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Knowledge Management Practices: Creating Effective and Efficient Processes in Globally Distributed Teams

CAPSTONE REPORT

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Abstract

This literature review focuses on the creation of effective and efficient knowledge management processes for teams distributed across the globe. The literature illustrates the importance of knowledge management to organizations, while providing key tools and ideas that can be applied in organizations with distributed teams to drive efficiencies. Fifteen sources are reviewed and divided into three categories: (a) knowledge management background, (b) creating efficient knowledge management processes, and (c) knowledge management in distributed teams.

Keywords: knowledge management, knowledge management processes, knowledge management in distributed teams, knowledge management efficiencies

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Introduction to the Annotated Bibliography

Problem

In the knowledge economy, knowledge itself can be considered a strategic asset and source of competitive advantage (Al-Alawi, Al-Marzooqi, & Mohammed, 2007). The foundations of organizations and industries have shifted from concentrations on natural resources, such as human capital, to intellectual capital (Ganguly, Mostashari, & Mansouri, 2011). Knowledge transfer (or sharing) is now the most commonly discussed activity within an organization. It is also the most critical to the success of an organization as different parts of an organization can benefit from faster dissemination of knowledge from other parts of an organization (Al-Alawi et al., 2007). Efficient management of an organization's knowledge has been observed to improve both organizational performance and competitiveness, while the effective use of knowledge enables organizations to operate more efficiently and effectively, reducing costs and increasing revenues (Prado-Gasco, Pardo, Calabuig-Moreno, & Vveinhardt, 2015).

One obstacle to managing knowledge in an organization is turning multiple knowledge sources into coherent business intelligence that is embedded in an organization's memory (Raghu & Vinze, 2007). The Information Technology (IT) department at GCI experiences this obstacle quite often. The IT department consists of a distributed workforce with employees that work from corporate offices in Anchorage, Alaska; Seattle, Washington; and Portland, Oregon; as well as employees that work from home offices throughout the United States. As GCI's IT department has grown, its workforce has migrated from the single Anchorage office to the distributed force it is today.

The change in GCI's workforce, plus general growth, has resulted in knowledge management (KM) becoming a larger challenge for the company, from the aspects of both the capture of knowledge and its dissemination. Knowledge management is defined by Akhavan, Jafari and Fathian (2006) as "an integrated, systematic approach to identify, manage, and share all the department's information assets, including databases, documents, policies and procedures, as well as previously unarticulated expertise and experience resident in individual officers" (p. 97). Jennex and Olfman (2006) note that successful KM has the ability to provide "…the appropriate knowledge for decision making when it is needed to those who need it" (p. 53) and encompasses not just explicit knowledge, but also tacit knowledge, or knowledge that exists only within the knower's mind.

Those leaders who are involved and actively engaged in KM in their organizations are beginning to realize the importance of getting employees involved in KM initiatives (Yip, Ng, & Lau, 2012); however, with the exponential increase in the volume of knowledge in organizations, there is a need to reconsider how KM is performed (Velev & Zlateva, 2012). As KM has matured, it has become clear that it is not just dependent on technology, but rather emphasizes and requires collaboration amongst a wide variety of contributors in an organization (Raghu & Vinze, 2007). Collocated and virtual teams may be particularly susceptible to challenges in collaboration and knowledge sharing for several reasons. First, developing and maintaining awareness of the skills, knowledge, and expertise of other team members can be a challenge when team members are not in close physical proximity (Margaryan, Boursinou, Lukic, & de Zwart, 2015). Issues of limited trust among distributed team members may also exist due to cultural differences, or among team members who have never met, which can result in limited

willingness to share knowledge (Pinjani & Palvia, 2013). Margaryan et al. (2015) mention the challenge of building trust in a virtual environment.

In response to these issues, many IT organizations have begun seeking solutions to help virtual and distributed teams communicate effectively and efficiently, as well as organize and store knowledge to be utilized for tracking purposes and decision making (Daim et al., 2012). Leaders of virtual teams need to find solutions that address the challenges of knowledge sharing when team members have cultural differences and work to build trust and team cohesiveness to increase knowledge sharing amongst team members (Pinjani & Pelvia, 2013). While there are many IT organizations seeking solutions to help virtual and distributed teams, those looking to use knowledge management solutions for this purpose must be mindful that most KM strategies fail due to lack of involvement in the sharing of knowledge by an organization's staff (Yip, Ng, & Lau, 2012). Research that addresses the sources of failure in implementing knowledge management for virtual and distributed teams and provides guidance on preventing these failures is needed.

Statement of Purpose

The intent of this study is to explore literature that provides knowledge management best practices for organizations with distributed workforces that are efficient, can be applied throughout the organization, and create the desire amongst employees to participate. In the context of this study, KM is defined as a systematic approach to identify, manage, and share all of an organization's information assets to generate value, innovation, and improvement (Akhavan, Jafari, & Fathian, 2006).

Sources are selected that provide background on knowledge management and identify best practices to create efficient knowledge management processes and practices that are successful in distributed teams.

Audience Description

DuToit and Steyn (2011) note that integration of KM with business processes should be a focus of management when any KM strategy is being implemented. The intended audience members for this study, therefore, are those that play a role in forming an organization's business processes. These stakeholders include Chief Information Officers and other C-level executives, directors, and managers. At GCI the stakeholders consist of the Chief Operating Officer and his reports, which include the Vice Presidents of IT, Consumer Services, Commercial Services, Network Service, and Product. This study is also useful to product managers, project managers, system administrators, and all who play a part in creating knowledge and ensuring that processes are followed by the teams that they supervise.

Research Question

What knowledge management best practices can be employed throughout organizations made up of distributed workforces to create efficiencies and a desire to participate?

Search Report

For this Capstone, the research topic is knowledge management and how efficiencies can be found in associated procedures within a distributed workforce. The primary focus of this research is twofold: (a) how organizations create efficient procedures related to knowledge management; and (b) what can be done to create a desire to participate when an organization's workforce is distributed.

Search strategy. The UO Library site is utilized for the initial search for *Knowledge Management*, which returns a substantial number of results (over 39,000) when including all publication types. A narrowing of the search to peer-reviewed journals with a publication year of 2006 or later still returns thousands of results. Searches are also undertaken on Google Scholar using the same search criteria with promising results.

