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The influence of ERP simulation on enterprise system learning outcome

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ABSTRACT

This study aims to examine how Enterprise Resurce Planning simulation (ERPsim) enhance the outcome of learning Enterprise Systems Course for accounting students. The sample of this study is undergraduate accounting students who have taken an Enterprise System course and ERPsim. The sample used in this study is 140 respondents selected using purposive sampling, The data analysis is conducted through Structural Equation Modelling (SEM). The result of this research indicates that two factors determining the behavior for learning Enterprise systems course are enjoyment and cognitive appraisal. The result of this study provides evidence that behavior intention to use ERPsim is related positively to learning outcomes. Enjoyment is related positively to cognitive appraisal for using ERPsim. Enjoyment and cognitive appraisal have an important role in the effectiveness of using ERPsim in understanding business processes and enterprise system.

Introduction

Understanding how to use an Enterprise System gives advantage to fresh graduates, due to the fact that the labor market has a high demand for this qualification. Broad implementation of Enterprise Resources Planning (ERP) system has put an increased demand for decision makers regarding knowledge of the ERP system and the underlying processes, as well as ability to make decisions and understanding of the effects in terms of ERP (Cronan et al., 2011). Therefore, today many accounting programs incorporate Enterprise System teaching in it's curriculum. Such software is not quite easy to study; there are several challenges in learning the integrated enterprise software. Sudaryono and Astuti (2006) stated that the challenges in the use of the accounting software are the time to adjust to the software, pressure, anxiety and unwillingness to master the software.

Recently, universities are influenced by global trends in terms of the needs for management's performance and efficiency to invest in ERP (Wadate, 2014). However, it is important to mention that it is difficult to identify the benefits from this application in terms of organizational performance and services. (De Castro Silva & De Oliveira, 2015). These difficulties exist because universities, or other organizations, deal with different circumstances and environment when they utilize ERP for the academic purposes (Abugabah & Sanzogni, 2010).

An ERP systems most often become the largest software applications adopted by universities has a significant amount allocated to the implementation (Abugabah & Sanzogni, 2010). A study by Léger (2006) developed an approach to ERP learning methods, i.e. developing ERP Simulation Games by utilizing the concept of learning by doing, in the hope that students can understand business processes in reality more easily. Teaching ERP skills in university programs through Information or Business Systems is an important part of the curriculum to prepare candidates for their future industrial careers (Lee, Chen, & Yang, 2006).

Traditionally, most of the skills needed for effective management are gradually developed during careers through on-the-job experience (Wildman, 2009). Léger (2006) stated that the approach to understanding using ERPsim may help students improve their understanding of ERP learning through the concept of learning by doing by making use of three learning approaches, i.e. building understanding of ERP concepts, gaining direct benefits of the experiences in using the integrated ERP Game Simulation, and building the skills in operating ERP software. Cronan and Douglas (2012) also stated that ERP Simulation Game is a unique method created to improve the ability in learning business processes using the ability and understanding of System Application and Processing (SAP).

According to Léger (2006), Cronan and Douglas (2012), ERPsim may improve learning outcomes for Information Systems course. Literature review shows that little is known about causal relationships among cognitive and psychological factors, learning behaviors and learning outcomes. There are empirical studies regarding ERPsim

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effectiveness in student learning behavior and performance. According to Hwang and Cruthirds (2017) students may develop a more positive attitude towards SAP and gain increased knowledge of ERP utilization. However, these factors and how they improve student learning performance when using ERPsim are unknown. This study aims to fill the gap through empirical tests of several psychological factors on student behavior and learning outcomes when they participate in ERPsim games in classes. In particular, theoretical models aim at revealing the effects of enjoyment and cognitive appraisal on the behavioral intentions to use learning tools and the effectiveness of these learning tools (Beaudry & Pinsonneaul, 2005; Davis, Bagozzi, & Warshaw, 1992; Heijden, 2004; Venkatesh, 2000). In the last several years, Cronan and his colleagues have shown that ERPsim games are effective in helping students have better understanding and embrace ERP concepts in traditional face-to-face classes (Cronan & Douglas, 2012; Cronan et al., 2011). The objective of this study is to measure students' cognitive-psychological factors and learning behavior in using ERPsim on their learning outcomes.

