

Impact of Culture on Knowledge Management: A Meta-Analysis and Framework

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Abstract:

Culture, both national and organizational, can have profound impacts on knowledge management. Yet the literature on exactly how culture impacts knowledge management is complex with no clear generalizable results. A meta-analysis was conducted on 52 articles from ten IS journals for the years 2000–2010 combining both quantitative and qualitative studies in a unique methodological approach. Key findings include a marked shift away from normative language towards more interpretive and critical discourse emphasizing the power issues inherent in the cultural context of knowledge management. Trust and openness are key organizational cultural dimensions that impact knowledge management processes, but these traits are achieved through effective business leadership, rather than a particular technological artifact. The most striking generalizable finding from the cross-case analysis is that organizational culture can overcome or mitigate differences in national culture. An overall framework is provided to illustrate the findings and to serve as an important guidepost for future research.

Keywords: Knowledge management | National culture | Organizational culture | Meta-analysis

Article:

INTRODUCTION

Knowledge Management (KM) has been an important area of Information Systems (IS) research for over twenty years (Alavi & Leidner, 1999; Leidner, 2010). Similarly, culture studies for over twenty years have reinforced the idea that culture can relate to IS in significant ways (Leidner & Kayworth, 2006; Kappos & Rivard, 2008). Despite this fact, the specific types of cultural values that affect the different types of knowledge management processes are still not clearly defined (Alavi, Kayworth, & Leidner, 2005/2006). A Knowledge Management System (KMS) is a

system designed to create, store and retrieve, transfer, and apply knowledge within an organization. Researchers have found "mixed findings" on the success of KMSs, in part by not considering all the factors of cultural context (Butler & Murphy, 2007). Understanding the cultural context is fundamental to understanding Knowledge Management (KM) because culture is a principle antecedent that impacts KM processes (Nemati, 2002). If effectively managing knowledge within a global firm can provide competitive advantage (Grant, 1996; Choo, 1998; Prieto & Easterby-Smith, 2006), then understanding culture's impact on KM processes is more important than ever.

Datta (2007) makes a call for more research into what specific aspects of organizational culture affect KM processes. This paper seeks to answer that call by consolidating the different studies on culture's impact on KMS in a meta-analysis of IS literature from 2000 to 2010. Cultural values that impact IS are primarily at the national and the organizational levels of analysis (Gallivan & Srite, 2005) and this meta-analysis includes both levels. A meta-analysis is an appropriate methodology when there are inconsistencies or multiple answers to a particular research question (Rosenthal & DiMatteo, 2001).

The intent of this meta-analysis is to provide an effective snapshot of the landscape of IS literature in this heterogeneous area of IS research. Kawalek & Hart (2007) evaluated the literature on KM and concluded that the theoretical literature was too ambiguous and KM initiatives were too inconsistent in practice. Meta-analysis has become an accepted way of synthesizing a large body of work into something more manageable in the field of IS research (Hwang, 1996) and has been used in different areas of research including Global IT (Palvia, Palvia, & Whitworth, 2002), Group Support Systems (Dennis, Wixom & Vandenberg, 2001; Dennis & Wixom, 2002) and particularly in Technology Acceptance (Wu & Lederer, 2009; Schepers & Wetzels, 2007; King & He, 2006). A broader view of research that shows the emerging "landscape" can sometimes be of greater value than the individual results (Rosenthal & DiMatteo, 2001), allowing researchers to see the forest rather than just the trees. Meta-analysis is appropriate when there are disparate or conflicting results. This is especially appropriate for both the fields of culture studies and knowledge management studies where there are no uniform indicators for *how* culture affects KM processes.

The main contribution of this study is a better understanding of this complex area by distilling disparate ideas from the meta-analysis articles down to their common relationships in an overall framework. While most meta-analyses focus solely on summarizing quantitative research, many of the studies on culture and KM are qualitative case studies. A more complete meta-analysis can overcome the problem of generalizability from a single case study by examining multiple cases using a case survey method (Yin & Heald, 1975) or cross-case analysis (Yin, 2003). The cross-case meta-analysis method is rarely seen in IS research, while the traditional quantitative method is seen more regularly (Hwang, 1996). Combining both quantitative *and* qualitative meta-analysis methods in the examination of a topic of IS research is even more rare. The advantage of this approach is that it eliminates the need to exclude relevant empirical articles simply based on

their methodology, and increases the overall generalizability of the results. The unique methodological approach coupled with the resulting integrative framework is the important contribution of this study.

Our research questions based on a thorough literature review of culture's impact on knowledge management processes over the last ten years of IS research include: 1) How has knowledge discourse changed in the last ten years of IS research? 2) Which KM processes have received the most attention in the last ten years of IS research? 3) What value dimensions of national and organizational culture have been addressed in KM studies in the last ten years of IS research? 4) Which value dimensions have the largest impact on knowledge management processes? 5) What is the relationship between the different value dimensions of both national and organizational culture on knowledge management processes? The following sections will provide a brief literature review on KM and culture, describe the meta-analysis methodology, report the results of the meta-analysis, and then discuss the findings within the proposed framework of culture's impact on KM processes.

LITERATURE REVIEW

Knowledge

Knowledge has been defined in the IS literature as "a justified personal belief that increases an individual's capacity to take effective action" (Alavi & Leidner, 1999, p. 5). Nonaka (1994) emphasizes that while information is a flow of messages, knowledge is both created from and shaped by that flow of information which leads the human holder of those beliefs to action. An important distinction is made between tacit and explicit knowledge where explicit knowledge is articulated and easily codified whereas tacit knowledge is the internal context-specific mental model and know-how that is harder to codify (Nonaka, 1994). One is not more important than the other, but rather both types are necessary as mutually reinforcing (Rai, 2011; Alavi & Leidner, 2001). Hassell (2007) observes that the difference is not that tacit knowledge is "in your head" and explicit knowledge is recorded externally because both are internal. "Implicit knowledge is that to which one cannot give ready voice" (Hassell, 2007, p. 189).

A view of knowledge that is especially useful in examining IS research on knowledge is the four different types of knowledge discourse identified in Schultze & Leidner (2002), namely, 1) normative, 2) interpretive, 3) critical, and 4) dialogic. Normative discourse is closely associated with studying the cause and effect of technology solutions, interpretive discourse is appropriate for understanding broad organizational implications, critical discourse lends itself to examining political struggles over power, and dialogic discourse highlights the complexities of any social reality and the lack of shared meanings (Schultze & Leidner, 2002). The normative discourse by far was the most popular in the literature from 1990 to 2000 while the dialogic and critical discourses were seldom used (Schultze & Leidner, 2002). Each type of discourse is associated with a different metaphor for knowledge: knowledge as object, asset, mind, commodity, or

discipline (Schultze & Leidner, 2002). Knowledge as an object exists outside of an individual and can be stored externally. Knowledge as an asset represents expertise within an organization. Both object and asset metaphors relate to normative discourse. Knowledge as mind represents the collective organizational mind in practice and is linked with interpretive discourse. Knowledge as commodity represents a resource that is neutral on the surface but has deeper implications for power relationships and is related to critical discourse. Finally, knowledge as discipline refers to the management and control of knowledge with a negative connotation of management's desire to control employee thinking within an organization and relates to dialogic discourse. The present study will use this discourse and metaphor coding scheme to see how the IS literature has evolved since 2000. This leads to the first research question: *How has knowledge discourse changed in the last ten years of IS research?*

There are important practical reasons for understanding knowledge and K.M better. The knowledge-based theory of the firm indicates that successful knowledge capture and integration can lead to sustained competitive advantage for a firm (Grant, 1996). Knowledge can act as a dynamic capability for competitive advantage particularly when it is transmitted via social interaction (Prieto & Easterby-Smith, 2006). Some of the practical benefits of effective knowledge management include global competitiveness, profitability, organizational efficiency and effectiveness (Rai, 2011; Alavi & Leidner, 1999).