Key terms. The following search terms are applied on both sites to narrow the results:

- *Knowledge management strategy*
- *Knowledge management procedures*
- *Knowledge management timeliness*
- *Knowledge management accessibility*
- *Knowledge management employee participation*
- *Knowledge management successful processes*
- *Knowledge management efficiencies*
- *Knowledge management distributed workforce*
- *Knowledge sharing virtual teams*
- *Knowledge management virtual team*
- *Knowledge governance efficiencies*
- *Knowledge sharing virtual problems*
- *Knowledge management efficiency*
- *Importance of knowledge management in IT*

Search engines and databases. The process of searching for literature mainly involves use of the University of Oregon Libraries' databases. Google Scholar is also utilized to search for literature. Most results returned by Google Scholar are not very useful due to a combination of

factors; they are either dated, full text is not available, or they are duplicates to the University of Oregon Libraries' site. Only a small number of results from Google Scholar prove useful. The University of Oregon Libraries' databases that are utilized in the search include:

- Science Direct
- Wiley Online Library
- ProQuest
- JSTOR
- Springer Link
- BI Brage
- Academic OneFile
- Taylor & Francis Online
- Sage Journals
- Google Scholar

Documentation Method

References are documented and tracked via two methods. The first method utilizes Zotero to save and sort articles. Zotero is a standalone program that utilizes browser plugins to save articles located by the researcher and allows them to be searched and sorted by title, creator, and date.

The second method utilizes Microsoft Word and a research folder in a personal Microsoft One Drive account. Keyword searches and article citations are recorded in a Microsoft Word document and each article is associated to a category. Each article Portable Document Format (PDF) is saved to one of three subfolders in the research folder on the Microsoft One Drive

account: (a) knowledge management background, (b) creating efficient knowledge management processes, and (c) knowledge management in distributed teams.

Reference Evaluation

References included in this document are evaluated based on the guidelines presented by the Center for Public Issues Education in their guide *Evaluating Information Sources* (2014), which recommend five characteristics to consider when evaluating sources: (a) authority, (b) timeliness, (c) quality, (d) relevancy, and (e) lack of bias (Center for Public Issues Education, 2014).

Authority. In their advice for checking the authority of sources, the Center for Public Issues Education (2014) notes that authors with advanced degrees or who have published other books or articles are typically considered more credible. In addition, they note that sources published by a peer-reviewed scholarly journal will have gone through a strict editing process. All references cited in the annotated bibliography meet the authoritative characteristic in that they are published in peer-reviewed journals.

Timeliness. The Center for Public Issues Education (2014) advises considering how much the subject of study changes over time. For example, are sources published decades ago still relevant today? Or has the subject area of focus changed so much that sources that are five years old are no longer relevant? In consideration of timeliness with regards to KM, a relatively new concept, only sources published within the past ten years are considered in this study.

Quality. A source that meets the criteria for quality is free from grammatical, spelling, and punctuation errors and is organized in a structured manner with a logical flow of information. In many instances, online sources do not go through a rigorous editing and review process, nor do they provide sources to trace references (Center for Public Issues Education,

2014). All sources in the annotated bibliography were published in peer-reviewed journals, meaning that both previously mentioned quality checks were applied prior to their publication.

Relevancy. All sources have been analyzed to determine whether they are relevant to the subject of KM background, efficiencies, and processes in distributed workforces.

Bias. The Center for Public Issues Education (2014) advises that two ways to determine whether an author is biased: if the author is trying to sell a product or services, or if the author does not make arguments based on credible, cited sources. Sources utilized in this document have been verified to be unbiased based on these merits.

Annotated Bibliography

The 15 references selected for presentation in the following Annotated Bibliography are organized into three categories and serve to address the research question posed in this study: What knowledge management best practices can be employed throughout organizations made up of distributed workforces to create efficiencies and a desire to participate? The first category serves to set the background on knowledge management, its importance to organizations, and why knowledge management matters. The second category presents ideas on ways to improve knowledge management processes and participation amongst members of an organization and how to measure the performance of knowledge management in these organizations. The third category provides best practices on how to manage knowledge in distributed teams, including how to work through both cultural differences and the unique factors that a distributed team brings to processes, which can sometimes have a negative impact.

Each annotation consists of three parts: (a) the bibliographic citation, (b) the published abstract, and (c) a summary. The ideas presented in the summary of each are those of the author(s) for each reference and not those of the author of this study.

Category 1: Knowledge Management Importance

Andreeva, T. & Kianto, A. (2012). Does knowledge management really matter? Linking knowledge management practices, competitiveness and economic performance. *Journal of Knowledge Management, 16*(4), 617-636. doi: 10.1108/13673271211246185

Abstract. Purpose – While nowadays an extensive literature promoting knowledge management (KM) exists, there is a worrying shortage of empirical studies demonstrating an actual connection between KM activities and organizational outcomes. To bridge this gap, we examine the link between KM practices, firm competitiveness and economic

performance. Design/methodology/approach – This paper proposes a framework of KM practices consisting of HRM and ICT. These both are hypothesised to impact competitiveness and economic performance of the firm. Hypotheses are then tested with structural equation modelling by using a survey dataset of 234 companies. Findings – The results show that HRM and ICT practices for managing knowledge are quite strongly correlated and have a statistically significant influence on both financial performance and competitiveness of the firm. The findings also indicate that ICT practices improve financial performance only when they are coupled with HRM practices. Research limitations – The data is limited to companies from Finland, Russia and China. Originality/value – This paper contributes to the literature on knowledge based organizing by empirically analyzing the performance impact of various areas of KM. It thereby tests the proposition put forth in many previous theoretical and case-based studies that KM promotes high organizational performance. It also addresses the interaction of social and technical KM practices in producing organizational outcomes. Practical implications – The paper contributes to managerial practice by pointing out the importance of utilizing a combination of both social and technical means for KM and illustrating that they do matter for the company bottom line.

Summary. This article focuses on how the two main elements of managerial systems in KM, Information and communications technologies (ICTs) and human resource management (HRM), relate to the firm's competitiveness and economic performance. To describe this relationship several hypotheses are proposed stating positive relationships between ICT and HRM with organizational competitiveness and financial performance. To prove these hypotheses a survey was collected amongst three different countries of

various economic and knowledge management development and cultures: Finland, Russia, and China. While this study does not include the United States, the author argues that a more generalized picture of the impact of KM can be obtained due to the differences between the countries.

The rate of usable responses across the three countries was fairly even, with 234 responses, of which 38.5% were Finnish, 27.8% Russian, and 33.8% Chinese, each representing a different company. Analysis of the survey results show that HRM and ICT practices have a strong correlation and extend a significant influence on both financial performance and competitiveness of an organization, which means that KM does matter when looking at the bottom line. A link was also noted that indicates that HRM and ICT practices complement each other, supporting the rationale for simultaneously applying both when previous literature suggested organizations may use them independently. This link was confirmed by the finding that use of ICT alone can diminish economic performance, displaying the importance of having KM processes that benefit the organization.

This article is relevant for this study because it shows that knowledge management can impact the bottom line of an organization as it can significantly improve financial performance. The article also stresses the employment of systematic and concrete management activities for successful knowledge management. Finally, the authors make the case that knowledge management is not a fad driven purely by rhetoric, but is in fact a viable tool to drive financial performance and effective processes.

