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THE INFLUENCE OF A LEARNING CULTURE ON IT INVESTMENTS

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ABSTRACT

This study investigates whether organizations with a learning culture differ from other organizations in their IT investment process and technology choices. Data were collected from a national sample of 200 firms. The findings show that a continuous-learning culture significantly impacts the extent to which change management and technical flexibility issues are considered in an organization's decision process, the type of decision makers involved in the process, and the technology choices that result.

Keywords: IT investment, organizational learning, socio-technical theory, change management, KM technologies adoption, technical flexibility

INTRODUCTION

Organizational learning is an imperative for marketplace success today. Researchers 0 state that "organizational learning is as important as positive cash flow for an organization's survival in today's global market." Varying amounts of organizational learning take place in all viable organizations, but successful "learning organizations" are characterized by a "continuous-learning culture," that is, a culture that supports and values constant learning 0. Learning organizations produce improved organizational results by creating, acquiring and communicating information and knowledge and changing their behavior to reflect new knowledge 0. These organizations provide learning opportunities for their employees, use learning to reach goals, and link individual performance with organizational performance 0. As a result, organizations implementing learning practices have better financial performance than those without such practices 0.

Within a continuous-learning culture there is a shared belief that learning and innovation are important

for remaining viable as a competitor in the marketplace 0. Because of this, processes are regularly analyzed, combined with new ideas, and refined. Previous research has investigated various processes of learning organizations, seeking insights on best practices, what these organizations have learned, and how their processes differ from other organizations. While the organizational learning perspective has been used to investigate Information Technology (IT) adoption, in general, and IT assimilation 0 00, research examining the initial IT investment decision has been scant. One study found that organizations with a learning culture were more likely to consider the social implications of technology adoption than those without such a culture 0. In addition, there is some evidence that organizations with a continuous-learning culture may invest in different technologies, or invest in technologies earlier, than those without such a culture. For example, Lin and Lee 0 found that organizational learning factors were significantly related to e-business adoption. Bangert and Dockter 0 discovered that organizational learning cultural variables were important to rapid adoption of the new and intrusive technology in the healthcare field. We continue this sparsely researched stream of research, by investigating whether organizations with a learning culture differ from other organizations in their IT investment process and technology choices. Specifically, the study intends to examine the following questions:

1) Are there IT investment decision issues that are considered to a greater degree by organizations with a learning culture?

2) Do such organizations involve different types of managers in their decision process?

3) Are the technologies that organizations with a learning culture choose to adopt different from other organizations?

To address these questions, we use socio-technical systems (STS) theory as a theoretical lens. STS assumes that organizations are made up of people (the social subsystem) using tools, techniques and procedures (the technical subsystem) to produce goods or services valued by customers (part of the organization's external environment). How well the social and technical subsystems are designed with respect to one another and with respect to the demands of the external environment determines to a large extent how effective the organization will be 0. Many researchers have embraced the STS approach by applying the concepts to IS topics such as system analysis and design 0, software project risk analysis 0, IT investment 0, business process reengineering 0 and development and use of group support systems 0. Past research has shown that learning organizations are more likely to take into account both social and technical subsystem issues 00. In this paper, we use STS to inform our investigation of how a learning organization's culture might affect its IT investment decisions.

The remainder of this paper is organized as follows. First, we present the theoretical background for our study and the research hypotheses. Next, we describe the methodology, the research results, implications and limitations.

THEORETICAL BACKGROUND AND RESEARCH HYPOTHESES

Socio-Technical Systems Theory (STS) and Continuous-Learning Culture

Both STS and the organizational learning perspective have roots in open systems theory. In open system theory, the term "open" means that the components receive input from the environment and "system" implies the interaction of the components. Open systems thinking is referred to as "the cornerstone of how learning organizations think about their world" 0 . Organizations adopting open systems thinking see the interrelationship among the components and patterns of change, rather than the static snapshots 0. With STS, linear and mechanistic thinking are replaced by system thinking-- a way of thinking which recognizes the interaction among components and the importance of the whole 0.

"Joint optimization" is a key STS principle. Contrary to technological determinism, STS is widely recognized for promoting the joint evaluation of both social and technical subsystems of any organizational system. Organizations can perform optimally when social subsystem and technical subsystem are both designed to fit each other 0. Suboptimization will occur when only the social or the technical subsystem is emphasized 0.

