Enhancing Inventory Accuracy in Manufacturing through the Implementation of Odoo Enterprise Resource Planning and Inventory Management Systems

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ABSTRACT

The phenomenon in this study originates from the discrepancy between actual stock and data recorded in the Enterprise Resource Planning Odoo system used by PT Paramita Bangun Sarana Tbk. This mismatch leads to decreased operational efficiency, distribution bottlenecks, and the risk of inaccurate decision-making. The purpose of this study is to examine the influence of Enterprise Resource Planning Odoo and Inventory Management on Inventory Accuracy Improvement at PT Paramita Bangun Sarana Tbk, Jakarta. This research employs a quantitative method with a descriptive approach. The population consists of employees from the purchasing, logistics, and warehouse divisions. The sample includes 45 respondents selected using a saturated sampling technique. Data were analyzed using multiple linear regression, t-test, F-test, and the coefficient of determination (R^2). The results show that both partially and simultaneously, Enterprise Resource Planning Odoo and Inventory Management significantly influence Inventory Accuracy. This is evidenced by the F-test significance value of 0.000 < 0.05. The t-test results show a significance value of 0.000 for Enterprise Resource Planning Odoo and 0.006 for Inventory Management, both less than 0.05. These findings indicate that ERP Odoo and Inventory Management have a significant effect on Inventory Accuracy. The coefficient of determination (R^2) indicates that Enterprise Resource Planning Odoo and Inventory Management contribute 92.3% to the improvement of inventory accuracy at PT Paramita Bangun Sarana Tbk, while the remaining 7.7% is influenced by other variables not examined in this study.

1. INTRODUCTION

Information technology systems play a critical role in guiding organizations towards success. An integrative approach involving information technology, business processes, and human resource components, enables organizations to not only survive in a competitive environment but also be innovative and progressive [1]. One of the business processes is logistics activities. Logistics management is a strategic approach that aims to coordinate all activities related to the flow of materials and information in order to achieve efficiency and customer satisfaction. By understanding the importance of logistics management, companies can optimise their operations and gain a competitive advantage in an increasingly complex and dynamic market [4].\

Inventory management is one part of production management and logistics. This inventory management is a system, method or way to control and manage the inventory owned by the company can also be interpreted as an activity to be able to maintain the optimum number of goods owned [7] . The amount of money invested in the form of inventory is usually very large. So that inventory is one of the largest assets owned by the company. Many companies have inventory values exceeding 25% of the total value of assets owned. The dimensions of inventory management can be arranged as follows: 1. Classification of inventory by function, 2. Classification of inventory by type, 3. Measurement of inventory performance [8].

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According to [2] information technology has become a major driver of innovation in a corporation or company's business model by enabling new ways to create and capture value, value exchange and transaction mechanisms, and the formation of a more adaptive organizational structure. By utilizing information technology systems effectively, organizations can achieve various benefits, including increased productivity, inventory accuracy, operational efficiency, and faster decision making.

An opinion from [3] currently, the system Enterprise Resource Planning has become one of the most effective solutions in integrating and managing corporate resources comprehensively. According to [5] system Enterprise Resource Planning is a concept, technique, or method to integrate all departments and functions of a company into an overall business process automation system to improve the effectiveness and efficiency of the company which is reflected by the existence of an accurate and measurable inventory report. This ERP system is useful for the overall business integration process, flexibility in the organization to transform and increase its turnover, create better analysis and capability improvement, and use of the latest technology. According to [6] The dimensions of ERP variables are: 1.Integrated, 2. Scalability, 3. Customization, 4. Reporting, 5. Security. Enterprise Resource Planning enables companies to automate and integrate different business processes, including inventory management, production, finance and human resource. Table 1 shows the inventory monitoring report for the period January to December 2024, covering quarterly intervals (Q1 to Q4), with the aim of achieving 99% inventory accuracy.