Knowledge Management Processes

Knowledge Management (KM) is "a systemic and organizationally specified process for acquiring, organizing and communicating both tacit and explicit knowledge of employees so that other employees may make use of it to be more effective and productive in their work" (Alavi & Leidner, 1999, p. 6). Gartner Group describes knowledge management as a "discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets" including "uncaptured expertise and experience in individual workers" (Srikantaiah & Koenig, 2000). KM is typically seen as a set of four processes: 1) creating knowledge, 2) storing/retrieving knowledge, 3) transferring knowledge, and 4) applying knowledge (Datta, 2007; Alavi & Leidner, 2001). KMSs are, by extension, "IT-based systems developed to support and enhance the organizational process of knowledge creation, storage/retrieval, transfer, and application" (Alavi & Leidner, 2001). This leads to the second research question: *Which KM processes have received the most attention in the last ten years of IS research?*

While software agents may be able to handle complex scanning and collection of raw information, human agents are required to interpret that information into actual knowledge (Datta, 2007; Butler & Murphy, 2007). These human agents are key players in each of the four processes of knowledge management (Datta, 2007). If knowledge exists inside people and not just inside a computer system, then attempts to capture real knowledge may be doomed to failure

unless the overall process addresses the human context (Hassell, 2007). Thus, understanding the cultural context of human interaction is fundamental to understanding KM.

Culture and KM Processes

There are two broad streams of cultural research within IS literature, national and organizational (Leidner, 2010; Gallivan & Srite, 2005). While there are several frameworks for examining national cultural values (House et al., 2004; Hooker, 2003; Trompenaars, 1997; Hall, 1986), Hofstede (1980) has gained the most popularity as an overall model in IS literature (Leidner and Kayworth, 2006). Hofstede conceptualized national culture as "the collective programming of the mind which distinguishes the members of one group or category of people from another" (Hofstede, 1980). His dimensions of national culture were 1) Power distance, 2) Uncertainty avoidance, 3) Individualism, 4) Masculinity (Hofstede, 1980) and 5) Long-term orientation (Hofstede & Bond, 1988). Power Distance is the extent to which less powerful members of society accept that power is distributed unequally. Uncertainty Avoidance is the extent to which people feel threatened by ambiguous or unknown situations. Individualism refers to societies where ties between individuals are loose versus collectivist societies that emphasize strong, cohesive in-groups. Masculinity refers to societies where there are stronger and distinct gender roles, i.e., men are expected to be assertive, tough, and focused on material success, whereas women are expected to be more modest, tender, and concerned with the quality of life. Long-term orientation refers to societies that promote the value of future rewards due to perseverance. National cultural differences can lead to different knowledge management practices (Al-Alawi, Al-Marzooqi, & Mohammed, 2007).

Organizational culture, on the other hand, is "the dominant pattern of basic assumptions, perceptions, thoughts, feelings, and attitudes held by members of an organization" (Schein, 1990). One of the biggest challenges to effective knowledge management is organizational culture (Alavi et al., 2005/2006; Gold, Malhotra, & Segars, 2001). Hassell (2007) asserts that "real knowledge management is not possible without true community" (p. 193). Community means shared values, shared purpose, shared rewards and motivations (Hassell, 2007). The formation of a collaborative community with shared cultural values plays a vital role in KM efforts (Leidner, Alavi, & Kayworth, 2006). While values can be difficult to articulate, they represent the deepest level of culture and are manifested in knowledge management behaviors (De Long & Fahey, 2000).

The typology of values that affect KM processes is complex and includes beliefs about openness, supportiveness, trust, collaboration, power, ownership, learning, freedom, sharing and more (Alavi et al., 2005/2006). Trust and rapport are important social ties that facilitate knowledge sharing and successful collaboration in an organization (Kotlarsky & Oshri, 2005; Ling, San, & Hock, 2009). The role of trust itself is heavily contingent on context (Jarvenpaa, Shaw & Staples, 2004) and trust is an element of organizational culture (Ling, San, & Hock, 2009). Knowledge sharing practices can be affected by normative influence as well as extrinsic and intrinsic

motivation (Marett & Joshi, 2009). Constructive (versus defensive) organizational cultures can lead to positive outcomes for KM processes (Balthazard & Cooke, 2004). Leadership behaviors within an organization also affect knowledge management processes (Nguyen & Mohamed, 2011). At this point, it is difficult to see which specific cultural values may be most important to examine for effective knowledge management. Alavi et al. (2005/2006) explore three organizational values (expertise, formalization, and innovativeness) and two national values (collaboration and autonomy) and how cultural values lead to different KMS use and outcomes. However, because these were found within one case study, these five values may not be generalizable to other organizations. Alavi & Leidner (2001) and Datta (2007) have both made calls for more research into what specific dimensions of culture affect KM processes. These calls lead to the third and fourth research questions: *What value dimensions of national and organizational culture have been addressed in KM studies in the last ten years of IS research?* And 4) *which value dimensions have the largest impact on knowledge management processes?*

Researchers have found "mixed findings" on the success of KMSs in part by not considering all the factors of organizational context (Butler & Murphy, 2007). Kawalek & Hart (2007) evaluated the literature on KM and concluded that the theoretical literature was too ambiguous and KM initiatives were too inconsistent in practice. These mixed findings include different models with differing relationships, for example: culture impacts behaviors which affect KM processes of creation, sharing, and use (De Long & Fahey, 2000); business leadership directly affects KM practices but is moderated by organizational cultural factors (Nguyen & Mohamed, 2011); organizational culture and knowledge processes directly impact each other bidirectionally (Ajmal & Helo, 2010). Finally, integrative frameworks of culture and knowledge management outcomes such as Gray & Densten (2005) and Rai (2011) focus on organizational culture alone without incorporating national culture. The final research question is: 5) *What is the relationship between the different value dimensions of both national and organizational culture on knowledge management processes?* The resulting framework provided by the meta-analysis will be an important contribution to ongoing research on culture's impact on KM processes.

