

Sandbox Environments in an ERP System Context: Examining User Attitude and Satisfaction

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Abstract: Enterprise Resource Planning (ERP) systems are large complex software packages that are widely used in organizations today. Due to the complexity, sandbox environments are often used for training on ERP systems. This study examines the effectiveness of training using a sandbox environment, specifically examining user attitudes, users' perception of financial knowledge gained, and user satisfaction in the ERP environment while learning financial concepts. The theoretical framework is based on the Technology Acceptance Model with additional factors predicted to impact users' attitude and satisfaction. Data were collected from 124 subjects who voluntarily participated in the study. Structural Equation Modeling was used to analyze the data. The results of this study should help organizations understand the factors impacting user attitudes on ERP training leading to higher self-perception of knowledge gains and task completion satisfaction. In addition, this study provides the results of using ERP systems as a tool for financial education.

Keywords: Enterprise Resource Planning (ERP) System, Technology Acceptance Model (TAM), Perceived Usefulness, Perceived Ease of Use, Perceived Knowledge Gained, Task Completion Satisfaction

1. Introduction

Businesses must adapt to changing industry conditions and competitive processes in order to survive and thrive. To do so, organizations seek competitive advantages through the effectiveness and efficiency gained by integrating their functional processes (Cronan and Douglas, 2012). Organizational changes require employees to change the way they accomplish tasks, often requiring employees to use new tools and acquire new knowledge to succeed. Many companies, therefore, train employees to develop new skillsets and knowledge in order to perform well for their job. Developing new skillsets and knowledge is costly. In 2019, companies spent \$1,286 per employee for training, not including the compensation/benefit costs of the employee for the average of 42.1 hours that the training required (Training, 2019).

An enterprise resource planning (ERP) system is a packaged business software system that provides an integrated solution to information-processing needs, enabling executives to manage resources efficiently and effectively (Shih, 2006). ERP systems are widely used in organizations today. ERP system usage continues to grow with the 2018 ERP market size of \$35.81 billion and with the 2026 ERP market size estimated to be \$78.4 billion (Rake and Baul, 2019). Most medium and large sized companies use an ERP system because of the benefits that an enterprise-wide system offers managers such as providing real-time reports on profitability, sales, and inventory levels. Because of the widespread usage of ERP systems, many new employees must participate in ERP training to accomplish their jobs. Although training programs enable users to understand both the ERP system and business processes, the complexity of ERP systems limits the amount of knowledge that users can absorb before they actually use an ERP system (Chang and Chou, 2011; Yi and Davis, 2003). Thus, some companies use a sandbox environment for training which allows users to interact with an isolated system with sample data that does not risk harm to the company's actual data.

Because the complexity of ERP systems often leads to employees making mistakes, sandbox environments are commonly used for employee training during ERP implementations. Sandbox environments of an ERP allow for employees to try out and learn the new system and make mistakes as the data in the system is refreshed and thus employee mistakes do not affect the actual company data. Companies would much rather have employees make mistakes in a sandbox environment while training rather than making mistakes on a live ERP system. The sandbox environment is important for ERP implementations as it allows companies to test out third party apps,

identify unexpected errors, train employees in a safe environment in which their mistakes will not affect organizational data, and provide the freedom to adapt and innovate without affecting organizational data (Jenkins, 2020).

Although ERP systems are widely used in organizations today and organizations regularly need to train employees to use the ERP systems, research examining the impact of sandbox environments in employee training is scarce. Although many studies have examined employee attitudes towards using a system, research has not examined the impact of sandbox environment for training nor the knowledge gained through learning system concepts through sandbox environments despite widespread usage in organizations globally. This study looks at using a sandbox environment of an ERP system to facilitate learning, examining the following research question: When a sandbox environment is used to train a person, what factors affect trainee’s attitudes towards the system and how does their attitude impact learning and satisfaction?