Literature Review

Theory of Planned Behavior

Theory of Planned Behavior (TPB) is a theory developed from a previous theory, i.e. Theory of Reasoned Action by Ajzen (1991). TPB has become one of the most influential theories in describing and predicting behaviors; this theory has also been shown to predict various behaviors (Sheppard, Hartwick, & Warshaw, 1988). The development of TPB was done by adding one construct, i.e. perceived behavioral control. This theory mentions that humans tend to act according to intention and perceived control through certain behaviors, where intention is influenced by behavior, subjective norms and behavioral control.

Theory of Planned Behavior (TPB) by Ajzen (1991) shows that behavioral intention is a motivational factor that shows the extent to which a person is willing to dedicate his behavior and this is the most influential predictor of behavior. Behavioral intention is a measure of how strong a person's intention describes his behaviors. TPB has three main variables used to predict behavior intention, namely: attitude toward behavior, subjective norm, and perceived behavior control.

Learning Outcomes

According to Suprijono (2013) learning outcomes are overall behavioral changes, not only changes in one aspect of human potentials. Learning outcomes are the achievement of behavioral changes that tend to settle from the cognitive, affective, and psychomotor domains of the learning processes carried out during a certain period of time. According to TPB, students' learning outcomes are directly determined by their behavioral intentions to use ERPsim, influenced by three types of beliefs (namely, behavioral, normative, control beliefs). In terms of ERPsim use, learning outcomes measure students' acquisition of business processes and knowledge of using SAP software (Chen, Keys, & Gaber, 2015). Learning outcomes can be measured using direct appraisals such as student exam scores and / or indirect appraisals such as self-reported appraisals (Rajkumar et al., 2011). The main objectives to be achieved through learning activities are learning outcomes. These outcomes are used to find out about the extent to which a person can understand the materials.

Enjoyment

Enjoyment refers to the extent to which an activity is considered as bringing joy to someone, in addition to the consequences of performance (Venkatesh, 2000). In information system literature, enjoyment refers to the extent to which using computer systems is considered to be something that creates comfort (Davis, Bagozzi, & Warshaw, 1992). This means that enjoyment is a pleasant experience when users are using technology. Extrinsic motivation refers to the performance of an activity because it is considered to play a role in achieving different outcomes from such activity, whereas intrinsic motivation refers to "the performance of an activity without any real strengthening apart from the process of doing the activity.

For example, perceive enjoyment is a type of intrinsic motivations, and perceived usefulness is a type of extrinsic motivations. By manipulating system-specific enjoyment level through training, it could improve not only the ease of use but also the meaning of perceived ease of use as an intention determinant (Venkatesh, 1999), thus indicating that perceived ease of use could certainly be affected by perceived system-specific enjoyment

Cognitive Appraisal

Lazarus and Folkman (1984) state that in general emotions have an appraisal process called as cognitive appraisal. Cognitive appraisal is a mental process where people assess two factors: (1) whether a demand

threatens the physical or psychological well-being and (2) the resources available to fulfill the demand. This is called primary and secondary appraisal. Cognitive Apprisal is an evaluative process that determines why and the extent to which a particular transaction or a series of transactions between people and the environment is stressful Lazarus and Folkman (1984).

Cognitive appraisal is a term used by Lazarus to describe an individual's interpretation of any events he/she experiences. An individual considers an event as dangerous, threatening or challenging. Further, an individual assesses the ability to deal with a threatening event (Lazarus, 2006). Thus, cognitive appraisal is a mental process involving individual judgment. Such appraisal consists of two things. First, whether a demand threatens his well-being. Second, the resources available to meet the demand. These two factors are referred to as primary and secondary appraisal (Lazarus, 2006). Therefore, it can be concluded that cognitive appraisal is a mental process that involves an individual appraisal of any events he/she experiences.

Enterprise Resource Planning (ERP)

Enterprise Resource Planning (ERP) is an integrated cross-functional software that reengineers the processes of distribution, manufacturing, finance, human resources, and other business processes of a company to improve its efficiency, effectiveness and profitability (O'Brien, 2010). According to Beheshti (2006), enterprise resource planning (ERP) system is a set of applications or business modules which connect a number of business units of an organization such as finance, accounting, manufacturing, and human resources into a single system which is integrated with a general platform for the purpose of information flow across businesses. A successful ERP system may function as the backbone of business intelligence for an organization as this can provide managers with an integrated view of the processes involved.

