Cultural Determinants of Learning Effectiveness from Knowledge Management Systems: A Multinational Investigation

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Furner, C, Mason, R., Mehta, N., Munyon, T. and Zinko, R. (2009). Cultural Determinants of Learning Effectiveness from Knowledge Management Systems: A Multinational Investigation. *Journal of Global Information Technology Management*, 12(1), 30-51. https://doi.org/10.1080/1097198X.2009.10856484

This is an Accepted Manuscript of an article published by Taylor & Francis in *Journal of Global Information Technology Management* in 2009, available online: http://www.tandfonline.com/10.1080/1097198X.2009.10856484.

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Abstract:

Knowledge is a vital component of organizational success embedded within the human resources of a firm (Grant, 1996). Knowledge is lost by organizations when it is not used or when knowledgeable individuals turnover. Knowledge Management Systems (KMS) are designed to help organizations capture, store, distill, and distribute knowledge embedded within their employees. The effectiveness of KMS is dependent on individual learning and individual-specific learning preferences. Furthermore, as the world becomes more globalized and the job candidate pool from which organizations hire becomes more culturally diverse, the extent to which western models of organizational behavior hold becomes less clear. Using a multi-national survey, this study aims to determine to what extent learning preferences are dependent on culture. If learning preferences are dependent on culture, KMS designs that ignore culture may result in incomplete or ineffective knowledge transfer and learning outcomes. Our findings contribute to the KMS literature by suggesting that KMS design should be conducted with the goal of effectively facilitating learning across cultures. Specific KMS design recommendations include incorporating group activities and providing more flexibility, depending on the culturally derived learning preferences of specific users.

Keywords: Knowledge Management Systems | Culture | Learning Preferences | Fit

Article:

INTRODUCTION

Knowledge Management (KM) has emerged as a topic of considerable interest to researchers in organizational sciences (Drucker, 2001; Ford & Chan, 2003). Davenport and Prusak (1998, p.3) define knowledge as " ... a fluid mix of framed experience, values, contextual information, and

expert insight that provides a framework for evaluating and incorporating new experiences and information". Knowledge has also been viewed as a resource embedded within the employees of an organization (Grant, 1996). According to Barney's (1991) resource-based view, knowledge represents a resource capable of creating sustained competitive advantage, as knowledge is difficult to imitate, rare, valuable, and heterogeneously distributed across firms. Investment in the preservation, augmentation, and application of knowledge promises to pay dividends for managers.

Knowledge Management Systems (KMS) are computer enabled information systems used by organizations to capture and store knowledge embedded in their employees and customers. This stored knowledge can then be distributed to facilitate learning by future employees. The effectiveness of this learning is dependent primarily on the design of the KMS. However, the learning preferences of the users will influence the effectiveness of the KMS in transferring knowledge. Mason (2003) suggests that KMS designs generally reflect the culture in which they were engineered. However, the recent technological revolution, accompanied by rapid globalization (Grimm & Smith, 1997), has led to increased cultural heterogeneity within organizations. As the world becomes more and more globalized, western organizations now have access to a pool of job candidates from increasingly diverse cultural backgrounds (Friedman, 2005). National borders no longer preclude individuals of different cultures from working in international firms. Consequently, organizations today exhibit more cultural diversity among their employees.

However, most information systems research has been conducted in a western context using western subjects, and the relationships identified in these studies may have been influenced by the espoused national culture of the subjects as suggested by a number of researchers (e..g, Okunoye & Karsten 2002; Watson, Ho, & Raman, 1994) Theorists such as Vygotsky, Rieber, and Carton (1997) have suggested that learning preferences are influenced by culture. Accordingly, culturally diverse workers in western organizations are apt to demonstrate learning preferences that differ between individuals.

Consequently, the purpose of this paper is to determine how KMS can be designed to best facilitate knowledge transfer from a learning module to an individual in multicultural organizations. Task-technology fit (Goodhue & Thompson, 1995) provides an applicable theoretical framework with which to analyze this question. Specifically, KMS provide organizations with a means to transfer knowledge and stimulate learning. However, learning outcomes will be partially dependent upon individual characteristics, including culture. Consequently, we seek to answer: *To what extent are learning preferences associated with culture?* If we are able to identify cultural determinants of learning preferences, then the next step is to determine how to design KMS that effectively transfers knowledge to individuals from divergent cultures with the ultimate goal of optimizing the technology-to-performance chain (Goodhue & Thompson, 1995).

This paper is organized as follows: first, we review the literature surrounding KMS, learning preferences, and culture. We then outline our research hypotheses. Next, we discuss the proposed methods, including our choice of methodology, subjects, measures, and data collection

procedures. Finally, we conclude with a discussion of contributions, limitations, and potential for future research.

