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ERP ODOO IMPLEMENTATION IN SMALL RETAILERS

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ABSTRACT

This study aims to identify current traditional retail business processes (As-is), align, and integrate their business processes based on Enterprise Resource Planning (ERP). This ERP implementation minimizes recordkeeping errors and saves time supporting traditional retail businesses. The design of a new business process (To-Be) was built considering the ERP business process. This study used the system development process method of ERP, which includes the stages of planning, requirements analysis, design, detailed design, and implementation. In addition, a gap/fit analysis was carried out to compare the current business process analysis (As-Is) and the proposed business process (To-Be) after using the ERP Odoo system. This study found that the business processes at AH Mart traditional retail require several changes (re-engineering), from manual and unintegrated business processes to a computerized and integrated model between divisions. Differences in business processes that occur at AH Mart are in the warehouse, cashier, and treasurer. In the warehouse, the implementation of stock-opname with ERP can use barcodes, so the product data is neatly recorded in the system, and the number of incoming and outgoing products can be appropriately detected. The cashier uses a barcode system, and the total calculation of customer payments is automatically accumulated. Making financial reports by the treasurer is more effective because the report data for each division is already stored in the same database. This research provides insight into changing from conventional business processes to business processes based on Enterprise Resource Planning (ERP). ERP business process can be adapted by traditional retail in the modern era.

KEYWORDS: Enterprise Resource Planning (ERP), Business Process, Odoo.

1. INTRODUCTION

Nowadays, competition between companies is getting tougher, one of which is in the retail sector. Digitalization and technological advancements require the retail industry to be more responsive and drive

significant technological innovations that continue to overgrow [1]. The retail business must carry out its operational activities effectively and efficiently, supported by an integrated information system to compete with global companies [2].

Around the world, the retail industry is experiencing rapid changes and improvements, as can be seen from the many traditional retail businesses that are starting to build new modern retail companies, such as using e-commerce systems and digital firms [3]. The Al-Hikmah Mart (AH Mart), a store at the Darul Al Hikmah Islamic boarding school in West Java, is a traditional retail business that wants to transform its retail business into a modern one. One of the causes of the growth of current customer behavior in shopping is that people prefer to shop using technology compared to conventional methods in buying and selling transactions. Customers also require fast service [4].

One example of technology in business is Amazon Go, a high-tech grocery store launched by Amazon using sensors and cameras so that goods will be detected automatically and take less time. All purchasing processes will be handled in real-time [5] so that customers are more interested in shopping because it takes less time (the method is more effective and efficient).

Alignment between business processes and information technology must be carried out properly so that all existing resources can be optimal and information technology becomes an inseparable part of the company. One approach applied in ERP can improve the company's operational performance by integrating various business processes and information between divisions within a company [6]. However, in Indonesia, a few companies still use ERP systems because of their high cost and complexity, such as SAP and Oracle, with the average global price in the 1990s estimated at \$10 million for software installation and consulting fees. These factors make lower-middle companies decide not to use an ERP system [2]. However, one solution to overcome this problem is to use an OpenERP, such as Odoo, because it can be adapted quickly and efficiently. Odoo provides more than 4000 modules to support the company's business needs. Odoo is a management system that small and medium enterprises (SMEs) can use. Odoo is easy to use, particularly for SMEs [7]. Therefore, Odoo software is suitable for supporting information systems design for small retail, such as AH Mart.

AH-Mart is a store that sells consumer goods, such as cooking equipment, toiletries, snacks, and other necessities. AH Mart conducts business processes manually, such as inventory, accounting, purchase, Point of Sales, and other activities. However, AH Mart wants to integrate all business processes to have an excellent opportunity to compete with other stores or retail businesses.

