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Best Practices for the Implementation of a Knowledge Management System in Small and Medium Enterprises

CAPSTONE REPORT

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Best Practices for the Implementation of a Knowledge Management System in Small and Medium Enterprises

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Abstract

This literature review focuses on the best practices for implementing a knowledge management system in a small to medium sized enterprise. The literature helps to illustrate common challenges businesses face when implementing a knowledge management system. Fifteen sources are reviewed and divided into three main categories: (a) challenges in implementing knowledge management systems, (b) best practices and key success factors in implementing knowledge management systems, and (c) knowledge management in small and medium sized organizations.

Keywords: knowledge management, IT knowledge management implementation, IT knowledge management implementation reports, IT knowledge management implementation plans, knowledge management key success factors, knowledge management implementation projects, knowledge management implementation best practices, and knowledge management implementation processes.

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Introduction to the Annotated Bibliography

Problem

Dalota and Grigore (2010) state that shifts towards a knowledge-driven economy play a significant role in maintaining economic growth, as well as enhancing various skill levels, throughout various industries. Organizations that want to keep up with technology innovations and shifts in economic cycles need to find innovative ways in which to increase the overall knowledge of their staff, as well as documenting and retaining the cumulative collection of knowledge already possessed. With the ever-changing structures of businesses and technology, the traditional source of organizational competitiveness has altered from tangible and physical resources to knowledge (Dalota & Grigore, 2010). “A company's innovativeness depends on whether it possesses or wants to develop three resources: human resources able to grasp and manage knowledge, effective organizational structures which support individual and group work, and technology” (Nowacki & Bachnick, 2016, p. 1578).

New business structures, harsh competition, changes in customer preferences and means of interacting, and varying reliability in technology have made companies evaluate the processes by which they manage tasks in their organizations, including knowledge management (Nowacki & Bachnik, 2016). One means of both increasing the knowledge of staff and providing for the retention and sharing of collective knowledge is through the implementation of a knowledge management system and associated processes (Dalota & Grigore, 2010).

Oliveira et al. (2012) define knowledge management as a compilation of processes that govern the leveraging, creation and dissemination of knowledge. Scovetta and Ellis (2015) identify the objectives of implementing a knowledge management system as the ability to utilize tangible and intangible assets to increase value and enhance competitive edge and business

value. The organizational decision to implement an extensive knowledge management system is influenced by a variety of factors including upper management buy-in and support, current staff communication procedures, process tracking documentation and management, organizational culture, and technology requirements (Oliveira, Caldeira & Ramao, 2012). Sedighi and Zand (2012) convey that while different expert opinions exist of the drivers moving organizations towards the establishment of secure knowledge management systems, determining the best practices and processes for creating, securing, and maintaining a knowledge management system to increase IT efficiency and retain knowledge is becoming more of a necessity than a benefit in maintaining a competitive advantage in any industry.

Many organizations have experienced challenges with the implementation of successful knowledge management systems and associated processes (Chan & Chao, 2008). According to Chan and Chao (2008), common issues experienced when trying to implement knowledge management systems are challenges in capturing the full quantity of knowledge generated by an organization, inadequate storage for the knowledge that is captured, inadequate time allocated to process all of the information, and insufficient staff to manage the project. Ulrich Remus (2012) states that without the use of professional knowledge management practices, it is difficult to gain adequate knowledge retention. Remus (2012) breaks knowledge management challenges into two different characteristics: insufficient collection of processes used in the past and legacy knowledge, and difficulties with the knowledge management integration and training processes that provide users with the ability to fully realize the benefits of the new knowledge management processes and systems.

Small and medium sized enterprises (SMEs) of approximately 200 employees or less (Chan & Chao, 2008) are particularly prone to challenges with the implementation of knowledge

management. SMEs typically have flat organizational structures and organic, free-floating management styles that encourage innovation and entrepreneurship (Edvardsson & Durst, 2015). It is not uncommon in free-floating management style environments for one person to be responsible for all of the processes of business planning and decision-making (Edvardsson & Durst, 2015). As a result of this central decision-making structure, those who wield this position are typically responsible for recognizing the benefits related to knowledge management that support the firms' operations (Edvardsson & Durst, 2015). SMEs experience challenges in successfully implementing knowledge management systems when they try to retain and leverage their organizations' knowledge (Hussain, Xiaoyu, Si, Wang, & Ahmed, 2011). These challenges include difficulties in securing top management support, developing a clear knowledge management vision, securing the necessary technical infrastructure, fostering a knowledge management culture, and providing a knowledge management linkage to business objectives in order to produce the best practices for these projects (Hussain et al., 2011).

Purpose Statement

The purpose of this annotated bibliography is to present literature on the best practices and processes needed to effectively implement a knowledge management system for a small to medium sized company's Information Technology (IT) department. Literature is provided that explores the challenges associated with implementing a knowledge management system. In addition, sources are provided that describe best practices and key success factors in implementing knowledge management systems. Finally, sources are provided to inform the topic of knowledge management in small and medium sized companies, including particular challenges and differences in the implementation and use of knowledge management systems dictated by the nature of SMEs.

Research Question

What are the best practices to effectively implement a knowledge management system in a small to medium sized company?

Audience

The information in this study is targeted for the president of WHA Insurance, Craig Feola, as well as the director of operations, Linda Cole. Scovetta and Ellis (2015) suggest that in order to create or maintain a certain level of proficiency in a knowledge management system, an organization's leadership team must fully support the project to gain buy-in from the remainder of the company. Porter, Lorsch, and Nohria (2014) note that for small companies, any major change to operations must have proper approval from key executives; in the case of WHA, these executives are the president and director of operations. For purchases exceeding a threshold amount of $10,000, the other two WHA owners also need to provide approval. If the project is approved, all members of the IT department will be able to utilize this study to aid in the implementation. After the initial implementation of the knowledge management system, other department managers who plan to implement knowledge management will also benefit from the study.

This research will also prove useful to any IT manager of a small or medium sized organization that is contemplating the implementation of a knowledge management system, as the study provides information on best practices and procedures for planning purposes. In addition, implementation teams for these organizations will also benefit from information on best practices in maintaining process knowledge from previously researched projects. Finally, leaders who are charged with providing policies regarding the cataloging and referencing of information and data that will be stored in a knowledge management system will benefit.

Search Report

Search strategy. Knowledge management is a very wide-ranging topic, so in order to find material that is useful for the purposes of this research, the topic is narrowed to the best practices and processes for the implementation of a viable knowledge management system. The initial search conducted through the UO Libraries uses "Knowledge Management Implementation" as the keyword search, producing 6,898 results. The results produced from the UO Libraries are located in various databases; the most useful for this study are:

- Google Scholar;
- Science Direct;
- Computer Source Database;
- Site Seer;
- ArXiv.org;
- Academic Search Premier;
- JSTOR;
- Mergent Online;
- ProQuest;
- Ebscohost; and
- Gale Group (Academic OneFile).

