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Abstract

The main purpose of this study is to determine whether the TAM (Technology Acceptance Model) could be extended to include external variables including computer self-efficacy, prior experience, computer anxiety, management support and compatibility, to further understand the learners' perceived usefulness and perceived ease of use of an e-learning system. The study also aims to clarify which factors are more influential in affecting the decision to use e-learning. Five factors were examined together with the TAM construct using the SEM (Structural Equation Modeling) technique. The study reveals that management support, prior experience, computer anxiety and compatibility have predictive power towards behavioral intention to use e-learning systems. The results gained from this study, which took place in the banking workplace in Indonesia, provide a conceptual framework for individuals and organizations to better understand the critical factors which influence e-learning acceptance in developing countries.

Keywords

e-learning adoption, banking, Technology Acceptance Model, Structural Equation Modeling, Indonesia

Introduction

In today's tight and competitive business world, corporations, particularly in the banking industry, must struggle to enhance their competitiveness in the market. The knowledge required by employees to perform their jobs is changing quickly, and the knowledge invested in people has become an important measure of an organization's strength (Glass 1998). Along with the development of information technology and the Internet, many businesses are replacing traditional vocational training with e-learning (electronic learning) to better manage their employees. Organizations can implement e-learning as another method of training that complements and blends with the more traditional methods of learning (Vaughan and MacVicar 2004).

The rapid obsolescence of knowledge and the need for cost-effective and efficient training have been identified as major stimuli for the use of e-learning in workplaces (Fry 2001). Govindasamy (2002) points out that organizations need to build more cost-effective and efficient workplace learning

environments to meet organizational objectives, requiring organizations to train employees at multiple sites and times. For this task, e-learning successfully breaks limitations of time and space and creates benefits, including reduced costs, regulatory compliance, meeting business needs, retraining of employees, low recurring costs, and customer-support costs (Gordon 2003).

In the developed countries, e-learning has continued to grow in the corporate training workplace (Bersin 2005). In Indonesia, however, as a developing country, e-learning implementation in the organizational business setting is still in the early phases of adoption (Untari 2007), although e-learning is growing quickly in educational institutions. In the banking industry in particular, e-learning implementation is

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prevalent only among established and large organizations. This may be because of corporate management doubts about the effectiveness of e-learning as a means of transferring knowledge and skills to employees.

In this situation, studies about e-learning implementation in business organizations in Indonesia are still very limited. Recently, an empirical study from Wahyuni (2008) established that the factors which influence the acceptance of e-learning systems in the banking sector are perceived usefulness (directly) and perceived ease of use (indirectly). The study also found that employee attitudes to the use of e-learning systems in the banking workplace had a significant impact on the acceptance of information technology.

In terms of information technology adoption, two major theoretical paradigms are used: the Technology Acceptance Model (TAM) and Diffusion Of Innovations (DOI). Although TAM and DOI have several conceptual similarities, they each provide distinct elements (Hardgrave et al. 2003). Therefore, elements from each of these models are used to form a unique combination of technology acceptance determinants. DOI includes five significant innovation characteristics: relative advantage, compatibility, complexity, trialability and observability. It has been widely applied in disciplines such as education, sociology, communication, marketing, etc. (Rogers 1995). On the other hand, the TAM provides a widely adopted theoretical framework for the study of technology acceptance. Perceived usefulness and perceived ease of use are hypothesized to be the fundamental determinants of user acceptance (Davis 1989). A simplified TAM has also been widely validated empirically (Venkatesh 1999; Venkatesh and Davis 1996, 2000). Previous research suggests that the TAM model can be extended to include the variables of organizational support and individual differences, such as computer background, that affect the use of information systems (Igbaria et al. 1995; Chau 2001; Mun and Hwang 2003).

The present study considers five direct determinants of e-learning adoption in the banking workplace: management support, computer self-efficacy, prior experience, computer anxiety and compatibility.

Management support is the element of organizational support. Computer self-efficacy, prior experience and computer anxiety are elements of individual differences, while compatibility is one element of DOI. This study only include one element of DOI because previous studies have found that the

relative advantage construct in DOI is similar to perceived usefulness in TAM, and the complexity construct in DOI is similar to perceived ease of use (Moore and Benbasat 1991). Also, previous research has shown no apparent correlations between trialability, observability and IT adoption (Agarwal and Prasad 1998).

This study was conducted for three specific purposes. The first purpose was to further validate the use of the TAM in an organizational business setting to determine employees' behavioral intentions when using an e-learning system. The second purpose was to determine whether the TAM could be extended to include the variables of computer background, including computer self-efficacy, prior experience, computer anxiety and management support, as well as compatibility, to further understand the learners' perceived usefulness and perceived ease of use of e-learning systems. The third purpose was to clarify which factors are more influential in affecting the decision to use e-learning. The results of this study are expected to advance the understanding of employees' intentions in using e-learning systems. This information is also expected to be useful for policy-making decisions concerning how e-learning can be integrated with training and development in business settings.

Research framework and hypothesis development

Nowadays, the TAM has been applied to studies on the adoption behavior of various information technology and systems (Ong et al. 2004; Park et al. 2009; Liu et al. 2010; etc). Noticeably, a number of studies extended the basic framework of the TAM and examined external variables that affect the key constructs – perceived ease of use, perceived usefulness, and behavioral intention to use.

