Presented to the Interdisciplinary Studies Program:

UNIVERSITY OF OREGON
APPLIED INFORMATION MANAGEMENT

Applied Information Management
and the Graduate School of the
University of Oregon
in partial fulfillment of the
requirement for the degree of
Master of Science

Knowledge Management Best Practices

CAPSTONE REPORT

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May 2015

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Abstract

This literature review focuses on resources that address failure within business knowledge management programs. The literature will help to establish best practices that may be leveraged by organizations attempting to successfully implement new knowledge management programs or analyze or review their existing solutions. A total of 16 resources are reviewed and have been divided into three knowledge management categories: (a) background, (b) challenges or problems, and (c) solutions within knowledge management.

Keywords: knowledge management, best practices, knowledge management challenges, collaboration, information management.

Table of Contents

Introduction to the Annotated Bibliography

Problem Description

Organizations put an incredible value on the knowledge and experience that are embedded within their human resources (Anklam, Cross, & Gulas, 2005). Commonplace terms such as knowledge management (KM), collaboration, and information systems (ISs) are interrelated and at the forefront of many Information Technology (IT) organizations. The ability to effectively leverage knowledge management through collaboration and effective information systems is often considered a requirement for success (O'Dell & Hubert, 2011). Knowledge management is defined as a procedural, ongoing effort to enable information and knowledge to evolve and create value within an organization (O'Dell & Hubert, 2011). Collaboration is related to knowledge management, as it is a requirement for knowledge management to be effective (O'Dell & Grayson Jr., 2012). Information systems are an essential component of knowledge management due to their role in providing information that connects users with business information needed to make decisions (Popovič, Hackney, Coelho, & Jaklič, 2014).

Knowledge management is a trend within business that started in the 1990s (Laycock, 2005) and has since grown into an entire industry. The successful application of knowledge management and the use of information systems and related processes that support knowledge management within an organization have proven to have positive effects on decision making, resulting in a competitive advantage in the larger business ecosystem (Popovič et al., 2014) The costs of failure in implementing successful knowledge management practices can be great, and organizations should be aware of the physical as well as the financial costs of a failed knowledge management program. The financial costs of ineffective KM programs are substantial; one

estimate shows that "US Fortune 500 companies lose at least 31.5 billion a year by failing to share knowledge" (Massingham & Massingham, 2014, p.222).

Knowledge management literature presents some tangible reasons why KM can help prevent disaster across a business. For example, when groups have limited or partial access to information, this can lead to challenges when handing problems. Choo (2005) cites an August 2000 issue where Bridgestone/Firestone, Inc. recalled 6.5 million tires impacting Ford Explorers. Choo (2005) points out that the tire issues were apparent to both Ford and Bridgestone as early as 1998 and both companies had addressed issues in other parts of the world, but they still failed to understand, and potentially resolve, the larger issue they would eventually encounter. The lack of shared information between the two companies resulted in damaged reputations for both companies, a $450 million loss for Firestone (Company, 2000) and a $3 billion loss for Ford (Jones, 2001). By encouraging a strong information culture, facilitated through knowledge management programs, companies can react to problems and work to recover errors before they cause major impacts to the organizations (Choo, 2005).

The risk of failure or organizational disasters should not be the only driver causing a company to invest in knowledge management. The value of success in developing KM programs can be substantial; knowledge management has been determined to add to competitive advantage by creating the ability for businesses to streamline the flow of information across organizational boundaries (Chen, Lin, & Yen, 2014). Additionally, there are several business cases that help to exemplify how effective knowledge management can be advantageous. For example, Texas Instruments (TI) created an additional $1.5 billion in increased capacity for fabrication by aligning best practices among their fabrication plants over the last 25 years (O'Dell & Grayson Jr., 2012). Knowledge management played a key role in this success by allowing management to

leverage consistent best practices across all their fabrication plants. This resulted in an additional capacity of one full fabrication factory, and the company was able to avoid a $500 million investment. Texas Instruments repeated this process two more times, resulting in a total $1.5 billion saved (O'Dell & Grayson Jr., 2012).

Success stories also yield more than just financial benefits. In the case of United Services Automobile Association (USAA), their needs were not entirely financially driven; the company understood that the majority of their clientele conducted business over the phone. There was an internal need to be able to complete members' requests within a single phone call; USAA employed Knowledge Management techniques to grow strategic alliances and transition their business conducted over the phone from 30% to over 70%, resulting in improved customer service. United Services Automobile Association has one of the highest retention rates in the insurance industry at 98% (O'Dell & Grayson Jr., 2012).

Organizations that wish to capitalize on the benefits and risk avoidance afforded by knowledge management will need to implement information systems to support their KM initiatives. Information systems such as business intelligence (BI) systems that support knowledge management are becoming more widespread, with an estimated 80% of companies having some form of knowledge management system in use (Massingham & Massingham, 2014). As companies have continued to evolve knowledge management processes, the tools used in BI systems to support knowledge management have improved greatly. One use of BI is to enable organizations to organize and make accessible information created by their knowledge experts (O'Dell & Hubert, 2011).

Despite the growing use of BI systems as part of an organization's overall knowledge management approach, there is still a large amount of failure within organizations trying to build

solid knowledge management processes (Adler, Baets, & König, 2011). While the information systems to support knowledge management are fairly evolved, the implementation of knowledge management processes often fails (Laycock, 2005) Many companies are stuck and left disappointed with their efforts to develop sustainable knowledge management processes across their organizations (Laycock, 2005). Research literature documents that many companies fail to fully understand the challenges of implementing knowledge management processes across an entire organization (Adler et al., 2011; Laycock, 2005; Popovič et al., 2014). Unfortunately, management often spends too much time focusing on vision and values, and not enough time enacting actual change or enticing staff to embody the cultural changes necessary to create a reliable KM system (Laycock, 2005). By instilling values such as collaboration in their employees, a company's executives can create successful knowledge management processes (Laycock, 2005). Knowledge sharing, as well as collaboration, can improve decision-making, which can add value to existing processes while also creating new value within an organization (Laycock, 2005).

Organizational decision-making is influenced by the organization's information culture, which is defined as an organization's attitude towards information, how information is defined, and how information flows between resources, including views on trust and collaboration (Widén & Hansen, 2012) Executives must accept that the concepts that drive information culture within an organization are a byproduct of organizational culture and these values impact operational as well as strategic success, creating a foundation for organizational decision-making (Popovič et al., 2014). Ultimately, by not driving change from within, and instead from the top, an organization will almost certainly encounter challenges that may cause efforts to build solid knowledge management processes to fail (Laycock, 2005).

Purpose

The purpose of this annotated bibliography is to present literature that describes the background and relevance of knowledge management programs, including the value and advantages they have provided to organizations that successfully utilize these programs; analyzes the problems in establishing successful and valued knowledge management processes within an organization; and details best practices in implementing knowledge management in organizations. Implementing knowledge management comes at great costs, and many companies are not satisfied with the progress they have made in developing KM programs (Laycock, 2005). In order to stay competitive, leaders need to understand the consequences of ineffective knowledge management programs, the potential risks failure presents, as well as the value they can add to an organization by driving success in KM. The goal of this research is to present literature that informs business leaders on the issues organizations experience in implementing and sustaining knowledge management processes and identifies best practices in developing knowledge management practices across an organization.

Research Question

Main question. What are the best practices for successful implementation of knowledge management programs that add value to organizations?

Sub-questions. What is the value that the successful implementation of KM programs provides to organizations? What are some of the causes of failure when implementing KM programs?

