Business Process Reengineering at Bakery X with the Odoo Application Implementation

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Abstract: Bakeries are one of the business ventures that have intense business competition. However, the sales, procurement, and production processes that are still manual make it difficult to maintain market share, so it is necessary to be efficient in all fields including ongoing business processes in order to increase competitiveness. The way to improve business process efficiency is to improve business processes by applying the concept of Business Process Reengineering. Techniques to determine the success of performance targets in previous business processes need to be used as a measuring instrument. Measuring test instruments used are Key Performance Indicators. The results of KPI measurement are four factors that has yet to be achieved, namely, reducing errors in making sales invoices, reducing errors in receiving raw materials, reducing errors in the purchase of raw materials, and reducing misuse of raw materials. To improve business processes that are still conventional and overcome the problems of the results of the KPI at the bakery, it is necessary to create a new business process that is systemized using the Odoo Application. After using the Odoo Application the problems contained in the KPI results can be overcome by using a number of Odoo modules related to sales, procurement, and production.

Keywords: Business Process Reengineering, Key Performance Indicators, Sales Process, Procurement Process, Production Process, Odoo Application.

1. INTRODUCTION

A company needs new innovations to survive in the competitive world of business in this modern age. This innovation is carried out to maintain existing market share and capture new market share. The company must also make efficiency in all fields including existing or ongoing business processes in order to increase competitiveness [1].

The solution to improve business process efficiency is to improve business processes by applying the concept of Business Process Reengineering (BPR). The concept of BPR is a change management technique for ongoing business processes to improve the efficiency, effectiveness, and service of business processes [2] [3]. Techniques to determine the success of performance targets in previous business processes need to be used as a measuring instrument. Measuring test equipment used is KPI (Key Performance Indicators) [4]. KPIs are used to monitor the performance of each business process, which is the main indication of measurement that determines how well the business process performance is to be achieved [5].

Implementation of business process improvement is done using the Odoo Application. Odoo is a management system application in which there are several integrated modules that can be used in various sectors, one of which is the trade sector, making it suitable for implementing business processes in bakery [6]. The business process at a bakery is related to the business process of selling, purchasing raw materials and producing. The modules contained in the Odoo Application that are suitable for use in implementing business processes in a bakery are the Manufacturing, Invoicing, Sales Management, Warehouse Management, and Purchasing modules [7]. The design of new business processes by utilizing information technology such as the Odoo

Application can add value to new business processes that are created [8].

This research utilizes the Odoo Application to analyze and help improve business processes in different case studies, namely at the bakery so as to increase the efficiency of time and costs incurred. The concept used in this research is Business Process Reengineering (BPR) with the implementation of the Odoo Application.

2. LITERATURE REVIEWS

Much research has been done on improving business processes and the use of Odoo, one of which is a journal that discusses the implementation of warehouse management information systems based on Enterprise Resource Planning using Odoo Applications [9]. Subsequent research on Business Process Reengineering with the Implementation of Open ERP in the sales and procurement process uses the Odoo Application [10].

3. RESEARCH METHODS

3.1 Research Flow

The first stage of the research is determining where to conduct the research and then conducting research licensing. The second stage is collecting data that can be done by studying literature from books, journals or e-books, but it can also be done by conducting interviews and direct observation. The third stage, after the data is collected and then conduct an analysis of old or ongoing business processes. After that, measuring performance on the old business processes, then making recommendations or modeling new business processes and implementing them to the Odoo Application.
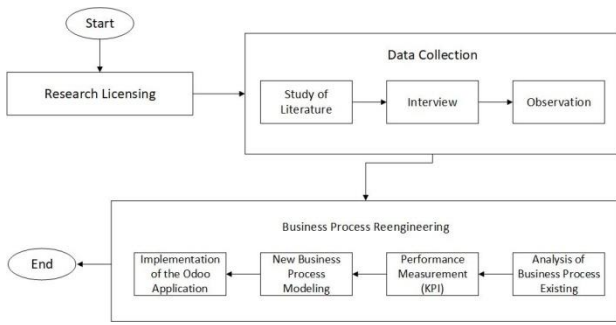
Figure 1. Research Flow

Figure 1 is the flow of research that contains a series or stages carried out in business process improvement studies in bakery X with the concept of business process reengineering.