Previous research (Igbaria et al. 1995; Chau 2001; Mun and Hwang 2003) suggests that the TAM model can be extended to include the variables of organizational support and individual differences, such as computer background, that affect the use of information systems. According to Igbaria et al. (1995), external factors such as individual and organizational characteristics have an effect on an individuals' intention to use a technology system based on the presence or absence of the necessary skills, opportunities, and resources to use the system. The external factors of computer background and organizational support

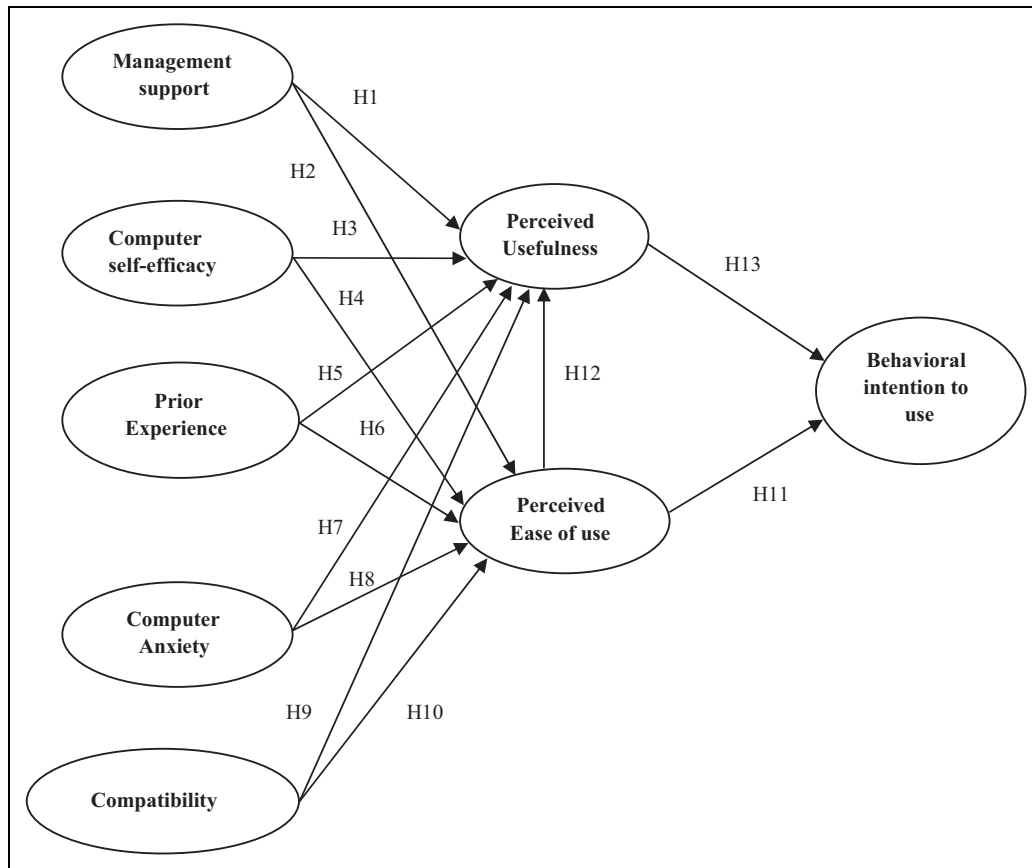


Figure 1. The proposed model of study.

were examined as independent variables and integrated in the TAM model. Computer background involves computer experience, computer usage, computer anxiety and computer self-efficacy (Igbaria et al. 1995; Landry et al. 2006). According to Igbaria et al. (1995), organizational support comprises end-user support and management support; end-user support includes the availability of system development assistance, specialized instruction, and guidance in using courseware applications, while management support includes top management encouragement, allocation of resources, and instructional development assistance.

In this study, we examine five factors which are considered to be critical for the development and use of e-learning systems in the banking workplace:

1. Management support
2. Computer self-efficacy
3. Prior experience
4. Computer anxiety
5. Compatibility.

The proposed extension of the TAM is shown in Figure 1.

Management support

Perceived support is the employees' belief that the web-based training will be supported by management (Ali and Magalhaes 2008). Igbaria et al. (1995) found that management support is related to employees' perceptions of the ease of use, importance and effectiveness of e-learning system, and is required in order to obtain the encouragement of top management, the allocation of resources, and assistance for instructional development. Managers and supervisors need to play their roles, not only in encouraging their employees to embrace self-directed learning via the Internet, but also in improving employees' perception of web-based training (Hashim 2008). Ndubisi and Jantan (2003) found that perceived support was a significant predictor of technology acceptance, and involves perceived usefulness and perceived ease of use. Walker (2004) noted that management support was the factor most likely to predict the acceptance of an e-learning system. Venkatesh (1999) found that during the early stages of learning and using a system, perceived ease of use is significantly affected by management support. Management support was also

found to have some influence on perceived usefulness (Hashim 2008). Therefore, we hypothesized:

- H1:** Management support has a positive effect on perceived usefulness of an e-learning system.
H2: Management support has a positive effect on perceived ease of use of an e-learning system.

