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Implementation of Enterprise Resource Planning (ERP) in Indonesia to Increase the Significant Impact of Management Control Systems

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ABSTRACT

To improve the Management Control Systems, an accidental sampling (non-probability sampling) method is used to apply Enterprise Resource Planning (ERP). Export and import service companies in the Jakarta Capital City area became the population in this study, with the total sample used is 100 respondents. 3 (three) variables that are the primary key of this research are Management Control System (X1) is an independent variable, and ERP implementation (Y) is classified as a related variable. The results obtained after this study's test indicate that ERP implementation (Y) is significantly influenced by the Management Control System (X1). There are several compromises in implementing an ERP (Enterprise Resource Planning) system in Indonesia. These factors exist in both the manufacturing and service industries. These have been identified as staffing issues where users do not understand how to use the ERP system. This lack of understanding leads to the implementation of non-optimized ERP due to the lack of education and learning about system usage and operational know-how. ERP is an evolution of Enterprise Resource Planning II (MRP II), a further development of Material Requirements Planning (MRP). ERP includes a warehouse management package as a first step, which is the supply control used in manufacturing or servicing products. The second phase of material requirements planning is the ERP route. In addition, the third phase of MRPII was the development of closed-loop MRP. ERP will emerge as Phase 4, an extension of MRP II and business processes. Extended ERP is the fifth phase of ERP, was introduced in 2000 and is much more complex than previous ERP.

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1. INTRODUCTION

Several jeopardizing factors exist for implementing Enterprise Resource Planning (ERP) systems in Indonesia [1]. These factors exist in both the manufacturing and the service industries. They have been recognized as Human Resource problems where the applicators do not comprehend the use of ERP systems. This lack of comprehension results in unoptimized ERP implementation and is caused by a lack of education and learning of the use and operational know-how of the system[2]. ERP develops from Manufacturing Resource Planning II (MRP II), which is an evolution of Material Requirement Planning (MRP). ERP includes but is not limited to Inventory Control Packages as its first step, which is the control of supply used in

production or service products. The second phase of Material Requirement Planning is the root of ERP. Moreover, the third phase of MRP-II was the development of closed-loop MRP[3]. ERP emerges as the fourth phase, an extension of MRP II, which is the extension of business processes. The fifth phase of ERP, extended ERP, was launched in 2000 and is much more complex than thepreceding ERP[4].

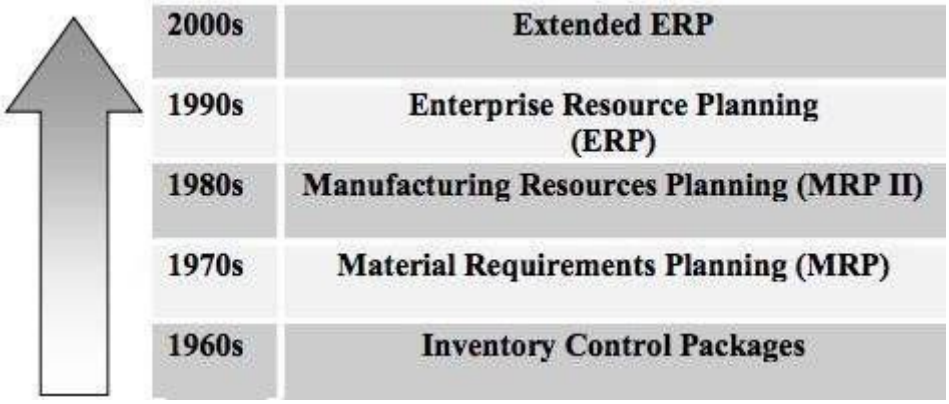

Figure 1. ERP develops

The main reason companies begin implementing ERP is because previously, transactions had to be processed manually[5]. This results in an extended period of report processing. With ERP, the company can coordinate its corporate business more comprehensively. ERP is software within the company to generate real-time information that makes integration of transaction and planning processes possible[6].

