Chapter XXIV
Organizational Culture for Knowledge Management Systems: A Study of Corporate Users

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ABSTRACT

Knowledge is increasingly being viewed as a critical component for organizations. It is largely people-based and the characteristics of groups of individuals, in the form of organizational cultures, may play a key role in the factors that lead to either the acceptance or rejection of knowledge management systems (KMS). The primary objective of this research is to explore how dimensions of organizational culture influence factors that lead to the acceptance of KMS. While researchers have agreed that culture plays an important role in KMS, the literature has only recently begun to examine organizational culture within this context. We examined the effects of three dimensions of organizational culture through a research model that was tested and analyzed utilizing a field survey of corporate knowledge management users. Our results indicated that both process-oriented and open communication system organizational cultures significantly influenced the factors that led to the acceptance of KMS.

INTRODUCTION

Organizational culture can either facilitate or be a major barrier to knowledge management system (KMS) acceptance (De Long & Fahey, 2000;

Grover & Davenport, 2001; Ruppel & Harrington, 2001). On February 1, 2003, the space shuttle Columbia was lost during its return to Earth. The Columbia Accident Investigation Board (CAIB) concluded that NASA's organizational culture as well as the piece of Columbia's foam insulation that fell off during launch shared equal blame for the tragedy (CAIB, 2003). According to the CAIB, the prevailing culture at NASA was of a mindset that accidents were inevitable, which led to the unnecessary acceptance of known and preventable risks. Although a KMS to assist with hazard identification and risk assessment was available at NASA (the Lessons Learned Information System), personnel only used that system on an *ad hoc* basis which limited its usefulness (CAIB, 2003). NASA's organizational culture consequently interfered with open communication, impeded the sharing of lessons learned, caused duplication and unnecessary expenditure of resources, and prompted resistance to external advice (CAIB, 2003).

The Columbia incident is an illustration of knowledge management system use failure. The acceptance of KMS, however, is a pressing issue in organizations (Kwan & Balasubramanian, 2003; Money & Turner, 2005). As knowledge is increasingly viewed as a critical activity for decision making (Markus, Majchrzak, & Gasser, 2002; Miranda & Saunders, 2003), organizations are becoming more receptive to using technologies to facilitate knowledge management (Schultze & Leidner, 2002). KMS are often employed to enhance organizational performance (De Long & Fahey, 2000) and are a reason why the KMS market has become one of the fastest growing areas in software development. While it is widely recognized that information technologies have the potential to facilitate knowledge management, the management of knowledge-based systems is an intricate process that involves a complex interplay of technical and social factors.

Recent studies have begun to investigate a variety of social factors and phenomena related to knowledge creation, sharing, and transfer. For example, Wasko and Faraj (2005) studied how individual motivations and social capital influence knowledge sharing in KMS. Ko, Kirsch, and King (2005) found that individual communication capabilities, motivations, and interpersonal relationships affected the transfer of complex enterprise software knowledge. Bock, Zmud, Kim, and Lee (2005) found that subjective norms and organizational climate had a significant impact on people's intention to share knowledge. Kankanhalli, Tan, and Wei (2005) similarly discovered that several social factors, including prosharing norms, influenced knowledge contribution. These studies provided strong empirical evidence of the social influences in knowledge management. Some of the factors that have been examined are conceptually similar to organizational culture dimensions that have been identified in the management literature. A more systematic study of organizational culture on KMS acceptance would provide theoretical congruence to this recent literature.

The primary objective of this research is to explore how dimensions of organizational culture influence the factors that lead to the acceptance of KMS (e.g., perceived usefulness, perceived ease-of-use, perceived behavioral control, subjective norms). In our investigation, organizational culture is postulated as a distal determinant for an employee's intention to use a KMS. In the next section, we present a literature review to support our hypotheses, followed by a discussion of our research methodology. We then empirically test our hypotheses with a field survey of corporate KMS users, discuss the results, and finish with some concluding remarks.

LITERATURE REVIEW

Knowledge Management Systems

Knowledge is information that exists in the mind of individuals (Alavi & Leidner, 2001; Berman-

Brown & Woodland, 1999; Grover & Davenport, 2001; Ruppel & Harrington, 2001). Given the nature of knowledge, which is created and applied in the minds of human beings, it is extremely difficult to manage and control (Alvesson & Karreman, 2001; Grover & Davenport, 2001). Indeed, an organization's efforts to facilitate knowledge sharing can be a "central competitive dimension" for a firm (Kogut & Zander, 1992, p. 384). Consequently, KMS are an organization's efforts to facilitate knowledge sharing through the use of information technology (IT) in order to obtain organizational benefits.