Offshoots of the STS paradigm, such as Learning Network Theory (LNT), focus on the interaction of learning and organizational change 0. According to LNT, organizational members develop action theories, which they use to augment their skills and enhance organizational performance. In such organizations, learning is seen as an extremely important human capability; a vital resource that allows the system as a whole to be sustainable and to continuously adapt.

Organizations that have a culture embracing continuous-learning share an organization-wide belief and expectation that "general knowledge acquisition and ap-

plication is important" 0. Tracey, Tannenbaum and Kavanagh 0 highlighted four aspects of a continuous-learning culture. First, employees in a continuous-learning working environment view knowledge and skill acquisition as their own responsibility. Second, there is a high degree of cooperation and cohesion among employees, managers, functional units and so on. Third, employees are provided opportunities for personal development in a continuous-learning environment. Fourth, there is a shared belief that innovation is valuable for staying competitive in market place.

Continuous-learning is valued by many organizations. For example, in order to survive in the highly competitive telecommunication industry, Nokia places strong emphasis on "Invest in People" and thus focuses on continuous-learning and developing people as human beings, not as organizational assets 0. Continuous-learning is also a central part of the culture in Nestle, the world's largest food and beverage company. The company places importance in employees' professional development by encouraging employees to work with people from different countries and cultures and by providing chances to develop skills in different areas of the business 0.

Learning organizations acquire, store and retrieve information quickly, test and improve their mental models and behavior routines and revise their organizational memory regularly 0. As a result, these organizations have been shown to achieve superior overall firm performance [13] and are noted as being more successful at internal processes, such as acquiring and assimilating technology [2] [14]. Specifically, researchers have found that learning organizations are successful adopters of technology because they are better at observing, interpreting and integrating facts and then changing behavior 0. They also are proficient at sharing knowledge with vendors and utilizing stocks of knowledge and, thus, better able to overcome barriers when assimilating complex technologies 0. When making decisions about which technologies to acquire, prior research has shown that organizations with a learning culture are more likely, in general, to pay attention to employee-related concerns 0. However, detailed analysis of what learning organizations have discovered and subsequently put into practice in their IT decision making process is lacking.

We begin to fill this void by proposing the model derived from STS and organizational learning literature shown in Figure 1. We hypothesize that continuous-learning culture affects IT investment issues including change management, technical flexibility, whether functional managers are included in the IT decision process, and what technologies, specifically KM technologies in this case, are chosen. Supporting literature for each hypothesis is reviewed in the following sections.

Issues Considered

STS describes well functioning organizational systems to be those in which organizational decisions consider implications for both the social and technical internal subsystems and also the requirements of the external environment 0. As shown in Figure 1, change management, which should consider both technical and social ramifications of new technology, is the first IT investment decision issue that we consider in more detail below. The second is technical flexibility, which relates to the capabilities of an organization in responding to external environmental change.

Change management is defined as making changes in a planned or systematic way. According to STS, change in the technical subsystem will have implications in the social subsystem as well. However, in most organizations, information technology initiatives tend to be technology-led with little emphasis on the ramifications of changes to work processes, human resource practices or the social (human and organizational) aspects in general 0 0. Due to new technology implementation, some employees may need to change their work process or update their job skills. As a result, they may resent or even resist the changes, which could lead to IT project failure. For example, when asked about why ERP implementation in Arkansas state government failed, Kelly Boyd, the governor's technology liaison, mentioned: "Training was not up to par and few people turned out…. Many folks simply did not want to make the change and don't care if it fails" 0.