Audience

This study is targeted for the upper management of large organizations, and will have wide application across multiple industries. Ultimately the value proposition for every

organization's implementation of KM will vary, along with the potential gains. Knowledge management can drive improvements in customer intimacy by improving customer service, operational excellence by ensuring the most efficient processes are in use within a company's operation, and advances in product development by improving the speed of product innovation within an organization (O'Dell & Grayson Jr., 2012).

This research may have application in business areas that require heavy decision-making, such as those charged with developing a product roadmap that will influence the future actions of a company by providing the knowledge and institutional learning required to inform the decisions. In addition, individuals who have to make critical decisions on limited information, such as the manager of an operations team, will benefit from the ability to access relevant information to inform the decisions. A common example in IT is an IT director who has to decide whether to invoke disaster recovery procedures for a failed system. In this example, the IT director will benefit by knowing which resources have the knowledge required to execute the change and which resources or process they may need to call upon to ensure a successful operation.

A Chief Information Officer (CIO) or other senior technology executive who is charged with implementing a KM solution will find value in the articles referenced. Additionally, management charged with training staff, or developing training programs throughout an organization will benefit from references that provide information on the background of KM, the challenges they might encounter, as well as best practices for successful implementation of knowledge management processes. C-Level executives seeking competitive advantage amongst their competition can leverage KM to help create success and value where their competition may struggle (Popovič, Hackney, Coelho, & Jaklič, 2014). Areas such as operations and support

within IT infrastructures will be able to make immediate use of the information cited as part of this research by improving their implementation of new processes and facilitating effective communication (Fugate, Stank, & Mentzer, 2009).

One of the general goals for the author was to present readers with a comprehensive package of information that, while primarily looking to address the challenges of implementing knowledge management programs, also provides background and solutions to the challenges that managers are likely facing. This study provides several resources that outline the background and history of knowledge management; some of the recorded challenges with implementing and maintaining knowledge management programs, including ways to address or avoid potential challenges; and a review of several articles that focus on knowledge management solutions. By presenting a holistic view of knowledge management in this manner, the author is providing leaders with a full suite of resources to help improve their organizations.

Search Report

Search strategy. Knowledge management is a well-documented subject. Literary research has grown in abundance since the mid-1990s (Massingham & Massingham, 2014). The author refines the search process from basic database searches on the general subject of *knowledge management* to more detailed topics, such as collaboration, culture, and the potential issues faced by an organization. Additionally, articles are found by referencing authors that are cited from multiple sources, such as Choo and O'Dell. Performing further specific searches on individual authors allows for more thorough research and provides a more detailed base of information on the subject of knowledge management.

As research continues, search terms evolve from basic and broad research areas into the focus on specific articles to provide information on the problem background or research problem.

For example, the broad term *information management* evolves into *knowledge management* and is ultimately augmented with specific keywords such as *challenge* to help provide the specific information needed to develop a complete research question and background on the research problem.

Key words. The full list of search terms that yield the selected references is below:

- Information Management AND Collaboration
- Information Management AND Knowledge Management
- Information Management AND Knowledge Management AND Collaboration
- Business Information Management
- Knowledge Sharing OR Knowledge Share AND Incentivize
- Information Sharing AND Business Culture
- Knowledge Management (exact phrase) AND Challenge
- Knowledge Management AND Challenge OR Problem
- IT Operations AND Knowledge Management

The University of Oregon Library search engine also recommends articles based on existing search information entered into the system. Several journals also offer this feature, based on the articles requested. Both of these resources yield beneficial sources that are pertinent to the research performed. Additionally, searches yield more results than just journal articles; several books and conference publications are found and selected as possible candidates for this paper.

Search engines and databases. Below are some of the repositories that yield some of the most credible results while performing research:

- Academic Search Premier
- Springer
- JSTOR
- Business Search Complete
- EBSCO Host

- Science Direct

The journals below yield several potential resource candidates:

- MIS Quarterly
- Information & Management
- Procedia
- The Journal of Strategic Information Systems
- Information Research
- The Journal of the American Society of Information Science and Technology
- Journal of Knowledge Management

There are challenges in the research process; much of the research available addresses solutions on how to best implement knowledge management processes and the benefits of such solutions, many resources only typify the actual problems that may be faced, and even fewer articles focus on the specific challenges faced by an organization. The scarcity of research focused on challenges is also referenced within many of the articles reviewed. There is abundant research that documents the background and general focus of this research problem, but finding research that focuses on the specific problems (and not background or solutions) creates minor challenges for research.

Documentation strategy. As research is ongoing, candidate articles are categorized into topics according to the best fit into the final research paper. Three categories for research candidates are chosen: (a) background or historical information, (b) challenges to knowledge management, and (c) solutions or directions for deploying knowledge management solutions. The coding of the candidate research is part of the methodology for adding information to the research paper. Along with using Zotero for cataloguing sources, the author uses the following process for defining potential research candidates:

- After reviewing the article for basic content and application to the research paper, the author downloads a soft copy of the candidate paper onto a local personal computer (PC).
- A new entry is created in the Zotero tool; all bibliographic information is documented and the downloaded article is attached as an artifact of the bibliographic line item.
- The article is then coded into a specific article type and keyword tags are employed to help organize the research data. These keyword tags include the general focus of the article, such as if it is an article that provides background of or solutions for KM and notes about how the article will add the most value towards this current research and how the article will be used within this annotated bibliography.

Evaluation criteria. While initially all articles are considered for use in this research paper, standards are employed as the research process is developed in order to ensure the most credible resources are leveraged. Initially a general rule is applied; all articles must come from credible, peer-reviewed academic journals or the articles must have authors with authority in their fields. All sources that are determined to be credible and have valid application for this research are then added into the list of candidates and referenced as necessary.

After an initial review of literature candidates has been completed, literature is evaluated for authority, timeliness, quality, relevancy, and bias using guidelines from the Center for Public Issues Education (Center, 2014). The authority of the literature is based on the author and publisher of the article (Center, 2014). Much of the literature found for this research featured multiple articles from the same authors. An author that is featured and cited in research indicates that the author is considered to be authoritative in his or her field. Author credibility is also partially determined by the frequency a specific article is cited in other research that is discovered. For example, Dr. Chun Wei Choo, a professor at the University of Toronto, is cited

in several articles on knowledge management. Upon further research, typically conducted through the Google search engine, Dr. Choo is determined to be a prominent figure within information management research, and subsequent searches yield additional results from Dr. Choo that are applied to this research paper.

Knowledge management is a relatively new subject in academic business literature, with most research less than 20 years old. Some principles on which knowledge management is founded are older, but for the purposes of this research the author attempts to find articles within the last 5-10 years in order to provide the most current research. The oldest articles considered are from the year 2005, and are included because of the value they add to illustrating the challenges and some potential solutions within knowledge management. Additionally, these articles are part of a special edition journal by The Learning Organization, a compilation of relevant and quality resources regarding knowledge management. The most recent source is from August 2015. The average date for all articles selected is 2011.

Quality and bias are not major obstacles in the search for knowledge management sources. All articles feature the heavy use of citations and all are featured in reputable journals. The selected sources contain no grammatical mistakes and all adhere to some form of writing standard, such as APA, MLA, or Chicago writing styles.

The relevancy of the literature does present a challenge at times as knowledge management has many applications to other industries such as healthcare and education. An article is determined to be relevant if it is related to modern business operations and is focused on the practical application of knowledge management. The goal of the author is to find real-world information as much as possible. Case studies and examples are preferred when possible.