LITERATURE REVIEW

Knowledge Management Systems

Knowledge resources represent the fundamental building block upon which organizational capabilities are built (Grant, 1996). Knowledge resources can be lost as experts leave the organization, and KMS, such as expert systems, have the capability to preserve some of this knowledge by storing it and making it available to other members of the organization. Alavi and Leidner (2001) proposed that KMS typically perform four key functions: 1) knowledge creation, 2) knowledge storage/retrieval, 3) knowledge transfer, and 4) knowledge application. Researchers have thus far focused more on the creation and storage/retrieval aspects of KMS than on the learning that ensues during knowledge transfer. However, knowledge transfer is an equally important process since learning is accomplished via a learning experience provided by the KMS. As systems designed to disseminate information, KMS design should logically focus on the transfer component and subsequent learning outcomes.

Prior studies have suggested that the ability of KMS to improve learning is profoundly contingent upon the social context in which they are embedded (e.g., Alavi, Kayworth, & Leidner, 2005). Although these studies provide insights into the importance of social issues on KMS learning outcomes, prior literature still lacks an empirical analysis of specific national cultures and how they might influence KM technology choices for transferring knowledge. We propose that culture shapes individual learning preferences, which in turn influence the effectiveness of KMS in transferring knowledge. Using the task-technology fit perspective, we argue that the level of fit between the task, individual, and technology will influence the effectiveness of KMS in facilitating knowledge transfer. By matching culturally-associated learning preferences with KMS design characteristics (i.e., by assuring a fit between learning preferences and design characteristics), the performance of KMS as a tool for learning can be improved. These connections are discussed further in the following paragraphs.

Technology Fit and Performance

Organizational training focuses on the dissemination and transfer of knowledge from KMS to employees. The performance of KMS in facilitating this transfer depends on the level of utilization and fit between the task, individual, and technology (Goodhue & Thompson, 1995). These factors collectively form the basis of the technology-to-performance chain, where task-technology fit mediates the relationship between task characteristics and performance impacts.

Two key assumptions of task-technology fit are the presence of utilization and a high degree of fit between the task, target (i.e., individual or group), and technology. KMS learning scenarios offer a unique test of task-technology fit since utilization variance is substantially reduced. Logically, organizations that invest resources in KMS for learning purposes will require their employees to use the technology. Accordingly, we would anticipate a reduced level of variance in KMS utilization. For training scenarios, this implies that task-technology fit is the primary

driver influencing performance outcomes and learning. Thus, KMS designs that accentuate task-technology fit should theoretically facilitate improved KMS performance, including the transfer of knowledge and learning. High KMS performance outcomes should also influence feedback and the continued utilization of the technology by organizations. As noted, task-technology fit includes characteristics of the task, technology, and individual (Goodhue & Thompson, 1995). Individual differences will likely influence how an employee learns. Consequently, it is important to consider the context of learning preferences in the design and implementation of KMS.

For example, an individual who prefers to be given more flexibility when learning may find a KMS that provides a structured learning experience to be confining, and may tune out, leading to less effective learning. Conversely, an individual who prefers more structure may find a flexible learning experience to be overwhelming, suffer information overload, become distracted, and also have a less effective learning experience.

Learning Preferences

Individuals differ in their learning preferences and styles (Rezler & Rezmovic, 1981). Astute organizations can incorporate these differences into their KMS design to improve fit and influence knowledge transfer and learning. For example, Leidner and Jarvenpaa (1995) expounded theoretical approaches to learning using technology, arguing that technology influences learning outcomes as a function of the model and situation where the learning occurs. Learning may occur using objectivist, constructivist, cooperative, cognitive information processing, and sociocultural learning models. KMS generally rely on the objectivist learning model since these systems are designed to disseminate information from the expert to the learner. However, task-technology fit is most accentuated when individual characteristics and preferences are included in the design. Since learning preferences are specific to the individual, an analysis of individual learning differences is needed to maximize fit in the task-technology framework.

Rezler and Rezmovic's (1981) Learning Preference Inventory asks participants to rank a number of statements which helps the researcher identify their preference for teacher directed vs. independent, as well as individual vs. team learning. In the current study, we consider learning preferences to include the preference for learning individually vs. learning in groups and preference for structure vs. flexibility, as these are recurring themes in the learning preferences literature, and we will argue that these components of learning preferences have cultural determinants.

Structure vs. Flexibility. Rezler and Rezmovic (1981) distinguished teacher directed from student directed learning. The constructs that they identify will be adopted here. We refer to teacher directed learning as structured and student directed learning as flexible. Although it is unclear if Rezler and Rezmovic (1981) refer to structure in terms of choosing the content of the course, or in terms of control over the student's schedule, we conceptualize the construct as consisting of both.

Individual vs. Group. Rezler and Rezmovic (1981) distinguish also between preference for individual and preference for group learning. Those who prefer to learn individually would rather experience the learning by themselves, without the company of peers (people who prefer to learn individually do not necessarily prefer to have no instructor, they just prefer to learn in the absence of their peers). Individuals who prefer to learn in groups do prefer the company of their peers while learning.