ERP systems can connect various fields of an organization, such as manufacturing, order management, financial systems, human resources, suppliers and customers, into a strongly integrated system with shared data and visibility. For example, ERP systems provide seamless integration of processes across functional areas with improved workflows, standardized business practices and access to current real-time data (Wadate, 2014).

Using ERP can improve service levels, improve financial control, save time to obtain information, standardize operating processes through the implementation of best practices so as to increase productivity and efficiency, improve product quality, and standardize information and data through uniform reporting, particularly for large companies that typically consist of many business units with different numbers and types of businesses. ERP software is a business management application that facilitates business management in integrating and automating various business processes of a company, from production, sales, finance, to resource management, aimed to integrate information throughout the company, eliminate complexity, and provide real time information.

SAP

SAP stands for System, Anwendungen, Produkte in der Datenverarbeitung (System, Application, Product in Data Processing). SAP is the world leader in terms of Enterprise Resource Planning. This company was established in 1972 by five former IBM employees whose headquarter is located in Germany. This is the world's largest inter-company software company and the fourth largest independent software supplier in the world (McCann & Grey, 2009).

SAP allows businesses to share real time information with employees, suppliers and distributors, regardless of the size of the organization. Such downsizing has a direct and positive effect on productivity, customer service, overall quality, and profitability. This application has the ability to manage finance, assets and cost accounting, production operations and materials, personnel, plants, even archived documents (McCann & Grey, 2009). SAP application can be characterized by high complexity. SAP application is able to perform many different functions to support a company's operations. SAP consists of a large number of programs and sub-programs. SAP programs are a structured instruction written in a special programming language named ABAP (Advanced Business Application Programming), which controls computer behaviors to record business transactions and perform various analysis functions.When SAP program is running, it has certain business functions for SAP system users (Moonsoon Academy, 2018).

SAP University Alliance (SAP UA)

SAP University Alliances (SAP UA) is a program developed by SAP to introduce SAP software as a forum to provide understanding and learning to students to find out the cycle processes within a company in terms of data processing in each department to write a report to evaluate and control the company in order to make right and accurate decisions. According to (McCann & Grey, 2009) SAP UA program is an effort to provide education globally by providing teachers who have expertise in this field to teach students about technology which could

activate integrated business processes. The understanding and skills gained through this training provide added value for students who are trying to get involved in highly competitive jobs.

The University Alliance Program aims to become at the forefront of education and research in Enteprise Integration. By providing students the access to state-of-the-art Enterprise software, this will also help them in building strong backgrounds in terms of enterprise integration foundations while exposing them to current technology. This exposure and education will bring them the advantage of competitive recruitment while giving employers access to graduates who are well prepared and skillful in the latest concepts and tools (McCann & Grey, 2009).

ERP Simulation

ERP Simulation (ERPs im) is a simulation game developed by HEC Montreal in Canada (Léger et al., 2010). According to Seethamraju (2008), ERP Simulation Game can help improve student learning in terms of business processes with an integrated system. ERPSim aims to improve the understanding about enterprise system concept, to get used to integrated companies, and to acquire or improve expertise in using ERP software (Léger, 2006). ERPSim was designed in such a way that participants could face business situations that are similar to those in the real world. Participants must run business processes using a system integrated with ERP.

The ERP system used in ERPSim is my SAP ECC 6.0 system (Léger et al., 2010). The main objective of ERPSim is to enable all participants to process the entire business cycles (including planning, procurement, production, and sales). In addition, ERPSim shows participants what are highly needed to operate a company efficiently within an integrated system (Léger et al., 2010). Participants shall also analyze transaction data in order to make the most appropriate business decisions; this is needed because the highest profit is required to win the game.

This study discusses how the ERP system affects students' learning outcomes in terms of information systems learning. The variables in this study are enjoyment in using ERPsim, cognitive appraisal in using ERPsim, intention to use ERPsim, and learning outcomes.

