Business process reengineering android-based sales: Case PT.XYZ

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Abstract. Increasingly the business market competition is getting tougher. Companies are required to provide better products/services than their competitors. PT XYZ is a company engaged in food manufacturing. The products produced are snacks which are grouped into 4 parts, namely crackers, biscuit noodles and wafers. The business process in the sales department is still very manual and outdated because ordering goods is still over the phone which is considered inefficient. Therefore, improvement is needed by accelerating the time cycle of each activity and simplifying a series of activities as well as the use of technology that cuts business activity activities that have no added value and is repeated. One concept that can be applied is to reengineer business processes (BPR), namely the use of android technology with ESIA method which is able to facilitate marketing from anywhere using an android-based communication device.

1. Introduction

A business process is a set of activities that require one or more inputs and form an output that has the value that the customer wants. Business process is a collection of activities or structured work that are interrelated to solve a particular problem [1]. A business process consists of a series of activities carried out in coordination in a business and technical environment. These series of activities together embody a business strategy. A business process is usually applied in an organization, but can also interact with processes carried out by other organizations [2].

Business Process Reengineering is an effort made by an organization to change its internal processes and controls from a traditional vertical functional hierarchy, to a horizontal flat structure and based on teamwork that focuses on increasing customer service. [3]

PT XYZ is a company engaged in food manufacturing. The products produced are snacks which are grouped into 4 parts, namely crackers, biscuit noodles and wafers. At PT. XYZ sales business process is still using the manual system via telephone and e-mail. For marketing data processing that is used is still using semi-computerized, in this case it will certainly complicate the management of the company in terms of controlling and checking data because it takes a long time and is inefficient. In addition, the possibility of inaccurate data in the case of the report on the calculation of sales data is also quite large because the system used is inadequate in the existing data processing arrangements at PT. XYZ

Business processes in the sales department are considered to need improvement, which is done by changing the technology used and simplifying the series of activities so as to speed up service time. In business processes are still done manually such as ordering goods by phone and take a long time
because they have to read the goods. From interviews conducted with the head of sales at PT. XYZ.

The following is data of order growth by telephone every year at PT. XYZ.

| Year | Order entry | Percentage of Growth |
|------|-------------|----------------------|
| 2015 | 43          | -                    |
| 2016 | 54          | 25.58%               |
| 2017 | 71          | 31.48%               |
| 2018 | 86          | 21.13%               |
| 2019 | 102         | 18.60%               |

Based on the table above, order at PT. XYZ. Experience an increase every year. But the increase is slowing the increase in the number of orders in 2018 and 2019. The reason for the low increase in the number of orders is due to customer complaints about the longer order processing time. In the interview process it is known that the customer takes up to 3 hours to process the order by telephone until completion. This is feared to be one of the reasons orders have slowed the increase in the number of orders from the previous year.

The company is now aware that optimal business process design is a major factor for companies to compete in a business environment that already uses technology in carrying out every aspect of its business activities. To make improvements, it is necessary to model business processes to understand the flow of business processes. Other problems when the customer orders the product using the telephone, in making requests. Too many parties involved in this process resulted in indirect requests being processed.

2. Research Methods

At this stage the problem identified in the Sales division is carried out. The thing to do is to observe the business process of the Sales service that is running. Then formulate the problems found in the sales department. In addition, it is done by studying theories relating to research from various sources such as books, journals, and the internet relating to research.

2.1. ESIA Method

Eliminate, Simplified, Integrate dan Automate (ESIA) There are 4 ways that improvisation can be carried out on processes within the company that can be offered by the use of information technology [4]

2.1.1. Eliminate. Eliminating processes that are considered unnecessary if the computer system is implemented, for example, for reasons of efficiency. Processes such as manually checking complex calculations that do not need to be done after a spreadsheet-based program is developed are one example of the convenience offered by information technology. Likewise, in the case of the process of making various reports, which usually take hours if they have to be done manually, they will disappear by themselves due to the installation of a computer-based automatic report.

2.1.2. Simplified. Amplifying certain processes or reducing the chain of processes for the purpose of carrying out activities that are faster and cheaper. The case that is most often done by companies is to simplify forms that are commonly used for the purpose of internal control of the company (because it is based on an old philosophy that says that the more human resources involved in controlling a process, the better it will be because it reduces the possibility of occurrence collusion). The e-mail and workflow
communication facilities offered on the intranet concept are one of the most efficient and effective alternatives to streamline procurement procedures. Especially if the technology is complemented by a sophisticated computer security system.