Keywords. Keyword compilations that are used throughout the databases include:

- knowledge management;
- IT knowledge management implementation;
- IT knowledge management implementation reports;
- IT knowledge management implementation plans;

- knowledge management key success factors;
- knowledge management implementation projects;
- knowledge management implementation best practices; and
- knowledge management implementation processes.

Reference evaluation criteria. Each reference is evaluated using criteria established in the Evaluating Information Sources site (Center for Public Issues, 2014) to determine its applicability for this study. The Center for Public Issues (2014) provides five characteristics to use when evaluating a source; these characteristics are (a) authority, (b) timeliness, (c) quality, (d) relevancy, and (e) bias. An authoritative reference is one written by a documented professional in his or her field or one that has been peer reviewed. With the ever-changing trends in technology, all articles must have been published within the past ten years to meet the criteria set forth to be timely for the topic of knowledge management systems. The source is then evaluated for quality including clear structure and consistency in the author's writing and proper punctuation, grammar, and spelling. A source is determined to be relevant when it addresses the research topic of determining the best practices and procedures for the implementation of a knowledge management system in a small and medium enterprise. Finally, the articles are evaluated to determine whether the author avoids personal or professional bias, uses sources that consider various perspectives, and uses credible sources to cite his or her work. Some bias, which should be avoided, can be present in articles trying to sway the readers to purchase some form of product or service.

Documentation approach. References for this document are collected and documented through Microsoft Word and Excel. The database used for each search is entered into Excel, followed by a secondary category of the keywords used to produce results. For each document

collected for evaluation, the title and reference link or digital object identifier (doi) is inserted. Once an article is determined to contain enough relevant information, the article information, including the American Psychological Association (APA) citation and abstract are documented in Microsoft Word. To avoid the loss of information, the two files are saved on two computers, as well as an external hard drive.

Annotated Bibliography

The Annotated Bibliography is comprised of 15 references that address the information that can aid in answering the research question of: What are the best practices to effectively implement a knowledge management system for a small to medium sized company's IT department? The references are placed in one of three categories based on the information they contain: (a) challenges in implementing knowledge management systems, (b) best practices and key success factors in implementing knowledge management systems, and (c) knowledge management in small and medium sized organizations. The annotations are comprised of: (a) APA bibliographic citation; (b) complete abstract; and (c) a summary of the content, including the relevance to the research problem.

Challenges in Implementing KM Systems

Barratt-Pugh, L., Kennett, P., & Bahn, S. (2013). Managing knowledge: The critical role of culture and ownership as mediator of systems. *International Journal of Knowledge Management, 9(*2), 20-37. doi:10.4018/jkm.2013040102

Abstract. For organizations, an environment of continuous change positions knowledge as the source of key competitive advantage and simultaneously mediates change to more fluid structures. More flexible structures challenge the traditions of knowledge flowing through hierarchical and formal chains of command. The emerging more fluid and knowledge based organizational structures present new challenges for developing, retaining and disseminating organizational knowledge. An area of highly contested debate involves the harmony and integration of Knowledge Management Systems (KMS) and changing organizational cultures. The paper explores KMS and cultural interface through an analysis of three mature organizational cases, identifying the key barriers that

appear to prevent the effective use of KMS. The study constructs a framework for exploring cultural integration issues. The study confirms the primacy of culture in shaping integration and the imperative of resourcing learning and development programmes. The findings indicate that the critical issues organizations should explore are the legitimacy of authoring, the transparency of filtering and attribution, and the awareness of cultural dissonance. For practitioners the study provides a framework for exploring employee participation relationships, while academically the study confirms how existing cultural relations will shape KMS relations and how the exploration of existing cultural exchange practices should be equally weighted with practices to build employee capability. Generating ownership may be the key to success.

Summary. The authors in this article use a variety of different methods to determine some of the challenges that restrict effective knowledge management systems in order to identify what actions should be taken to create the best utilization of the KMS. Their methods include a literature review, pilot study, and in-office observation of current knowledge management systems at work. The pilot study focuses on three main categories of study: (a) culture, (b) individual perceptions, and (c) structure. The field study in the offices was broken down into three categories: (a) how the existing culture of the organization affects the system, (b) how the perceptions of individuals mediate engagement with the system, and finally (c) how the structure of the organization impacts the system. A majority of the information from the in-office interviews highlighted lack of training and development to be a major setback in the successful utilization of the knowledge management system. The authors found that the main driving force in the implementation of a knowledge management system is the incorporation of staff

involvement. Project managers and upper management need to focus some of their efforts on maintaining staff training and developing knowledge management practices.

This source is helpful in illustrating some of the challenges that are present when creating guidelines for managing the cultural and staffing issues that may be present in an organization that can negatively impact the successful implementation of knowledge management systems. This source also provides justification for a structured knowledge management training schedule to reduce potential issues such as a failure of participants to fully adapt to the move to a knowledge management system.

Nowacki, R., & Bachnik, K. (2016). Innovations within knowledge management. *Journal of Business Research*, 1477-1581. doi:10.1016/j.jbusres.2015.10.020

Abstract. The research aims at studying the scope of innovative knowledge management. It uses the concept of eight processes of knowledge management and identifies three broad categories of knowledge management innovations in an organizational context. It tries to verify outcomes of these innovative efforts. The research considers four aspects of organizational effectiveness: enterprise competitiveness, revenues, buyers' satisfaction, and business partners' satisfaction. The analysis covers small, medium, and large companies in Poland. The main conclusion is that studied enterprises are little innovative in the area of knowledge management.

Summary. Nowacki and Bachnik report on innovative knowledge management. They note how companies possess or need to develop three resources in order to enable innovative knowledge management: human resources able to grasp and manage knowledge; effective organizational structures that support individual and group work; and technology, which includes information systems, intranets, and web portals.

The research study consisted of 608 randomly selected companies that represented multiple categories of industry (manufacturers, service providers, trading companies, micro, small, medium, and large enterprises). The research team conducted one-on-one interviews with management. Of the results, only 23% of the companies currently pursue knowledge management practices, and 11% intend to start working on an implementation. The study concluded that a company needs to do more than embrace knowledge management to reap the benefits; the company needs to be unique and creative to produce superior results.

The information from the statistical data presented in this article provides strong justification for the need for knowledge management systems. The results show a correlation between business productivity and success and the proper implementation of a knowledge management system.

Remus, U. (2012). Exploring the dynamics behind knowledge management challenges—An enterprise resource planning case study. *Information Systems Management*, *29*(3), 188-200. doi: 10.1080/10580530.2012.687309

Abstract. The conductor of this case study uses causal mapping to show that external changes to an enterprise resource planning project can trigger a chain reaction, resulting in weak performance of key knowledge management activities such as knowledge capture, sharing, and integration. Management decisions responding to these changes may lead to knowledge dilemmas that can trigger unwanted dynamic behavior, finally causing project drift. This research extends existing knowledge on knowledge management challenges by emphasizing the need to reveal the dynamics behind how knowledge management challenges unfold over time.

