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Using Unified Theory of Acceptance and Use of Technology to Develop IS Strategic Planning

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Abstract - ***PT. Republic Express is one of the companies in Indonesia engaged in the one stop logistics field which has been working for more than 30 years and located in South Jakarta. The current conditions at that company do not have a good Information Systems strategy, less use of Information Systems use and the company only makes a work plan based on the project plan to be taken. Therefore, PT. Republic Express requires an IS Strategic Planning using Enterprise Architecture. Before implementing the warehouse management system at company, first analyze the readiness of the implementation of the warehouse management system by distributing questionnaires to 200 employee respondents. The model used for this study uses Unified Theory of Acceptance and Use of Technology (UTAUT) Theory. The purpose of this study is look for indicators, and new factors which will later be used to build a new model based on the results of the respondent questionnaire. from the theory model developed into a new model that will form new factors and indicators. From the some factors used then the data the results of the questionnaire processed using factor analysis resulted in 5 new factors, namely, after obtaining 5 new factors, then processed into a new model that has been analyzed using linear regression.***

Keywords: enterprise architecture, strategic planning, faktor analysis, UTAUT, warehouse management system

I. INTRODUCTION

A. Background

The development of information system technology in the era of globalization and digitalization is now very fast and affects human activities in the business sector. While information resources are the main resource in the company to be able to compete with other companies. then to improve competitive advantage for companies, efforts to try to implement information technology in order to improve the effectiveness and efficiency of business processes are mostly carried out in various companies, the purpose of writing this paper is to demonstrate innovation that will make the company's competitive advantage in business competition.

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Enterprise Architecture Planning is one of the methodologies used to plan enterprise architecture that focuses on data architecture, application architecture and technology architecture that is oriented to business needs and how the architecture is implemented so that it can support the achievement of company goals.

The company is one of the companies in Indonesia that is engaged in the one stop logistics field with more than 30 years working in South Jakarta.

The company also supports warehousing, contract logistics, supply chain management and transport lines. Facing increasingly tight logistics business competition, its conducts breakthroughs and business innovations by developing business wheels using channel marketing and communication especially digital marketing and also providing e-logistic services and e-warehouse. The current condition at the company does not have a good IS/IT strategy, it does not utilize IT and the company only makes work plans based on the project plan to be taken. So that there is no specific planning for strategy.

Therefore, the company makes a breakthrough in order to be adaptive in complex and ambiguous situations and disruptive eras. Therefore, the company needs an IT Strategic Planning so that this company can develop its business to provide the best service to its customers. To make an IT Strategic Planning will start from analysis to the best solution for the strategy that will be implemented by this company for the long term. Before applying this to the company, it is necessary to pay attention to several factors that refer to the UTAUT model, one of which is the analysis of the readiness of the implementation of the Warehouse management system, which will be implemented in the company.

B. Problem Statement

The company does not have a good IT strategy in developing its business, especially in the company's operations and also a lack of innovation that is far behind other competitors. Therefore, a strategic plan is needed to implement the WMS system at the company. Before implementing WMS in the company, it is necessary to evaluate the readiness for the application of WMS in the company.

C. Purpose Research

The objectives of this study are:

1. Looking for factors that influence the readiness of WMS implementation in the company.
2. Looking for indicators that affect the readiness to implement WMS at the company.
3. Analyze the readiness of WMS implementation at the company.

II. METHODOLOGY

In this study descriptive method was used using Convenience Sampling techniques and survey approaches. Data collection techniques for conducting this research include:

1. Observation this observation method is carried out for the current conditions that occur in PT RPX by making direct observations about operational activities.
2. Interview were carried out to the level managers to the top management to formulate information system strategy planning to achieve the company's vision and mission.
3. Questionnaire Some samples that have been determined as respondents will be asked to answer a number of questions and statements related to evaluating the readiness of WMS implementation at the company. This questionnaire is distributed in the internal environment of the company.