Enterprise Resource Planning (ERP) is a set of programs integrated into core organizational activities such as manufacturing and logistics, finance and accounting, sales and marketing, and human resources[7]. ERP can be used to share data and knowledge, reduce costs, and increase business process management[8]. ERP implementation is expected to fully integrate online data inside the company, as well as standardize and increase the accuracy of data, ease out management duties, and in the end, improve efficiency and effectiveness of the organization through optimal company resource allocation[9]. The increasing quality of the information in accounting will result in better decision-making and analysis and long-term reporting. In this study, we could show that managers are the most critical individuals in the success and failure of ERP implementation[10]. Management Control System (MCS) is the process where managers are responsible for resource attainment and allocation to be done effectively and efficiently to attain organizational goals. In this study, it can be stated that there is a correlation between the success of ERP implementation and MCS[11]. This correlation can be illustrated clearly in figure 2 as was published by.

This research asked several questions. Firstly, how do MCS affect ERP? Secondly, how the Interactive control system interacts with ERP. Moreover, lastly how diagnostic control interacts with ERP implementation[12].

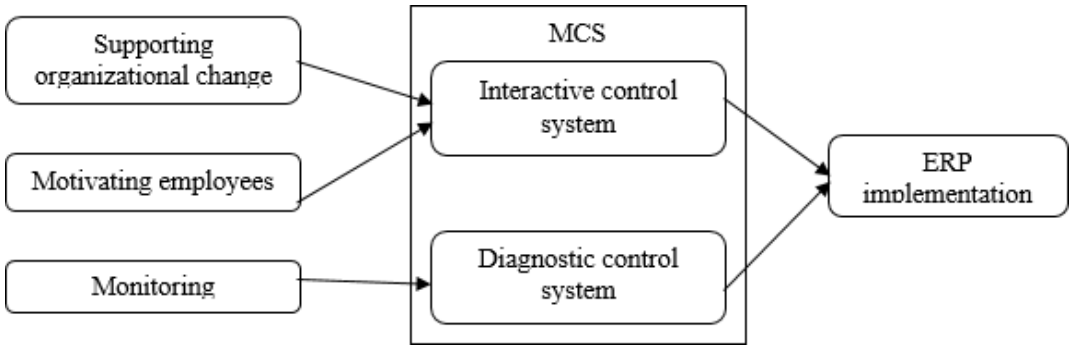

Figure 2. ERP Project Implementation

2. LITERATURE REVIEW AND HYPOTHESIS

Signal Theory by Companies send signals using acts and communications. These companies will adopt signals to communicate hidden meanings to policy makers[13]. This literature review has identified several positive and negative arguments about the nature of the correlation between MCS and ERP implementation. The purpose of the diagnostic use of MCS is for it to be a traditional feedback system to monitor results and goal achievement[14]. At the same time, the interactive use of MCS is to widen the opportunity to search and apply changes and broad organizational learning[15]. Control systems give motivations and directions to achieve the purpose and work concurrently for different purposes. ERP implementation results in such a change that must be carefully managed to achieve the benefits of the ERP solution. MCRS manages the organization, changes strategy, as well as fosters flexibility[16]. So in an organization within the phase of implementation of ERP using interactive control, ERP can achieve success. This Interactive Control System is a formal system used by top management regularly and personally, which results in their involvement in the bottom-line decision-making[17]. Anthony (1965) has defined Management Control System (MCS) as a process where a manager guarantees that resources are attained and utilized effectively and efficiently to achieve organizational goals. Aside from that, Simons (1995)[18]. defined MCS as a formal routine according to information and procedures the manager used to keep and modify the pattern of organizational activities. According to Merchant and Otley (2007), "Management control system is designed to assist organizations in adapting to a controlled environment and achieve key results desired by stakeholders, most commonly shareholders of a commercial company"[19]. Otley opined that MCS has to monitor and support its employees to achieve the company's goal. According to Anthony, Robert, and Govindarajan (2008). MCS was defined as a series of activities to ensure compliance with management planning[20].