The implementation of business processes at AH Mart is currently not optimal. Financial records are recorded using Microsoft Excel software, and the financial input process is not scheduled. As a result, financial record errors often occur. It can cause losses for AH Mart stores. The format of the financial statements made at AH Mart is still simple because there is no accounting expert or audit team. So, it is difficult for AH Mart to judge whether its financial statements are reasonable. When carrying out the stock-opname, errors in inputting prices often occur due to human error. It happens because the employees have to record items individually. The result of this error is the poor quality of financial reports. In addition, the entry and exit records of goods are not well controlled. Implementing the stock-opname takes a long time, which can take one day (morning-evening). AH Mart has to close until the stock opname is over. Based on this explanation, the research questions in this study are how to identify the current retail business processes (As-Is) at AH Mart and how to design a proposed business process (To-Be) following the ERP implementation at AH Mart store.

2. LITERATURE REVIEW

2.1. Business Process

Business processes are groups of tasks performed together to create customer value. A company must consider customer satisfaction, profit or investment, and market share. Therefore, optimizing business activities requires interdependence between processes and systems that are implemented through the integration of various business processes [8]. These business process activities can be carried out either manually or with an information system [9].

Business process analysis is a stage of studying and modeling the entire retail business process. This analysis helps improve, automate, and improve business processes. Bizagi Modeler is a freeware application for creating graphic diagrams, documents, and process simulations in a standard format called Business Process Modeling Notation (BPMN). BPMN is designed to be easy to use and understand and can model complex business processes by displaying business process sequences and supporting information [10].

2.2. Enterprise Resource Planning

ERP system is software used to manage company data [11]. The use of ERP makes all systems in a company into one integrated system with one database, making it easier for several departments to share data and facilitate communication [12]. ERP has been used in business since the 1960s. Due to the advent of technology, the ERP sector has rapidly grown. Small and medium enterprises have also started implementing ERP [13]. ERP systems can be divided into two categories, namely commercial (exclusive) and free (Open Source) [6]. Commercial ERP software such as SAP, Oracle, People Soft [14], while open source ERP software is available in the market, such as webERP, Compiere, PostBooks, ERP5, Odoo, etc.

[15]. Using ERP means cost reduction, inventory reduction, and increased operating performance (see table 1) [11].

Table 1: Before and After ERP: Business Perspective

	Before ERP	With ERP
Cycle time	Costly bottlenecks	Time and cost reduction of business processes
Transactions processing	Multiple transactions use multiple data files	Faster transactions using shared data. Reduces the time and cost of multiple updates
Financial Management	The increased cost of excess inventory, cost of overdue accounts receivable	Improves operational performance (e.g., less excess inventory, reduction in accounts receivable)
Business processes	The proliferation of fragmented processes with duplication of effort	Re-engineering around a business model that conforms with "best practices."
Productivity	Lack of responsiveness to customers and suppliers	Improvements in financial management and customer service
Supply chain management	Lack of integration	Linkages with suppliers and customers
eBusiness	Web-based interfaces support isolated systems and their components	Web-based interfaces are front-end to integrated systems
Information	Lack of tactical information for effective monitoring and control of organizational resources	Allows cross-functional access to the same data for planning and control. Provides widely available information
Communications	Lack of effective communication with customers and suppliers	Facilitates organizational communications with customers and suppliers

2.3. Odoo

Odoo is an open-source business management software that unifies the work's structure and details. It is open to developing other editable modules in addition to the modules provided by default that the organization may require [16]. Odoo is an ERP system with several applications or modules [17], such as accounting modules, sales management, purchase management, inventory management, MRP, dashboards, point of sales, project management, and CRM [6]. Odoo comprises three main components: the PostgreSQL database server, the Odoo application server, and the web server [18].

2.4. Fit/Gap Analysis

Fit/gap analysis is a tool or way to compare actual performance with potential performance. Fit/gap analysis is considered the most suitable for researchers because it makes it easier to measure one's expectations with various variants and facts that occur in the field [19].

3. Business Model of Traditional Retail

3.1. Methodology

This research includes action research conducted at the Al-Hikmah Mart store in Kp. Kramat RT 01/04 Pabuaran Village, Bogor. Data were collected by conducting interviews with related parties and conducting library studies. The method used in this research is developing an ERP system by re-engineering business processes using Odoo software. The steps in ERP system development: (1) Planning, namely by conducting a needs assessment which will later justify business processes; (2) Requirements Analysis analyzes business processes and determines the processes to be supported by ERP; (3) Design is doing business process re-engineering; (4) Detailed Design selects the model and information supported by the system; (5) Implementation is direct testing of Odoo software and providing step by step tutorials for using Odoo.

