DETERMINANTS OF ENTERPRISE RESOURCE PLANNING (ERP) SYSTEMS ADOPTION IN THAI PRIVATE COMPANIES

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Abstract

The purpose of this study is to investigate determinants of Enterprise Resource Planning (ERP) systems adoption among end users who have been experiencing the ERP system at least one year in six Thai private companies. The conceptual framework proposed casual relationship among Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Facilitating Conditions (FC), Intention to Use (IU) and Actual Use (AU). Data collection was made with the sample size of 500 ERP users and were gathered from both offline and online survey. Researcher applied probability and non-probability sampling, using multi-stage sampling which included purposive sampling, stratified random sampling of and convenience sampling. The research applied Structural Equation Model (SEM) and Confirmatory Factor Analysis (CFA) for the data analysis including model fit, reliability, and validity of the constructs. The findings indicated that most of factors presented the significant influence on intention to use except perceived ease of used. Intention to use also has strongest impact on actual use but not facilitating conditions. The recommendations are that further study can extend qualitative method and different schemes of sample size. For practical implication, organization could consider the relevant factors and provide enhancement for successful adoption of ERP systems.

Keyword: Performance Expectancy, Effort Expectancy, Social Influence, Perceived Usefulness, Perceived Ease of Use, Facilitating Conditions

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Introduction

Majority of organizations have been invested in innovation and technology for better and faster business operations. The sourcing of tools and systems were believed to optimize resources and maximize profit which produce organizational performance (Jaruwanakul, 2021). Enterprise resource planning (ERP) system is an essential information technology software that manage resource and allocation of entire organization with the single source of truth (Rajan & Baral, 2015). It has been widely adopted in every size of business, especially complex organizations. The technical and behavioral indicators of ERP program implementation have been ensured to unite the data across department within a company (Chang, Cheung, Cheng & Yeung, 2008).

Enterprise Resource Planning (ERP) is a solution software package that integrates entire business operations into one comprehensive information technology system (Rajan & Baral, 2015). ERP systems have been used by most of the companies in fortune 500 (Weinrich & Ahmad, 2009) to operate the businesses in various functions including finance and accounting, sales and marketing, inventory management, supply chain management, human resources management, manufacturing, customer relationship management and many mores. ERP system has grown rapidly and employed by large to small organizations (Szajna, 1993).

Prior to ERP system, IBM jointed with J.I. Case, a Japanese construction machine company to originate material requirements planning (MRP) systems in 1960s. Later in 1970s, MRP highly gained attention but it was limited to only large companies as the investment cost is relatively high. The second version of MRP was launched in 1980s for better performance of the system. Afterwards, Gartner, a research company, introduced ERP system into the market in 1990s and had continued to develop the second version of ERP in year 2000 due to the rising of internet enable infrastructure (McCue, 2020).

Nowadays, with the exponential growth of the technology with integration of artificial intelligence (AI), internet of things (IOT), Cloud system etc. ERP systems have been evolved and transformed with most advance technologies (McCue, 2020). Major players who provide ERP system are namely SAP, Oracle, Infor, Sage, Microsoft, Epicor and many mores (Pang, 2015). ERP programs that were used widely are SAP S/4HANA, Oracle Cloud Enterprise Resource Planning (ERP), Sage Intacct, Microsoft Dynamics 365 etc. (Trustradius, n.d.). On the other hand, some companies also build in-house ERP software to customize their specific needs as alternatives.

According to Roul (2021), ERP improves businesses in many ways. The statistic revealed that 27% of employees in a company use ERP systems which can decrease operational costs by 23% and administrative costs by 22%. 95% of businesses accomplished major improvements after implementing ERP through reducing process times, growing collaboration, and centralizing enterprise data.

Objectives

The study aims to examine factors determining the adoption of Enterprise Resource Planning (ERP) system among users in six Thai private companies. The study reveals factors in the technology acceptance model which has strongest significance and insignificance to intention to use and actual use of ERP systems. There are two key objectives in this research.