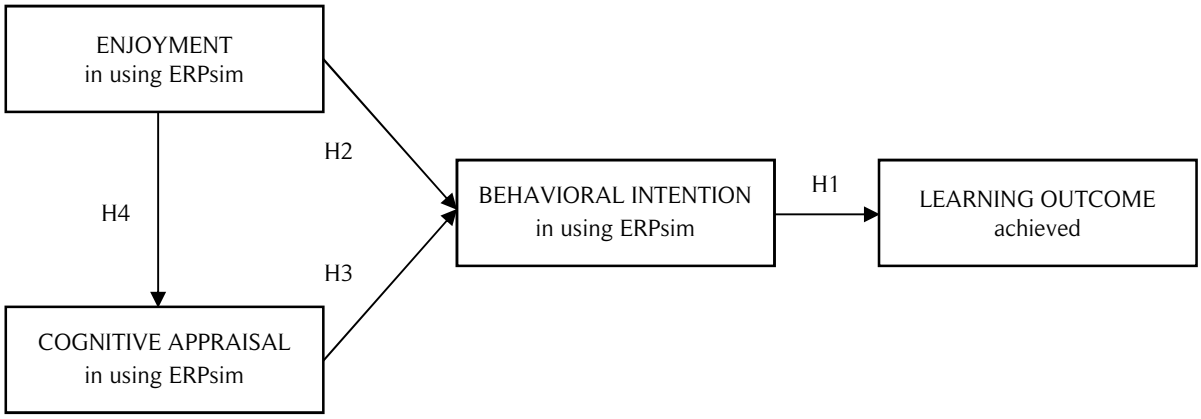

Figure 1. Hypothesis Model

Hypothesis Development

Hypothesis is a short statement concluded from literature review, and it is the answer to the problem being studied. This hypothesis will explain the relationship between enjoyment and cognitive appraisal with behavioral intentions, enjoyment with cognitive appraisal, and behavioral intentions with learning outcomes.

Behavioral intention to use ERPsim during enterprise learning process has positive correlation with learning results

In information system literature, TPB has succeeded in implementing information systems to study various behaviors (Pavlou & Fygenson, 2006). When students conduct experiments using ERPsim as a learning tool in a classroom, this means that these students are students and users of information systems. According to TPB, students' learning outcomes are determined directly by their behavioral intentions to use ERPsim, which is influenced by three types of beliefs (namely behavioral, normative, and control beliefs). In terms of ERPsim use, learning outcomes can be measured by how well students understand business processes and how good is their knowledge in using SAP software. In addition, learning outcomes can also be measured using either direct appraisal such as student exam score or indirect appraisal such students' mindset that they understand the

learning processes (Rajkumar et al., 2011). In this study, the learning outcomes perceived by students are called as perceived learning outcomes. Based on this explanation, it can be formulated as follows:

H1: Behavioral intention to use ERPsim during enterprise learning process has positive correlation with learning results

The effect of enjoyment in using ERPs on the intention to use ERPsim as a tool for business process learning

Enjoyment refers to the extent to which an activity is considered as bringing joy to oneself (Venkatesh, 2000). In terms of information system, enjoyment refers to the extent to which computer systems are intrinsically considered to provide a sense of comfort individually (Davis, Bagozzi, & Warshaw, 1992). This means that enjoyment is a pleasant experience when users use technology. Empirical studies have shown that enjoyment is a key determinant of behavioral intentions and outcomes (Davis, Bagozzi, & Warshaw, 1992; Koufaris, 2002; Venkatesh, 2000). Enjoyment is one of the most important things in information system literature (Heijden, 2004; Koufaris, 2002; Venkatesh, 2000; Wakefield & Whitten, 2006). In TPB theory (Ajzen, 1991), enjoyment has a positive effect on individual behavioral intentions and behavioral performance in cognitive-psychological activities such as using information systems (Davis, Bagozzi, & Warshaw, 1992; Venkatesh, 2000). This is believed that enjoyment when using ERPsim may increase the intention to use ERPsim to learn business processes, thus improving learning outcomes. Based on this explanation, it can be formulated as follows:

H2: Enjoyment in using ERPsim has a positive effect on the intention to use ERPsim as a tool for business process learning

The effect of cognitive appraisal in using ERPs on the intention to use ERPsim as a tool for business process learning

Cognitive appraisal refers to individual interpretation and assessment of the situation in which they are involved. Cognitive appraisal is a cognitive process followed by behavior after the appraisal (Lazarus & Folkman, 1984). Cognitive appraisal in information system is highly important because this determines the behavior of usage (Fadel & Brown, 2010). According to Lazarus and Folkman (1984), students may benefit from using ERPs in the classroom. If they believe that using ERPsim can help them learn business concepts, use software easily and quickly, and gain better exam scores, then they have the motivation and inspiration to explore ERPsim and the intention to learn more from it. Thus, the hypothesis can be formulated as follows:

