Impact of Enterprise Resource Planning (ERP) On Employee Performance

Eko Budi Setiawan
Universitas Komputer Indonesia
email: mail@ekobudisetiawan.com

Abstract

Enterprise Resource Planning (ERP) is an integrated software for your business or organization that has an important role in increasing the efficiency and effectiveness of the company. ERP can integrate most of the processes that exist in the company so as to provide the necessary information for the company's operations in realtime. Integration of the results of the implementation of ERP can assist employees in terms of dependency and coordination with other employees. This research studied the effect of ERP on addiction, coordination and work performance of the employees. The method used in this study is a quantitative method of Structural Equation Modeling (SEM). Respondents study were 204 employees of PT. PLN (Persero) using SAP ERP on the job. ERP results showed that positive and significant to dependency and employee performance PT. PLN (Persero), but no effect on the coordination among employees. Then, the dependence among employees can have a positive and significant impact on the coordination that exists, but interdependence has a negative influence on the performance of the employee. Also note that the coordination among the employees a significant effect on the work performance of the employee.

Keywords: ERP, interdependence, coordination, work performance, s*tructural equation modeling*.

I Introduction

A. Background Research

The company's performance can be an accumulation of the performance of all the resources therein. The existence of human resources for the company or the employee is important because the performance of employees in general may affect the company's business development [1]. ERP is an endorsement of the company in the form of technology that plays an important employee performance improvement [1]. By using ERP, processes and information that exist in an enterprise can be integrated with each other so that the company's operations can be executed in real-time [6]. This is in accordance with the value of information technology (IT value) for a company in which the use of IT to improve effectiveness and efficiency of processes or activities in an enterprise.

Employee's performance can be affected by technology, the dependence with other employees, as well as coordination among employees. To measure the value of information technology that has been invested by the company in the form of ERP technology, it can be seen from the influences that have implemented ERP towards interdependence, coordination and performance of company employees. This requires a study to analyze the effect of the interdependence between ERP, coordination and performance of the employees.

B. Problem Formulation

From the description of the background of the above issues, the formulation of the problem to be studied in this research are:

1. How ERP effect on interdependence among employees?
2. How ERP effects on coordination among employees?
3. How ERP effect on employee performance?
4. How does the influence of interdependence on coordination among employees?
5. How interdependence influence on employee performance?
6. How is the influence of coordination on the performance of an employee?

C. Limitation

The extent of the problem that exists in this study are as follows:

1. The study was conducted based on the results of the implementation of SAP ERP with modules of human resources (human resource management), finance (financial management) and warehousing (materials management) at PT. PLN (Persero).
2. Analyzing the effect of ERP on performance of employees of PT. PLN (Persero).
3. Analyzing the effect of ERP on interdependence and coordination among employees of PT. PLN (Persero).
4. Analyze the influence of interdependence and coordination on the performance of employees of PT. PLN (Persero).

D. Purpose Research

Goals to be achieved from this research was to determine the effect of the interdependence of ERP implementation, coordination and performance of employees of PT. PLN (Persero) using SAP ERP. The benefits of this research for a company that can be used as an assessment of the extent to which material ERP implementation that has been applied by PT. PLN (Persero) plays a role in addiction, coordination and performance of the employees.

E. Research Methods

The method used in this study to determine the effect of ERP on employee performance is the method of quantitative research tools structural equation modeling (SEM).

II Literature Review

A. Organization Information Processing Theory

Processing of information in an organization can be defined as the process of gathering data, transforming data into information, and then the process of communication and storage of information in an organization. Information processing can also be seen in an organization as an open system and must have a good response to the environment in which they operate and manage the uncertainty of information as the primary task of the organization. Uncertainty can be interpreted as a lack of information on the status of employment, the environment and others [2]. The amount and type of information uncertainty will vary across the organization and the individual business units within the organization.

Dependency information will result in an increase of coordination that exists among employees to process information [4]. If no coordination or communication between departments, it will lead to "information uncertainty" among different business units [18]. To cope with the uncertainty of information, then a company or organization can use an integrated information system among different business units in which one of them is using Enterprise Resource Planning (ERP) [4] [5].

B. Enterprise Resource Planning

Enterprise Resource Planning (ERP) can be defined as a concept that can manage and plan the resources owned by a company in order to achieve the goal. ERP is an industry term for a package of business software that enables companies to automate and integrate the majority of its business processes, standardize business processes across business units [19] as well as the organization of an integrated transaction processing in real-time [6].