This study makes several contributions. First, it contributes to the literature by furthering the knowledge on sandbox environments. While sandbox environments are commonly used for testing new systems and for training employees on complicated systems, research on the usefulness of sandbox environments for employee training is scarce. Second, this study expands on the user attitude and behavior research by examining the impact of an employee’s attitude towards the training system and how it affects learning outcomes and satisfaction. Third, as the Technology Acceptance Model (TAM) is focused around the voluntary acceptance of a new system, this study expands the TAM literature by examining user attitudes in an environment in which users are required to use the system. Fourth, this study contributes to industry as it is beneficial for companies investing in training to better understand how the impact on employees’ attitudes towards a sandbox environment will impact the learning that occurs.

2. Literature Review

There are various studies which have found that ERP training is a significant factor that affects the success of an ERP implementation (Gupta, 2000; Rao, 2000; Stratman and Roth, 2002). However, studies examined ERP training focus on traditional classroom style training as well as online training. However, ERP training in recent years has been focused more on sandbox environment training in which users try out tasks in the new ERP system in a protected environment with data that is regularly refreshed rather than having trainees affecting organizational data as they complete tasks.

Many prior studies have focused on system usage and builds upon the well-established literature that indicates the attitude of an individual impacts his/her behavior (Ajzen and Fishbein, 1977; Smith and Swinyard, 1983). The Technology Acceptance Model (TAM) found that attitude has a strong impact on an individual's behavioral intention to use a system (Davis, 1989) and was derived from the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975). TAM has been studied extensively within the Information System discipline and is well-supported (Hwang et al., 2017), showing that Perceived Usefulness and Perceived Ease of Use are important predictors of a user’s attitude towards system use (Davis, 1989). The key purpose of TAM is to trace the impact of external variables on internal beliefs, attitudes, and intentions (Changchit et al., 2017). TAM suggests that two constructs - Perceived Usefulness and Perceived Ease of Use - are the two main factors in explaining system use. Lee, Kozar, and Larsen (2003) stated that TAM is considered the most influential and commonly employed theory for describing an individual’s voluntary acceptance of information systems. The original TAM is shown in Figure 1 below.

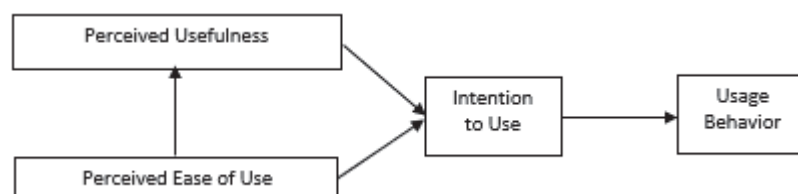


Figure 1: Technology Acceptance Model (TAM) (Davis et al., 1989)

However, while TAM is focused around the voluntary acceptance of a system, companies that use ERP systems usually require that employees use the system. Thus, there have been some studies that have examined TAM specifically in a mandatory adoption environment, such in regard to ERP systems. One study found that the

complexity of an ERP system negatively affects a user’s attitude towards using the system (Igbaria et al., 1995). In fact, the attitudes of ERP users can have a great impact on their behaviors, particularly on behaviors that are resisting the implementation (Klaus et al., 2015). Also, one study reports that the constructs Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) have been found to significantly affect intention to use and actual ERP system usage (Rajan and Baral, 2015).

As employees in an ERP training program usually are forced to learn the new system so that they can use it in their job, it is important that employees understand the usefulness of the system. A study conducted by Bhattacharjee (2002) confirmed the importance of the construct PU on ERP usage. By using the system to accomplish tasks related to their job in a sandbox environment, it is likely that employees may see the usefulness of the system. It is expected that users would be more likely to adopt an ERP system if they perceived the ERP system would assist them to attain desired performance outcomes. Consequently, the greater the PU of the ERP system, the more likely it is that the ERP system would be adopted.