There are a variety of KMS that exist, such as knowledge repositories, corporate directories, and knowledge networks (Alavi & Leidner, 2001; Grover & Davenport, 2001). Knowledge repositories, the type of IT examined in this study, are the most common KMS in Western organizations (Grover & Davenport, 2001). These systems are typically used to capture knowledge from employees for subsequent and extensive use by others within the organization to assist in decision-making. Examples of knowledge that are contained in such systems may range from best practices and lessons learned to organizational strategies and recruitment efforts.

There have been a number of KMS reviews and meta-analyses done in the information systems (IS) domain. Alavi & Leidner (2001) provided a review of the knowledge management literature in different academic disciplines that identified some key areas of research, which included the concept of knowledge in organizations, knowledge management processes (i.e., knowledge creation, storage/retrieval, and transfer), and KMS. They indicated that while the design of a KMS is important, the extent of use by its intended users would also have a significant impact on KMS acceptance. Schultze & Leidner (2002) also examined knowledge management research in the IS area. They identified and classified knowledge management research into four theoretical streams, which are normative, interpretive, critical, and dialogic discourses. Subsequent case-based research (Alavi, Kayworth, & Leidner, 2005-2006; Leidner, Alavi, & Kayworth, 2006) has found that differences in organizational cultural values leads to different uses of KMS. These research efforts demonstrated the importance and saliency of KMS in the IS context.

Organizational Culture

NASA's organizational culture had as much to do with this accident as foam did. Columbia Accident Investigation Report (CAIB, 2003)

As suggested in the quotation above, organizational culture is important and inextricably linked to KMS within organizations (Alavi & Leidner, 2001; Alvesson & Karreman, 2001; Cronin, 2001; De Long & Fahey, 2000; Grover & Davenport, 2001; McDermott, 1999; Tanriverdi, 2005). Organizational culture has been extensively studied in management research, and therefore, it is surprising that the relationship between KMS and an organization's culture has not been more thoroughly explored in the IS literature. Culture has historically been a factor that has received insufficient attention in the IS acceptance literature (Cooper, 1994; Robey, Wishart, & Rodriguez-Diaz, 1995a; Ruppel & Harrington, 2001), but is increasingly being viewed as a key ingredient for an organization's ability to embrace KMS (Cronin, 2001).

Organizational culture is widely believed to be a major barrier to KMS acceptance (De Long & Fahey, 2000; Grover & Davenport, 2001; Ruppel & Harrington, 2001). Without a match between an organization's culture and the cultural assumptions embedded within an IT innovation, costly implementation failures are likely to happen (Ruppel & Harrington, 2001). For example, in organizational cultures that are not suited to share and utilize knowledge (e.g., an organization where miscommunication is common and mistrust is prevalent), acceptance of a KMS can be prob-

lematic (Ruppel & Harrington, 2001). Without acknowledging cultural mismatches or modifying the organizational culture to better fit the IT, the impact on the organization could be disastrous, as evidenced in the Colombia tragedy.

Hofstede (1991) views culture as being collective, but often intangible and is what distinguishes one group, organization, or nation from another. There are two main elements of culture: the internal values of culture (invisible) and external elements of culture (visible), which are known as practices (Hofstede, 1991). Practices are particularly important to investigate because they are the most direct means for changing behaviors needed to support knowledge creation, sharing, and use (De Long & Fahey, 2000). Hofstede, Neuijen, Ohayv, and Sanders (1990) measured the perceived practices in employees' work situations in 20 organizational units and discovered six dimensions underlying organizational culture. Contrary to his dimensions of national culture (Hofstede, 1991), these organizational dimensions deal with key sociological issues. In favor of depicting a more manageable research model, we examine three dimensions of organizational culture, process-oriented vs. results-oriented, employee-oriented vs. job-oriented, and open communication systems vs. closed communication systems.

Technology Acceptance

Previous findings from the technology acceptance literature, which has been widely popular in the IS field for the past few years, suggest that for an advantage to be attained, the technology in question must be accepted and used (Venkatesh, Morris, Davis, & Davis, 2003). Organizations typically employ KMS to leverage their collective knowledge for competitive advantage (Alavi & Leidner, 2001). There has been relatively little research, however, that explicitly examines the influence that dimensions of organizational culture have on technology acceptance.