H3: Cognitive appraisal in using ERPsim has a positive effect on the intention to use ERPsim as a tool for business process learning

The effect of enjoyment in using ERPs on cognitive appraisal to use ERPsim

Lee, Chen, and Ilie (2012) shows that attitudes consist of two different dimensions: affective appraisal and cognitive appraisal. Cognitive appraisal is self assessment in terms of utilitarian aspects of attitude (Lee, Chen, & Ilie, 2012) while affective appraisal refers to self evaluation in terms of feeling and emotions (Breckler, 1984). Yi and Hwang (2003) drew conclusions from an empirical study about the behavior of using management systems in web-based classes. In general, enjoyment more likely leads to a cognitive appraisal, not the other way around. This is because comfort reduces cognitive burden and because individuals are willing to have more efforts on tasks when they have enjoyment (Agarwal et al., 2014). In addition, enjoyment may help individuals forget about any difficulties in using technology because they only enjoy the processes and neglect to use the technology (Venkatesh, 2000). In general, human cognitive processes such as cognitive appraisal may be affected by emotions because enjoyment arises in the human brain earlier than ability or difficulty in using information systems (LeDoux, 1995; Lee, Chen, & Ilie, 2012). Based on this discussion, the hypothesis can be formulated as follows:

H4 : Enjoyment in using ERPsim has a positive effect on cognitive appraisal to use ERPsim

Research Method

Population and Sample

The population in this study consisted of students who attended SAP ERP subject in Accounting Study Program, Universitas Islam Indonesia. The data collection method was purposive sampling. Primary data were data obtained from the first source, in the form of filling out questionnaires with specific objectives according to the samples needed in this study, i.e. 140 samples.

The questionnaires that had been distributed and filled out by the respondents were collected systematically and presented informatively, scientifically, and accountably. The collected data were then processed in a comprehensive and descriptive analysis. The correlation among various variables was analyzed using Structural Equation Modelling (SEM) statistical test approach. SEM approach is a set of statistical techniques that allow simultaneous testing of a series of relatively complex relationships. According to Ghozali (2008), a path analysis model of all latent variables in PLS consists of three relationships:

1. Inner model which specifies the relation between latent variables (Structural model).
2. Outer model which specifies the relation between latent variables with indicator or manifest variables (Measurement Model).
3. Weight relation in which the score of latent variables can be estimated.

Dependent Variables

The dependent variable in this study was perceived learning outcomes. According to Suprijono (2013) learning outcomes are overall behavioral changes, instead of only one aspect of human potentials. After a learning process ends, then someone gains learning outcomes. Learning outcomes have an important role in the learning process. The main objectives to be achieved through learning activities are learning outcomes. Learning outcomes are used to know the extent to which a person can understand learning materials. Learning outcomes are measured using 5 questions adapted from Chen, Keys, and Gaber (2015) using likert scale.

Independent Variables

In this study there were three variables, i.e. behavioral intention to use ERPsim, cognitive assessment in using ERPsim, and enjoyment in using ERPsim. This study used a Likert scale. Likert scale was used to measure attitudes, opinions, and perceptions of a person or a group of people related to a social phenomenon. In this study, the social phenomenon was specifically determined by the researcher, which was then referred to as the research variable. The operational definitions of variables in this study are:

1. Behavioral intention to use ERPsim
   Behavioral intention is a motivational factor, indicating the extent to which a person is willing to be dedicated in doing an activity, and this serves as the most influential predictor of behavior. In relation to ERPsim use, behavior intention is seen in terms of the present, tomorrow and the future. The behavioral intention to use ERPsim was measured by three questions based on a theory developed by Venkatesh (2000) using 6 likert scale.
2. Cognitive appraisal in using ERPsim
   Cognitive appraisal is a mental process where people assess two factors: (1) whether a demand threatens the physical or psychological well-being and (2) the available resources to meet the demand. Cognitive appraisal emphasizes the psychological aspects of ERPsim users. In this study, the variable of cognitive appraisal in using ERPsim was measured using five questions adopted from Lee, Chen, and Ilie (2012) consisting of 6 likert scale.
3. Enjoyment in using ERPsim
   In information systems literature, enjoyment refers to the extent to which computer systems are considered as providing comfort (Davis, Bagozzi, & Warshaw, 1992). This means that enjoyment in using information systems is a pleasant experience when users are using technology. In this study, the variable of enjoyment in using ERPsim was measured using four questions adapted from Ghani, Supnick, and Rooney (1991) consisting of 6 likert scale.