Table 1. Inventory Report PT Paramita Bangun Sarana Tbk

SN	MONTH	TOTAL STOCK ACTUAL	TOTAL SYSTEM ODOO	DISCREPANCY / SELISIH	PERSENTAGE
Q1	March	21988	23214	-1226	95%
Q2	June	13800	14141	-341	98%
Q3	September	23280	23624	-344	99%
Q4	December	17500	17815	-315	98%

Based on Table 1, there is a difference between the number of total Stock Actual and Total System Odooin several months in the 2024 PT PBS inventory report. This shows that there is a discrepancy between physical data and the system, such as the table above. Discrapency/differences that can affect the accuracy of inventory management. In March, for example, the percentage of match only reached 95%, which is the lowest accuracy level compared to other months. This discrepancy can cause uncertainty in operational planning and inventory decision making.

According to [9], inventory accuracy plays an important role in reducing costs related to excess or understock. They show that inventory error rates can have a direct impact on handling costs and reorder frequency, so higher accuracy supports operational efficiency. The dimensions of inventory accuracy are: 1. Counting Accuracy, 2. Cycle Counting Frequency, 3. Inventory Record Alignment, 4. Order Fulfillment.

Inventory inaccuracy can cause serious problems for companies, such as understocking, overstocking, and difficulty in fulfilling customer orders. Today, many companies face major challenges in terms of inventory management and warehouse efficiency. Reliance on manual or semi-manual methods often causes problems, this can result in financial losses, decreased customer satisfaction, and even loss of customers. With increasing competition in the market, companies that are unable to adapt to these changes will struggle to survive.

This research fills a gap that has not been widely discussed in previous studies, namely the influence of implementing Enterprise Resource Planning Odoo and inventory management simultaneously on inventory accuracy, especially in the construction industry such as PT Paramita Bangun Sarana Tbk. Previous research has focused more on the manufacturing or retail sectors, without examining in depth the relationship between the system Enterprise Resource Planning with the accuracy of stock recording. With this approach, the research provides new contributions both theoretically and practically in improving operational efficiency and inventory data accuracy through system integration based on Enterprise Resource Planning.

Based on the problem formulation above, it can be concluded that the objectives of the research conducted are as follows:

1. To find out how big the influence is Enterprise Resource Plannin Odoo on improving inventory accuracy at PT Paramita Bangun Sarana Tbk.
2. To determine how much influence inventory management has on increasing inventory accuracy at PT Paramita Bangun Sarana Tbk.
3. To find out how big the influence is Enterprise Resource Planning Odoo and inventory management simultaneously to improve inventory accuracy at PT Paramita Bangun Sarana Tbk.

2. THEORITICAL FRAMEWORK

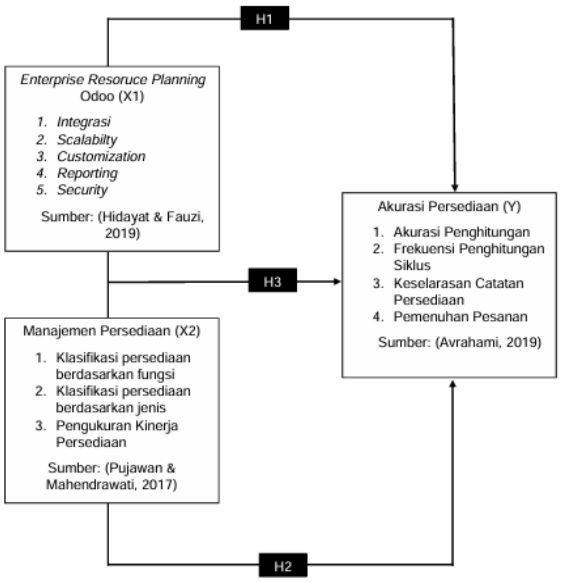

Figure 1. Theoretical Framework

3. HYPOTHESIS

According to [10], a hypothesis or temporary assumption is an answer to the formulation of a problem in a study whose truth still needs to be tested. Based on the theoretical framework above, it is suspected that the hypothesis formulated in this study is:

H1: There is a positive influence between Enterprise Resource Planning Odoo on improving inventory accuracy at PT Paramita Bangun Sarana Tbk.

H2: There is an influence between inventory management and increasing inventory accuracy at PT Paramita Bangun Sarana Tbk.

H3: There is an influence between Enterprise Resource Planning Odoo and Inventory Management towards improving inventory accuracy at PT Paramita Bangun Sarana Tbk.