Respondents simply choose one answer from the answers provided. Questions in the questionnaire were built based on the research instruments that had been made which came from eight factors from UTAUT. The scale technique used in this study is integrated rating scales using the 5 Likert Scale Indicator.

In this study will use a research model of the UTAUT model which is used to measure the level of employee acceptance of information system design concepts that will be applied to be able to compete with competitors. The proposed research model will use all the main independent variables and all dependent variables. The following is a picture of the proposed research model which is a modification of the UTAUT model:

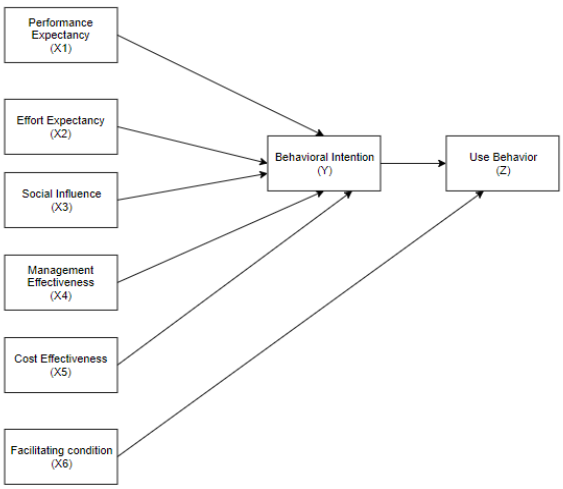

Figure 1: Proposed research Model

Based on the proposed research model, the independent variables to be used are performance expectancy, effort expectancy, social influence and facilitating conditions.While the dependent variable that will be used is behavior intention and use behavior. In addition, two independent variables will be added, namely cost effectiveness and management effectiveness.

Table 1: Variable and indicator Matrix

Variabel	Indicator
Performance Expectancy (PE)	Easy to use(PE1)
	User expects(PE2)
	Perceived usefulness(PE3)
	Relative adventage(PE4)
Effort Expectancy(EE)	Time(EE1)
	Perceived easy to use(EE2)
	Complexity(EE3)
	Ease of use(EE4)
	Internal communication(EE5)
Social Influence(SI)	Social Implications(SI1)
	Social Factors(SI2)
	Social Information(S13)
	Normative social Influence(SI4)
Management Effectiveness(ME)	Support from top management(ME1)
	Customer satisfaction(ME2)
	Decision making efficiency(ME3)

Table 2: Variable and indicator Matrix

Variabel	Indicator
Cost Effectiveness(CE)	*Cost reduction(CE1)*
	Integrated knowldege(CE2)
	Cost evaluation(CE3)
	Cost estimation(CE4)
Facilitating condition(FC)	Infrastructure(FC1)
	Compability(FC2)
	Information technology(FC3)
	Team support(FC4)
	Network(FC5)
Behavioral intention(BI)	*Intention to use(BI1)*
	System usage plan(BI2)
	Access to information(BI3)
Use Behavior(UB)	*Effective(UB1)*
	Flexibility(UB2)

List Of Responden

The method of collecting data with questionnaires was conducted on research samples related to the evaluation of the readiness of WMS implementation in PT RPX. The process of distribution until the collection of questionnaires took about 2 weeks. The questionnaire was distributed to 200 respondents. Respondents who participated in filling out the questionnaire were employees in each division. Questionnaires that are fully redistributed and answers are filled in completely so that it can proceed to the next stage, which is the data processing stage.

Demographic Data Of Respondents

The following is a descriptive description of the research respondents:

1. Respondent Data Based on Introduction to WMS

Tabel 3. The respondent's data is based on the introduction of Werehouse Management Systems (WMS)

Know WMS	Respondent	Percentage
Yes	163	81%
No	37	19%
Total	200	100%

Based on the distributed questionnaire, as shown in table 3, data can be obtained that many respondents chose to know what WMS is.