• To examine the relationship between performance expectancy, effort expectancy, social influence, perceived usefulness, perceived ease of use, facilitating conditions, and intention to use towards actual use of ERP.

• To determine the implication for practices for CEOs and executives to improve the adoption of planning the enterprise resource planning (ERP) systems for organizational development perspective.

Literature Reviews

The Unified Theory of Acceptance and Use of Technology (UTAUT)

Numerous researchers have studied the determinants of technological systems adoption (Salahshour Rad, Nilashi & Mohamed Dahlan, 2018) using the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh, Morris, Davis and Davis (2003). The key factors in the model are performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) that has influence on intention to use (IU) and IU presents its impact on actual use (AU). The relationship between intention to use and actual use is the key link explained that users who have willingness to use the technology tend to actual use it.

The Technology acceptance model (TAM)

The technology acceptance model (TAM) has been used to examine the technology adoption derived from the theory of reasoned action (TRA) by Azjen and Fishbein (1980) and TAM later developed by Davis, Bagozzi and Warshaw (1989). The traditional TAM consists of perceived ease of use (PEOU), perceived usefulness (PU), attitude towards using (ATU), Intention to Use (IU) and Actual Used (AU). It was extended and modified by many researchers in various technology schemes.

Performance Expectancy

Performance Expectancy is described as the level of user's belief in technology capability that can fulfill one's action with the expectation on problem solving and goal accomplishment (Catherine, Geofrey, Moya & Aballo, 2018; Venkatesh et al., 2003). The presence of performance expectancy in UTAUT model produces a usage intention of technology. Users who believe that the technology can improve their work performance leads to the adoption intention. Uddin, Alam, Mamun, Uz-Zaman Khan and Akter (2020)

and many more researchers (Altin, Calisir & Bayram, 2007; Catherine et al., 2018; Kanwal, Irfan & Manarvi, 2010; Venkatesh et al., 2003) validated the positive relationship between performance expectancy and intention to use in the ERP system adoption context. Therefore, the hypothesis was derived.

H1: Performance expectancy has a significant influence on intention to use ERP.

Effort Expectancy

Effort Expectancy is referred to how easy that technology or system can be used (Venkatesh et al., 2003). The level of effort can be a variable factor of technology adoption. To simplify the statement, end users present the willingness to accept using technology if they found it is easy, flexible and user friendly (Catherine et al., 2018). The effort expectancy has significant effect on intention to use of ERP program as supported in numerous literatures (Alshare & Lane, 2011; Benmessaoud, Kharrazi & MacDorman, 2011; Ghalandari, 2012; Alam & Uddin, 2019; Rajan & Baral, 2015; Chao, 2019; Maillet, Mathieu & Sicotte, 2015) which can propose the hypothesis per followed.

H2: Effort expectancy has a significant influence on intention to use ERP.

Social Influence

The definition of social influence is the degree of importance of others that affect users' decision to adopt new technology or system (Venkatesh & Morris, 2000) in which can be received or pressured by feedback or recommendations by acquaintances, peers, co-workers etc. Some literatures stated that expectation from others can influence user to try, use or purchase in something (Dwivedi, Rana, Jeyaraj, Clement & Williams, 2019). In ERP system context, users are encouraged to execute the program provided by the company because of the management and colleague's influence. Hence, the relationship between social influence on usage intention was previously investigated by many researchers (Chao, 2019; Barrane, Karuranga & Poulin, 2018; Dwivedi et al., 2019; Owusu, 2019; Tao, 2011) Thus, the conclusion is drawn in hypothesis number three.

H3: Social Influence has a significant influence on Intention to Use ERP.

