

Enterprise Resource Planning (ERP) SAP Business One Evaluation and Improvement Recommendation using Customized Odoo

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Abstract— The study was conducted to find out the problems arising from the use of the SAP Business One system by evaluating and understanding the level of success of SAP Business One. Based on the results of the evaluation that has been carried out, it concluded that development is still needed to meet user needs. With limited access rights to develop SAP Business One, this research will set it on an Open-source ERP platform using Odoo ERP ver 15.0, which will be customized. The results of this study indicate a significant increase in the assessment of system quality, information quality, service quality, and user satisfaction on the customized Odoo ERP following the evaluation results recommendations on SAP Business One. The conclusion is that Odoo's open-source ERP can be a solution for customization according to company needs.

Index Terms—DeLone and McLean; ERP; Information Systems Success Model; Odoo; SAP Business One.

I. INTRODUCTION

With the fast growth of technology, businesses are attempting to employ cutting-edge technology to gain a competitive advantage [1]. One of the most excellent options in the present business scope is to use the company's resources, also known as ERP (Enterprise Resource Planning) [2]. Since the 1990s, businesses have begun implementing ERP, which provides several benefits. One of them is to help the company's business procedures [3].

PT Bando Indonesia is an Indonesian V-Belt and Conveyor Belt company that uses ERP (Enterprise Resource Planning) technology. ERP is a software

application system feature that allows businesses to manage their operations better [4]. ERP offers advantages such as reduced stock and inventory levels, increased production, and improved communication between divisions, which will affect the company's profitability [5].

PT Bando Indonesia uses SAP Business One as a solution to integrate all types of business operations in the firm. Since the implementation of ERP, there has never been a review of the use of this SAP system by PT Bando Indonesia [6]. As a result, firms must perform assessment studies to determine the success of the ERP system. The current level of technology in the world is continually increasing [7].

This study is being conducted to assess the SAP Business One system deployed at PT Bando Indonesia [6]. By examining developments, you may determine whether the firm is meeting or exceeding expectations. This study is organized into three sections based on the DeLone and McLean Information Systems Success Model. The first step examines each Business One system series from implementation to going live. The user satisfaction unit evaluates the system, information, and service quality at this level [8]. Afterward, the next step involves the user for system use analysis and user satisfaction to examine the user experience using the PT Bando Indonesia ERP system. So subsequently, we can explore and analyze the success of SAP Business One's performance in fulfilling the demands of the organization based on the data acquired during this review [6].

This study also configures and customizes Odoo version 15.0 open-source ERP. With this setup and customization, recommendations for flaws in the prior system will be made [10]. because there are limited access rights to perform customization in the SAP

Business One system. Based on that reason, the possible solution is to modify and tweak the Odoo application to highlight the benefits and shortcomings of the SAP Business One application [11]. This study evaluates ERP SAP Business One at PT Bando using the Delone and McLean methods. From the evaluation, results can be recommendations to improve aspects such as system quality, information quality, service quality, and user satisfaction. Due to limited access rights to make modifications on SAP Business One, further customization is carried out on the open-source ERP Odoo Vers.15.0 according to the recommendations from the evaluation results that have been carried out previously.

II. METHOD

1. Evaluation

There is also a definition of evaluation, which states that evaluation is an interpretation based on quantitative data derived from measurement results [12]. Some of these theories conclude that evaluation is an activity based on specified criteria and observations [1].

2. System Configuration

System configuration is a word or statement used in system engineering to describe the arrangements and their limits. For example, the steps of controlling module selection and system configuration settings, as well as resolving issues with each stability and performance [10].

3. System Customization

Previous to customization, the configuration process is carried out, which involves the selection of settings and modules that agree with the agreed-upon outcomes. Customization is a procedure that delivers a highly competitive value, but it is also a challenging process since there is a link between flexibility and the program being built [10].

4. Enterprise Resource Planning (ERP)

ERP is a functional company system supported by a software module device that is interconnected to support the company's in-depth and fundamental business processes [13]. ERP software for manufacturing companies will help process and check sales, inventory, delivery, BOM (Bill of Materials) data, and estimates of raw material usage and labor requirements [14].

5. SAP Business One

SAP Business One is SAP's ERP software for small and medium-sized businesses [15]. SAP developed SAP Business One because it frequently causes issues

for firms utilizing R3 if the complexity and scale of the reach are insufficient for medium-sized businesses. Later, other issues would surface, such as high implementation costs and lengthy implementation timeframes [4].