Results and Discussion

The respondents who became the subject of this study were the students in Accounting Study Program, Faculty of Economics, Universitas Islam Indonesia who already took SAP ERP software subject and attended ERPsim. A total of 140 questionnaires were distributed to students in 2016's cohort.

Table 1. Data Collection Results

Description	Number	Percentage
Distributed questionnaires	140	100%
Returned questionnaires	140	100%
Unanswered questionnaires	0	0%
Questionnaires that met the requirements	140	100%

Source: primary data 2018

Respondent Characteristics

Based on the distributed questionnaires, the respondent characteristic by gender is presented in Table 2.

Table 2. Respondent characteristic by gender

Gender	Number
Male	53
Female	87
Total	140

Source: primary data 2018

Measurement Model Testing (Outer Model)

Validity test

Validity test consists of two types of tests, namely convergent validity test and discriminant validity test. The results of the validity tests in this study can be seen in Table 3.

Table 3. Outer Loading Value

Constructs	Item	Loading Value
Enjoyment (E)	RS 1	0.834
	RS 2	0.948
	RS 3	0.918
	RS 4	0.927
Cognitive Appraisal (CA)	PKO 1	0.834
	PKO 2	0.878
	PKO 3	0.868
	PKO 4	0.847
	PKO 5	0.589
Behavioral Intention (BI)	NP 1	0.914
	NP2	0.912
	NP3	0.922
Learning Outcomes (LO)	HB 1	0.836
	HB 2	0.845
	HB 3	0.856
	HB 4	0.734
	HB 5	0.845

Source: Data processed, 2018

Based on Table 3, it can be seen that all items have a loading value above 0.5, but there is one item that has a loading value below 0.7, i.e. CA 5. According to Ghozali (2008), outer loading value of 0.5 can still be tolerated to be included in the model that is still under development. In addition, Table 4 presents the AVE value of each variable in this study.

Table 4. Final Average Variance Expected (AVE) Value

Constructs	AVE Value
Enjoyment (E)	0.824
Cognitive Appraisal (CA)	0.657
Behavioral Intention (BI)	0.839
Learning Outcomes (LO)	0.679

Source: Data processed, 2018

Table 4 shows that every variable in this study has an AVE value above 0.5. Therefore, based on the results in Tables 3 and 4, it can be concluded that this study has met the convergent validity test because the item and AVE value of each variable is above 0.5. In addition, Table 5 presents the correlation value between variables.

Table 5. Correlation Value between Variables

	LO	BI	CA	E
LO	**0.824**	0	0	0
BI	0.628	**0.916**	0	0
CA	0.712	0.769	**0.810**	0
E	0.521	0.536	0.640	**0.908**

Source: Data processed, 2018

Based on Table 5, it can be seen that the correlation value (bold number) of each variable with the variable itself is the highest when compared with the correlation value with other variables. It can be concluded that this study has met the discriminant validity test.

Reliability test

The reliability test was done by using composite reliability values. The reliability test results in this study can be seen in Table 6.

Table 6. Composite Reliability Value of Each Variable

Variable	Composite Reliability Value
Learning Outcomes (LO)	0.914
Enjoyment (E)	0.949
Behavioral Intention (BI)	0.940
Cognitive Appraisal (CA)	0.904

Source: Data processed, 2018

Based on Table 6, it can be seen that each variable in this study has a composite reliability value above 0.7. This way, it can be concluded that this study has met the reliability test, making it reliable.

Structural model test (Inner Model)

There were three types of structural model tests, namely R-square, path coefficient, and t test (significance). The R-square test was conducted to see the extent of the effect of the independent variables on the dependent variable in the study. The results of the R-square hypothesis test in this study can be seen in Table 7.