Grant, K. (2011). Knowledge management, an enduring but confusing fashion. *Electronic Journal of Knowledge Management, 9*(2), 117-131. Retrieved from http://www.ejkm.com/issue/download.html?idArticle=285

Abstract. Knowledge Management has been a subject of significant management interest for some 15 years. During that time it has been subjected to a variety of criticisms including the argument that it is little more than a "fad" -- something that catches management's attention for a while and then fades away because of a lack of sustainability. It has been compared to other major management fads such as quality circles and business process re-engineering. This paper examines the discipline of Knowledge Management (KM) through the lens of management fashion theory. It demonstrates that KM is not a fad and that it has become an enduring management activity. Management Fashion Theory (Abrahamson and Fairchild, 1999) is an extension of Rogers' Theory of Diffusion of Innovations (Rogers, 2003), that takes a skeptical view of business innovations, viewing the discourse about and the diffusion of innovations as a cultural phenomenon rather than a rational decision making process. After a brief introduction to the field of Knowledge Management (KM), a review of the theories of Diffusion of Innovations and Management Fashion is presented, along with a description of the methodology used to apply Management Fashion Theory to the discourse on KM. Bibliometric and content analysis techniques are used to examine publications and discourse in the field from 1990 to 2009. The analysis of discourse on KM demonstrates a significant period of "latency" from the late 1980s to 1994, during which foundational ideas and precursors to KM appear. Then a rapid growth period is identified, from 1995-2001 during which KM becomes an innovation of interest to most major organizations.

Finally, it appears that discourse has settled at a steady state, with no decline apparent. However, detailed analysis has also identified a potential conflict between the interests of practitioners and researchers, with a separation of the discourse into distinct groups that may have inconsistent views on what is or is not "Knowledge Management". In summary, this paper presents a comprehensive analysis of the evolution of discourse on KM. It provides bibliometric evidence that there has been a sustained interest in KM that is quite unlike that of other popular management themes over the last 30 years. It raises some questions about the relevance of some of the research being carried out.

Summary. This article focuses on the innovation and growth of KM and whether it can be considered a fad or fashion. In the context of this article, a *fashion* is described by the author as a cultural phenomenon that is shaped by norms and expectations of progress in management innovation, with the expectation that over time fashions will decline and new ideas will emerge. This phenomenon is characterized by a long phase of latency (or slow adoption), followed by a fast rise in popularity and then a period of decline. To determine the status of KM as a fad or fashion the author completed a bibliographic analysis using the online *ProQuest Research Library Complete*. Through this analysis, the author determined the existence of a latency period followed by rapid growth, which meets the definition of a *fashion*. However, after the rapid growth there has been continued interest in KM with no decline, meaning that KM appears to be a fashion that is enduring.

This article is relevant for this study because it shows that knowledge management is not just a fad that will suddenly lose relevancy; instead, it is an enduring

practice that is worth pursuing for those organizations not currently practicing knowledge management and enhancing for those organizations with existing implementations.

López-Nicolás, C. & Meroño-Cerdán, A.L. (2011). Strategic knowledge management, innovation and performance. *International Journal of Information Management, 31*, 502-509. doi: 10.1016/j.ijinfomgt.2011.02.003

Abstract. Our aim is to shed light on the consequences of knowledge management (KM) strategies on firm's innovation and corporate performance. Organizations are not aware of the real implications that KM may have. Based on an empirical study consisted of 310 Spanish organizations and structural equations modelling, results show that both KM strategies (codification and personalization) impacts on innovation and organizational performance directly and indirectly (through an increase on innovation capability). Also, findings demonstrate a different effect of KM strategies on diverse dimensions of organizational performance. Our conclusions may help academics and managers in designing KM strategic programs in order to achieve higher innovation, effectiveness, efficiency and profitability.

Summary. In this article the authors aim to analyze whether KM can be translated into better performance for an organization, both directly and indirectly. The authors propose a test model that links the KM strategies of codification (knowledge extraction from an individual) and personalization (dialogue between individuals) and the impacts of these strategies on performance and innovation. The authors propose twelve hypotheses related to how strategic KM impacts both innovation and performance in the organization, directly and indirectly.

To test their proposed hypotheses, a structured questionnaire consisting of closed-ended questions was submitted to organizations in the Murcia region of Spain; 310 valid responses were received. Ultimately, the results of the study show that KM significantly impacts both innovation and performance of the organization. While this study was conducted in Spain, the authors note that the usefulness of KM towards an organization's performance improvement can be recognized as nearly universal amongst member countries of the Organization for Economic Co-operation and Development, of which the United States is a member (OECD, 2016).

This article has been included in this annotated bibliography as it reinforces the idea that KM is an important contributor to an organization's performance and innovation, both directly and indirectly.

Raghu, T.S. & Vinze, A. (2007). A business process context for knowledge management. *Decision Support Systems, 43*, 1062-1079. doi: 10.1016/j.dss.2005.05.031

Abstract. Knowledge and management of it emphasize and expect interactions between aspects of business processes including workflow execution, information processing, decision making and motivational structure. As such production and consumption of knowledge occur within these aspects of business processes. Therefore, a business process context provides the justification and rationale for organizing Knowledge Management efforts that address knowledge storage and retrieval, knowledge sharing and knowledge synthesis. Exemplar projects are used to illustrate potential approaches and associated research challenges to addressing Knowledge Management efforts within a business process context.

Summary. In this article, the authors discuss the three main facets of KM processes in organizations – knowledge storage and retrieval, sharing, and synthesis – as the main drivers of KM efforts. The authors note that these knowledge management facets are cyclical in nature and account for the continuous evolution of knowledge and KM in organizations. The authors present two cases to illustrate that organizations can tailor their approaches to KM by increasing the importance of any one of the three facets of KM.

The first case provides implications on the challenges that can be posed by knowledge storage and retrieval efforts; for example, the challenge of applying characterization to knowledge units for later retrieval, which requires the adoption of control vocabularies and taxonomies. Applying characterization to knowledge is further complicated by the fact that business process and assumption and multiple foci are required for retrieval.

The second case touches on both knowledge sharing and knowledge synthesis, highlighting the criticality of knowledge sharing to enable timely and effective resolutions to problems that require a decision to be made. The authors note that knowledge sharing is especially relevant in situations where the users of the knowledge are geographically dispersed and the scenario is mission-critical.

The authors provide a detailed description of a *knowledge context kernel*, containing four key business processes (a) workflow execution, (b) information processing, (c) decision making, and (d) motivation structure, and note that these processes should be addressed in any KM effort. These aspects are important as they

interact with one another and other KM processes in complex ways, resulting in an operational core of knowledge.

This article is useful to this research study because it ties knowledge to a business context, replacing the typical view of knowledge as just data or information and providing a framework to assess the effect that KM efforts have on the improvement of the performance of business processes.