Culture

For some time researchers have been aware that individuals in various civilizations share common values, beliefs, norms, and customs. Researchers have labeled the socially constructed forces that comprise these commonalities as culture (Stahl and Elbeltagi, 2004). Building on Kroeber and Parsons' (1958) definition of culture, we define the construct as: *patterns of values, beliefs, norms and customs shared by members of a civilization that influence their behavior.*

A number of categorization schemes exist for culture. The most frequently cited topology is Hofstede's (2001) four dimensions of culture: Individualism/Collectivism, Power Distance, Uncertainty Avoidance, and Masculinity/Femininity. This topology is being adopted for the current study because it provides the most rich and well articulated conceptualization of culture available. Each dimension will be discussed in turn.

Individualism/Collectivism. We identify culture as consisting of values, beliefs, norms, and customs. Individuals who score highly on individualism value relationships with family, friends and co-workers less than collectivists. The norms in individualistic cultures stress independence from one's family and employer (for example, young adults rarely live with their parents, and do not have a sense of loyalty to their employer). Triandis (1995) characterizes people in individualistic cultures as loosely linked and individually rational, while collectivists are closely linked and give priority to the group.

Power Distance. Power distance can be conceptualized as the degree of separation between individuals at adjacent levels of rank. Individuals who score highly on power distance place a high value on societal hierarchy, while individuals who score low value societal hierarchy less (Watson et a]., 1994; Hofstede, 2001). Individuals who score high on power distance believe that supervisors should maintain decision making authority, receive credit for success, and that supervisors deserve respect and admiration from subordinates. Conversely, individuals who score low on power distance believe that the supervisor and the subordinate are colleagues, working toward the same goal, and are similar in terms of respectability. Norms and customs in high power distance cultures include centralized decision making at the top, showing a great deal of respect for individuals with higher rank (Srite & Karahanna, 2006), and a tendency to form bureaucratic organizations (Hofstede, 2001).

Uncertainty Avoidance. Uncertainty avoidance can be conceptualized as the propensity of individuals to avoid actions where the outcome is unclear. Individuals who score high on uncertainty avoidance value complete knowledge of future outcomes given alternate courses of action, while individuals who score low on uncertainty avoidance value complete knowledge less. Individuals with low uncertainty avoidance believe complete knowledge is not possible, and

even if it were, it would not be extremely useful. So, these individuals tend to exercise more risk taking behaviors (which have become norms) than individuals with a high degree of uncertainty avoidance. Customs in cultures with high uncertainty avoidance include dichotomization (conceptualizing people and situations as either good or bad), modularation and compartmentalization of tasks, in an attempt to simplify them (Hall, 1989; Hofstede, 2001).

Masculinity/Femininity. The concept of masculinity is associated with the competitiveness of individuals. Masculine individuals value ambition and the acquisition of wealth, while feminine individuals value nurturing and quality of life. Masculine individuals typically believe that failure is catastrophic, while feminine individuals see failure as common and find it easier to move on.

Norms in masculine cultures are congruent with their values, and include pursuit of wealth, pursuit of power and strengthening of ego. Conversely, in feminine cultures, norms include relationship building, helping out those who need help, and solving conflict through compromise and understanding (Hofstede, 1998).

As theorists (e.g., Chen, Wu, & Chung, 2008; Gurung & Prater, 2006) have noted, Hofstede's topology suffers from many drawbacks. While national level patterns exist, individuals within each country vary in terms of their scores on each cultural dimension, so using Hofstede's findings to predict individual behavior becomes problematic. The vast majority of previous studies of culture test individual level models across countries, and attribute differences in dependant variables to country level differences on dimensions of culture, without actually measuring individual level variations on those dimensions (Srite & Karahanna, 2006). This can threaten discriminant validity. To overcome this confusion, Srite and Karahanna (2006) use the term "Espoused National Culture" to refer to individual scores on nationally identified cultural dimensions. This term is used in the same manner in the present study, and the term culture is taken to mean espoused national culture. Espoused national culture is operationalized as four dimensions that match four of Hofstede's cultural dimensions; espoused collectivism, espoused power distance, espoused uncertainty avoidance and espoused masculinity.

Evidence suggests that western-derived models do not always hold in other national contexts. For example, Almutairi (2007) found that the Technology Acceptance Model is not supported with subjects from Kuwait. Almutairi used national culture to explain the inconsistency. In the KMS context, Al-Busaidi and Olfman (2005) found that the factors that determine KMS success differ in Oman, and attribute the difference in part to differences in knowledge culture. KMS that are designed by westerners, or under the direction of westerners, are likely to be designed with the assumption that the users of the KMS will have western learning preferences (Mason, 2003). This may or may not be the case. The next section goes through the development of the hypotheses to be tested in this study.

HYPOTHESES

We have identified two components of learning preferences - preference for structure vs. flexibility in terms of content and pace, and preference for working alone vs. working in groups.

The independent variables include all four of Srite & Katakana's four dimensions of espoused national culture. Research model is presented in Fig. 1.

