Journal of Theoretical and Applied Information Technology
15th December 2018. Vol.96. No 23

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

FACTOR AFFECTING THE IMPLEMENTATION BENEFIT OF ENTERPRISE RESOURCE PLANNING SYSTEM USING MODIFIED DELONE AND MCLEAN INFORMATION SYSTEM SUCCESS MODEL

[1]ARIYA EKA WIRAWAN, [2] TOGAR ALAM NAPITUPULU

Information System Management Department,
BINUS Graduate Program – Master Information System Management
Bina Nusantara University
Jakarta 11480 Indonesia

Email: [1]ariya.eka@gmail.com, [2]tnapitupulu@binus.edu

ABSTRACT

Investment Holding Enterprises Group (PTMD Group) is a company engaged in the business investment of various business portfolios. The Company has implemented Enterprise Resource Planning (ERP) since 2010 to support its business operations and consolidated financial reporting. The Company has implemented Enterprise Resource Planning (ERP) since 2010 to support its business operations and consolidated financial reporting. After go Live ERP, there is a increasing of audit findings from year to year both audit financial reports generated by ERP and IT audits related to internal control of ERP systems that impact on data integrity of ERP systems. The accuracy of financial statements or data integrity generated by the system is needed to as a basis for strategic decision making business quickly and appropriately by management in order to become more competitive company [1]. This case study aims to determine whether the implementation of the ERP system has provided benefits to the business through the identification of factors affecting the implementation of the ERP system. Through the development of modification model DeLone & McLean which this model to review the success of information systems. The results of these reviews resulted in an understanding of factors related to dimension factors that can measure the success of information systems and be an alternative solution to improve the ERP system. Through analysis of regression statistic test based on SEM (Structural Equation Model) model through data processing research derived from the questionnaire with the number of 97 respondents then the conclusion of the results of this study include that the system use factor is influenced by the quality system, user satisfaction factor is influenced by system quality, net benefit factor are influenced by information quality, system use, and user satisfaction in the PTMD Group. The contribution of this research was performed by evaluation process both for quality of ERP system and IT support team based on result of the research. In the other hand, the service quality had been re-reviewed to optimize IT support benefit.

Keywords: *ERP System, Information System Success Model, DeLone & McLean Model Dimensions, SEM*

1. INTRODUCTION

1.1 Background

Based on AMR Research in 2007, it stated that the implementation of Enterprise Resource Planning (ERP) technology has grown rapidly in the last few years. According to this research that globalization era, IT centralization and performance management is the key driver to continue investing ERP. According to [2] stated that the ERP technology is also useful to integrate all lines of business organization and can help in controlling the business better because it can reduce inventory stocks, reduce cycle time orders, improve productivity, better communication and increase company profit. According to [3] stated that ERP has advantages with lead-time reduction, timely delivery, cycle time reduction, better customer satisfaction, increased flexibility, reduced cost of

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

quality, better power and improved information accuracy and decision-making capabilities.

However, there is a potential failure in the implementation of ERP technology based on research by [3], stated that ERP implementation failures are generally divided into two levels: failure thoroughly and partially. In a complete failure, the project may be suspended from the beginning of implementation or fail in the implementation process so that the company has a significant impact on its long-term finance. In partial failure, ERP implementation can exert an influence that disrupts daily operational activities in the company.

Investment Holding Enterprises Group (PTMD Group) is a company engaged in the business investment of various business portfolios. The Company has implemented Enterprise Resource Planning (ERP) since 2010 to support its business operations and consolidated financial reporting. However, since ERP implementation in PTMD Group, there is increasing audit findings from year to year both audit financial statements generated by ERP and IT audits related to internal control of ERP systems that impact on data integrity of ERP systems. According to [1] stated that the accuracy of financial statements or data integrity generated by the system is needed to as a basis for strategic decision making business quickly and appropriately by management in order to become more competitive company

Therefore, the objectives this study is to determine whether the implementation of the ERP system has provided benefits to the business through the identification of factors affecting the implementation of the ERP system through the development of modification model DeLone & McLean which this model to review the success of information systems.

During this research, we start with research question, literature review, develop research model, define hypothesis, distribute questionnaire, result analysis, conclusion and recommendation.