3.2 Overview

This overview explains the implementation of new business processes that use the Odoo Application. The modules in Odoo that are needed in the process of selling, procurement, and production in the bakery X are the Purchase module, the Sales module, the Inventory module, the Manufacturing module, and the Invoicing module.
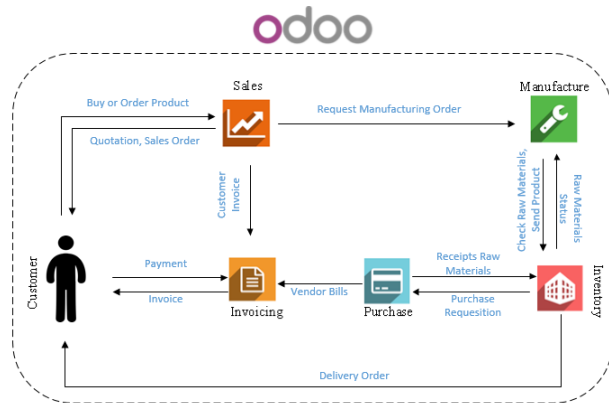

Figure 2. Overview

Figure 2 is an overview of the system usage of the Odoo Application which uses five modules. The Sales module is used for the sales process, the Manufacture module for the production process, the Purchase module for the procurement process, the Inventory and Invoicing modules are additional modules related to other modules.

3.3 KPI Measurement

KPI (Key Performance Indicators) measurements are carried out in three categories, namely measurements for the sales, procurement and production processes.

3.3.1 Sales

There are three KPI measurements in the sales process, namely calculating the percentage increase in the number of products sold (A1), the percentage of errors in making sales invoices (A2), and the percentage of the level of customer satisfaction with the products sold (A3).

$$A1 = \frac{(\text{Total of new sales} - \text{Total of old sales})}{\text{Total of old sales}} x100\% \qquad (1)$$

$$A2 = \frac{\text{Total invoice error creation}}{\text{Total transaction}} x100\% \qquad (2)$$

$$A3 = \frac{(\text{Total customers come} - \text{Total customers complain})}{\text{Total customers come}} x100\% \qquad (3)$$

3.3.2 Procurement

There are three KPI measurements in the procurement process, namely counting the percentage of raw material receipt (B1), the percentage of purchase errors of raw material (B2), and the percentage of the number of delays in the delivery of raw materials (B3).

$$B1 = \frac{\text{Total error of receipt}}{\text{Total receipt}} x100\% \qquad (4)$$

$$B2 = \frac{\text{Total error of purchase}}{\text{Total purchase}} x100\% \qquad (5)$$

$$B3 = \frac{\text{Total shipping delays}}{\text{Total shipping}} x100\% \qquad (6)$$

3.3.3 Production

There are three KPI measurements in the production process, namely calculating the percentage of the number of production orders that can be fulfilled (C1), the percentage of misuse of raw materials (C2), and the percentage of the number of defective products (C3).

$$C1 = \frac{\text{Total orders that can be fulfilled}}{\text{Total orders}} x100\% \qquad (7)$$

$$C2 = \frac{\text{Total abuse of raw materials (per product)}}{\text{Total products produced}} x100\% \qquad (8)$$

$$C3 = \frac{\text{Total defective products}}{\text{Total products produced}} x100\% \qquad (9)$$

4. CONCEPTS AND THEORIES

4.1 Business Process Reengineering

Business Process Reengineering is a fundamental rethinking and radical redesign of a business process to achieve dramatic improvements [11] [12] [13]. By measuring current performance through the elements of cost, quality, service, and speed [14]. The steps in carrying out the BPR process can be explained as follows [15].

