

The Factors Affecting to Acceptable Behaviors of Enterprise Resource Planning

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Abstract

In this paper, we investigated and studied both the factors affecting the acceptable behaviors in Enterprise Resource Planning (ERP) and the acceptable behaviors in ERP of State Enterprise in Thailand. The samples are selected from five State Enterprises using ERP with total 300 employees by questionnaire. The results illustrated that overall opinion levels of employees for both the acceptable behaviors of ERP and the factors affecting the acceptable behaviors were moderate. The factors were given as 3 predictive variables, consisting of the personal basis, the perceived ability of system, and the influence from society or organizations. Their correlations with acceptable behaviors in ERP were given as 0.722. The coefficient of determination and the standard error were 52.1% and 51.4%, respectively. These variables can be used to predict the acceptable behaviors of ERP with the statistical significance level of 0.01. When these variables changed, the level of acceptable behaviors of ERP would be increased.

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Keywords: Acceptance of Information Systems, Enterprise Resource Planning (ERP), State Enterprise.

1. Introduction

ENTERPRISE Resource Planning (ERP) is used to collect, connect, and share all information and resources within organization by central database integrated by data and business processes [1–3]. ERP is used in various systems such as Planning, Production, Financial, Human resources, Logistic, and Sale and Marketing [4]. Many organizations try to apply ERP for optimization of enterprise management, although it is very high investments. Previous studies found that many organizations using ERP failed greatly which the failure rate approximately 60 to 90 percent [5]. These problems might cause the lack of organizational support, inefficiency of the system developer, unclear pro-

cesses, lack of learning, and training system [6], and the most important form of users [7].

The success of ERP for enterprise management depended on combination of many factors such as environment, organizational culture, innovation or technology [8]. So they brought ERP to optimize management and so needed to consider many factors, especially the behavioral factors. Behavior factors are an important issue in implementing the information system [9]; therefore, many researchers studied ERP acceptance by behavioral factors. They were linked into the system acceptance [3, 10–12]. The results showed that factors affecting to ERP acceptant behaviors were attitude, recognizing benefits and easy of system, organizational culture, expecting in performance, social influence, environment, and user satisfaction. These factors were proposed through the theory and technology acceptance model to explain how and why individuals to accept ERP studied about human behaviors [13]. When executives were awarded of the factors affecting to ERP acceptant behaviors, expectation was is a solution and strategic planning based on discovered factors.

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State Enterprises were under the control of the government. The Ministry controlled and made policies then the committee was representative for government [14]. Present Governmental agencies gave precedence to ERP in organization management. ERP was very high investments; therefore, they need to study many factors carefully before ERP is applied. In this paper we investigated the factors affecting to ERP acceptant behaviors of State Enterprise in Thailand. These results can help them in planning the implementation of ERP to optimize utilization and working process more effectively.

Independent Variables Dependent Variables

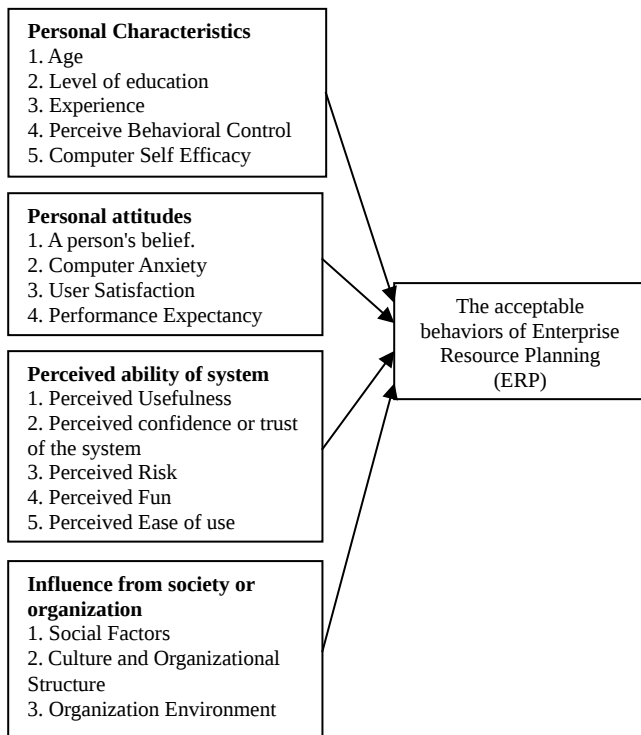


Fig. 1. The research framework.