Summary. The author's focus on the challenges in knowledge management implementation and their impact on enterprise resource planning (ERP) implementations utilizes a literature review to determine numerous challenges which can be present in knowledge management implementation activities. Remus cites multiple authors in naming the activities (Alavi&Leidner, 2001; Bhatt, 2000; Davenport, Jarvenpaa, & Beers, 1996; Nissen, Kamel, & Sengupta, 2000; O'Dell & Grayson, 1997; Ruggles, 1997; Tuomi, 1999; Wiig, 1986); the activities include: (a) creation or generation; (b) acquisition or adoption; (c) identification or capture; (d) collection; (e) evaluation; (f) conversion; (g) organization, (h) linking and embedding; (i) formalization; (j) storage; (k) refinement or development; (l) distribution, diffusion, transfer or sharing; (m) presentation or formatting; (n) application, deploying or exploiting; (o) review, revision or evolution; and (p) archiving, deletion or forgetting of knowledge. Remus then sought to determine how and why challenges to KM activities occur in ERP implementation projects, breaking the study out into two stages: identifying the main challenges of KM activities and then adapting a causal mapping methodology to further explore consequences and interactions. Using qualitative methods to collect and analyze data, he conducted seven in-depth face-to-face interviews, as well as reviewing published and internal documentation, such as process documentation, requests for proposals (RFPs) and protocols.

Key findings from the study include the identification of knowledge integration and training and insufficient capture of process and legacy knowledge from the past as substantial challenges in successful knowledge management during the implementation of an ERP system. The authors also found that the added pressure of implementing an

ERP system can cause several other challenges, such as knowledge loss. The amount of work required by key project team members on the ERP projects meant that these resources were not available to complete core KM activities.

Though the information in the article does specifically target the challenges that can arise in knowledge management activities with the implementation of an ERP project, the findings can play a useful role in highlighting conflicts for a knowledge management implementation. This source is also useful in showing the challenges in implementing a large and complex project. The increased workload can cause a chain reaction that could delay training, lose project momentum, or reduce the support from the staff.

The focus from this source is to implement safeguards to maintain training throughout the implementation process for a complex project such as an ERP implementation, as well as collecting any process knowledge from all individuals working on the implementation, including internal staff and consultants. Investigating and documenting legacy projects and knowledge and systems from the past are crucial activities in these complex system implementations, as is developing a schedule with project time estimates that includes a sufficient window of opportunity to gather and document all of the important knowledge.

Best Practices and Key Success Factors in Implementing KM Systems

Anantatmula,V., & Kanungo,S., (2010) Modeling enablers for successful KM implementation, *Journal of Knowledge Management, 14*(1), pp.100 – 113

Abstract. Knowledge is recognized as a critical resource to gain and sustain competitive advantage in business. While many organizations are employing knowledge management

(KM) initiatives, research studies suggest that it is difficult to establish return on investment of such efforts; however, desired results can be obtained through successful implementation. In this research study, using literature review, we identified a set of enablers and barriers of successful KM implementation. Using this set of factors, we developed a questionnaire by applying Interpretive Structural Modeling (ISM) methodology to determine underlying relations among these factors and develop strategies for successful implementation of KM initiatives. Contributions from this research effort should also support organizations in making decisions about improving organizational performance using KM initiatives, and understanding the directional relations among KM factors. Because of the number of participants in our study, applicability of our research results may have certain limitations. To address this inadequacy, as a future research effort, we intend to increase the number of respondents and participant organizations.

Summary. The authors utilize a literature review to design a questionnaire to help in declaring enablers and barriers for successful knowledge management (KM) implementations. They created their questionnaire by applying the ISM (interpretive structure modeling) methodology. Through their literature review, Anantatmula and Kanungo were able to establish 14 key factors to determine likely success of a KM project; these factors are (a) leadership, (b) top management support, (c) culture, (d) strategic focus, (e) budgetary support, (f) communication, (g) formalization, (h) collaboration, (i) content quality, (j) KM processes, (k) top management involvement, (l) technology infrastructure, (m) measurement of results, and (n) formalization. Their results show that the main driving factors in building a successful KM effort are top

management involvement, KM leadership, and the culture of the organization. The inclusion of top management support will help in the efforts to gain support and active participation, as well as ensure that the project will stay on task that all needed departments get involved.

This source is useful for this research study because it provides both best practices and key success factors for successful knowledge management systems. In particular, the article notes that organizations that exercise strong leadership and involve top executives in these implementation projects can positively influence the successful outcomes of the projects.

Jayasingam, S., Ansari, M. A., & Jantan, M. (2010). Influencing knowledge workers: The Power of Top Management. *Industrial Management + Data Systems, 110* (1), 134. Retrieved from: http://www.kmice.cms.net.my/ProcKMICe/KMICe2008/Pdf/172-177-CR101.pdf

Abstract. Leadership is known as the major factor that can influence and motivate knowledge workers to contribute and participate actively in creating, sharing and using knowledge effectively. A survey of 180 Multimedia Supercorridor (MSC) status firms was conducted to identify what leadership characteristics (in the form of social power) are needed in a knowledge-based firm. The results showed that knowledge leaders should embrace personal power and avoid information power. Position power must be exercised with caution because it not only encourages knowledge sharing but also impedes knowledge acquisition. Careful use of power can successfully influence k-workers to apply knowledge management practices (KMP).

Summary. This literature review and questionnaire-based article focuses on the effects of leadership characteristics on the proper implementation of a knowledge management

system. The survey was distributed to 180 Multimedia Supercorridor (MSC) firms. The choice to use MSC firms was based on two main factors: the concentration of knowledge workers and the inclusion of knowledge-intensive industry sectors. The survey identifies three leadership power types that influence knowledge management implementation success: position power - PO (referent power, coercive power, legitimate power), personal power - PE (expert, connection, and reward power), and information power – IP (the accuracy and availability of information that other people need and do not own themselves). The knowledge management practices are broken up into five categories:

- Knowledge acquisition (KA);
- Knowledge acquisition through hiring (KAH);
- Knowledge exchange (KE);
- Knowledge circulation (KC); and
- Knowledge utilization (KU).

The authors then used a multiple regression analysis to successfully test their hypothesis that leadership does play a vital role in the implementation of knowledge management practices, and the influence leaders have over the participation of knowledge workers in using a knowledge management system. The results indicate that the personal power of leaders is the most effective in influencing knowledge workers.

This source is useful for this research study in showing how the involvement of leaders in knowledge management implementations can play a crucial part in getting knowledge workers to embrace the implementation and resulting system and processes.