ERP is currently often used to integrate information from finance and accounting, human resources, operations, supply chains and customers [7] [11]. Integration is a process to combine a variety of needs into a single logical database. Thus, most of the business units that have to be integrated easily to share information.

Characteristics possessed by the ERP according to O'Leary [6] of which is able to integrate most of the company's business processes, to provide access to information in real time, as well as process the majority of the company's activities thus allowing fusion processes between business units.

Various business units integrated with each other using ERP, have standardized processes and different information. It requires the use of ERP has a good quality of information so as to minimize the ambiguity of the meaning of information for employees of different business units. The difference in the standard of each business unit to make ERP implementation should also be customized according to user needs. Quality of information and customization to suit the needs and business processes is one of the factors influence the success of an ERP implementation [17][20][21][22].

C. Information

Information by Turban et al [23] is the data that has been organized so as to give meaning and value to the recipient. Information by Jogiyanto [24], is the data that is processed into a form that is more useful and more meaningful for those who receive and need. Thus, it can be concluded that the information is the result of data processing that gives meaning or significance that can benefit the use.

To provide benefits, the information must have the quality. Quality is everything to meet the desires and needs of the user. Quality information can have an impact on individuals [25] which include the performance of the employee. Without good quality information, the company will be very limited in the coordination between business units. ERP can provide ease of access to operational data into the company, but if the information is not accurate and is not relevant to the business processes involved, the ERP only provide little benefit to the user [4].

The concept of the impact of the quality of information on individuals proposed by DeLone and McLean [25] is also supported by the results of research conducted by Etezadi-Amoli and Farhoomand [26], Teo and Wong [27] and Wixon and Watson [28]. Indicators that can be used to measure the quality of information is relevance [29], accurate [29][30], completeness [29][30], timeliness [29], and understandability [25][31] of the information produced.

D. Customization

Customization is one of the critical success factors that can affect the success of the ERP implementation

so as to provide benefits in accordance with the purpose of implementation [17]. Customization is the customization of the system used for the company's business processes. According to Gattiker [4] is a change in the ERP customization to meet the individual needs of users.

The company has a variety of options when ERP is used not in accordance with its business processes. Customization is a technique to respond to the lack of fit between business processes that are running the ERP is used. Thus, after the company selected ERP vendor, then the next thing to do is to configure ERP taking into account the needs of the company as a whole so that it can be used as needed.

Customization of ERP ERP will result in the correspondence between the needs of users so that the indicators can be used to measure the level of customization of ERP is the fit between the needs of users with the use of ERP. ERP customization according to user requirements can impact the efficiency of the user in completing the work [12].

E. Integration

The concept of integration in ERP can be viewed from two perspectives, namely in terms of technical and organizational. In technical terms, integration is used to describe the relationship between the organization's technology companies by looking at the data element level share [32]. Based on the views from the technical point of view, the integration can be presented for a range of different systems can be connected to each other by exploiting the use of information. Further perspective apart from a technical point of integration is seen as a range of various business processes or a stand-alone organization and standardized inter-connected through technology [33].

Barki & Pinsonneault [16] explains more about the concept of integration by looking at the difference of the two characteristics of the systems used and the ability to respond to the system with each other. In ERP, the difference modules used in a variety of business units should have the ability to respond from one module to another. ERP integration efficiency can be seen from how each system user can receive and interpret information sent by other users of the business units of the same or different, and can respond correctly to the information generated by ERP [16].

Integration across multiple business units using ERP can also provide clarity of responsibility (responsibility) in accordance with the scope of the work [34]. Based on the concept and development of the theory of pre-existing studies, to measure the integration of ERP can be seen from the assessment of the level of connectedness of employees in the various business units within the ERP and the responsibility of each business unit.

F. Interdependence

Task interdependence is the extent to which work activities of an employee depends on the employee another [10]. ERP can be influential in terms of task interdependence among employees due to the integration of business units to facilitate the employees to exchange information with other employees quickly. Dependence work can make employees coordinate with other employees from different business units to exchange information.

The greater the interdependence of information sharing among employees in different business units, the greater the level also needs to share the information so that they can have a negative impact for employees to complete the work because the work output produced is dependent and influenced by other employees [11]. Dependence can be caused by changes that occur in the information business units may require some adjustment of other business units [12].