1.2 Research Problem

Based on above background description and related previous research so research problem of this research are :

1) How the success rate for the benefits of ERP implementation in the Holding Investment Group (PTMD)?
2) What factors affect the benefits of ERP implementation in the Investment Holdings Group (PTMD)?
3) How the relationship of factors that affect the benefits of ERP implementation in the Investment Holding Enterprises Group (PTMD)?

1.3 Scope of The Research

The scope of this research will be focused on the following such as :

1) This research is only conducted at in the Investment Holding Enterprises Group (PTMD) as a case study.
2) The respondent are the employee in PTMD who use the ERP application.
3) The result of the research are only used for improving ERP implementation in PTMD.

1.4 Research Objectives

Based on above background description and research problem, the objectives of this research are the following :

1) Identify the success rate of ERP implementation in the Investment Holding Enterprises Group (PTMD).
2) To know what factors have a significant effect on the benefits of ERP implementation in the Investment Holding Enterprises Group (PTMD).
3) Contribute to company to evaluate what factors affect the effectiveness of ERP implementation benefits in the Investment Holding Enterprises Group (PTMD).
4) Contribute to company in identifying and evaluating what factors need to be improve so that the benefits of ERP implementation can be maximized as per the expectations of stakeholders.
5) Provide insight for next similar research that may be conducted in the future.

2. THEORITICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

2.1 Management Information System

Management information system definition according to [4] is a a collection of human resources, tools, procedures, and software to conduct a range of business activities in an organization. According to [1] stated that information systems that can assist management in making decisions in a timely and effective way to plan, direct and control activities to achieve business goals.

One of the implementation of Management Information System is the implementation of

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

technology across business functions through business applications such as : Enterprise Resource Planning (ERP). By combining existing systems, companies using functional ERP can reengineer businesses, automate and integrate manufacturing, distribution, finance and human resources processes through ERP implementation.

2.2 Enterprise Resource Planning

The ERP system acts as the backbone in a cross-functional enterprise that integrates and automates several internal processes and information systems including the production, logistics, distribution, accounting, finance and human capital. .ERP also serves as an important software engine needed to integrate and complete the cross-functional processes it produces.

There are two types of ERP users that are key users and end users in during ERP implementation. According to [3] and [5] that these key user parties are from company management that determines what needs are required by the company and the ERP consultant who is tasked with determining the implementation method and performing the necessary business adaptation processes. The end user is the end user of the ERP system in accordance with the direction of the key user.

2.3 DeLone & McLean IS Success Model

DeLone & McLean Information Systen Success Model is a framework to measure a complex . ERP software play important role for business software that needed to integrate and complete the several cross-functional business in each function.

c. Service Quality
Service Quality dimensions represent the quality of support gained by application users from information systems departments and IT Support personnel. There are several indicators of the characteristics that can be measured for the quality of service, such as: assurance, empathy, flexibility, interpersonal quality, intrinsic quality, training IS, reliability, responsiveness, tangibles and etc. [8].

d. System Use
The dimension of System Use represents the extent and manner in which an information system is utilized by the users. There are several indicators of the characteristics that can be measured the intensity of use, among others: Actual Use, Daily Use, Frequency Use, Intention to (re) use, Nature of Use, Navigation Patterns, Number of Site Visits & Number of Transaction [8]

e. User Satisfaction
The dimension of user satisfaction is the level or level of user satisfaction when utilizing the information system. This dimension is one of the most important factors of information system success. There are several indicators of the characteristics that can be measured for user satisfaction, such as: adequacy, effectiveness, Efficiency, Enjoyment, Information Satisfaction, Overall Satisfaction and System Satisfaction [8].

f. Net Benefit
The Benefit Net dimension is the point where an information system contributes to the success of stakeholders. There are several indicators of the characteristics that can be measured from the net benefits include: Profitability, Productivity, Return on Investment & Quantifiable Financial Measure[8]

independent variables in information systems research [6]. The DeLone & McLean IS Success Model is one of the most comprehensive models supported by many empirical studies and reviewed more than 180 studies from several publications and synthesized with six factors that contribute to the success of an information system [7]. Bellow the several dimension of DeLone & McLean model are used in this research model :

a. Information Quality
Information quality is one dimension of information system characteristics which expected in terms of output information generated system useful for application users, There are several indicators of the characteristics that can be measured by the quality of information, such as : accuracy, adequacy, availability, completeness, conciseness, consistency, format, precision & etc. [8].

b. System Quality
System quality is the dimension of information system characteristics which expected in terms of usability aspects and characteristics of a system. There are several indicators of the characteristics that can be measured: Access, Convenience, efficiency, flexibility etc. [8].