4. RESEARCH METHOD

4.1. Research Methods

This study uses a descriptive approach with the aim of describing the object of research or research results. The descriptive research Quantitative Approach is a research method that aims to find out the description of the respondent's answers; test the relationship between variables;

determine the causality of the variables; test theories and find generalizations that have predictive value (to predict a symptom), [10].

4.2. Operationalization of Variables

According to [11] research variables are anything that is determined by researchers to be studied so that information is obtained about the thing to be studied, then conclusions are drawn. Research variables are divided into two parts, namely independent variables and dependent variables.

a. Independent Variables

According to [11] the independent variable is a variable that influences the cause of changes or the emergence of dependent variables. In this study, the independent variable is the application Enterprise Resource Planning Odoo and Inventory Management (X).

b. Dependent Variables

According to [11] dependent variable is a variable that is influenced and becomes a result, because of the existence of independent variables. In this study, the dependent variable is the increase in inventory accuracy which will be the variable attribute (Y) in this writing.

4.3. Population and Sample

In research, population is a collection of objects that are used as research sources, such as objects, people, or events that occur as objects or means of research. This is in accordance with the opinion of [11] who states that population is a generalization area consisting of subjects/objects that have certain qualities and characteristics determined by researchers to be studied and then conclusions drawn. The population in this study is the number of employees who conducted stock opname at PT Paramita Bangun Sarana Tbk division purchasing, logistics and warehouse

Sample

A sample is a portion of a population whose characteristics are to be investigated, and is considered to be representative of the entire population (less than the population). The units to be studied in the sample are called sample units. Saturated sampling is a sampling technique when all members of the population are used as samples. Usually if the population is relatively small, for example less than 100 people [12].

This study uses saturated sampling because the population is less than 100 so that 45 employees who use ERP odoo and inventory management are selected to be samples. Purchasing, Logistics, and Warehouse Division of PT PBS. This method is chosen so that the entire population is represented, avoids bias, and obtains more accurate data.

4.4. Data Collection Techniques

This study uses data collection techniques through questionnaires and the use of primary and secondary data. Primary data is obtained by distributing questionnaires to respondents, where this questionnaire contains a number of questions that have been designed. Secondary data is obtained indirectly from various sources relevant to the study, such as company history, business scope, organizational structure, books, literature, articles, and websites. One of the methods used is Library Research, which is research conducted by reviewing various references, such as books, journals, magazines, websites, and previous research related to the problems being studied.

4.5. Sampling Techniques

The sampling technique in this study used the non-probability technique, namely the saturated sampling method or often called total sampling. According to [11], saturated sampling is a sampling determination technique by taking all members of the population as respondents or samples, so that the sample in this study was all employees of the purchasing, logistics and warehouse divisions of PT. Paramita Bangun Sarana Tbk totaling 45 employees.

4.6. Teknik Analisis Data

The data analysis method in this study is a study that uses quantitative descriptive. The results of the data collection are then processed so that the information that occurs is easier to interpret and

further analyzed in accordance with the form of discussion analysis techniques used. There are two important things in the questionnaire, namely, validity and reliability. An instrument can be declared valid if it can measure what is desired and can reveal data from the variables that have been studied accurately. According to [13], data analysis can be interpreted as an effort to process available data and then process it statistically and can be used to answer the formulation of problems in the study. The data analysis method used in this study is a study that uses quantitative explanation. There are two important things in the questionnaire, namely, validity and reliability. An instrument can be declared valid if it can measure what is desired and can reveal data from the variables that have been studied accurately.