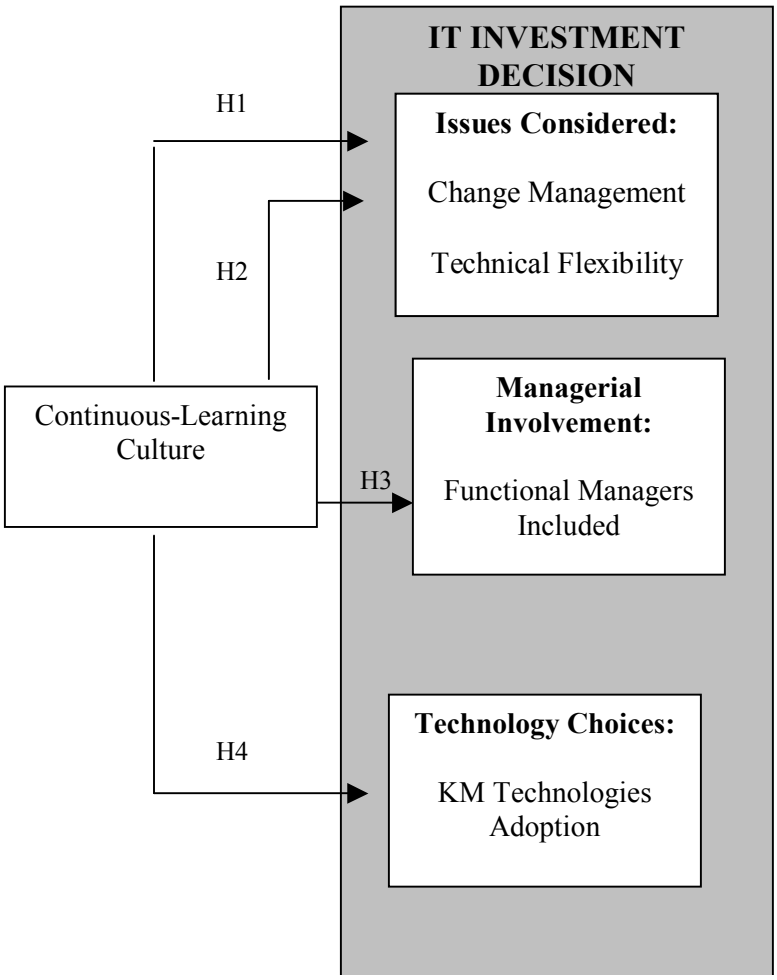

Figure 1: Research Model –Continuous-Learning Culture's

Research has revealed that change management is most critical to IT project success 0. A manager once commented: "It takes three months of really hard work and three months of just hand holding…. They appreciate the three months of hand holding" 0. Grover et al. 0 found that change management is critical to success when business processes are radically changed. Their data also suggested that not recognizing the need for managing change was a significant problem.

Change management practices can be facilitated by an organizational culture characterized by willingness to share knowledge, balanced network relationships and a capacity to learn 0. By definition, learning organizations must be adept at handling change because learning mandates transformations in mental models and necessitates corresponding changes in attitudes and/or behaviors. Therefore, we propose that organizations with a continuous-learning culture understand the importance of managing change and will spend more time and resources considering change management issues than those without such a culture.

H1: There is a direct positive relationship between an organization's continuous-learning culture and change management consideration in the IT decision-making process.

Technical flexibility is defined as the capability of a firm to respond quickly to environmental changes by reconfiguring IT. Flexibility is a critical component of IT infrastructure because of the ever-changing business environment 0. Since IT is a vehicle to reduce uncertainty, adapt to change and increase problem-solving capability of an organization, it can assist in interpreting environ-

mental change and instituting new practices and procedures 0. Therefore, there is a direct association between flexible IT system and the ability of an organization to introduce new business process 0.

According to STS and organizational contingency theory, organizations must adapt to the environment to remain competitive and innovative 0. A learning atmosphere can help an organization continuously improve and increase its capabilities 0. Learning organizations can reconfigure their structure and reallocate their resources 0. They constantly reflect on associations between past actions and the outcomes of these actions. This, in turn, influences future actions so that better alignment between the organization and the environment will occur 0. We argue that learning organizations consider technologies that can be easily integrated, thus performing well with existing systems, as well as technologies that provide agility to expand or be modified. Therefore, organizations with a continuous-learning culture will be more likely to consider technical flexibility than those without such a culture so that their IT capabilities can change as required.

H2: There is a direct positive relationship between an organization's continuous-learning culture and technical flexibility in the IT decision-making process.

Managerial Involvement

A major IT project is likely to influence the work processes of employees of several departments. Prior research has shown the efficacy of involving end-users, especially in the needs analysis of selecting new IT 0 . We, however, are investigating the types of *managers* involved in the IT decision process. Functional managers who are involved in IT decisions represent their department's operational needs, evaluate departmental resource availability, and assess their employees' current and future skill requirements so that they can effectively operate and assimilate the IT under consideration. Prior research has shown that involvement of functional managers is an important factor for successful integration of IT in strategic planning 0.