In the technology acceptance literature, a variety of psychological constructs have been examined with the goal of understanding how and why individuals adopt new information technologies. This has generated several competing models of technology acceptance, each with different sets of determinants for acceptance (Venkatesh et al., 2003). The following is a concise review of attributes that have been consistently shown to account for a significant amount of variance in the prediction of intentions and behaviors (Rogers, 2003; Tornatzky & Klein, 1982; Venkatesh et al., 2003).

Attributes of the Acceptance and Use of Technology

Based upon conceptual and empirical similarities across eight prominent models in the user acceptance literature, Venkatesh et al. (2003) developed a unified theory of individual acceptance of technology (the unified theory of acceptance and use of technology or UTAUT). The UTAUT theorizes four constructs having a significant role as direct determinants of acceptance and usage behavior: performance expectancy, effort expectancy, social influence, and facilitating conditions. Although we did not test the full UTAUT because the model was not published at the time of our data collection, each of the constructs that we did examine was conceptually similar. The four constructs that we utilized and their relationships to the constructs of the UTAUT model are discussed next.

The first construct examined in our model is perceived usefulness. Originally proposed in Davis' (1989) technology acceptance model (TAM), this is contained within the UTAUT construct of performance expectancy and is defined as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh et al., 2003, p. 447). The second construct examined in our model is perceived ease of use. This construct,

originally in Davis' (1989) TAM, is incorporated into UTAUT as part of effort expectancy which is defined as "the degree of ease associated with the use of the system" (Venkatesh et al., 2003, p. 450). Perceived ease of use has a significant direct effect on perceived usefulness (Davis, 1989).

The third construct examined, perceived behavioral control, indicates that a person's motivation is influenced by how difficult the behaviors are perceived to be, as well as the perception of how successfully the individual can, or cannot, perform the activity. Perceived behavioral control, originally in the theory of planned behavior (TPB) (Ajzen, 1985; Ajzen & Madden, 1986), is part of UTAUT's facilitating conditions construct which is defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system" (Venkatesh et al., 2003, p. 453). Subjective norms, the fourth construct examined in this model, deals with the influence of important others, such as coworkers, supervisors, and top management. Subjective norms, originally in Fishbein & Ajzen's (1975) theory of reasoned action (TRA), are incorporated into UTAUT's construct of social influence, which is defined as "the degree to which an individual perceives that important others believe he or she should use the system" (Venkatesh et al., 2003, p. 451).

RESEARCH HYPOTHESES

Organizational Culture's Impact on Perceived Usefulness

An organization's attitude toward change, often elicited and reflected by the introduction of technology innovations, impacts the adoption of these technologies (Damanpour, 1991). Some organizations are relatively *process-oriented* and may have conservative attitudes toward innovation and its associated risk, exerting minimal effort while preferring the use of existing or well-known methods (Hofstede et al., 1990). Such organizations innovate only when they are seriously challenged by their competition or by shifting consumer preferences (Miller & Friesen, 1982). In contrast, *results-oriented* organizations are risk-oriented and foster an environment that encourages and actively supports the use of innovative techniques for the survival and growth of the organization (Hofstede et al., 1990). As an organization's policies and practices are perceived by employees to encourage, cultivate, and reward their use of a technology (e.g., KMS) the stronger that culture will be for the implementation of that technology (Klein & Sorra, 1996). Organizations that promote innovativeness and a willingness to try new things among their employees have been found to have better success with a KMS implementation (Ruppel & Harrington, 2001). Such organizations and individuals usually try to obtain a competitive advantage by routinely making dramatic innovative changes and taking the inherent risks associated with those innovations. Consequently, employees in a results-oriented organization are likely to believe that using KMS would enhance their job performance. On the other hand, knowledge sharing is risky from an individual employees' perspective because their value depends largely on the knowledge they possess (Stenmark, 2000). A work environment that is more process-oriented, consequently, would view KMS as a threat and to be less useful for making decisions. This leads to the following hypothesis:

H1: *Employees who perceive their work environment to be more* ***results-oriented*** *will have higher levels of perceived usefulness than employees who perceive their work environment to be more* ***process-oriented****.*