Perceived Usefulness

The confidence of individuals in using specific technology which enable them benefits is explained as perceived usefulness. When ERP systems is useful to employees in term of increasing work performance, efficiency, convenience etc., they express the intention to use it (Saade & Bahli, 2005). The number of empirical studies has explored the positive relationship among perceived usefulness and intention to use of technology per the model of TAM (Davis, 1989; López-Nicolás, Molina-Castillo & Bouwman, 2008; Jaradat & Al-Mashaqba, 2014; Venkatesh & Davis, 2000; Benjangjaru & Vongurai, 2018). Therefore, the proposed hypothesis is stated.

H4: Perceived usefulness has a significant influence on Intention to Use ERP.

Perceived Ease of Use

Perceived ease of use is the level of easiness which individual perceives when using technology (Davis, 1989). It is one of key construct of TAM which is a predictor of intention to use. Most of studies examined the effect of perceived ease of use on intention to use of ERP system and discovered the positive relationship among them (Arunkumar, 2008; Shin, 2010; Szajna, 1993). As a result, this study posted that perceived ease of use significantly impact on intention to use. Likewise, a hypothesis is developed per below.

H5: Perceived ease of use has a significant influence on intention to use ERP.

Facilitating Conditions

According to Chang et al. (2008), facilitating conditions is explicated as resources and supports that facilitate the behavior and leads to the adoption of technology. The intention behavior can be obstructed by barriers and can be encouraged the deployment by the support environment, for instance, hardware and software infrastructure, training programs, IT support etc. In addition, the support of organization can stimulate the intention to use of ERP (Triandis, 1979). Chang et al. (2008) found the direct link between facilitating conditions can affect intention to use of ERP system. Henceforth, hypotheses were obtained.

H6: Facilitating conditions has a significant influence on intention to use ERP.

H7: Facilitating conditions has a significant influence on actual use of ERP.

Intention to Use

Intention to use is defined as an intrinsic motivation of individuals to perform behavior (Davis, 1989). The study of Kanwal et al. (2010) assessed the adoption of ERP systems using partial UTAUT model and noticed that there were numerous factors that significantly impact on intention to use apart from variables used in this study such as project communication, self-efficacy, training and top management support. Uddin et al. (2020) studied employees' behavioral intention (Kitcharoen & Vongurai, 2021) that positively affects on actual use of ERP system. Consequently, the following hypothesis is demonstrated.

H8: Intention to use has a significant influence on actual use of ERP.

Actual use

According to Ajzen (1991), actual use is identified as the demonstration or the predictable behavior and response. Akinbobola and Adeleke (2013) extended that the actual use of technology has three behavioral aspects which are absorption, reinvention and learning. Actual usage placed in the final variables of technology adoption model. Many studies indicated that the actual usage behavior can be influenced by intention

to use and the positive relationship between them was confirmed (Alam & Uddin, 2019; Rajan & Baral, 2015).

Research Framework

The conceptual framework of this study is constructed from previous literatures of technology adoption. The research model was adapted from three theoretical models. First, ERP usage behavior which has impact on employees' performance based on UTAUT model was evaluated by Kanwal et al. (2010). Second model from Rajan and Baral (2015) investigated the ERP adoption which has association with individual impact, applying TAM. Last, Chang et al. (2008) modified the model to explore ERP system adoption from the user's perspective. The proposed framework of this study is drafted per Figure 1.