2. Literature

2.1. Enterprise Resource Planning (ERP)

ERP is the system helping in integrated enterprise management which control and manage resource in an enterprise. Working processes consist of Coordination, Human resource, Accounting, Financial, Manufacturing, Warehouse, Tax, Customer Service, etc. All departments connect and share all information and resources within organization by central database that operative information results are unified [1–3]. The ERP concept began in 1990 in the United States which its origin comes from the concept of Material Requirement Planning/Manufacturing Resource Planning (MAP System) [15].

Table 1. The Number and Percentage of Samples Divided by Personal Characteristics.

Personal Characteristics	Number of instances	Percentage
Gender		
Male	92	30.67
Female	208	69.33
Total	300	100.00
Age		
21-30 years old	59	19.67
31-40 years old	77	25.67
41-50 years old	117	39.00
51-60 years old	47	15.67
Total	300	100.00
Level of education		
Vocational Certificate / Senior High School	33	11.00
High Vocational Certificate / Diploma	105	35.00
Bachelor Degree	158	52.67
Master Degree	4	1.33
Total	300	100.00
Experience		
Less than 1 year.	29	9.67
1-10 years	87	29.00
11-20 years	109	36.33
21-30 years	66	22.00
31-40 years	9	3.00
Total	300	100.00

2.2. Concepts and Theories of Technology Acceptance

Satien Cheypratub [16] defined acceptance as the decision to use innovation, because they thinking innovation is a good way and useful. Somchai Ruengmaneechatchawan [17] defined the acceptance of the person’s innovation as a conceptual process to response the innovation starting from perception to accept or reject innovation. Rogers [18] defined the process to accept innovation starting from the perception, attitude, leading to the decision to accept or reject and decisions about innovations.

The present most of researches on the information technology acceptance are studied on the basis of the established model such as

- 1) The theory of reasoned action: TRA
- 2) The theory of planned behavior: TPB
- 3) The technology acceptance model: TAM
- 4) The model of PC utilization: MPCU
- 5) The diffusion of innovation theory: DOI

Table 2. Average, Standard Deviation, Opinion Level of State Enterprise Employees to Factors Affecting to Acceptable Behaviors.

Factors affecting behavior	\bar{X}	S.D.	Opinion level
1. Personal Characteristics	3.35	0.870	Moderate
2. Personal attitudes	3.25	0.848	Moderate
3. Perceived ability of system	3.43	0.858	High
4. Influence from society or organization	3.47	0.778	High
Average	3.37	0.838	Moderate

Table 3. Average, Standard Deviation, Opinion Level of State Enterprise Employees to Acceptable Behaviors of ERP.

The acceptable behaviors of ERP	\bar{X}	S.D.	Opinion level
1. You are ready to use ERP	3.31	0.863	Moderate
2. You intend to use ERP	3.66	0.812	High
3. You will use ERP when you are ordered from the executive	3.51	0.860	High
4. You will use ERP When you are influenced by competition.	3.21	0.784	Moderate
5. You will use ERP based on your experience	3.29	0.829	Moderate
6. You will use ERP based on your cognizance	3.33	0.858	Moderate
7. You will use ERP to increase performance	3.57	0.809	High
8. You will use ERP to enhance the image and modern	3.54	0.878	High
9. You will use ERP because the system is easy to learn	3.19	0.863	Moderate
10. You will use ERP because you can learn by yourself	3.15	0.998	Moderate
Average	3.38	0.86	Moderate

- 6) The motivational model: MM
- 7) The social cognitive theory: SCT
- 8) A model combining the technology acceptance model and the theory of planned behavior: C-TAM-TPB and
- 9) Unified Theory of acceptance and use of technology: UTAUT [19].