Lakshman, C. (2009). Organizational knowledge leadership: An empirical examination of KM by top executive leaders. *Leadership and Organization Development Journal, 30(4),* 338-364. doi:10.1108/01437730910961676

Abstract. Purpose – Knowledge management as a key top executive function has not been sufficiently explored in the leadership literature. This study seeks to examine the role of top executives in knowledge management by first building theoretical hypotheses and subsequently testing them. Hypotheses are developed through the integration of the knowledge management and leadership literatures and tested using CEO interviews published in Harvard Business Review. Design/methodology/approach – Using the method of structured content analysis developed by Jauch et al., this study uses these HBR interviews and develops questionnaire instruments through which data are collected from respondents in a structured fashion. This innovative method involves the distribution of these published interviews with top executives of organizations (such as CEOs) to multiple groups of respondents, who then carefully read the interviews and responded to the structured questions developed for the purpose of assessing the relevant constructs in the study. Such structured content analysis allows for both the assessment of inter-rater reliability and testing the theoretical relationships identified in the theory-building stage. Findings – The major hypotheses, relating cause-effect beliefs held by the CEOs and their knowledge management practices to performance measures and leadership perceptions, were supported. Research limitations/implications – The CEOs included in the study were not randomly chosen but chosen from a set of interviews (acquired) from a published source. The use of acquired interviews may also be the reason for not finding stronger relationships across the variables being examined here.

Practical implications – The paper has studied the importance of information acquisition, information use, and more generally information and knowledge management as key leader functions or behaviors. Overall, the findings and the framework used here point to the importance of the role of leaders (top executives) in information and knowledge management. Originality/value – This is a seminal investigation of knowledge leadership by top executives. Such work has not existed in the literature to date, except in the qualitative mode.

Summary. Lakshman used a literature review and an innovative content analysis to analyze 37 published interviews from company CEOs and other top executives that had been published in the Harvard Business Review. Based upon these interviews, the author developed and distributed questionnaires to CEOs and other top leaders to determine their role in successful knowledge management initiatives. The author assessed the cause and effect beliefs held by the CEOs, the nature and degree of knowledge management activities they established, the nature and degree of customer-focused knowledge management activities established by the CEOs, and leadership perception ratings. He then used regression analyses to determine the impacts from three independent variables identified in the study. They were regressed on the average return on equity, return on assets, earnings per share, return on sales, and leadership perceptions. The results of this study and literature review indicate that information and knowledge management play a significant role in leadership. The study found strong correlation between variables in leadership perception and the importance organizational performance.

The information in this study will increase the credible documentation supporting the need for upper management support in knowledge management implementations, but

also shows the overall value that knowledge management adds to the ability to effectively leader as well. Favorable perceptions of leadership can also be effective in acquiring resources for knowledge management projects and getting the commitment and acceptance for key decisions.

Lindner, F., & Wald, A. (2010). Success factors of knowledge management in temporary organizations. *International Journal of Project Management, 29(7),* 877-888. Retrieved from: http://www.sciencedirect.com/science/article/pii/S0263786310001328

Abstract. The prevalence of temporary forms of cooperation and project-based work is increasing. Likewise, the knowledge-intensity of work contents is growing. However, the unique and temporary nature of projects and programs does not support knowledge transfer from, between, and within projects.

This research aims at spotting success factors of knowledge management in temporary organizations. Based on a cross-industry sample with 414 organizations, we apply the partial least square (PLS) method to test the influence of cultural, organizational, structural, and process-related factors on knowledge management effectiveness.

Besides IT-support and formal elements of the organization, it is cultural factors that strongly influence knowledge management success. In temporary organizations they compensate for the lack of organizational routines and organizational memory. Our results contribute to a more differentiated understanding of knowledge management in project environments.

Summary. The information collected in this study focuses on project-based company knowledge management. The authors conclude that several factors affect the success or failure of knowledge management projects, which include:

- Culture, including knowledge culture, management commitment, project culture, mistake tolerance, and informal networking;
- Information and communication technology (ICT), including communication devices, services, and applications;
- The use of a project management methodology that encompasses the five phases or processes of project management (define, plan, launch, manage, and close)
- Organization, including the existence of defined standards and quality requirements.

Lindner and Wald determined that a strong knowledge culture was the most important enabler in a knowledge management implementation. Organizational culture is particularly important in the early phases of the knowledge management implementation, whereas in later phases the established culture allows for better interpersonal communication throughout the projects.

In addition to the literature review, the authors conducted a survey of 8,000 members and other affiliates of the German Association of Project Management. The intent of the survey was to measure the success of knowledge management as a construct of knowledge management effectiveness, perceived knowledge management effectiveness, and user satisfaction with the knowledge management system. They determined that organizations with clear project processes and strong project knowledge have a positive impact on the success of knowledge management implementations. The

study results showed that processes used to generate, store, and retrieve knowledge could not form in a temporary organization, while permanent organizations construct routines that handle many of these tasks.

This source provides information on successful knowledge management implementations for both projects that are directed at internal customers as well as for external projects that are directed to external customers. The data collected pertains to both temporary and permanent organizations that are implementing knowledge management systems and provides key best practices for this study.

Luo, S., & Lee, G. (2013). Key factors for knowledge management implementation. *Social Behavior and Personality, 41*(3), 463-476. Retrieved from: https://www.sbp-journal.com/index.php/sbp/article/view/2832/2908

Abstract. Although ethical climate, trust, satisfaction, and commitment are related to knowledge management (KM), there are at present few studies in which the way ethical climate affects KM through trust, satisfaction, and commitment has been emphasized. The aim of this study was to fill this research gap by examining different ethical climates in this context. The authors have found that, principle-oriented climates of company rules and procedures and laws and professional codes (LPC) affected KM positively and directly, the benevolence-oriented climate of team interest (TI) influenced KM positively but indirectly, and the effect of trust on commitment was indirect but fully mediated through satisfaction in TI and LPC. The authors have used structural equation modeling for data analysis to map the relationships between KM practices and the key factors.

Summary. This article focuses on the effects of the ethical climate in a company as a key impactor of an effective knowledge management system. Luo and Lee conducted a study

on Taiwanese organizations to determine the relationship between knowledge management and ethical climate, trust, satisfaction, and commitment. The results of the study indicated that three ethical climates in the Taiwanese enterprises they studied did have positive impacts on knowledge management in an organization. These ethical climates, listed in order of positive impact on knowledge management in the organizations, are: company rules and procedures (CRP), characterized as principle-oriented and local; laws and professional code (LCP), characterized as principle-oriented and cosmopolitan, and team-interest (TI), characterized as benevolence-oriented and local. Lou and Lee found that enterprises achieve better knowledge management performance by prioritizing CRP, LPC, and TI to create a suitable ethical climate.

The information from this source provides information on the importance of ethical climate in the workplace for the successful implementation of a knowledge management system. It also focuses on trust, commitment and satisfaction in the company environment and how each plays a role in the knowledge management implementation processes and ultimate effectiveness.

Oliveira, M., Caldeira, M., & Batista Romão, M. J. (2012). Knowledge management implementation: An evolutionary process in organizations. *Knowledge & Process Management, 19*(1), 17-26. doi: 10.1002/kpm.1381

Abstract. The implementation of knowledge management projects continues to be a challenge for many organizations. A project of such nature involves the introduction of new information technologies, changes in business processes, and often changes in the organizational culture. In this paper, we have studied the implementation of knowledge management initiatives in 11 firms operating in Portugal. Data were mainly collected

through semi-structured interviews with top managers. The aim of this research is to analyze the process and factors associated with knowledge management implementation and develop a framework, with different stages, to guide the implementation of knowledge management in organizations. The theoretical and practical contribution to this framework is discussed, as well as the findings in each case study.