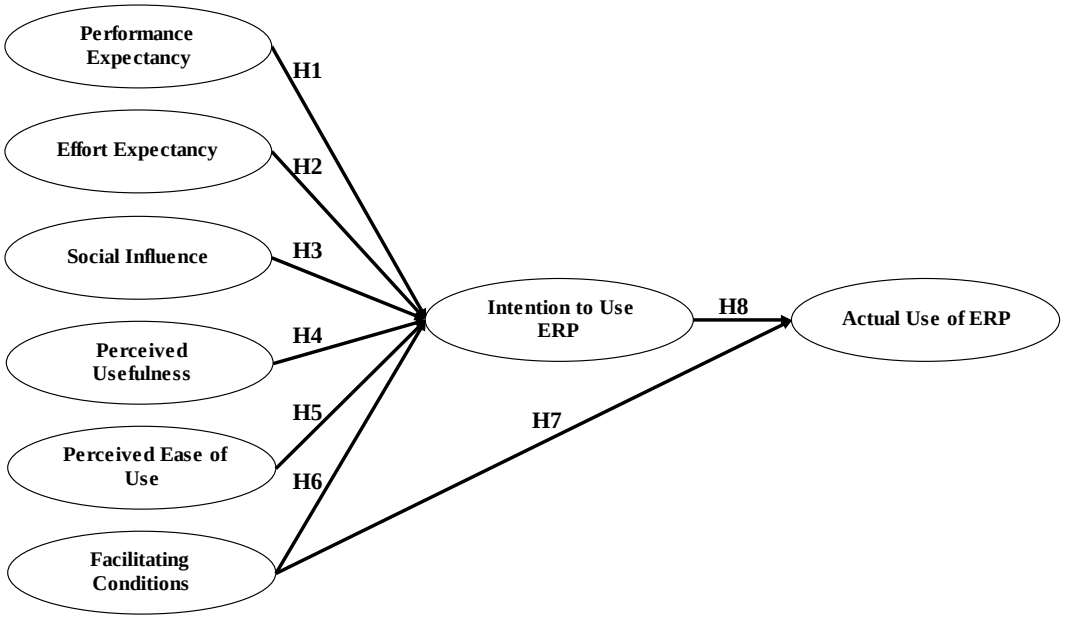

Figure 1 Conceptual Framework

Research Methodology

Population and samples

The population is based on six Thai companies where have adopted Enterprise Resource Planning (ERP) Systems for over five years, targeting end users who have been experiencing ERP Systems at least one year. The recommended minimum sample size is 200 participants which was suggested by Kline (2011). This study aims to use total sample size of n=500 for the analyze of research model.

Research tools and data collection

Prior to data collection, the questionnaire was developed from previous studies and validated by Index of Item-Objective Congruence (IOC), using four experts who are

C-levels and familiar with ERP systems adoption in their companies (Rovinelli & Hambleton, 1977). Subsequently, the small sample size of 35 respondents was tested for reliability with Cronbach's alpha. The survey was designed to have three parts including screening questions, five-point Likert scale (from strongly agree = 5 to strongly disagree = 1) used for twenty-nine measuring items and demographical information (gender, age, educational level and years of ERP experience) The translation was made to Thai language to assure accurate interpretation among readers (Onputtha & Siriwichai, 2021). The sampling technique applied the multi-stage sampling, using purposive sampling of non-probability sampling to select six Thai companies that adopt ERP systems for over five years. Then, stratified random sampling of probability sampling was utilized to calculate ratio from total employees of each company (Per shown in Table 1) Lastly, purposive sampling is to identify users who have been using ERP system for at least one year and convenience sampling for survey distribution via offline and online was made to 500 respondents per set criteria.

Table 1 Population and Sample Size by Company

Company	Approximate Population Size (Total Employee)	Sample Size	% Of total Sample Size
Bangkok Metropolis Motors Co., Ltd.	829	207	41.4%
G-TECH Products Co., Ltd	182	45	9%
T.N. Advance Intertrade Co., Ltd	164	41	8%
Vispac co., Ltd.	135	34	6.8%
Bow Bakery House Co., Ltd.	356	89	17.8%
Union Paper Cartons Co., Ltd. (UPC)	340	85	17%
Total	**2006**	**500**	**100%**

Source: Created by authors

The development of research instruments

This research concludes eight constructs and twenty-nine measuring items including performance expectancy (4), effort expectancy (4), social influence (6), perceived usefulness (4), perceived ease of use (3), facilitating conditions (4), intention to use (2) and actual use (2). The measures or items in which were applied to five points Likert Scale to determine reliability, validity and relationship assessment.