Computer self-efficacy

Self-efficacy refers to people's judgment of their own ability to perform specific tasks (Bandura 1977). Compeau and Higgins (1995) and Compeau et al. (1999) defined computer self-efficacy as individuals' beliefs with regard to their ability to use a computer in the context of information technology usage. Computer self-efficacy plays a critical role in terms of its effect on perceived ease of use (Madorin and Iwasiw 1999) and perceived usefulness (Venkatesh and Davis 1996; Hayashi et al. 2004), because individuals' confidence in their computer-related knowledge and abilities can influence their judgment of the ease or difficulty of carrying out a specific task using a new information technology. As to the relationship between computer self-efficacy and perceived usefulness, significant influences of computer self-efficacy on outcome expectations were empirically examined in previous studies (Compeau and Higgins 1995; Compeau et al. 1999). The relationship between computer self-efficacy and perceived ease of use has been examined empirically in past studies (Agarwal et al. 2000; Chau 2001; Park et al. 2009) which demonstrated a positive effect of computer self-efficacy toward perceived ease of use. These indications suggest that computer self-efficacy has a significant positive effect on perceived usefulness and perceived ease of use for the e-learning system. We therefore hypothesized:

- H3:** Computer self-efficacy has a positive effect on perceived usefulness of an e-learning system.
H4: Computer self-efficacy has a positive effect on perceived ease of use of an e-learning system.

Prior experience

Previous studies have demonstrated that prior computer experience has been found to influence intention to use a variety of technology applications including microcomputers and Internet banking services, as well as e-learning (Igbaria et al. 1995; Kerka 1999;

Tan and Teo 2000; Sun and Zhang 2006 and Rezaei et al. 2008). Those findings supported the argument from Nelson (1990) that the acceptance of computer technology not only depends on the technology itself, but also relies on the level of skill or expertise of the individual using the technology. Specifically, Lee et al. (2010) demonstrated that individual experience with computers significantly affects perceived ease of use. This confirms the results of past research that individual experience influences users' intention to use various technology applications (e.g. e-learning) (Tan and Teo 2000; McFarland and Hamilton 2006). Taylor and Todd (1995) examined the differences between experienced and inexperienced users in terms of the relative influence of the various determinants of IT usage. The results suggested that there are some significant differences in the relative influence of the determinants of usage, depending on experience. This is consistent with the notion that experienced users employ the knowledge gained from their prior experiences to form their intentions (Fishbein and Ajzen 1975). Therefore, we hypothesized:

- H5:** Prior experience has a positive effect on perceived usefulness of an e-learning system.
H6: Prior experience has a positive effect on perceived ease of use of an e-learning system.

Computer anxiety

Computer anxiety is a concept-specific anxiety, because it is a feeling that is associated with a person's interaction with computers (Saade and Kira 2006). Howard and Smith (1986) define computer anxiety as the tendency of a person to experience a level of uneasiness over his or her impending use of a computer. The definition of computer anxiety in this research is the level of learners' anxiety when they apply computers in e-learning (Sun et al. 2008). Piccoli and Ahmad (2001) found that computer anxiety significantly affects the learner's satisfaction with an e-learning system. Higher levels of computer anxiety cause lower levels of learning satisfaction. Past research has shown that computer anxiety influences both perceived ease of use and perceived usefulness of an information system (Saade and Kira 2009). We thus examine the hypotheses:

- H7:** Computer anxiety has a negative effect on perceived usefulness of an e-learning system.
H8: Computer anxiety has a negative effect on perceived ease of use of an e-learning system.

Compatibility

Compatibility is defined as the degree to which an innovation is perceived as consistent with the existing values, past experiences and needs of potential adopters (Rogers 1995). Tornatzky and Klein (1982) define compatibility as "congruence with the existing practices of the adopters". This suggests that adopters' beliefs about the compatibility between their existing skills and background are needed in a new learning environment and may be an important consideration in the adoption of e-learning systems. Past studies from Chau and Hu (2001) and Agarwal et al. (2000) also included compatibility in their research and hypothesized that compatibility affected perceived usefulness and perceived ease of use. The present study therefore combines DOI and TAM, adding compatibility as an additional research construct:

H9: Compatibility has a positive effect on perceived usefulness of an e-learning system.

H10: Compatibility has a positive effect on perceived ease of use of an e-learning system.

Perceived Usefulness, Perceived Ease of Use and Intention to Use

In TAM, the behavioral intentions of users regarding technology are affected by two variables: Perceived Ease of Use and Perceived Usefulness. The former affects the latter, which means that if users feel the system is ease to use, they will feel that e-learning is useful and they will be prepared to use the technology. The causal relationship that exists between these two variables has been confirmed by a number of empirical studies (e.g. Davis 1989; Venkatesh and Davis 1996). The TAM proposed by Davis predicts whether users will adopt a general purpose technology, without focusing on a specific topic (Pituch and Lee 2006). The current study extends the TAM by focusing on specific topics and exploring the Intention to Use an online learning system in a business setting. Therefore, we also examine the relationship between both factors in the proposed model:

H11: Perceived ease of use has a positive effect on intention to use of an e-learning system

H12: Perceived ease of use has a positive effect on perceived usefulness of an e-learning system.