3.2. Reengineering Business Process

Two designs can be used in developing an ERP system: Re-engineering and Customizing. This study chose a commercial ERP and re-engineered the business processes to match the ERP. Meanwhile, the design process adapts the ERP to the company's business processes in the customizing method. Here is a comparison of re-engineering and customizing [11].

Table 2: Comparison Re-engineering and Customizing

	Advantages	Disadvantages
<i>Customizing</i>	Maintaining company business processes	ERP may not support existing business processes in the company, thus requiring customization. Customization is complicated due to integrated modules, and it is challenging to upgrade the software to newer versions because upgrades are based on the vanilla version
<i>Re-engineering</i>	Supported by ERP solutions, taking advantage of shared or common processes in the industry (for example, can use other industry practices can improve business processes, make it easier to document best practices, and keep working well when there are few organizational changes	Unable to maintain previous business processes (unique and strategic business processes), resistance occurs when there is extensive organizational change

Source: [11]

In this study, ERP system design is done by re-engineering because most of the current business processes (inventory, accounting, and point of sales) can be changed to follow the business processes that are in line with Odoo software. However, there is one module, purchase, where AH Mart wants

to maintain their business process by buying products from various suppliers (it does not have a fixed supplier) to look for cheaper product prices. Figure 1 is the current business process (As-Is) of AH Mart.

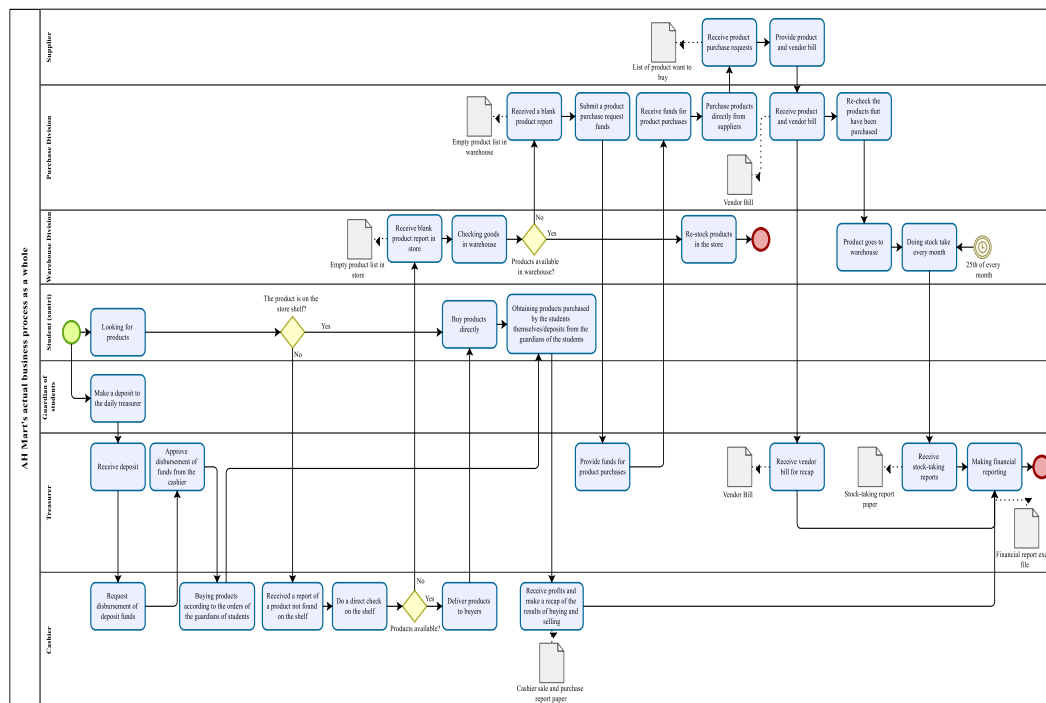


Figure 1: Actual Business Process

Table 3: Implementation Re-engineering at AH Mart

No	Module	Module Definition	Odoo Reengineering Application	
			In accordance	Not in accordance
1	Accounting	Modules used to work on accounting processes. The accounting module allows users to track financial data and manage expenses. The accounting module on <i>Odoo</i> can also be connected to other modules so that the economic reports can be directly updated when	Making financial reports at AH Mart can be done by following the accounting module in <i>Odoo</i> (Reengineering). AH-Mart's financial information is currently done by creating a manual in Microsoft Excel with a simple report format. The financial statements are not directly inputted when money is	