Table 7. R-Square

Variable	R-Square
Learning Outcomes (LO)	0.394
Behavioral Intention (BI)	0.595
Cognitive A(CA)	0.409

Source: Data processed, 2018

The R-square value is the coefficient of determination in endogenous construct. The R-Square value of 0.67 (strong), 0.33 (moderate) and 0.19 (weak). Based on Table 7, it can be seen that the R-square values are above 0.33 or moderate, for the dependent variable of learning outcomes, i.e. 0.390. This means that the variable of behavioral intention (BI) has an effect on the variable of learning outcomes of 39.0%. The variable of behavioral intention has a R-square value of 0.533 which means that the variables of enjoyment (E) and cognitive appraisal (CA) have an effect on the variable of behavioral intention of 53.3%. The variable of cognitive appraisal has an R-square value of 0.390, which means has less effect. In addition, the path coefficient test and t test (significance) were conducted to test whether the hypothesis of this study was proven or not. The results of the path coefficient test and t test (significance) can be seen in Table 8. Enjoyment (E) has an effect on the variable of cognitive appraisal of 64%.

Table 8. Inner Model Test Resuls

Path	Original Sample	T-Statistics
BI -> LO	0.628	10.888
E -> BI	0.076	1.227
CA -> BI	0.721	13.098
E -> CA	0.640	11.576

Source: Data processed, 2018

Table 8 illustrates that the first hypothesis (H1) "Behavioral intention to use ERPsim in learning business processes has correlation with learning outcomes" is proven to be significant. This variable has a t-statistic value of 10,888 which is greater than 1.96 (alpha 5%), and has a positive original sample value of 0.628.

Further in Table 8, it can be seen that the second hypothesis (H2) is not proven to be significant. This is because H2 has a t-statistic value of 1.227, smaller than 1.96 (alpha 5%) and has a positive original sample value of 0.076. This way, "Enjoyment in using ERPsim affects the intention to use ERPsim as a tool for business process learning" is not proven.

In addition, Table 8 shows that "Cognitive appraisal in using ERPsim has an effect on the intention to use ERPsim as a tool for business process learning" is proven to be significant. This is because the third hypothesis (H3) has a t-statistic value of 13,098 which is greater than alpha 5% (1.96) and has a positive original sample value of 0.721.

In fact, Table 8 also shows that "Enjoyment in using ERPsim has an effect on cognitive appraisal in using ERP system" is proven. The fact that the fourth hypothesis (H4) is supported is because it has a t-statistic value of 11,576 which is greater than 1.96 (alpha 5%) and also has a positive original sample value of 0.640.

Hypothesis Test

Behavioral intention to use ERPsim in learning business processes is positively corelated to learning outcomes

The first hypothesis (H1) testing in this study has proven that behavioral intention to use ERPsim in learning business processes has a significant effect on learning outcomes. This is because this variable has a t-statistic value of 10,888, greater than 1.96 (alpha 5%), and also has a positive original sample value of 0.628.

Theory of Planned Behavior developed by Ajzen and his colleague (Ajzen & Madden, 1986) emphasizes behavioral intention as a result or the result of a combination of several beliefs. Intention is one of the important factors for the outcomes to achieve. Therefore, it can be said that someone who has a high intention will obtain results that are directly proportional to his/her intention even though there are still many other determining factors, but intention is one of the important factors. Intention to use ERPsim in learning business processes can also be directly proportional to the learning outcomes achieved by students. Ajzen (2005) defines intention as behavior disposition, which until there is the right time and opportunity will be manifested in the form of actions that will later result in something. The findings of several studies show that, due to deep limitations, behavioral intentions do not always lead to actual behavior or, in other words, intention or motivation does not serve as the main determinant of individual control in his/her behavior. However, in the Theory of Planned Behavior, behavioral intention is strongly correlated to learning outcomes achieved by the actors.

Enjoyment in using ERPsim is positively corelated to the intention to use as a tool for business process learning

The second hypothesis (H2) testing in this study has proven that enjoyment in using ERPsim has no positive effect on the intention to use ERPsim as a tool for business process learning. This is because H2 has a t-statistic value of 1.227, smaller than 1.96 (alpha 5%) and has a positive original sample value of 0.076.