1. Position yourself for change, in this case must position the company and determine why it must change. Change to what or what you want to focus on. Develop a focus for change and mobilize resources for implementation.

2. Conduct a diagnosis of the current process, in this case must know how the current process is and what it looks like, and why the current system is designed like that. This understanding when associated with the customer's will, then forms the basis for fundamentally new thinking about the business processes that are made.

3. Redesign business processes, to create new business processes, imagine and think of new ways to organize and carry out processes or activities to meet customer needs and

goals. Seek input from several people to form a vision that encourages improvement in the process.

4. Transition to new design, develop business plans or strategies to change towards a predetermined vision. New process tests are conducted to demonstrate their performance and to show that there are new concepts and at the same time generate enthusiasm, in addition to managing changes that occur at all levels.

4.2 Key Performance Indicators

Key performance indicators (KPI) is a performance measurement tool for a company that reflects the goals to be achieved by a company [16]. Key performance indicators refer to the measurements used to show the performance of each process [17]. Key performance indicators are indicators used to monitor the level of achievement of a company's performance targets. In this case it is often referred to as a company KPI. The determination of company KPI basically must be based on the company's vision and mission, strategy, and strategic objectives of the company. Obtaining KPIs can generally be done through discussions between employees and leaders through interviews, or from internal organizational documents [18].

4.3 Odoo

Odoo is an open source web application which is one of the implementations of ERP (Entreprise Resource Planning). The Odoo application was previously named TinyERP, and in 2009 it was renamed OpenERP. The database on Odoo uses postgresql, while the programming language uses javascript and python [19]. Odoo is a management system application that can be used by large, medium or small companies and can be applied in various sectors, such as trade, textiles and so on. Odoo application has various integrated modules in it which help in running a business, such as Manufacturing, Invoicing, Sales Management, Warehouse Management, Purchasing, Point of Sale and others [7].

Odoo has three components in its architecture, namely the database, server and client components. The database handles the storage of information that is run by Odoo servers, the server handles business logic and interactions with database applications, while the client provides information to the user and allows it to be operated with the server using other applications [20].

According to Jindal and Singh Dhindsa the benefits of using Odoo for the company are as follows [21].

1. The ability to adapt is better because it is open source and easier to adjust.

2. Vendor dependency becomes lower because it is open source, so the company does not depend on the software owner.

3. Lower implementation costs, because there are no licensing fees and only basic infrastructure is needed to get good application performance.

4. Easier to integrate, because Odoo uses a common database, hardware and operating system.

5. Odoo has good quality on the technical side because it is supported by the community.

5. RESULT AND IMPLEMENTATION

5.1 KPI Analysis

The results of the analysis of business process performance measurement at bakery X using the KPI (Key Performance Indicators) measurement model can be seen in the following table.

Table 1. KPI Measurement Result

Category	No	KPI	Result	Target
Sales	A1	Percentage increase in the number of products sold	22,9%	Min 20%
	A2	Percentage of errors in making sales invoices	1,18%	0%
	A3	Percentage of customer satisfaction	100%	Min 95%
Procurement	B1	Percentage of error in receipt of raw materials	4,28%	0%
	B2	Percentage of purchase error of raw material types	2,85%	0%
	B3	Percentage of many late delivery of raw materials	0%	0%
Production	C1	Percentage of the number of production orders that can be fulfilled	100%	100%
	C2	Percentage of misuse of raw materials (per product)	1,59%	0%
	C3	Percentage of total defective products	0%	0%

There were four results of KPI performance measurements in the table above, namely A2 in the sales category, B1 and B2 in the raw material procurement category, and C2 in the production category. The four factors that do not reach the target can be overcome by using the Odoo Application.