Annotated Bibliography

The following annotated bibliography presents 16 scholarly articles that are focused on the challenges of implementing or maintaining a knowledge management program. This information is meant to inform business leaders who wish to create a series of best practices for knowledge management that are tailored to specific organizations, addressing the most crucial organizational needs, while also ensuring any existing or implemented knowledge management solutions add maximum value to the organizations. Additionally, literature is presented that addresses explanations for failure within knowledge management programs and helps to define the value that is added to an organization by properly leveraging knowledge management. References are divided into three categories to help define their purpose for inclusion within this paper: (a) research that is focused on general knowledge management, histories, and background on the subject; (b) research that focuses on the challenges to knowledge management solutions; and (c) research that focuses on solutions within knowledge management, including ways to evaluate a KM implementation or tools that may be used within knowledge management programs.

All annotations include three components: (a) a full APA bibliographic citation, (b) an abstract, generally provided by the author of the article, and (c) a summary, which outlines the relevance the article has on this paper's subject matter of best practices within knowledge management programs. Each summary describes how the research specifically applies to the research question the author seeks to address, and outlines the value this research adds to addressing the goals of this research. Ultimately, this annotated bibliography is meant to inform

senior leaders of organizations who wish to implement successful knowledge management programs.

Resources Focused on Knowledge Management History and Background

Choo, C. W., Bergeron, P., Detlor, B., & Heaton, L. (2008). Information culture and information use: An exploratory study of three organizations. *Journal of the American Society for Information Science & Technology, 59*(5), 792–804. http://dx.doi.org/10.1002/asi.20797

Abstract. This research explores the link between information culture and information use in three organizations. We ask if there is a way to systematically identify information behaviors and values that can characterize the information culture of an organization, and whether this culture has an effect on information use outcomes. The primary method of data collection was a questionnaire survey that was applied to a national law firm, a public health agency, and an engineering company. Over 650 persons in the three organizations answered the survey. Data analysis suggests that the questionnaire instrument was able to elicit information behaviors and values that denote an organization's information culture. Moreover, the information behaviors and values of each organization were able to explain 30–50% of the variance in information use outcomes. We conclude that it is possible to identify behaviors and values that describe an organization's information culture, and that the sets of identified behaviors and values can account for significant proportions of the variance in information use outcomes.

Summary. In this research, Choo et al. attempt to present evidence that provides a correlation between the information values of an organization and how an organization uses information. Their study, a survey conducted across three organizations, draws a strong correlation between a company’s information culture, defined as the value people

have towards information, often influenced by culture, and how information is used throughout an organization. The authors expand their findings in an attempt to explain why some mechanisms of knowledge management work better in specific organizations. For example, a health care company that was surveyed scored much higher in the concept of information transparency than the other two companies, an engineering company and law firm. The authors assume the difference in scores to be due to the differences in the cultures of the industries, as passing on accurate and valued information lends itself more naturally to a medical field due to industry requirements to share information.

This article adds value to this study as it helps to establish the importance of industry and company culture, specifically information culture, as key factors in how information and knowledge are transferred and stored within an organization. Choo et al. use quantitative survey data to support the idea that culture is a key factor in knowledge management success.

Massingham, P. R., & Massingham, R. K. (2014). Does knowledge management produce practical outcomes? *Journal of Knowledge Management, 18*(2), 221–254. http://dx.doi.org/10.1108/JKM-10-2013-0390

Abstract. The paper examines ways that Knowledge Management (KM) can demonstrate practical value for organizations. It begins by reviewing the claims made about KM, i.e. the benefits KM can provide to organizations. These claims are compared with traditional firm performance metrics to derive a criterion to measure the value of KM. Seven practical outcomes of KM are then presented as methods to persuade managers to invest in KM. These practical outcomes are then evaluated against the value criterion. The paper is based on empirical evidence from a five-year longitudinal study. This paper provides a

checklist from which to evaluate KM in terms of financial and non-financial measures and seven practical outcomes from which to identify the organizational problem which may be addressed by KM. Lead and lag indicators – what needs to be done and what will result – are also provided. Managers may use this framework to identify the value proposition in any KM investment.

Summary. The authors created a model and checklist for determining if a KM program adds value to an organization; they consider both financial and non-financial implications. Findings are summarized into seven practical outcomes weighed against the value of a KM program. These outcomes are defined as the following: (a) learning curve, (b) experience curve, (c) strategic alignment, (d) connectivity, (e) risk management, (f) value management, and (g) psychological contract. They conclude with their results, which (a) provide an outline of how to best determine the value proposition of one's own KM program, but also (b) create an argument that KM investments should focus on organizational issues which will help to improve performance across the seven defined non-financial outcomes, as well as provide potential cost-savings found in financial results. The authors include a summary of the seven outcomes and how survey respondents rated these areas over the period of the study, as well as the developed checklist, which a practitioner can then apply to his or her own organization to create an internal measure upon which to build. This article is useful for this specific research study because it provides significant background information on the subject of knowledge management and the outcomes leaders can expect when evaluating their existing knowledge management programs. It will also help organizations identify drivers

of their existing KM programs and target specific aspects of the program to help increase the programs' value and maximize returns.

O'Dell, C., & Grayson Jr., C. J. (2012). *If only we knew what we know: The transfer of internal knowledge and best practice* (1st edition). New York: Free Press.

Abstract. The authors, heads of the American Productivity and Quality Center, focus on the notion of internal best practices, discussing the barriers to internal knowledge transfer and offering detailed recommendations for overcoming these barriers. Of particular value is their Knowledge Management Assessment Tool (KMAT), a device to help organizations assess their strengths and weaknesses in managing internal knowledge. A good starting point for those new to KM.

Summary. O'Dell and Grayson Jr. attempt to tackle the entire subject of knowledge management. Their book presents a brief history of KM and the benefits a successful KM program can provide to an organization. The authors claim that their work is unique from other books on knowledge management due to the heavily referenced real-world examples and case studies. Throughout the book they lay out a framework for how organizations can pitch, implement, and deliver knowledge management solutions, as well as mechanisms to evaluate performance before and after implementation. The book has a wide focus, concepts tend to be generalized and the book does not dive into academic studies or specific issues, instead focusing on providing a well-rounded background by highlighting several successful implementations that showcase the potential benefits of KM. This book is useful for this specific research study because it is one of the largest resources of aggregated content on knowledge management. The book provides a solid background into knowledge management, as well as providing examples

of the challenges an organization can expect when implementing a knowledge management program. The strength of book lies in the authors' heavy reliance on real-world examples, which provide several practical solutions and explanations of success in knowledge management programs.

Popovič, A., Hackney, R., Coelho, P. S., & Jaklič, J. (2014). How information-sharing values influence the use of information systems: An investigation in the business intelligence systems context. *The Journal of Strategic Information Systems*, *23*(4), 270–283. http://dx.doi.org/10.1016/j.jsis.2014.08.003

Abstract. Although the constituents of information systems (IS) success and their relationships have been well documented in the business value of information technology (IT) and strategic IS literature, our understanding of how information-sharing values affect the relationships among IS success dimensions is limited. In response, we conduct a quantitative study of 146 medium and large firms that have implemented a business intelligence system in their operations. Our results highlight that in the business intelligence systems context information-sharing values are not directly linked to IT-enabled information use, yet they act as significant moderators of information systems success dimensions relationships.