No	Module	Module Definition	<i>Odoo</i> Reengineering Application	
			In accordance	Not in accordance
		conducting transactions or activities related to finance.	coming in or going out (not real-time). Hence, human error often does not record expenses or income in the financial statements. Meanwhile, using <i>Odoo</i> , financial reports will be directly integrated with various modules such as inventory, purchase, and point of sale. So when a sale and purchase transaction occurs, the financial statements will be automatically recorded, and when checking goods in the warehouse (financial reports resulting from <i>Stock opname</i>) will be directly integrated with the financial statements. The financial report format on <i>Odoo</i> can be adjusted to the financial statements commonly used in Indonesia, or if there is an addition from AH Mart, the economic structure can be corrected without losing the monetary value that has been recorded in the software	
2	Inventory	Modules used for stock management and logistics activities. The inventory module is also used for warehouse management with advanced barcode scanner applications	Warehouse management at AH Mart can be done by following the existing business processes on <i>Odoo</i> (Reengineering). The <i>Stock opname</i> at AH Mart is done manually by looking for one product at a time. Then it is recorded on paper that has printed the names of the products. It is often an error in recording the number of	

No	Module	Module Definition	<i>Odoo</i> Reengineering Application	
			In accordance	Not in accordance
			<p>products due to the condition of the goods in the warehouse, which are not all placed in stock in the same place (all types and brands of goods are mixed). Manual implementation like this also takes a long time, namely one day (the store must be closed on <i>Stock opname</i>). Meanwhile, using the inventory module on <i>Odoo</i>, <i>Stock opname</i> can be implemented using a barcode system. Employees scan the product without having to search for products with a specific brand or type because barcodes on computers/laptops will be grouped according to each class and brand. For products that do not have a barcode, <i>Odoo</i> can display a barcode when creating the product on <i>Odoo</i>. The barcode can be printed and pasted into the product.</p>	
3	Purchase	The module makes purchase orders to suppliers, auctions, and agreements. The purchase module in ERP makes business processes easier because it only requires one database that can be monitored with methods that are integrated with other modules, such as accounting and inventory		AH Mart processes purchasing products from suppliers by selecting and looking for different suppliers whenever they want to buy products for stock in stores. AH-Mart does this intending to find a supplier with the lowest product price with a benchmark price at the time of the last purchase of the product. Meanwhile,

No	Module	Module Definition	<i>Odoo</i> Reengineering Application	
			In accordance	Not in accordance
				<i>Odoo</i> AH Mart can choose a permanent supplier and see the average price from that supplier. However, for purchasing products from suppliers, AH Mart still wants to maintain the old way by looking for suppliers whenever they want to buy products.
4	Point of Sale (POS)	Point of sales module commonly used in restaurants or stores. POS is also an integrated application that allows transactions, automatically registers product movements in stock, and provides real-time statistics and consolidation across all stores. By using the POS module on <i>Odoo</i> , cashiers will find it easier to find out prices, calculate the total cost of goods purchased by customers, and provide options for buyers to make payments and issue purchase receipts.	Buying and selling transactions at AH Mart can be done by following the existing business processes on <i>Odoo</i> (Reengineering). At this time, the buying and selling process at AH Mart is done manually, without any receipts given to customers, the also the sales summary on that day must be recorded manually. Meanwhile, by using the point of sales module on <i>Odoo</i> , buying and selling transactions can be done automatically. By scanning the barcode, the product price and the number of products purchased will immediately appear on the computer/laptop. The cost to be paid by the customer will also be accumulated directly so that cashiers no longer need to use a calculator, which is also prone to errors. <i>Odoo</i> will also issue purchase receipts so customers can recheck the item. The	