METHODOLOGY

The methodology for this meta-analysis is a systematic selection of articles that fit the research questions. The term "meta-analysis" was first coined in Glass (1976) in the field of psychology as simply an "analysis of analyses." Rosenthal and DiMatteo (2001) elaborate that "the quantitative procedures of meta-analysis help to address some of the challenges introduced by the existence of multiple answers to a given research question." (p. 61) In order to reduce ambiguity and inconsistency, a metaanalysis is typically pursued as a quantitative analysis, comparing effect sizes (r values) across many studies to aggregate the statistical significance of findings (Hwang, 1996). When the same constructs are measured across multiple studies, their mean effect size can be calculated from the individual effect sizes across studies (Hwang, 1996), such as Perceived Usefulness or Intention to Use (King & He, 2006). This works very well for

quantitative studies that measure the same constructs, but necessarily excludes qualitative studies.

It is possible for a meta-analysis to address qualitative case studies by conducting a cross-case synthesis (Yin, 2003). Cross-case analysis of multiple cases in IS research allows for extension of theory and more general research results (Benbasat et al., 1987). Cross-case syntheses can be performed on individual case studies conducted as prior independent research studies from different authors in order to aggregate the qualitative findings (Yin, 2003). This "case survey method" addresses the analysis of qualitative evidence with rigor (Yin & Heald, 1975) by presenting case information in a uniform way such that an overall pattern may be examined (Yin, 2003). Rigor is also obtained through the coding of each article into discrete data points (through close-ended questions) where the amount of inter-rater agreement is the measure of reliability (Yin & Heald, 1975). The new synthesis of material is achieved by presenting the individual case data in tabular format and examining the overall patterns for comparisons, possible typologies, and interpretations (Yin, 2003). This allows for the capture of rich, qualitative information important for theory-building, while simultaneously overcoming the shortcoming of low generalizability of case research (Yin & Heald, 1975). This process is also referred to as creating a "metaanalytic schedule" where the rows are case studies and the columns are variable-related findings and study attributes (Garson, 2002).

The cross-case meta-analysis method is rarely seen in IS research, while the traditional quantitative method is seen more regularly (Hwang, 1996). Combining both quantitative *and* qualitative meta-analysis methods in the examination of a topic of IS research is even more rare. The advantage of this approach is that it eliminates the need to exclude relevant empirical articles simply based on their methodology, and increases overall generalizability of the results. The combined approach also takes advantage of the fact that most studies on culture and knowledge management are qualitative case studies which do not have formal effect sizes.

The target pool of articles included ten journals: 1) *European Journal of Information Systems*, 2) *Information Systems Journal*, 3) *Information Systems Research*, 4) *Journal of AIS*, 5) *Journal of MIS*, 6) *MIS Quarterly*, 7) *Journal of Strategic Information Systems*, 8) *Journal of Information Technology*, 9) *Journal of Global Information Management*, and 10) *Journal of Global Information Technology Management*. The justification for using these journals is that the first eight comprise the Senior Scholars' Basket of Journals for the Association for Information Systems (AIS) as well as the top journals for global IS studies. By restricting ourselves to IS journals, we ensure that we are capturing an IT artifact and not simply a generic business process.

The time period of IS articles covers the years 2000 through 2010. Many meta-analyses tend to cover a ten-year period (for example, Kohli & Devaraj, 2003; Palvia, Jacks, Schilhavy, & Wang, 2009), but more importantly this time period picks up where Schultze & Leidner's (2002) review of KMS research left off that covered the years 1990 through 2000. Their review used the

following journals: *Accounting, Management and Information Technologies, European Journal of Information Systems, Information Systems Research, Journal of Management Information Systems, Journal of Strategic Information Systems, and MIS Quarterly*. There is enough overlap in journal titles for effective comparison. Using Schultze & Leidner's (2002) coding schema for knowledge metaphors and types of knowledge discourse not only builds on the cumulative tradition of IS research, but offers a useful comparison between the periods of 1990-2000 and 2000-2010.

The initial round of article selection had a low agreement rate (at 0.70 between the two coding authors) due to ambiguity of both independent and dependent variable names used in the literature. After refining the selection criteria (presented below), inter-rater reliability rose above the desired 0.90 threshold. Discussion between the authors quickly led to complete agreement on all articles selected for analysis. Several iterative rounds of selection are typical in meta-analysis research in order to achieve high inter-rater reliability (Wolf, 1986). The additional step of reading all the abstracts of all the journals helped to eliminate errors of exclusion whereas group discussion about the articles selected helped eliminate errors of inclusion. The complete list of articles selected for analysis is provided in Appendix A.

The authors met many times to compare candidate articles until all were satisfied that the selection criteria were being interpreted consistently. The initial search resulted in 68 articles. Sixteen of these were ultimately excluded after review between the authors since the selected article did not meet the strict selection criteria. The resulting 52 articles provided the basis for this meta-analysis. The selection criteria covered three main points: First, culture had to be an independent variable in the study. Culture was interpreted fairly broadly. For example, included articles examined aspects of national culture, organizational culture, or both. Sometimes the word "culture" was not used explicitly in the study, but rather "orientation", "values", "norms", "differences", "beliefs", "views", or "influences", just to name a few. However, the content of the article had to be consistent with the definitions of culture above as either a "set of values, beliefs, norms, and expectations that are widely held in an organisation" (Huber, 2001) for organizational culture, or "the collective programming of the mind which distinguishes the members of one group or category of people from another" (Hofstede, 1980) for national culture. If culture was used as a moderating variable, we included those as well.

Second, knowledge management had to be a dependent variable in the study. This included KM processes, outcomes, and behaviors. Examples of KM behavior included actual usage and knowledge-sharing/hoarding. While there are areas of research that are closely related to knowledge management including information sharing, organizational memory, and e-learning (Schultze & Leidner, 2002), the context of articles on these topics was carefully examined to see if these concepts included aspects of knowledge management explicitly. If they did, they were included.

Third, the article had to be empirical. While this included both quantitative and qualitative studies, this excluded articles that were purely theoretical or review articles. Theoretical articles informed our literature review rather than the actual analysis.

These three selection criteria mirror the selection criteria used in other IS meta-analyses (Kohli & Devaraj, 2003; Palvia et al., 2009). Articles were identified by both keyword search in library databases (first step) and manually reading all abstracts in each issue of the targeted journals (second step). The second step is an additional measure of reliability in not excluding relevant articles. Many meta-analyses in IS research rely solely on the first step of keyword searching.

Coding process

A strict coding scheme was used for the structure of a spreadsheet for coding all articles. The following fields in the spreadsheet identified the variables and attributes of interest for the meta-analysis:

- bibliographic information
- independent/moderating variable name
- independent/moderating variable measure or definition
- dependent variable name
- dependent variable measure or definition
- model type
- method type
- n value for sample size of individuals or cases or both
- effect sizes (r values)
- reliability of measures
- primary or secondary research
- cross-sectional or longitudinal research
- quantitative or qualitative research or both
- case study context
- qualitative findings
- theoretical foundation
- knowledge metaphor
- knowledge discourse
- components of knowledge management

In some cases, knowledge sharing behavior was a mediating variable that led to organizational performance, but was coded as the dependent variable for the purposes of this study. Similarly, many studies included additional independent variables that affect KM such as cognitive or economic factors outside the scope of culture and hence are not reported in the analysis. Method type code was based on types of IS research identified in Palvia, Midha, & Pinjani (2006). Sample size, effect sizes, and reliability of measures are necessary for aggregating results for a

quantitative meta-analysis (Wu & Lederer, 2009). In articles where effect sizes were not explicitly reported, r values (correlation between variables) had to be calculated manually wherever possible using formulas from Rosenthal & DiMatteo (2001) and Wu & Lederer (2009) for converting t values and F values to r values. Small effect sizes are less than .02, medium approaches .15, and large effect sizes approach .35 and up (Cohen, 1992). Knowledge metaphor and knowledge discourse were coded based on definitions in Schultze & Leidner (2002). Components of knowledge management were coded based on the four components identified in Alavi & Leidner (2001) based on a sociology of knowledge (Holzner & Marx, 1979) and included creation, storage/retrieval, transfer, and application.