Summary. This paper analyzes the relationship between the quality of information, the quality of information systems, specific information values and how these factors can influence a specific KM solution. The authors conducted a quantitative study of 146 medium and large firms that have implemented business intelligence systems in their operations. The results of the study indicate that the quality of an information system has no impact on the use of the information system; however, the quality of the information

(which may be contained within an information system) has a heavy influence on the use of specific information. Additionally, while information sharing values do not have a direct impact on the use of information, they do have an impact on the quality of information produced. These findings create several implications for a KM manager within an organization. Tools and information quality will not influence how often information is accessed; however, the quality of the information and the information culture within an organization do have a direct impact on each other. By improving the information culture throughout an organization, a manager can likely improve the quality of information.

This article is useful for this specific research study because the authors establish a link between the quality of information and the use of information systems; specifically, the authors establish that "information quality is the key driver of information use" (p.281). This highlights the importance of documenting information that is high in quality across an organization and may help organizations in researching unsuccessful KM tool use by providing potential explanations for the underlying issues.

Widén, G., & Hansen, P. (2012). Managing collaborative information sharing: Bridging research on information culture and collaborative information behaviour. *Information Research*, *17*(4). Retrieved from http://InformationR.net/ir/17-4/paper538.html

Abstract. The aim of this paper is to combine insights of collaborative information behavior and information cultures in organizations to bridge different aspects of managing knowledge-creation and information sharing in order to highlight the importance of supporting collaborative handling within business environments. This paper is a literature review and a theoretical discussion on the influence of information

culture and information practices in the context of managing collaborative information sharing in work settings. The review underlines how information culture affects different processes within a knowledge organization. It also explores how collaborative information handling processes are related to work practices. It is clearly fruitful to integrate these perspectives of IC and CIB giving good grounds for developing both lines of research further, posing important questions for empirical work.

Summary. This paper attempts to connect the concepts of *information culture*, with the concepts of *information behavior*. The authors define information culture as how information is regarded and how it flows, as well as influences on trust and collaboration, and define information behavior as how humans behave in relation to "sources and channels of information" (p. 3). The authors relate these concepts to *information sharing*, which they define as the act of exchanging information amongst people. The authors conclude that both information culture and information behavior influence how information is shared. They encourage their readers to establish a high pedigree of information culture and behavior, as doing so can have a positive impact on information sharing throughout an organization. By understanding the complexity of information sharing, leaders can understand how factors such as culture can have positive or negative effects on knowledge sharing and a larger KM program.

This article is useful for this specific research study because it establishes a link between information culture, which is a byproduct of organizational culture, and information behavior, or how people interact when looking to acquire or disseminate information. Both of these factors have a heavy influence on information sharing. These elements are a key factor in how an organization will utilize knowledge management.

Companies will need to focus on elements of their organizational culture when looking to establish a knowledge management program.

Resources Focused on the Challenges of Knowledge Management

Arvidsson, V., Holmström, J., & Lyytinen, K. (2014). Information systems use as strategy practice: A multi-dimensional view of strategic information system implementation and use. *The Journal of Strategic Information Systems, 23*(1), 45–61. http://dx.doi.org/10.1016/j.jsis.2014.01.004

Abstract. Information systems (IS) are strategic in so far as they are used to realize strategic intent. Yet, while much has been said about aligning IS functionality with the strategic intent and how to organizationally implement strategically aligned systems, less is known of how to successfully implement strategic change associated with system use – a truly critical challenge within strategic IS implementation. Drawing on a strategy-as-practice perspective we address this gap by developing a multi-dimensional view of IS strategy, conceptualizing three key challenges in the IS strategy process, to explain how and why a paper mill, despite successfully implementing a strategic production management system, failed to produce intended strategic change. We call this outcome strategy blindness: organizational incapability to realize the strategic intent of implemented, available system capabilities. Using a longitudinal case study we investigate how cognitive rigidity of key actors and fixed, interrelated practices shaped the implementation of the new production system. We also identify core components and dynamics that constitute a richer multi-dimensional view of the IS strategy implementation (alignment) process. In particular, we identify three salient factors that contribute to strategy blindness – mistranslation of intent, flexibility of the IT artifact and

cognitive entrenchment – and discuss how they affect strategic implementation processes. We conclude by discussing implications of our findings for IS strategy theory and practice, especially the contribution of strategy-as-practice to this stream of research.

Summary. In this research paper, Arvidsson et al. focus on a specific problem when looking at the challenges that a knowledge management program can face. They identify a specific issue, termed *strategy blindness*, and explain it as a phenomenon of implementing a business program without understanding the strategic intent of that program. This is a common issue for organizations that are seeking to implement KM solutions, but may not understand why knowledge management is being implemented or the specific goals the organizations are seeking to accomplish through the implementation of knowledge management. The authors include a case study to exemplify the problem of strategy blindness, describing a company that implemented a KM solution without understanding the strategic intent of the proposed solution and therefore was not able to see any tangible benefits from their knowledge management program. The authors determine there are three factors that can lead to strategy blindness: (a) the failure to specify and communicate the intent of the program; (b) the failure to successfully implement knowledge management tools, and (c) a concept termed cognitive entrenchment, which is when information fails to flow or transcend an organization due to the actions of specific actors within a process. A common example of cognitive entrenchment is staff members that do not agree with or fail to participate in a KM program, which can impede the progress of that program. The authors determined that the organization they researched suffered from all three of these conditions, all of which contributed to the failure of their knowledge management program. The paper concludes

by providing a brief conclusion and recommendation for addressing these challenges. The authors cite the need for a positive information culture and for open communication to evolve in an organization that wishes to change in order to successfully adapt a KM solution.

This research contributes to this paper by highlighting some challenges that may exist within an existing knowledge management program. The authors identify a multi-dimensional view of strategy blindness, a phenomenon of implementing a business program without understanding the strategic intent of that program, and tie strategy blindness to factors that cause failures in knowledge management programs. Failure can be defined as a lack of vision, tools, or communication within knowledge management implementations, and leaders need to be aware of what can detract from their larger goals. By outlining these potential risks, the authors provide practitioners with a series of potential pitfalls to avoid for an organization looking to implement, or modify, an existing knowledge management program.

Burkhard, R. J., Hill, T. R., & Venkatsubramanyan, S. (2011). The emerging challenge of knowledge management ecosystems: A Silicon Valley high tech company signals the future. *Information Systems Management, 28*(1), 5–18. http://dx.doi.org/10.1080/10580530.2011.536105

Abstract. A Silicon Valley case study serves as a leading indicator of knowledge management challenges emerging in high-tech knowledge economies. Though a leader in technology innovation, this multi-billion-dollar semiconductor company struggles with traditional knowledge management efforts in technical support owing to the sheer complexity and dynamism of their intellectual property. Add to this the back-end

knowledge linkages to suppliers and customer-driven knowledge channels sprouting like weeds and a managed ecosystem perspective emerges. Implications of these emerging phenomena for knowledge management theory and practice are discussed.

Summary. In this research, the authors attempt to solve a paradoxical issue. They frame their research as an attempt to identify why technology companies struggle with knowledge management solutions, as they often succeed in adapting new technologies and processes at a higher rate than other industries. The authors developed a case study of a single organization and collected data through interviews over a six-month period. They developed three key explanations of the challenges that faced the organization. First, the environments of technologies companies are more complex and change more rapidly than those of other industries; the velocity at which information moved throughout the organization in the case study created challenges and limitations in capturing information. Second, external forms of information such as social media create challenges to the successful development of a KM program. The authors note that the "knowledge ecosystem" (p. 16) extends beyond the core company, and for a KM solution to be successful all inputs and outputs of information need to be included. Lastly, due to the increasingly complex information environment, the authors cite a need for a dedicated knowledge manager in order to ensure that employees adhere to all knowledge management processes. These findings raise implications about existing knowledge management solutions and how well they continue to meet the needs of the organizations for which they were developed, as well as the longevity of existing knowledge management programs. The authors conclude that these programs will need to adapt to the rapid pace at which information is changing and evolving.