5. RESULTS AND DISCUSSION

Results

a. Validity Test

According to [14] "Validity testing is used to measure the validity of a questionnaire. The criteria for determining the validity of a questionnaire are as follows:

1. If r count > r table then the statement is declared valid

2. If r count < r table then the statement is declared invalid

Table 2. Validity Test Results

Variable	No	r.count	r.table	Information
Enterprise Resource Planning Odoo	1	0,824	0,312	Valid
	2	0,912	0,312	Valid
	3	0,89	0,312	Valid
	4	0,777	0,312	Valid
	5	0,774	0,312	Valid
	6	0,824	0,312	Valid
	7	0,912	0,312	Valid
	8	0,89	0,312	Valid
	9	0,777	0,312	Valid
	10	0,774	0,312	Valid
Inventory Management	1	0,556	0,312	Valid
	2	0,661	0,312	Valid
	3	0,609	0,312	Valid
	4	0,598	0,312	Valid
	5	0,697	0,312	Valid
	6	0,647	0,312	Valid
Inventory Accuracy	1	0,833	0,312	Valid
	2	0,926	0,312	Valid
	3	0,873	0,312	Valid
	4	0,705	0,312	Valid
	5	0,541	0,312	Valid
	6	0,832	0,312	Valid
	7	0,926	0,312	Valid
	8	0,593	0,312	Valid

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Based on the Validity Test on the questionnaire table 2 above. R Calculation is greater than R Table which is (0.312) So for testing the validity test of variables X and Y using the SPSS version 26 method, it can be concluded that the questionnaire is declared valid.

b. Realibility Test

Table 3. Reliability Test Results

Research Variabel	N of Item	Cronbach's Alpha	Uji Reliabilitas	Information
ERP Odoo	10	0,951	>0,60	Reliable
Inventory Management	6	0,694	>0,60	Reliable
Inventory Accuracy	8	0,907	>0,60	Reliable

The results of the Reliability Test show that each variable has a Cronbach's Alpha coefficient value > 0.60. Therefore, each variable in this study is declared reliable or the reliability requirements are met.

c. Normality Test

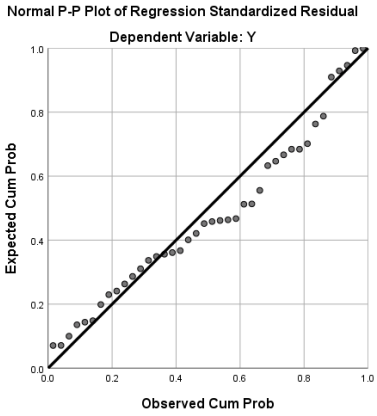

Figure 2. Normality Test Results

Based on the test results in the image above, it shows that the data is normally distributed because the points spread around the diagonal line and follow the direction of the diagonal line. then it can be concluded that the data meets the normal assumption or follows the line in normality.

d. Correlation Coefficient Test

Table 4. Correlation Coefficient Test Result

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.961[a]	.923	.919	1.895

a. Predictors: (Constant), Manajemen Persediaan, Enterprise Resource Planning Odoo

b. Dependent Variable: Akurasi Persediaan

Based on the results of table 4 above, the correlation coefficient (R) value is 0.961. This value shows that there is a very strong relationship between the variables. Enterpris Resource Planning Odoo (X1) and Inventory Management (X2) on inventory accuracy (Y).

e. Coefficient of Determination

Table 5. Coefficient of Determination Test Result

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.961[a]	.923	.919	1.895

a. Predictors: (Constant), Inventory Management, Enterprise Resource Planning Odoo

b. Dependent Variable: Inventory Accuracy

Based on table 5 above, it can be concluded that the variables Enterprise Resource Planning Odoo and Inventory Management together affect the inventory accuracy variable by 92.3%. On the other hand, 7.7% of inventory accuracy is influenced by other factors outside this study.

f. Multiple Linear Regression Test

Table 6. Multiple Linear Regression Test Result

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.502	2.195		.684	.498		
	X1	.713	.034	.962	21.034	.000	.996	1.004
	X2	.098	.082	.054	1.190	.242	.996	1.004

a. Dependent Variable: Akurasi Persediaan

Based on output coefficientIn this study, the hypothesis will be proven partially, the beta effect produced, and the formation of the regression equation. The linear regression equation in this study can be formed from the resultsCoefficient in the columnStandardized Coefficients are as follows:

$$Y = a+bX$$

Y = 1,502+0,713X1+0,098X2 regression equation. The linear regression equation in this study can be formed from the results on the collar *Standarized Coefficent* are as follows

1) The constant value shows a value of 1.502, meaning that if the value of the independent (free) variable is zero, then the value of the dependent (bound) variable is 1.502.
2) Variable valueEnterprise Resource Planning Odoo (X1) on inventory accuracy 0.713 has a positive value, so if inventory accuracy increases by one value, then Enterprise Resource Planning Odoo will increase by 0.713
3) The value of the Inventory Management variable (X2) on inventory accuracy of 0.098 has a positive value, so if inventory accuracy increases by one value, then Inventory Management will increase by 0.098.