Wang, Z. & Wang, N. (2012). Knowledge sharing, innovation and firm performance. *Expert Systems with Applications, 39,* 8899-8908. doi: 10.1016/j.eswa.2012.02.017

Abstract. This study investigates the quantitative relationship between knowledge sharing, innovation and performance. Based on the literature review, we develop a research model positing that knowledge sharing not only have positive relationship with performance directly but also influence innovation which in turn contributes to firm performance. This model is empirically tested using data collected from 89 high technology firms in Jiangsu Province of China. It is found that both explicit and tacit knowledge sharing practices facilitate innovation and performance. Explicit knowledge sharing has more significant effects on innovation speed and financial performance while tacit knowledge sharing has more significant effects on innovation quality and operational performance.

Summary. In this article, the authors note that there is little guidance in literature about what knowledge sharing really means and what its direct and quantifiable organizational outcomes are. The aim of the study they undertake is to explore the relationships between knowledge sharing, innovation, and firm performance. The authors provide a literature review that lays the groundwork for understanding the study; the selected literature

describes the differences between explicit and tacit knowledge, including how these types of knowledge are shared in the workplace. A dozen hypotheses are proposed related to the impacts of innovation on performance, knowledge sharing on innovation, and knowledge sharing on firm performance. In the study firm size (employee number) is used as a control variable since it can influence a firm's performance.

Data for the study was collected via a survey among 89 high technology firms in China. The authors selected this sample because the firms are rich settings for testing the hypotheses as each company encourages the sharing of knowledge and connects it to operational or financial performance. Overall findings of the study, through effects analysis, show that knowledge-sharing practices contribute to innovation and firm performance.

This study has been included in this annotated bibliography as it illustrates the importance of encouraging the sharing of both explicit and tacit knowledge in firms due to the resulting direct and indirect impacts on innovations and performance.

Category 2: Creating Efficient Knowledge Management Processes

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

Abstract. Knowledge Management (KM) is critical in ensuring process efficiency, outcome effectiveness and improved organizational memory for the modern day business enterprises. Knowledge Sharing (KS) is fast becoming a rapidly growing area of interest in the domain of knowledge management. The purpose of this paper is to enlist a set of

generalized metrics that can be used to evaluate the efficiency and the effectiveness of knowledge sharing in an enterprise network. The metrics proposed in this research are those that can be readily measured by various types of enterprise knowledge sharing systems, and link usage information to organizational outputs. The paper uses an illustrative case example of how an enterprise might make use of the metrics in measuring the efficiency and effectiveness of its knowledge sharing system.

Summary. In this article, the authors develop a set of quantifiable metrics to allow organizations to measure the efficiency and effectiveness of knowledge sharing (KS). The authors adopt Ipe's (2003) definition of knowledge sharing as "the act of making knowledge available to others within the organization" (p. 39). The authors note that knowledge sharing is an extremely important part of any KM process. They start by laying the groundwork for their metrics by providing a literature review on KM and KS, discussing how KS is a critical factor for successful KM, and noting previous efforts that have been made in measuring KS.

The KS metrics proposed by the authors are divided into three categories: (a) enterprise knowledge network characteristics (input); (b) knowledge flow characteristics (output/efficiency); and (c) knowledge impact characteristics (outcome/effectiveness). The authors define the enterprise knowledge network characteristics as derived from metrics such as the number of staff and the annual per staff cost of the KM system; the knowledge flow characteristic category as derived from metrics such as the rate of annual increase of information in the KM system and average frequency of knowledge access per user on an annual basis; and the knowledge impact characteristics as derived from

metrics such as reduction in total cost due to better KS and the ratio of the operational costs to total costs of an organization.

To illustrate the proposed KS metrics, the authors provide a hypothetical case study that describes a 1200-employee, multi-national organization that has recently purchased a KM/KS system. The authors conclude by noting that the effectiveness and efficiency of their proposed metrics depend on the organization utilizing them, since many organizations often have their own organizational attributes and traits which define both the nature and structure of knowledge sharing amongst employees.

This article is useful as it provides metrics for how to measure the effectiveness and efficiency of knowledge sharing in an organization. The importance of KM metrics is reflected in the authors' comments that while KS is an important aspect of KM, creation of measurable metrics has been overlooked in previous research.

Grubić-Nešić, L., Matić, D., & Matrović, S. (2015). The influence of demographic and organizational factors on knowledge sharing among employees in organizations. *Technical Gazette, 22*(4), 1005-1010. doi: 10.17559/TV-20141216213746

Abstract. This paper analyses various personal and organizational factors that affect knowledge sharing between employees in organizations. Personal factors involve general demographic characteristics i.e. gender, age and years of experience, and also technical, social or natural orientation of the profession of employees. Characteristics of organizations that were examined regarding knowledge sharing behavior are the type of ownership and production or service activity of the organization. Results show that gender, level of education, organizational tenure and advance at work have significant impact on knowledge sharing. Regarding different types of organizations, the type of

activities does not affect knowledge sharing, while the type of ownership does. Results have primarily practical implications for the design of managerial and organizational measures that would provide knowledge sharing and spreading in a more efficient manner and in accordance with the long-term strategic goals of the organization.

Summary. In this article, the authors provide a short background on why some employees do not share knowledge, including how the demographics of an organization can be a factor. They then address their main research question of how general characteristics of both employees and the organization itself contribute to the sharing of knowledge. Based on the objective of identifying factors that encourage knowledge sharing amongst employees, the authors propose five hypotheses related to employee demographics and employee attitudes towards knowledge sharing. These hypotheses include predictions that there are differences in knowledge sharing related to differences in gender, age, tenure, professions, whether the employee is in a service or manufacturing industry, and whether the employee is part of a public or private organization. To prove their hypotheses the authors conducted a quantitative survey in 2013 with employees at all levels of organizations located in central Europe. The results showed that demographic and organizational characteristics such as gender, tenure, workplace advancement, and whether the organization is privately or publicly owned provide significant impacts on willingness to share knowledge.

This article is useful for this research study because it may help organizational leaders understand how the demographics of their organizations can impact knowledge sharing, allowing for the creation of proper measures to improve knowledge sharing processes.

Ho, C., Hsieh, P., & Hung, W. (2014). Enablers and processes for effective knowledge management. *Industrial Management & Data Systems, 114*(5), 734-754. doi: 10.1108/IMDS-08-2013-0343

Abstract. Purpose – The purpose of this paper is to attempt to assist firms in applying knowledge management (KM) through developing an integrated model which considers knowledge enablers, knowledge circulation processes (KCP), and job performance.

Design/methodology/approach – This study utilizes a questionnaire technique to validate the proposed integrated model. Structural equation modeling also validated the model.

Findings – All dimensions in the construct of organizational culture positively impact KCP. However, the formalized organizational structure appears to have a positive impact on KCP, while the autonomous organizational structure did not. This study also finds that KCP has a positive impact on both task outcomes and contextual job performance.

Research limitations/implications – The integrated model, which served to examine the impact of KM enablers on KCP, from the standpoints of organizational culture and organizational structure, along with the impact of KCP on job performance, has improved understanding of the relationships among KM enablers, KCP, and job performance.