This article adds value to this research as it highlights the fact that knowledge management, like information, is an ever evolving subject. As information and sources of knowledge change, KM solutions must adapt to ensure they capture the information and identify and integrate new sources of knowledge, both internal and external. The implementation of a successful knowledge management program will vary by organization based upon a variety of factors, including the velocities at which new information is created and information changes and the number and types of information sources. Organizations need to be mindful that the success of a KM solution may need to change and evolve along with the company in order to continue to create value.

Laycock, M. (2005). Collaborating to compete: Achieving effective knowledge sharing in organizations. *The Learning Organization: Knowledge Sharing*, *12*(6), 523–538. http://dx.doi.org/10.1108/09696470510626739

Abstract. This paper aims to present a practitioner overview of the challenges and growing strategic importance of knowledge and knowledge sharing in organizations, considering roles of learning, and in particular networks, together with collaboration in the development of sustainable competitive edge through knowledge, knowledge management and the activities of knowledge workers.

Summary. Laycock presents a literature review and case study focused on achieving KM across an organization and an analysis to answer the question of why, if KM is becoming so popular, do so many organizations struggle to implement successful programs? The author proposes a theory that most organizational challenges that arise are due to cultural limitations that exist within many organizations. Organizations need cultures that are conducive to knowledge sharing in order to implement successful KM programs.

Laycock also puts forward a potential solution focusing on intangible assets within an organization, such as human (tacit), customer, and structural capital, as focus areas for KM solutions. The author ends the article with a cautionary message; first, that KM is becoming a requirement within organizations in order to remain competitive against competitors and second, a warning about the amount of time it takes to evoke the level of change required for a successful knowledge management solution across an organization, often years. However, upon success, the author notes that KM solutions can create a true competitive advantage when properly maintained.

This article is useful for this specific research study because it highlights the importance of creating a culture shift within an organization as the main driver of success within knowledge management. Laycock also presents a successful argument of why KM programs are so critical for today's businesses, citing research that identifies knowledge and human capital as two of the main intangible assets of a company. He makes a solid case that with today's complicated business systems, knowledgeable resources are just as important as tangible resources, such as products sold. Once realized, human capital and knowledge within an organization can provide a competitive advantage by creating avenues for collaboration and knowledge sharing within an organization.

Yuan, Y. C., Zhao, X., Liao, Q., & Chi, C. (2013). The use of different information and communication technologies to support knowledge sharing in organizations: From e-mail to micro-blogging. *Journal of the American Society for Information Science & Technology, 64*(8), 1659–1670. http://dx.doi.org/10.1002/asi.22863

Abstract. Previous research has revealed the following three challenges for knowledge sharing: awareness of expertise distribution, motivation for sharing, and network ties. In

this case study, we examine how different generations of information and communication technologies (ICTs), ranging from e-mail to micro-blogging, can help address these challenges. Twenty-one interviews with employees from a multinational company revealed that although people think social media can better address these challenges than older tools, the full potential of social media for supporting knowledge sharing has yet to be achieved. When examining the interconnections among different ICTs, we found that employees′ choice of a combination of ICTs, as affected by their functional backgrounds, could create 'technological divides' among them and separate resources. This finding indicates that having more ICTs is not necessarily better. ICT integration, as well as support for easy navigation, is crucial for effective knowledge search and sharing. Adaptation to local culture is also needed to ensure worldwide participation in knowledge sharing.

Summary. This paper focuses on the use of tools in different knowledge management solutions. The authors analyze different tools used within KM to determine how they are most effective and how they are used most frequently. They conducted their research via intrapersonal interviews within a single multi-national organization. The authors identify several interesting findings from their research; the most noteworthy is that knowledge management tool use is a generational concept. For example, knowledge management may be more effective when conducted via email or instant message for an older demographic of workers, whereas social media provides a more pertinent toolset for younger staff. Additionally, the authors note how many KM tools have begun to transition or become hybrids of multiple technical solutions, such as the merging of instant messaging with email or newer concepts, such as wikis. Social media has many

positive implications for a knowledge management solution, such as more seamless tool integration and better aggregation of data. Ultimately, the authors conclude that those who will be the most successful in implementing and maintaining knowledge management solutions will continue to remove the artificial boundaries between people and the tools that exist today, creating a more seamless solution.

This article is relevant to this research because it highlights the ongoing and changing atmosphere of knowledge management, including changes that involve modifications to the technologies used and the approach human resources need to take when working with new technologies. The authors provide a look into the future of knowledge management and expected transitions with KM tools and processes. The authors predict that KM solutions in the near future will have better integration with more seamless IT solutions, finding that tools within social media were more effective than traditional databases when addressing knowledge sharing challenges. These types of integrations allow resources to create an issue and find the solution all from the same interface to promote more seamless interaction with associates, ultimately enabling knowledge management programs to remain competitive.

Resources Focused on Knowledge Management Solutions

Anklam, P., Cross, R., & Gulas, V. (2005). Expanding the field of vision. *The Learning Organization: Knowledge Sharing*, *12*(6), 539–551. http://dx.doi.org/10.1108/09696470510626748

Abstract. The purpose of this article is to describe the emerging business discipline of organizational network analysis and its potential as a tool to guide efforts in creating awareness of where knowledge exists in an organization and how this expertise can be

best tapped by an organization's workforce. Specific initiatives and activities that companies are using to promote the changes necessary to ensure that knowledge flows are discussed. When organizational network analysis is accompanied by management practices that encourage, support, and require connectivity, employees more naturally leverage the expertise of peers and counterparts, wherever they live.

Summary. The authors focus on a concept known as organization network analysis (ONA), which is a business-focused evolution of an older sociological analysis technique known as social network analysis (SNA). Social network analysis is defined as "the study of the relationships and roles between people, groups, and organizations" (p. 540). Organizational network analysis expands on SNA by also including technology and physical mediums as part of social networks. It accounts for information accessed outside of human repositories, such as databases or servers. The authors provide a framework for how to map an organization's information network, which consists of both human and non-human elements. By including technological elements in an information map, leaders gain a unique view into their organization and can effectively map how information is created, stored, and transitioned. By encouraging positive information flows, organizational leaders can further capitalize on information networks that are innate to their organization.

This article is useful for this specific research study because it provides context for how information culture is formed and developed across an organization. Organizational network analysis provides leaders with a tool to use to identify key human knowledge repositories within their organizations and allows them to identify what knowledge exists, how people access this information, how resources engage each other,

and the cost of these interactions. Practitioners looking to expand and capitalize on tacit knowledge within a company will need to understand and document these social and organizational networks in order to maximize their knowledge sharing programs.