With regard to the construct PEOU, a prior study has shown that this construct has led to students’ satisfaction on the ERP training in a class (Kanthawongs, 2011). Effort expectancy was found to have a stronger relationship with behavioral intention to use ERP software training for students with less experience as compared to the experienced students, which is consistent with the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003). Students with less experience tend to assign more value to ease of use associated with the use of ERP software for training and are more likely to use it if it does not require a high level of effort (Chauhana and Jaiswalb, 2016). Another study found that PEOU, PU, Perceived Fit between the ERP system and the business needs, and perceived compatibility between the system and the user’s preference on how work should be accomplished were all significant in predicting attitudes towards use (Nah et al., 2004).

Students’ innovativeness in IT were confirmed as contributing towards increased behavioral intention to use ERP software training. Furthermore, behavioral intention to use the system was an important factor affecting actual use of the ERP software for training (Chauhana and Jaiswalb, 2016).

3. Theoretical Development, Research Model and Hypotheses

This study has modified the TAM model to investigate the impact of users’ attitude on using an ERP system for financial training. The two additional factors incorporated into the research model are Perceived Financial Knowledge Gained and Task Completion Satisfaction. The proposed research model is shown in Figure 2 below.

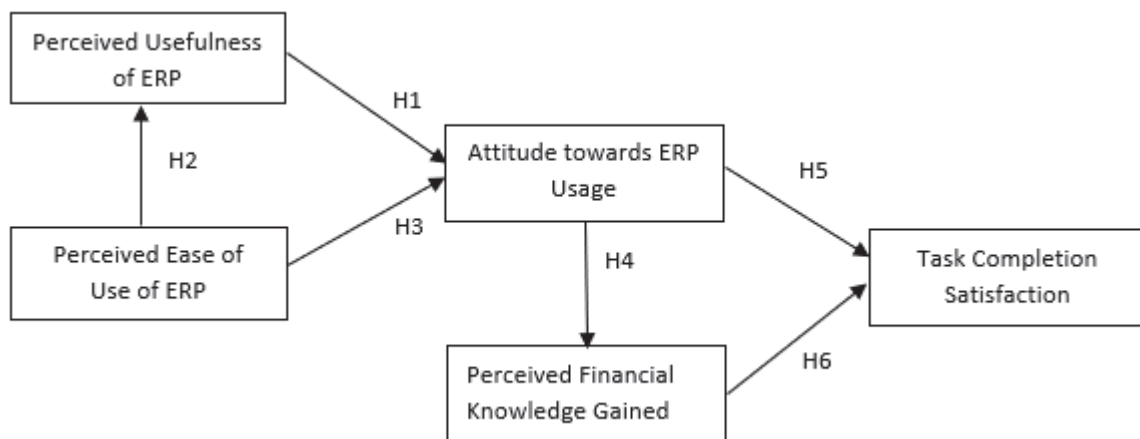


Figure 2: Research model and hypotheses

3.1 Perceived usefulness (PU)

The construct perceived usefulness is defined as the prospective users’ subjective probability that using a specific application system will increase his or her job performance within an organizational context (Davis et al., 1989). Many prior studies reported that this construct has a significant effect on usage intention (Agarwal and Prasad 1999; Davis et al., 1989; Koenig-Lewis et al., 2010; Venkatesh and Davis 2000), with one study revealing that this construct was the most important factor in discriminating between users and non-users (Mathew et al., 2014).

Thus, the construct perceived usefulness is predicted to be a positive driver for the attitude towards the usage of the ERP system, and we propose the following hypothesis:

H1. Perceived usefulness (PU) positively affects the attitude towards the usage of the ERP system for financial training.

3.2 Perceived ease of use (PEOU)

The construct perceived ease of use is defined as the degree to which the prospective user expects the target system to be free of effort (Davis et al., 1989). This factor plays a crucial role in understanding individual response to information technology (Agarwal and Karahanna 2000; Chau and Hu 2001; Hong et al., 2001).