Journal of Theoretical and Applied Information Technology
15th December 2018. Vol.96. No 23

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

2.5 Previous ERP Information System Success Research

According to [9], [10] and [11] that Net Benefit is influenced by System Use and The User Satisfaction, then the User Satisfaction and System Use are influenced by The quality of Information, System Quality and Service Quality. Meanwhile according to [12], the Net Benefit can be influenced by The Quality of Information, System Quality and Service Quality, this research mention that the independent variable (The Quality of Information, System Quality and Service Quality) can influence directly to The Net Benefit without intermediary dimension (System Use and The User Satisfaction by modified DeLone and McLean Information System Success Model.

3. METHODOLOGY

3.1 Research Model

Based on the previous research with the basic assumption are the System Use and User Satisfaction are influenced by Information Quality, System, System Quality and Service Quality, Meanwhile Net Benefit are influenced by System Use and User Satisfaction so that the evaluation of ERP implementation information system success the Investment Holding Enterprises Group (PTMD) can use research model as we can see in the figure 1 below :

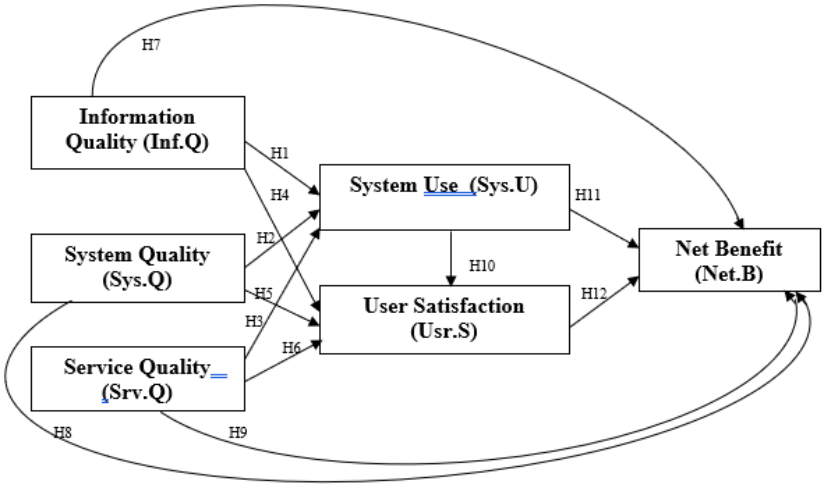

Figure 1. The Modified DeLone & McLean IS Success Model

3.2 Hypotheses

The research utilized by modify DeLone and McLean IS success model based on model presented in figure 1 above, so the hypotheses are of the following :

- H1 : The factor of information quality positively affects to the system use.
- H2 : The factor of system quality positively affects to the system use.
- H3 : The factor of service quality positively affects to the system use.
- H4 : The factor of information quality positively affects to user satisfaction.
- H5 : The factor of system quality positively affects to user satisfaction.
- H6 : The factor of service quality positively affects to user satisfaction.
- H7 : The factor of information quality positively affects to net benefit.
- H8 : The factor of system quality positively affects to net benefit.
- H9 : The factor of service quality positively affects to net benefit.
- H10: The factor of system use positively affects to user satisfaction.
- H11 : The factor of system use positively affects to net benefit.
- H12 : The factor of user satisfaction positively affects to net benefit.

3.3 Population and Data Collection Technique

The population of this research were the employees of in the Holding Investment Group (PTMD). This population of this research were 184 who using the ERP system. The population of this study is the employment population data of the Group Holding Investment Enterprises (PTMD) which uses and is recorded as an active ERP.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Then the number of population is 184 users that active users in the ERP application.