Massingham, P. (2014). An evaluation of knowledge management tools: Part 1 – managing knowledge resources. *Journal of Knowledge Management*, *18*(6), 1075–1100. http://dx.doi.org/10.1108/JKM-11-2013-0449

Abstract. This paper aims to evaluate a range of best practice knowledge management (KM) ideas used to manage knowledge resources. In total, four KM toolkits and 16 KM tools were tested over a five-year period (2008-2013), as part of a large-scale longitudinal change project. Each tool was assessed against an evaluative framework designed to test criticisms of KM: strategy, implementation and performance. The results provide empirical evidence about which KM tools work and which do not and why, and outcomes for practitioners, researchers and consultants. The results provide empirical evidence that KM can be used to manage knowledge resources. The highest rating toolkit was knowledge strategy, followed by knowledge measurement. The most value was created by using KM to introduce objectivity into future thinking (future capability requirements) and decisions when filling competency gaps (sourcing). The results tended to support criticism that KM is difficult to implement and identified the main barriers as participation located at the operational action research level, i.e. how do we make this work? Evidence that KM works was found in progress towards learning organization capacity and in practical outcomes.

Summary. In his study, Massingham develops a comprehensive map of several business tools that can be leveraged when looking to implement, adapt, and develop knowledge

management. He reviews four specific knowledge management ‘toolkits’ and sixteen specific tools. The four toolkits he analyzes focus on knowledge (a) strategy, (b) creation, (c) retention, and (d) measurement. Massingham works to analyzes two criticisms regarding knowledge management, first that KM tools cannot be used to manage knowledge resources, and second that KM solutions are difficult to implement. He counters the first criticism and asserts that knowledge management tools can be used to manage knowledge resources. The highest rated toolkit he reviewed includes tools focused on managing knowledge strategy; specifically, tools focused on defining future capability, sourcing decisions (resource planning), and knowledge value. In these situations, value was added by allowing practitioners to create objective views of potential future business scenarios, which allows management to turn a specific situation into an archetype it can potentially leverage in the future.

Massingham also notes that the data he gathered coincides with the second criticism; he agrees with the criticism that knowledge management solutions are difficult to implement. Tools for knowledge creation were represented as the weakest of the toolkits reviewed, including tools such as cameras used for videotaping associates.

This research adds value to this annotated bibliography because it provides practitioners with actual tools they can use to implement, maintain, and expand knowledge management programs. Additionally, the article describes how a company can evaluate current KM tools and juxtapose the successes against Massingham’s research results, which may help to inform a company’s specific knowledge management direction for the future.

McIver, D., Lengnick-Hall, C. A., Lengnick-Hall, M. L., & Ramachandran, I. (2013). Understanding work and knowledge management from a knowledge in- practice perspective. *Academy of Management Review, 38*(4), 597–620. http://dx.doi.org/10.5465/amr.2011.0266

Abstract. We introduce a knowledge-in-practice framework for understanding the nature of work and use this framework to peer into the black box of knowledge management (KM) and to explore the relation between KM activities and performance. The knowledge- in-practice framework describes knowledge characteristics of work practices along two dimensions: tacitness and learnability. We propose that adopting KM activities that match the tacitness and learnability of organizational work settings will have a positive effect on desirable performance targets for each work environment. Our framework offers a new lens for defining work and work settings. We identify patterns of KM activity that are believed to be maximally effective within each work setting and offer an enhanced contingency-based explanation of the association among work settings, KM initiatives, and performance. These ideas challenge the belief that KM activities always contribute to better performance and that the greater the investment in KM the better.

Summary. In this research, the authors analyze several KM processes by monitoring the actual practice of work that occurs within an organization, a term they describe as *knowledge-in-practice*. Practices are enacted by actors within a business ecosystem and used to enact change or accomplish work. The study focuses on types of work that are considered either highly learnable, where training comes with relative ease, against work that requires varying amounts of a tacit knowledge and is learned through performing

tasks, something you cannot necessarily learn from a book or a seminar. The authors focus on practices in four knowledge management areas: (a) enacted information, defined as information that is highly learnable and has a low level of tacitness ("base skills"[p. 501]); (b) accumulated information, defined as information that is difficult to learn and also has a low level of tacitness ("10,000 hours of study" [p. 501]); (c) apprenticed information, defined as information that is highly learnable but also requires a high level of tacitness ("practice makes perfect" [p.501]); and (d) talent and intuitive information, defined as information that is highly tacit and has a low level of learnability ("artistry" [p. 501]). Additionally, each of these four types of information is paired with the personal nature of the information (tacitness), as well as learnability.

The authors are able to determine which types of information are the most successful within a KM solution. For example, enacted information, which is information that is not personal and highly learnable, does not lend itself well to knowledge management solutions as there are more common business processes that allow this information to be quickly transferred. However, if an issue arises that is out of the normal operations of an enacted process, employees will struggle to adapt, and knowledge management becomes more valuable. This mapping allows practitioners to focus their KM programs on specific types of information within an organization.

This research adds value to this paper because it helps to identify the areas where knowledge management will add the most value to an organization. In order for a KM program to be successful, practitioners need to have a solid understanding of the types of information that exist within their organizations. The study also provides readers with feedback on which types of information best interact with knowledge management

programs. This allows management to target key focus areas within an organization to ensure that investments made into knowledge management are made as efficiently as possible. Leaders can look at their organizational dispositions and target KM to a specific area of the business, in order to gain the most advantage.

O'Dell, C., & Hubert, C. (2011). *New edge in knowledge : How knowledge management is changing the way we do business.* Chichester, England: Wiley. Retrieved from http://www.eblib.com

Abstract. The best thinking and actions in the fast-moving arena of collaboration and knowledge management. *The New Edge in Knowledge* captures the most practical and innovative practices to ensure organizations have the knowledge they need in the future and, more importantly, the ability to connect the dots and use knowledge to succeed today.

- Build or retrofit your organization for new ways of working and collaboration by using knowledge management.
- Adapt to today's most popular ways to collaborate such as social networking.
- Overcome organization silos, knowledge hoarding and "not invented here" resistance.
- Take advantage of emerging technologies and mobile devices to build networks and share knowledge.
- Identify what can be learned from Facebook, Twitter, Google and Amazon to make firms and people smarter, stronger and faster.
- Straightforward and easy-to-follow, this is the resource you'll turn to again and again to get-and stay-in the know. Plus, the book is filled with real-world examples – the

case studies and snapshots of how best practice companies are achieving success with knowledge management.

Summary. This book, very much a sequel to her previous work *If We Only Knew What We Know***,** O'Dell and her new writing partner Cindy Hubert attempt to update, refine, and focus knowledge management principles that were outlined in the previous text. This text extends the advice from the 1st book, now mandating a form of KM to be implemented for any organization that seeks to drive long-term success. It includes elements on the increasingly digitized lives of both organizations and employees, and how to tap into areas such as social media as a knowledge management tool. Other focuses include governance of KM systems and best practices that should be implemented. Like the previous text by O'Dell, the authors cover multiple knowledge management topics within the book. Case studies provide specific information for those looking for real-world examples and the book, overall, provides a holistic view of KM, why it is becoming a requirement for organizations, and solutions to ensure the best knowledge management processes are implemented.

This book is useful for this specific research study because it provides a wide background on knowledge management solutions. It further extends many of the topics covered in O'Dell's first book *If We Only Knew What We Know*, and expands knowledge management into newer technology areas such as social media and other web 2.0 concepts. The authors include sections on how to effectively manage change as well as risk when developing KM solutions. As with O'Dell's first title, much of the strength of the book comes from her extensive use of case studies, which work to further her points as well as provide real-world examples of challenges and successes within knowledge

management implementations. It is an excellent repository of information that provides a solid baseline for those looking for a more practical view into knowledge management solutions.