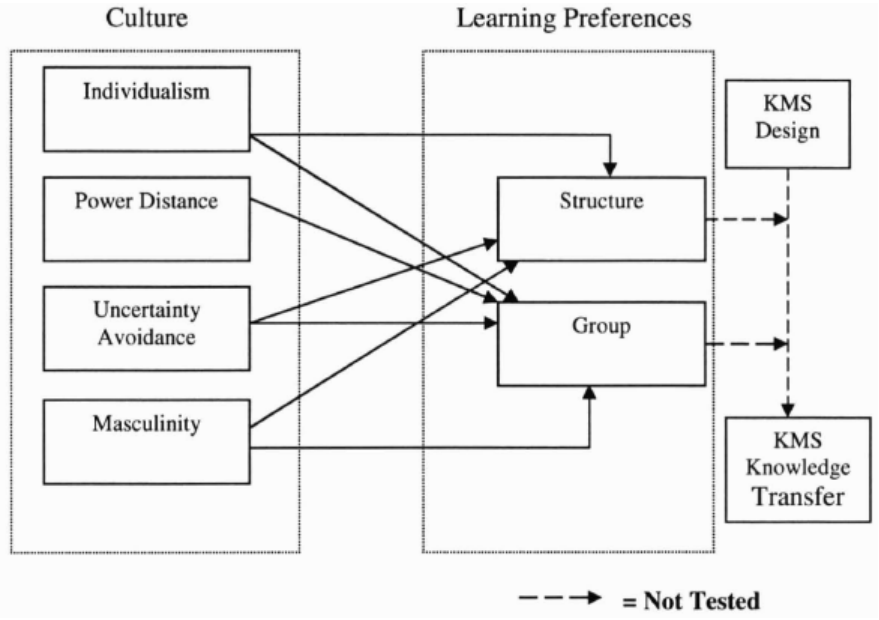

Figure 1. Research Model

Individualism/Collectivism

Ramburuth and McCormick (2001) found that Asian international student studying at a university in Australia scored higher on their preference to learn in groups than did native Australians studying at the same university. While the study never measured individualism at the individual level, and did not control for other social issues that may come into play when students study abroad, the finding is insightful in formulating our first hypothesis. According to Hofstede (2001), the people of Australia are the second most individualistic that he has examined, while Asian countries tend to be very collectivist. Ramburuth and McConnic explain their finding by arguing that differences in individualism play a role in the differences in preference to learn alone or in a group.

Individualism and collectivism are cultural elements that influence many aspects of life, including learning (Triandis, 1995). Individualists stress independence in their work and value individual achievement, whereas collectivists believe that if the group works together, they can benefit from synergies and all come out better off by working together (Hofstede, 2001). This suggests:

> **Hypothesis 1:** People who score highly on individualism will prefer to learn by themselves.

People who score highly in individualism tend to have an internal locus of control (Triandis, 1995) and like to have control over their own time. These individuals tend to experience negative affect when they do not have control over their own time. As such, we posit that these individuals are likely to prefer flexibility over structure in their learning endeavors, allowing

them to set their own pace and have control of their own time. Collectivists, on the other hand, seek congruence, belonging, and opportunities to contribute to a larger plan. These feelings and opportunities are facilitated by structure in terms of content, thus, we posit that those individuals who score low on individualism will prefer more structure than those individuals who score high on individualism.

> **Hypothesis 2:** People who score highly on individualism will prefer less structure in learning.

Power Distance

Individuals who score high on power distance and are faced with the prospect of learning in a group are likely to perceive the emergence of a hierarchy within that group. This is likely to lead to increased performance expectations, perceived responsibilities and therefore increased distress. Also, when engaged in group learning, individuals who score high on power distance are likely to engage in political behavior, creating more stress and hindering learning (Hall, Hochwarter, Ferris, & Bowen, 2004). These perceptions are expected to cause individuals who score high on power distance to be hesitant to join learning groups.

> **Hypothesis 3:** People who score highly on power distance will prefer to learn by themselves.

Structure reduces autonomy and, to an extent, reallocates accountability in the learning process from the student to the teacher (Rezler & Rezmovic, 1981). Instructors have a higher rank than students, so if a student who rates high on power distance is given flexibility, he/she can be expected to be concerned with doing things in a way that pleases the instructor rather than satisfying their own internal locus of control as expressed by Triandis (1995). Figuring out what pleases the instructor requires effort and can be stressful for students and may detract from learning. Conversely, in low power distance cultures, autonomy is regularly distributed and delegated to lower ranking individuals (Hofstede, 2001). and low power distance students should be more comfortable with the responsibility of scheduling their own time and deciding which topics are important. Indeed, individuals who score low on power distance may be offended if not given the opportunity to do so. This suggests:

> **Hypothesis 4:** People who score highly on power distance will prefer more structure in learning.

