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Success model for knowledge management systems used by doctoral researchers

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ABSTRACT

The purpose of this paper is to propose a model to anticipate the success in the use of a Knowledge Management System (KMS) by doctoral researchers. Doctoral researchers who are preparing their doctoral dissertation are requested to prepare a tool to manage the knowledge they are collecting. The tool is based on data base techniques, and the researchers will use this tool to collect data about the knowledge they use. Doctoral researchers will perceive satisfaction in the use of this tool, depending on internal aspects that they could previously perceive, such as ease of use, usefulness, or quality. Also, there could be external aspects such as rewards, trust and social norms that could affect the perceived satisfaction. As a conclusion, the correct identification of internal and external aspects can improve the success in the use of a KMS.

1. Introduction

Doctoral students, who gather knowledge to prepare their researches, need to manage this knowledge. Tools to manage knowledge are in some cases software products like Moodle, and in other cases data base models adapted to the knowledge needs students have. Uribe-Tirado, Melgar-Estrada, and Bornacelly-Castro (2007) report the use of Moodle as a tool to manage information, documents and knowledge in two research groups at the Inter-–American School of Library Science, University of Antioquia, in Medellin, Colombia. Their conclusion is that the process is more valuable than the results; research groups must look for strategies to complement processes and results, supported by information technology (IT) professionals. For this purpose collaborative tools, like Moodle, are a valuable alternative. Lackner (2012) describes the introduction of Moodle as learning platform at the University of Graz in the Winter Semester 2010. Also, Lackner and Raunig (2012) introduce a multimedia manual for Moodle Praxis at the Academy of New Media and Knowledge Transfer. Solana-González and Pérez-González (2008) give a strategic step as they present the experience and results of the development and implementation of a technical-documentary information management system at the enterprise Nuclenor. As a conclusion, they find the need for information technology to combine digitizing and image treatment, text processing and others. Also, it is necessary to integrate the disperse knowledge in different sources.

The problem all organizations have is to efficiently discover knowledge, create new knowledge, capture it, share it, and use it to gain competitive advantage (Hevner & Chaterjee, 2010). Organizations need to develop a system to manage their knowledge: a knowledge management system (KMS). This system refers to a class of information system applied to managing organizational knowledge. The objective of KMS is to support creation, transfer, and application of knowledge in organizations (Alavi & Leidner, 2001). Students who prepare their doctoral dissertation need to manage their knowledge as well, and prepare their own KMS to fulfill this need. This research will measure the success of KMS's developed by doctoral students, by proposing a success model. The research question in this paper is: What are the variables that influence the success in the use of a knowledge management system by doctoral researchers?

Knowledge management uses information technology as a tool. The purpose of this research is to prepare a model to evaluate the success of technology applied to handle knowledge management.

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This technology will be called a knowledge management system (KMS) and the model will be referred to as success model (SM). The success model proposed will identify external and internal variables; their participation in the model and their relationship to other variables will be validated with a survey.

This paper will first explain the variables to be used. Then, in the next section, the method to collect data and the survey used will be explained. Later, an analysis will be made. Finally, the implications will be discussed.

1.1. Rewards

Bock, Sabherwal, and Qian (2008) found the following definitions for rewards: "*Extrinsic rewards* are defined as rewards that are not inherently connected to the activity performed, which include factors such as direct or indirect monetary compensation." "*Intrinsic rewards* can be defined as satisfaction that arises out of performing an activity such as enjoyment from knowledge sharing or problem solving." Saparito and Gopalakrishnan (2009) found that the use of a KMS can be characterized by assumptions about rewards that make behavior more predictable. A party can be confident about entering into a vulnerable situation because it believes that other parties will behave in a fashion that is consistent with its welfare. However, predictions can relate behavior positively or negatively to knowledge sharing. For example, Kock and Davison (2003) found a study about an implementation of an asynchronous computer conferencing system (Lotus Notes) at a large consulting firm and concluded that the reward systems prevented knowledge sharing among consultants, in spite of the availability of technological support.