Level of involvement of members in an organization may depend on the type of the organization 0. We argue that organizations with a strong continuous-learning culture will be more likely to involve functional managers in IT decision-making processes for several reasons. First, organizations with a continuous-learning culture are characterized by their willingness to share information across departmental lines 0. Learning organizations recognize that no single department, like IT, possesses perfect knowledge. Therefore, while the IT department may possess prowess on technical matters, input from the various user departments is essential. Involving end users may result in more satisfied users, but if the functional manager is not supportive of the new technology, assimilation into his or her workgroup is difficult. Including functional managers not only promotes more informed decision-making but also provides a smoother, more supported transition to the new IT. Second, organizations with a continuous-learning culture place an emphasis on organization members' knowledge and skill acquisition. There is some evidence to suggest that functional managers participate in decision-making activities for their own personal development 0. Thus, we hypothesize that decision authority will be less likely to reside solely within the IT department and will be more likely to involve functional managers.

H3: There is a direct positive relationship between an organization's continuous-learning culture and involvement of functional managers in the IT investment decision.

Technology Choices

Argyris 0 stated that IT could facilitate organizational learning by interrupting routine thinking, making information transparent and helping people reason productively. KM technologies refer to information systems used to manage organizational knowledge, such as intranet, data warehousing and groupware products. They play an important role in supporting the creation, transfer and application of knowledge in organizations 0. Researchers suggest that organizations need to spend about a third of their time thinking about technology for knowledge management 0.

Despite the agreement of the benefits of knowledge management technologies, organizations with learning culture are more successful in implementing them than their counterparts. Researchers find that learning organizations are more likely to create data networks across functions. Among the learning organizations, 87% of those create regularly updated databases compared with only 7% of organizations without a learning culture 0. Organizations with a continuous-learning culture are more likely to use IT to disseminate knowledge and overcome learning curves when introducing new procedures and products. These organizations will place awareness and application of knowledge in a more focal position than others. Therefore, we hypothesize that organizations with a continuous-learning culture are more likely to have the KM technologies installed.

H4: There is a direct positive relationship between an organization's continuous-learning culture and KM technologies adoption.

METHODOLOGY

A survey instrument was used to test these hypotheses. After reading an IT investment scenario, respondents answered questions regarding their company's decision-making process. The scenario used is shown in the Appendix.

The survey was refined through four stages. First, several academic experts in the IS field reviewed the survey. Modifications were made based on their feedback. Next, seven IT executives from the Society of Information Management (SIM) organization completed a pilot survey and provided comments on the appropriateness and clarity of the questions. Then 12 additional content experts reviewed the questionnaire. The survey was finalized based on their recommendations.

Three sources were used for contacting organizations in this research. The use of multiple sources of contacts adds to the breadth in sampling of IT decision-makers. The first source was a list of 539 IT executive names, organizations and addresses provided by the executive education branch of a large, international computer hardware and software manufacturing company. The second source was a list of names, organizations, addresses and phone numbers provided by a computer research company. This list consisted of 575 randomly selected names and addresses for professionals, who were classified as "top computer executives." A third source of 401 company contacts was obtained from the CORPTECH database, produced by Corporate Technology Information Services. The executive responsible for MIS was selected from that listing for this research. The names and addresses of data were combined to insure that duplicate surveys were not sent to the same organization.

The final instrument was mailed to the IT executives in 1515 organizations selected from the sample. The chief IT executive from each organization was chosen to be the respondent. After the survey was mailed, follow-up calls were made to 592 organizations from the second and third contact lists. Phone numbers were not available on the first contact list. Of the 1,515 surveys mailed, 1,242 were deliverable to the addresses and a total of 200 surveys were returned yielding a 16% response rate. Nonresponse bias was assessed by the commonly used method of treating responses received after the deadline given (three weeks after the survey was mailed to the respondents) as being representative of nonrespondents' bias 0. Statistical analysis of key constructs and demographic variables revealed no significant difference between respondents and nonrespondents. There is also no significant difference in terms of organizational size between respondents and nonrespondents.