According to Sudhaman, ERP is a series of integrated programs for organizational core activities such as manufacturing and logistic, finance and accounting, sales and marketing, and human resources[21]. ERP system is a set of software widely integrated into the business process, such as manufacturing, supply chain, sales, finances, human resources, budgeting, and customer services. The benefit of an ERP system is the complete integration of all business processes, lessening the load of data entry volume, increased adaptability, and implementation of current best practices[22].

Several ERP implementation studies have been done, especially in advanced countries, and very little has been done in developing nations such as India[23]. Even though the previous studies have been regarded as external variables in this study, there was no clear pattern regarding the choice of external variables. According to this study, the model of research can be used to study the effects of individual, organizational, as well as technological factors that influence ERP implementation as well as its consequences on the attitude and action of employees, as illustrated in image three from Rajan et al.'s study in 2015[24].

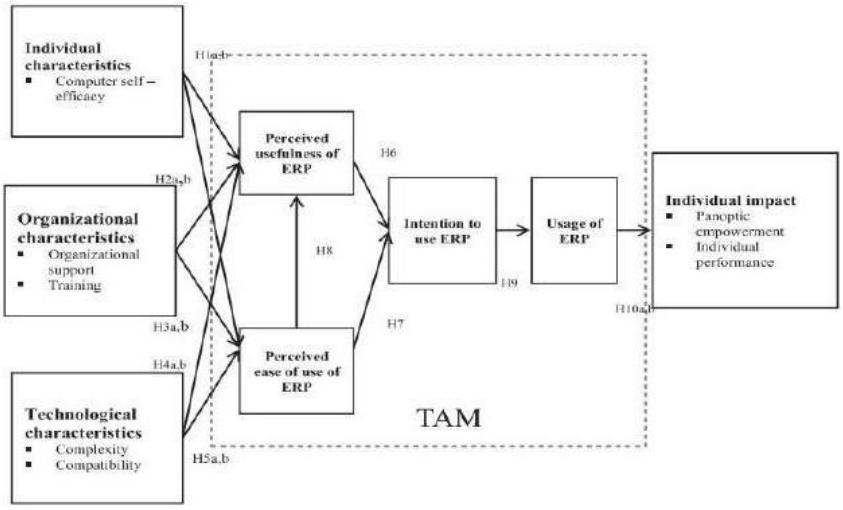

Figure 3. Effect model from individual factor, organization, and technology to the utilization of ERP impacted to behavior and attitude of employees.

The application of ERP in this research is affected by various external variables that can be categorized as individual characteristics, organizations, and technology, with the hypothesis as follows:
H1 a : The effectiveness of computers is going to have a positive effect on the benefits impacted by the ERP system.
H1 b : The effectiveness of computers is going to have a positive effect on the perception of ease of use of the ERP system.
H2 a : Organization support will have a positive effect on the benefits impacted by the ERP system.
H2 b : Organization support is going to have a positive effect on the perception of ease of use of the ERP system.
H3 a : Training is going to have a positive effect on the benefits impacted by the ERP system. H3 b : Training is going to have a positive effect on the perception of ease of use of the ERP system.
H4 a : Complexity is going to hurt the benefits impacted by the ERP system. H4 b : Complexity will hurt the perception of ease of use of the ERP system.
H5 a : Compatibility is going to have a positive effect on the benefits impacted by the ERP system.
H5 b : Compatibility is going to have a positive effect on the perception of ease of use of the ERP system.
On the other hand, the hypothetical relationship between TAM variable will be replicated in the ERP system context as follow.
H6: There is a positive relationship between the benefit impacted by the ERP system and the motivation to use the ERP system.
H7: There is a positive relationship between the perception of ease to use of the ERP system and the motivation to use the ERP system.
H8: There is a positive relationship between the perception of ease to use of the ERP system and the benefit impacted by the function of the ERP system.
H9: There is a positive relationship between motivation to use the ERP system and the benefit of the ERP system.
Consistently, panoptic utilization and individual performance are already considered measured variables on an individual level. The hypothesis is as follows:
H10 a: There is a positive relationship between ERP and panoptic utilization. H10 b: There is a positive relationship between ERP and individual performance.