3.4 Variable Measurement Indicators

Here is an indicator of the measurement of the variables of each dimension as an assessment parameter of each variable in this research model

Table 1. Parameter Instrument each Variable

Dimension	Parameter	Reference
Information Quality	Accuracy, Format, Relevance, Understanding, Useful , Information Security	[13], [14], [15],[11]
System Quality	Easy to Use, System Accuracy, Flexibility, Feature, Access, Respond, Automate	[13], [11], [15]
Service Quality	Availability, Reliable, Training, Maintenance, Guarantee	[14], [11], [6], [9], [12]
System Use	Duration, Connectivity Time, Reporting Use, Transaction Time, Transaction Volume	[11], [6]
User Satisfaction	Information, System, Overall, ERP Project	[13], [11]
Net Benefit	Operational, Strategic, Organization, Reputation, Coordination	[16], [15], , [12]

Above each item survey use 5 point likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 strongly agree).

3.5 Data Analysis

The equation of structural model developed based on research model in Figure 1 are :

$$X_1Sys.U = \beta_{10} + \beta_{11}XInf.Q + \beta_{12}XSys.Q + \beta_{13}XSrv.Q + \varepsilon_1 \quad (1)$$

$$X_2Usr.S = \beta_{20} + \beta_{21}XInf.Q + \beta_{22}XSys.Q + \beta_{23}XSrv.Q + \beta_{24}XSys.U + \varepsilon_2 \quad (2)$$

$$YNet.B = \beta_{30} + \beta_{31}XInf.Q + \beta_{32}XSys.Q + \beta_{33}XSrv.Q + \beta_{34}XSys.U + \beta_{35}XUsr.S + \varepsilon_3 \quad (3)$$

Where Inf.Q denotes Information Quality, Sys.Q denotes System Quality, Srv.Q denotes Service Quality, Usr.S denotes User Satisfaction, Sys.U denotes System Use, Usr.S denotes User Satisfaction, Net.B denotes Net Benefit and ε denotes error factor

Based on first [1] equation model so there are three hypotheses that can be analysed based on each beta in this regression such as :

- H1 = The factor of information quality positively affects to the system use of system. H1 will be accepted if $\beta_{11} \neq 0$ and *p-value* < 0.05, otherwise if $\beta_{11} = 0$ and *p-value* > 0.05 so H1 will be rejected.
- H2 = The factor of system quality positively affects to the system use of system. H2 will be accepted if $\beta_{12} \neq 0$ and *p-value* < 0.05, otherwise if $\beta_{12} = 0$ and *p-value* > 0.05 so H2 will be rejected.
- H3 = The factor of service quality positively affects to the system use of system. H3 will be accepted if $\beta_{13} \neq 0$ and *p-value* < 0.05, otherwise if $\beta_{13} = 0$ and *p-value* > 0.05 so H3 will be rejected.

Based on second [2] equation model so there are four hypotheses that can be analysed based on each beta in this regression such as :

- H4 = The factor of information quality positively affects to user satisfaction. H4 will be accepted if $\beta_{21} \neq 0$ and *p-value* < 0.05, otherwise if $\beta_{21} = 0$ and *p-value* > 0.05 so H4 will be rejected.
- H5 = The factor of system quality positively affects to user satisfaction. H5 will be accepted if $\beta_{22} \neq 0$ and *p-value* < 0.05, otherwise if $\beta_{22} = 0$ and *p-value* > 0.05 so H5 will be rejected.
- H6 = The factor of service quality positively affects to user satisfaction. H6 will be accepted if $\beta_{23} \neq 0$ and *p-value* < 0.05, otherwise if $\beta_{23} = 0$ and *p-value* > 0.05 so H6 will be rejected.
- H10 = The factor of system use positively affects to user satisfaction. H10 will be accepted if $\beta_{24} \neq 0$ and *p-value* < 0.05, otherwise if $\beta_{24} = 0$ and *p-value* > 0.05 so H10 will be rejected.