No	Module	Module Definition	<i>Odoo</i> Reengineering Application	
			In accordance	Not in accordance
			summary of transactions carried out on that day can also be seen directly in the reporting point of sales	

Source: (Data Processing, 2022)

Table 3 explains the detailed implementation of Re-engineering at AH Mart. It can be seen that the dominant business processes of AH Mart can be done by re-engineering, namely the accounting, inventory, and point of sales modules. Meanwhile, in the purchase module, AH Mart still wants to maintain the way it is currently being done. However, Odoo can provide a solution related to this because, in Odoo, it is also possible to create a new supplier selected by AH Mart. Every product purchased from that supplier can be inputted by employees so that the inventory module (number of products that enter the warehouse) and accounting (financial reports) will be updated too. Therefore, Re-engineering can be done at AH Mart.

4. RESULT AND DISCUSSION

4.1. Design of AH Mart Store Proposed Business Process

Business process improvement at AH Mart is carried out by adjusting business processes following Enterprise Resource Planning, especially Odoo 14 Software, namely the warehouse, purchasing, cashier, and treasurer (accounting and financial). Is done so that data from each division can be stored in one database, which can later be used.

1. Purchasing Products to Suppliers Using Odoo Software

The purchase module is used when AH Mart wants to procure product stock in the warehouse. This module includes price quotes to suppliers for purchasing and receiving products from suppliers. However, because AH Mart still wants to make purchases by coming directly to the supplier's shop, this purchasing module only updates suppliers, types, and quantities of products purchased (Figure 2). The goal is that financial reports can be updated automatically, and AH Mart can see the history of product purchases that have been made. The results of this process will be stored in the Odoo database and can be used as a reference for future purchases.

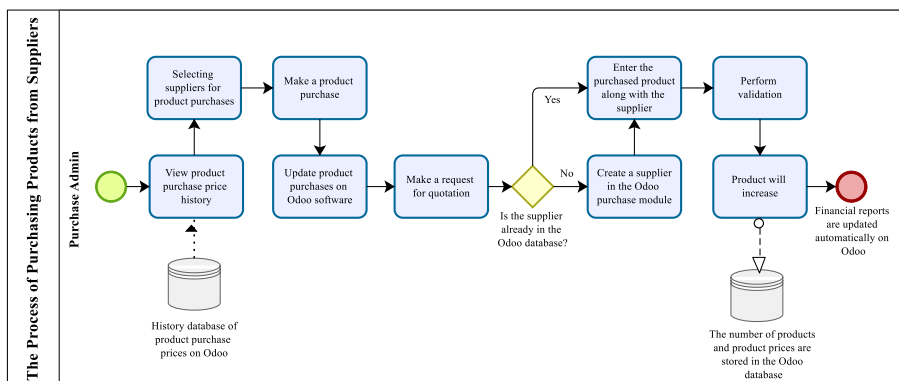


Figure 2: Business Process of Purchasing Products to Suppliers Using Odoo Software

2. Product Purchase Process by Customers Using Odoo Software

AH-Mart has a direct selling model or direct sales in stores. This process is carried out using the point of sales module. The methods contained in the sales issue are receiving products, receiving payments, and delivering products to customers (Figure 3). After the cashier makes a record, the cashier will receive payment from the customer in cash. If the customer has made a transaction, the next step is to print a sales receipt which will later be given to the customer (Figure 4).