Research over the past decade provides evidence of the significant effect perceived ease of use has had on usage intention (Agarwal and Prasad 1999; Azad 2016; Venkatesh and Davis 2000). In the IS training context, this construct has been found to be an indicator of the cognitive effort needed to learn and use an IS, as it represents end-users' perceptions that the skills they have acquired are easy to utilize in the work environment (Arasanmi et al., 2016). We therefore posit:

H2. Perceived ease of use (PEOU) positively affects perceived usefulness of the ERP system for financial training.

H3. Perceived ease of use (PEOU) positively affects the attitude towards the usage of the ERP system for financial training.

3.3 Perceived financial knowledge gained

While research has clearly found that attitudes affect behaviors (Wallace et al., 2005), surprisingly, very few studies have actually examined the impact of attitude on learning outcomes. In particular, we did not find a study that examined the impact of user attitudes towards a system on learning outcomes from that system.

Individuals that do not have a positive attitude towards using a system may experience more anxiety and frustration, and consequently exhibit less determination in learning a challenging task (that is, the ERP system) and may have lower levels of learning intentions. Thus, we seek to examine if the attitude of users actually affects the perceived level of learning that occurs as there is a high likelihood that a user's attitude towards using the system will impact their perception of knowledge gained. We therefore hypothesize that:

H4: Attitude towards the usage of the ERP system for financial training positively affects users' perceptions on financial knowledge gained.

3.4 Task Completion Satisfaction (TCS)

We define "Task Completion Satisfaction" as the extent to which an individual is content with the completion of the task. For this study, this is the user's opinion towards completing the ERP training exercise. Users with high perceptions of knowledge gained from the training may be more satisfied because they found the ERP training to be worthwhile of their time. In addition, users that have had a more positive attitude towards using the system prior to starting may be more satisfied with the task upon completion. We therefore posit:

H5. Attitude towards the usage of the ERP system for financial training positively affects the level of satisfaction that a user has in completing a task.

H6. Users' Perceptions of Financial Knowledge Gained positively affects the level of satisfaction that a user has in completing a task.

4. Research Methodology

The questionnaire consisted of twenty (20) questions. All items use a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Four questions were developed to measure each of the five constructs in the research model. The questions related to TAM that were used for this study were based on Venkatesh and Davis (2000). Additional questions were developed to measure the constructs Perceived Financial Knowledge Gained and Task Completion Satisfaction. Prior to using the developed questions, feedback on the questions were obtained from four researchers to verify the face validity and content validity of the questions. The questions were then modified according to the comments received.

Over a period of four semesters, the questionnaire was made available to undergraduate business students in a Management Information Systems course that is required for all business majors at a university located in the southern United States. While students were required to complete the financial training module using the SAP ERP system, participating in the study and completing the questionnaire was optional. One hundred twenty-four (124) students out of a total of two hundred forty-two (242) students voluntarily participated in the study, which is a response rate of 51.2%. Prior to completing the financial training module, the respondents completed the Perceived Usefulness, Perceived Ease of Use, and Attitude towards Use questions. Most students then took around three hours to complete the financial training module. Upon completing the financial training module, respondents answered the questions regarding Perceived Financial Knowledge Gained and Task Completion Satisfaction.

Table 1 summarizes the items measuring each construct. All of the variables had an appropriate level of internal consistency of 0.85 or higher.

Table 1: Measure Subscales, Internal Consistency, Means, and Standard Deviation (SD)

	M	SD
Perceived Usefulness ($\alpha = 0.871$) This system is a useful business tool. I see the value in why companies would want to use this system. I understand why this system is important to use. I think that this system has useful features.	4.10	0.74
Perceived Ease of Use ($\alpha = 0.865$) It has been easy for me to learn how to use this system. I find it easy to perform required tasks in this system. It would be easy for me to become skillful at using this system. I find this system easy to use.	3.07	0.94
Attitude towards the Usage of ERP System ($\alpha = 0.872$) I am pleased with what I have been able to accomplish with this system. I think it's a good idea to use SAP in this course I am pleased that I've been able to use this system. Overall, I have enjoyed using this system.	3.47	0.94
Perceived Financial Knowledge Gained ($\alpha = 0.907$) I understood everything about the financial transactions that I completed. I am confident on how to process financial transactions. I understood each of the financial transactions I just completed. The financial processes made sense to me.	3.65	0.90
Task Completion Satisfaction ($\alpha = 0.907$) I was able to complete all tasks well. I fully completed the required financial processes. The financial exercise was fully completed. I satisfactorily completed all financial tasks.	4.18	0.81

5. Data Analysis

The following paragraphs describe the statistical analyses of the data.