The responding organizations were from 37 states. Median annual revenue of the organizations was reported as $150 million, with a median IT budget of $1.7 million. Of the participating organizations, 28% were nonprofit organizations. Table 1 shows the title of the executives who responded. In practice, these professionals have considerable influence on IT investment decisions within their organizations.

Table 1: Titles of Executives Completing the Survey

Executive title	Number of persons
President	3
Vice president	49
Director (IS/IT)	49
CIO	19
CFO	2
Controller	5
IS/IT manager	48
Other	25
Total	200

The continuous-learning culture was measured by 21 items taken from the study in 0. Three items were dropped from the original scale because of a conceptual overlap with another construct the study intended to measure. In addition, the phrases changed from "In my store…." to "In my organization…." A five-point Likert scale was used, with anchors ranging from "never" to "always." The reliability score of the construct is 0.93.

Change management consideration was measured by five items. Examples include "thinking about the costs of communicating information about the changes to the users", "considering the time managers will need to spend overseeing the change" and "discussing with managers the degree of employee resistance to change." A seven-point Likert scale was used to capture responses to the items. The reliability score of the construct is 0.88.

Involvement of functional managers was measured by asking the respondents: "In your organizations, whose "buy-in" would be required for this type of decision?" The choices were "mine, my manager, the CEO/president, an executive/management committee and functional managers." If a respondent chose functional managers, the item took a value of 1; otherwise it had a

value of 0. In the study, 92 respondents indicated that the "buy-in" from functional manager is required and 104 respondents indicated otherwise.

Technical flexibility was measured by three items, including "investigating the ability to expand or modify our option to meet changing requirements," "evaluating the performance and capacity characteristics" and "evaluating how easily the options can be integrated with our existing systems." A seven-point Likert scale was used. The reliability score is 0.80.

KM technologies adoption is measured by one item asking respondents if their organizations have adopted any of several types of technologies. Data warehousing, intranet and groupware are considered KM technologies. We used a polar extreme approach: organizations that have adopted none of the technologies were considered non-adopters of KM technologies, which were given a value of 0. Organizations that have adopted all three technologies were considered adopters, which are given a value of 1. In the study, 58 organizations did not adopt any of the technologies while 35 organizations adopted all three technologies. Therefore, these 93 organizations are used to test hypothesis four.

Construct validity for continuous-learning culture, change management and technical flexibility was assessed through principle axis factor analysis with a varimax rotation. Table 2 shows the factor loadings of the three factors. None of the survey items loaded on more than one factor with a loading greater than 0.3.

RESULTS

We used regression analysis to test hypotheses 1-4. Continuous-learning culture was the independent variable. Hypothesis 1 proposed a positive relationship between continuous-learning culture and change management consideration. Using OLS regression analysis, the results supported the hypothesis ($t=4.587$, $p<0.001$).

Hypothesis 2 asserted that there is a positive relationship between continuous-learning culture and involvement of functional manager. This was tested using logistic regression with involvement of functional manager as dependent variable. The hypothesis was supported (Wald Chi-sq = 5.481, $p<0.05$).

Hypothesis 3 posited that organizations with a strong continuous-learning culture would consider technical flexibility more than those with a weak continuous-learning culture. Hypothesis 3 was tested using OLS regression with technical flexibility as the dependent variable. The hypothesis was also supported ($t=2.932$, $p<0.01$).

Hypothesis 4 states that there is a positive relationship between continuous-learning culture and adoption of KM technologies. Logistics regression was used to test the hypothesis with adoption of KM technologies as dependent variable. The hypothesis was supported (Wald Chi-sq =9.904, $p<0.01$).

DISCUSSION

Our first research question asked if there are IT investment decision issues that are considered more by organizations with a learning culture. The results show that organizational continuous-learning culture significantly influences the IT investment decision process and its outcomes. Our data highlight two critical issues that learning organizations consider more thoroughly in the decision process: change management and technical flexibility. Organizations with a strong continuous-learning culture are more likely to consider change management issues. Since these organizations place value on employee knowledge acquisition and application, they will respond more thoroughly to changes that will occur because of new IT investment. They are aware of the social impact of a technological intervention and will spend time and effort communicating information about changes to their employees and helping them adjust.