2.1.3. Integrate. It is possible to integrate several processes which are usually handled by several employees from various separate divisions into a simpler process. By implementing a LAN-scale computer network, the procurement process and the budget control process can be carried out in an integrated manner so as to save time in the procurement process.

2.1.4. Automate. Is changing things that are usually done manually into the activity using a computer.

3. Business Process Modeling and Analysis

In the actual business process of sales at PT. XYZ is still done manually such as ordering goods by phone and takes a long time because they have to read items that will be ordered per-item. If ordering goods via e-mail also takes a long time because customer service must copy the list of orders sent by the customer. In making a note the customer service is still using a manual system using Microsoft excel worksheets. Following is the actual business sales process can be seen in Figure 1 [5].

| Number | Activity                                      | Time | Human Resources |
|--------|----------------------------------------------|------|-----------------|
| 1      | Upload order file to email                   | 3    | Customer        |
| 2      | Customer Confirmation of Order to CS         | 1,5  | Customer service|
| 3      | The cashier calculates the order price       | 1    | Cashier         |
| 4      | Price confirmation to the customer           | 3    | Customer service|
Analysis of problems that occur in business processes that are running by using cause and effect diagrams. By using cause and effect diagrams, it can be seen the factors that cause ineffective and ineffective business processes that are running. The results of the analysis using the fishbone diagram can be seen in Figure 2.

3.1. System Planning
After analyzing the existing processes, a program is designed that is systemized in the Android application. This system aims to accelerate the flow of sales information systems at PT XYZ. It is expected that this system can shorten the service process time in the sales process. To illustrate the needs of the system to be implemented, we use a usecase diagram. At usecase diagram can be explained a process flow system that will be built. Usecase Sales application that will be designed can be seen in Figure 3.
4. Results

4.1. Proposed Business Process

After analyzing existing business processes and designing new business processes. Then the proposed new business process as shown below:

![Proposed Business Process Diagram]

**Figure 4. Proposed Business Process**

4.2. Implementation

Implementation is the stage of operating the system. Does the system that has been made will really run in accordance with the objectives achieved. The following is the appearance of a sales information system application.
Figure 5. Login Form

Login form as above is a display for customer login on this login form the customer enters a username and password. And then the system will bring customers into the order view.

Figure 6. Order Input Form
On this form the customer can see the order data that has been input on the previous form along with the total price to be paid. After making a payment the customer uploads the proof of payment.

### 4.3. Business Process Simulation

The business process simulation is carried out with the help of the igrafix Process 2013 program by including the series of processes and time required for each activity in accordance with existing data [8]. This simulation is carried out 10 times for each process and then makes a comparison of business process simulations before the Business Process Reengineering and after the Business Process Reengineering
Table 3. Sales Simulation before BPR

| Count | Average | Count | Average Service |
|-------|---------|-------|-----------------|
| 1     | 79,29   | 6     | 77,8            |
| 2     | 80,56   | 7     | 81,71           |
| 3     | 79,19   | 8     | 76,62           |
| 4     | 83,29   | 9     | 81,29           |
| 5     | 81,67   | 10    | 80,67           |

Table 4. Sales Simulation After BPR

| Count | Average | Count | Average Service |
|-------|---------|-------|-----------------|
| 1     | 23,19   | 6     | 37,8            |
| 2     | 20,16   | 7     | 31,81           |
| 3     | 39,19   | 8     | 26,12           |
| 4     | 26,29   | 9     | 31,69           |
| 5     | 21,67   | 10    | 40,97           |

5. Conclusion

Based on the research results, the conclusions obtained from this study:

- Based on the simulation results before and after the Business Process Reengineering, it can be seen that the results are quite significant namely the difference in service time between the two. The service time between before the Business Process Reengineering was 80.21 and after the Business Process Reengineering was 29.89 and the difference in the two service times reached 62.74%.

- This proves that the Business Process Reengineering with changes in the use of technology that has an impact on simplifying the process and reducing the time in working on an activity can affect overall business service time. So that BPR can produce better business processes.

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