5.1 Reliability test

To verify the suitability of the measurement model and scales used, various statistical analyses (reliability, validity, exploratory, and confirmatory analyses) were conducted using SPSS 23.0 software. A reliability test was conducted to examine the internal consistency of the research instrument. The test confirmed the reliability of the research items with Cronbach's alpha coefficient of 0.906.

5.2 The KMO and Bartlett's test

The KMO and Bartlett's Test was conducted to assess the degree of unidimensionality of the scales. The test confirmed the sampling adequacy with the value of 0.866 and the Bartlett's test of sphericity showed a significance or p-value of 0.000, and thus the null hypothesis was rejected that all batch variances are equal.

5.3 Factor analysis

The convergent validity of each construct was assessed with a factor analysis to ensure that the survey items produced the expected number of factors and whether each item was loaded on their appropriated factor. An Exploratory Factor Analysis (EFA) was used to reveal the underlying structure of constructs. As demonstrated in Table 2 below, factor analysis results show that twenty (20) items were loaded on five (5) factors with a total cumulative variance of 76.72%. One item (Q9) had a loading below the suggested 0.7 threshold and thus was removed from the data analysis (Hair, 2009). All items show high communality values, indicating that the total amount of variance and original variable shared with all other variables in the analysis is high. The results validated that the construct measures were valid and thus could be used to measure the five (5) factors in the research model.

Table 2: Factor analysis

Q#	Constructs	Component				
		1	2	3	4	5
1	Perceived Usefulness 1	.002	.784	.148	.102	.350
2	Perceived Usefulness 2	-.015	.814	-.001	.136	.244
3	Perceived Usefulness 3	.026	.784	.087	.206	.289
4	Perceived Usefulness 4	.122	.781	-.019	.168	.122
5	Perceived Ease of Use 1	.104	.240	.175	.759	.336
6	Perceived Ease of Use 2	.110	.091	.112	.742	.333
7	Perceived Ease of Use 3	-.068	.488	.050	.738	.011
8	Perceived Ease of Use 4	.073	.099	.086	.797	.308
9	Attitude towards Usage 1 (removed)	.052	.246	.183	.346	.668
10	Attitude towards Usage 2	.122	.343	-.130	.167	.762
11	Attitude towards Usage 3	.087	.348	.118	.269	.772
12	Attitude towards Usage 4	-.062	.252	.229	.338	.730
13	Perceived Financial Knowledge Gained 1	.760	-.044	.243	.199	.031
14	Perceived Financial Knowledge Gained 2	.897	.070	.224	.108	.089
15	Perceived Financial Knowledge Gained 3	.883	.037	.273	-.021	.028
16	Perceived Financial Knowledge Gained 4	.848	.075	.233	-.074	.033
17	Task Completion Satisfaction 1	.331	.053	.863	.058	.052
18	Task Completion Satisfaction 2	.156	.064	.826	.059	.171
19	Task Completion Satisfaction 3	.279	.110	.862	.096	.039
20	Task Completion Satisfaction 4	.350	-.050	.752	.221	.039

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.^a

5.4 Common method bias

In order to ensure that the model is free from common method bias, which is a measurement error that threatens the validity of a conclusion drawn upon statistical results (Podsakoff et al., 2003; Podsakoff et al., 2012), the Harman's single factor test was conducted. This is the most widely used test for common method bias (Podsakoff et al., 2003; Roni, 2014), produced by running an un-rotated, single-factor constraint of factor analysis in SPSS. As shown in Table 3 below, 36.491% of the variance was explained by a single factor which shows that the common method bias is not a major concern in this study, as it was less than the 50% cut-off threshold (Roni 2014).