Wolf (1986) identifies seven best practices for enhancing inter-rater reliability in a meta-analysis and these were all followed. The coding form was pilot-tested, an explicit codebook keyed to the form was developed, coder training was performed, intercoder reliability was computed (0.98 for all coding fields), the codebook was revised and coders retrained as needed, no new coders were added, and coders were actively involved in discussions and decisions about coding rules.

RESULTS

Results - Frequency

The distribution of articles on culture's impact on knowledge management by journal title is shown in Table 1. The frequency of articles by year is shown in Figure 1 and shows a dramatic jump in 2007.

Table 1. Frequency by Journal

Journal title	Count (from 2000 to March 2010)
EJIS	10
JIT	10
JSIS	8
ISJ	7
JGITM	4
JGIM	3
JMIS	3
MISQ	3
ISR	2
JAIS	2
Total	52

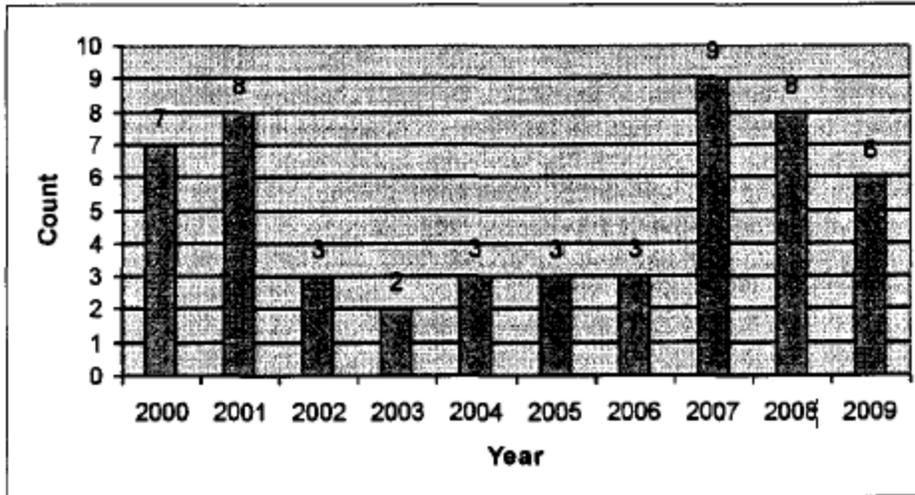


Figure 1. Frequency of Articles by Year

The reason for the jump in 2007 may be due to the interest in the topic generated by Alavi, Kayworth & Leidner (2005/2006) on the impact of organizational culture on knowledge management practices. Since the start of 2007, there were 23 articles in the ten journals that looked at the effect of culture on KM. This shows that KM researchers are continuing to look at the effects of culture and journals are willing to publish their findings, although interest may be cyclical.

Results - Method Types

In terms of the research methods used, the most striking finding was that there were exactly twice as many qualitative articles as quantitative. Thirty two articles were qualitative (case studies primarily but also ethnography and action research). There were sixteen articles that were quantitative with numerically measurable results from surveys, and four articles had both quantitative and qualitative elements to their methodology.

This shows that this line of research is still in the exploratory stages and/or that culture-related studies are best served by qualitative methods. The dramatic increase of case studies is exciting evidence that qualitative research in IS studies are not just acceptable but actively encouraged. The sheer number of case studies versus surveys was surprising for IS where the most prevalent form of study is the survey method (Palvia et al., 2006). The breakdown of specific method type is shown in Table 2. Results - Knowledge Discourse The first research question asked how knowledge discourse has changed in the last ten years of IS research. This included type of knowledge discourse and knowledge metaphor (coded based on Schultze & Leidner, 2002). The summary results are shown in Table 3.

Table 2. Articles by Method Type

Method type	Count
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Case study	29
Survey	18
Action research	2
Ethnography	2
Experimental design	2
Field study	2
Content analysis	1

Table 3. Summary of Types of Knowledge Discourse, Metaphor & Process

Authors	Knowledge metaphor	Knowledge discourse	Knowledge Process			
			Creation	Storage/Retrieval	Transfer	Application
Gil-Garcia et al. (2007)	Asset	Normative			X	
Kambayashi & Scarbrough (2001)	Asset	Normative	X			
Wang et al. (2008)	Asset	Normative	n/a	n/a	n/a	n/a
Patnavakuni & Ruppel (2006)	Asset	Normative	X	X	X	X
Gottschalk (2000)	Asset	Normative	X	X	X	X
Mehta et al. (2007)	Asset	Normative	X	X	X	X
Klein & Rai (2009)	Asset	Normative			X	X
Robert et al. (2008)	Asset	Normative			X	
Staples & Webster (2008)	Asset	Normative			X	
Jarvenpaa & Staples (2000)	Asset	Normative				X
Ibrahim & Ribbers (2009)	Asset	Normative			X	X
Okunovem, et al. (2002)	Asset	Normative	X	X	X	X
Al-Busaidi et al. (2005)	Asset	Normative	X	X	X	X

Furner et al. (2009)	Asset	Normative			X	
Galliers & Newell (2001)	Asset	Normative			X	
Hsu & Wang (2008)	Asset	Normative	X	X	X	X
Taylor (2004)	Object	Normative			X	
Shore (2001)	Object	Normative			X	
Keil & Magnus (2007)	Object	Normative			X	
Gold et al. (2001)	Object	Normative	X	X	X	X
Merali (2002)	Object	Normative	X			
Merali (2000)	Commodity	Critical	X	X	X	X
Venters & Wood (2007)	Commodity	Critical			X	
Silva et al. (2009)	Commodity	Critical	X	X		
Bock et al. (2006)	Commodity	Critical	X			
Ravishankar et al. (2009)	Commodity	Critical	X	X		
Zhang & Faerman (2007)	Commodity	Critical			X	
Tai & Phelps (2000)	Commodity	Critical	X	X		
Wasko & Farai (2000)	Commodity	Critical	X			
Kankanhalli et al. (2005)	Commodity	Critical		X		
Phang et al. (2008)	Commodity	Critical				X
Jarvenpaa & Staples (2001)	Commodity	Critical			X	
David et al. (2008)	Commodity	Critical		X		
Howard-Grenville &	Commodity	Critical			X	