In terms of validity test, the Index of Item-Objective Congruence (IOC) was used in three ranges from + 1 (clearly measuring), 0 (degree of measures that is unclear), and -1 (clearly not measuring) (Hambleton, 1978). This study employed four experts

who are C-levels and penetrate ERP systems adoption into the company to verifying all measuring items. The item was acceptable at the value equal or greater than 0.5 (Turner & Carlson, 2003). IOC results suggest removing two items from total 31 items to 29 items.

Cronbach Alpha (CA) coefficient was deployed to conserve the reliability of pilot testing in this study. Reliability test can provide consistency of instruments and avoid repetitive results (Huck, 2007). Five-point Likert scale was taken to reserve reliability of data with the determination of internal consistency. Per the trial test result, all constructs demonstrated acceptable value of coefficient of 0.70 or above (Hajiar, 2014). Thus, all variables were reliable and adequate to be used as the research instrument for this study.

Data Analysis

The data was analyzed from samples by using descriptive statistics including frequency, percentage, mean and standard deviation. The data was screened, and the normality of data was validated by skewness, kurtosis, and coefficient of variation percentile. The skewness and kurtosis reflecting the normal distribution is equal to zero with the range from -1 to 1, signifying as a near-normal (Kallner, 2018). The confirmatory factor analysis (CFA) and structural equation modeling (SEM) were applied to measure the relationship between independent variables and dependence variables, testing construct validity, convergent validity (factor loading, composite reliability, average variance extracted), discriminant validity and fit model. The acceptable thresholds of model fit used in this study were CMIN/DF = The ratio of the chi-square value to degree of freedom at < 3.00 (Hair, Black, Babin, Anderson & Tatham, 2006), GFI = goodness-of-fit index at > 0.85 (Sica & Ghisi, 2007), AGFI = adjusted goodness-of-fit index at > 0.80 (Sica & Ghisi, 2007), TLI = Tucker-Lewis index at > 0.90 (Hair et al., 2006), CFI = comparative fit index at > 0.90 (Hair et al., 2006), IFI = incremental fit index at > 0.90 (Bollen, 1989) and RMSEA = root mean square error of approximation at < 0.08 (Pedroso et al., 2016).

Research Results

Demographic Information

The demographic profile of 500 respondents is summarized in Table 2. Most participants were female of 79.6% and male of 20.4%. In term of age, the largest group were 26-35 years old, resulting in 41.4% of respondents, followed by 38.6% of 36-45 years old, 12.6% of Above 45 years old and 7.4 % of 25 years old or less respectively. For highest educational level, the major group was 74.0% of Bachelor's degree, followed by 21.4% of below Bachelor's degree, 4.2% of Master's degree and 0.4% of Doctorate's degree accordingly. In the context of ERP, researcher considered the ERP experience

which results in between 1-3 years was 47.2%, 4-6 years was 20.8%, more than 9 years was 20.0 % and 7-9 years was 12.0%.

Table 2 Demographic Profile

Demographic and Behavior Data (N=500)		**Frequency**	**Percentage**
Gender	Male	102	20.4%
	Female	398	79.6%
Age	25 years old or less	37	7.4%
	26-35 years old	207	41.4%
	36-45 years old	193	38.6%
	Above 45 years old	63	12.6%
Education	Below Bachelor's degree	107	21.4%
	Bachelor's degree	370	74.0%
	Master's degree	21	4.2%
	Doctorate's degree	2	0.4%
ERP Experience	Between 1-3 years	236	47.2%
	Between 4-6 years	104	20.8%
	Between 7-9 years	60	12.0%
	More than 9 years	100	20.0%

Source: Created by the author

End user's adoption towards actual use of ERP

Per ERP adoption among users, the data results showed that respondents have strongly agreeable level towards Intention to Use ERP (IU) and Facilitating Conditions (FC) with mean score 4.170 and 4.124 and standard deviation of 0.605 and 0.655 respectively. In addition, the agreement level of users towards Actual Use of ERP (AU) was posited with mean score as of 4.082 and standard deviation as of 0.629.