Practical implications – Firms should carefully consider methods for adjusting internal structural designs or institute various mechanisms to promote the use of KM to maintain the organization's long-term competitive advantage.

Originality/value – The model contributes to firms' understanding the influence of knowledge enablers on KCP, and provides a KM performance index for assessment of individual performance. Research results can provide enterprises with guidance for implementing initiatives for KM initiatives.

Summary. In this article, the authors describe a study in which they explore the abilities of knowledge enablers to improve KM performance from the view of organizational KM processes, which refers to the transformation of individual or group knowledge into intellectual assets for the organization. The authors touch on KM enablers and KM processes in literature, including organizational culture, which is a critical success factor for KM. Through this literature review, eight hypotheses are proposed surrounding organizational dynamics and their impacts on knowledge circulation processes (KCP); these hypotheses predict that collaboration, trust, learning exercises, innovation, expertise, and autonomy all have a positive impact on KCP; formalization has a negative impact on KCP; and that KCP has positive impacts on both task and contextual performance.

To test their hypotheses, questionnaires were distributed to employees at all levels of several different Taiwan-based enterprises, from which 248 valid responses were received, for a recovery rate of 79.49 percent. From the responses, the authors found that the formalized structure of Taiwanese organizations had an unexpectedly positive impact on knowledge circulation and that well-maintained processes enhance productivity while increasing willingness of employees to improve themselves.

This article is relevant for this study because its findings can help provide guidance for improvement of existing processes to drive participation and sharing of knowledge amongst organizational members.

Kim, T.H., Lee, J., Chun, J.U., & Benbasat, I. (2014). Understanding the effect of knowledge management strategies on knowledge management performance: A contingency perspective. *Information & Management, 51*, 398-416. doi: 10.1016/j.im.2014.03.001

Abstract. The universalistic perspective research on employing a unidimensional knowledge management (KM) strategy has yielded conflicting findings and recommendations in different contexts. This study proposes a contingency model for investigating the effects of KM strategies on KM performance to resolve these contradictions. Drawing on the knowledge-based view (KBV) of the firm, which identifies knowledge type and origin as two key KM dimensions, this study first defines four KM strategies: external codification, internal codification, external personalization, and internal personalization. A multiple contingency model of KM strategy is then developed based on a technology–organization–environment framework. This study proposes that the effectiveness of each KM strategy depends on both external and internal contextual conditions, namely, environmental knowledge intensity and organizational information systems (IS) maturity. To test and validate the contingency model, we analyze data from 141 firms to explain the effects of KM strategies on KM performance. Our results reveal three KM strategies, not including the internal personalization strategies, which have a significant association with KM performance in their hypothesized contexts. This study expands KM strategy research by theoretically developing an advanced contingency model aligned with external and internal contexts and by providing valuable practical suggestions to managers for selecting a KM strategy based on multiple contingencies related to the external and internal conditions of a firm.

Summary. In this article the authors study the effect that knowledge management strategies have on knowledge management performance (KMP) depending on the degree of difference in environmental knowledge intensity and the level of organizational information systems maturity. The authors embarked on this study after finding that

research on the effect of KM strategies on KMP is conflicting; for example, some studies have found that internally system-oriented KM strategies provide a competitive advantage, while others have found the opposite effect. In an effort to overcome such conflicts this study has defined KM strategies based on two major facets of KM: knowledge type and knowledge origin. The study also integrates the organization's strategic choices regarding KM, environmental knowledge intensity, and the maturity of the organization's information systems. Four strategies are suggested by the authors for improvement of KMP: (a) internal codification, (b) external codification, (c) internal personalization, and (d) external personalization.

The authors proposed four hypotheses of the best strategies for improving KMP depending on the levels of an organization's IS maturity and environmental knowledge intensity: (a) external codification is most effective when IS maturity and environmental knowledge intensity are both high, (b) internal codification is most effective when IS maturity is high and environmental knowledge intensity is low, (c) external personalization is most effective when IS maturity is low and its environmental knowledge intensity is high, and (d) internal personalization is most effective when IS maturity and environmental knowledge intensity are both low. The research was conducted via a survey submitted to a 154 firms in Korea, with requests that five to ten employees with appropriate backgrounds be selected to respond to the survey by the management of each firm. This effort resulted in 660 usable responses representing 141 firms. The results of the survey revealed three key findings. First, when implementing KM strategies, organizations need to be efficient and realistic by considering knowledge type and origin along with both internal and external contexts. Second, the effectiveness

of KM strategy is dependent on both environmental knowledge intensity and IS maturity. Finally, the internal personalization strategy is important in any effort to increase KMP, no matter the underlying strategy.

While the study utilized data collected from Korean firms, the authors note that the findings of this study can be added to existing studies from both North America and Europe. This article is useful to this research study as it reinforces the need for organizations to consider both external and internal contextual factors, such as how knowledge is created and utilized within a firm, when developing their KM strategies in order to reap the benefits.

Kimble, C. (2013). What cost knowledge management? The example of Infosys. *Global Business and Organizational Excellence, 32*(3), 6-14. doi: 10.1002/joe.21480

Abstract. The term knowledge management (KM) first came to prominence in the late 1990s. Although initially dismissed as a fad, KM continues to be featured in articles concerning business productivity and innovation. And yet, clear-cut examples that demonstrate the success of KM are few and far between. A brief examination of the history of KM explores the reasons for this and looks at some of the assumptions about what KM can achieve. A subsequent analysis of the experiences of Infosys with KM shows that for KM to be successful, organizational leaders need to engage in a continuous process of modification and maintenance. Although KM initiatives can be made to yield worthwhile returns over an extended period, there are often substantial ongoing costs associated with them.

Summary. In this article Kimble provides a short history of KM and then reviews the history of KM at Infosys, one of the first organizations to formally implement KM. The

historical overview starts with first generation KM, which has its basis in the theories of codified knowledge presented by Shannon and Weaver in their 1949 work *The Mathematical Theory of Communication*. Shannon and Weaver's work was concerned with how information could be encoded and transmitted over a communications network. In essence, this is a technology-based repository approach, making knowledge explicit. Kimble also discusses second generation KM, which instead of focusing on explicit knowledge, focuses on tacit knowledge. In the discussion of each KM generation, Kimble outlines the advantages and disadvantages of each.

In the case study of Infosys' KM implementation, Kimble provides a brief history of KM at Infosys, including difficulties that were encountered and the corrective actions that were taken with regard to participation and knowledge growth. Kimble concludes that there is no easy path to the successful implementation of KM, noting that the Infosys case demonstrates that if a KM initiative is to succeed and provide returns, there needs to be an unrelenting effort by management to ensure it is always functioning the way it was intended.

This article is relevant for this study because the Infosys' KM implementation case study illustrates that for an organization to be successful in knowledge management, approaches to and policies for KM need to be constantly reviewed and updated in order to garner the highest rates of return and usefulness.