Uncertainty Avoidance

A constant pursuit of complete knowledge characterizes individuals who score high on uncertainty avoidance (Hofstede, 2001). A common belief among academics is that groups bring more knowledge to the table, along with diverse viewpoints (Priem, Lyon, & Dess, 1999). As such, in order to pursue complete information, we posit that individuals who score high on uncertainty avoidance will seek the knowledge and viewpoints of multiple individuals, and tend to form learning groups:

Hypothesis 5: People who score highly on uncertainty avoidance will prefer to learn in groups.

Learning that is structured in terms of delivery and content involves less uncertainty and more clear outcomes than learning that is flexible in terms of delivery (Rezler & Rezmovic, 1981). This is because structure requires clear objectives and milestones, which reduce perceived uncertainty. By definition, individuals who score high on uncertainty avoidance tend to seek clear outcomes and are uncomfortable with uncertainty (Hofstede, 2001). As such, individuals who score high on uncertainty avoidance are likely to prefer more structure when learning, as structure provides the learner with a clearer picture of how the learning experience will progress.

Hypothesis 6: People who score highly on uncertainty avoidance cultures will prefer more structure in learning.

Masculinity/Femininity

Individuals who score high in the masculinity dimension tend to be proud, territorial, and try to show each other up and outperform each other (Hofstede, 2001). Individual achievement is of vital importance to these individuals, and working in groups only masks their ability to show off their own performance capacity. We posit that individuals who score high on masculinity will seek opportunities to highlight their own performance, absent of any influence from others, and will thus avoid group learning. Conversely, individuals who score lower in masculinity will tend to engage in networking behaviors, help each other, and be supportive in a group learning environment.

Hypothesis 7: People who score highly on masculinity will prefer to learn alone.

Individuals who score high in masculinity tend to adhere to hierarchy and believe in defined roles, with clear expectations by which they can evaluate themselves and their relative performance (Hofstede, 2001). Structured learning environments provide milestones and objective criteria on which individuals can evaluate their performance relative to others. As such, we posit that individuals who score highly on masculinity will prefer more structure in learning so that they have the opportunity to stand out relative to others. In addition, individuals who score low on masculinity do not value performance as much; they are more interested in having time to enjoy life (Hofstede, 2001). As such, individuals who score low on masculinity will prefer flexibility to structure.

Hypothesis 8: People who score highly on masculinity will prefer more structure in learning.

METHOD

Methodology

Our research question aims to identify relationships between cultural and learning preference variables. In order to test our hypotheses, a cross-sectional survey was administered to

undergraduate students from universities in China, France, and the United States. While longitudinal designs are generally preferable to cross sectional designs, Pinsonneault and Kraemer (1993) argue that when the phenomena being studied is not the result of a dynamic process in which the values of the dependent variable change over time, cross sectional designs are acceptable. Keefe (1979) points out that learning preferences are largely stable, defining them as a "composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment." Hall notes "...once people have learned to learn in a given way it is extremely hard for them to learn in any other way. This is because, through the process of learning, they have acquired a long set of tacit conditions and assumptions in which learning is embedded" (1990, p. 47). This assertion is supported by empirical studies, for example Veres, Sims, and Locklear (1991) found that when subjects were given a learning preference questionnaire, then given the same questionnaire one year later, correlations between scores were significant (0.91).

Subjects

The population of interest is upper level undergraduate students because the retrieval function of KMS is frequently used by new employees who need to understand the processes that are associated with their jobs, and upper level undergraduate students will become new employees relatively soon. By understanding the learning preferences of upper level undergraduates, we can determine how best to design KMS to quickly and effectively acclimate new employees to their roles.

The level of analysis in our hypotheses is the individual. As such, our level of data collection is also the individual student. The sample for this study consists of upper level (Senior and Junior) undergraduate students at large universities (20,000 or more students) in the China, France and the United States. These nations were chosen because the individuals within these nations should exhibit adequate variation on the four cultural dimensions as illustrated in Table 1. Upper level undergraduate students were chosen because: 1) they have had recent experience with learning and should be prepared to respond to questions regarding their preferences accurately, 2) their learning mechanisms have not been tainted by the pressures of work (as is likely to be found in graduate students), which mask the effects of the cultural variables, and because 3) they will soon be using KMS to learn about their roles as new hires in organizations, making them a relevant population for our study.

Table 1. Hofstede's (2001) Index Scores

	USA	China	France
Individualism	91	20	71
Power Distance	40	80	68
Uncertainty Avoidance	46	30	86
Masculinity	62	66	43

Measures

To measure learning preferences, 33 questions were developed to measure preference for structure in learning (Structure) and preference for learning in groups (Group). The questions

were based on a 7-point Likert scale. A pilot study was conducted, in which 48 graduate students at a large university in the southeastern United States participated. Subjects originated from 14 different countries. Exploratory factor analysis was conducted, and after dropping some items (each construct finished with 8 items) the reliability (a) for Structure was 0.7055 and for Group was 0.7572. The remaining 16 items were kept in the final survey.