H13: Perceived usefulness has a positive effect on intention to use an e-learning system.

Methods

Survey administration

Since e-learning systems have been implemented in two banks, namely: Bank Negara Indonesia (BNI) and Bank International Indonesia (BII), their employees were chosen as participants of this study. This study applied a survey instrument to collect data from the employees. The questionnaire (see Appendix A) was designed as an online survey placed on the e-learning system portal of each corporation. The questionnaire was placed as a link in the Learning Management System (LMS) and could be accessed by employees who had registered as students in the LMS. Both banks apply LMS to develop e-learning modules, e.g. operational risk management, product knowledge and service quality, law for bankers, know your customer, anti-money laundering, etc. LMS is a software application for the administration, documentation, tracking, and reporting of training programs, classroom and online events, e-learning programs, and training contents (Bersin 2005). With the implementation of e-learning, both banks thus obtain significant benefits, for example in improving employee competence, increasing the numbers of training participants, reducing training costs, varying the learning topics in accordance with existing needs, improving time flexibility to join the courses and expanding equitable learning opportunities among employees (Sugiarsono 2007).

Sample description

A link to the online survey was sent by email to 500 individuals who had taken at least one e-learning course. A total of 343 responses were received. Since 37 questionnaires were incomplete, a total of 306 usable questionnaires were used, giving a response rate of 61 percent. The demographical profile of the respondents, including gender, age, education, job tenure, job level, job department and experience using computers, is shown in Table 1. The gender distribution shows that 60.5 percent of the respondents were male. The age distribution shows that the biggest single group of respondents (44.4 percent) were in the range of 30–39 years old. As for the level of education, the majority had bachelor degrees (81.7 percent), followed by master degree holders (10.8 percent), and senior high school graduates (7.5 percent). In terms of job tenure, the biggest single group (37.6 percent) had held their jobs for more than 10 years. Almost one

Table 1. Respondents demographical variables ($N = 306$)

Variables		Frequency	Percent
Gender	Male	185	60.5
	Female	121	39.5
Age	<30 year	102	33.3
	30–39 year	136	44.4
	40–49 year	56	18.3
	>50 year	12	3.9
Degree of education	High	23	7.5
	Bachelor	250	81.7
	Master	33	10.8
Job tenure	<1 year	38	12.4
	1–3 years	46	15.0
	3–5 years	36	11.8
	5–7 years	43	14.1
	7–10 years	28	9.2
	> 10 years	115	37.6
Job position	Upper manager	3	1.0
	Middle manager	32	10.5
	Line manager	67	21.9
	Professional employee	101	33.0
	Contract employee	40	13.1
	Others	63	20.6
Job department	Finance & Accounting	29	9.5
	Marketing	81	26.5
	General management	44	14.4
	Information	28	9.2
	Research and Development	7	2.3
	Electronic	2	7.0
	Public service	32	10.5
	Others	83	27.1
Experience using computer	1–3 years	15	4.9
	3–6 years	32	10.5
	6–9 years	61	19.9
	> 9 years	198	64.7

third (33 percent) of respondents were professional workers and the biggest single group (26.5 percent) worked in the marketing departments. Additionally, most respondents (64.7 percent) had more than 9 years experience of using computers.

Questionnaire development

The instrument was developed by the researcher based on the objectives of the study and the review of previous literature. The completed instrument consists of two parts. Part I consisted of two subsections: external variables (management support, computer self-efficacy, prior experience, computer anxiety and compatibility) and TAM construct (perceived ease of use, perceived usefulness and

behavioral intention to use). Part II was designed to identify the demographic attributes of the respondents as presented in Table 1 and summarized above. In Part I, the questionnaire items on management support were adapted from Ali (2005); on computer self-efficacy from Lee (2006); on prior experience from Walker (2004); on computer anxiety from Sun et al. (2008); and on compatibility from Hardgrave et al. (2003). The TAM instrument for this study was mainly adapted from the studies of Lee (2006) and Park (2009), who in turn adapted them from Davis (1989). All constructs were measured on 5-point Likert-type scales, from 1 = strongly disagree to 5 = strongly agree.

Table 2. Mean, standard deviation and convergent validity analysis (N = 306)

Constructs/Factor	Indicator	Mean	Standard deviation	Standardized loading	Composite reliability	AVE
Management Support	MS 1	3.97	0.726	0.562	0.764	0.525
	MS 2	3.72	0.817	0.762		
	MS 3	3.72	0.788	0.824		
Computer Self Efficacy	CSE 1	4.12	0.685	0.745	0.748	0.501
	CSE 2	4.16	0.725	0.770		
	CSE 3	4.03	0.652	0.595		
Prior Experience	PE 1	3.55	0.864	0.625	0.817	0.532
	PE 2	3.62	0.764	0.788		
	PE 3	3.59	0.801	0.834		
	PE 4	3.63	0.723	0.647		
Computer Anxiety	CA 1	3.91	0.987	0.806	0.918	0.738
	CA 2	3.97	0.915	0.892		
	CA 3	4.08	0.905	0.850		
	CA 4	3.92	0.971	0.888		
Compatibility	Cp1	3.44	0.796	0.737	0.851	0.588
	Cp2	3.65	0.724	0.743		
	Cp3	3.54	0.759	0.829		
	Cp4	3.63	0.732	0.755		
Perceived usefulness	PU 1	3.96	0.693	0.736	0.763	0.524
	PU 2	3.99	0.699	0.851		
	PU 3	4.01	0.648	0.554		
Perceived ease of use	PEOU 1	3.85	0.769	0.610	0.759	0.517
	PEOU 2	3.74	0.778	0.674		
	PEOU 3	3.68	0.752	0.851		
Behavioral intention to use	BIU 1	3.76	0.802	0.536	0.825	0.548
	BIU 2	3.84	0.733	0.699		
	BIU 3	3.88	0.701	0.801		
	BIU 4	3.87	0.712	0.881		