G. Coordination

Coordination by GR Terry in Hasibuan [35] is a synchronous and regular effort to provide the exact amount and timing, and direct the execution to produce a uniform and harmonious action on the specified target. Meanwhile, according to Handoko [36] coordination is the process of integrating the goals and activities of the unit or a separate business unit in an organization to achieve its goals effectively and efficiently. Coordination among employees can affect the performance of the employee's own [4] [5] [13][14][15].

ERP can provide an integrated information between business units within a company so that the concept of integration between business units using ERP, will affect the dependency between the business units and the effect on improving coordination among employees in resolving uncertainty information. Indicators to determine the level of coordination adopted from the study of Ryan D, Dickover [12] and Gattiker [5] is to notice any improvement coordination, changing condition, awareness information, and synchronize information.

H. Work Performance

Performance is the level of achievement of the results of work a person or group within an organization to a particular activity. These activities may include tasks in accordance with the responsibilities that have been given. Achievement levels can be caused by the ability of an employee who is in on the job. So that the performance can also be interpreted as an implementation of the work, performance, achievements or results of the work performed.

Here is a definition of performance:

1. Faustino Cardoso Gomez [37] suggested the definition of a record performance outcomes

resulting from a particular job or activity over a period of time.

2. Anwar Prabumangkunegara [38] explained that the performance is the result of the quality and quantity of work accomplished by an employee in carrying out their duties in accordance with the responsibilities assigned to him.
3. Veitzhal Rivai [39] suggests that the performance of a real behavior shown everyone as job performance generated by the employees in accordance with their role in the company.

The performance of employees can affect the development of the business of an enterprise. Mathis and Jackson [1] suggests that the performance of the company depends on the performance of its employees. The better performance of the employees it will have an impact on the business development of the company's good.

Research on the effect of ERP on the performance of employees is based on the theory that an organization's information processing employee performance measurement in this study is more focused on the results of the work that has been done both in terms of quantity (quantity of work), quality (quality of work), and the time of completion of the work (timeliness of work).

I. Hyphothesis

The model that describes the relationship between the study variables to determine the effect of ERP on employee performance using the result of merging the two concepts, namely theory of organizational information processing theory and human resource theory. Picture research model used can be seen in **Figure 1**below:

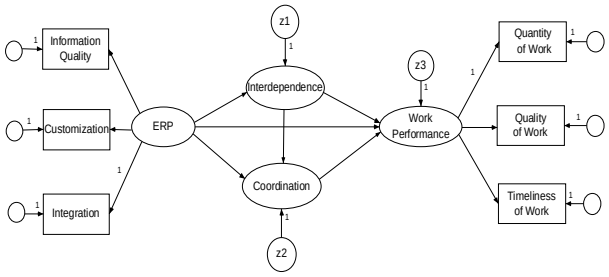

Figure 1. Concept of Model Research

The use of ERP in the works will affect the performance of the employee [8][9]. While interdependence in work can also affect the coordination between employees [4] so that it will have an impact on the performance of the employees of the company [4] [12].

The hypothesis of this research is based on theoretical concepts used are:

H1 : ERP positive effect on interdependence among employees.

H2 : ERP positive effect on coordination among employees.

H3 : ERP positive influence on workemployee performance.

H4 : Interdependence positive terhdapcoordination among employees.

H5 : Interdependence negatively affectemployee work performance.

H6 : Coordination negatively affectemployee work performance.

III Research Methodology

The research methodology is a technique to search for or collect primary data or secondary are used for scientific research related to the subject matter so that we will get the truth data. The method according Sugiyono research [41] is a scientific way to get the data with a particular purpose and usefulness.

The method used in this study to determine the effect of ERP on the performance of an employee is a quantitative research method. Quantitative methods have been selected for the testing of the theoretical concepts in the study done by measuring the study variables with statistical procedures in order to test the hypothesis. The intended use of quantitative methods is that the concept underlying the study is statistically easier to understand so that they can explain the phenomenon in a more scalable.