Since we are treating espoused national culture as an individual level variable, the country of origin of the subject is not analyzed; each subject reports their own espoused national culture, which is assessed without regard to their country of origin. This approach is consistent with Srite and Karahanna (2006). The items used to measure the four dimensions of espoused national culture were adopted from work by Srite and Karahanna (2006). Exploratory factor analysis identified five items for collectivism (reliability (α) = .81) and five items for power distance (reliability (α) = .68). Exploratory factor analysis yielded only two items each for masculinity (reliability (α) = .57) and uncertainty avoidance (reliability (α) = .62). Additional items were developed for these constructs, bringing the total to 7 for masculinity, and 5 for uncertainty avoidance. These additional items were not pilot tested. The final instrument included 38 items, in addition to 10 demographic questions.

Survey Procedures

Professors in each country, who administered the survey to their students, were identified in a variety of ways. The professors at the two universities in China were former professors of the spouse of one of the researchers. The French professor is a colleague of one of the researchers. Finally, the American students are undergraduates at the university where the researchers are employed.

Surveys were translated into the native language of the country to which they were sent. Subjects in the USA were given English surveys, subjects in mainland China were given surveys in Mandarin, and subjects in France were given surveys in French. A great deal of effort was made to ensure that the meaning of the questions was not distorted during translation. The Mandarin surveys were initially translated by a Chinese doctoral student in education who was studying in the United States. They were then translated back into English by a Chinese master of accounting student, and discussed word by word with one of the researchers, to ensure that the translation had captured the correct meaning. Seven adjustments were made, and the survey was sent to a Chinese Post-Doctorate Literature student working in the United States to be translated back into English one last time. The resulting translation was accurate. The French survey underwent a similar process with the assistance of Faculty from a university in France.

Surveys were e-mailed to the overseas professors who administered them. All surveys were coded by the same researcher in the US.

Analyses

Two linear regressions were employed to test our hypotheses. In one regression, preference for learning in groups was the dependant variable, and the factor scores for the four cultural dimensions served as the independent variables. In the second regression, preference for

structure in learning served as the dependant variable, and again the factor scores for the four cultural dimensions served as independent variables.

Validity

Our study is reasonably strong in terms of construct, internal, and external validity. Cook and Campbell (1979, p. 59) define construct validity as "the degree to which the measure's true score corresponds to the conceptual variable that the measure is intended to operationalize." Based on past literature, we have captured four very important aspects of culture, and two of the three most widely cited components of learning preferences (Rezler & Rezmovic, 1981). Thus, we believe that our variables adequately represent the constructs.

Internal validity refers to the degree to which a proposed relationship is causal in the direction proposed (Cook & Campbell, 1979). We have strong internal validity: As individuals grow, their learning preferences are typically formed within the boundaries/precincts of their culture (Vygotsky et al., 1997). External validity refers to the extent to which findings are generalizable across populations (Cook & Campbell, 1979). Our population of interest is upper level undergraduates preparing to enter the work force who are likely to use KMS training modules to learn in their respective organizations. Although recent graduates are not the only individuals that use KMS to learn, the determinants of learning preferences that we have considered are cultural, and the effects of which are expected to remain constant across populations (Hall, 1989). Conversely, learning preferences are expected to vary across populations, due to alternate plausible explanations. The use of students as subjects is a common concern regarding the external validity of these findings. Aspects of this study do address the theory behind what Berkowitz and Donnerstein (1982) are trying to achieve when they refer to "mundane realism". Most upperclassmen and graduate students are of similar age and education level as junior employees in the workforce. In addition, the variables being examined are essentially static (i.e., they represent personality traits, and as such will be somewhat static through one's life); therefore, such traits should not be greatly affected by station in life.

The diversity among subjects (both undergraduate and graduate from 14 different countries) that was used to obtain the convergent results of the pilot and primary studies is consistent with Cook and Campbell (1979) suggesting that external validity is enhanced by multiple heterogeneous smaller assessments than by one large experiment. By this notion, such a diverse group will only stand to increase validity. Additionally the large sample size (in excess of 500 observations) compensates for any power that may be lost due to the diversity of the sample. Overall, this study has moderate external validity, which is common in survey research designs.

Convergent validity refers to the extent to which multiple measures of a construct are in agreement. The current paper uses only a single instrument to gather data, making convergent validity impossible to assess. Overall, the current study has reasonably strong validity.

RESULTS

A total of 551 surveys were collected, of which 299 were filled out by Chinese students, 139 by American students, 87 by French students, and 26 by students from other countries. We did not

include incomplete surveys and we were left with a final usable sample of 515. The results of our analysis are presented in Table 2. The adjusted coefficient of determination (R^2) for the regression with preference for structure as the dependant variable was .272. The adjusted R^2 for the regression with preference for learning in groups as the dependant variable was .152. Multicollinearity was assessed by examining the VIF score. For both regressions, the VIF score was 1, indicating that multicollinearity was not a cause for concern (Green, 2000). Reliabilities for our six factors were assessed, and the alphas for each factor were all greater than .7 as shown in Table 3.