Summary. Oliveira, Caldeira, and Romão (2012) utilize case studies of eleven different Portugal firms from four industries to evaluate the 22 factors that they believe influence success in the implementation of knowledge management. These industries include construction, information systems and technology, consultancies, and communication firms. The information presented in this article is derived from interviews conducted in each of the organizations, as well as literature reviews. The authors focus their study by discussing the four main stages of KM implementation: planning, initiation, development, and integration. The authors categorized the 22 factors among the four stages of the implementation process. Stage one (planning) includes top management support; organizational culture; organizational structure; and alignment with business objectives, project objectives, and budget. Stage two (initiation) consists of explicit knowledge, knowledge management project leader, process phases, technology, and time. The factors in stage three (development) are training, rewarding systems, communication, tacit knowledge, benefits, and core knowledge. Finally, stage four (integration) includes legislation, customers, suppliers, partners, and competitors. The authors point out that for the most part, the fields of technology and communication have the most consistency in implementation and retention of the KM systems.

The authors' results state that the three most important factors in the successful implementation of knowledge management systems are top management support, strong understanding of the organization's culture, and organizational structure. The organizational structure was considered important because it can have an impact on decision making that impacts the other factors, such as the decision of what types of technology to utilize.

The information gathered from this source assists in compiling and analyzing the different key factors that influence the success of knowledge management system implementations. Based on the information provided, all of the 22 factors play some role in the implementation process, and an evaluation of each factor should be included in a knowledge management implementation to identify its influence on the process.

Pirró, G., Mastroianni, C., & Talia, D. (2010). A framework for distributed knowledge management: Design and implementation. *Future Generation Computer Systems, 26*(1), 38-49. doi:10.1016/j.future.2009.06.004

Abstract. This paper describes a framework for implementing distributed ontology-based knowledge management systems (DOKMS). The framework, in particular, focuses on knowledge management within organizations. It investigates the functional requirements to enable Individual Knowledge Workers (IKWs) and distributed communities (e.g., project teams) to create, manage and share knowledge with the support of ontologies. On the one hand, the framework enables distributed and collaborative work by relying on a P2P virtual office model. On the other hand, it provides a multi-layer ontology framework to enable semantics-driven knowledge processing. The ontology framework allows organizational knowledge to be modeled at different levels. An Upper Ontology is

exploited to establish a common organizational knowledge background. A set of Workspace Ontologies can be designed to manage, share and search knowledge within communities by the establishment of a contextual (i.e., related to the aim of a group) understanding. Finally, Personal Ontologies support IKWs in personal knowledge management activities. We present an implementation of the designed framework in the K-link+ system and show the suitability of this approach through a use case. The evaluation of K-link+ in a real network is also discussed.

Summary. This article provides insight into distributed ontology-based knowledge management systems. The information allows for the creation of a knowledge management system that fosters the ability to harness a variety of different views into one knowledge management system in order to increase creativity and innovation. The systems utilize a peer-to-peer method that coordinates knowledge workers (the people who utilize, collect, or handle knowledge) throughout the system. This method introduces a group evaluation of the knowledge capture process in which the knowledge is collected through collaboration. The results of this study show that the collaboration of the knowledge workers in developing the knowledge-capture process provided more effective results than using a standard predefined knowledge management procedure.

The information from this article is used to weigh the differences between a standard knowledge management system implementation and a distributed ontology-based method. The collection techniques in this study hold promise for removing some of the challenges faced by organizations that use traditional knowledge management processes.

Scovetta, V., & Ellis, T. J. (2015). Leadership social power as a component of KMS success. *International Journal of Knowledge Management, 11(*2) 1-14. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA439536371&v=2.1&u=s8492775&it=r&p=AONE&sw=w&asid=722b54cd3694cb792d213d7005cf219d

Abstract. This study investigated the relationships between a leader's of Leadership Social Power (LSP) profile and Knowledge Management Systems (KMS). Previous research has established that KMS success is positively impacted by leadership commitment to KMS, knowledge quality, and knowledge use. Yet how little we know about the constructs of leadership that may impact KM. The goals of this research focused on discovering how the manner in which leaders exert power – their LSP profile influenced each of these KM success factors. This research was able to empirically demonstrate that LSP is a factor of that success and was able to effectively predict Leadership Commitment to KMS, Knowledge Content Quality, and Knowledge Use based upon predominate manner of Leadership Social Power used by the KM leaders.

Summary. This research study focuses on the key element of leadership in the implementation of a knowledge management system. Scovetta and Ellis focused their research on leadership social power as it influences leadership commitment KMS systems - LCKMS (the degree to which leaders in the organization are believed to be committed to the success of the knowledge management system), knowledge use (KU) and knowledge quality (KQ). They then broke leadership social power into five categories: expert, coercive, reward, referent, and legitimate. The results of the study showed the correlation between leadership social power and the three main factors. Expert and reward power were shown to be positively correlated to LCKMS and KU.

Coercive power was negatively correlated to LCKMS, referent power was negatively correlated to KU, and referent and legitimate power were determined to not be correlated to LCKMS as the study results indicate no significant influence on knowledge management. The results of the study indicate that expert leadership social power is positively correlated to all three of the knowledge management factors. Finally, the study revealed that leadership commitment will produce better results if there is some form of reward system to enhance knowledge use.

The information in this source is used to strengthen the position of needing strong leadership commitment throughout all stages of the implementation of the knowledge management system in order to achieve success. The source is further useful by identifying different types of leadership social powers and identifying which have positive and negative impacts on knowledge management success factors.

Wu, I., & Lin, H. (2009). A strategy-based process for implementing knowledge management: An integrative view and empirical study. *Journal of the American Society for Information Science & Technology*, *60*(4), 789-802. doi: 10.1002/asi.20999

Abstract. Knowledge resource is unique and valuable for a link to competitive advantage based on the knowledge-based perspective. Effective knowledge management is the major concern of contemporary business managers. The key determinant of effective knowledge management is the firm's competitive strategy. The link between business strategy and knowledge management, while often discussed, has been widely ignored in practice. Moreover, while knowledge management is complex in nature, it is difficult to directly translate a firm's competitive strategy into the specific knowledge management activities. This requires first defining knowledge strategy to guide further information

technology (IT)-supported implementation approaches. Finally, the ultimate goal of knowledge management lies in the realization of firm performance. Previous studies have just discussed partial relationship among these relevant knowledge concepts rather than in an integrative manner. Thus, this research proposes a complete process-based model with four components: competitive strategy, knowledge strategy, implementation approach, and firm performance. Empirical results have shown positive relationships between any two consecutive components and useful insight for knowledge implementation practice.