Normality Test: Skewness, Kurtosis and Coefficient of Variation

The findings of this study postulated that performance expectancy (PE1, 2, 3, 4) reports the value of Skewness from 0.008 to 0.546, Kurtosis from -0.291 to -0.618, and %CV from 17.504 to 18.744. For effort expectancy (EE 1, 2, 3, 4), it has value of Skewness from -0.062 to -0.263, Kurtosis from -0.375 to 0.430, and %CV from 15.092 to 17.746. Additionally, social influence (SI 1, 2, 3, 4, 5, 6) has value of Skewness from -0.001 to 0.002, Kurtosis from -0.065 to-0.712, and %CV from 13.764 to 14.808. Another construct is perceived usefulness (PU 1, 2, 3, 4) which has value of Skewness from 0.026 to 0.084, Kurtosis from -0.452 to -0.681, and %CV from 11.787 to 13.632. Next, perceived ease of use (PEOU 1, 3, 4) shows the value of Skewness from -0.130 to -0.319, Kurtosis

from -0.363 to 0.018, and %CV value from13.613 to 15.457. Later, facilitating conditions (FC1, 2, 3, 4) which has value of Skewness from 0.082 to 0.319, Kurtosis from -0.394 to -0.696, and %CV from 11.685 to 12.715. In the aspect of intention to use (IU 1, 2), Skewness ranges from -0.096 to -0.142, Kurtosis ranges from -0.410 to -0.606, and %CV value is 20.837. Last, actual use (AU 1, 2) which has value of Skewness from -0.006 to -0.064, Kurtosis from -0.489 to -0.624, and %CV is 20.611. In conclusion, the data has systematically distribution and good shape due to the range of skewness and kurtosis were between -3 and +3 and percent of coefficient of variation (%CV) is below 30 percent as recommended by Brown (1998). Assessment of normality is exhibited in Table 3.

Table 3 Summary of Normality Test

Construct	Items	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Std. Error
Performance Expectancy (PE)	PE1-4	0.008 to 0.546	0.109	-0.291 to -0.618	0.218
Effort Expectancy (EE)	EE1-4	-0.062 to -0.263	0.109	-0.375 to 0.430	0.218
Social Influence (SI)	SI1-6	-0.001 to 0.002	0.109	-0.065 to-0.712	0.218
Perceived Usefulness (PU)	PU1-4	0.026 to 0.084	0.109	0.452 to -0.681	0.218
Perceived Ease of Use (PEOU)	PEOU1,3,4	-0.130 to -0.319	0.109	-0.363 to 0.018	0.218
Facilitating Conditions (FC)	FC1-4	0.082 to 0.319	0.109	-0.394 to -0.696	0.218
Intention to Use ERP (IU)	IU1-2	-0.096 to -0.142	0.109	-0.410 to -0.606	0.218
Actual Use of ERP (AU)	AU1-2	-0.006 to -0.064	0.109	-0.489 to -0.624	0.218

Confirmation Factor Analysis

The confirmatory factor analysis (CFA) was carried out to analyze original and adjusted models. Per the original model already presented the harmonization of all data in CFA, the adjusted model was not required. Per illustrated in Table 4, all estimates are significant per the criteria including the reliability test of Cronbach's Alpha (α) was greater than 0.7 and Factor loadings show value higher than 0.30 and p-value is lower than 0.05. Furthermore, the Composite Reliability (CR) is greater than the cut-off points of 0.7 and Average Variance Extracted (AVE) is higher than the cut-off point of 0.4 (Fornell & Larcker, 1981). Discriminant validity test was evaluated by computing the square root of each AVE. Based on this study, the value of discriminant validity is larger than all inter-construct/factor correlations (Fornell & Larcker, 1981), therefore, the discriminant validity is supportive per shown in Table 5. The original model showed all acceptable model-fit values including p-value of 0.000, CMIN/df of 1.426, GFI of 0.937, AGFI of 0.689, CFI of 0.976, TLI of 0.973, IFI of 0.977 and RMSEA of

0.029. Table 5.1 proves that all results are greater than acceptable values. Therefore, the convergent validity and discriminant validity were assured.