2. Respondent Data Based on Gender

Tabel 4. The respondent's data based on gender

Gender	Respondent
Male	153
Female	47
Total	200

Based on table 4., of 200 respondents, as many as 47 respondents were female, and 153 other respondents were male. The author assumes that gender does not significantly influence the introduction of the warehouse management system.

3. Respondent Data Based on Latest Education

Tabel 5. The respondent's data based on education

Level Education	Responden
High School	10
D3	18
S1	167
S2	5
Total	200

From table 5, of the 200 respondents, the high school educated were 10 respondents, D3 were 18 respondents, S2 were 5 respondents and the most were those with S1 final education, 167 respondents.

4. Respondent Data Based on ages

Tabel 6 The respondent's data based on age

Age	Responden
21 – 30	85
31 -40	73
41 – 50	30
>50	12
Total	200

Based on table 6, out of 200 respondents, 85 respondents were between 21 and 30 years old, 73 respondents were around 31 to 40 years old, 30 respondents were around 41-50 years old, while there were only around 12 respondents who were more than 50 years. The age of the respondent can influence the capture and accuracy of the use of the warehouse management system later.

Reliability and Validity Test

1. Reliability test

Tabel 7. Reliability Statistics

Cronbach's Alpha	N of Items
.909	30

Reliability test is a questionnaire reliability testing technique that is most often used. Reliability testing helps in ensuring the stability, consistency, and accuracy of the variables in the research instrument represented by the value of Cronbanch's Alpha (α). The value of Cronbanch's Alpha (α)> 0.9 is said to be very good,> 0.8 said good,> 0.7 acceptable (George & Mallery , 2003). The reliability test results of research variables which can be seen from table 6 show that Cronbanch's Alpha (α) from the 30 statements is equal to 0.909. From the numbers generated, it shows that the instrument variables used in this study are reliable for each statement used.

Analisa Faktor

KMO & Bartlett's Test

If the KMO-MSA value is> 0.5 and the significant value (sig) or opportunity (p) <0.05, then the variables analyzed in the factor analysis are worthy of factoring. The table also shows the Bartlett's test results worth 0.774 and sig 0,000. with KMO-MSA values> 0.5 and the value (p) <0.05 indicates that the data collected is feasible to be factored.

Tabel 8. KMO and Bartlett's test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.774
Bartlett's Test of Sphericity	Approx. Chi-Square	3487.971
	df	435
	Sig.	.000

Anti Image Correlation

The anti image correlation value indicates whether the variable can be used as a shared component or not with the following conditions:

1. MSA = 1 indicates that variables can be predicted without errors.
2. MSA ≥ 0.5 indicates that predictable variables need further analysis.
3. MSA < 0.5 indicates that the variable is not feasible for further analysis.

The calculation results for the value of anti image correlation in this study can be seen in table 9. The calculation results show all variables have a value of MSA > 0.5, so that all variables can be said to be feasible for further analysis.

Tabel 9 Anti Image Correlation

Anti Image Correlation	Value
PE1	0.733
PE2	0.750
PE3	0.761
PE4	0.851
EE1	0.794
EE2	0.762
EE3	0.664
EE4	0.783
EE5	0.800
SI1	0.771
SI2	0.722
SI3	0.806
ME1	0.800
ME2	0.619
ME3	0.761
CE1	0.835
CE2	0.686
CE3	0.828
CE4	0.639

FC1	0.642
FC2	0.758
FC3	0.856
FC4	0.657
FC5	0.865
BI1	0.761
BI2	0.871
BI3	0.836
UB1	0.860
UB2	0.907

Total Variance Explained

The eigenvalue / eigenvalue describes the role of variables in the shared factors that are formed.

From processing data using an eigen value greater than one, eight new factors were formed with the cumulative value of the overall variant extraction of 68.201%). Data processing is continued in the factor extraction process by using fixed number of factors in SPSS to reduce the factors formed. The author carries out testing with a fixed value of 6 factors 61,046%, 5 factors 56,936%, The test results can be seen in table 10 below:

Tabel 10. Factor Extraction

Fixed number of factor	*Cumulative(%)*
8 faktor	68,201 %
6 faktor	61,046 %
5 faktor	56,936 %

The results of the fixed number of factors produced 3 possibilities, namely 8 factors, 6 factors and 5 factors. The author chose 5 factors because it was more complex and made it easier to build new factors.