Summary. Utilizing both a literature review and a survey method, Wu and Lin evaluate the processes for implementing a KM system. The survey consists of a five-part questionnaire. The first part was rated using a nominal scale, whereas the remainder of the questionnaire was scored using a 7-point Likert scale. The five parts were (a) basic information; (b) competitive strategy (prospector, analyzer, and defender); (c) knowledge strategy (innovator, skill acquirer, continuous improver, and copier); (d) implementation approach (codification, personalization, integration, and other); and (e) firm performance (improved ability to innovation, improved coordination efforts, rapid commercialization of new products, improved ability to anticipate crisis, quick responsiveness to market change, and reduced redundancy of information/knowledge). Their questionnaire was sent out in two different 3-week periods to chief knowledge officers (CKO), or chief information officers (CIO if a CKO was unavailable. The authors mailed the surveys in an 800-survey sample group, and another 200-survey group. The response to the survey was extremely low. The total respondent percentage from the two groups was only about 16%, which could cause concerns on the validity of the data collected.

The data collected was then analyzed to determine a correlation between the different factors in the questionnaire. The authors compared the competitive strategy and implementation approach against knowledge strategies, and implementation approach against firm performance. The results show that a high proportion (approximately 44.5%) of the firms analyzed were adapting towards the analyzer strategy. For the knowledge strategy firms that were adopting a prospector strategy, a high proportion (approximately 55.2%) focused on innovation. The firms that adopted the innovator strategy showed high results (approximately 53.2%) in the personalization approach. Finally, the firm performance evaluation showed that improved coordination efforts were best suited for codification, where knowledge is codified and stored in a database that can be accessed and easily used by anyone in the company; improved ability to innovate fit the personal approach; and rapid commercialization of new products fit the integration approach.

This source is useful for this research study because it aids in determining the most effective approach for knowledge management implementation in each of the categories for different types of organizations. Furthermore, the results from the evaluation highlight some implementation challenges to particularly avoid or pay close attention to in the implementation.

KM in Small and Medium Sized Organizations

Chan, I., & Chao, C. (2008). Knowledge management in small and medium sized enterprises. *Communications of the ACM*, *51*(4), 83-88. doi:10.1145/1330311.1330328

Abstract. The article discusses knowledge management capabilities of small and medium sized enterprises and the successful implementation of knowledge management programs. According to Hong Kong Government statistics, 98% of business

establishments in Hongkong are small to medium-sized enterprises. These enterprises represent 50% of employment in Hong Kong. Due to competition in business environment, knowledge management operations plans are implemented in small to medium sized businesses. The author mentions that to achieve balanced deployment of these plans, enterprises must evaluate the process capability and infrastructure capability of their organizational resources.

Summary. The authors of this article conduct a survey with 68 small and medium enterprises (SMEs) that had knowledge management launches within a few years prior to the survey. In the process of evaluating the survey results, the authors break the information received into two capabilities: infrastructure, and process. The infrastructure capabilities consist of structure, culture, and technology, whereas the process capabilities include acquisition, protection, conversion, and application. The authors note that it is vital that the organizations harness an even balance of culture, technology, and structure infrastructure, together with the precise capabilities to acquire, combine, apply, and create knowledge. The focus and intention of a knowledge management system should not be to focus on any single one of these areas, but to make sure that there is an even consideration of each.

This source is useful for this research study because it provides concrete advice about the different capabilities a SME should either possess or improve prior to implementing knowledge management, as compared to a larger company.

Dalotă, M., & Grigore, S. (2010). Successful implementation of knowledge management in small and medium enterprises. *Managerial Challenges of the Contemporary Society*, *6*(1), 46-49. Retrieved from: ftp://ftp.repec.org/opt/ReDIF/RePEc/bbu/wpaper/46-49.pdf

Abstract. Knowledge has become one of the critical driving forces for business success. Organizations are becoming more knowledge intensive and the needs for leveraging the value of knowledge are increasing. Organizations need to be cognizant and aware of the factors that will influence the success of a knowledge management (KM) initiative. The effective implementation of KM in small and medium enterprises (SMEs) is governed and facilitated by certain factors. Organizations can certainly benefit from a more thorough understanding of the factors that are critical to the success of KM. The adoption of factors which are not suitable can impede the achievement of the desired performance.

Summary. Dalotă and Grigore take an insightful look at critical factors that play major roles in implementing a knowledge management system in a small to medium sized enterprise. In this literature review, they highlight several factors that are important when considering a KM implementation. These factors include:

- leadership and support,
- processes and activities,
- motivational aids,
- resources,
- culture,
- information technology,
- strategy and purpose,
- measurement,
- organizational infrastructure,
- training and education, and
- human resource management.

They illustrate that the top three factors indicated by their research are senior management support and leadership, having a knowledge friendly culture, and having a clear strategy for managing knowledge. The lowest ranking three factors are development of technological infrastructure, incentives to encourage KM practices, and measuring the effectiveness of KM. Throughout the literature, their focus highlighted the need for managerial support of the KM implementation.

This source provides key elements a small and medium sized enterprise should consider when implementing a knowledge management system. In particular, the study points to the need for strong managerial support of a KM implementation as a critical success factor.

Edvardsson, I., & Durst, S. (2013) The benefits of knowledge management in small and medium-sized enterprises, *Procedia - Social and Behavioral Sciences, 81(28),* 351-354, doi.org/10.1016/j.sbspro.2013.06.441.

Abstract. The purpose of our paper is to review extant research to identify what we know about the benefits of knowledge management for small and medium-sized enterprises. The following research questions were formulated according to this aim: 1) What kind of studies have been conducted that focus on benefits of KM within SMEs? 2) What were the main findings of the studies? We propose an approach of literature review in order to understand knowledge benefits for SMEs; a poorly understood area of stud y to date. The few studies identified highlight employee development, innovation, customer satisfaction and organizational success as areas where small and medium-sized businesses benefit from KM activities.

Summary. The author's literature review is comprised of nine scholarly articles and journals between the years for 2005 and 2011. The findings from the literature review conclude that some form of organizational success, such as increased productivity, process improvements, increased sales, and fewer losses result from the implementation of a knowledge management system. They also find that implementation of a knowledge management system contributes to employee development, innovation, improved customer satisfaction, creativity, and improved external relationships with other companies.

The information in this source lends credibility to the need for results that can be achieved from implementing a knowledge management system in a small to medium sized enterprise.

Conclusion

Shifts towards a knowledge-driven economy play a significant role in maintaining economic growth, as well as enhancing various skill levels throughout various industries (Dalota & Grigore, 2010). This annotated bibliography focuses on the challenges faced by small and medium sized companies when implementing knowledge management systems, as well as best practices they can employ to overcome the challenges. Success when implementing a knowledge management system relies on the organization's ability to utilize tangible and intangible assets to increase business value and enhance a competitive edge (Scovetta & Ellis, 2015). Retaining knowledge is becoming more of a necessity than a benefit in maintaining a competitive advantage in any industry (Sedighi & Zand 2012).

Through the evaluation of 15 literary sources, major key factors are identified to inform successful knowledge management implementations. Sources are provided that inform the topics of common challenges an organization may face when implementing knowledge management systems, the best practices to use and key success factors to leverage in the implementations, and knowledge management in small to medium sized organizations.

