

# **Business Process Re-engineering For Reducing Time Of Procurement and Inventory Process in Telecommunication Tower Company**

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## **Abstract**

Increased development of telecommunication industry requires telecommunication tower provider companies to finish the construction of telecommunication tower in accordance with the customer's demand. Business Process Re-engineering methodology in this research is used to shorten the time of the procurement with the help of the IDEF0 method, mapping the process through interviews and focus group discussions with six experts. Using Elimination, Simplify, Integration, and Automation method, this research resulted in As-Is and To-Be processes in project procurement and tower construction could shorten the processing time up to forty percent.

## **Keywords**

Procurement and Inventory, Business Process Engineering, IDEF0, Focus Group Discussion, ESIA Method, As-Is, To-Be.

## **1. Introduction**

The telecommunications industry in Indonesia is currently developing rapidly and increasing competitively. The competitive offer must be supported by the technology and good quality of their products, one of which is the quality of a good signal or network. One of the supporting sectors in the telecommunications industry is the construction of telecommunication towers. Investment in the construction of telecommunications towers is currently growing fast to offset the many requests of telecommunications operators to utilize their services.

According to Nitin Bhat, partner and head of consulting at Frost & Sullivan Inc., tower provider companies will experience growth of around 15% by the end of 2013. With a high growth rate accompanied by a large number of competitors in the industry, as well as a limited number of consumers, it will automatically increase business climate change. These changes are influenced by customers, competition, time, and price (Hammer & Champy, 2001). With the increasing demands of the external environment, such as government regulations, growth, competition, technological development, and changes in the workforce, many companies are required to make organizational changes at least once a year and major changes every four to five years. Therefore the organization is required to complete each tower construction project in a timely, fast, and competitive price.

Delay in the supply of materials and inappropriate storage of materials can result in delays in the completion of a project and even stop. As a result, there will be complaints and customer dissatisfaction so that it can result in decreased competitiveness of the company. Many things in a company that originated from previous processes result in a delay. This includes ineffective and inefficient procurement and storage processes.

The purpose of this research is to redesign the company's business processes to overcome the problem of delays in the provision of project materials, especially in the process of procurement and storage of materials.

## **2. Literature Review**

### **2.1 Business Process Reengineering**

Business Process Reengineering (BPR) has emerged as a solution for companies to improve performance, efficiency, and gain competitive advantage (Goksoy & Beliz Ozsoy, 2012).

BPRs identify reasons for improving inefficient business processes, reorganizing business functions, and improving the current position of the industry (Whitman, 1996). Observation from studies of 75-80% of companies, namely IBM, Texas, Johnson & Johnson, Ford, Shell oil, American express, Wall-Mart, TacoBell, Hewlett Packard almost all reengineered and achieved extraordinary success (Srikanth, 2012). Some headlines in popular media, "Wal-Mart reduced restocking time from six weeks to thirty-six hours". "Hewlett Packard's assembly time for computer servers touched under-four minutes". "Taco Bell sales jumped from \$ 500 million to \$ 3 billion"(Grover, 1997). The reason behind this success story is Business Process Engineering.

BPR is implemented in emergency management procedures by reengineering all systems in emergency management in Falconara Marittima covering information systems, communication to produce clear and effective communication in handling emergency management using IDEF (Integration DEFinition) methods (Bevilacqua, 2012).

- Current state analysis
- Design of the “as-is” model using IDEF0
- Identification of critical situations and areas for improvement
- Development of solutions, beginning with a thorough understanding of strategy and goals and consequent Process
- Design of the “to-be” model using IDEF0

The broad definition of BPR is the fundamental rethinking and radical redesign of business processes to get dramatic improvements by measuring critical performance such as cost, quality, service, and speed. Re-engineering has a broader meaning than just a process (Hammer, M & Champy, J, 2001).

Another understanding is BPR as a structured approach, which continues to improve important activities of the organization, such as marketing, production, and communication. BPR is also a management tool, where business processes are examined and redesigned to improve cost efficiency and service effectiveness (Grover, 1997). According to Lindsay and colleagues, BPR is a management tool, where business processes are examined and redesigned to improve cost efficiency and service effectiveness (Grover, 1997). BPR is an organizational initiative to re-examine and redesign business processes with the aim of achieving competitive breakthroughs in quality, responsiveness, cost, satisfaction, and other performance measures.