5.2 Current vs Business Processes

Current or ongoing business processes are still conventional so everything is done manually. While the new business processes use the Odoo Application which is already systemized and integrated.
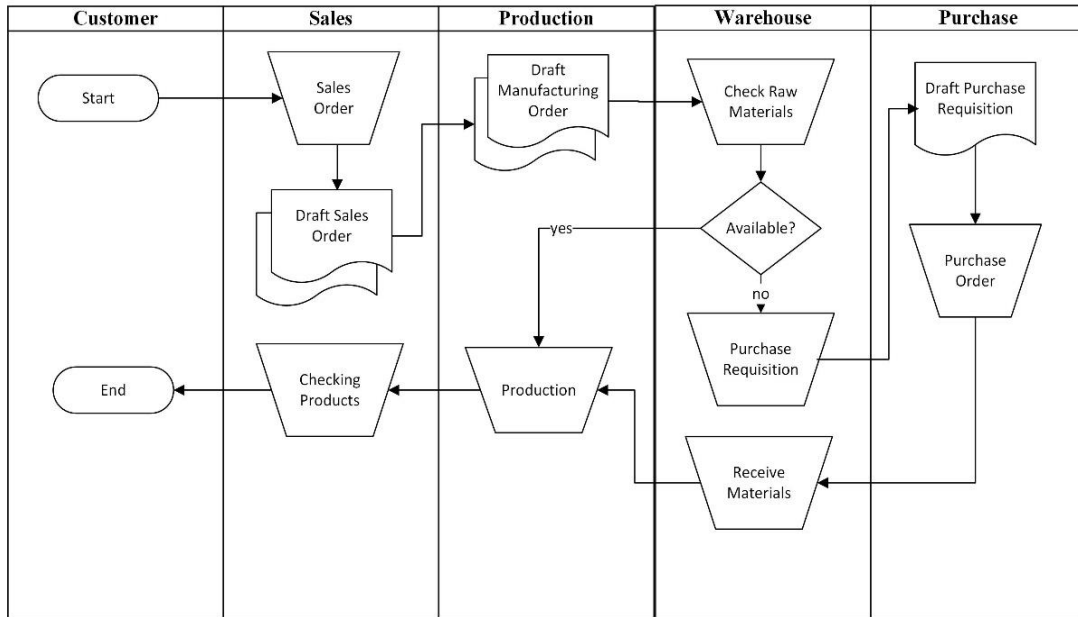
Figure 3. Ongoing or Current Business Process

Figure 3 shows the flow of the ongoing business processes. The ongoing business process is still conventional and inefficient because the process is still manual. The sales process is still recorded directly by the employee. The process of procuring raw materials is also manual, in which the warehouse section checks the availability of raw materials first, if there is a lack of availability, then it is coordinated to the purchasing department to purchase raw materials. The production process is also manual, where the production department must ask the warehouse to find out the availability of raw material stock.