Carlile (2006)						
Breu & Hemingway (2004)	Mind	Interpretive	X	X	X	
Schultze & Boland (2000)	Mind	Interpretive	X	X	X	X
Huang et al. (2001)	Mind	Interpretive			X	
Massey et al. (2002)	Mind	Interpretive	X			
Pan & Leidner (2003)	Mind	Interpretive	X	X	X	X
Braganza et al. (2007)	Mind	Interpretive	X	X		
Holsapple & Joshi (2000)	Mind	Interpretive	X	X	X	X
Yoo et al. (2007)	Mind	Interpretive	X			
Butler et al. (2008)	Mind	Interpretive	X	X	X	X
Alavi et al. (2005/2006)	Mind	Interpretive	X	X	X	X
Rottman (2008)	Mind	Interpretive			X	
Kawalek & Hart (2007)	Mind	Interpretive	X			
Oshri et al. (2008)	Mind	Interpretive	X	X	X	
Sherif & Menon (2004)	Mind	Interpretive	X			
Kotlarskv et al. (2007)	Mind	Interpretive			X	X
Bergquist et al. (2001)	Mind	Interpretive	X		X	
Sorensen & Lundh-Snis (2001)	Mind	Interpretive	X			X
Joshi et al. (2007)	Mind	Interpretive				
Total			24	19	36	20

Table 4 shows a side-by-side comparison of the findings of Schultze & Leidner (2002) on the types of discourse found in the literature from 1990 to 2000 with those found in the current study from 2000 to 2010. This comparison demonstrates a marked shift away from normative forms of discourse in the last ten years.

Table 4. Comparison on Discourse Types by Time Period

Discourse Type	1990-2000 (Schultze & Leidner, 2002)	%	2000-2010	%
Normative	53	71%	21	40%
Critical	1	1%	13	25%
Interpretive	19	25%	18	35%
Dialogical	2	3%	0	0%

It is important to note that Schultze & Leidner's (2002) review examined all articles on KM, and not just culture's impact on KM. Therefore the last decade's numbers will look necessarily smaller even though the literature has grown. The numbers and percentages do, however, represent dramatic shifts in how we talk about knowledge in IS literature. Looking at the discourse types (Schultze & Leidner, 2002) in Table 3, there is a much larger proportion of critical articles (25% versus 1%) and interpretive articles (35% vs. 25%) in the period of 2000-2010. This could be the result of looking at KM through the lens of culture but it could also be attributed to the gaining popularity of knowledge being viewed as a commodity or source of power within the organization. This shows that researchers are less inclined to see knowledge as a neutral asset or object, as in the 1990s, but as a political tool that can be leveraged. This fundamental shift in knowledge discourse away from normative language towards interpretive and critical discourse represents a key finding.

Results - KM Processes

The second research question asked which KM processes have received the most attention in the last ten years of IS research. Table 3 above highlights the distribution of the four different KM processes that were addressed in the meta-analysis. It shows that the majority of articles related the effect of culture to the knowledge transfer process of KM first (29) and the knowledge creation portion second (21). While the storage/retrieval component received the least attention (16), this aspect of KM may be addressed better in studies where technology, not culture, is the independent variable of interest. The fourth component of knowledge application also received less attention (20) and may be a good area for future research.

Table 5 shows a complete list of all knowledge management-related dependent variables including both quantitative and qualitative studies. Actual KMS usage was the most popular dependent variable (12) followed closely by knowledge sharing (9). Space prohibits showing the complete list of how each variable was operationalized.

Table 5. Dependent Variables for Knowledge Management

Knowledge variables	count	Knowledge variables (cont.)	Count
KMS Use	12	KN learning preferences	1
Knowledge sharing	9	KM orientation	1
Knowledge Management	7	KM Perceptions	1
Information sharing	6	KM processes	1
Organization knowledge	4	Knowledge Infrastructure	1
Knowledge transfer	2	Knowledge sharing effectiveness	1
e-Learning	1	Organizational learning	1
Human knowledge	1		

Results - Cultural Dimensions

The third research question asked what dimensions of national and organizational culture have been addressed in KM studies in the last ten years of IS research. One of the particular areas of interest was how frequently national culture was examined versus organizational culture. There were 7 articles that focused on aspects of national culture, while 38 of the articles focused on organizational culture with 7 articles examining both levels. Table 6 shows a consolidated list of all culture-related independent variables including both quantitative and qualitative studies. Trust, in particular, is a dominant variable in the literature that has a strong influence on knowledge management across many different contexts and types of organization. The role of trust itself is heavily contingent on context (Jarvenpaa, Shaw & Staples, 2004) and can be considered an important aspect of organizational culture (Ling, San, & Hock, 2009). Specific national cultural dimensions most frequently addressed were power distance and uncertainty avoidance.

Table 6. Independent Variables for Culture

Cultural variables	Count	Cultural variables (cont.)	Count
Trust	9	Corporate IT culture	1
Leadership/Executive support/managerial influence	8	Culture capital	1
National cultural differences	7	Demographic diversity	1
Collaborative Norms	4	Gender roles	1
Control orientation	4	Informal structures	1
Power	4	Innovativeness	1
Willingness to share	4	Knowledge regimes	1
Communication	3	Lack of respect among organizations	1
Ownership	3	Legitimate Peripheral Participation (LLP)	1
Community beliefs	2	Long terms relationship orientation	1
Incentives	2	Network ties	1

Individualistic orientation	1	Norms	1
Information culture	2	Organizational classification	1
Knowledge culture	2	Organizational structure	1
Obligation	2	Peer review	1
Openness	2	Reporting hierarchy	1
Attitudes towards re-use	1	Resistance to change	1
Autonomy	1	Shared goals	1
Boundary agents	1		

Results. Effect sizes

The fourth research question asked which value dimensions have the largest impact on knowledge management processes. Effect sizes can only be reported for quantitative studies that report an *r* (correlation) value between variables. Effect sizes can be aggregated in a meta-analysis to show a mean correlation across studies (King & He, 2006). Because the constructs used to represent culture as well as knowledge management are heterogeneous, we have not aggregated the effects into a mean value for culture and a mean value for knowledge management due to issues of interpretation. Rather, the effect sizes are reported for all quantitative studies in order of effect size in Table 7. Some *r* values had to be calculated manually based on reported *t* values or *F* values (Rosenthal & DiMatteo, 2001). Small effect sizes are less than .02, medium approaches .15, and large effect sizes approach .35 and up (Cohen, 1992).