### **2.2 Focus Group Discussion**

Focus Group Discussion (FGD) can simply be defined as a discussion that is carried out systematically and directed on a particular issue or problem. FGD is a systematic process of collecting data and information on a specific problem that is very specific through group discussions (Boateng, 2012). In addition, group dynamics that occur during the discussion process often provide important, interesting, and sometimes even unexpected information (Boateng, 2012). The benefit of FGD is that FGD can focus on research and develop relevant research hypotheses by exploring more deeply the problems to be investigated and their possible causes, can formulate appropriate questions to be more structured, survey larger scales, help understand and solve unexpected problems in intervene, develop appropriate messages for health education programs and then evaluate messages for clarity and can explore controversial topics (Silalahi, 2006).

### 3. Methods

#### 3.1 Business Process Identification

In order to understand the whole current process (As-Is) and the related business units, it is necessary to identify the process flow. Identification and drawing are based on the existing procurement and the functions of the company by looking at existing activities.

#### 3.2 Focus Group Discussion (FGD)

Focus Group Discussion (FGD) is conducted to identify the processes that most influence the amount of time the process of procurement and supply of Items, this FGD is participated by experts who have strategic positions and their decisions can affect the process.

Table 1. FGD Experts

Expert	Position	Experience
Expert 1	IT manager	8 Years
Expert 2	PMO Manager	17 Years
Expert 3	Business Analyst	7 Years
Expert 4	Finance Manager	13 Years
Expert 5	Project Director	15 Years
Expert 6	Commercial Director	25 Years

The FGD was attended by six experts, which can be seen in Table 1, discussing the processes that most influence the amount of time the procurement and supply process. The aim of FGD is to obtain several sub-processes that must be eliminated in time because it is identified that are most influential on the total process time.

#### 3.3 Process Improvements

Based on the sub-process analysis in FGD results with informants about the sub-process activities that are problematic, then the sub-process activities are carried out improvement to determine bottlenecks and processes that cause waste (Razvi Doomun, 2008), suggestions for improvement can be made at the analysis level or at the redesign level (which requires more profound changes to the organizational structure) (Cristina Climent, 2009).

The FGD work team provided several ideas and solutions for making the ideal process map. Furthermore, these suggestions are collected and together with the work team, the coordinator proposes innovations or changes, which are explained below. Suggestions for this new process are represented in the "To-be" model (M. Bevilacqua, 2012).

### 4. Results

Table 2. Timetable of Each Main Process

No	Main process	Activities	Total Time	
			Day	Minutes
1	Items Procurement	13	15	620
2	Items Receive	8		290
3	Items Release	11		375
4	Items Request	7	36	330
Total Time			51	1615

Business processes that have been identified are mapped using a process flow map to find out the detailed flow of the process along with the time details of each process which are shown in Table 2.

#### 4.1 Comparison of As-Is Processes and To-Be Processes

After mapping the process before and after the redesign, this stage is comparing the amount of process time associated with the process before (As-Is) and after the redesign (To-Be) as can be seen in Table 3.

Table 3. Comparison of Total As-Is Time and To-Be Time

Process	Department	Tasklist	As-Is Time	To-Be Time
Items Procurement Process	Project Admin	Receive item request information	30'	30'
		Make a purchase request (PR)	30'	30'
		Check the project budget	60'	60'
		Request PR approval from the project manager and director	7 day	3 day
		Give PR to the purchasing department	30'	30'
	Purchasing	Receive homework and choose suppliers	240'	240'
		Send request for quotation (RFQ)	10'	10'
		Receive SPH (letter of price quote)	1 day	1 day
		Review and make offers	300'	300'
		Making a purchase order	30'	30'
	Purchasing	Request approval from PO directors and president directors	7 day	1 day
	Purchasing	Revised PO if there is a correction	120'	120'
Items Receive Process	Logistics	Send pos to suppliers	10'	10'
		Receive information on incoming items	10'	10'
		Supplier sending Items	180'	180'
		Receive Items from suppliers	30'	30'
		Check incoming Items	10'	10'
		The signature on the incoming items pass	5'	5'
		Store Items in a warehouse	30'	30'
		Entering data entry Items in the system	5'	5'
		Incoming items information report	5'	5'
Items Delivery Process	Project Admin	Receive material requests	10'	10'
		Make material requests in the system	240'	10'
		Receive material requests	10'	10'
	Logistics	Check the availability of Items	30'	30'
		Prepare items on request	30'	30'
		Make items delivery documents	10'	10'
		Delivering items	30'	30'
	Engineer	Receive items	10'	10'
	Logistics	Check and sign documents	5'	5'
Update item expenditure data on the system		5'	5'	
		Conduct information on the release of Items	5'	5'
Items Request Process	Marketing	Receive orders from customers	60'	60'
	Engineer	Make a project budget	1 day	60'
		Make project planning	120'	120'
		Site acquisition project	30 day	14 day
		Make work ready for construction status	3 day	0
		Making material needs	120'	120'
		Make material requests	30'	30'
		Total Time	51 day 1615 minute	27 day 1445 minute
		Total Minutes	75.055	40.325
		Reducing Time	46%	