From these basic models we applied the relevant factors for the research framework (Fig. 1).

From the research framework, we identifying the hypothesizes consisting of Personal Characteristics, Personal attitudes, Perceived ability of system, and Influence from society or organization that affecting to acceptable behaviors of Enterprise Resource Planning (ERP) of State Enterprise in Thailand.

3. Methodology

3.1. Study and Collect Data

We use questionnaires to collect data divided by 3 sections

Table 4. The Results of Pearson Correlation Coefficient Value.

		X ₁	X ₂	X ₃	X ₄	Y
X ₁	Pearson Correlation	1	0.781**	0.656**	0.659**	0.586**
	Sig.(2-tailed)		0.000	0.000	0.000	0.000
	N	300	300	300	300	300
X ₂	Pearson Correlation	0.781**	1	0.791**	0.743**	0.592**
	Sig.(2-tailed)	0.000		0.000	0.000	0.000
	N	300	300	300	300	300
X ₃	Pearson Correlation	0.656**	0.791**	1	0.806**	0.661**
	Sig.(2-tailed)	0.000	0.000		0.000	0.000
	N	300	300	300	300	300
X ₄	Pearson Correlation	0.659**	0.743**	0.806**	1	0.683**
	Sig.(2-tailed)	0.000	0.000	0.000		0.000
	N	300	300	300	300	300
Y	Pearson Correlation	0.586**	0.592**	0.661**	0.683**	1
	Sig.(2-tailed)	0.000	0.000	0.000	0.000	
	N	300	300	300	300	300

** Correlation is significant at the 0.01

- 1) Personal Characteristics
- 2) Factors affecting to acceptable behaviors of ERP
- 3) Acceptable behaviors of ERP

The samples of this study included 300 employees who were working in five enterprise states that just have used ERP, Thailand. The sample size was calculated by an unknown size of population [20] and confidence level at 95 %. Therefore, the number of sample size equals to 246. In addition, consideration for the possible loss of subjects, the number of sample size was 300 employees.

3.2. Data Analysis

- 1) Percentage : Categorizing and studying of the personal characteristics are presented by the table.

Table 5. Regression Coefficient, Standard Error, Estimation for Factors Affecting to Acceptable Behaviors of ERP.

Prediction variable	b	SE	β	t	Sig.
Constant	4.384	1.713	-	2.559	0.011
Personal basis (X ₁)	0.401	0.121	0.217	3.308	0.001**
Personal attitudes (X ₂)	-0.117	0.130	-0.073	-0.899	0.369
Perceived ability of system (X ₃)	0.460	0.129	0.278	3.573	0.000**
Influence from society or organization (X ₄)	0.679	0.132	0.370	5.134	0.000**
R = 0.722, R ² = 0.521, Adj. R ² = 0.514, F = 80.094, Sig. = 0.000					

- 2) Mean : Measuring the factors affecting to acceptable behaviors of ERP in enterprise states , Thailand. Each item was rated on a five point Likert scale.
- 3) Hypothesis Testing : Finding relationship between several independent or predictor variables and a dependent or criterion variable by Multiple Regression Analysis .The result can be summarized in linear equation and described and compared the relationship of each independent variable that affecting to acceptable behaviors of ERP in enterprise states

4. Result

4.1. The Results of The Personal Characteristics Analysis

Table 1 shows that the results of the personal characteristics analysis of State Enterprise employees that is the majority of subjects were female (69.33%, 208 employees), age between 41-50 years old (39.00%, 117 employees), level of education as Bachelor Degree (52.67 percent, 158 employees), and experience between 11-20 years (36.33%, 109 employees).