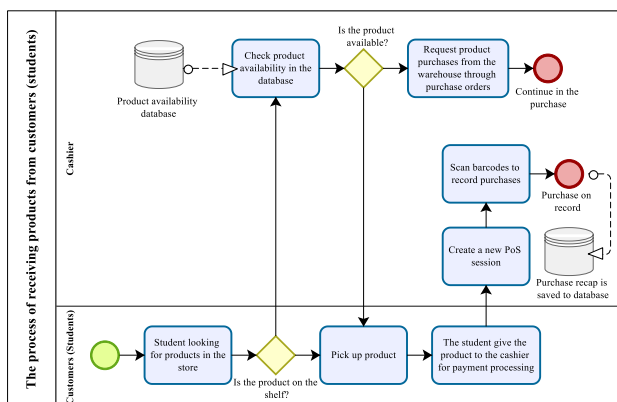


Figure 3: Business Process of Receiving Products from Customers Using Odoo Software

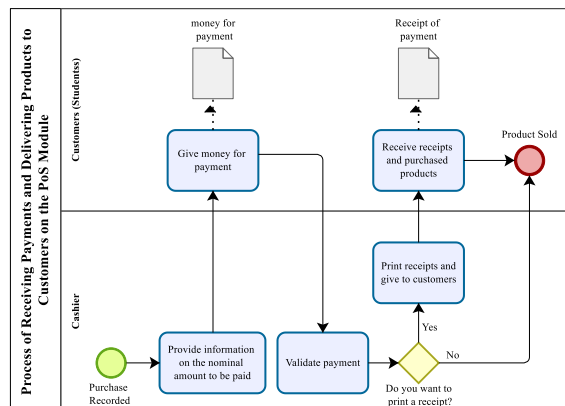


Figure 4: The Process of Receiving Payments from Customers Using Odoo

3. Stock Opname Implementation Process Using Odoo Software

Stock opname is done by looking at the physical evidence of inventory in the warehouse (Figure 5). The goal is to confirm the accuracy of the inventory in the warehouse with product records at AH Mart. In Odoo, inventory valuation can be done, which is used to see the value of production assets in the warehouse. Inventory valuation contains information about products in the warehouse, such as quantity, location, and the importance of production assets, which is used as a reference for recording products in stock opname. The implementation of stock opname using Odoo at AH Mart is done by scanning product barcodes in the warehouse randomly (Figure 6).