3. RESEARCH METHOD

The data collection method is done through research questionnaires. In the process of data collection and other information needed for the basis of research writing, the writers have created a list of questions related to each variable. The explanation of the definitions and variable measurement indicators that are researched in this paper are as follows:

A. Management Control System Variable is the tool that is used by organizational management to reach organizational goals. This is also backed up by Widener and Selto. that Management Control System variable is designed to assist management in planning and controlling organization activities. Management Control System in each organization is contingent on internal and external factor.
B. Enterprise Resource Planning Variable is the integrated information system, which can also be called a software package. with a primary function to integrate all core functions in a company, regardless of the field of the industry.

This paper uses primary data gathered from research questionnaires that the pre-determined respondent filled. The methodologies used are primary data, and data analysis used in this paper uses Statistical Package for the Social Sciences (SPSS) with calculation process assisted within the application of SPSS[25].

4. RESEARCH FINDINGS

The questionnaires prepared were 100 packs. These questionnaires are distributed to a service company that is using ERP. Respondents were PT. Raisya Transportindo (50 questionnaires), and PT. Gemilang Bingang Lestari (50 questionnaires). The reliability of the data is already tested with a validity and reliability test.

The reliability test done in the research resulted in Cronbach's Alpha 0,814 because alpha > 0,60. Therefore according to reliability data statistics, data results are reliable, believable, dependable, consistent, and stable.

Table 1. Reliability Statistics

Cronbach's Alpha	N of Items
814	30

Table 2. Item Total Statistics

	N	%
Cases Valid	100	100.0
Excluded	0	.0
Total	100	100.0

Table 3. Partial Testing (T test)

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if ItemDeleted
P1	115.4400	78.027	.260	.811
P2	115.5900	77.052	.259	.812
P3	115.5800	77.963	.216	.813
P4	115.7300	76.522	.324	.809
P5	115.4800	73.383	.507	.801
P6	115.7100	74.127	.518	.801
P7	115.5600	77.522	.305	.810
P8	115.2900	75.420	.448	.804
P9	115.3100	75.489	.414	.805
P10	115.3600	74.536	.480	.803
P11	115.2300	76.987	.313	.809
P12	115.4900	76.495	.338	.808
P13	115.2800	75.678	.389	.806
P14	115.1600	75.530	.386	.806
P15	115.3000	76.576	.386	.807
P16	115.1200	77.541	.275	.811
P17	115.3000	76.394	.334	.809
P18	115.3900	77.372	.310	.809
P19	115.5800	77.559	.226	.813
P20	115.6100	77.957	.232	.812
P21	115.4700	78.777	.158	.816
P22	115.4400	78.047	.245	.812
P23	115.4600	78.231	.213	.813
P24	115.5500	78.169	.221	.813
P25	115.4400	78.815	.178	.814
P26	115.4300	78.510	.244	.812
P27	115.2100	75.764	.431	.805
P28	115.1800	74.998	.475	.803
P29	115.3200	76.341	.359	.808
P30	115.3000	77.929	.221	.813

Table 4. Simultaneous Test (F test)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Standardized Coefficients
	B	Std. Error	Beta			
1	(Constant)	44.459	4.804		9.254	.000
	X1 = System Control Management	.263	.081	313	3.262	.002

Table 5. Determination Coefficient

ANOVA b

Model	Sum of Squares	df	Mean Square	F	Sig
1	Regression	250.211	1	250.211	10.640
	Residual	2304.539	98	23.516	
	Total	2554.750	99		