Table 3: Total variance explained *

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.298	36.491	36.491	7.298	36.491	36.491
2	4.127	20.637	57.128	4.127	20.637	57.128
3	1.594	7.969	65.097	1.594	7.969	65.097
4	1.352	6.761	71.857	1.352	6.761	71.857
5	.972	4.859	76.716	.972	4.859	76.716
6	.581	2.905	79.621			
7	.483	2.414	82.036			
8	.465	2.326	84.361			
9	.440	2.201	86.563			
10	.405	2.026	88.589			
11	.351	1.756	90.345			
12	.323	1.617	91.962			
13	.309	1.543	93.505			
14	.305	1.524	95.030			
15	.240	1.202	96.232			
16	.225	1.123	97.355			
17	.169	.846	98.200			
18	.143	.713	98.913			
19	.118	.592	99.505			
20	.099	.495	100.000			

* Extraction Method: Principal Component Analysis.

5.5 Structural equation model (SEM)

The structural equation model was analyzed using AMOS 24.0 software. In order to test the fitness of the model, seven (7) common model-fit measures were conducted to assess the model’s overall goodness of fit: the ratio of Chi-square (CMIN) to degrees-of-freedom (df); goodness of fit index (GFI); adjusted goodness-of-fit index (AGFI); normalized fit index (NFI); Tucker Lewis Index (TLI); comparative fit index (CFI); and root mean square error of approximation (RMSEA). As shown in Table 4, all the model-fit indices exceeded their respective common acceptance levels suggested by previous research, thus demonstrating that the measurement model exhibited a good fit with the data collected (Browne et al., 1989; Byrne, 1994; Hair, 2009; Kline, 1998; Schumacker and Lomax, 2004; Ullman, 2001).

Table 4: Fit Indices for Measurement and Structural Models

Fit Indices	Recommended Value	Measurement Model
Chi-square (CMIN)/df	<=3.00	0.971
Goodness-of-fit (GFI)	>=0.90	0.988
Adjusted goodness-of-fit (AGFI)	>=0.80	0.954
Normed fit index (NFI)	>=0.90	0.980
Tucker Lewis Index (TLI)	>=0.90	1.002
Comparative fit index (CFI)	>=0.93	1.000
Root Mean Square Error of Approximation (RMSEA)	<=0.06	0.000

5.6 Hypothesis Testing

Properties of the causal paths including standardized path coefficients are presented in Figure 3. The results of hypothesis testing are shown in Table 5.