Smith, P. (2005). Knowledge sharing and strategic capital: The importance and identification of opinion leaders. *The Learning Organization: Knowledge Sharing*, *12*(6), 563–574. http://dx.doi.org/10.1108/09696470510626766

Abstract. This article seeks to propose that the success of an organization's knowledge-sharing strategy and the magnitude of its strategic capital are critically dependent on its having the capability to visualize relationship-networks among its employees, and means to identify and leverage, as appropriate, patterns of positive or negative influence. There seems no evidence in the literature that programs can be mounted to deliberately develop opinion leaders by helping them acquire such meta-capabilities or assume archetypical characteristics.

Summary. This article seeks to find literature focused on the value of opinion leaders within an organization and their impact on knowledge sharing programs. The author notes the scarcity of literature in this area, but argues that trusted opinion leaders are key early adopters that will heavily influence the adoption rate of large culture-changing programs that can be imbedded into KM solutions. Having opinion leaders buy into a solution early can positively influence the organization and its ability to create a culture shift to create a valuable KM solution. Smith breaks down critical information opinion leaders into specific archetypes, to outline the specific way they add value to a network. For example, an individual that links many people together is known as a *central connector*, while an individual that provides information by linking people together

indirectly is known as an *information broker*. These resources help to extend an idea or practice, such as knowledge management, and influence change throughout an organization. This article is useful for this specific research study because it highlights the value of individual contributors to an organization looking to enact change. Early adoption is key when rolling out a new process or solution, and knowledge management programs, often faced with cultural change, need actors acting in favor of the change in order to expedite the process and ensure the success of the programs. Knowing who these resources are within an organization can help to expedite change as efficiently as possible.

Snowden, D. (2005). From atomism to networks in social systems. *The Learning Organization: Knowledge Sharing*, *12*(6), 552–563. http://dx.doi.org/10.1108/09696470510626757

Abstract. The purpose of this article is to focus on the role of networks in organizations as a critical aspect of knowledge management and learning processes. By making the shifts identified above, a solid and tool-rich body of research is used as a base on which to build, but in effect the focus is on using the network intelligence rather than assemblies of atomistic individual intelligences: the whole is greater than the sum of the parts, but only if one understands it as a whole.

Summary. In this article, Snowden attempts to outline the use of two techniques, social network analysis (SNA) and social network stimulation (SNS) for analyzing an organization's social systems to help target potential problems within KM implementations. Social network analysis, a method of information analysis that utilizes some form of human observation, either through data mining or interviews, helps to define social networks and then create abstractions which allow leaders to identify key

resources, processes, and groups related to social networks and help to map how information transitions throughout an organization. Social network analysis is a technique that builds on SNA, but attempts to create new social networks by leveraging key information stakeholders (typically defined though an SNA exercise) and creating scenarios for stakeholders to work on a specialized issue to the organization, such as problems that cross departmental boundaries. These processes can help to create new social networks, which might be able to solve more complex issues. Both of these techniques can be leveraged to help organizations, and knowledge managers, to discover, monitor, and leverage the information that exists, but may not be apparent, within an organization.

This article is useful for this specific research study because it recommends exercises practitioners can perform to help them identify the social networks within their own organizations. As members of an organization develop an understanding of their social structure, they can begin to leverage those systems when looking to implement a knowledge management solution. Snowden argues that organizations need to evolve their traditional methods of knowledge aggregations, typically localized as communities focused on a particular function. Social network analysis and SNS provide new mechanisms for organizations to analyze and break down their social networks and potentially reorganize them into higher functioning entities. This approach is often used as a primary analysis of knowledge management and can allow organizations to create new efficiencies by allowing a new viewpoint to exist within an organization.

Venkitachalam, K., & Willmott, H. (2015). Factors shaping organizational dynamics in strategic knowledge management. *Knowledge Management Research & Practice*, *13*(3), 344–359. http://dx.doi.org/10.1057/kmrp.2013.54

Abstract. Knowledge as a valuable asset of organizations is increasingly incorporated into thinking about strategy. Studies of knowledge management (KM) suggest that executives engaged in decision making often have a slender understanding of the strategic significance of knowledge. When addressing the challenge of explicating and designing a knowledge strategy, logics of codification and personalization have been differentiated and commended. The paper draws upon evidence from four case studies to identify factors that shape the evolving contexts of knowledge strategies. It is in these contexts that the challenge of continuously reviewing and revising the mix of codifying and personalizing aspects of strategic KM is practically accomplished. The cases are analyzed with reference to external competition, leadership, organizational politics, culture and technology as a basis for advancing a more dynamic framework for the analysis of knowledge strategies.

Summary. In this paper, the authors attempt to map out the organizational dynamics that can influence knowledge strategies across an organization. They include the use of four case studies of organizations in different fields to help develop their results; the different focuses of the organizations meant they had different and specific needs and requirements for a KM solution. These contextual factors will influence how an organization implements a knowledge management solution and will also drive the benefits they seek from a KM implementation. The author identifies the following four drivers of knowledge management solutions: (a) competition, (b) leadership, (c) politics and

culture, and (d) technology. These elements become critical factors in deciding what an organization needs to garner from their knowledge management solution. For example organization A, working in the education field, has a strong driver of using knowledge management to influence culture, but a low demand to leverage KM against the competition, which will allow them to tailor their specific knowledge management program to their needs to focusing KM towards culture, not competition. Practitioners will need to understand these values and drivers for their specific organization in order to ensure that their KM solution is providing the right type of value to the organization.

This paper is important to this research because it provides factors of which leadership will need to be mindful when looking to implement a knowledge management solution. Organizations need to identify what internal factors are driving the need for a knowledge management solution. Is there a need to be able to better compete with rivals? Does the organization need better leadership, or better technology? These are important elements that will factor into a KM solution and work to mold the solution as it is developed across an organization. Organizations that fail to identify these drivers may run into problems in the future as they may not fully understand the needs of KM solutions that were implemented, resulting in issues such as *strategy blindness* (Arvidsson et al., 2014) By identifying the specific areas in which a company wants to focus their knowledge, practitioners can quickly hone in on the most constructive areas on which to focus KM within the business.

Conclusion

This annotated bibliography was designed to present readers with a comprehensive view of knowledge management and resources focused on related topics. Throughout the research process, the author discovered that many elements of a knowledge management solution will be unique to each organization and the needs of the organization. These factors might be influenced by why an organization needs to implement knowledge management, such as the need to compete or provide leadership (Venkatachalam & Willmott, 2015). Additionally, knowledge management solutions may need to be tailored to the types of knowledge that must be managed across an organization, such as knowledge that is highly tacit, is dependent upon experience, or is highly learnable and implemented through training (McIver et al., 2013). For example, a call center will have a separate set of requirements than an accounting firm.

Throughout the research process the author discovered that there are not many specific lists that practitioners can find to help identify the best practices that will help to create a positive knowledge management program. A high quality, accurate list simply cannot be produced from recent research on the subject for application to every organization, possibly due to the custom nature of knowledge management solutions. Some of the literature included in this annotated bibliography does attempt to provide a comprehensive view of knowledge management, such as the works by O'Dell and Hubert (2011) and O'Dell and Grayson, Jr. (2012). However, when comparing these works to other resources found in academic journals, the author of this annotated bibliography discovered that the larger the topics within knowledge management, the more the authors on the subject are forced to typify information and therefore rather than focusing on specific knowledge management elements. Resources were determined to be either broad in nature, often providing an overview of several knowledge management topics, or they

were very specific in nature, focusing on a single specific element of knowledge management. O'Dell and Grayson Jr. (2012) offer an excellent resource that takes a brief look at many aspects of knowledge management, but fails to offer some of the detail and specific recommendations that other articles from academic journals provide.