Table 4 Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	Source of Questionnaire (Measurement Indicator)	No. of Item	Cronbach's Alpha	Factors Loading	CR	AVE
Performance Expectancy (PE)	Chao (2019)	4	0.876	0.771- 0.833	0.878	0.643
Effort Expectancy (EE)	Chao (2019)	4	0.841	0.690 - 0.811	0.842	0.571
Social Influence (SI)	Rajan and Baral (2015)	6	0.850	0.662 - 0.729	0.851	0.488
Perceived Usefulness (PU)	Rajan and Baral (2015)	4	0.767	0.612 - 0.732	0.770	0.457
Perceived Ease of Use (PEOU)	Rajan and Baral (2015)	3	0.799	0.833 - 0.656	0.804	0.581
Facilitating Conditions (FC)	Chang et al. (2008)	4	0.757	0.621 - 0.689	0.758	0.440
Intention to Use ERP (IU)	Rajan and Baral (2015)	2	0.831	0.802 - 0.887	0.833	0.715
Actual Use of ERP (AU)	Chang et al. (2008)	2	0.829	0.810 - 0.875	0.831	0.711

Table 5 Discriminant Validity

	IU	PE	EE	SI	PU	PEOU	FC	AU
IU	**0.846**							
PE	0.249	**0.802**						
EE	0.386	0.170	**0.756**					
SI	0.455	0.197	0.396	**0.699**				
PU	0.456	0.144	0.461	0.431	**0.676**			
PEOU	0.244	0.130	0.310	0.138	0.269	**0.762**		
FC	0.542	0.184	0.415	0.424	0.462	0.358	**0.663**	
AU	0.732	0.236	0.365	0.476	0.412	0.290	0.500	**0.843**

Note: The diagonally listed value is the AVE square roots of the variables

Structural Equation Model (SEM)

Structural Equation Modeling (SEM) was applied to test the casual relationship among variables in a research model (Hair, Black, Babin & Anderson, 2010). The goodness of fit indices for SEM is exhibited in Table 6. The original model was not in harmony with empirical data, so the adjusted model was necessary. The model fit after the adjustment using SPSS AMOS version 26 presented model fit which are CMIN/DF = 2.543, GFI = 0.871, AGFI = 0.838, CFI = 0.916, TLI = 0.901, IFI = 0.916 and RMSEA = 0.056, according to Table 7, the acceptable values are posted.

Table 6 Goodness of Fit for Measurement Model (CFA) and Structural Model (SEM)

Goodness of Fit Indices	Criterion	Measurement Model	Structural Model
CMIN/DF	< 3.00 Hair et al. (2006)	1.426	2.543
GFI	≥ 0.85 Sica and Ghisi (2007)	0.937	0.871
AGFI	≥0.80 Sica and Ghisi (2007)	0.922	0.838
CFI	≥ 0.90 Hair et al. (2006)	0.976	0.916
TLI	≥ 0.90 Hair et al. (2006)	0.973	0.901
IFI	≥ 0.90 Bollen (1989)	0.977	0.916
RMSEA	< 0.08 Pedroso et al. (2016)	0.029	0.056

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, CFI = comparative fit index, TLI = Tucker-Lewis index, IFI = Incremental Fit Index, and RMSEA = root mean square error of approximation.

Research Hypothesis Testing Result

A significance of each variable was measured from its Standardized path coefficient (β) and t-value, resulting in Table 7. Hypotheses were supported with a significance at p = 0.05. Consequently, intention to use has the strongest influence on actual use of ERP with the value 0.873, followed by facilitating conditions on intention to use (β =0.304), social influence on intention to use (β = 0.304), perceived usefulness on intention to use (β = 0.277) accordingly. Nevertheless, researcher found no support relationship between perceived ease of use on intention to use (β = 0.082) and facilitating conditions on actual use (β = -0.013). In summary, this study confirmed the significance influence of H1, H2, H3, H4, H6 and H8 whereas H5 and H7 were found as insignificance as the testing results were not supported.