Category 3: Knowledge Management in Distributed Teams

Ambos, T.C., Ambos, B., Eich, K.J., Puck, J. (2016). Imbalance and isolation: How team configurations affect global knowledge sharing. *Journal of International Management*. Advance online publication. doi: 10.1016/j.intman.2016.03.005

Abstract. This study investigates knowledge sharing in globally dispersed teams with distinctive geographical and cultural configurations. We provide fresh insights by contrasting international business and social identity theory and suggest that configurational asymmetries, namely imbalance and isolation, affect team members' average perceptions of knowledge sharing processes and outcomes. We test our hypotheses in the context of a multinational software corporation, drawing on a sample of 171 responses from team-members of 40 nationalities in 45 locations. Supporting social identity theory, our results show that our configurational variables – geographical and cultural imbalance – negatively affect knowledge sharing. The highest negative impact is observed in teams with geographically or culturally isolated members. Interestingly, we find no adverse effects of cultural and geographical distance (separation) that have been in the center of a large stream of research in international business.

Summary. In this article, the authors discuss results of a study that they conducted in order to determine how the configuration of a team with regards to distance and cultural dispersion impacts a team's knowledge sharing processes and outcomes. The authors review existing literature on global teams, which presume that larger distances are harder to bridge than shorter ones with regard to knowledge sharing (KS). They also include the recent addition of social identity theory in literature and describe how it impacts KS in global teams, suggesting that national culture is a driver of social identification and possibly affects the outcomes of knowledge sharing processes. To illustrate imbalances in teams, the authors illustrate different team configurations and how they rank on the separation index; for example, all Americans in a single office versus a completely dispersed team of different nationalities.

Based on the literature, the authors state six hypotheses. These hypotheses predict that geographical and cultural separation and geographical and cultural imbalance are all negatively related to process and outcomes of knowledge sharing within teams, and that these negative outcomes will be most noticeable to isolated team members. To test these hypotheses a survey was conducted at a large multinational software corporation headquartered in Europe, with respondents distributed in over 45 cities and consisting of 40 nationalities. Individual perceptions of knowledge sharing processes and outcomes were used as dependent variables in the study, with geographical and cultural separation and imbalances making up the four independent variables. Several control variables were also utilized in order to avoid the misidentification of any misleading relationships between dependent and independent variables. The researchers found that both the geographical and cultural imbalance of team members have greater impacts on knowledge sharing activities than does distance alone, though cultural imbalance alone is less noticeable. It was also found that while geographic imbalance has a negative impact on knowledge sharing processes, knowledge-sharing outcomes were not impacted.

This study is included in this Capstone project as it provides guidance on team configurations to avoid in virtual workforces, including the recommendation to avoid isolating team members and to be cautious with geographic and cultural imbalances.

Bosch-Sijtsema, P.M., Fruchter, R., Vartiainen, M., & Ruohomäki, V. (2011). A framework to analyze knowledge work in distributed teams. *Group & Organization Management, 36*(3), 275-307. doi: 10.1177/1059601111403625

Abstract. This article presents a framework to analyze knowledge work in the changing context of new ways of working. Knowledge work increasingly takes place as

collaboration from different and changing workplaces due to mobility, multi-locational, and geographical distribution of participants. We define the framework based on five key factors that pose challenges to the performance and productivity of knowledge work performed in distributed teams. The framework extends and integrates traditional performance models of task, team structure, and work process, with context factors like workplace, organization policy, and information and communication technology (ICT) infrastructure. The framework is applied in a qualitative comparative cross case analysis to eight globally distributed teams in two Fortune 100 high-tech companies. We conclude with a series of specific challenges for each factor when studying distributed knowledge work. It is shown that due to changing contexts knowledge workers, teams, and organizations need to constantly adapt, readjust, and realign per the five factors.

Summary. The authors of this article describe a framework for analyzing knowledge work in distributed teams by describing the five factors of the framework (a) task content, (b) team structure, (c) team work processes, (d) workplace, and (e) organization context, and then applying the framework qualitatively to eight team-level case studies. The case studies were conducted at two Fortune 100 high tech companies and consist of observations on how people work when collaborating in the context of globalization and mobile multi-locations that are supported by technology, as well as data from semi-structured interviews and qualitative surveys. Five of the teams were in the United States, two were in Nordic European locations, and one team had members in both the United States and Nordic Europe.

The authors proposed a framework that is intended to enable the study of the performance and productivity of knowledge work in distributed teams while presenting

factors concerning the context in which the teams operate. From the research, the authors found that the work context for distributed knowledge work has a major impact on knowledge work performance and productivity, with workers constantly being challenged to adapt and adjust while organizational policies and infrastructures require alignment to meet their needs. The framework focuses on the aforementioned five factors that impose challenges in the contexts of distributed teams in new work contexts, providing both theoretical and practical benefits. From a theoretical point of view, the framework can be applied to study knowledge work in new work contexts, while from the practical point of view it emphasizes the importance of strategic alignment and integration of business units responsible for the five factors.

This article is relevant for this study because it reinforces the importance of infrastructure and policy in the contexts of task, team structure, process, workplace, and organization when managing a distributed workforce that utilizes and/or contributes to the knowledge assets of an organization.

Margaryan, A., Boursinou, E., Lukic, D., & de Zward, H. (2015). Narrating your work: An approach to supporting knowledge sharing in virtual teams. *Knowledge Management, Research & Practice, 13*(4), 391-400. doi: 10.1057/kmrp.2013.58

Abstract. We propose an approach to enhancing knowledge sharing and connectedness in distributed teams. Termed 'Narrating Your Work' (NYW), the approach involves members of distributed teams using a microblogging tool to post regular updates about their current work, accomplishments, and issues. The NYW approach was evaluated within a geographically and temporally distributed team at Shell International for a period of one month, using a mixed-method research design. Methodology comprised of a

quantitative survey, followed by semi-structured interviews and analysis of microblogging updates posted during the month in which the approach was being trialed. The evaluation results suggest that NYW was viewed as a valid and practical approach to enhancing knowledge sharing and connectedness. A range of barriers and enablers that could impact the future application and embedding of the approach are identified and recommendations for implementation are outlined.

Summary. The authors of this paper address the need for tools that distributed workforces can use to share both tacit and explicit knowledge. One suggestion to encourage tacit knowledge sharing in distributed teams is to utilize social media. The authors studied an approach undertaken by Shell International with one of its virtual teams called *Narrating Your Work* (NYW). With this approach, employees utilized the microblogging platform Yammer to post updates on their work to both team-only and company forums. The research for this study was based on a mixed-methods approach and was comprised of a quantitative survey, qualitative semi-structured interviews with participants of the study, and an analysis of all updates posted to Yammer by users during the experiment.

The findings of the study addressed both the perceived value and practicality of the NYW approach, with results suggesting that the NYW approach could help address some of the connectedness issues related to knowledge sharing in virtual teams. Specifically, the authors found that the value of the NYW lies both within its simplicity and the potential for improving the use of tacit and explicit knowledge, leading to an increased sense of connectedness.