Table 7. Effects Sizes for Quantitative Studies

Authors	Independent Variable	Ind Var reliability	Dependent Variable	Dep Var reliability	Sample Size (n value)	Effects (r)
Staples & Webster Knowledge (2008)	Trust	0.7	Knowledge sharing	0.86	824	0.55
Furner et al. Uncertainty (2009)	Uncertainty Avoidance	0.71	Structure	0.79	515	0.50
Hsu & Wang (2008)	Top management knowledge values	0.86	Knowledge-sharing effectiveness	0.84	130	0.46
Wang et al. (2008)	Knowledge Receptivity	0.84	KM Orientation	0.92	213	0.41
Al-Busaidi et al. (2005)	Knowledge culture	0.69	KMS Success	0.69	53	0.41
Klein & Rai	Buyer trusting	0.96	Buyer	0.96	182	0.40

(2009)	beliefs		Information Flows			
Klein & Rai (2009)	Supplier trusting beliefs	0.96	Supplier Information Flows	0.96	182	0.40
Patnayakuni & Ruppel (2006)	Process formalization	0.845	Knowledge Integration	0.85	60	0.37
Robert et al.(2008)	Relational Capital	0.88	Knowledge Integration	N/A	172	0.34
Taylor (2004)	Gender	1	Use	NR	257	0.30
Patnayakuni & Ruppel (2006)	Collaborative exchange	0.88	Knowledge Integration	0.85	60	0.23
Kankanhalli et al. (2005)	Org reward	0.96	EKR usage	0.85	150	0.22
Jarvenpaa et al. (2001)	Solidarity	0.78	Ownership	0.81	1935	0.20
Keil et al. (2007)	Face-saving	0.75	Information Sharing	NR	146	0.20
Bocket al. Collaborative (2006)	Norms	0.70	EKR Usage	0.89	134	0.17
Kankanhalli et al. (2005)	Trust	0.85	EKR usage	0.85	150	0.13
Jarvenpaa et al. (2001)	Sociability	0.75	Ownership	0.81	1935	0.11
Jarvenpaa et al. (2001)	Organic	0.79	Ownership	0.81	1935	0.10
Jarvenpaa& Staples (2000)	Propensity to share	0.77	Use	0.78	1125	0.09
Jarvenpaa et al. (2001)	Job orientation	0.57	Ownership	0.81	1935	0.09
Kankanhalli et al. (2005)	Prosharing norms	0.93	EKR usage	0.85	150	0.04
Jarvenpaa et al. (2001)	Achievement	0.71	Ownership	0.81	1935	0.01
Jarvenpaa et al. (2001)	Open	0.64	Ownership	0.81	1935	-0.02
Kankanhalli et al. (2005)	Image	0.89	EKR usage	0.85	150	-0.05
Jarvenpaa & Staples (2000)	Info culture	0.78	Use	0.78	1125	-0.055
Jarvenpaa & Staples (2000)	Ownership	0.75	Use	0.78	1125	-0.074
Jarvenpaa et al. (2001)	Democratic	0.6	Ownership	0.81	1935	-0.09
Kambayashi &	National	NR	Information	NR	1409	NR

Scarborough (2001)	culture		sharing			
Gil-Garcia et al. (2007)	Perceived Impediments	NR	Expected Benefits of Sharing	NR	478	NR
Gold et al.(2001)	Culture	0.8	Knowledge Infrastructure Capability	0.8	323	NR

NR=Not Reported

Cross-case Analysis

While Tables 1 through 7 may be considered all part of a larger cross-case analysis, Table 8 presents a narrower cross-case analysis of the qualitative studies. The number of cases, the context of the study, and a summary of the qualitative findings are included. This tabular format allows for a quick overview of non-numeric, yet rich, insights into the effect of culture on knowledge management. Such cross-case analyses lend themselves to more generalizable interpretation and theory building (Yin, 2003). The most striking generalizable finding is that organizational culture can *overcome* differences in national culture. This pattern was repeated consistently for large organizations with branches around the world in the qualitative findings. Where national cultural differences, especially for the dimensions of uncertainty avoidance and power distance, can present obstacles to KM effectiveness, organizational culture can serve as a cohesive force that rallies the organization around knowledge-sharing values of trust and openness. This organizational culture change is typically accomplished by top-level management support that increases the level of trust and openness through improved communication, especially face-to-face communication, encouragement and rewards for knowledge sharing, and monitoring correct usage. These activities help to create shared understandings and contexts that directly improve knowledge management and mitigate national cultural differences.

Another important generalizable finding is that firms should anticipate power shifts due to the implementation of a new KMS. Sometimes power shifts away from corporate headquarters in ways that reduce cohesion, sometimes power shifts towards end users that embrace the new KM process, and sometimes management's position of power is reinforced. But a redistribution of knowledge typically means a redistribution of power.

Table 8. Cross-case Analysis of Qualitative Studies

Authors	#of cases	Case study context	Qualitative findings
Gottschalk (2000)	1	Norwegian law firm with 145 employees	KM use is significantly influenced by general IT use.
Klein & Rai (2009)	1	Logistics vendor and its client.	Trusting beliefs related to ability, benevolence, and integrity addressed concerns of opportunism.
Venters &	1	Multi-national organization	KMS failure due to: I) intention to reduce

Wood (2007)			reliance of HQ led to diminishing role of HQ and reduced social cohesion. 2) downsizing led to increased individualization and loss of trust. 3) Internet organization availability and discussion groups reduced KMS use.
Silva et al. (2009)	1	MetaFilter blog	Old timers felt responsible for enforcing rules to newcomers.
Ravishankar et al. (2009)	1	India-based global IT services and consulting company with 50,000 people across 10 countries.	Less rational but highly influential informal elements played a role in strategic alignment and implementation success
Huang et al. (2001)	1	Multinational investment bank's Y2K knowledge	Lack of common knowledge and subcultural distinctiveness across organizational members integration program impeded knowledge integration and sharing.
Massey et al. (2002)	1	Nortel's product development (NPD) process including knowledge assets	Broader organizational factors and changes cannot be disentangled from KM initiatives.
Zhang & Faerman (2007)	1	KMS in New York's Office of the State Comptroller	Distributed leadership provided a viable means for developing as well as the day-to-day functioning of the knowledge transfer systems.
Braganza et al. (2009)	1	Leading firm in oilfield services industry operating in over 100 countries	Diverse work groups are more likely to encourage knowledge activities that lead to successful KM.
Yoo et al. (2007)	2	Large polymer compound manufacturing company after a merger	Lack of shared context created a sense of uncertainty and incompleteness which led to less knowledge sharing.
Rottman (2008)	1	Fortune 100 manufacturing firm and Indian offshoring firm	1. Strengthen cultural understanding by visiting the offshore supplier and project teams. 2. Clarify goals by communicating the offshore strategy to all parties. 3. Integrate the supplier's employees into the development team. 4. Co-train internal employees and supplier employees to communicate goals and Rottman increase cultural awareness. 5. Increase internal trust by understanding and managing talent.
Sherif& Menon(2004)	4	IT services company, communications company, oil & gas company, and a leading software consulting organization	Individual attitudes toward were a significant predictor of success or failure. Successful sites credited their organizational cultures for the receptiveness to reuse technology. Unsuccessful sites were not attributed to knowledge hoarding. Their sharing culture atrophied due to inadequate attention to strategy and process change. Cultural change is necessary but not sufficient for the success of reuse. Strategy change and process change are organization also necessary.
Breu &	1	Inspectorate is an	Undependable infrastructure inhibits