A. Research Design

The study design is a research design that is used as a guideline in conducting the research process so that research done can run well and systematically. Stages of the research process by Sugiyono quantitative method [41], namely:

1. Determining the source of the problem
2. formulation of the problem
3. The foundation of the theory
4. Formulation of hypotheses
5. The data collection
6. Analysis of data
7. Conclusion

B. Object Research

The object of research is clear about what or who is the object of the research as well as where and when the study was conducted [44]. Selection and determination of the proper object of study is expected to support the activities during the study, so that things which are needed in the study could easily be achieved. Object studied in this research are employees of PT. PLN (Persero) using SAP ERP in the works. Election PT. PLN (Persero) as the object of study is due to PT. PLN (Limited) has been successful in implementing ERP as evidenced by the award-winning Best IT Execution Award in 2009.

C. Operationalization of Research Variables

Variable according to Uma Sekaran [42] is anything that can differentiate or take variations in value, while according to Umar [44] variable in this study is an attribute of the group object, and have studied the variation between one and the other in the group. Operationalization is the process of decomposition of variables into subvariabel research variables, dimensions, indicators and measurement-related research. Variable further research question asked to the respondents through questionnaires given to measure the level of agreement of respondents think the questions posed.

Table 1. Operasionalization Variabel ERP

Variable	Dimension	Definition	Indicator
ERP	*Information*	Quality of the information generated by ERP	*Relevance*
			Accurate
			Completenes
			Timeliness
			Understand-ability
	Customiza-tion	ERP modifications to suit the needs	*Suitability*
	Integration	Linkages between stakeholders ERP	*Integration between ERP modules*
			Responsibility among ERP users

Source : DeLone and McLean [25], McLeod and George P Schell [29], Livari [30], Gable et al [31], Ifinedo [45], Gattiker [4], Barki and Pinsonneault [16], Dickover [12].

Table 2. Operasionalization Variabel Interdependence

Variable	Definition	Indicator
Interdependence	Dependence among employees in completing the work with other employees	Effect of ERP to dependency with another employee
		The level of importance of information
		Communication

Source : Gattiker [5], Gattiker and Godhue [4], Dickover [12].

Table 3.OperasionalizationVariabel *Coordination*

Variable	Definition	Indicator
Coordination	Coordination among employees to achieve goals effectively and efficiently	*Improvement coordination*
		Changing Conditions
		Awareness Information
		Synchronize

Sumber : Gattiker [5], Gattiker and Godhue [4], Dickover [12].

Table 4. Operasionalization Variabel *Work Performance*

Variable	Dimension	Definition	Indicator
(Work Per-formance	*Quantity of Work*	Quantity of the work done	Level according to the amount of work completion
	Quality of Work	The quality of the work performed	level Accuracy
			Level according to the quality
			Rate neatness
			level of Satisfaction
	Timeliness of Work	The time it takes to finish the job	Level of compliance with the target completion time
			The efficiency rate of job completion time

Source : Faustino Cardoso Gomez[37], Sudarmanto[40]

IV Analysis and Discussion

Discussion of the results of field studies to obtain data using questionnaires. It aims to analyze the influence of the variables used in the model study to measure the impact of ERP on employee performance. The results of the data processing is used as a basis for analyzing and answering of the research hypotheses that have been proposed previously.

A. Responden Research

Data collection was conducted from December 2012 to January 2013. Data were obtained from 204 employees of PT. PLN (Limited) Office and Distribution Center in West Java and Banten that use SAP ERP system on the job.

B. Data Analysis

For the stage of data analysis in this study using the Structural Equation Modeling (SEM) with AMOS application assistance.

B.1 Testing Sufficient Sample

The number of respondents in this study were 204 people. The amount is assessed to meet for SEM analysis using the method of Maximum Likehood Estimation at 5 to 10 observations for each of the estimated parameters of the question.

B.2 Testing validity and reliability

Before analyzing the data, then re-do the validity and reliability of the instruments used.