This article is relevant for this study because it provides a valuable recommendation for how to increase knowledge sharing in virtual teams. Further, the approach suggested is validated and shown to have merit by studying its use in an actual virtual team.

Pawlowski, J. & Bick, M. (2012). The global knowledge management framework: Towards a theory for knowledge management in globally distributed settings. *The Electronic Journal of Knowledge Management, 10*(1), 92-108. Retrieved from http://ejkm.com/issue/download.html?idArticle=314

Abstract. Our paper introduces the Global Knowledge Management Framework (GKMF) which describes components and influence factors of knowledge management in globally distributed settings. The framework identifies the key aspects when designing knowledge management processes and systems and can be used for two main purposes. On the one hand, it guides development processes by providing a solution space and success factors for decision makers as well as implementers. On the other hand, it is a reference for researchers to compare research in the field by providing a common set of context descriptions as well as aspects influencing the success of knowledge management solutions. We illustrate the application of our framework first within two scenarios and describe its first evaluation as a proof-of-concept in an educational setting. By that, we give insights into further research and development of the framework trying to stimulate discussion and initiating a broad initiative working towards global knowledge management.

Summary. Pawlowski and Bick introduce the Global Knowledge Management Framework (GKMF), a model to structure and compare influence factors on KM in

global settings. The authors provide a proof-of-concept of the GKMF with a case study. The framework's stated goal is to "identify and relate global influence factors for distributed knowledge management practices in global settings" (p. 96). This framework is important because most frameworks that exist for KM do not cover the topic from the perspective of global organizations, which face a variety of additional influence factors, barriers, and challenges including differences in culture from both human and organizational perspectives, technology infrastructure, and management strategy.

Pawlowski and Bick's framework consists of five components: (a) processes, (b) stakeholders and context, (c) knowledge, (d) instruments, and (e) results. These are each broken down into several categories, with the core of the framework identified as processes consisting of: (a) business processes, (b) knowledge processes, and (c) external processes. The stakeholders and context component describe characteristics of participating stakeholders, while context describes the environment in which KM is taking place. The knowledge component provides a description and characterization of shared or required knowledge aspects and elements within an organization. The instruments component describes the methods and activities to which knowledge processes are applied, such as human-based (e.g., mentoring and team development) or technology-based (e.g., document management and microblogging).

The authors suggest that the GKMF can be utilized in a couple of different scenarios, including using it as a starting point for research in global KM. The second suggested use of GKMF is the most useful for this study. The authors describe GKMF as a guide to the design and development of international KM processes, defining a solution space for those processes, which are crucial for success in geographically distributed

workforces. The authors suggest that the following steps can be derived from the model: (a) identification of stakeholder context and barriers, (b) knowledge sharing design processes, (c) contribution of a supporting infrastructure, and (d) project success assessment.

An initial case study, acting as the proof-of-concept of the framework, was carried out in an international, university-level, educational setting. The case study involved a fictional company pursuing expansion in international markets, and therefore learning to cope with global KM issues. The framework was able to guide the students to completion of their assignment, which shows its usefulness in designing a global KM project.

Even though the authors conclude by stating that further validation is still needed, the comprehensiveness of the framework and the results of the case study make it a useful addition to this annotated bibliography in providing an example of a tool that can be used to manage knowledge within distributed teams on a global scale.

Pinjani, P. & Palvia, P. (2013). Trust and knowledge sharing in diverse global virtual teams. *Information & Management, 50,* 144 – 153. doi: 10.1016/j.im.2012.10.002

Abstract. Global virtual teams (GVTs) allow organizations to improve productivity, procure global knowledge, and transfer best practice information instantaneously among team members. GVTs rely heavily on IT and have little face-to-face interaction, thereby increasing problems resulting from geographic barriers, time language, and cultural differences, and inter-personal relationships. The purpose of our study was to design a normative framework that would assist organizations in understanding the relationship between diversity, mutual trust, and knowledge sharing among GVTs, with additional focus on understanding the moderating impact of collaborative technology and task

characteristics. Empirical data was collected from 58 GVTs and analyzed using a Hierarchical Multiple Regression technique. Results showed that in GVTs, deep level diversity has a more significant relationship with team processes of mutual trust and knowledge sharing than visible functional level diversity. This relationship is moderated by the collaborative capabilities of available technology and levels of interdependence of the task. Furthermore, knowledge sharing and mutual trust mediate the relationship between diversity levels and team effectiveness.

Summary. In this article, Pinjani and Palvia discuss considerations when designing a collaborative global virtual team (GVT) and the design of a normative framework that can assist organizations in understanding trust and knowledge sharing amongst members of diverse GVTs. The authors write that diversity poses both opportunities and risks, with diversity on GVTs having a significant impact on performance and outcomes due to the dispersed nature and inherent diversity. The authors also note that trust, shared knowledge, the technology utilized for collaboration, and the degree to which completion of tasks requires team interactions are important to the performance of GVTs.

In the research model, Pinjani and Palvia argue that the effectiveness of GVTs increases as mutual trust and knowledge sharing develop, and after careful review the authors identified task interdependence and frequency and duration of interactions as bonds that hold the GVT together. As a result of this theorized model, Pinjani and Palvia arrived at 17 hypotheses broken out into five categories: (a) diversity, (b) task interdependence, (c) collaborative technology, (d) mutual trust, and (e) mediating effects of knowledge sharing. To test the hypotheses a survey was distributed to various GVTs within several multi-national organizations.

Results of the survey revealed a number of key findings. First, the results confirmed that trust is essential for relationship building and team effectiveness in a GVT, though it is difficult to establish. Another finding was that high-level usage of collaborative technology strengthens the positive relationship between deep level diversity and mutual trust and knowledge sharing, with mutual trust found to be positively related to levels of knowledge sharing. These findings provide the lesson that an environment facilitating knowledge sharing and trust in teamwork should be fostered in GVTs. The authors also conclude that manager training in relationship building, development of team processes, and diversity management should be undertaken to get the most benefit from GVTs, and that the collaborative aspects of technology should be taken into consideration.

This study is relevant to this annotated bibliography as it provides useful information on team dynamics in global virtual teams, which can help managers of such teams build team commitment to common goals and provide motivation, making the team both efficient and effective.

Conclusion

The references selected in this annotated bibliography communicate ideas and techniques to help those that play a role in forming an organization's business processes determine how to best manage knowledge in a distributed workforce. Emphasis is given to sources that address the implementation of knowledge management processes that create a desire to participate among employees. The peer-reviewed journal articles in the annotated bibliography provide information on frameworks for knowledge management and approaches to sharing knowledge in organizations. Each of the organizing themes used to frame the presentation of the references in this study highlight key factors of *knowledge management* and how to approach it within the context of a distributed organization. Themes include (a) knowledge management importance; (b) creating efficient knowledge management processes; and (c) knowledge management in distributed teams.