Data analysis and result

Structural Equation Modeling (SEM) is a statistical approach for examining the causal relationships and testing the hypotheses between the observed and latent variables in a research model (Hoyle 1995). In this study, we propose an extended version of TAM based on the related literature in order to examine a research model. The main advantage of SEM is that it can estimate a measurement and structure model, and achieve a good model fit after analysis and modification (Ngai et al. 2007). SEM has two main components: the measurement model deals with the relationships between measured variables and latent variables, while the structural model deals with the relationships between latent variables only. In addition, SEM integrates factor analysis, path analysis, and multiple regressions from first-generation techniques as a comprehensive statistical approach. SEM also provides multiple criteria to measure a model's quality and estimate measurement errors.

Analysis of measurement model

To verify the validity and reliability of the measures, we observed the factor loadings from the confirmatory factor analysis (CFA) assessing the measurement model. In accordance with Fornell and Larcker (1981), we are using three criteria to assess convergent validity:

1. All indicator factors loading should exceed 0.5
2. Composite reliabilities should exceed 0.7
3. Average variance extracted (AVE) should be equal to or exceed 0.5.

All measurement values in confirmatory factor analysis of the measurement model exceeded the threshold value (see Table 2). Convergent validity was assessed based on the criteria that the indicator's estimated coefficient was significant on its posited underlying construct factor. Therefore, all three conditions for convergent validity were achieved.

Table 3. Means, standard deviations and inter construct correlations ($N = 306$)

Construct	Mean	SD	1	2	3	4	5	6	7	8
1. Management support	3.80	0.638	0.725							
2. Computer self-efficacy	4.10	0.559	0.088	0.708						
3. Prior experience	3.59	0.629	0.205**	0.133*	0.729					
4. Computer anxiety	3.97	0.869	0.038	0.343**	0.119*	0.859				
5. Compatibility	3.58	0.594	0.277**	0.078	0.609**	0.021	0.767			
6. Perceived usefulness	3.99	0.554	0.370**	0.201**	0.431**	0.219**	0.467**	0.724		
7. Perceived ease of use	3.76	0.599	0.327**	0.147*	0.424**	0.151**	0.391**	0.445**	0.719	
8. Behavioral intention to use	3.84	0.591	0.128*	0.346**	0.299**	0.388**	0.236**	0.335**	0.232**	0.741

Note: Diagonals represent the square roots of AVE and the other matrix entries are the factor correlations.

Discriminant validity assesses the extent to which a concept and its indicators differ from another concept and its indicators (Bagozzi et al. 1991). According to Fornell and Larcker (1981), the correlations between items in any two constructs should be lower than the square root of the AVE shared by items within a construct. As shown in Table 3, the square root of AVE shared between constructs was greater than the correlations between the construct in the model, satisfying Fornell and Larckers' (1981) criteria for discriminant validity.

Evaluation of structural model

According to the evaluation of structural model, Chau (1997) required the relationships of the constructs to one another as posited by research models. The test of the structural model was performed using the AMOS (Analysis Of Moment Structures) procedure, a software package designed to perform the structural equations model approach to path analysis. We evaluate the five goodness of fit index: the χ^2 -square test statistic, the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the comparative fit index (CFI) and root mean square error of approximation (RMSEA). The results of structural equation modeling obtained for the proposed conceptual model revealed a ratio of chi-square to the degree of freedom (χ^2/df) = 1.68, GFI = 0.90, AGFI = 0.87, CFI = 0.94 and RMSEA = 0.05. Generally, fit statistics greater than or equal to 0.9 for GFI, NFI, RFI, CFI and 0.8 for AGFI indicate a good model fit (Bagozzi et al. 1991; Hair et al. 1998). Furthermore, RMSEA values ranging from 0.05 to 0.08 are acceptable (Hair et al. 1998). Therefore, the RMSEA suggested that our model fit was acceptable. Other fit

indices indicated that our proposed model obtained an adequate model fit.