Organizational Culture's Impact on Perceived Ease of Use

At one end of a continuum, job roles in an organizational environment are routine and similar from one day to the next (*process-oriented*) (Hofstede et al., 1990). Employees in this environment are resistant to change, new technology, and risk and will only exert minimal effort. At the opposite end of this continuum, job roles bring forth new challenges daily (*results-oriented*) (Hofstede et al., 1990). Employees in this results-oriented environment embrace risk, are comfortable in unknown situations, and are likely to more quickly exploit any opportunity that a technology may offer. These individuals are likely to have more experience using innovative or relatively complex technologies, and as a result, have a relatively high belief that using other complex technologies would not be difficult. In fact, complexity is the degree to which an innovation is perceived as being difficult to use and has the opposite meaning of ease of use (Davis, Bagozzi, & Warshaw, 1989; Moore & Benbasat, 1991; Thompson, Higgins, & Howell, 1991). Therefore, employees who work in an environment that is characterized as a results-oriented organization where using new or complex technologies in their daily tasks is common are more likely to believe that KMS are easy to use. Hence:

H2: *Employees who perceive their work environment to be more* ***results-oriented*** *will have higher levels of perceived ease of use than employees who perceive their work environment to be more* ***process-oriented***.

Organizational Culture's Impact on Perceived Behavioral Control

When employees are asked to put what they know into a KMS, they tend to feel as if they have lost ownership of the knowledge that they alone had previously controlled (De Long & Fahey, 2000). Individuals tend to resist such systems because when giving up control of their knowledge they may perceive their worth as an employee to be marginal, which is only propagated by the understandable fear that their job position has become interchangeable. In such circumstances an organization's culture is critical for the acceptance of KMS. As stated earlier, *results-oriented* organizations are risk-oriented, fostering an environment of daily challenges where employees feel comfortable in unknown situations (Hofstede et al., 1990). Although employees in results-oriented organizations may encounter more risky events, their capacity to tolerate risks is much stronger. Employees in this type of risk inclined environment would likely have strong beliefs in their ability to control outcomes (Delfabbro & Winefield, 2000) and hence, will be less worried about the potential negative issues associated with sharing knowledge. The more control an employee thinks they possess, the greater should be that person's perceived control over their behavior (Ajzen & Madden, 1986). Therefore, employees that work in an environment that is characterized as a results-oriented organization would believe that they can control the technology they use, which would make them more likely to use KMS. Hence:

H3: *Employees who perceive their work environment to be more* ***results-oriented*** *will have higher levels of perceived behavioral control than employees who perceive their work environment to be more* ***process-oriented***.

Environments that typically do not favor KMS emphasize unilateral control, have high stakes for winning and losing, and attempt to minimize negative emotions (Ruppel & Harrington, 2001). Competition thrives in such environments and mistrust in others is high as sharing information or helping fellow employees is frowned upon because it creates a disadvantage for the employee being generous. A *job-oriented* environment exemplifies this scenario as it is an atmosphere

where employees feel pressured to complete work (Hofstede et al., 1990).

On the other hand, an *employee-oriented* environment is one where individual personal problems are addressed and the organization has a genuine concern for the employee's welfare (Hofstede et al., 1990). This is critical particularly in the acceptance of KMS where employees must be able divulge, support, and trust the knowledge provided by other employees via the technology. The human relations management and job enrichment literatures (Hackman & Oldham, 1980) suggest that intrinsic rewards (e.g., employee of the month recognition) are at times more important than extrinsic rewards (e.g., salary raises, promotion). Resource-based theory also acknowledges the vital role that human assets/resources play in the contemporary hypercompetitive external environments where progressive organizations strive to keep their employees satisfied and thus retain top talent. Indeed, Ruppel & Harrington (2001) found that early adoption of KMS was most likely to occur in organizations where the culture was characterized as having a high concern for its employees and a setting of mutual confidence and trust. Consequently, employees who work in an environment that is characterized as an employee-oriented organization would be more likely to believe that they have access to greater opportunities and resources to perform a behavior than in a pressure-filled, job-oriented environment. Hence:

H4: *Employees who perceive their work environment to be more* ***employee-oriented*** *will have higher levels of perceived behavioral control than employees who perceive their work environment to be more* ***job-oriented****.*