Knowledge Management Importance

Knowledge management is an approach for managing knowledge and information in an organization, allowing for growth and refinement of methods through which knowledge flows and contributing to the realization of organizational value such as innovation and competitive advantage (Ganguly, Mostashari, & Mansouri, 2011). While some experts note the shift in the foundations of organizations from natural resources to intellectual capital and the ensuing role of knowledge as a strategic asset and source of competitive advantage in the knowledge economy (Ganguly et al., 2011), others claim that KM is just a passing fad and is not sustainable (Grant, 2011). Research however has shown that the opposite is true: KM is a management theory that has been sustained and is important to organizations from the aspects of both competitive advantage and the bottom line (Grant, 2011). Grant's research (2011) has shown that interest in

KM has been sustained since the initial rise in interest over 15 years ago, making it a relevant practice for organizations to pursue and enhance.

Beyond just being an enduring practice, when implemented properly KM has a positive impact on competitiveness and financial performance (Andreeva & Kianto, 2012; López-Nicolás & Meroño-Cerdán, 2011; Wang & Wang, 2012). In their findings, Andreeva and Kianto (2012) and Raghu and Vinze (2007) discuss the importance of a proper implementation for KM. Andreeva and Kianto (2012) found a positive link between the human resource management (HRM) and information and communication technology (ICT) practices in a KM implementation. Additional findings by Andreeva and Kianto (2012) show that these two elements are synergistic and that only applying one can actually have a negative impact on a firm's performance.

HRM and ICT are not the only important considerations when implementing KM. Raghu and Vinze (2007) note the need to address the key business processes of workflow execution, information processing, decision making, and motivation structure in any KM effort as these processes interact with one another, creating an operational core of knowledge. Wang and Wang (2012) note that sharing of knowledge is fundamental to meeting the goals of any KM effort, with their study demonstrating that sharing both explicit and tacit knowledge must be encouraged in order fully benefit and see a positive impact on competitiveness and financial performance.

Creating Efficient Knowledge Management Processes

In order to realize the benefits of KM, Raghu and Vinze (2007) write that the processes surrounding it must encourage collaboration amongst a wide variety of members of an organization. Ganguly et al. (2011) also make note of the importance of collaboration, noting

that knowledge sharing (KS) is a critical factor for a successful KM implementation. The metrics proposed by Ganguly et al. (2012) hold value as they provide a way for organizations to measure the efficiency and effectiveness of KS.

Grubić-Nešić, Matić, and Matrović (2015) build on the importance of KS by describing how the results of their study indicate that differing levels of KS exist across different organizations and that the characteristics of an organization and its demographics have an effect on the willingness of employees to share knowledge. In particular, Grubić-Nešić, Matić, and Matrović (2015) found that the willingness to share knowledge is impacted by gender, age, tenure, professions, whether the employee is in a service or manufacturing industry, and whether the employee is part of a public or private organization. Ho, Hsieh, and Hung (2014) also note that organizational culture is a critical success factor for KM; specifically, organizational culture that is formalized was found to positively impact KM and knowledge circulation. Ho, Hsieh, and Hung (2014) also found that organizations that maintain their KM processes are more successful at knowledge management and knowledge circulation.

While KS is a very important factor in how successful a KM implementation is, the overall strategy also has an effect (Kim, Lee, Chun, and Benbasat, 2014). Kim et al.'s (2014) study provides the insight that one single approach to KM does not fit every organization. Instead, to see success, the degree of difference in environmental knowledge intensity and the level of information systems maturity must be considered when selecting a KM strategy. Kim et al. (2014) note that while selection of a KM strategy will allow an organization to reap the benefits of knowledge management for some time, the aforementioned factors will change over time and an organization should therefore change approaches as needed. Kimble's (2013) case study of Infosys supports the need to adjust KM approaches over time, describing how Infosys

found it necessary to change their KM strategies as not just technology changed, but their organization did as well.

Knowledge Management in Distributed Teams

Lack of awareness of skillsets and expertise amongst team members, as well as lack of trust, are common issues in distributed and virtual teams, which can cause challenges when trying to implement, maintain, and adhere to knowledge management processes (Margaryan et al, 2015; Pinjani & Palvia, 2013). While the degree of difficulty in overcoming these challenges is high, they can be overcome with the right understanding of diversity in its various forms and how that diversity can impact task requirements (Pinjani & Palvia, 2013).

Ambos, Ambos, Eich, and Puck's (2016) study results indicate that when working with a globally distributed team, geographic and cultural isolation can have the greatest impact on KS processes, concluding that leaders of virtual teams need to identify geographically and culturally isolated team members and make accommodations when determining how knowledge will be shared on a team. Pinjani and Palvia (2013) also note that deep level diversity on global virtual teams has a significant impact on mutual trust and knowledge sharing.

These two studies highlight some of the challenges of effectively sharing knowledge among members of a distributed global team, but Pinjani and Palvia's (2013) survey results also show that while trust is hard to establish in such situations, it is possible and facilitated through extensive use of collaborative technology. A study of microblogging within Shell International provides one example of the successful adoption of collaborative technology that is extensively used (Margaryan et al., 2015). Margaryan et al. (2015) note that microblogging showed the potential to increase the sharing of both tacit and explicit knowledge and that study participants found the approach simple while increasing their sense of connectedness to the rest of the team.

Multiple researchers provide frameworks to facilitate the successful implementation of knowledge management in distributed teams (Bosch-Sijtsema, Fruchter, Vartiainen, & Ruohomäki, 2011; Pawlowski & Bick, 2012). Bosch-Sijtsema et al. (2011) proposed a framework to facilitate knowledge work in distributed teams and found that infrastructure and the integration and strategic alignment of business units are important factors to obtain optimal levels of performance. Pawlowski and Bick's (2012) proposed framework can also help organizations with the creation of KM processes that are crucial for geographically distributed teams.

Summary

This annotated bibliography highlights the importance of KM and provides ideas and techniques for managing knowledge in a distributed workforce. Key findings include the recognition that KM is not a passing fad, but rather an established and relevant practice that organizations should pursue (Grant, 2011). Organizations that implement knowledge management should also prepare for constant process revisions to accommodate changes in both internal and external forces over time in order for their knowledge management implementations to remain effective (Kimble, 2013).

Managing knowledge in distributed teams adds an extra dimension since knowledge flow can be obstructed and relationships between people and organizations are shifted (Margaryan et al., 2015). Understanding how geographical and cultural differences impact communication and team dynamics, especially with regard to trust, is one key to successfully managing knowledge in distributed teams (Margaryan et al., 2015; Pinjani & Palvia, 2013). Ultimately, the complexity of factors that influence the success of a knowledge management implementation make it clear that no one approach to KM will work for every organization and point to the need for research to

identify the best approach for an organization's unique set of factors (Kim et al., 2014; Pawlowski & Bick, 2012).

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