Component Matrix

After the factor extraction process using fixed number of factors, the next step is to determine the variables of each new factor formed by rotating the component matrix. By using the fixed number of factors value of 5 factors and seeing the results of rotated component matrix, the following are the factors with the variables formed:

The First Factor is inefficiency and accessibility is a representation of a number of variables, consisting of variables:

1. Decision making efficiency (ME3), which is fast and effective decision making that can help businesses.
2. Perceived easy to use (EE2), which is a good system that is a system that is easy to use and understand.
3. User expects (PE2), that is, the system can meet user needs.
4. Customer satisfaction (ME2), namely customer satisfaction with services and products is very important
5. Easy to use (PE1), namely the use of the system can facilitate users.
6. Cost reduction (CE1), which is the development of a system with the most cost efficient.

Second factor is negative business impact is a representation of a number of variables, consisting of variables:

1. Social Factors (SI2), namely the influence of others in making purchases.
2. Ease Of Use (EE4), which is the speed of system access that makes it easy for users.
3. Internal communication (EE5) namely good communication produces new knowledge through training.

The third factor is system performance is a representation of a number of variables, consisting of variables:

1. Perceived usefulness (PE3), namely the use of the system can improve user performance.
2. Time (EE1), namely the use of the system can reduce manual work.
3. Relative advantage (PE4), namely the use of the system can improve user performance.

The fourth factor is the appraisal framework is a representation of a number of variables, consisting of variables:

1. Cost evaluation (CE3), which is evaluating costs based on employee performance.
2. Support from top management (ME1), that is, support from top management is important.
3. Integrated knowledge (CE2), namely the estimated costs incurred for the construction of a system.
4. Infrastructure (FC1), namely infrastructure that adequately supports the use of the system.

The fifth factor is system dependency is a representation of a number of variables, consisting of variables:

1. Compability (FC2), namely computer devices that are competible with information technology systems.
2. Intention to use (BI1), namely the desire of users to use the system very high
3. effective (UB1), namely the use of a system that effectively increases the desires of users.
4. Normative social influence (SI4), namely the influence of co-workers in providing training to employees.
5. Network (FC5) = Network that can be accessed anywhere and stable.

III.RESULT AND DISCUSSION

New factors obtained through factor analysis are efficiency and efficiency, negative business impact, system performance, framework appraisal, system deployment. This new factor is what I will use to analyze the readiness of WMS implementation in the company.

The next step is the factor scoring or looking for the value of the five new factors formed. In the questionnaire the author shared with the research respondents, there was a statement regarding the level of understanding of the warehouse management system (WMS) system. The author uses a scale with a score range between one and ten to see the level of understanding of the respondents.

X_1 = inefficiency and inaccesbility
X_2 = negative business impact
X_3 = system performance
X_4 = appraisal framework
X_5 = system dependency

After doing the regression, the bottom value of each factor is obtained that meets the reliable criteria for the following calculation model:

$$\mathbf{Y = B_0 + A_1X_1 + A_2X_2 + A_3X_3 + A_4X_4 + A_5X_5}$$

The following are the values obtained from the factor regression with the value of the respondent's level of understanding of the system warehouse management system:

B0 = 8.000
A1 = -0.042
A2 = -0.018
A3 = 0.056
A4 = 0.286
A5 = -0.002

By knowing these values, a systematic model of the analysis of readiness for the implementation of the warehouse management system is created as follows:

$Y = 8{,}000 - 0.042X_1 - 0.018X_2 + 0.056X_3 + 0.286X_4 - 0.002X_5$

Based on the model above, the readiness analysis model for the implementation of the warehouse management system (WMS) can be seen in Figure. 2.