Organizational Culture's Impact on Subjective Norms

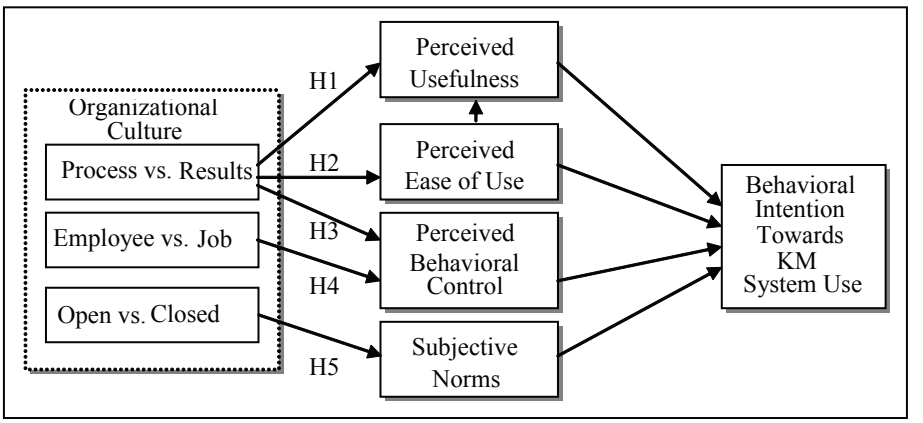
An organizational culture that discourages open communication engenders a context that undermines knowledge sharing (De Long & Fahey, 2000). This is similar to a *closed communication system,* an environment that is secretive and reserved and also one in which it takes a relatively long time for employees to "fit in" (Hofstede et al., 1990). For KMS to be widely accepted within an organization, it should have a culture that supports knowledge sharing from a wide spectrum of coworkers, supervisors, and managers. Without this support, employees may not be willing to share and disseminate their knowledge and experiences, thus making the KMS essentially useless. Indeed, instilling a culture of sharing and maintaining information is critical for KMS acceptance.

An *open communication system*, alternatively, is an environment that is characterized as being open to newcomers and outsiders where it takes a relatively short time for employees to feel comfortable in the organization (Hofstede et al., 1990). Employees in this type of environment are likely to more willingly share their experiences and to support one another when attempting to make decisions on complex and unknown topic areas (e.g., relevance and mastery of new technologies). It is reasonable to expect that users of KMS would be more willing and prepared to assume any challenges posed by the new technology environment in view of the support that they can expect from their colleagues. Employees who work in an environment characterized by an open communication system, therefore, are more likely to be influenced by the opinions of important others and be more likely to use KMS. Hence:

H5: *Employees who perceive their work environment to be more* ***open*** *will have higher levels of subjective norms than employees who perceive their work environment to be more* ***closed****.*

Consistent with the TAM, the TRA, the TPB, and the UTAUT, perceived usefulness, perceived ease of use, perceived behavioral control, and subjective norms are expected to influence behavioral

Figure 1. Theoretical model



intentions. Following the technology acceptance model, perceived ease of use is expected to influence perceived usefulness. These relationships as well as our research hypotheses are depicted in the proposed theoretical model (Figure 1).

METHODOLOGY

This research utilized a questionnaire borrowing scales from prior literature. We adopted measures of organizational culture from Hofstede et al. (1990), perceived usefulness, perceived ease of use, and behavioral intention to use from Davis (1989), and perceived behavioral control from Ajzen & Madden (1986). The subjective norms construct contains two dimensions: normative beliefs (similar to the construct developed by Fishbein & Ajzen (1975) and motivation to comply from Bandura (1977). The subjective norms construct was formed by multiplying pairs of items (normative beliefs * motivation to comply). The order of the statements in the questionnaire was scrambled randomly to control for order effects. The dependent variable, behavioral intention was selected as it has been validated in prior literature as a reliable proxy for actual use in behavioral research (Magnus & Niclas, 2003). The questionnaire employed a 7-point Likert-style scale, anchored from 1 (strongly disagree) to 7 (strongly agree).

Data Collection

The instrument was pilot tested using 24 MBA students who were familiar with KMS. The reliability and validity of all eight research constructs were found to be acceptable. A field survey was then administered via two procedures within a 1 week period. We first surveyed KMS users from a leading user group in a major Midwestern U.S. city. The KMS utilized by the users were repository-based and included applications for sharing corporate knowledge, best practices, and lessons learned, among others. We distributed paper-based surveys after briefly explaining our research agenda. There were 64 attendees that were solicited to participate with 41 completing the paper-based survey, yielding a response rate of 64%.

The initial participants in the study were subsequently asked to recruit additional KMS users within their firms via an online Web-based survey, which had the same questions in identical sequence as the paper-based version. The participants represented seven companies from a variety

of industries, including manufacturing, finance, consulting, and education. The Web-based survey provided an additional 144 completed surveys from 7 companies, yielding an approximate response rate of 29% (144/500). This resulted in a total sample size of 185 (41 paper and 144 Web). With the exception of a single item, out of 31 total items, there were no significant differences between the paper-based and Web-based surveys after performing a series of t-tests at both the construct and item levels. The single item was not removed from the analysis because dropping it lowered the reliability of its construct. The mean age of the respondents was 38, and 60% of the participants were female and 40% were male. On average, the respondents had 15 years of work experience, 13 years of computing experience, and 2 years of KMS experience.