Venkatesh (2000) explains that enjoyment has been identified as one of the main intrinsic motivations in using information systems. This is because enjoyment is able to make the actor want to produce the best without any extrinsic motivations. Moreover, in using information system based on the intention to use it, there must be enjoyment in using an information system. However, the second hypothesis (H2) in this study "Enjoyment in using ERPsim affects the intention to use ERPsim as a tool for business process learning" is not supported. Therefore this study is not in line to a previous study conducted by Chen, Keys, and Gaber (2015). This study possibly has internal and external factors that affect why enjoyment in using ERPsim does not affect the behavioral intention to use ERPsim in information system learning. An internal factor from the respondents themselves is because the implementation of using ERPsim is difficult, for example, playing ERPsim games is difficult due to a lack of understanding about running ERPsim because the respondents only played the game once. In terms of the external factor, it is likely that the respondents listened to the opinions of other students who did not proceed to the next level of ERP because there was a lack of information and these respondents did not really know the continuation of the ERPsim game.

Cognitive appraisal in using ERPsim is positively corelated to the intention to use as a tool for business process learning

The result of this study proved that cognitive appraisal in using ERPsim has a positive effect on the intention to use ERPsim as a tool for business process learning. This is because the hypothesis "Cognitive appraisal in using

ERPsim affects the intention to use ERPsim as a tool for business process learning" has a t-statistic value of 13,098, greater than alpha 5% (1.96) and has a positive original sample value of 0.721.

Cognitive appraisal refers to the utilitarian aspect of attitude (Lee, Chen, & Ilie, 2012). Utilitarian aspect here is a belief in moral philosophy which emphasizes the usefulness or benefits in assessing an action. Thus it can be concluded that the way of thinking will be better when knowing the benefits that can be gained. From knowing the benefits, then the process of thinking will be good, then an intention to learn more about this will arise. This fact is supported by the testing in this study. The third hypothesis (H3) testing "Cognitive appraisal in using ERPsim has a positive effect on the intention to use ERPsim as a tool for business process learning" is supported. Therefore, the better the cognitive appraisal in using ERPsim, the higher the intention to use ERPsim as a tool for business process learning.

Enjoyment in using ERPsim is positively corelated to cognitive appraisal in using ERPsim

The results of this study proved that enjoyment in using ERPsim affects cognitive appraisal in using ERPsim. This is because the effect of enjoyment in using ERPsim on cognitive appraisal in using ERPsim has a t-statistic value of 11,576, greater than 1.96 (alpha 5%) and has a positive original sample value of 0.640.

Venkatesh (2000) explains that enjoyment will improve learning outcomes because individuals will think they enjoy learning about it, thus they think well about it. This way, individuals will certainly feel that ERPsim is easy if they enjoy ERPsim. Such enjoyment will arise if people are already engaged in using ERPsim. People with high level of enjoyment in using ERPsim will have good learning intentions. Besides, they will tend to think that ERPsim is easy and may bring benefits in the future. This has been proven in this study. The fourth hypothesis (H4) testing in this study has proven that enjoyment in using ERPsim affects cognitive appraisal in using ERPsim. In other words, the higher the enjoyment in using ERPsim, the better the cognitive appraisal of learning information systems using ERPsim.

Conclusion

Behavioral intention to use ERPsim in business process learning is positively correlated to learning outcomes. When students have a good intention to learn information systems using ERPsim, then the outcomes achieved will also be good. Enjoyment in using ERPsim does not have a positive effect on the intention to use ERPsim as a tool for business process learning. Enjoyment in using ERPsim is not always directly proportional with the intention to use ERPsim because in addition to enjoyment, way of thinking also affects the intention to use ERPsim. Cognitive appraisal in using ERPsim has a positive effect on the intention to use ERPsim as a tool for business process learning. A good opinion about ERPsim may affect the intention to continue using ERPsim as a tool for business process learning. Enjoyment in using ERPsim has a positive effect on cognitive appraisal in using ERPsim. Enjoyment in using ERPsim in fact influences the opinions about ERPsim. Higher level of enjoyment in ERPsim will lead to a belief that ERPsim is easy.

Based on the findings of this study, it can be seen that the ERP Simulation Game is effective to be used in ERP learning curriculum because ERP Simulation Game not only facilitates students' understanding of business processes, Enterprise Systems and expertise in SAP transaction processing, but also helps students work in a team and make business process-related decisions. However, this study has a number of limitations that might influence its results, namely the sample of this study only involved students who used SAP enterprise system with a limited duration of play.

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