Hemmingway (2004)		independent national in a European Union member state with 2000 employees	networking. Focus on individual performance inhibits learning organization culture. Decreased boundary agency permeability restricts information exchange. Virtualization increases the number and complexity of organizational boundaries. Technology cannot employees substitute for face-to-face knowledge sharing for confidential or sensitive information.
Schultze & Boland(2000)	1	US-based, Fortune- 500 manufacturer of building materials with 17,000 employees in 30 countries	Based on the incongruence between the CI analysts' situated informing practices and the generalized practices embedded in KnowMor, a successful implementation would have resulted in such unintended consequences as challenges to the CI analysts' privileged access to information and their selective intelligence dissemination practices.
Merali (2000)	3	A quasi nongovernmental organization, a financial services organization, & an international group of natural resource companies	The cognitive congruence framework in the context of social capital links individuals with organizational knowledge and sensemaking in a socially aware framework.
Pan & Leidner (2003)	1	Buckman Labs, a US \$300 million chemical company knowledge sharing. Implementation of KM and with 400 employees.	1) Technological solutions to KM are flexible. 2) Need to provide multiple channels/forums for diverse knowledge sharing needs and preferences. 3) Importance of expanding individuals' community of practice. 4) need to explore issues and concerns regarding the changing role of IT in global knowledge sharing. Implementation of KM and KMS requires a change in organizational culture.
Mehta et al. (2007)	1	Infosys Technologies, Ltd in India	More empowered employees were less threatened by the idea of sharing their unique knowledge and were less prone to knowledge hoarding. KM required an open culture that recognized merit and encouraged ideas. Culture, norms, and practices should dictate the choice of KM architecture.
Kotlarsky et al. (2007)	2	Skandia bank in Zurich and Dresdner bank in San Francisco.	Company needed to develop capability for adjusting style and content of communication (e.g. wording and selection of media) to personal and cultural characteristics of remote counterparts.
Holsapple & Joshi (2000)	n/a	Panel of CEOs, consultants, and researchers from five continents	An organization's cultural knowledge resource will have a major impact on creating and maintaining a knowledge sharing environment. Knowledge resources affect KM by serving as the basis for coordination, control, measurement, and leadership. Culture affects KM through 1) management, 2)

			resources, and 3) environment.
Butler et al. (2008)	2	The UN Population Fund (UNFPA) Switzerland	People from a different culture and tradition, domains of knowledge, and areas of expertise, found the conceptual architecture of the KMS to be intuitive, easy to understand and 'logical' and hence Switzerland supported the design of the KMS.
Alavi et al. (2005/2006)	1	A large, global high-tech firm in the U.S. with 316,000 employees throughout the world.	1) Deployment of standardized KMS will encounter diverse uses due to assorted local and organization wide cultural values. 2) Users employ diverse features of KMS based on embedded cultural values. 3) Differences in cultural values will lead to divergent organizational and individual outcomes from KMS use. 4) The presence of multiple cultures suggests that both formalized employees (top-down) and organic (bottom-up) approaches to throughout the world. KM may occur simultaneously within the same firm.
Wasko & Faraj (2000)	3	Three online technical communities	People participate and help others because participation is fun, enjoyable, and brings satisfaction. Members who act out of self-interest to show-off expertise, or put down other members, have a negative impact on participation.
Kawalke & Hart (2007)	1	EU project for e-business education in Mediterranean	Community members will change their behavior to fit the monitoring criteria that they think are being applied. There are often ambiguities in what exactly Mediterranean is being monitored.
Phang (2008)	1	eGovernment initiative at the National Library Board (NLB), the library authority of Singapore.	Culture that is receptive to IT and learning made it easier for learning of new KMS. The management's position was reinforced in terms of power relations. Some employees ascended to more strategic the positions after KMS implementation (i.e., change in power position relative to others). They gained new knowledge in IT use and became more valuable.
Oshri et al. (2008)	2	Scandia bank (India & Switzerland) and Dresdner bank (India & USA)	Teams successfully transferred knowledge and overcame different local contexts, work routines and expertise levels through codified or personalized directories or both. Teams that do not have shared histories may benefit from a division of work based on geographical location for a time before changing to an expertise-based division of work approach.
Ibrahim & Ribbers (2009)	3	Global Automation Companion, Fast Cuisine in Germany, and Fretadia in the	Competence-trust positively influences the use of human-knowledge resources, resources related to interlinkage of business processes,

		Netherlands	and organizational domain knowledge resources. Openness-trust positively influences use of human- knowledge resources and organizational domain knowledge resources.
Bergquist et al. (2001)	1	Quality support in a pharmaceutical company	Peer review ensures that relevant new knowledge is distributed and is important for converting company information into reliable and accountable knowledge.
Sorensen & Lundh-Snis (2001)	2	Volvo Aero Corporation & Foss Electric in Denmark	Lack of interaction or community-building hinders knowledge creation.
Merali (2002)	1	A medium-sized building society	Understanding how boundary agents operate and connect internal and external sources and users of intelligence is central to knowledge management in dynamic environments.
Howard-Grenville & Carlile (2006)	1	U.S. semiconductor manufacturing facility	Knowledge integration is hindered by incompatibility across knowledge regimes.
Shore (2001)	4	1. Shoe Manufacturing 2. Purchasing Organization 3. Trading Company 4. High-tech Supplier	Found PO and UA affected information sharing; strength of IT culture affected the strategies used. Dimensions of national culture may help explain why some suppliers cooperate and share data and others do not.
Okunoyem, et al. (2002)	6	Research organizations in Sub-Saharan Africa	Organizational culture affected all aspects of KM. National culture affected training format and willingness to share. Organisational structure, leadership and management play significant roles in KM efforts. Local culture issues in African context include short-term planning & delays in communication.
Al-Busaidi et al. (2005)	8	IT managers in large firms in Oman including government, banking, telecommunications, aviation, consulting and petroleum.	Rewards policy was not a factor of success in Oman. Omani orgs share the same success factors for KMS as western organizations. Mgmt support is extremely important to promote knowledge-culture, along with clear vision. Lack of mgmt support is one of the aviation, consulting main inhibitors.
Joshi et al. (2007)	2	Pharmaceutical company in Europe and nonprofit opensource certification firm in North Africa	Technology (KMS) does not change culture by itself. Organizational culture must be managed to overcome national culture differences by management. National cultural differences do have an impact on knowledge sharing.
Galliers & Newell (2001)	2	World's largest international airline KMS system and European bank KMS system	Even though both companies were global, the challenges to success were organizational and not due to national culture. The process of participation and inclusiveness were the most important factors.

Results. Framework

The fifth research question asked what is the relationship between the different value dimensions of both national and organizational culture on knowledge management processes. In both the quantitative and qualitative articles, there is consistent evidence that national cultural differences can be an impediment to effective knowledge management. However, none of the articles found any relationship between business leadership and national culture. It stands to reason that business leaders cannot change or even influence national culture. National cultural differences for the two values of Power Distance and Uncertainty Avoidance are especially relevant to KM. At the same time, national cultural differences are not always a negative influence because diversity in work groups sometimes led to better KM practices. Business leaders can, on the other hand, change their organizational culture and these changes consistently led to better knowledge management practices. The organizational culture traits of trust and openness were most frequently identified as critical to effective KM. Trust involves several types including competence trust, benevolence trust, integrity trust, trust in management, general trust that others will not take advantage or hurt them due to their knowledge sharing activities, and finally trust that employees will be rewarded for their efforts. Openness means a culture of encouragement rather than criticism, openness to new ideas, openness to new change, and openness to new technology. So in this sense, organizational cultural change led by top management support is able to mitigate the impact of national cultural differences. Specifically, the areas of top management values and support, and overall vision and leadership were key factors in positively influencing both organizational culture as well as knowledge-sharing behaviors which led to overall KM success.