The resources in this study are divided into three categories, all designed to provide readers with a holistic view of knowledge management, focused on establishing best practices for an organization to follow. These categories are defined as (a) knowledge management history, (b) knowledge management challenges, and (c) knowledge management solutions.

The resources focused on knowledge management background provide readers with foundational concepts of knowledge management, the benefits organizations can realize with it, and reasons why organizations should utilize knowledge management. A common theme that authors in this section present is that organizations need to be prepared to investigate and examine their current knowledge resources in order to develop solid foundations on which to build knowledge management solutions. Organizations must educate employees on impending changes related to the implementation of knowledge management practices and the basic practices and principles of knowledge management in order to ensure that the employee culture changes appropriately. Failure to provide this education can lead to additional challenges that might cause knowledge management initiatives to fail (Laycock, 2005). O'Dell and Grayson Jr. (2012) provide an excellent background source for any person looking to get a broad understanding of knowledge management, risks, and benefits. The authors recommend that organizations develop value propositions when implementing knowledge management programs in order to focus on areas they would like to improve and where knowledge management can improve performance. O'Dell and Grayson Jr. (2012) also provide recommendations for process

implementations, including ways to create culture shift such as creating a collective sense of purpose and collaborative relationships, as well as IT recommendations such as collaborative software to encourage knowledge management. Finally, O'Dell and Grayson Jr. (2012) recommend that those charged with implementing knowledge management programs work with executive leadership in order to ensure that the value proposition is being properly executed and that all layers of management are satisfied.

Smith (2005) provides specific focus on identifying knowledge resources and opinion leaders and makes a strong case for the need to create cultural change in order to create a lasting knowledge management program. Choo et al. (2008) echo Smith's recommendations; when analyzing the results of interviews they conducted with 650 people across three different organizations (a law firm, an engineering company, and a public health agency), their results indicate a positive correlation between organizational values and employee culture. Laycock (2005) determined through his research that organizational challenges in implementing knowledge management programs arise due to cultural limitations that exist within the organizations, and explains that organizations need cultures that are conducive to knowledge sharing in order to implement successful knowledge management programs. Burkhard et al. (2011) provide research findings that indicate that all industries suffer from knowledge management challenges, and even those that specialize in technology and other fast moving enterprises are not immune from the culture changes required in order to be successful with knowledge management.

Multiple resources examined as part of this literary review support the premise that the only way to successfully implement knowledge management is to ensure that a widespread cultural change is created within the organization (Laycock, 2005; O'Dell & Grayson Jr., 2012;

Smith, 2005; Venkitachalam & Willmott, 2013). The background provided by these resources helps practitioners to understand the requirements of implementing and maintaining a knowledge management system. A company must have an organizational culture that is conducive to knowledge management practices, such as organizational transparency and knowledge sharing (Yuan et al. 2013), as well as sufficient buy-in from associates throughout the organization, including early adopters (Smith, 2005), in order to ensure a successful knowledge management implementation. Knowledge management solutions will not work as top-down approaches and need to be coordinated and implemented using a bottom-up and employee driven approach (Laycock, 2005).

Yuan et al. (2013) provide a review of knowledge management tools and perform a generational analysis of their use across one company's human resources department. They conclude that practitioners need to consider the specific tools they need to implement when managing knowledge management programs and how they can expect tools to be utilized by employees of different ages; employees who are older may prefer tools that are more traditional, such as email and databases, while younger employees may yield better performance with more complex tools, such as social media platforms which can integrate several tools into a single interface. Tools that have the ability to offer multiple services on an integrated platform may yield improved knowledge sharing due to improved ease-of-use (Yuan et al. 2013). Yuan et al. (2013) provide research focused on technology use within knowledge management across organizations and note that social media platforms are becoming more commonly used to improve knowledge management systems by offering better integration of processes and less artificial working environments than more traditional database driven solutions.

A final challenge that organizations may face when attempting to implement and maintain successful knowledge management programs is strategy blindness. Strategy blindness is a term coined by Arvidsson et al. (2014) to describe the situation when an organization attempts to implement knowledge management solutions without necessarily knowing exactly why (2014).

These challenges can have a broad impact on organizations, from the obvious, such as sunk costs, to the more abstract, such as lost or inefficiently managed resources, and these impacts may cause organizations to question if knowledge management is even worth the effort. Massingham and Massingham (2013) seek to answer that question through their research, and conclude that knowledge management programs require significant time and cost investments in order to be effective. While many programs are effective at cutting costs and improving performance, an organization needs to have a complete view of their organizational makeup, including human knowledge and business processes, in order to fully capitalize on knowledge management. Venkatachalam and Willmott (2015) echo this recommendation when drawing conclusions from their research, which helps practitioners identify the key drivers for a knowledge management program, such as competition, training, and the need to create a culture shift. Ultimately, the research gathered for this annotated bibliography indicates that an organization should expect to perform introspection when looking to develop knowledge management; programs are costly and may not provide the solutions desired without an organization first having a comprehensive view of their needs, drivers, and the goals they wish to accomplish within a knowledge management solution (Laycock, 2005). However, once those factors are established, there are many solutions available, which can allow an organization to become more efficient and competitive (Laycock, 2005).

There are many potential paths to success when implementing knowledge management. One of the primary factors is ensuring that an organization has conducted a thorough investigation of their needs and the goals they wish to achieve by implementing knowledge management (Laycock, 2005; O'Dell & Hubert, 2011). Massingham (2014) and McIver et al. (2013) focus on tools and processes that can be leveraged when attempting to identify where knowledge management will work best within an organization. Tools such as competency mapping allow for an organization to develop an index of associated competency levels, which is helpful because it allows an organization to understand where tacit knowledge resides within their human resources (Massingham, 2014). Additionally, knowledge valuation can be used to identify the most knowledgeable resources within an organization (Massingham, 2014), which allows these resources to be targeted and further integrated into knowledge management processes.

As noted earlier, practitioners need to look at the cultural elements of an organization in order to create success within knowledge management. Authors such as Smith (2005), Snowden (2005), O'Dell and Hubert (2011), and Anklam et al. (2005) identify culture change as a primary driver for knowledge management success and present several solutions focused on how to create culture change. For example, Smith's (2005) research cites the specific need to gather early adopters to help to roll out changes and start a cultural shift when attempting to implement knowledge management. Anklam et al. (2005) work to further this information by providing one solution, organizational network analysis, which helps create objective viewpoints when analyzing organizational structures. This process allows an organization to develop an understanding of where knowledge exists and how accessible it is, which is important when building knowledge management processes. By understanding these key resources an

organization can avoid some of the major challenges that impact organizations when creating knowledge management solutions.

Ultimately, the research represented in this annotated bibliography does not identify any guaranteed processes that practitioners can follow that guarantee success in implementing and maintaining knowledge management systems and processes, and research further indicates there are no simple or automatic solutions when attempting to develop knowledge management programs. On the contrary, the research in this paper identifies that simple knowledge management strategies that fail to drive internal cultural and systemic change across an organization are doomed to failure. The measures of success within knowledge management development are centered on creating a shift in the culture of an organization, which is accomplished by performing a full investigation into the processes and tacit knowledge that are central to an organization. Knowledge management programs will have the most success when those who are charged with this success consider that people are the primary drivers and supporters of information. By understanding an organization's knowledge repositories, and then capitalizing on these resources, an organization over time will create a successful knowledge management solution, which will serve to help the organization accomplish its goals and improve processes and productivity throughout the entire organization.

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