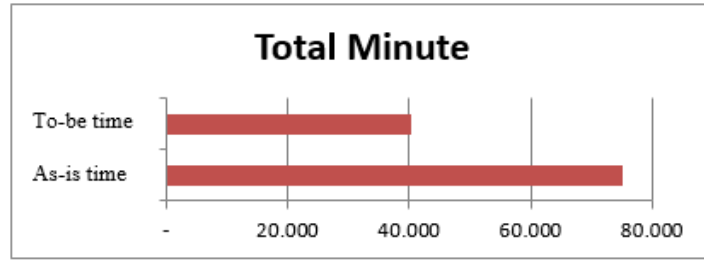


Figure 1. Comparison of Total As-Is Time and To-Be Time

The To-Be process flow is described using IDEF0 to compare changes with the As-Is process flow modeling, from the FGD results obtained several activities that will be carried out improvement, these activities are located in 3 sub processes, namely:

- The process of procurement of Items
- Process of releasing Items
- The process of requesting Items

The subprocess changes compared to the As-Is depiction, the change is not too significant because the changes occur in the activities in the subprocess.

Comparison of figure 2 IDEF0 A2 diagram of the procurement process (As-Is) and IDEF0 A2 diagram of the process of procurement of Items in figure 3 experienced a change in the activity of making a Purchase Request, due to a reduction in the process of requesting approval from the project manager and director.

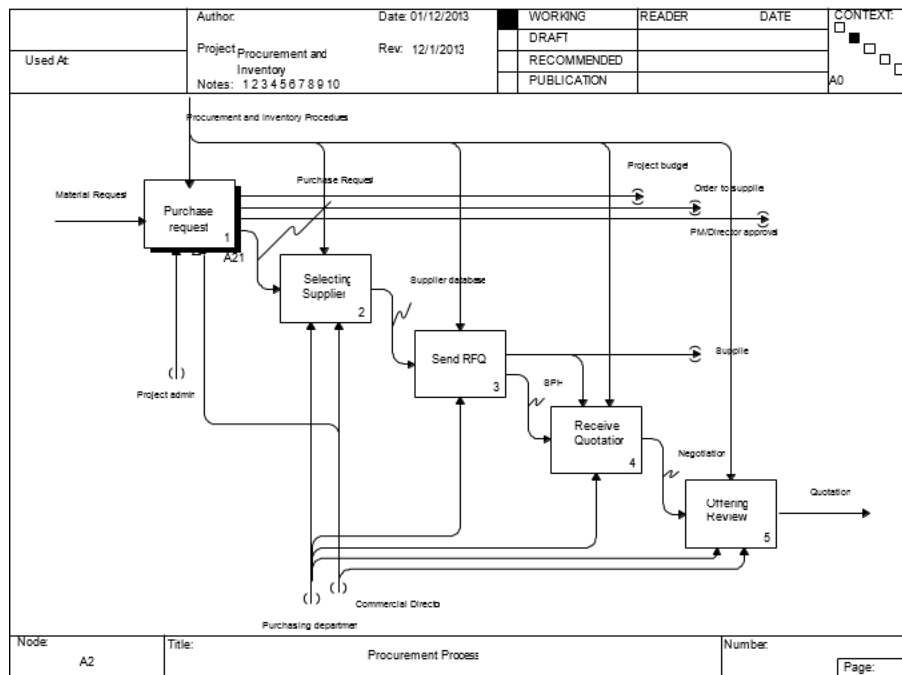


Figure 2. IDEF0 A2 Procurement Process Diagram (As-Is)