In the new business process, it uses several modules in the Odoo Application. The selling process involves the sales and invoicing module, the production process involves the manufacturing and inventory modules, while the purchasing process involves the purchase and invoicing module.
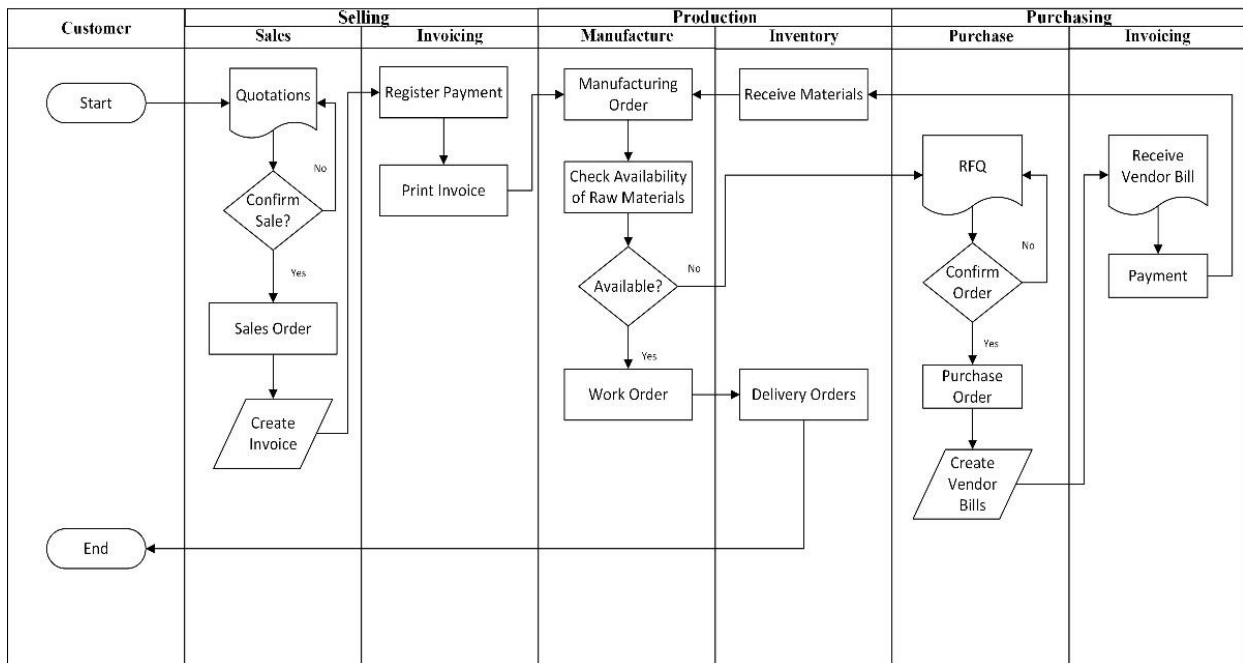

Figure 4. New Business Processes

Figure 4 shows the business process flow according to the Odoo Application. Modeling new business processes using the Odoo Application makes it more efficient because it is systemized. The sales process is efficient because orders are directly inputted and stored in the system. The process of procuring raw materials is carried out automatically by the system when the stock in the warehouse is running low. The production process is also more efficient because the availability of raw materials is displayed automatically by the system when it wants to do production.

5.3 Implementation by Odoo Application

Implementation with the Odoo Application is carried out in accordance with the new business processes that have been created. The implementation is divided into three processes namely, the sales process, the production process, and the procurement process.

5.3.1 Sales Process

The sales process in the Odoo Application starts when the customer wants to place an order, the sales department makes quotations.
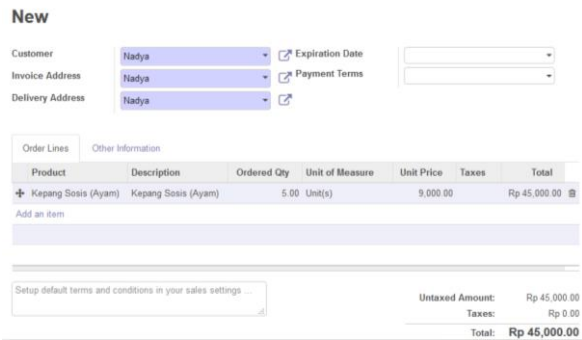
Figure 5. Quotations

Figure 5 is an example of making quotations on the Odoo Application. Quotations is the recording of customer orders. Making quotations is in the Sales module. After completing the quotations, the sales department creates an invoice according to the quotations made.
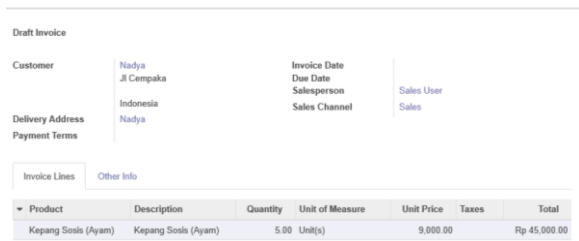
Figure 6. Invoice

Figure 6 is an example of creating invoices on the Odoo Application. Invoices are automatically generated according to customer orders. This automatic invoice creation can help overcome the KPI problem in A2 code, which is to avoid mistakes in making sales invoices.