Based on third [3] equation model so there are five hypotheses that can be analysed based on each beta in this regression such as :

- H7 = The factor of information quality positively affects to net benefit. H7 will be accepted if $\beta_{31} \neq 0$ and *p-value* < 0.05, otherwise if $\beta_{31} = 0$ and *p-value* > 0.05 so H7 will be rejected.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

- H8 = The factor of system quality positively affects to net benefit. H8 will be accepted if $\beta_{32} \neq 0$ and *p-value* < 0.05, otherwise if $\beta_{32} = 0$ and *p-value* > 0.05 so H8 will be rejected.
- H9 = The factor of service quality positively affects to net benefit. H9 will be accepted if $\beta_{33} \neq 0$ and *p-value* < 0.05, otherwise if $\beta_{33} = 0$ and *p-value* > 0.05 so H9 will be rejected.
- H11 = The factor of system use positively affects to net benefit. H11 will be accepted if $\beta_{34} \neq 0$ and *p-value* < 0.05, otherwise if $\beta_{34} = 0$ and *p-value* > 0.05 so H11 will be rejected.
- H12 = The factor of user satisfaction positively affects to net benefit. H12 will be accepted if $\beta_{35} \neq 0$ and *p-value* < 0.05, otherwise if $\beta_{35} = 0$ and *p-value* > 0.05 so H12 will be rejected.

The three models above will be analyzed based on SEM (Structural Equation Model) approach through SPSS SEM software using variance or PLS SEM (Partial Least Square - Structural Equation Model).

4.2 Measure of Validity and Reliability

Validity is an indication of instrument's ability to measure what it claims to and reliability is the repeatability and consistency of survey instrument. The result of validity test are presented bellow tables 2.

4. RESULT AND DISCUSSION

4.1 Respondent's Characteristics

The questionnaires distributed to all (PTMD employee who use ERP with bellow characteristics:

This paper have limitation with only 52.72% respond rate due to spreads of respondent location are located in several remote area with internet network limitation.

Table 2. PTMD'S Employee Descriptive Statistic

Characteristic	Frequency	Percentage
Department		
Finance	33	34%
Supply Chain	25	25%
Administration	10	10%
Others	29	31%
Job Position		
Manager	12	12%
Supervisor	36	37%
Staff	49	51%

The probability is 0.05 so if the p-value is les than 5% or 0.05 then we note that the indicator of variable in questionnaire is valid and vise versa.

Table 3. The Result of Validity Test

Variable	Sig. (2-tailed)/ P-value
Information Quality (Inf.Q)	0.000
System Quality (Sys.Q)	0.000
Service Quality (Srv.Q)	0.000
System Use (Sys.U)	0.000
User Satisfaction (Usr.S)	0.000
Net Benefit (Net.B)	0.000

The reliability test is evaluated using Cronbach's Alpha. A variable is considered reliable value if the result of reliability test is more than 0.700. As per bellow table 3 the reliability test and Cronbach's alpha value average is 0.800, it indicates high
reliability survey instrument where Cronbach's alpha scores higher than 0.700.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Table 4. The Reliability Test

Variable	N of Parameter Items	Cronbach's Alpha Score
Information Quality (Inf.Q)	6	0.876
System Quality (Sys.Q)	7	0.868
Service Quality (Srv.Q)	6	0.898
System Use (Sys.U)	4	0.823
User Satisfaction (Usr.S)	4	0.903
Net Benefit (Net.B)	5	0.892

4.3 Regression Analysis

The result of regression analysis relating among variable : information quality, system quality, service quality, System Use, user satisfaction and net benefit are shown in bellow regression statistics table and result regression analysis table. As per bellow table As per bellow table 4. Regression Statistics result show that *R Square* of first dependent variable - System Use (Sys.U) = 0.524 tells this model contain 52.40% of variance in the equation in the equation model where 47.60% of another variance are explained in outside of the equation model, second dependent variable - user satisfaction (Usr.S) = 0.705 tells this model contain 70,50% of variance in the equation model where 29,50% of another variance are explained in outside of the equation model, last third dependent variable – net benefit (Net.B) = 0.768 tells this model contain 76,80% of variance in the equation model where 23,20% of another variance are explained in outside of the equation model. These all *R Square* values can be counted as strong value.