Table 6. Model Summary

Model Summary b

Mode	R	R Square	Adjusted R Square	Std. Error of The Estimate
1	.313a	.098	.089	4.84930

a. Predictors: (Constant), X1 = Management Control System

b. Dependent Variable: Y =Implementasi ERP

From the model summary above, Adjusted R Square is valued at 0,089 / about 8.9%, which shows that the ability of the Management Control System variable (X1) to explain the ERP implementation variable (Y) is 8.9%, other factors 91,1% is explained by other variables outside this paper. R = 0,313 means that double correlations are weak. The error level from this regression equation from this research paper is 91,1%. This research result is supported by previous research from Rajan and Baral. Yulizar (2016), and Verma & Kumar that states that Management Control System is positively and significantly correlated to ERP implementation

REFERENCES

[1] M. Afif, T. Mariyanti, N. Septiani, and E. Dolan, "Factor Affecting Employee Motivation to Increase Performance of Sharia Bank in Indonesia on Islamic Perspective," APTISI Trans. Manag., vol. 7, no. 2, pp. 131–142, 2023.

[2] I. Hidayat and F. O. S. Dewi, "The Effect of Liquidity, Leverage, and Working Capital Turn on Profitability," APTISI Trans. Manag., vol. 7, no. 1, pp. 60–68, 2023.

[3] Y. Z. Basri and W. Arafah, "Determinant of Interest in Paying Zakat with Age as a Moderating Variable (Study on Minang Society)," APTISI Trans. Manag., vol. 7, no. 2, pp. 92–104, 2023.

[4] Y. R. C. Pujiharto, T. Mariyanti, A. R. Jayaprawira, and Y. A. Terah, "Financial Management of Indonesian Hajj Against the Yield by Using a Dynamics System Model," APTISI Trans. Manag., vol. 7, no. 1, pp. 69–78, 2023.

[5] Y. Z. Basri and W. Arafah, "Muslim Consumers' Preferences on Interest in Buying Halal Food and Beverage Products with moderating variables of gender and education in DKI Jakarta," APTISI Trans.

Manag., vol. 7, no. 2, pp. 113–124, 2023.

[6] Z. Fauziah, H. Latifah, U. Rahardja, N. Lutfiani, and A. Mardiansyah, "Designing Student Attendance Information Systems Web-Based," Aptisi Trans. Technopreneursh., vol. 3, no. 1, pp. 23–31, 2021.

[7] T. Ayuninggati, N. Lutfiani, and S. Millah, "CRM-Based E-Business Design (Customer Relationship Management) Case Study: Shoe Washing Service Company S-Neat-Kers," Int. J. Cyber IT Serv. Manag., vol. 1, no. 2, pp. 216–225, 2021.

[8] U. Rahardja, N. Lutfiani, and H. L. Juniar, "Scientific Publication Management Transformation In Disruption Era," Aptisi Trans. Manag., vol. 3, no. 2, pp. 109–118, 2019.

[9] Q. Aini, N. Lutfiani, N. P. L. Santoso, S. Sulistiawati, and E. Astriyani, "Blockchain For Education Purpose: Essential Topology," Aptisi Trans. Manag., vol. 5, no. 2, pp. 112–120, 2021.

[10] I. Amsyar, E. Cristhopher, U. Rahardja, N. Lutfiani, and A. Rizky, "Application of Building Workers Services in Facing Industrial Revolution 4.0," Aptisi Trans. Technopreneursh., vol. 3, no. 1, pp. 32–41, 2021.

[11] U. Rahardja, Q. Aini, Y. I. Graha, and M. R. Tangkaw, "Gamification framework design of management education and development in industrial revolution 4.0," in Journal of Physics: Conference Series, 2019, vol. 1364, no. 1, p. 12035.