Table 2. Means, Standard Deviations, and Intercorrelations Among Study Variables

	DV: Structure		DV: Group		Correlations					
Variable	**β**	**Std. Error**	**β**	**Std. Error**	**1**	**2**	**3**	**4**	**5**	**6**
1. Pref. for Structure	–	–	–	–	–	–	–	–	–	–
2. Pref. for Group	–	–	–	–	-.010	–	–	–	–	–
3. Individualism	-.037	.038	.285*	.041	-.021	-.285*	–	–	–	–
4. Power Distance	-.089*	.037	.078	.041	-.085*	.057	.034	–	–	–
5.Uncertainty Avoidance	.501*	.038	.031	.042	.500*	.030	.028	.011	–	–
6. Masculinity	-.132*	.038	.276*	.041	-.141*	.271*	-.033	-.023	-.010	–

* $p < 0.05$

Table 3. Alphas and Descriptive Statistics for each Variable

Variable	**α**	**Min**	**Mean**	**Max**	**S.D.**
Pref. for Structure	.786	1.000	3.488	6.021	0.896
Pref. for Group	.710	1.000	4.088	6.743	0.951
Individualism	.741	1.000	3.450	6.721	1.201
Power Distance	.707	1.761	3.695	6.680	1.204
Uncertainty Avoidance	.712	1.000	4.218	6.354	0.995
Masculinity	.763	1.367	3.971	6.227	1.312

Hypothesis 1 stated that people who score highly on individualism will prefer to learn by themselves. Hypothesis 1 was supported ($p < .001$, $\beta = .285$). Hypothesis 2 stated that people who score highly on individualism will prefer less structure in learning. Hypothesis 2 was not supported ($p = .332$). Hypothesis 3 stated that people who score highly on power distance will prefer to learn by themselves. Hypothesis 3 was not supported ($p = .057$). Hypothesis 4 stated that people who score highly on power distance will prefer more structure in learning. Hypothesis 4 was not supported, although the beta coefficient was significant, it was in the opposite direction than predicted ($p = .017$, $\beta = -0.09$). Hypothesis 5 stated that people who score highly on uncertainty avoidance will prefer to learn in groups. Hypothesis 5 was not supported ($p = .455$). Hypothesis 6 stated that people who score highly on uncertainty avoidance will prefer more structure in learning. Hypothesis 6 was supported ($p < .001$, $\beta = 0.501$). Hypothesis 7 stated that people who score highly on masculinity will prefer to learn alone. Hypothesis 7 was not supported, although the beta coefficient was significant, it was in the opposite direction than predicted ($p < .001$, $\beta = .276$). Hypothesis 8 stated that people who score highly on masculinity will prefer more structure in learning. Hypothesis 8 was not supported, although the beta coefficient was significant; it was also in the opposite direction than predicted ($p < .001$, $\beta = -0.132$).

DISCUSSION

We argue that when a new employee uses a KMS to learn about their job duties, the effectiveness of their learning experience will depend on their espoused national culture. The purpose of this study was to determine if one's espoused national culture has an influence on one's learning preferences. Our results indicate that one's espoused national culture does indeed impact one's learning preferences. Specifically, three of the four cultural dimensions examined have an influence on preference for structure in learning, while two of the four cultural dimensions examined have an influence on preference to learn in groups. Four of the findings of this study were surprising and warrant additional discussion.

First, gender was included as a control variable. Holding other factors constant, the regression results show that females are more likely to prefer structure in learning than males. Though, when cultural variables are included in the model, this effect disappears. Gender was not related to any of our hypotheses. However the finding that females prefer more structure than males represents an avenue for further exploration in subsequent studies, as it suggests that gender may moderate relationships between espoused national culture and learning preferences.

The three surprising findings are those significant results that are in the opposite direction then as we had hypothesized. We had argued that structure provides a set of metrics by which individuals can compare themselves to their peers, and that individuals who score highly on masculinity appreciate the opportunity to show off, which is facilitated by clear guidelines provided by structure. However, we found that individuals who scored highly on masculinity preferred less structure in learning. Measuring the ability of individuals to perform is facilitated by structure; however structure may limit the individual's ability to perform by removing any opportunity to employ creativity, and thus make it more difficult to rise above the competition. As such, an individual who scores highly on espoused masculinity who is faced with the choice between a structured and a flexible learning experience may prefer the opportunities for creativity which are provided by the flexible learning experience.

We also proposed that structure removes accountability, and people who score highly on espoused power distance will prefer more structure because structure makes it easier for individuals to blame the system if learning goals are not accomplished. However, individuals who scored high on power distance actually preferred less structure in learning (the effect was relatively small). The individuals in our sample who scored highly on espoused power distance may have felt overwhelmed by power differences between themselves and their teachers, and experienced authority bum out. They may have perceived the opportunity to control their learning experience via a flexible learning experience as an opportunity to take back some of the control that they abdicated to their instructors. Perhaps being empowered with the ability to choose the pace and content of their learning experience is appealing to these individuals because it promises to be less stressful than adhering to the structured learning experience dictated by an authority figure.