4.2. The Result of Opinion Level Analysis on Factors Affecting to Acceptable Behaviors of ERP of State Enterprise in Thailand

Table 2 shows overall opinion level of State Enterprise employees to factors affecting to acceptable behaviors of ERP at a moderate level ($\bar{x}=3.37$, S.D.=0.838). Considering each dimension found the influence from society or organization at a high level ($\bar{x}=3.47$, S.D.=0.778), Perceived ability of system at a high ($\bar{x}=3.43$, S.D.=0.858), Personal basis at a moderate level ($\bar{x}=3.35$, S.D.=0.870), and Personal attitudes at a moderate level ($\bar{x}=3.25$, S.D.=0.848).

4.3. The Result of Opinion Level Analysis to Acceptable Behaviors of ERP Of State Enterprise in Thailand

Table 3 shows overall opinion level of State Enterprise employees to acceptable behaviors of ERP at a moderate level ($\bar{x}=3.38$, S.D.=0.86). Considering each dimension found the you intend to use ERP at a high level ($\bar{x}=3.66$, S.D. = 0.812), you will use ERP to increase performance at a high ($\bar{x}=3.57$, S.D.=0.809), you will use ERP to enhance the image and modern at a high level ($\bar{x}=3.54$, S.D. = 0.878), and you will use ERP when you are ordered from the executive at a high level ($\bar{x}=3.51$, S.D. = 0.860).

4.4. The Results of Pearson Correlation Coefficient Value

Table 4 The significant Pearson correlation coefficient value of 0.01; there appears to be a moderate to strong positive correlation between the variables (0.586 0.806).

4.5. The Results of Data Analysis to Select The Regression Equation

From Table 4, the 3 prediction variables consist of Personal basis (X_1), Personal attitudes (X_2), Influence from society or organization (X_4) which are correlation with acceptable behaviors of ERP (0.722), the coefficient of determination (52.1%), the standard error (51.4%) and these variables can predict the acceptable behaviors of ERP at the statistical significance level (0.01). When these variables are changed making the opinion of acceptable behaviors with ERP increased because the t values are positive.

5. Discussion

Totally opinion level of State Enterprise employees on factors affecting to acceptable behaviors of ERP is medium level. These results are different from previous study that most samples accepted ERP in very good or good level, for example, studying of Supalak Aimsunpang [21] and Wilaiwan Pongkaew [22] which most employees are concerned in using, learning, and increasing the workload with ERP. Moreover, we finding the factors affecting the acceptable behaviors in ERP consist of the personal basis according to Sarlan *et al.* [21], the perceived ability of system according to Amoako-Gyampah [22], Kwahk & Ahn [5], Lu *et al.* [23], and the influence from society or organization according to Chang *et al.* [24], Huang & Wang [9], Kijsanayotin *et al.* [25].

6. Conclusions

Enterprise Resource Planning could connect and share information from all departments by central database making organization management effective. Now many organizations, government or private company applied ERP. They needed to consider benefits or success received form ERP because of its high investment. In this paper, we investigated the factors affecting to acceptable behaviors of Enterprise Resource Planning (ERP) and studied acceptable behaviors of ERP of the State Enterprise in Thailand. The results illustrated that overall opinion levels of employees to factors affecting to acceptable behaviors and overall opinion levels of employees to acceptable behaviors of ERP were at moderate. The factors consisted of the personal basis, the perceived ability of system, and influence from society or organization. The 3 prediction variables consisted of Personal basis, Personal attitudes, Influence from society or organization which were correlation with acceptable behaviors of ERP (0.722), the coefficient of determination (52.1%), the standard error (51.4%) and these variables could predict the acceptable behaviors of ERP at the statistical significance level (0.01). When these variables were changed, they made the opinion of acceptable behaviors with ERP increased.

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