Table 7 Hypotheses Testing Result of the Structural Model

Hypothesis	Standardized path coefficient (β)	t-value	Testing result
H1: PE => IU	0.163	3.594*	Supported
H2: EE => IU	0.103	2.240*	Supported
H3: SI => IU	0.304	6.303*	Supported
H4: PU => IU	0.277	5.435*	Supported
H5: PEOU=> IU	0.082	1.780	Not Supported
H6: FC => IU	0.466	7.798*	Supported
H7: FC => AU	-0.013	-0.247	Not Supported
H8: IU => AU	0.873	12.816*	Supported

Note: *=p-value<0.05

Table 6 confirmed H1 with the significance between performance expectancy and intention to use. It can be explained further that the perception of users towards ERP system can facilitate the behavioral intention because they believe the system can enhance their capabilities at work (Chao, 2019). H2 was proven the significance of the relationship between effort expectancy and intention to use which describe the level of easiness can stimulate the intention to use of ERP system (Alshare & Lane, 2011). In the aspect of H3, social influence significantly influences the intention to use ERP system as management and coworkers can dominate ERP users to complete their tasks with provided system (Rajan & Baral, 2015). Perceived usefulness was also found support of the relationship with intention to use of ERP system and verified H4 as users perceived the benefits of using it (Saade & Bahli, 2005). On the other hand, H5 was discovered that there is no relationship among perceived ease of use and behavioral intention which means ERP system is mandatory that acquire learning due to the company's policy. H6 postulated the significant association between facilitation conditions and intention to use of ERP system. With the tools and training provided by a company, end users tend to use ERP system (Chang et al., 2008). In terms of H7, facilitating conditions has insignificant relationship with actual usage which explain the support environment is not a factor that can determine the usage of ERP system. Many researchers supported H8 which aligned with the finding of this study. It confirmed that intention to use has the strongest influence on actual use of ERP system (Kitcharoen & Vongurai, 2021) as reflected with standardized path coefficient (β) value.

Discussion and conclusion

This paper fulfilled its objectives to investigate determinants of ERP system adoption. Performance expectancy, effort expectancy, social influence, perceived usefulness and facilitation conditions have significance influence on intention to use of ERP. The intention to use presents the strongest influence on actual use of ERP system. Therefore, the H1, H2, H3, H4, H6 and H8 were confirmed and supported. On the other hand, the relationship between perceived ease of use and intention to use were found insignificance as well as facilitating conditions has no significant influence on actual use of ERP system.

C-level executives, decision makers and practitioners are recommended to consider significant factors to assure the high level of satisfaction and performance among users for adopting ERP systems such as effective communications, flexible training and helpdesk support for ERP systems. In addition, the insignificant relationship is required to be improved which includes perceived ease of use on intention to use and facilitating conditions on actual use of ERP system. Therefore, a company must consider to optimize the usage by selecting an appropriate and user-friendly system and provide regular trainings for employees.

Researchers provides two recommendations for further study. Firstly, this study only focuses on quantitative approach. With the exploit of qualitative methods such as interview or focus group can be considered for insights and in-dept analysis and interpretation. Secondly, the characteristic of companies in this study are merely medium-sized companies in manufacturing sector. The adoption level of ERP system can be varied in different type, sizes, businesses and industries. Subsequently, the future study can extend the methodology or sample of interest as recommended perspectives.

As the technology can provide its greatest benefit with a successful adoption, it is important to understand the factors that affecting the technology deployment. Decision makers in organization could consider the relevant influencers which can enhance the ERP systems usage in the company to ensure budget maximization, work efficiency, time saving and performance enhancement.

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