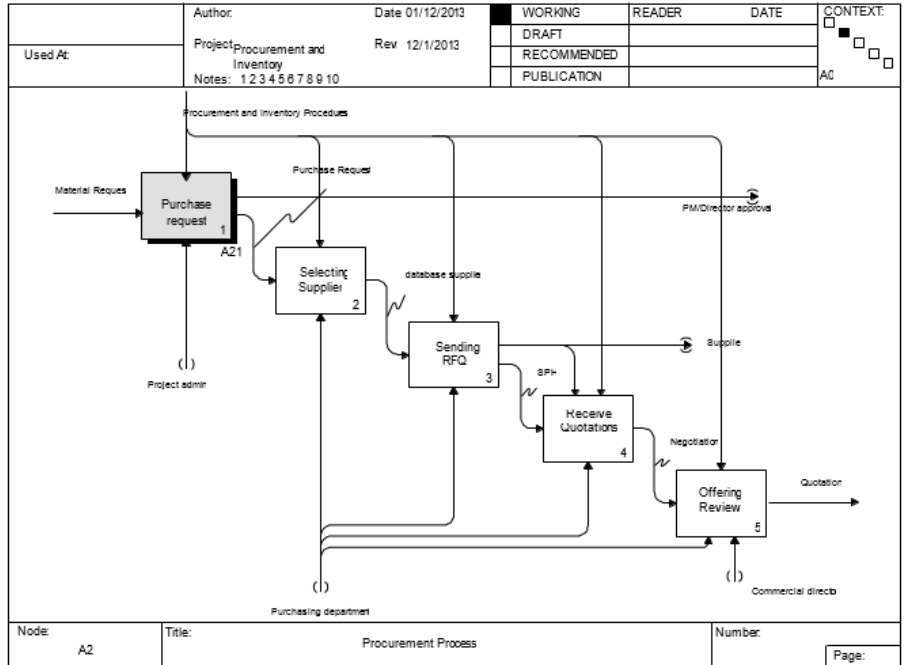


Figure 3. IDEF0 A2 Procurement Process Diagram (To-Be)

Comparison of figure 4 IDEF0 A1 diagram of items requisition process (As-Is) and figure 5 illustrates IDEF0 A1 diagram of item requisition process (To-Be), there is a change in the activities of the site acquisition process and the incorporation of the RFC process at the time of the acquisition process.

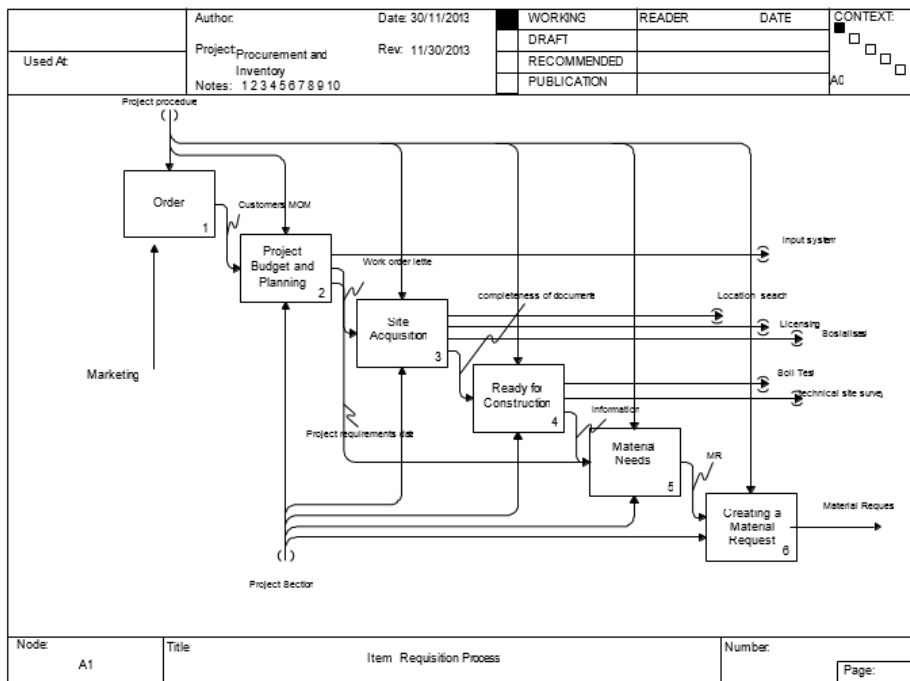


Figure 4. IDEF0 A1 Diagram of Item Requisition Process (As-Is)

