Predictive Maintenance Information Systems: 
The Underlying Conditions and Technological Aspects

Yu Zhao, Lamar University, USA
Kakoli Bandyopadhyay, Lamar University, USA
Cynthia Barnes, Lamar University, USA

ABSTRACT

Enterprise resource planning (ERP) systems allow businesses to achieve high performance through distinctive capabilities and are one of the fastest growing areas within information systems. Many universities have adopted ERP in their management information systems (MIS) curriculum to increase the marketability of their students. Drawing on the IS success model and several constructive learning theories, this study develops a model that is predictive of students’ continued ERP software use intention, satisfaction, and perceived learning outcomes. SAP is the ERP system used in this study. Business students at four mid-sized state universities in the United States were surveyed. The universities are members of the SAP University Alliance. There were 373 usable responses. Partial least squares structural equation modeling (PLS-SEM) was used to empirically test the model. The findings indicate that student motivation, perceived instructor support, and ERP system quality are strong predictors of student satisfaction, and learning outcomes. Student motivation and ERP system quality, but not perceived instructor support, are also significant predictors of continued use intention.

KEYWORDS
Education, ERP, Information Technology (IT) Adoption, Learning Outcomes, Perceived Instructor Support, SAP, Satisfaction, Student Motivation

INTRODUCTION

During the last two decades, many businesses around the world have adopted enterprise resource planning (ERP) systems. ERP systems are enterprise-wide customizable software packages that integrate information and business processes (Rosemann & Watson, 2002; Devadoss & Pan, 2007; Saygili, Ozturkoglu, & Kocakulah, 2017). “They are designed to address the problem of information fragmentation or ‘islands of information’ in business organizations (Muscatello & Chen, 2008).” Because ERP carries the most effective, efficient, and cross-functional integrative capabilities, ERP use is important in today’s business settings (Khattach et al., 2013; Vom Brocke et al., 2018). The existing literature indicates that the implementation of an ERP system created sustained value

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(Hawking & Sellitto, 2015; Saygili et al., 2017; Ali & Miller, 2017). Consequently, the growth in the number of businesses implementing ERP systems has had an enormous impact on the demand for ERP skills. This is one of the main reasons that many universities have adopted ERP in their management information systems (MIS) curriculum (Bandyopadhyay & Bandyopadhyay, 2019). Although there are some studies indicating that using an ERP system helps students to better understand business processes and integration (Halonen, Thomander, & Laukkanen, 2010; Darban, Kwak, Deng, Srite, & Lee, 2016), the educational benefits of instructional use of ERP systems are still mostly based on anecdotal statements from faculty and students rather than on empirical measured data secured by educational research methods (Noguera & Watson, 2004; Ruhi, 2016). Understanding the factors that lead to student learning outcomes and satisfaction in ERP courses can be of great help to MIS instructors in colleges and universities. Instructors can use this information as they formulate and refine curriculum that focuses on or includes ERP concepts and modules.

Because ERP related skills are in great demand, the learning and practice of ERP in higher education can also improve students’ marketability, thus helping them to obtain higher paying jobs (Ruhi, 2016; Singh, 2016). Employers expect new college graduates to understand how companies function in today’s economy, which requires knowledge of basic business processes and the technology used to support them. Implementing realistic ERP with hands-on practice in the curricula helps companies hire college students with real-world experience (Wixom et al., 2014). The content of an ERP course should include an explanation of and hands-on experience with key business processes (Rienzo & Han, 2011). Regardless of the software used, the course content should be a blend of information about ERP and hands-on experiences (Ngo-Ye, 2016). Meanwhile, it is important to understand the factors that lead to students’ acceptance of ERP, so that instructors can facilitate student learning of ERP concepts and the systems. Graduates with a basic understanding of ERP concepts and systems have a competitive advantage over those who do not have such an understanding when entering the workforce (Alshare & Lane, 2011). Sager, Mensching, Corbitt, and Connolly (2006) tracked graduates from their College of Business and found that students graduating with an extensive ERP background consistently obtained higher salaries than students without this background. Barkhi and Kozlowski (2017) found that the average salaries of students who possessed SAP ERP skills were about 20 percent higher than their counterparts.

To equip graduates with knowledge and skills needed to approach enterprise information systems, ERP academic training is an effective way to help them achieve success in today’s business environment (Arnold & Sutton, 2007; Barkhi & Kozlowski, 2017). Unfortunately, only a small number of existing studies examined the effectiveness of ERP academic training and its predictors (Ruhi, 2016). This lack of exploration is what led us to this study. The effectiveness of training is contingent by the level of knowledge transfer (Arasanmi & Ojo, 2019). In order to effectively deliver ERP academic training, one cannot ignore the impact of perceived instructor support, and student motivation (Eom & Ashill, 2018). Moreover, we know from information systems (IS) Success Model (DeLone & McLean, 2003) that system quality is an important success factor. Thus, we wonder whether ERP system quality is another predictor of successful delivery of ERP academic training, besides perceive instructor support, and student motivation.

The purpose of this research is to analyze the predictors of continued use intention of the ERP system, students’ perceived learning outcomes, and satisfaction in ERP-enabled courses, focusing on an integrated view of the students, instructors, and the ERP software. The ERP system used in this study is SAP. This paper is based on the IS Success Model (DeLone & McLean, 2003) and several constructive learning theories. The paper will begin with a discussion of the theoretical background of the study, and then a conceptual framework will be developed and tested to determine the predictors of continued use intention, satisfaction, and students’ perceived learning outcomes in ERP-enabled courses. The following sections will present the research model, research design, the research survey, results, discussion of research findings, and implications, as well as the limitations of the study, directions for future research, and will end with the conclusion.
Validation of Model: The Process
www.igi-global.com/chapter/validation-model-process/76977?camid=4v1a