6. The DeLone and McLean Model Systems Success

Essentially, there is no method to assess the success and failure of ERP standard adoption because measuring methods are continuously developing [9]. In general, the measuring process is an improvement over the prior measurement method. William H. Delonee and Ephraim R. McLean pioneered the information system success model. In 1992, a survey was conducted to determine the elements contributing to information systems' success [8].

7. Open-Source ERP: Odoo

Odoo is an open-source ERP application. Odoo is very suitable for applications from SMEs to large companies. Odoo has 30 modules, which can be increased to support business processes [14]. Odoo has a high degree of flexibility, making it easy to use, accessible, and adaptable to business needs. Odoo modules cover sales management, purchasing management, CRM, MRP, warehouse management, inventory management, accounting, and finance [10].

III. RESULT AND DISCUSSION

3.1 Overview of Research Object

1. Company Profile

PT Bando Indonesia has the main factory located in the Tangerang area and a marketing office in Central Jakarta. The company was founded on November 25, 1987, and started to produce industrial belts and automotive power transmission belts [6].



Figure 1. PT Bando Indonesia logo

3.2 Research Methods

This study uses quantitative methods. Quantitative data based on this research were obtained from questionnaires in the form of google Forms, which included information quality, system quality, service quality, and user satisfaction. The questions received in the questionnaire include closed and open questions., as follows:

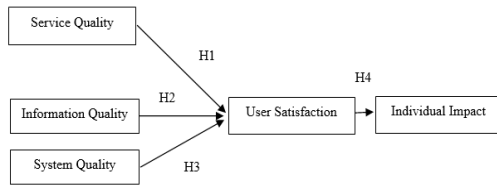


Figure 2. Research Methods

3.3 Data collection technique

The data collection phase was collected from respondents' opinions, attitudes, characteristics, and experiences. This activity was conducted using a method to collect primary data by using a survey method and collecting preliminary data using closed and open questions.

3.4 Sampling Techniques

This study's population is SAP Business One users at PT Bando Indonesia. While the sample used is a probability sampling technique utilizing simple random sampling. With a simple random sampling technique, it is done by asking respondents to fill out a questionnaire. The sample of this study amounted to 41 users who are still active by using simple random sampling and types of primary data.

3.5 Data analysis technique

The data analysis technique aims to determine whether the data results can be distributed generally by conducting a normality test. This study used SEM (Structural Equation Model) analysis with Partial Least Square (SEM-PLS) with the help of SMART-PLS verse software.03 to perform model analysis. There are five stages [5], as shown in Figure 3.3:

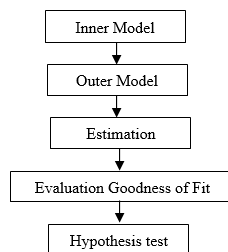


Figure 3. SEM

3.6 System Requirements

The following are the system requirements obtained from the results of the open-ended question questionnaire, which uses the Delone and Mclean indicators. With open-ended questions, respondents can explain system requirements that occur when the system is running on SAP Business One, including:

Table 1. System Requirements

No.	Problem	Problem details	Development Suggestions
1.	UI display Not user friendly	The resulting display does not produce a satisfactory display for employees aged > 30 years.	Implement a user friendly UI
2.	Company difficulty managing inventory	There are errors or inaccuracies in inventory related to logistics activities in the company	Configure the Inventory feature in Odoo
3.	Information regarding (status, process, production schedule, and material requirements).	There are no features that can manage the movement of materials and process results inside and outside the factory that can track manufacturing orders	Manufacturing configuration that is able to provide detailed information on the movement and process results to the company.
4.	Search feature that displays data that does not match	The search feature sometimes doesn't match what you're looking for	Customize filter grouping, to make it easier to search and simplify what has been created
5.	The resulting report is less effective	Reports that are made cannot be edited, can only be accessed by the IT team and must be canceled so that they can be continued and there is often a mismatch between the SAP system and monthly reports.	Integrate reports in the system according to monthly reports.

3.7 Analysis and Research Results

A. Analysis Problem

This phase aims to configure and customize Odo's creation from the results of deficiencies in data processing through the evaluations discussed in the previous chapter. This configuration and customization will make recommendations for the shortcomings of the previous system.

B. Solution

Based on the analysis, to overcome the problem, this research will configure and customize the Odo application to suggest the shortcomings of the SAP Business One application.