Consistent with the technology acceptance studies, gender (Venkatesh & Morris, 2000), age (Gist, Rosen, & Schwoerer, 1988; Igbaria, Parasuraman, & Baroudi, 1996), and experience (Venkatesh et al., 2003) were tested as control variables to see if they had a moderating effect on behavioral intention to use. Following Venkatesh et al. (2003), a hierarchical regression analysis was used to test the direct and moderating effects because sample size considerations prevented us from running the interaction terms in LISREL (our primary analysis tool). The moderating effects were modeled as interaction terms between the moderators and perceived usefulness (PU), perceived ease of use (PEOU), perceived behavioral control (PBC), and subjective norms (SN). With direct effects, PU, SN, and PBC were significant. With both direct and interaction effects, PU, PU x gender, PU x age, PU x gender x age, and PBC x experience were significant.

Psychometric Measures

The data were analyzed using the structural equation modeling (SEM) technique, which is suitable because our research model contains latent variables. The model was tested using the two-step approach where the measurement model fit was first assessed followed by the structural model testing in which the path coefficients were estimated (Bollen, 1989). The reliability and validity of the data were tested before model assessment and the results demonstrated acceptable psychometric properties. The reliability coefficients of all eight constructs, with two exceptions, were above .70, which is an acceptable value as stated by Nunnally (1967). The employee-oriented vs. job-oriented and open communication system vs. closed communication system constructs were at .69. They were retained because they were close to the cutoff level1.

Construct validity was assessed by comparing the correlation coefficients within and between constructs. The average within construct correlation was .40, which is higher than the between constructs correlation of .19. The within construct correlations were higher than between constructs correlations, indicating construct validity. In addition, we examined convergent and divergent validity and tested the data for normality. Even though the maximum likelihood estimator performs relatively well under various conditions (Hoyle & Panter, 1995), it assumes the normality of the data. The mean skewness and kurtosis values were -.47 and .33 respectively, indicating that the variables approximate a normal distribution and were acceptable for LISREL analysis (Bollen, 1989; Byrne, 1998; West, Finch, & Curran, 1995).

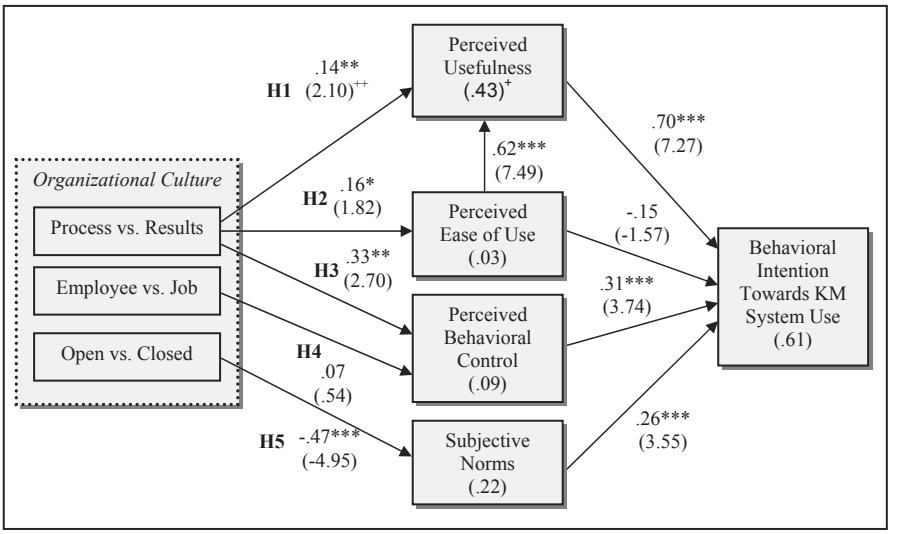
Chi-square goodness-of-fit statistic, comparative fit index, and the root mean square error of approximation were also assessed. Chi-square (χ^2) goodness-of-fit statistic assesses the degree of departure of the sample covariance matrix from the fitted covariance matrix (Hu & Bentler, 1999) . A nonsignificant and small chi-square is desirable. Because the chi-square statistic is a direct product of sample size, when the sample size is large and models contain a large number of indicators, the statistic can often be significant

(Byrne, 1998). The comparative fit index (CFI) and root mean square error of approximation (RMSEA), however, are not sensitive to sample size. The comparative fit index is an incremental fit index that measures the improvement in fit by comparing a target model with a restricted, nested base model (Hu & Bentler, 1999). In addition, it is suggested as the best approximation of the population value for a single model (Medsker, Williams, & Holahan, 1994). The general accepted value is above .90. The root mean square error of approximation, a type of absolute fit index, assesses how well sample data are reproduced from an *a priori* model (Hu & Bentler, 1999). The general accepted cutoff is .10.