Challenges in Implementing KM Systems

Many organizations have experienced challenges with the implementation of successful knowledge management systems and associated processes (Chan & Chao, 2008). According to Chan and Chao (2008), common issues include challenges in capturing the full quantity of knowledge generated by an organization, inadequate storage for the knowledge that is captured, inadequate time allocated to process all of the information, and insufficient staff to manage the project. Barratt-Pugh, Kennett, and Bahn (2013) researched the three categories of culture, individual perceptions, and structure to determine their influence on the success of knowledge

management implementations. While conducting evaluations in the office environment, they determined that a lack of training and development throughout knowledge management implementations causes major setbacks in the successful utilization of a knowledge management system. They concluded that the main driving force in ensuring the success of a knowledge management system implementation is staff involvement.

Some of the dilemmas that arise in a knowledge management implementation could escalate and cause the implementation project to drift, the project team to lose focus, and the project to eventually be halted. Remus (2012) notes that the most consistent challenges in the implementation of knowledge management are the lack of knowledge integration and training, as well as insufficient methods of collecting current processes and knowledge possessed by employees.

Nowacki and Bachnik (2016) note that companies must possess or develop three main resources in order to enable innovative knowledge management: (a) human resources able to grasp and manage knowledge; (b) effective organizational structures that support individual and group work; and (c) technology, which includes information systems, intranets, and web portals. Companies need to do more than just embrace the concept of a knowledge management system; they also need to be innovative and creative to produce the best results.

Best Practices and Key Success Factors in Implementing KM Systems

Knowledge management researchers identify leadership involvement as necessary for successful implementations of knowledge management systems (Jayasingam, Ansari, & Jantan, 2010; Lakshman, 2009). Jayasingam, Ansari, and Jantan (2010) categorize leadership into three categories: (a) position power (referent power, coercive power, and legitimate power); (b) personal power (expert, connection, and reward power); and (c) information power (the accuracy

and availability of information that other people need and do not own themselves). While all of the leadership categories are vital for the successful implementation of a knowledge management system, Jayasingam, Ansari, and Jantan (2010) found that personal power has the greatest impact in influencing knowledge workers to use the system effectively. Lakshman (2009) determined that leadership perception of the implementation in the organization plays a significant role in whether the implementation is successful. The inclusion of top management support aids in the efforts to gain support and active participation from the remainder of the organization Lakshman (2009).

The research results varied in identifying what exact factors are necessary for a successful implementation of a knowledge management system. Oliveira, Caldeira, and Romão (2012), Lindner and Wald (2010), and Anantatmula, and Kanungo (2010) identify top management support, culture and organizational structure as playing the most significant roles in the successful implementation of a knowledge management system. Other factors that they find influence the success of knowledge management implementations include training; reward systems; the technology used to collect, store, and distribute data; competitors in the industry; budgetary support; communication content quality; and result measurement systems. Oliveira, Caldeira, and Romão (2012) recommend that a knowledge-management implementation be completed in four stages: (a) planning, (b) initiation, (c) development, and (d) integration. They further break the stages into twenty-two key factors, which should be considered to successfully implement a knowledge management system. Overall, Oliveira, Caldeira, and Romão (2012) find that the three most important factors in the successful implementation of knowledge management systems are top management support strong understanding of the organization's culture, and organizational structure. Lindner and Wald (2010) dive deeper into the specifics of

culture in the organization by breaking culture itself out into five categories: knowledge culture, management commitment, project culture, mistake tolerance, and informal networking, finding that knowledge culture plays the most significant role in ensuring success in the implementation of knowledge management.

KM in Small and Medium Sized Organizations

Small and medium sized enterprises (SMEs) of approximately 200 employees or less (Chan & Chao, 2008) are particularly prone to challenges with the implementation of knowledge management. Knowledge management implementations for small and medium sized organizations do not differ from implementations for larger organizations in terms of the most important factors for knowledge management success: the incorporation of top management support and leadership, a friendly culture, and a clear strategy for managing the project are all key (Dalotă & Grigore 2010). Dalotă and Grigore (2010) identify several factors that are important to the successful implementation of a knowledge management system in a small to medium sized enterprise. These factors include leadership and support, clearly defined processes and activities, motivational aids to keep the projects on task and the staff involved, budgetary and HR resources, strong defined strategy and purpose, organizational infrastructure, and training and education on the collection and implementation of the resulting knowledge.

Edvardsson and Durst (2013) found that small and medium sized enterprises benefit greatly from the implementation of knowledge management systems, which they found contribute to employee development, innovation, creativity, and improved customer satisfaction and external relationships with other companies. A common thread throughout the majority of research on the implementation of knowledge management systems in small and medium sized

organizations is the need to focus on managerial support of the implementation (Chan & Chao, 2008, Dalotă & Grigore 2010, Edvardsson & Durst, 2013).

Summary

The drive towards the implementation of knowledge management in organizations has been increasing due to changes in business structures, increases in competition, changes in how customers choose to interact, and the reliability of technology in day-to-day processes (Nowacki & Bachnik, 2016).

There are a variety of different methods and theories about the most effective best practices in implementing a knowledge management system, but the research reveals no definitive conclusions pointing to a specific outline of an exact ideal system. The research in this study however does support the identification of top organizational leadership support and organizational culture as two important factors for successful knowledge management implementations. In particular, garnering support from top management is key to ensuring needed participation from the remainder of the company.

References

Ajmal, M., Helo, P., & Kekäle, T. (2010). Critical factors for knowledge management in project business. *Journal of Knowledge Management, 14(1),* 156-168. doi: 10.1108/13673271011015633

Akhavan, P., & Pezeshkan, A. (2014). Knowledge management critical failure factors: A multi-case study. *Vine, 44(1),* 22-41. doi: 10.1108/VINE-08-2012-0034

Al-Hakim, L. A., & Hassan, S. (2016). Core requirements of knowledge management implementation, innovation, and organizational performance. *Journal of Business Economics & Management, 17*(1), 109-124. doi:10.3846/16111699.2012.720597

Anantatmula, V., & Kanung, S. (2008). Role of IT and KM in improving project management performance. *The Journal of Information and KM Systems, 38*(3), 357-369.

Ardichvili, A., & Yoon, S.W**.** (2009). Designing integrative knowledge management systems: theoretical considerations and practical applications. *Advances in Developing Human Resources, 11*(3), 307-319.

Bachnik, K. (2011). Knowledge management in the light of breakthrough information–communication technologies and the accompanying social trends. In *Poskrobko, B. (Ed.), Sustainable economy based on knowledge*. Białystok: 297–309.

Barratt-Pugh, L., Kennett, P., & Bahn, S. (2013). Managing knowledge: The critical role of culture and ownership as mediator of systems. *International Journal of Knowledge Management, 9(*2), 20-37. doi:10.4018/jkm.2013040102

Bitkowska, A. (2010). Innovativeness in knowledge management. In *Nowacki, R. (Ed.), Innovation in management and enterprises competitiveness*. Warsaw: Difin, 146–183.