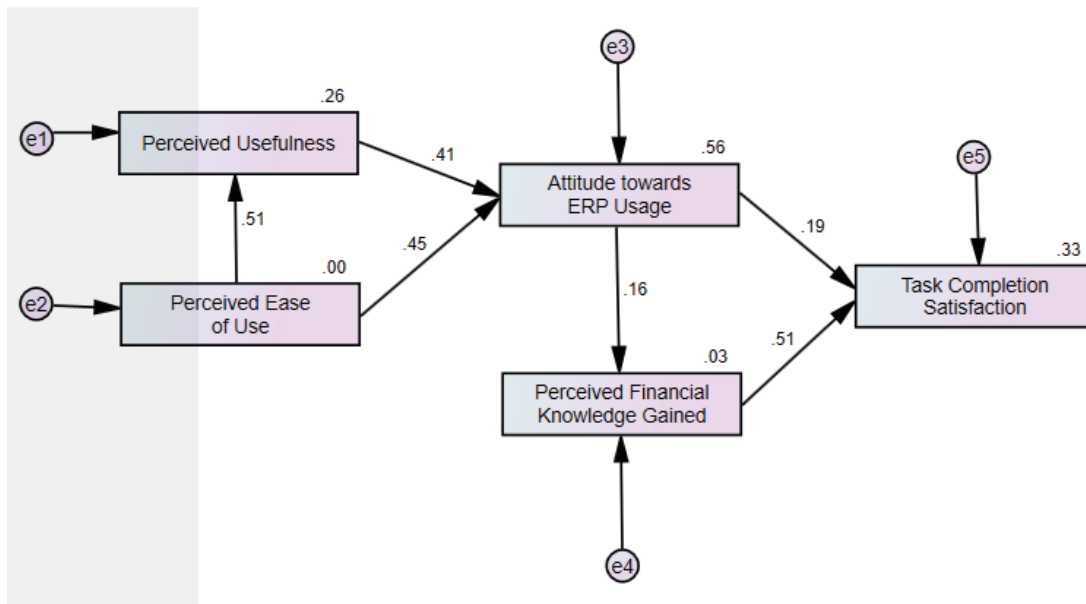


Figure 3: Structural equation model path analysis

Table 5: Hypothesis Testing and Results

H#	Hypothesis Testing	Standardized Estimate (β)	C.R.	p-value
H1	Perceived Usefulness of ERP System \longrightarrow Attitude towards ERP Usage	.398	6.530	***
H2	Perceived Ease of Use of ERP System \longrightarrow Perceived Usefulness of ERP System	.448	6.420	***
H3	Perceived Ease of Use of ERP System \longrightarrow Attitude towards ERP Usage	.527	5.916	***
H4	Attitude towards ERP Usage \longrightarrow Perceived Financial Knowledge Gained	.141	1.833	.067*
H5	Attitude towards ERP Usage \longrightarrow Task Completion Satisfaction	.133	2.495	.013**
H6	Perceived Financial Knowledge Gained \longrightarrow Task Completion Satisfaction	.422	6.845	***

*** indicates significant level <0.001; ** indicates significant level <0.05; * indicates significant level <0.1

6. Discussion and Conclusions

Based on the results shown in Table 5 above, hypotheses H1, H2, H3, and H6 have statistically significant results at $p < .001$, H5 at $p < .05$, while hypothesis H4 is weakly supported at $p < 0.1$. Regarding hypotheses H1 ($\beta = 0.398$, $p\text{-value} < 0.001$) and H3 ($\beta = 0.527$, $p\text{-value} < 0.01$), it is not surprising that Perceived Usefulness and Perceived Ease of Use have a significant and strong impact on Attitude towards ERP Usage. This finding is consistent with earlier research that has looked on the impact of perceptions about the system on attitude towards use. It is apparent that if subjects perceive that the training system is useful and easy to use, they will have a positive attitude regarding using the system.

Hypothesis H2 ($\beta = 0.448$, $p\text{-value} < 0.001$), is also supported by the study, indicating that the perceived ease of use that trainees have towards the system will also impact trainees' perceptions of the usefulness of the system. This result is consistent with the TAM literature findings which indicates that the construct Perceived Ease of Use will positively influence subjects' Perceived Usefulness. As people nowadays tend to believe that technology should only require minimal effort to use, they are much more likely to perceive that the system is useful if they do not have to spend a lot of effort to learn how to use it. This finding indicates that even for an ERP system in a sandbox environment that requires mandatory use, users still perceive that the system is more useful if it is easy to use.

Regarding Hypothesis H4 ($\beta = 0.141$, $p\text{-value} < 0.1$), the finding showed weak support that attitude towards using the ERP system positively affects the perceptions of knowledge gained. This result implies that if users perceive that they like the system prior to using it, they tend to gain more knowledge when using the system as a training tool. This is a relationship that warrants more research to determine if trainees with better attitudes actually learn more. Previous literature has indicated that attitude affects the level of learning (Janssen and O'Brien, 2014). Thus, it may be fruitful to examine how the attitude of a trainee affects their ERP system learning. In addition to examining the perceived knowledge gained, it may also be useful for a future study to measure how the attitude of trainees prior to the training affects the actual level of knowledge gained from the training.