[12] U. Rahardja, E. P. Harahap, and S. R. Dewi, "The strategy of enhancing article citation and H-index on SINTA to improve tertiary reputation," TELKOMNIKA, vol. 17, no. 2, pp. 683–692, 2019.

[13] U. Rahardja, A. N. Hidayanto, T. Hariguna, and Q. Aini, "Design framework on tertiary education system in Indonesia using blockchain technology," in 2019 7th International Conference on Cyber and IT Service Management (CITSM), 2019, vol. 7, pp. 1–4.

[14] D. Apriani, A. Williams, U. Rahardja, A. Khoirunisa, and S. Avionita, "The Use of Science Technology In Islamic Practices and Rules In The Past Now and The Future," Int. J. Cyber IT Serv. Manag., vol. 1, no. 1, pp. 48–64, 2021.

[15] E. Guustaaf, U. Rahardja, Q. Aini, H. W. Maharani, and N. A. Santoso, "Blockchain-based Education Project," Aptisi Trans. Manag., vol. 5, no. 1, pp. 46–61, 2021.

[16] Q. Aini, A. Badrianto, F. Budiarty, A. Khoirunisa, and U. Rahardja, "Alleviate fake diploma problem in education using block chain technology," J. Adv. Res. Dyn. Control Syst, vol. 12, no. 2, pp. 1821–1826, 2020.

[17] Q. Aini, U. Rahardja, and A. Khoirunisa, "Blockchain Technology into Gamification on Education," IJCCS (Indonesian J. Comput. Cybern. Syst., vol. 14, no. 2, pp. 147–158, 2020.

[18] Q. Aini, S. R. Bob, N. P. L. Santoso, A. Faturahman, and U. Rahardja, "Digitalization of Smart Student Assessment Quality in Era 4.0," Int. J. Adv. Trends Comput. Sci. Eng, vol. 9, no. 1.2, pp. 257–265, 2020.

[19] U. Rahardja, T. Hariguna, and Q. Aini, "Understanding the impact of determinants in game learning acceptance: An empirical study," Int. J. Educ. Pract., vol. 7, no. 3, pp. 136–145, 2019.

[20] Q. Aini, I. Dhaniarti, and A. Khoirunisa, "Effects of ilearning media on student learning motivation," Aptisi Trans. Manag., vol. 3, no. 1, pp. 1–12, 2019.

[21] V. Agarwal, M. C. Lohani, A. S. Bist, E. P. Harahap, and A. Khoirunisa, "Analysis Of Deep Learning

Techniques For Chest X-Ray Classification In Context Of Covid-19," ADI J. Recent Innov., vol. 3, no. 2, pp. 208–216, 2022.

[22] R. E. Santoso, F. P. Oganda, E. P. Harahap, and N. I. Permadi, "Pemanfaatan Penggunaan Hyperlocal Marketing bagi Startup Bidang Kuliner di Tangerang," ADI Bisnis Digit. Interdisiplin J., vol. 2, no. 2, pp. 60–65, 2021.

[23] T. Ayuninggati, E. P. Harahap, D. Immaniar, and S. Amelia, "Peranan Tantangan Dakwah Pendidikan Agama Islam Dalam Media Komunikasi Era Globalisasi," Alph. J. Wawasan Agama Risal. Islam. Teknol. dan Sos., vol. 1, no. 1, pp. 85–95, 2021.

[24] S. Santoso, E. P. Harahap, A. Khoirunisa, and K. Zelina, "A Systematic Review Through Intellectual Based Blockchain-Intermediary," in 2021 9th International Conference on Cyber and IT Service Management (CITSM), 2021, pp. 1–7.

[25] U. Rahardja, Q. Aini, E. P. Harahap, and R. Raihan, "GOOD, BAD AND DARK BITCOIN: A Systematic Literature Review," Aptisi Trans. Technopreneursh., vol. 3, no. 2, pp. 1–5, 2021.