Using LISREL 8.54, we first tested the measurement model. Its fit statistics were χ^2 (406 df, N = 185) = 685.63, p < .001, CFI = .95, and RMSEA = .061. Overall, the statistics demonstrated good fit and the measures were acceptable for structural model assessment. Good model statistics are indicative of unidimensionality and convergent validity (Gefen, Karahanna, & Straub, 2003). Divergent validity was assessed by comparing the original measurement model with an alterative model that includes all items as one construct (Segars, 1997). The χ^2 was significantly smaller in the original measurement model ($\chi^2_{\text{Alternative}}$ = 3234.07, χ^2 difference = 2548.44 with *df* change = 28, *p* = .00) establishing discriminant validity (Segars, 1997).

We assessed 10 paths in the structural model testing. The model fit statistics were χ^2 (421 df, N = 185) = 771.33, p < .001, CFI = .93, and RMSEA = .067. Overall, the statistics demonstrated a good fit of the model to the data. Figure 2 shows the estimated standardized path coefficients and their t-values in the structural model and the variance explained for each of the constructs. The asterisks on the path indicate the significance level and the variance explained are presented below the asterisks in parentheses. All links except those between an employee-oriented vs. job-oriented organizational culture and perceived behavioral control and between perceived ease of use and behavioral intention were significant. The model

Figure 2. Structural path coefficients



** P < .10, ** p < .05, *** p < .001*

had adequate predictive power for several constructs, including perceived usefulness (R^2_{PU} = .43), subjective norms (R^2_{SN} = .22), and behavioral intention (R^2_{BI} = .61). However, the predictive power was somewhat less for perceived ease of use (R^2_{PEOU} = .03) and perceived behavioral control (R^2_{PBC} = .09). In regard to the variance extracted in behavioral intention, our model exhibited better predictive power (.61) than that shown in the hierarchical regression with direct effects (.48), as well as direct effects and interaction effects (e.g., age, gender, experience) combined (.58).

The theoretical model was modified to add direct paths of the cultural dimensions influencing behavioral intention. None of the direct paths from the cultural dimensions to behavioral intention were significant. The change between the theoretical model and the modified model in χ^2 was 5.49 with 3 degrees of freedom (p = .1392). This suggested that the effects of the cultural dimensions on behavioral intention were mediated and, consequently, the theoretical model was utilized.

DISCUSSION

There was support for four out of the five research hypotheses. These results suggest that the organizational culture dimensions play a key role in the factors that lead to the acceptance of KMS. Our research also examined several prominent technology acceptance relationships and had similar findings to other research that has investigated the applicability of such relationships with the user acceptance of a KMS (Money & Turner, 2005). The relationships between perceived usefulness and behavioral intention to use a KMS, subjective norms, and behavioral intention to use a KMS, perceived behavioral control, and behavioral intention to use a KMS, and perceived ease of use and perceived usefulness were all significant. The relationship between perceived ease of use and behavioral intention to use a KMS, however, was not significant although there was still a significant path through the model incorporating perceived usefulness. These findings are consistent with other studies of extended technology acceptance models (e.g., Adams, Nelson, & Todd, 1992; Hu, Chau, Sheng, & Tam, 1999).

In general, our model explained a reasonable amount of variation of the key variables. The variation in process-oriented vs. results-oriented organizational cultures (as well as the variation in perceptions of ease of use) explained 43% of the variation in perceptions of usefulness. Furthermore, the variability in process-oriented vs. results-oriented cultures explained 3% of the variance of perceived ease of use. Similarly, open communication systems vs. closed communication systems organizational cultures explained 22% of the variance in subjective norms and 9% of the variance in perceived behavioral control. The model accounted for 61% of the variability in behavioral intention to use. Most of the R^2 values are acceptable for technology acceptance research. The large amount of variance in behavioral intention to use is an indication that organizational culture, subjective norms, perceived behavior control, and technology acceptance together are strong factors to study with respect to KMS acceptance.

IMPLICATIONS AND CONCLUSION

In conclusion, our research found that organizational culture does significantly influence the factors that lead to the acceptance of KMS. Our research model was developed using commonly accepted measures from the technology acceptance and organizational culture literatures, tested by surveying corporate KMS users, and analyzed utilizing structural equation modeling. Our results indicated that both process-oriented and open communication organizational cultures significantly influenced factors that lead to the acceptance of KMS.