For Hypothesis H5 ($\beta = 0.133$, $p\text{-value} < 0.05$), the results reveal that the attitude towards using the ERP system affects the users' satisfaction of task completion. The finding suggests that if users have a better attitude towards using the system prior to completing a task, they are more likely to be satisfied with the tasks that they are completing. Thus, companies seeking to have employees who are content with using the ERP system for their job should start early and promote the ERP system in a favorable manner prior to training, so that employees' attitudes towards the system is more positive.

Regarding Hypothesis H6 ($\beta = 0.422$, $p\text{-value} < 0.001$), the results indicate that subjects who perceived that they gained a higher level of financial understanding from the task were more satisfied with the tasks that they completed in the exercise. Perhaps users who felt that their knowledge increased to a larger extent while completing the task felt that the task was a more worthwhile exercise and thus were more satisfied. This implies that if companies want their employees to be satisfied with training, there needs to be an appropriate level of knowledge learned from the training.

7. Study Implications and Limitations

From a theoretical perspective, this study adds to the body of literature by expanding the TAM beyond the subjects' attitude about the system. To the best of our knowledge, there is no prior study which attempts to examine the relationship of Attitude towards ERP Usage on Perceived Finance Knowledge Gained and Task Completion Satisfaction. The findings in this study show that the perception users have towards the system affects their level of learning from the system about financial concepts. While TAM has shown that Attitude towards Use impacts the behavioral intention to use the system (Venkatesh and Davis 2000), this study shows that the attitude towards the system also affects learning outcomes, which is a relationship not examined in prior studies. As companies continue to train employees on new concepts, it is important to use systems that employees have a positive attitude towards as this can affect the perceived knowledge retained by the employees. In addition, the results reveal that users' attitudes towards the system contributes to their satisfaction on the task completion.

From a practical standpoint, the research findings in this study suggest that perceived usefulness and perceived ease of use affects attitude towards use, which in turn, affects the perceived financial knowledge gain through using an ERP system for training. Thus, using ERP sandbox environments may not only be helpful for learning the ERP system, but it may also help trainees learn concepts about useful about their job, such as providing trainees with a better understanding of finance or accounting. We believe the results likely would be similar if ERP sandbox environments were used as a training tool for other business concepts. In addition, this study shows that using a sandbox environment can be a useful medium for training and overall, trainees had a high level of task completion satisfaction. Relevant business concepts can be effectively learned by interacting with a system to accomplish tasks.

As the attitudes of respondents ultimately affect their learning outcome and task completion satisfaction, this study has shown that perceptions of system usefulness and ease of use influence attitudes. An organization should educate their employees about the usefulness of a system by selling the benefits of the system to employees and help employees to understand the importance of the system for the organization. It is also important to ensure that these employees are aware that this technology is easy to use, which could be accomplished through choosing an ERP system with a well-designed intuitive interface or providing thorough training. Compared to most software used today, ERP systems are much more complex, requiring hours or days of training. Thus, employees may not normally consider the system easy to use. However, if the employees are taught about the navigation and menu prior to starting on training exercises, they may consider it easy to use. In addition, findings in this study also showed that employees' attitudes towards ERP usage could influence their

perceptions on knowledge gained and task completion satisfaction, which should help increasing both the effectiveness and efficiency of the training.

As in most empirical studies, generalizability is an inherent limitation. The sample in this research was limited to subjects in one university. While prior studies have proposed students as good surrogates (Luo et al., 2010; Remus 1998), there might exist a threat to the external validity since most students are not full-time employees of an organization. We believe that the results are generalizable since the students were using a relevant business software (they used SAP which is the most popular ERP system in the world), they had only a small amount of system knowledge prior to the training (similar to most employees that get trained in using ERP systems), and they were using it for training in a manner similar to how employees would use SAP for training by completing multiple tasks. Even though the exercises that were completed are relevant to the business world, future research should consider expanding demographics to include non-student subjects. In addition, a more detailed study conducted in the future could investigate which system features could enhance the knowledge transfer via the usage of the ERP system.

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