3.8 Questionnaire Results

A. Inner Model

When evaluating this measurement model for respondents from SAP Business One users at PT Bando Indonesia, the indicators used were not entirely valid and reliable. So that a structural model that is suitable for research can be obtained, which is as follows:

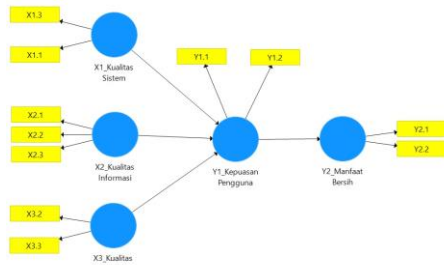


Figure 4. Inner Model

1. The exogenous latent variable Quality System (X1) has two manifest variables (indicators), namely, ease of use which is expressed by X1.1; Declared System Reliability (X1.3).
2. The exogenous latent variable Information Quality (X2) has three manifest variables (indicators), namely, completeness by variable (X2.2); and accurate data expressed by the variable (X2.3).
3. The exogenous latent variable of Service Quality (X3) has two manifest variables (indicators), namely, the guarantee stated by the variable (X3.2); and responsive, which is expressed by the variable (X3.3).
4. The endogenous latent variable User Satisfaction (Y1) has two manifest variables (indicators), namely, overall satisfaction expressed by the variable (Y1.1); and information satisfaction defined by the variable (Y1.2).
5. Endogenous latent variable Individual Impact (Y2) has two manifest variables (indicators), namely,

increasing productivity as stated by the variable (Y2.1); and an increase in job performance expressed by (Y2.2).

B. Outer Model

	X1_Kualitas Sistem	X2_Kualitas Informasi	X3_Kualitas Layanan	Y1_Kepuasan Pengguna	Y2_Manfaat Bersih
X1.3	0.883				
X2.1		0.711			
X2.2		0.804			
X2.3		0.733			
X3.2			0.869		
X3.3			0.868		
Y1.1				0.921	
Y1.2				0.942	
Y2.1					0.932
Y2.2					0.880
X1.1	0.831				

Figure 1. Outer Model

The output shows that the loading factor is above the suggested value of 0.5. convergent if it has a loading factor > 0.7 and has an average variance extracted (AVE) of 0.50. After re-estimation, the results have met convergent validity because all loading factors are 0.7. Thus, the concurrent validity for system quality, information quality, service quality, user satisfaction, and net benefits can be valid. Therefore, the values of the indicators used in this study have met convergent validity, so the indicators used in this study have met convergent validity (Convergent Validity).

C. Discriminant Validity

In related reflective indicators, it is necessary to test discriminant validity by comparing the cross-loading table values. So, a hand is declared valid if it has the highest loading factor value to the intended construct compared to the loading factor value of other constructs.

	X1_Kualitas Sistem	X2_Kualitas Informasi	X3_Kualitas Layanan	Y1_Kepuasan Pengguna	Y2_Manfaat Bersih
X1_Kualitas Sistem	0.817				
X2_Kualitas Informasi	0.713	0.750			
X3_Kualitas Layanan	0.645	0.770	0.868		
Y1_Kepuasan Pengguna	0.800	0.686	0.644	0.932	
Y2_Manfaat Bersih	0.680	0.714	0.649	0.817	0.901

Figure 2. Discriminant Validity

Evaluation of discriminant validity is done by comparing the square root of the Average Variance Extracted (AVE) value for each construct with the correlation value between constructs in the model. A good AVE value should be > 0.5. In this study, the AVE value can be seen in the following figure:

D. Construct Reliability and Validity

Construct Reliability and Validity			
Matrix	Cronbach's Alpha	rho_A	Com
Composite Reliability			
X1_Kualitas Sistem		0.801	
X2_Kualitas Informasi		0.794	
X3_Kualitas Layanan		0.860	
Y1_Kepuasan Pengguna		0.929	
Y2_Manfaat Bersih		0.896	

Figure 3. Reliability and Validity

In addition to the validity test, there is also a reliability test. Reliability shows that something can be trusted as a data collection tool because the instrument is already good. To confirm that the measuring device can work reliably, it will be tested in two ways using Cronbach's Alpha and composite reliability (CR). The Rule of Thumb is a guide that provides simplified suggestions for some ground rules when completing or approaching a particular task. So, the power of thumb is used to assess construct reliability, namely the composite reliability value > 0.7, as follows:

E. R Square

Evaluation of the structural model (inner model) aims to predict the relationship between latent variables by knowing if it has a constructive match. The Structural Model (inner model) can be evaluated by looking at the percentage of variance explained by looking at the R-Square value of the endogenous latent construct. The higher the R-Square value, the better the prediction model of the proposed model. In the 2 test, this value uses the smartPLS 3.0 computer program, and the data obtained are as follows:

R Square			
Matrix	R Square	R Square Adjusted	
	R Square	R Square Adjusted	
Y1_Kepuasan Pengguna	0.674	0.648	
Y2_Manfaat Bersih	0.667	0.658	

Figure 4. Rsquare

The value of 2 (R-Squared) measures how much influence certain independent latent variables have on the latent dependent variable. The result of 2 is 0.60, which indicates that the model is categorized as good [40]. Figure 3.27 shows the value of the construct of User Satisfaction of 0.674, which means that the variability of the construct of user satisfaction which can be explained by the variables of system quality, information quality, and service quality is 67.4%. In comparison, 32.6% is explained by other variables. Then the value of the net benefit construct is 0.667, which means that the variability of the net benefit construct that can be defined by user satisfaction is

66.7%. In comparison, 33.3% is explained by other variables outside those studied in this study.

3.9 Configuration

A. Inventory Module Configuration

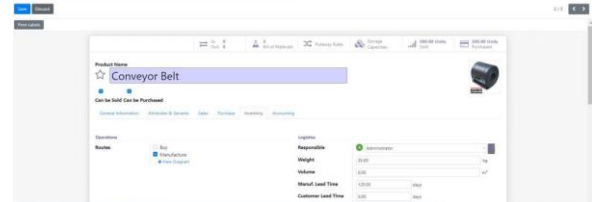


Figure 5. Inventory Module Configuration

After filling in the General Information tab, fill in the operational data in PT Bando Indonesia for the Conveyor Belt product, namely "Manufacture." Then, fill in data such as weight, volume, manufacturing period, and who is responsible for each process carried out in the Responsible field, namely "Administrator".

B. Purchase Module Configuration

If there is already a "PAID" written on it, it explains that the supplier has made the payment.

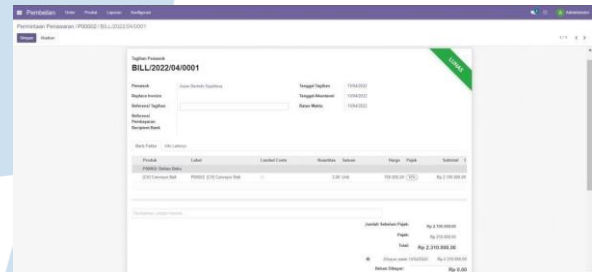


Figure 6. Purchase Module Configuration

C. Manufacturing Module Configuration



Figure 7. Manufacturing Module Configuration

In the last stage, a pop-up will appear after clicking "Mark as Complete," as shown in figure 12. Then click "Apply" Even though the status is not available, if there is a notification, as shown in figure 12, it can be declared successful. If stock is unavailable, a "create back-order" or "back-order not available" pop-up will appear, confirming that the item is not in stock.

D. Sales Module Configuration

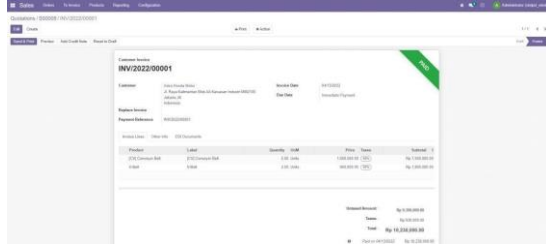


Figure 13. Sales Module Configuration

Explain that invoices containing a "PAID" notification mean that the customer has paid for the product.

3.10 Customization

A. Adding Signature Column in Sales Order Document

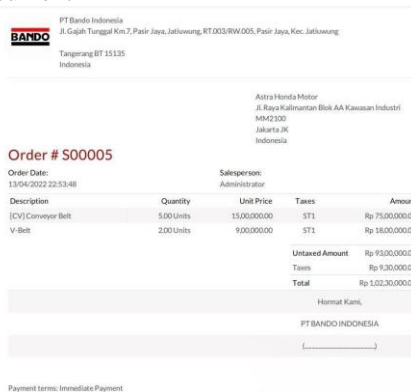


Figure 8. Customization Sales Order

The creation of this signature column is found in the Sales Order module. This is done so that this invoice can be said to be official and up-to-date with the information listed following the approval of the person in charge of the invoice issued.