Next, we proposed that individuals who score highly on masculinity would prefer to learn alone, because doing so would allow them to isolate their own performance, so that they can lay full claim to their accomplishments. However, these individuals preferred to learn in groups. This finding can be explained by masculine individuals' tendency to seek leadership opportunities (Triandis, 1995). If put into a group learning environment, an individual who scores highly on

masculinity may perceive an opportunity to demonstrate his/her leadership abilities, thus potentially make a good impression on his/her supervisor. Acting on this opportunity would be consistent with Ferris, Perrewé, Anthony, and Gilmore's (2000) argument that employees engage in elevated impression management behaviors during the early months of a new job.

In addition to four surprising findings, we also had three non-significant results that warrant discussion. First, we were not able to find support for hypothesis 2, which stated that people who score highly on individualism will prefer less structure in learning. This non-finding is truly perplexing, as individualists generally value setting their own agendas and having as much control over their lives as possible. The apparent explanation is that the degree to which people who score highly on individualism value being able to decide what content is important and setting their own schedule is not as strong as we had expected.

We were not able to support hypothesis 3, which stated that people who score highly on power distance will prefer to learn by themselves. Our rationale for this hypothesis centered on a desire of people who score highly on power distance to avoid the stress created when a power hierarchy emerges within a group. Perhaps individuals are not able to predict this emergence of a power hierarchy, or the related stress before becoming involved in the group. In addition, we were unable to find support for hypothesis 5, which stated that people who score highly on uncertainty avoidance will prefer to learn in groups. Perhaps we overestimated the ability of individuals to appreciate the potential benefits of group learning. Further, individuals from high uncertainty avoidance cultures may feel uncomfortable giving up any control of their learning activities to others.

The findings of our study merit theoretical discussion. We have demonstrated that culture influences learning preferences by testing eight relationships between espoused national culture and learning preferences, and identifying five significant relationships. This provides empirical support to prior conceptual work by Watkins (2000) and Mason (2003). Indeed, in the context of learning, one size does not fit all. Given this finding, we suggest that KMS designers and organizations evaluate the individual cultural preferences of users to optimize the design of KMS learning modules. We suggest that KMS that are designed around a sociocultural learning model (Leidner & Jarvenpaa, 1995) are most suitable in culturally-diverse organizations. The sociocultural learning model assumes that knowledge is most readily gained when rooted culturally in the context of the learner.

LIMITATIONS, CONTRIBUTIONS AND OPPORTUNITIES FOR IMPROVEMENT

It is important to note the limitations of this study. First, our sample consists only of undergraduate university students. While these students are preparing to enter the workforce and will soon be faced with using KMS for training purposes, they are not the only users of the KMS, so the implications that we have outlined may not apply to all users or all KMS. People who have worked in the organization for many years also use KMS, as do new hires with experience in the field.

Second, participation was voluntary, which may result in non-response bias. In addition, while efforts were made to select countries with cultures that differ on Hofstede's (2001) levels, the

universities and students within each country were not selected randomly, which can lead to a myriad of serious methodological problems (Cook & Campbell, 1979; Fowler, 2002).

Limitations with the measures are also present. Data were collected via a survey methodology only, which can threaten the reliability of the findings (Pinsonneault & Kraemer, 1993). While the four cultural variables that we employed are consistently used by researchers in a variety of disciplines, they are not exhaustive, and more cultural variables could be considered, such as contextual orientation, temporal orientation (monochronic vs. polychromic), and formality (Hall, 1989, 1990).

Nonetheless, using a multi-national sample, we have been able to demonstrate that culture influences learning preferences, which carry important implications for developers of KMS in multicultural organizations (Larkey, 1996). Our findings indicate that KMS developers should be aware of the projected cultural make up of their organization and design KMS to accommodate individuals who prefer to learn in groups and who prefer less structure in their learning. First, future research is needed to identify specific ways in which learning preferences can be incorporated into KMS design and use. Second, research is needed to identify which learning models (Leidner & Jarvenpaa, 1995) provide the best KMS outcomes in organizations. Finally, extension and replication would serve to augment the reliability of the findings of this study. In particular, while linear models are useful for understanding issues as complex as learning preference and culture, non-linear models and combinations of factors could provide better explanations of the relationships between these constructs.

CONCLUDING REMARKS

By illustrating the relationship between culture and learning preferences, this study sets the stage for an exciting new sequence of KM research. We have framed the problem of ineffective KMS design within the context of culture. Westerners generally prefer less structure and to learn individually. Accordingly, many KMS are currently designed to accommodate these preferences. The next step is to identify KMS design strategies that will prove effective in multicultural settings. An example KMS design strategy that would appeal to individuals who prefer to learn in groups would involve role-playing exercises and simulations with decision-making components, and feedback indicating how closely the users' decision patterns match those of the experts. The potential for future research is substantial.

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