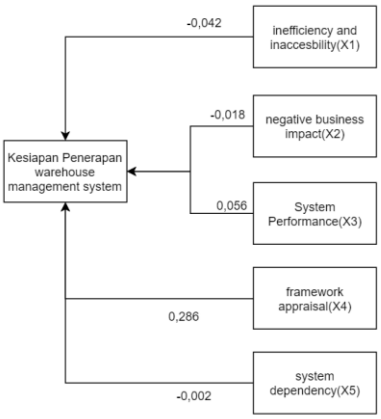

Figure 2. User Knowledge Factor Value

1. From the above model, it is known that the first (inefficiency and inaccesbility) factor is negative 0.042.
2. The second factor (negative business impact) is negative 0.018.
3. The third factor (system performance) is positive 0.056.
4. The fourth factor (appraisal framework) is positive 0.286.
5. The fifth factor (system dependency) is negative 0.002.

From the above model, to get the ideal model, X_1, X_2 and X_5 must be negative because the ideal model is a model whose value increases, not a model whose value decreases.

Tabel 10 Min And Max Value

Variabel	Y	B0	X1	X2	X3	X4	X5
Netral	8	8	0	0	0	0	0
Min	7.102	8	-3.085	-3.465	-3.748	-3.107	-4.222
Max	8.529	8	2.221	2.325	1.854	1.969	1.918
Extreme	6.766	8	2.221	2.325	-3.748	-3.107	1.918
Ideal	8.865	8	-3.085	-3.465	1.854	1.969	-4.222

The value of factors and models that have been explained by the author above, then the author will use them to analyze the readiness of the implementation of the warehouse management system by regressing the value of these factors to the level of understanding of the respondents. From table 10, the author will look for minimum values, maximum, extreme and ideal values. From the table above, all values of X1, X2, X3, X4 and X5 have been described according to the results of the SPSS regression data.

With factor regression, the minimum and maximum value limits are obtained as follows:

$Y = 8{,}000 - 0.042X_1 - 0.018X_2 + 0.056X_3 + 0.286X_4 - 0.002X_5$

With explanation:

$-3.085 \leq X_1 \leq 2.221$
$-3.465 \leq X_2 \leq 2.325$
$-3{,}748 \leq X_3 \leq 1.854$
$-3.107 \leq X_4 \leq 1.969$
$-4.222 \leq X_5 \leq 1.918$

From the results of the model based on minimum, maximum, extreme and ideal values, the highest Y value is obtained at the ideal value because the higher the Y value, the more ideal the value and readiness in applying the WMS.

IV. CONCLUSION

From this research we can conclude some important things for planning the implementation of the system and information technology strategies as follows:

1. 5 new factors have been found that influence the readiness to implement WMS in the company, namely inefficiency and accessibility, negative business impact, system performance, framework assessment, system dependence.
2. Each new factor is composed of several indicators and has a correlation with the factors formed. The first factor (inefficiency and efficiency), namely the decision making efficiency, is perceived as easy to use, user expects, customer satisfaction, easy to use, cost reduction. The second factor (negative business impact) is social factors, ease of use, complexity, internal communication. The third factor (system performance) is perceived usefulness, time, relative advantage. The fourth factor (framework appraisal) is cost evaluation, support from top management, integrated knowledge, infrastructure. The fifth factor (system dependency) is compability, intention to use, effective, normative social influence, network.
3. The mathematical model that is formed from the exploration of factors and the value of each factor to the analysis of the readiness of the implementation of the warehouse management system are as follows:

$Y = 8{,}000 - 0.042X_1 - 0.018X_2 + 0.056X_3 + 0.286X_4 - 0.002X_5$

Explanation:

X_1 = inefficiency and inaccesbility
X_2 = negative business impact
X_3 = system performance
X_4 = appraisal framework
X_5 = system dependency

From this model it can be concluded that the highest value is obtained from the ideal model because the value of Y is 8.865.

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