Organizations with a continuous-learning culture are more likely to take technical flexibility into consideration. Because of the competitive pressure, organizations need to respond quickly to environmental changes. Continuous-learning organizations are proactive in understanding how they can be aligned with their environment – both in the present and in the future. The flexible and agile nature of these organizations requires flexible IT functions 0. Therefore, when making an IT investment, such organizations will take technical flexibility into consideration.

Our second research question asked if organizations with a learning culture involve different types of managers in their decision process. Results demonstrate that when making a major IT investment, organizations with a strong continuous-learning culture are also more likely to involve functional managers in the decision-making process than those without. Major IT initiatives require coordination and interaction among several departments in an organization. Since functional managers are familiar with the needs and requirements of their own units, their inputs are critical in ensuring a successful implementation of IT projects. If functional managers are invited to participate from the start of an IT investment

process, they are more likely to be very cooperative throughout the project.

Table 2: Results of Factor Analysis

	Factor 1	Factor 2	Factor 3
CC14	0.8029		
CC15	0.7586		
CC17	0.7441		
CC19	0.7236		
CC13	0.6741		
CC11	0.6653		
CC21	0.6490		
CC9	0.6379		
CC10	0.6365		
CC6	0.6242		
CC15	0.6230		
CC16	0.6078		
CC8	0.6052		
CC21	0.6017		
CC7	0.5972		
CC5	0.5960		
CC12	0.5459		
CC1	0.4510		
CC3	0.4182		
CC20	0.3646		
CC4	0.3340		
CHGMGMT4		0.8073	
CHGMGMT5		0.7964	
CHGMGMT3		0.7786	
CHGMGMT2		0.7516	
CHGMGMT1		0.7181	
TF1			0.7941
TF2			0.7237
TF3			0.7002
Eigenvalue	9.22	3.46	1.7700
% of variance explained	29.89%	10.47%	4.53%
Cronbach's α	0.93	0.88	0.80

Note: CC (continuous-learning culture); CHGMGMT (change management); TF (technical flexibility).

Our third research question asked if organizations with a learning culture adopt different technologies from other organizations. The study shows that organizational culture does affect the resulting types of technologies chosen for adoption. Our data suggest that organizations with a continuous-learning culture are more likely to install KM technologies. KM technologies can assist with the systematic collection, storage and dissemination of organizational knowledge. Past knowledge of employees can be stored and codified via KM technologies so that other organizational members can access this knowledge. Learning organizations are more aware of the importance of KM technologies and are eager to develop and implement the technologies.

IMPLICATIONS

Our data reveal that learning organizations differ from other organizations in their decision process and outcomes when selecting IT investments. Organizations without a continuous-learning culture are less likely to consider change management issues, take into account technical flexibility, involve functional managers in IT investment decisions, or adopt KM technologies. It is well documented that organizations that inadequately consider how to manage change driven by technology implementation, or change *in* technology driven by external forces, are more likely to fail. Given the criticality of these issues, IT projects in these organizations are more likely to be "at-risk." These organizations do not incorporate in their IT decision process issues and practices that can maximize IT investments. Managers can use the continuous-learning culture scale used in this research as a self-assessment tool for their organization. Organizations low on this scale should carefully consider the process by which IT decisions are made as well as the outcome of these decisions. Our research highlights several key areas that should be evaluated.

First, mangers should evaluate whether they are adequately considering change management issues in their decision processes. Guha et al. 0 found that change management is critical to project success and state "any significant business process change requires a strategic initiative where top managers act as leaders in defining and communicating a vision of change" (p. 121). IT success depends not only on technical issues but also on overcoming organizational resistance to change. Managers should consider these issues and their associated costs when making an IT investment decision.

Next, managers should assess whether issues regarding technical flexibility are being sufficiently contemplated. In today's business environment technical flexibility is critical to firm innovation and competitive performance 0. Defining and understanding the firm's IT architec-

ture so that new technologies can be easily integrated is key to achieving business benefits.

Third, the IT department should consider who is involved in making IT decisions. Not all IT decisions require extensive end user departmental input because some decisions cause little disruption in the day-to-day activities of end users (e.g., certain types of IT infrastructure acquisitions) [39]. However, other IT decisions induce significant changes. Especially in the latter situation, functional managers, as well as other departmental end users should be involved. Employees from the functional areas can bring insights on department requirements and preferences. They can also propose tailored implementation strategies focused on specific end user groups so that users will be more likely to accept the new IT and use it productively.