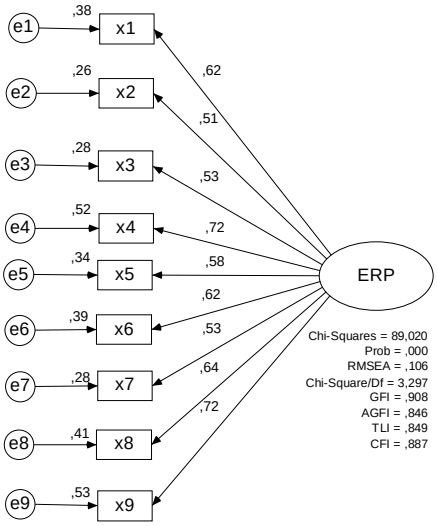

Figure 2. Testing confirmatory ERP variable

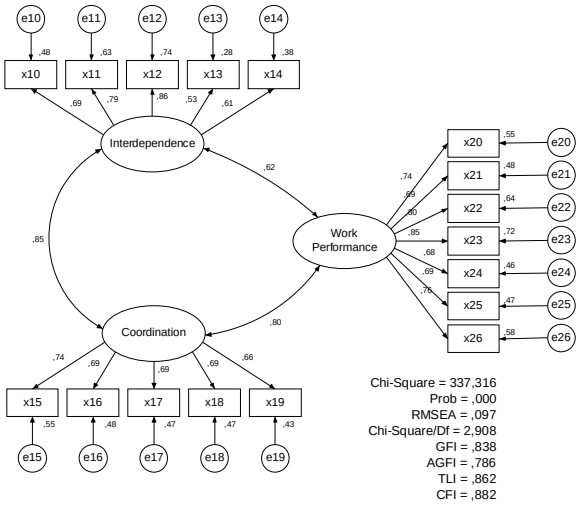

Figure 3. Confirmatory Test Between Endogenous Variables

Value of Contstuct Reliability (CR) and Variance Extracted for each variable are:

Table 5. Validity and reliability model

Variabel	CR	VE
ERP	0,84	0,36
Interdependence	0,83	0,50
Coordination	0,82	0,48
Work Performance	0,90	0,56

B.3 Full Model Struktural

The test results of the full structural model is:

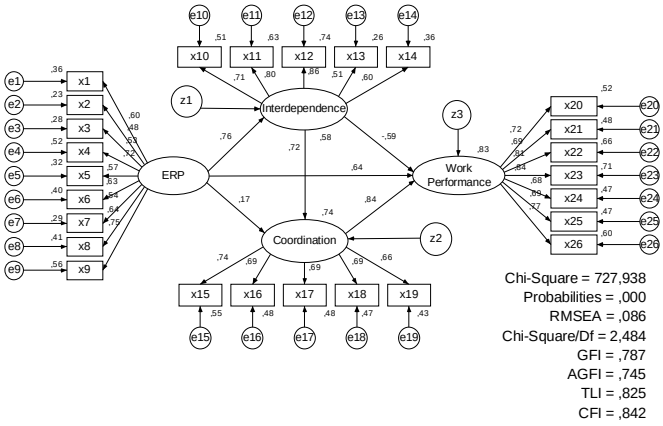

Figure 4. Full Model Structural

B.4 Testing Hypothesis

To test the hypothesis of the study, carried out by analyzing the output table produced by AMOS software in the form of regression weight that can be seen in**Table 6**. The criteria according Ghozali hypothesis testing [46] and Santoso [43] are as follows:

a. If the value of probability (P) <0.05 means the exogenous variables affect the endogenous variable. If the value of probability (P)> 0.05 then the exogenous variables have no effect on the endogenous variables.
b. If the value of probability (P)> 0.05 means the exogenous variables have no effect on the endogenous variables. If the value of probability (P)> 0.05 then the exogenous variables have no effect on the endogenous variables.

Table 6. Output Regression Weight

			Estimate	S.E.	C.R.	P	Label
Interdependence	<---	ERP	,724	,089	8,128	***	par_2
Coordination	<---	ERP	,154	,094	1,632	,103	par_3
Coordination	<---	Interdependence	,671	,120	5,571	***	par_5
Work Performance	<---	Interdependence	-,613	,193	-3,172	,002	par_1
Work Performance	<---	Coordination	,934	,207	4,517	***	par_4
Work Performance	<---	ERP	,629	,119	5,277	***	par_6

Test marks exogenous relation to the endogenous variables can be done by looking at the value of the standardized regression weights in **Table 7**as follows:

Table 7. Output Standardized Regression Weight

			Estimate
Interdependence	<---	ERP	,764
Coordination	<---	ERP	,174
Coordination	<---	Interdependence	,719
Work Performance	<---	Interdependence	-,593
Work Performance	<---	Coordination	,844
Work Performance	<---	ERP	,643

C. Testing Hypothesis

C.1. Testing Hypothesis 1

The first hypothesis states that ERP positive effect on interdependence. The test results of the parameter estimation of standardized regression weight of the interdependence between the ERP showed a positive correlation of .764. Probability (p-value) produced significant values below 0.05 are indicated with an asterisk (***). Thus the first hypothesis that ERP positive effect on interdependence (dependence) is acceptable because it has a significant value.