B. Adding Signature Column in Purchase Order Document

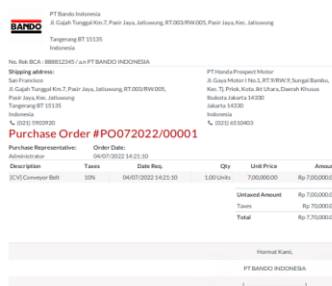


Figure 9. Customization Purchase Order

In this process, add the code in the Purchase Order section. PT Bando Indonesia previously did not have a format that applied internal approval to purchases and sales through operations.

C. Adding Price Contract Information



Figure 10. Adding Price

PT Bando Indonesia sets the price value on each agreed contract for the sale made. Therefore, to make it easier to identify the price contract on the sale order and trace the contract agreed with the customer, this customization was made to include the "Terms and conditions" and "Pricelist" columns.

D. Adding a Bank Account in the Header

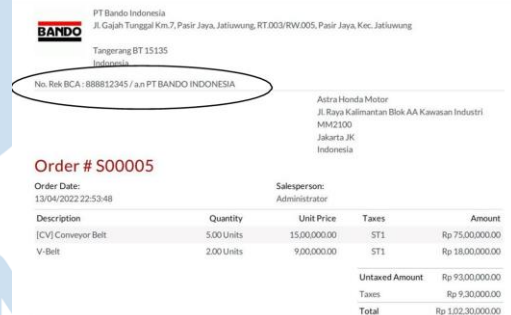


Figure 11. Adding a Bank Account

Add a bank account number in the header section that is created after the company profile information to make it easier for customers when making payments through transfer via bank.

E. Creating Grouping Filters



Figure 12. Creating Grouping

In making this grouping filter, it aims to make it easier to search and simplify what has been made.

3.11 User Acceptance Test

Based on the system that has been created, potential users are asked to test the features and modules, and this is useful for later the system will be used. Therefore, several stages of system testing with UAT standards are needed using the Black-Box Test method. This test is based on the appearance and function of the features and modules used on the Odoo ERP system.

Table 2. UAT results

Description	Case	Status
Log in	User's input username and password.	OK
Discuss page	Create a discussion room/forum to discuss with each other (user).	OK
User information Account	Display the user information (profile).	OK
Dashboard module	Display the available module.	OK
Inventory module	Display and Input Category, Product data, etc.	OK
Purchase module	Display information of vendor and invoice.	OK
Manufacture module	Display cost of materials and section.	OK
Sales module	Display customer data, product, invoice, and receipt.	OK
Add new module	Create a new module based on the requirements	OK
Change password	Change user password	OK
Log out	User's can log out after finish the task or an activity.	OK

3.12 Comparison of implementation

Table 3. SAP B1 vs Odoo Implementation

No	Using SAP B1	Using Odoo
1	User Interface of SAP B1 is not user friendly.	The price is costly and a one-time purchase when implementing the SAP program. The company must buy the hardware and software needed by the company to run all the programs in the system.
2	difficulty managing supplies	SAP offers flexibility for growth purposes. With this, many small companies gain benefits significantly.

3	Lack of information regarding status, process, production schedule, and material requirements	Manufacturing configuration can provide customers with detailed information on movement and process results.
4	Search feature that displays data that does not match the criteria	Customize filter grouping, to make searching easier and easier which has been made.
5	The resulting report is less effective	Integrate the reports in the system according to monthly reports.

IV. CONCLUSION

1. The system's quality has a positive and significant effect on user satisfaction. In testing the hypothesis, the 4.347 count is feasible > 2.021 . The higher the system's quality, the higher the level of satisfaction.
2. The quality of the information produced positively affects user satisfaction but is insignificant. In testing the hypothesis, the count value is $1.243 < 2.021$. Need to be improved again and needs other variables that can have a significant effect.
3. Service quality, which is produced, has a positive effect on user satisfaction but is insignificant. In testing the hypothesis, the count value is $1.055 < 2.021$. need other variables that can have a considerable effect.
4. User satisfaction affects the net benefit (net benefits) positively and significantly. The variability of the net benefit construct that can be explained by user satisfaction is 66.7%, while 33.3% is explained by other variables outside those studied in this study.
5. The recommendation activities are related to developing suggestions from the evaluation results in SAP Business One. This module complements the activity modules not in SAP Business One by recommending the inventory and manufacturing module.

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