5.3.2 Production Process

The production process is the process of making goods in accordance with the request of the buyer, after the buyer makes an order. The production process in the Odoo Application is in the Manufacturing module.
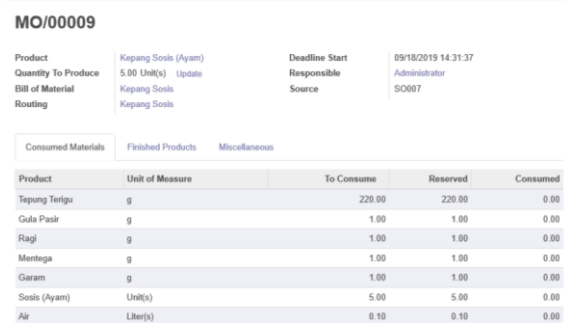
Figure 7. Manufacturing Orders

Figure 7 is an example of display manufacturing orders. Manufacturing orders are lists of production orders ordered by customers. In each order list, below it appears the bills of materials and the required quantities according to the type of product you want to make. These Bills of materials can help overcome the KPI problem in C2 code, namely avoiding misuse of raw materials.
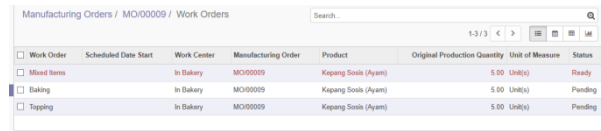
Figure 8. Work Orders

Figure 8 is an example of the appearance of work orders. Work orders are the stages of the production process that are in manufacturing orders. These stages must be carried out sequentially, when it is finished in the last stage, the product is ready and sent.

5.3.3 Procurement Process

The process of procuring raw materials is the process of purchasing raw materials, this process takes place if the availability of raw materials has run low or has reached a minimum stock.

Figure 9. Run Scheduler

Figure 9 is the run scheduler display. Ordering of raw materials can be done automatically by clicking on the run scheduler button in the Inventory module. Run scheduler is done to check which raw materials are out of stock or reach minimum stock. This run scheduler can help to overcome the problem of KPI in B2 code, which is avoiding mistakes in purchasing raw materials.
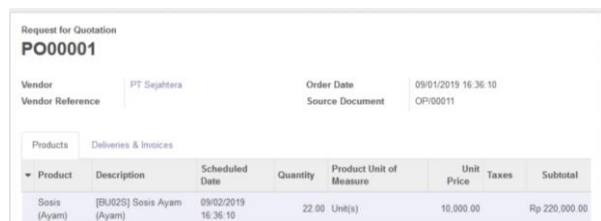
Figure 10. Requests for Quotation

Figure 10 is an example of the display request for quotation or purchase order. A list of raw materials purchased after running the scheduler is automatically displayed on the Requests for Quotation menu in the Purchase module.

WH/IN/00001

Partner	PT Sejahtera	Scheduled Date	09/02/2019 16:36:10
Destination Location	WH/Stock	Source Document	PO00001

Operations   Additional Info   Note

Product	Initial Demand	Done	Unit of Measure
Sosis (Ayam)	22.00	22.00	Unit(s)

Figure 11. Receipts

Figure 11 is an example of display receipts. Raw materials that come from suppliers appear in the Receipts feature in the Inventory module, where there is a check on the amount of raw material stock that comes whether it matches the quantity of raw material stock purchased. This checking process can help resolve the KPI problem in code B1, which is to avoid receiving raw materials.

6. CONCLUSION

To improve business processes, old business processes must be analyzed in advance in order to know the existing problems and can make a new business process modeling. KPIs are one way to analyze ongoing business processes. The results of KPI measurement there are four factors that cannot be achieved, namely, reducing errors in making sales invoices, reducing errors in receiving raw materials, reducing errors in the purchase of raw materials, and reducing misuse of raw materials. The results of the KPI are then made a new business process modeling using the Odoo Application to improve the old business processes, so that these four factors can be overcome.

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