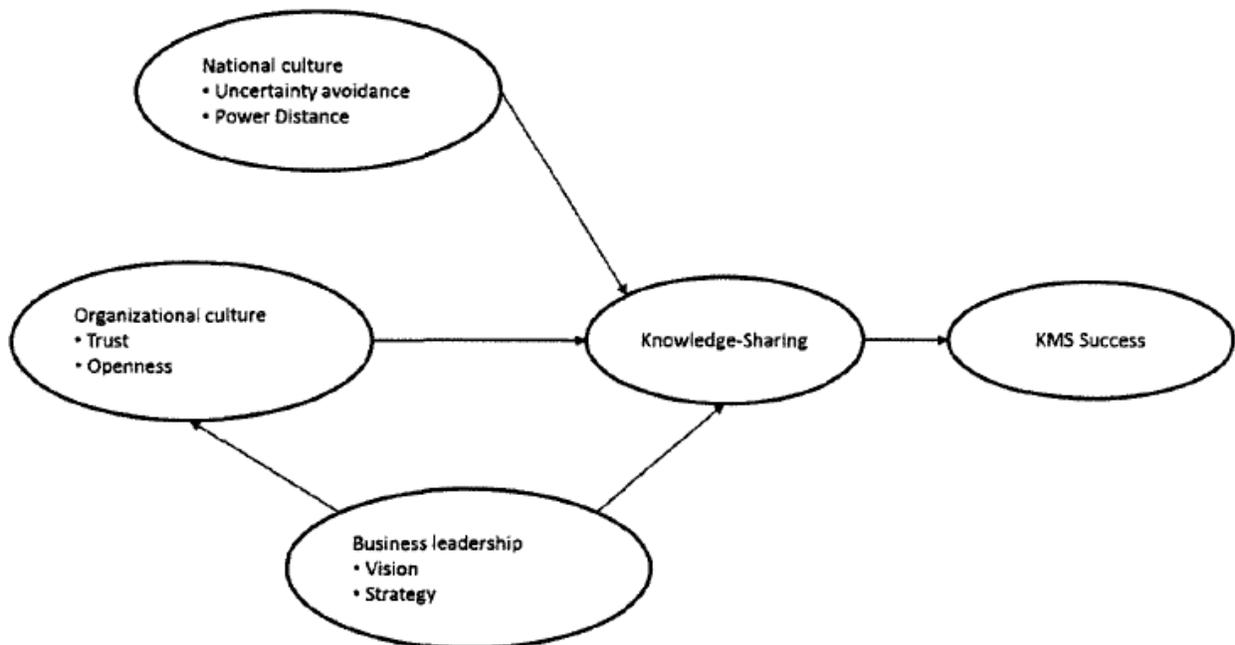


Figure 2. Proposed Framework

Based on the findings, the following framework is proposed to guide future research in the area of the impact of culture on knowledge management. Figure 2 shows the relationships between key constructs. Constructs are informed by the major findings of research in both the quantitative and qualitative studies examined in the meta-analysis. National culture and organizational culture both have an impact on knowledge-sharing behaviors which, in turn, affect the success of a KMS implementation. But business leadership plays a key role in fostering both organizational culture and knowledge-sharing behaviors. In this way, organizational culture is able to mitigate the effects of national cultural differences. This framework may be helpful in both summarizing this meta-analysis and providing guidelines for further research in this area.

DISCUSSION

All of the above detailed results may be reduced into three key findings of interest. First, there are some important trends in how the IS field is talking about knowledge and knowledge management. Knowledge discourse has shifted over the last ten years (2000-2010) from predominantly "normative" to more "interpretive" and "critical" ways of thinking as compared to the previous ten years (1990-2000). Knowledge has evolved from a simple asset or object to something more culturally meaningful, especially with regard to power relationships. Interpretive studies using qualitative research lend themselves well to examining these relationships. However, studies on culture's impact on knowledge management continue to focus on the knowledge transfer process more so than the other three processes of creation, storage, and application processes. This can provide helpful insight to future researchers in that there is a need for more "critical" studies, more so than "normative", into the other knowledge management processes, particularly the knowledge application process.

Second, the following cultural dimensions have large effect sizes based on quantitative and qualitative studies: trusting beliefs, openness, uncertainty avoidance, power distance, and top management support. There is a consistent narrative when read as a whole. For national culture, greater uncertainty and power distance can lead to less knowledge sharing. For organizational culture, an environment that emphasizes trust and openness is consistently more important than any technology artifact. This organizational culture of trust and openness is created by upper management setting a clear strategic direction with regard to KM processes. While national culture *does* have an impact on KM implementations, based on both the quantitative and the qualitative studies, the impact of organizational culture is much larger than national culture. In case study after case study, organizational culture was specifically able to overcome national cultural differences by management clearly articulating the vision for the new KMS. These findings are particularly important for practitioners in terms of providing guidance for which specific aspects of culture, both national and organizational, should guide their strategic decisions for KM within their firms.

The findings about organizational culture overcoming the effect of national culture should be qualified however. There are at least two alternative explanations of this finding. One is that multi-national corporations are typically composed of a blend of different nationalities among their managers and employees. Furthermore, ex-pat employees may be more cosmopolitan such that traditional national cultural dimensions may not apply in their case. Another explanation is a limitation of this study, which focused on primarily U.S.-based journals. It is possible that this introduced a bias such that certain issues of national cultural difference may not get published in U.S. journals. Nonetheless, current research strongly supports the finding that both national and organizational culture impact knowledge management processes and that organizational culture overall has a stronger influence.

Third, these relationships between national culture, organizational culture, business leadership, knowledge sharing behaviors, and KMS outcomes can be presented in a parsimonious model. The framework offered in this study neatly encapsulates ten years of research into culture's impact on knowledge management processes and should serve as an effective guide for both researchers and practitioners.

CONCLUSIONS

A meta-analysis was conducted on 52 IS studies on the effects of culture on knowledge management processes from 2000 to 2010, combining both quantitative and qualitative studies in a unique methodological approach. While steady research in the area of culture's impact on knowledge management processes continues, there are two marked shifts in KM research over the last 20 years. One is a shift from quantitative survey-based research to more qualitative research such as case studies. The other is a change in the type of discourse on knowledge away from normative language towards more interpretive and critical discourse emphasizing the power issues inherent in the cultural context of KM. The most striking generalizable finding from the cross-case analysis was that organizational culture can overcome or mitigate differences in national culture. Trust and openness are key organizational cultural dimensions that impact KM processes, but these traits are achieved through effective business leadership, rather than a particular technological artifact. An overall framework was provided to illustrate the findings and to serve as an important guidepost for future research.

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