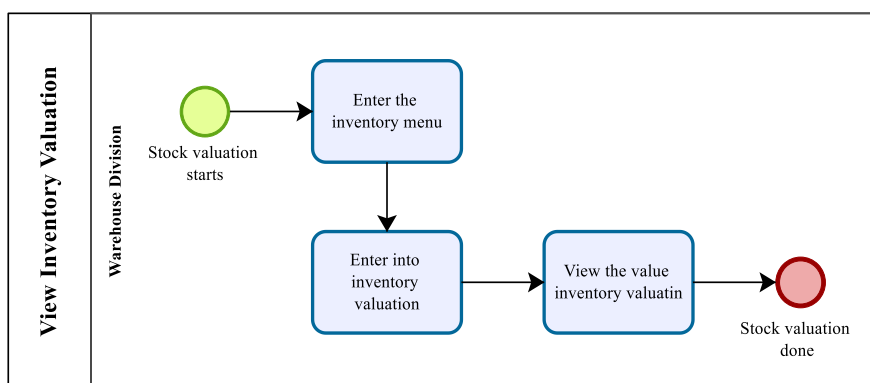


Figure 5: Business Process View Inventory Stock Valuation Using Odoo Software

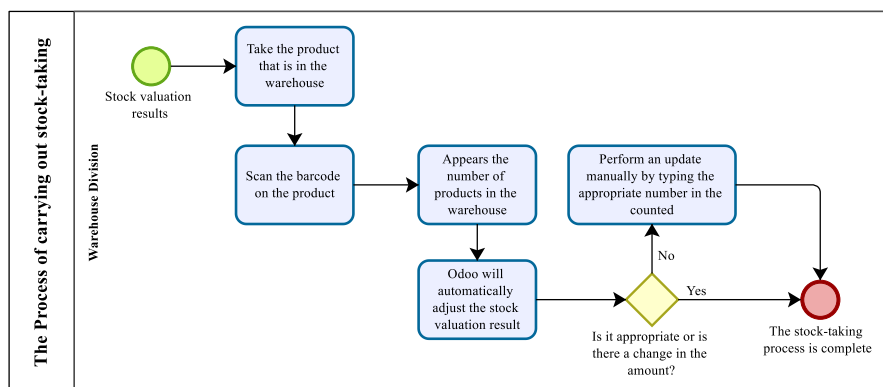


Figure 6: Business Process of Carrying Out Stock Opname Using Odoo Software

4. The Process of Making Financial Reports Using Odoo Software

This business process records income and expenses made by AH Mart. In Odoo, this business process uses the accounting module (Figure 7). Some of the methods in this module are recording payments and making store financial reports. The accounting module records customer payments (customer invoices) and payments to the supplier (vendor bills). In addition, this module can provide company financial reports from transaction data to store profit and loss data. Recording costs are carried out when a procurement or sale transaction occurs. This process will record the money in and out of the store cash journal.

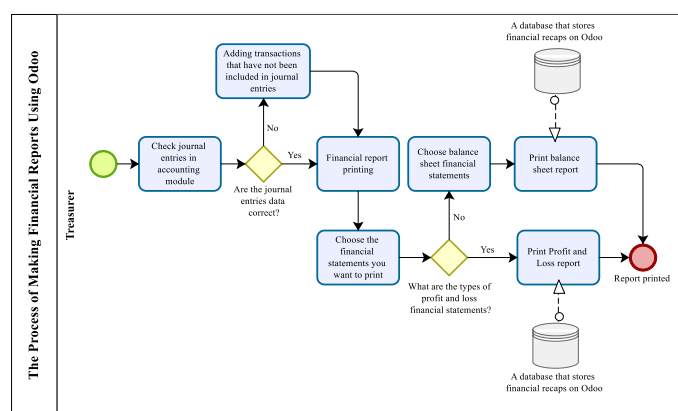


Figure 7: Business Process of Making Financial Reports Using Odoo Software

4.2. Fit/Gap Analysis

This gap analysis subchapter will compare the As-Is and To-Be analyses using Odoo Software. This analysis uses fit/gap information to assess the following gaps:

- Fit (F), Business processes are said to be fit when the comparison between current business processes (As-Is) and future business processes (To-Be) does not require significant changes or can be said to be appropriate.
- Partial Fit (P), The business process is said to be partial fit when the future business process (To-Be) has been executed on the current business process (As-Is). But in use, it still requires changes in some parts to match
- Gap (G), Business processes are said to be gaps when future business processes (To-Be) are executed on current business processes (As-Is)

Table 4. The Business Process Gap Analysis at AH Mart

No	Business Process/Module	Sub Process	Business Activity	As-Is	To-Be (Odo)	As-Is Justification	Odo Justification	Fit/Gap		
								F	P	G
1.	Inventory	Adding new products	Enter the name, quantity, and price of the products	V	V	The input of product name, quantity, and the price is done manually using Microsoft Excel software, but the data can be accessed by other divisions when the file is sent to the division, and if there is a transaction, it cannot be updated automatically	The input of product names, quantities, and prices can be done manually or using master data directly imported into the Odo software. The inputted product data will be stored in a database that other divisions can now access without the need to share files, and if there are transactions or changes, it will be updated automatically, as used in the point of sales module for buying and selling transactions using barcodes			V
		Implementation of Stock	Cross-check the products in	V	V	Stock opname is carried out by searching and	Scanning barcodes carry out stock taking			V

	<i>opname</i>	the warehouse			listing the products. Updating the number of products is done manually by writing on paper containing product data	without having to search for products one by one because, by scanning, the product will immediately appear on the computer/laptop screen along with the number		
	View Inventory Valuation	View the number of product stock in the warehouse along with the asset value in the warehouse	X	V	AH Mart has no asset records in the warehouse	Odoo has a feature to see the amount of product stock in the warehouse and record the value of assets in the warehouse	V	
2.	Purchase	Purchase of products to suppliers	Product to buying process	V	V	Product purchases are made to suppliers manually, directly to the supplier's store. AH-Mart does not have a permanent supplier, so whenever you want to buy a product to restock at the store, you must look for a new supplier to find the lowest price. The price benchmark is only based on the last purchase receipt (cannot compare prices at each supplier)	Purchasing products from suppliers can be done without having to go to the store by making a purchase order on Odoo. However, in this case, at AH Mart, the process of purchasing products will still be done manually because AH Mart wants to find a supplier with the lowest price (AH Mart does not have a permanent supplier). Using Odoo, AH-Mart can also compare prices from each supplier because Odoo will display the price of a product from the beginning of the transaction to the	V