Table 5. Regression Statistics

Regression Statistics	
R Square – Sys.U	0.524
R Square – Usr.S	0.705
R Square – Net.B	0.768

The Research model has twelve hypotheses. This model was tested as three models :

1) Information Quality, System Quality, and Service Quality as predictors of System Use
2) Information Quality, System Quality, and Service Quality and System Use as predictors of User Satisfaction
3) Information Quality, System Quality, and Service Quality, System Use and User Satisfaction as predictors of Net Benefit

Based on the regression test in the bellow table suggest that the three independent variables with the established regression models :

Sys.U = 0.868.Sys.Q
Usr.S = 0.949.Sys.Q
Net.B = 0.365.Inf.Q + 0.385Sys.U + 0.300Sys.S

Where Usr.S denotes User Satisfaction, Inf.Q denotes Information Quality, Sys.Q denotes System Quality, Srv.Q denotes Service Quality, Sys.U denotes System Use, Usr.S denotes User Satisfaction, Net.B denotes Net Benefit and ε denotes error factor. Above equation models are developed by statistics result table of SPSS Amos :

Table 6. The Result of Regression Analysis

	Coefficients	*P-value*
Inf.Q → Sys.U	0.146	0.593
Sys.Q → Sys.U	0.868.	0.001
Srv.Q → Sys.U	-0.085	0.447
Inf.Q → Usr.S	0.107	0.609

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Sys.Q → Usr.S	0.949	0.001
Srv.Q → Usr.S	0.036	0.675
SysU → Usr.S	-0.520	0.673
Inf.Q → Net.B	0.365	0.021
Sys.Q → Net.B	-0.286	0.196
Srv.Q → Net.B	0.113	0.071
SysU → Net.B	0.385	0.001
Usr.s → Net.B	0.300	0.017

The above equation model covers the test of the hypotheses H1, H2, H3, H4, H5, H6, H7, H8, H9, H10, H11 and H12. As above table show that *p-values* of the relationship between information quality and system use is 0.593 that is more than 0.05, *p-values* of the relationship between system quality and system use is 0.001 that is less than 0.05, *p-values* of the relationship between service quality and system use is 0.447 is above 0.05, *p-values* of the relationship between information quality and user satisfaction is 0.609 that is more than 0.05, *p- values* of the relationship between system quality and user satisfaction is 0,001 that is less than 0.05, *p- values* of the relationship between service quality and user satisfaction is 0,675 that is more than 0.05, *p- values* of the relationship between system use and user satisfaction is 0,673 that is more than 0.05, *p- values* of the relationship between information quality and net benefit is 0,021 that is less than 0.05, *p- values* of the relationship between system quality and net benefit is 0,196 that is more than 0.05, *p- values* of the relationship between service quality and net benefit is 0,071 that is more than 0.05, *p- values* of the relationship between system use and net benefit is 0,001 that is less than 0.05, *p- values* of the relationship between user satisfaction and net benefit is 0,017 that is less than 0.05

Based on this result, lead us the following conclusions that H2, H5, H7, H11 and H12 are accepted but H1, H3, H4, H6, H8, H9 and H10 are rejected based on above the result of regression analysis.

The above analysis also leads us to the following result explanation :

- H1 : Factor of information quality affects positively to the system use but it is not significant influence so this hypotheses is rejected
- H2 : Factor of system quality affects positively to the system use and it is significant influence so this hypotheses is accepted
- H3 : Factor of service quality affects negatively to the system use and it is not significant influence so this hypotheses is rejected
- H4 : Factor of information quality affects positively to the user satisfaction but it is not significant influence so this hypotheses is rejected
- H5 : Factor of system quality affects positively to the user satisfaction and it is significant influence so this hypotheses is accepted
- H6 : Factor of service quality affects positively to the user satisfaction but it is not significant influence so this hypotheses is rejected
- H7 : Factor of information quality affects positively to net benefit and it is significant influence so this hypotheses is accepted
- H8 : Factor of system quality affects negatively to the net benefit but it is not significant influence so this hypotheses is rejected
- H9 : Factor of service quality affects positively to the net benefit but it is not significant influence so this hypotheses is rejected
- H10 : Factor of system use affects negatively to the user satisfaction and it is not significant influence so this hypotheses is rejected
- H11 : Factor of system use affects positively to net benefit and it is significant influence so this hypotheses is accepted
- H12 : Factor of user satisfaction affects positively to net benefit and it is significant influence so this hypotheses is accepted.