C.2. Testing Hypothesis 2

The second hypothesis states that ERP positive effect on coordination among employees. The test results of the parameter estimation of standardized regression weight of the coordination between the ERP showed a positive correlation of .174. Probability (p-value) produced no significant values above 0.05 which is 0.103. Thus the second hypothesis that ERP positive effect on coordination among employees can not be accepted because it has no significant value.

C.3. Testing Hypothesis 3

The third hypothesis states that ERP positive effect on employee work performance. The test results of the parameter estimation of standardized regression weight between ERP on work performance showed a positive correlation of .643. Probability (p-value) produced significant values below 0.05 are indicated with an asterisk (***). Thus, the third hypothesis that ERP positive effect on work performance is acceptable because it has a significant value.

C.4. Testing Hypothesis 4

The fourth hypothesis states that the interdependence that exists between employees will have positive impact on coordination among employees. The test results of the parameter estimation of standardized regression weight between the interdependence of the coordination showed a positive correlation of .719. Probability (p-value) produced significant values below 0.05 are indicated with an asterisk (***). Thus the hypothesis that interdependence The four positive effect on coordination is acceptable because it has a significant value.

C.5. Testing Hypothesis 5

The fifth hypothesis states that the interdependence that exists between employees will negatively impact employee work performance. The test results of the parameter estimation of standardized regression weight between the interdependence of the work performance showed a negative correlation of -0.593. While the probability (p-value) produced significant value below 0.05 which is 0.002. Thus, the fifth hypothesis that interdependence negatively affects employee work performance is acceptable because it has a significant value.

C.6. Testing Hypothesis 6

The sixth hypothesis stated that the coordination that exists among employees will have a positive impact on employee work performance. The test results of the parameter estimation of standardized regression weight between the coordination of the work performance showed a positive correlation of 0.844. While the probability (p-value) produced significant values below 0.05 are indicated with an asterisk (***). Thus the hypothesis that the sixth coordination positive effect on work performance is acceptable because it has a significant value.

Summary of hypothesis testing results in this study are presented in**Table 8** as follows:

Table 8. Summary of hypothesis testing

No	Hypothesis	Result
H1	ERP positive influence on interdependence among employees	Accepted
H2	ERP positive influence on coordination among employees	Rejected
H3	ERP positive influence on individual employee work performance	Accepted
H4	Interdependence positive influence on coordination among employees	Accepted
H5	Interdependence negative influence employee work performance	Accepted
H6	Coordination positive influence on individual employee work performance	Accepted

V Conclusion

From the results of the processing and data analysis, hypothesis testing results obtained using the model developed by the authors is as follows:

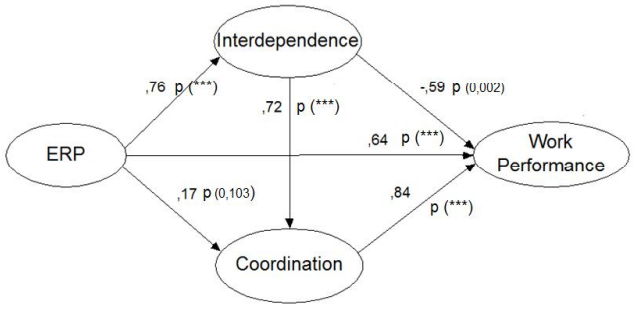

Figure 5. Research Model Testing Results

Based on the conclusion of the testing of hypotheses, it can be concluded that the value of information technology (IT value) that has been invested by PT. PLN (Limited) in the form of ERP, has a significant influence on employee performance improvement in terms of quantity, quality and timeliness in completing the work as well as having a positive and significant impact on an employee dependence.

Interdependence among employees has a negative effect on performance, it means that if the level of dependency of each employee has a high value, it will result in reduced performance of individual employees. ERP has a positive influence on dependence, so as to overcome the dependence of employees to process and obtain information from other employees.

With a positive and significant effect of ERP on dependency and employee performance, then the value of information technology that has been invested by PT. PLN (Persero) into the form of ERP, is in accordance with the intended use of information technology in improving the effectiveness and efficiency of the company which can be seen from the improvement or performance improvement of human resources owned by the company.

Reference

[1] John H Jackson Robert L. Mathis, *Human Resource Management*., 2010.