						last transaction made. Example: The cost of ABC battery products purchased from suppliers A, B, and C will be displayed on <i>Odoo</i>		
		Update supplier data along with product purchase prices to suppliers	X	V	AH-Mart does not update supplier data, and the purchase price of products to suppliers is only on the vendor bill given by the supplier. The total transaction price to suppliers is updated manually in the financial report section	<i>Odoo</i> has a feature to update suppliers and the price of products purchased from that supplier. Transactions carried out together with suppliers will be updated automatically in the report	V	
3.	Accounting	Recording Transactions	Record buying and selling transactions at the cashier and transactions with suppliers when purchasing product stock that has run out in the warehouse	V	V	Recording irregular transactions still using a notebook	<i>Odoo</i> has a transaction recording feature automatically, both buying and selling transactions made to suppliers (Journal Entries Feature)	V
			Bank and cash journal entry	X	V	No automatic recording in the journal	<i>Odoo</i> has features for recording in bank and cash journals	V
		Making Financial Report Format	Making financial report formats following	V	V	The format of the financial statements made at AH Mart is still simple and does not allow the	<i>Odoo</i> has a financial report feature that can be printed automatically, but	V

		the formats commonly used in Indonesia			structure of financial statements that are commonly used, and the design of the financial statements that are made is still mixed with financial reports in Islamic boarding schools	if you want to make changes to the default <i>Odoo</i> format, it can be done quickly and adapted to the design of financial reports in Indonesia		
	Making Financial Reporting	Print financial reports	X	V	AH Mart does not have structured financial statements	<i>Odoo</i> has complete and structured financial reports, where all transactions will be automatically updated in the financial statements because transaction data is stored in the <i>Odoo</i> database.	V	
4.	Point of Sales	Receiving Products	Creating a New PoS session	X	V	AH Mart doesn't have a point of sales system yet; buying and selling transactions are done manually	<i>Odoo</i> has a point-of-sales feature	V
		Record Purchase		X	V	AH Mart doesn't have a PoS system yet; buying and selling transactions are done manually	<i>Odoo</i> provides a cashier system for direct purchases at <i>Odoo</i> , so sales made per day will be recorded automatically and updated in the financial statements	V
	Receive Payment	Receive Payment		X	V	Payments are made manually, where the cashier will calculate the price of the product purchased using a calculator; then, if	<i>Odoo</i> provides a cashier system using a barcode, where when the barcode is scanned, the product will be	V

				the cashier doesn't know the cost of the product, they must open the product price update record first	immediately read on the computer/laptop screen along with the latest price of the product, then the total cost of the product purchased by the customer is calculated automatically on <i>Odoo</i>	
	Making Invoice	X	V	AH Mart has no purchase receipt	<i>Odoo</i> can provide purchase receipts to customers so that customers can check back on the products they bought	V

An explanation of the business process gap analysis at AH-Mart can be seen in Table 4. After conducting a gap analysis on AH Mart's actual business processes, there are several changes to the business processes that have been adapted to the implementation of ERP Odoo, especially in the warehouse, purchase, cashier, and treasurer. The business process after using ERP Odoo has covered the needs of AH Mart, where the business processes were initially still using the manual system, and there were many obstacles. For now, AH Mart's business processes have been computerized and integrated between one division and another with the implementation of ERP Odoo so that AH Mart verifies that the proposed business process (To-Be) using Odoo can be implemented at AH Mart stores.

5. CONCLUSION

Implementing business processes at AH Mart integrated with the Enterprise Resource Planning (ERP) system with Odoo software. The data between divisions has been stored in the same database, so each division can access data from other divisions without needing to contact and wait for a response from the division concerned. They also minimize errors in making financial reports, calculating stock in the warehouse, and speeding up the buying and selling process at the cashier.

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