All the hypothesized relations were positively significant except the relation between information quality and System Use, service quality and System Use, information quality and user satisfaction, service quality and user satisfaction, system quality and net benefit, service quality and net benefit and also relation between System Use and user satisfaction.

5. CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Different with previous research that this case study research aim to evaluate enterprise resource planning (ERP) implementation based on factors :

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

information quality, system quality, service quality, System User and user satisfaction.

According to [9], [10], [11] and that Net Benefit is influenced by System Use and The User Satisfaction, then the User Satisfaction and System Use are influenced by The quality of Information, System Quality and Service Quality, the Net Benefit can be influenced by The Quality of Information, System Quality and Service Quality based on [12]. Meanwhile, the Net Benefit in this research model influenced by The Quality of Information, System Use and User Satisfaction. Different with previous research that based on in this research model we add relationship between Non Intermediary Variable / Independent Variables (Information Quality, System Quality and Service Quality) to Net Benefit (Dependent Variable), besides that we also add Intermediary Variable Relationship (System Use and User Satisfaction) between Net Benefit.

The main objective of the research is to investigate the factors of that influence net benefit, so based on regression result of this research and based on research objective achievement that we have already identify and evaluate factors with have bellow several factors with significant effect on benefit of ERP implementation so we can provide the several recommendation based on the result of this research with the conclusion are :

1) The System Use factor in Investment Holding Enterprises Group (PTMD) is positively influenced only by system quality (System Quality), therefore only this independent variable gives strong influence to the system usage factor, meanwhile the information quality and the service quality does not affect the System Use factor.
2) User Satisfaction factor in Investment Holding Business Group (PTMD) is positively influenced only by system quality thus only this independent variable gives strong influence to the user satisfaction factor meanwhile information quality, service quality and System Use does not affect the user satisfaction factor
3) Net Benefit Factor in Investment Holding Enterprises (PTMD) is positively influenced significantly by information quality, System Use and user satisfaction where the System Use factor has the most influence significant to net benefits compared to the information quality and user satisfaction factor.
4) Service quality dimension is the only variable that do not contribute significantly to System Use, user satisfaction and net benefit.
5) Evaluation of ERP implementation in Investment Holding Enterprises (PTMD) is measured by Likert scale indicator (scale 1 = strongly disagree, 2 = disagree, 3 = quite agree, 4 = agree and 5 = strongly agree) with the average result reach 3,84 (enough agree) so it can be concluded that ERP implementation in Investment Holding Enterprises (PTMD) is quite successful with highest mean value is information quality (3.94) while lowest mean is quality service (3.40). The other variables such as system quality with a score of 3.83, the use of the system with a score of 3.87 and user satisfaction with a score of 3.75. In relation to all independent variables are still below score 4 then the dimensions of information quality, system quality, service quality, system usage and user satisfaction shall be improved in the future.

5.2 Recommendation.

Based on the conclusion explained above, the recommendation for next research are :

1) Increase system use (ERP) especially for reports which generated by the ERP system and improve the level of user satisfaction by improve the information quality which generated in the system and improve the support services to the ERP system.
2) To optimize the net benefit role of ERP applications by improve the information quality which generated in the system and upgrade support services to ERP the system.
3) Improve service quality for ERP system by optimize the service desk or helpdesk resources as first layer support of ERP application, improve service quality based on service level agreement, monitor ERP support ticket by analyze and anticipate the problem for decrease similar problem in the future.
4) Suggest to implement quality standards of application support services based on information technology frameworks such as COBIT (Control Objective for Information and Related Technologies), ITIL (Information Technology Infrastructure Library) or other information technology framework as a reference for information technology support services management.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

5) Based on the R-Square results of the three model equations in *Table 4. Regression Statistics*, so further research is needed to identify other variables (47.60%) that affect System Use variables, identify other variable (29.50%) that affect user satisfaction variable and identify other variables (23.20%) that affect the net benefit variable.
6) Similar research is further recommended to extend similar research objects to applications other than Enterprise Resource Planning such as satellite applications with example : Human Capital System, POS (Point of Sales) front end applications, Purchase Requisition Online and other satellite application applications and etc.

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