Center for Public Issues Education. (2014). Evaluating information sources. Retrieved from http://www.piecenter.com/wp-content/uploads/2014/08/evaluateinfo.pdf

Choy, C. S., Yew, K. Y., & Lin, B. (2006). Criteria for measuring KM performance outcomes in organization. *Industrial Management & Data Systems*, *106*(7), 917-936. doi: 10.1108/02635570610688850

Dalotă, M., & Grigore, S. (2010). Successful implementation of knowledge management in small and medium enterprises. *Managerial Challenges of the Contemporary Society*, *6*(1), 46-49. Retrieved from: ftp://ftp.repec.org/opt/ReDIF/RePEc/bbu/wpaper/46-49.pdf

Edvardsson, I., & Durst, S. (2013) The benefits of knowledge management in small and medium-sized enterprises, *Procedia - Social and Behavioral Sciences, 81(28),* 351-354, doi.org/10.1016/j.sbspro.2013.06.441.

Ganguly, A., Mostashari, A., & Mansouri, M. (2011). Measuring knowledge management/knowledge sharing efficiency and effectiveness in enterprise networks. *International Journal of Knowledge Management, 7*(4), 37-54. doi: 10.4018/jkm.2011100103

Goel, A., Rana, G., & Rastogi, R. (2010). Case study: Knowledge management as a process to develop sustainable competitive advantage. *South Asian Journal of Management, 17(3),* 104-116.

Hanisch, B., Lindner, F., Mueller, A., & Wald, A. (2009). KM in project environments. *Journal of Knowledge Management, 13(4),* 148-160. doi: 10.1108/13673270910971897 PMID:19622123

Harlow, H. (2008). The effect of tacit knowledge on firm performance. *Journal of Knowledge Management, 12(1),* 148-163. doi: 10.1108/13673270810852458

Holsapple, C. W., & Wu, J. (2008). In search of a missing link. *KM Research and Practice, 2008* (6), 31-40.

Hong, H., Kim, J.-S., Kim, T., & Leem, B.-H. (2008). The effect of knowledge on system integration project performance. *Industrial Management & Data Systems, 108(3),* 385-404. doi: 10.1108/02635570810858787

Hussain, I., Xiaoyu, Y., Si, L., Wang Steven, L., & Ahmed, S. (2011). Organizational knowledge management capabilities and knowledge management success (KMS) in small and medium enterprises (SMEs). *African Journal of Business Management, 5*(22), 8971-8979. doi: 10.5897/AJBM11.604

Jayasingam, S., Ansari, M. A., & Jantan, M. (2010). Influencing knowledge workers: The Power of Top Management. *Industrial Management + Data Systems, 110* (1), 134. Retrieved from: http://www.kmice.cms.net.my/ProcKMICe/KMICe2008/Pdf/172-177-CR101.pdf

Jennex, M. E., Smolnik, S., & Croasdell, D. T. (2009). Towards a consensus knowledge management success definition. *The Journal of Information and Knowledge Management Systems, 39(2),* 174-188. doi: 10.1108/03055720910988878

Jennex, M. E., Smolnik, S., & Croasdell, D. (2012). Where to look for Knowledge Management success. *Paper presented at the 2012 Hawaii International Conference on Systems Sciences, Maui, HI.* doi:10.1109/HICSS.2012.641

Lakshman, C. (2009). Organizational knowledge leadership: An empirical examination of KM by top executive leaders. *Leadership and Organization Development Journal, 30(4),* 338-364. doi:10.1108/01437730910961676

Lierni, P. C., & Ribière, V. M. (2008). The relationship between improving the management of projects and the use of KM. *The Journal of Information and Knowledge Management Systems, 38(1),* 133-146.

Lindner, F., & Wald, A. (2010). Success factors of knowledge management in temporary organizations. *International Journal of Project Management, 29(7),* 877-888. Retrieved from: http://www.sciencedirect.com/science/article/pii/S0263786310001328

Luo, S. H., & Lee, G. G. (2012). Applying failure mode and effects analysis for successful knowledge management. *Total Quality Management & Business Excellence.*

Luo, S., & Lee, G. (2015). Applying failure mode and effects analysis for successful knowledge management. *Total Quality Management & Business Excellence 26.1-2* 62.

O'Dell, C. S., & Hubert, C. (2011). The new edge in knowledge: How knowledge management is changing the way we do business. Hoboken, NJ: Wiley.

Oliveira, M., Caldeira, M., & Batista Romão, M. J. (2012). Knowledge management implementation: An evolutionary process in organizations. *Knowledge & Process Management, 19*(1), 17-26. doi: 10.1002/kpm.1381

Picker, S., Ruhnke, A., & Leker, J. (2009). Developing knowledge management — what makes the success? *International Journal of Technology Management, 46*(1/2), 380-389. http://dx.doi.org/10.1504/IJTM.2009.02266

Pirró, G., Mastroianni, C., & Talia, D. (2010). A framework for distributed knowledge management: Design and implementation. *Future Generation Computer Systems, 26*(1), 38-49. doi:10.1016/j.future.2009.06.004

Pollack, J. (2012). Transferring knowledge about knowledge management: Implementation of a complex organisational change programme. *International Journal of Project*

Management, 877-886. Retrieved from: http://www.sciencedirect.com.libproxy.uoregon.edu/science/article/pii/S0263786312000518

Porter, M. E., Lorsch, J. W., & Nohria, N. (2004). Seven surprises for new CEOs. (cover story). *Harvard Business Review, 82*(10), 62-72. Retrieved from: http://web.b.ebscohost.com.libproxy.uoregon.edu/ehost/detail/detail?sid=7a6df2a4-4980-4257-a354-e3e81f7475e2%40sessionmgr105&vid=0&hid=125&bdata=JnNpdGU9ZWhvc3QtbGl2ZSZzY29wZT1zaXRl&preview=false#AN=14599897&db=bth

Ranasinghe, S. B., & Dharmadasa, P. (2013). Intention to knowledge sharing: From planned behavior and psychological needs perspectives. *International Journal of Knowledge Management, 9(4),* 33-50. doi:10.4018/ijkm.2013100103

Reich, B. H. (2007). Managing knowledge and learning in IT projects: A conceptual framework and guidelines for practice. *Project Management Journal, 38(2),* 5-17.

Scovetta, V., & Ellis, T. J. (2015). Leadership social power as a component of KMS success. *International Journal of Knowledge Management, 11(*2) 1-14. Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA439536371&v=2.1&u=s8492775&it=r&p=AONE&sw=w&asid=722b54cd3694cb792d213d7005cf219d

Sedighi, M., & Zand, F. (2012). Knowledge management: Review of the critical success factors and development of a conceptual classification model. *Proceedings of the 10th International Conference of ICT and Knowledge Engineering, IEEE Explore* (pp. 1-9). doi:10.1109/ICTKE.2012.6408553

Turner, J. R., Zimmerman, T., & Allen, J. M. (2012). Teams as a sub-process for knowledge management. *Journal of Knowledge Management, 16(6),* 963-977. doi:10.1108/13673271211276227

Wu, I., & Lin, H. (2009). A strategy-based process for implementing knowledge management: An integrative view and empirical study. *Journal of the American Society for Information Science & Technology, 60*(4), 789-802. doi: 10.1002/asi.20999