1.2. Trust

Simple collaborative technologies can have a positive effect on knowledge sharing in organizations (Kock & Davison, 2003). When combined with appropriate social processes, collaborative technologies may foster knowledge sharing. In previous models, trust has been identified as a variable that contributes to knowledge sharing. Bock et al. (2008) examined the determinants of knowledge repository systems success, and focused on organizational trust as an aspect of social context. They then defined organizational trust as "the willingness of workers to vulnerably rely on others based on positive expectations or beliefs about them". Bock et al. (2008) also found that "trusting relationships lead to greater knowledge exchange. Organizational trust has been regarded as essential factor in knowledge sharing; in the presence of organizational trust, people are more willing to contribute useful knowledge, and to listen and absorb others' knowledge". Saparito and Gopalakrishnan (2009) defined trust as "the intention of one party to accept vulnerability based upon positive expectations of the intentions or behavior of another party". Because trust reflects beliefs about predictability and functionality, Thatcher, McKnight, Baker, Arsal, and Roberts (2011) examined how beliefs about trust in information technology affect intention to explore information technology. In studying relational trust, Santoro and Saparito (2006) found in previous researches that trust between partnering organizations facilitates knowledge transfer. Also, an important ingredient for the success of inter organizational partnerships is trust. Trust between a firm and university research centers will enable more open communications and knowledge transfer (Santoro & Bierly, 2006). Furthermore, Hsu and Sabherwal (2011) found that trust among employees promote knowledge exchange and combination.

1.3. Subjective norm

Subjective norm has been identified by previous authors in their models. For example, to control for the influence of social context and individual differences on intention to explore, Thatcher et al. (2011) collected data on subjective norm. Although Bock et al. (2008) did examine how attributes of social context might influence individuals' ability and motivation to share knowledge, in bounding the scope of the study; they excluded subjective norms, and recommended that future research on knowledge use should examine the effects of it.

1.4. Perceived usefulness and perceived ease of use

Perceived usefulness and perceived ease of use have been widely studied in the Technology Acceptance Model. Behavioral beliefs, such as perceived usefulness and perceived ease of use, finally determine intention and behavior.

Thatcher et al. (2011) found that perceived usefulness refers to "the degree to which a person believes that using a particular system would enhance his or her job performance". For Bock et al. (2008), perceived usefulness is defined as "the extent to which the user believes that the particular system has contributed to his or her job performance". Bock et al. (2008) found evidence that perceived usefulness would lead to increased user satisfaction, including empirical support. Therefore, Bock et al. (2008) argue that if a user considers the technology to be more useful, he or she is more likely to be satisfied with it.

Thatcher et al. (2011) found also that perceived ease of use, refers to "the degree to which a person believes that using a particular system would be free of effort". Bock et al. (2008) used the term perceived searchability instead of ease of use. Perceived searchability indicates how well the system can help individuals who seek to reuse certain knowledge residing in the system find that knowledge.

1.5. Information quality

The previous models of KMS success include information quality; Bock et al. (2008) use perceived Knowledge Repository System (KRS) output quality instead of information quality. Perceived KRS output quality reflects the quality of the output that is available from the KRS to the specific user. In this research, perceived KMS output quality will also mean the quality of the output available to the user, in this case the doctoral researcher. Earlier models of information system success found by Bock et al. (2008) also included information quality and system quality.

1.6. User satisfaction and system use

Bock et al. (2008) found that user satisfaction was defined by Seddon (1997) as "the extent to which the user believes that a KRS meets his or her information and knowledge requirements"; next Bock et al. (2008) argued that if a user considers the KRS more useful, then he or she is more likely to be satisfied with it. In this research, perceived KMS user satisfaction is the extent to which the user, in this case the doctoral researcher, believes that the KMS meets his or her knowledge requirements.

Bock et al. (2008) explain the variable "system use" using Rai, Lang, and Welker (2002) definition, as "the behavior of using the system as indicated by the effort an individual puts into using the system". Next, Bock et al. (2008) mention two difficulties for including system use in their study: a) they found at least three different meanings for system use, and b) they found two different reasons for system use. Bock et al. (2008) decided to exclude system