[2] J.R Galbraith, *Designing Complex Organizations*.: Reading : Addison - Wesley, 1973.

[3] J.R Galbraith, "Organization Design : An Information processing view," *Interfaces*, vol. 4, no. 3, pp. 28-36, 1974.

[4] T Gattiker and D. Goodhue, "What happens after ERP implementation : Understanding the impact of interdepence and differentiation on plant level outcomes," *MIS Quarterly*, vol. 29, no. 3, pp. 559-585, September 2005.

[5] Thomas Frederic Gattiker, "Enterprise Resource Planning Systems in Operations Management : A Model, An Instrument and An Empirical Test," University of Georgia, Athens, Dissertation of Doctor Philosophy 2000.

[6] D. E O'Leary, *Enterprise resource planning Systems : Systems, Life Cycles, Electronic Commerce, And Risk*. New York: Cambridge University Press, 2000.

[7] Fadi Taher, Shadi Ahmed Khattab, and Khair Saleem, "The Effect of ERP Successful Implementation on Employees Productivity, Service Quality and Innovation : An Empirical Study in Telecommunication Sector in Jordan," *International Journal of Business ana Management*, vol. 7, no. 19, pp. 45-54, 2012.

[8] Akram Jalal, "Enterprise Resource Planning : An Empirical Study of Its Impacts on Job Performance," *International Journal of business and Information*, vol. 6, no. 1, pp. 77-90, 2011.

[9] Irfan Anjum Saima Kanwal, "Evaluating ERP Usage Behavior of Employees And Its Impact on Their Performance : A Case of Telecom Sector," *Global Journal of Computer Science and Technology*, pp. 34-41, 2010.

[10] F.P Morgeson and S.E Humphrey, "The Work Design Questionnaire (WDQ) : Developing and Validationg a Comprehensive Measure for Assessing Job Design and the nature og Work," *Journal of Applied Psychologu*, vol. 91, no. 6, pp. 1321-1339, 2006.

[11] Mark K Hirst and Philip W Yetton, "The effect of budget goals and task interdependence on the level of and variance in performance : a research note," *Accounting, Organization and Society*, vol. 24, pp. 205-216, 1999.

[12] Ryan D. Dickover, "Interdependence and Differentiation : Evaluating A Structured Equation Model for Enterprise Resource Planning System Business Impact Using a Public Sector Environtment," Capella University, Dissertation 2009.

[13] Jody Hoffer Gittel, Dana Weinberg, Susan pfefferle, and Christine Bishop, "Impact of relational coordination on job satisfaction and quality outcomes," *Human Resource Management Journal*, vol. 18, no. 2, pp. 154-170, 2008.

[14] David J. Glew, "Effects of Interdependence and Social Interaction Based Person Team Fit," *Administrative Sciences*, vol. 2, pp. 26-46, 2012.

[15] T Gattiker, "Enterprise Resource Planning (ERP) systems and the manufacturing-marketing interface : An information-processing theory view," *International Journal of Production Research*, vol. 45, no. 13, pp. 2895-2917, 2007.

[16] Henri Barki and Alain Pinsonneault, "A Model of Organizational Integration, Implementation Effort, and Performance," *Organization Science*, vol. 16, pp. 165-179, April 2005.

[17] K Nelson and T Somers, "The Impact of Critical Success Factors across the Stages of Enterprise Resource Planning Implementations," in *34th Hawaii International Conference on Systems Sciences*, Hawaii, 2001, pp. 1-10.

[18] Clemens HauBmann, Yogesh K.Dwivedi, Krishna Venkitachalam, and Michael D. Williams, "A Summary and Review of Galbraith's Organizational Information Processing Theory," in *Information Systems Theory*.: Springer, 2012, pp. 71-93.

[19] PT. Perusahaan Listrik Negara (Persero), "Proyek Roll Out ERP," 2008.

[20] E.W.T Ngai, C.C.H.Law, and F.K.T.Wat, "Examining the critical success factors in the adoption of enterprise resource planning," December 2007.

[21] Sherry Finney, "ERP implementation : a compilation and analysis of critical success factors," *Business Process Management Journal*, vol. 13, no. 3, pp. 329-347, 2007.