Result of hypothesis testing

An SEM approach was adopted in our data analysis. Figure 2 presents the results the structural model with non-significant paths as dotted lines and the standardized path coefficients between constructs. Perceived usefulness to e-learning in this study was jointly predicted by management support ($\beta = .244, p < .001$), prior experience ($\beta = .259, p < .001$), computer anxiety ($\beta = -.193, p < .01$), compatibility ($\beta = .372, p < .001$) and perceived ease of use ($\beta = .286, p < 0.001$). Those variables together explained 43.2 percent of the variance of perceived usefulness ($R^2 = 0.432$, coefficient of determination). As a result, Hypotheses 1, 5, 7, 9 and 12 were all supported. Perceived ease of use was predicted by management support ($\beta = .317, p < .001$), prior experience ($\beta = .363, p < 0.001$) and compatibility ($\beta = .261, p < 0.001$). Together these variables explained 35.0 percent of the total variance. These findings validated Hypotheses 2, 6 and 10 respectively. Perceived usefulness significantly ($\beta = .396, p < .001$) influences behavioral intention to use while explaining 19.3 percent of the total variance in behavioral intention to use. Accordingly, Hypothesis 13 was supported. Computer self-efficacy did not significantly influence perceived usefulness and perceived ease of use. Computer anxiety did not significantly influence perceived ease of use. Lastly, perceived ease of use did not significantly influence behavioral intention to use. Consequently, hypothesis 3, 4, 8 and 11 were not supported. To further assess the significance of indirect effects of predictor variables on intentions to use e-learning, a decomposition of the effects analysis was conducted (see Table 4).

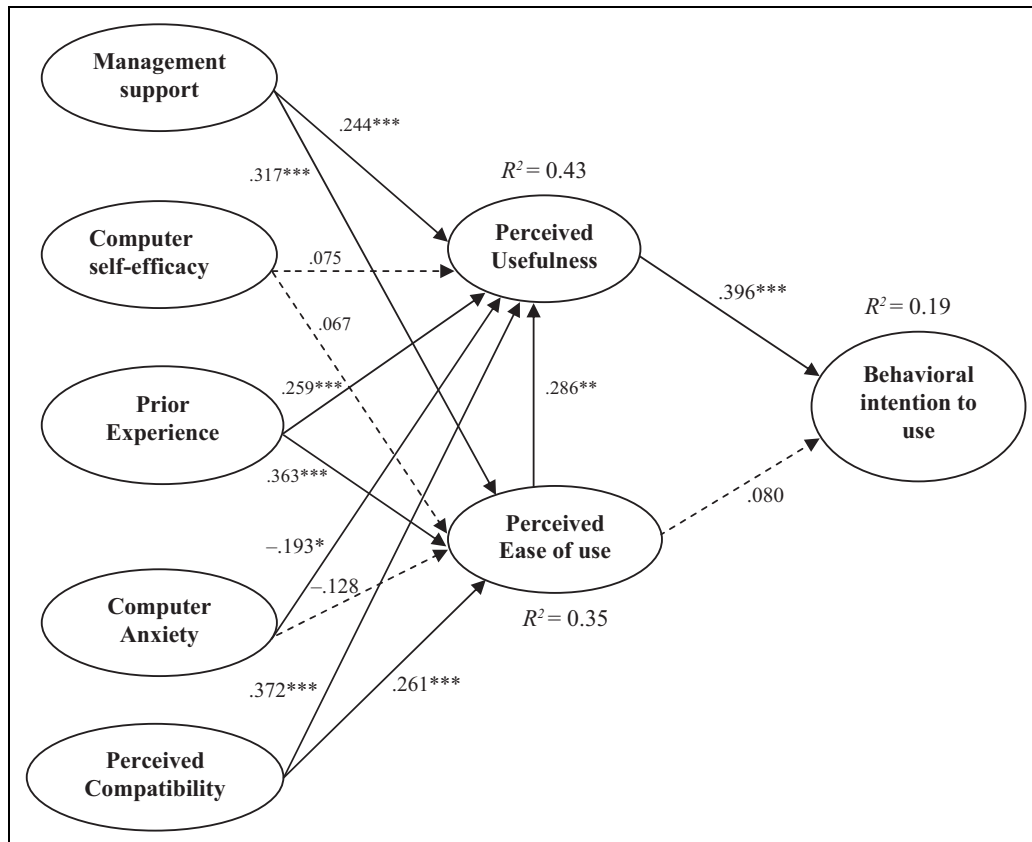


Figure 2. The result of structural model analysis of study.

Discussions and conclusion

The results provide support for the research model of this study and for the hypotheses regarding the directional linkage among the model's variables.

Management support

The results of this study show that management support plays an important role in the adoption of e-learning. As hypothesized, management support significantly affects both perceived usefulness and perceived ease of use. This result is consistent with the results of a past study by Konradt et al. (2006) that management support influences both perceived usefulness and perceived ease of use of a technology system. It seems that management support predicts perceived ease of use ($\beta = .317, p < .001$) more strongly than perceived usefulness ($\beta = .244, p < .001$). Lee et al. (2010) found that the role of management was perceived by the employees as that of facilitators and supporters of the use of e-learning systems. Therefore, employees tended to perceive the e-learning system as easy to use. This result agrees with the findings of Venkatesh (1999) that during

the early stages of learning and using a system, perceived ease of use is significantly affected by management support. This is especially so in Indonesia where e-learning implementation in the organizational business setting is still in the early phases of adoption. Thus, management support is an important factor to be considered for e-learning adoption in the corporate world in Indonesia.