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g. T- Test

Table 7. T-Test Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.502	2.195		.684	.498		
	X1	.713	.034	.962	21.034	.000	.996	1.004
	X2	.098	.082	.054	11.190	.006	.996	1.004

a. Dependent Variable: Akuasi Persediaan

From the table above it can be concluded that:

I. Hypothesis Testing I: it is known that the t table value = 2.016 variables Enterprise Resource Planning Odoo has a significant and positive effect on the inventory accuracy variable. This can be seen from the significance value of 0.000 which is smaller than 0.05, then the t-value is 21.034, both of which are positive. Therefore, the hypothesis "variable Enterprise Resource Planning Odoo has a positive and significant effect on inventory accuracy partially.

II. Hypothesis Testing II: inventory management variables have an influence on inventory accuracy. This can be seen from the significance value of 0.006 which is smaller than 0.05, then the t-count value of 11.190 is greater than 2.016 as the t table, it can be interpreted that the second hypothesis is accepted in other words, the hypothesis "inventory management variables have a positive and significant effect on inventory accuracy partially".

h. F- Test

Table 8. F-Test Results

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1589.479	2	794.739	221.224	.000[b]
	Residual	132.921	37	3.592		
	Total	1722.400	39			

a. Dependent Variable: Akurasi Persediaan

b. Predictors: (Constant), Manajemen Persediaan, Enterprise Resource Planning Odoo

Based on the data in the table above, it can be seen that the ERP Odoo and Inventory Management variables have an F count of 221.224, which means that the independent variable has a significant relationship with the dependent variable. With a significance value of 0.000. Therefore, it can be concluded that the hypothesis "variable Enterprise Resource Planning Odoo and Inventory Management simultaneously have a positive effect on inventory accuracy" is acceptable.

Discussion

There is a positive influence between the implementation Enterprise Resource PlanningOdoo (X1) on Inventory Accuracy (Y). The influence of the Implementation of Enterprise Resource Planning Odoo (X1) on Inventory Accuracy (Y) is 0.865 or 86.5%. While the remaining 13.5% is influenced by other factors that are not examined in this study.

There is a positive influence between Inventory Management (X2) on Inventory Accuracy (Y). The influence between Inventory Management (X2) on Inventory Accuracy (Y) is 0.876 or 87.6%. While the remaining 12.4% is influenced by other factors not examined in this study.

There is a positive and significant influence between Enterprise Resource PlanningOdoo (X1) and Inventory Management (X2) on Inventory Accuracy (Y). The F statistic result of 221.224 for a probability of 0.05 (5%) obtained an F table of 3.08 and a significant value of 0.0000 <0.05, this shows that the calculated F> F table (221.224> 3.17), so it can be concluded thatEnterprise Resource PlanningOdoo (X1) and Inventory Management (X2) together have a significant influence on Inventory Accuracy (Y).

6. CONCLUSION

Based on the research results, there is a significant and positive influence between the implementation of Enterprise Resource Planning Odoo and inventory management on inventory accuracy at PT Paramita Bangun Sarana Tbk. The correlation coefficient (R) value of 0.961 indicates a very strong relationship, while the R^2 value of 92.3% indicates that the variable Enterprise Resource Planning Odoo and inventory management are able to explain most of the variation in inventory accuracy, while the remaining 7.7% is influenced by other factors not studied. The t-test results also show that both Enterprise Resource Planning Both Odoo and inventory management significantly impact inventory accuracy, where each unit increase in Enterprise Resource Planning Odoo will increase inventory accuracy by 0.713 units, and each unit increase in inventory management will increase accuracy by 0.098 units. These results confirm that the implementation ofEnterprise Resource Planning Effective Odoo and good inventory management practices improve stock data accuracy, operational efficiency, and support the overall performance of the company.

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