Fourth, managers need to closely evaluate the scope of technologies that are considered for adoption, the type of evaluation criteria used, and the weight given to each evaluation element. Because organizations with a continuous-learning culture are more likely to adopt KM technologies than those without such a culture, we can infer that greater rate of adoption is caused by one of the following: 1) the organizations with a continuous-learning culture evaluate technologies that other firms ignore; or 2) both types of organizations evaluate similar technologies, but organizations with a continuous-learning culture have different evaluation criteria than other organizations; or 3) both types of organizations evaluate similar technologies, but organizations with a continuous-learning culture weigh evaluation criteria differently. IT managers should reevaluate these areas in their decision-making process to ensure they are producing the best technology choices.

Our research also has important implications for research. We proposed and empirically tested a model that identified three major areas in which learning organizations' IT decision process can be differentiated from that of other organizations: 1) issues considered, 2) managers involved and 3) technology choices. Researchers may collect a larger sample size and perform structural equation modeling to test the model. Future research can use this model as a starting point, and could broaden both the scope and the depth of this model by identifying other major areas of differentiation and additional elements within each area. Case-based research may also provide valuable insights for expanding the model.

LIMITATIONS

The research has several limitations in terms of internal and external validity. First, we investigated only a few issues where the IT decision process of learning organizations differ from those that do not have a learning culture. Future research should examine other issues whereby the IT investment decision process differs from other organizations such as human capital investment, changes in work practices and organizational restructuring. Second, common-method variance is a possible limitation. That is, potential respondent bias might constitute a systematic error common to survey responses from the same source. Since all data were obtained from one executive per organization, common method variance remains a concern. However, using the senior IT executive as a "key organizational informant" is widely accepted in IS research (e.g. 0). Another possible limitation deals with the perception of IT decision-makers regarding the hypothetical scenario. To address the concern, the scenario was carefully drafted and refined in the pilot phase of this study, and deemed by IT managers as "realistic" and "commonly encountered."

Organizational culture can influence IT decision-maker's perceptions of the factors and priorities to be considered when making an acquisition decision, who is involved in the decision making process, as well in determining which technologies are adopted. Organizations with a continuous-learning culture are more likely to be concerned about change management issues, bear in mind technical flexibility, include functional managers in IT investment decisions and adopt technologies that help manage and distribute knowledge throughout the organization. These considerations are essential in managing IT wisely.

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APPENDIX

Scenario description

The managers in your organization have expressed concern that the information systems supporting your core business functions are not well integrated. You recognize the need for streamlining business processes to become more efficient. The suggestion has been made to reengineer these business processes using IT capabilities to better support the business areas. You are considering these options:

1. Modify the existing software, to the extent possible, so that the business functions can become more integrated.
2. Purchase an integrated package which contains modules for your core business functions.
3. Have either in-house programmers or a consultant custom design a solution.

You know options 2 and 3 will affect organizational structure, the work sequence, and the sources of data.

Below is a list of possible actions your organization might consider when making this **Integrating Business Functions** *investment decision. Please indicate how much* ***EFFORT and/or RESOURCE*** *your organization would spend on each of the following actions in terms of your* ***DECISION PROCESS (1=no effort/resource, 7= an extraordinary amount of effort/resource)***

CHANGE MANAGEMENT ITEMS***
(Headings not labeled for survey respondents)

In my organization, we would spend….

1 2 3 4 5 6 7 thinking about the costs of communicating information about the change to users.

1 2 3 4 5 6 7 discussing with managers the degree of employee resistance to change.

1 2 3 4 5 6 7 considering the time managers will need to spend overseeing the change.

1 2 3 4 5 6 7 calculating the time managers will need to spend overseeing the changes.

1 2 3 4 5 6 7 evaluating the costs of telling and "selling" the decision to the users.

TECHNICAL FLEXIBILITY ITEMS***
(Headings not labeled for survey respondents)

In my organization, we would spend ……

1 2 3 4 5 6 7 investigating the ability to expand or modify our option to meet changing requirements.

1 2 3 4 5 6 7 evaluating the performance and capacity characteristics.

1 2 3 4 5 6 7 evaluating how easily the options can be integrated with our existing systems.

*** Change management and technical flexibility are both measured by 7-point Likert Scale.

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