Computer self-efficacy

The result of the analysis of the second external variable, computer self-efficacy, was found to be inconsistent with the hypotheses. Whereas a numerous of previous research studies (Agarwal et al. 2000; Chau 2001; Hong et al. 2001; Lee 2006) have proved that this factor has a significant influence on e-learning adoption, this study revealed that computer self-efficacy did not affect either perceived ease of use or perceived usefulness. One possible explanation for this finding is that the majority of the respondents were highly computer literate and had much experience in using the Internet. As shown in the demographic profile, 65 percent of the respondents had

Table 4. Standardized causal effects for the structural model ($N = 306$)

Endogenous variable	Determinant	Standardized causal effect			Result
		Direct	Indirect	Total	
Perceived Usefulness ($R^2 = 0.432$)	H1-MS	0.244***	0.059	0.303	Supported
	H3-CSE	0.075	0.013	0.088	Not supported
	H5-PE	0.259***	0.067	0.326	Supported
	H7-CA	-0.193**	-0.024	-0.217	Supported
	H9-Cp	0.372***	-0.049	0.420	Supported
	H12-PEOU	0.286**		0.286	Supported
Perceived Ease of Use ($R^2 = 0.350$)	H2-MS	0.317***		0.317	Supported
	H4-CSE	0.067		0.067	Not supported
	H6-PE	0.363***		0.363	Supported
	H8-CA	-0.128		-0.128	Not supported
	H10-Cp	0.261***		0.261	Supported
Behavioral intention to use ($R^2 = 0.193$)	H11-PEOU	0.080	0.073	0.153	Not supported
	H13-PU	0.396***		0.396	Supported
	MS		0.145	0.145	
	CSE		0.040	0.040	
	PE		0.119	0.119	
	CA		-0.096	-0.096	
	Cp		0.187	0.187	

over 9 years experience of using computers. Lau and Woods (2008) pointed out that an induction program which involves introduction and demonstration sessions conducted at an early stage may foster a feeling of self-efficacy to use an e-learning system.

Prior experience

The results of this study show that prior computer experience significantly affects both perceived ease of use and perceived usefulness. This confirms the results of past research that prior experience influences users' intention to use various technology applications (e.g. e-learning) (Tan and Teo 2000; McFarland and Hamilton 2006). However, this study also confirms the results of a study by Taylor and Todd (1995), which showed that there are some significant differences in the relative influence of the determinants of IT usage, depending on experience. Thus, the present study shows that prior experience is more associated with perceived ease of use than with perceived usefulness. Prior experience can predict perceived ease of use ($\beta = .363, p < .001$) more strongly than perceived usefulness ($\beta = .259, p < .001$). This result accords with the findings of Lee

(2010) that prior experience using computers significantly affects perceived ease of use. The users will employ the knowledge gained from computer experience to perceive the ease of use of the system, which in turn enhances their intentions to use the e-learning systems.

Computer anxiety

This study demonstrated that computer anxiety has a significant negative effect ($\beta = -.193, p < .01$) on perceived usefulness. This implies that the greater the level of anxiety the lower the level of perceived usefulness. The finding from Heinssen et al. (1987) confirmed that level of anxiety influences feelings of satisfaction and maybe feelings of usefulness among employees toward e-learning systems.

However, this study found that computer anxiety has no effect on perceived ease of use. One possible explanation is that the respondents were highly computer literate. This makes an individual feel at ease in using computers and may thus decrease perceptions of complexity of a technology or information system. Therefore, the employee perceives that the e-learning system is easy to use.

Compatibility

This study found that compatibility has a positive and direct effect on perceived usefulness and perceived ease of use of an e-learning system. This result implies that higher compatibility will increase acceptance of e-learning systems among employees. Most banks' employees have experience using the Internet and other IT systems before they adopt and use an e-learning system. This makes the user more prepared for the new technology and eventually leads to personal perceptions of usefulness and ease of use.

Perceived ease of use, perceived usefulness and intention to use

The results of this study suggest that perceived usefulness has a significant effect ($\beta = .396, p < .001$) on the intention to use e-learning. The results are consistent with numerous prior TAM studies which indicated that perceived usefulness was an important determinant of technology adoption (Venkatesh and Davis 2000; Ong and Lai 2006; Park et al. 2009, etc.). Those researches demonstrated that perceived usefulness influences intention to use directly, and may be mediated by perceived ease of use.

In this study, perceived usefulness was found to have more predictive power than perceived ease of use on behavioral intention to use. This result implies that perceived usefulness is the main determinant of technology adoption. Perceived ease of use was found to have an indirect influence, via perceived usefulness, on behavioral intention to use e-learning. In accordance with Selim (2003), this study finds no direct effect of perceived ease of use on intention to use e-learning. The non-significance of the direct effect is consistent with other recent research (Chau and Hu 2001; Wu and Wang 2005). It has therefore been suggested that as users gain experience with a new system, perceived ease of use becomes less profound since instrumentality concerns overshadow concerns about the system's ease of use (Straub et al., 1997). The nature of the system may also explain why perceived usefulness surfaces as a significant predictor and perceived ease of use does not (Agarwal and Prasad 1998). Although perceived ease of use does not have a direct impact on intention to use, it affects perceived usefulness directly, which in turn leads to greater acceptance of e-learning.