[22] M. Reza Moohebat, M.Davarpanah Jazi, and Asefeh Asemi, "Evaluation of the ERP Implementation at Esfahan Steel Company Based on Fice Critical Success Factors : A Case Study," *International Journal of Business and Management*, vol. 6, no. 5, pp. 236-250, May 2011.

[23] Turban, Leidner, McLean, and Wetherbe, *Information Technology for Management*, 6th ed.: John Wiley & Sons (Asis) Pte Ltd, 2008.

[24] Jogiyanto, *Analisis dan Desain Sistem Informasi*. Yogyakarta: Andi Offset, 2005.

[25] William H DeLone, Ephraim R. McLean, "The DeLone and McLean Model of Information Systems Success : A Teen-Year Update," *Journal of Management Information System*, vol. 19, pp. 9-30, 2003.

[26] Etezadi-Amoli and J.Farhoomand, "A Structural model of end user computing satisfaction and user performance," *Information & Management*, pp. 65-73, 1996.

[27] T.S.H Teo and Wong P.K, "An empirical study of the performance impact of coputerization in the retail industry," *International Journal of Management Science*, pp. 611-621, 1998.

[28] B.H and Watson, H.J Wixom, "An empirical investigation of the factos affecting data warehousing success," *MIS Quarterly*, pp. 17-41, 2001.

[29] Raymond McLeod and George P Schell, *Management Information Systems*, 10th ed.: Pearson/Prentice Hall, 2007.

[30] Juhani Livari, "An Empirical Test of The DeLone – McLean Model of Information System Success," *The Database for Advance in Information System (DFA)*, vol. 36, no. 2, 2005.

[31] Guy G Gable, Darshana Sedera, and Taizan Chan, "Enterprise Systems Success : A Measurement Model," in *Proceeding Tewnty-Fourth International Conference on Information Systems*, Seattle, USA, 2003, pp. 576-591.

[32] R.H. L Chiang and E.Lim V.C Storey, "A Framework for acquiring domain semantics and knowledge for database integration," *Data Base*, vol. 31, no. 2, pp. 46-64, 2000.

[33] A Dan, D.M.Dias, T.C.Lau, T.N.Nguyen R.Keamey, F.N. Parr, and H.H. Shaikh M.W.Sachs, "Business to Business intergration with tpaML and a business to business protocol framework," *IBM*

Systems Journal, vol. 40, no. 1, pp. 68-90, 2001.

[34] Richard Hall, "Enterprise Resource Planning Systems and Organizational Change : Transforming Work Organizations ?," *Strategic Change*, pp. 263-270, 2002.

[35] Malayu S.P Hasibuan, *Manajemen Dasar, Pengertian dan Masalah*. Jakarta: Bumi Aksara, 2006.

[36] T. Hani Handoko, *Manajemen Edisi Kedua*. Yogyakarta: BPFE, 2003.

[37] Faustino Cardoso Gomez, *Manajemen Sumber Daya Manusia*. Yogyakarta: ANDI, 2003.

[38] Anwar Prabu Mangkunegara, *Manajemen Sumber Daya Manusia*. Bandung: PT. Remaja Rosdakarya, 2009.

[39] Veithzal Rivai, *Manajemen Sumber Daya Manusia Untuk Perusahaan*. Jakarta: PT. Raja Grafindo Persada, 2005.

[40] Sudarmanto, *Kinerja dan Pengembangan Kompetensi SDM Teori, Dimensi, Pengukuran dan Implementasi dalam Organisasi*. Yogyakarta: Pustaka Pelajar, 2009.

[41] Sugiyono, *Metode Penelitian Kuantitatif Kualitatif dan R & D*. Bandung: Alfabeta, 2012.

[42] Uma Sekaran, *Metode Penelitian untuk Bisnis*, 4th ed. Jakarta: Salemba Empat, 2009.

[43] Singgih Santoso, *Analisis SEM Menggunakan AMOS*. Jakarta: PT. Elex Media Komputindo, 2012.

[44] Husein Umar, *Metode Penelitian Untuk Skripsi dan Tesis Bisnis*. Jakarta: Raja Grafindo Persada, 2007.

[45] Princely Ifinedo, "Extending The Gable et Al. Enterprise System Success Measurement Model : A Preliminary Study," *Journal of Information Technology Management*, vol. XVII, 2006.

[46] Imam Ghozali, *Konsep dan Aplikasi Dengan Program AMOS 16.0*. Semarang: Universitas Dipenogoro Semarang, 2007.