This research has relevance for both practitioners and researchers. In this article, we examine the influence that three dimensions of organizational culture have on KMS acceptance. It is necessary to examine organizational culture when investigating KMS because such systems are different from traditional information systems. Knowledge, which is information that exists in the minds of individuals, is inextricably linked to knowledge management systems. The emphasis on this human component may not be as prominent in other information systems, and suggests that we incorporate constructs, such as organizational culture, to match the nature of this technology.

This research builds upon the growing IS literature that examines organizational culture, which had historically received insufficient attention (Cooper, 1994; Robey, Wishart, & Rodriguez-Diaz, 1995b; Ruppel & Harrington, 2001). In this study, we have demonstrated that organizational cultural elements are important and should be considered in studies of technology acceptance. For researchers in the culture field, our study extends the importance of examining organizational culture with respect to information systems.

This research also offers several implications for practitioners. We identify different dimensions of organizational culture that lead to greater KMS acceptance. These organizational culture practices are particularly valuable because they are the most direct tools for changing behaviors needed to support knowledge creation, sharing, and use (De Long & Fahey, 2000). Although organizational culture is likely to be inherent in IS practitioner's day-to-day interactions with employees and IT, knowledge of more formally defined dimensions as investigated in this study could lead to better understanding and management of organizational cultural issues, such as office politics. In addition, it has been found that organizations that share common goals, principles, values, and language help facilitate IT relatedness, which can enhance knowledge management capability and ultimately, firm performance (Tanriverdi, 2005). The findings in our research reveal specific dimensions of organizational culture that can influence the knowledge management capability of an organization. Consequently, managers should strive to foster a more results-oriented and open communication system environment in the workplace.

To develop a more results-oriented culture, managers need to encourage behaviors that are less risk averse, such as experimentation and exploration. Instead of a static technology with a limited adaptability, a KMS that has been experimented with by its users will generate new and novel uses of the system. Technologies are often not accepted due to a perceived misfit between the characteristics of the technology and the culture of the organization. Allowing employees the opportunity to adapt to the technology as an outcome of a results-oriented culture can generate a better fit. Consequently, managers should be required to focus more on the goals of job tasks instead of the processes of achieving the outcomes. The schemes for incentives and promotions of KMS users should be compatible with such strategies.

Allowing users time to experiment and explore the features of a new KMS could lead to increased perceptions of usefulness and ease of use, which were also found to influence KMS acceptance. As users experiment and find novel features of the system, they will find it to be more useful. Additionally, the increased time spent on the system would allow for greater perceptions of ease of use. Support for experimentation by management implies a tolerance for mistakes. With the understanding that a certain number of experiments will not have desirable outcomes, users would nevertheless still perceive a greater degree of control over the operation of the system.

Open communication plays a significant role in the acceptance of KMS. To develop a more open communication system culture, a number of strategies can be implemented. Users need to freely interact with their important others (such

as coworkers, supervisors, and top management) as well as being included in the design, development, administration, and support of the system. Companies should encourage open communication through the use of forums and newsletters and can even design such features into a knowledge management system. Management can also reward users for openness, such as for voicing opinions regarding the system, and making suggestions for system improvements. These policies will cultivate the tendency to increase subjective norms among users and hence, increase KMS acceptance.

A limitation of our research is that it investigated only a few organizational culture dimensions. We believe that the dimensions most appropriate for KMS were captured in our study and that the germane features of other competing dimensions may be largely encapsulated in the dimensions that we investigated (Chatman & Jehn, 1994; Hofstede et al., 1990). Nonetheless, future research may wish to consider other cultural dimensions to examine the influence that they may have on KMS acceptance. Research can also pursue additional relationships among the cultural dimensions examined in this research, which may provide further insights into the influence that they have on the antecedents of KMS acceptance. The variance extracted for perceived ease of use and perceived behavioral control was less than 10%. It is important to recognize that due to limited variance extracted, the process/result-perceived ease of use and process/result-perceived behavioral control links need to be interpreted with caution and closely examined in future research (Falk & Miller, 1992). Another limitation is that the source of our data may be too limited to claim any universality for our research model. Certain industries, such as health and welfare, government, and retail were not represented in our sample. However, we believe that our research model is robust and will be suitable for testing in other environments and contexts.

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ENDNOTE

[1] An exploratory factor analysis was performed, but not included in this article due to space limitations. These results are available from the third author.

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