Implications and further studies

The results gained from this study, which took place in the banking workplace in Indonesia, provide a conceptual framework for individuals and organizations to better understand the critical factors which influence e-learning acceptance in Indonesia.

The first implication of this study's results is that organizations should increase their support to employees to use e-learning. Decision makers and top management need to be aware of the concept of management support and its impact on individual behaviour to accept new technology systems. In this study, it was found that compatibility has a great positive and direct effect on perceived usefulness and perceived ease of use of e-learning systems. In other words, the higher the compatibility of users, the higher the acceptance of e-learning system. This implies that organizations should increase employee's skills and knowledge of e-learning systems in order to increase perceived compatibility among employees.

The second implication is that individual characteristics such as prior experience and computer anxiety play important roles in affecting users' beliefs as to the perceived usefulness of an e-learning system. Since perceived usefulness is the most important antecedent of behavioral intention to use, it suggests that prior experience and computer anxiety are decisive antecedents of learner's acceptance of e-learning systems. The findings highlight the importance of considering management support and IT skills during the task assignment. The individuals with higher computer skills tend to succeed in their work, especially when they deal with complex tasks and use advanced information technologies.

As with all empirical research, there are also several limitations in this study conducted in the banking workplace. The proposed model incorporates five external variables to provide a more comprehensive investigation covering both the individual and organizational characteristics towards adoption behaviour. The results show that the proposed model has good explanatory power and confirms its robustness in predicting employees' intentions to use e-learning. Still, as with any research study, care should be taken when generalizing the results.

First, the survey was conducted using a non-random convenience sample of subject responses. Therefore, gathering a larger sample and random sampling methods would have been preferred. Nevertheless, a larger sample was beyond the reach of this

research project due to the factor of cost. Generalization could be enhanced if future research were systematically sampled from a more dispersed sample.

Secondly, while this study has identified five external variables (management support, computer self-efficacy, prior experience, computer anxiety and compatibility) influencing employees' adoption of online learning, it is important to recognize the individual and organizational factors which influence technology acceptance. This phenomenon deserves

further investigation and validation. Hence, a replication of this study on a wider scale incorporating more external variables is essential for a further generalization of the current findings.

Finally, to evaluate the proposed argument, a longitudinal study could be employed. By using a future longitudinal study, we could investigate the current research model in different time periods and make comparisons, thus providing more insight into the phenomenon of e-learning adoption in the banking workplaces of developing countries.

APPENDIX

Questionnaire PART A

No	Question	Strongly disagree – Strongly agree				
		1	2	3	4	5
	Management support					
MS 1	My boss understands the benefits to be achieved by using e-learning system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS 2	I am always supported and encouraged by my boss to e-learning system to perform my job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS 3	I am always supported and encouraged by my administrators to use the e-learning system to enhance the performance of my job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Computer self-efficacy					
CSE 1	I am confident that I can overcome any obstacles when using the computer for e-learning system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CSE 2	I believe that I can use different the e-learning system to receive education.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CSE 3	I am confident of using computer for e-learning system: Even if I have never used such a system before.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Prior Experience					
PE 1	I enjoy using computers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PE 2	I am comfortable using the Internet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PE 3	I am comfortable saving and locating files.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PE 4	I enjoy using e-mail.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Computer anxiety					
CA 1	Working with a computer would make me very nervous.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CA 2	I get a sinking feeling when I think of trying to use a computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CA 3	Computers make me feel uneasy and confused.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CA 4	I feel apprehensive about using the computer system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Compatibility					
Cp1	Using the e-learning system is compatible with all aspects of my work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cp2	I think that using the e-learning system fits well with the way I like to work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cp3	Using the e-learning system fits into my work style.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cp4	Using the e-learning system is appropriate for my learning style.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Perceived usefulness					
PU 1	Using the e-learning system enhances my effectiveness in my learning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PU 2	Using the e-learning system will improve my learning performance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(continued)

APPENDIX (continued)

No	Question	Strongly disagree – Strongly agree				
		1	2	3	4	5
PU 3	I believe e-learning contents are informative. Perceived ease of use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PEU 1	I find the e-learning system to be easy to use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PEU 2	I find that interacting with the e-learning system doesn't demand much care or attention.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PEU 3	I clearly understand how to use the e-learning system. Behavioral intention to use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PIU 1	I will strongly recommend others to use it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PIU 2	I intend to use e-learning as an autonomous learning tool.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PIU 3	I intend to use e-learning to assist my learning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PIU 4	I intend to use e-learning content to assist my learning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Questionnaire Part B**Demographic profile**

1. Gender
 Male Female
2. Age
 below 30 years old 30 to 39 years old
 40 to 49 years old Over 50 years old
3. Your educational background
 High school Bachelor Master Ph.D.
4. Your years of working?
 below 1 year 1 to 3 years 3 to 5 years
 5 to 7 years 7 to 10 years Over 10 years.
5. Your organizational position?
 upper manager middle manager line manager
 professional employee contracted job employees others
6. Your working department?
 finance&accounting marketing general management information R and D
 electronic HR&D public servant others
7. The years of experience that you use computers?
 below 1 year 1 to 3 years 3 to 6 years 6 to 9 years over 9 years

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