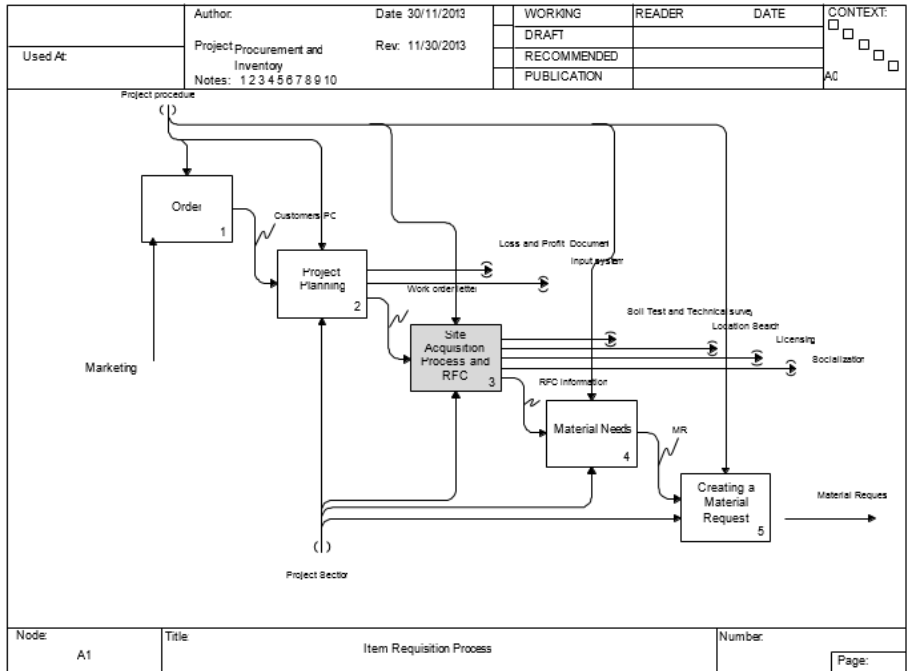


Figure 5. IDEF0 A1 Diagram of Item Requisition Process (To-Be)

Comparison of figure 6 IDEF0 A5 diagram of the process of item expenditures (As-Is) and figure 7 illustrates IDEF0 A5 diagram of process of expending items (To-Be), there is a change in the activity of making material request activities on the system that previously the mechanism of work was carried out by the project admin, on the diagram To-Be implemented mechanism work is carried out by the logistics department.

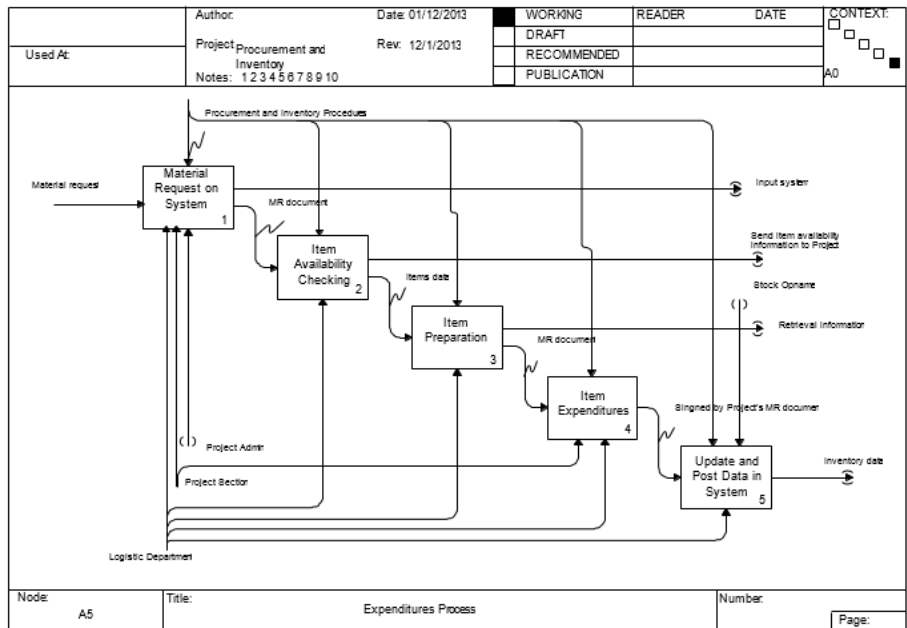


Figure 6. IDEF0 A5 Diagram of Process of Item Expenditures (As-Is)

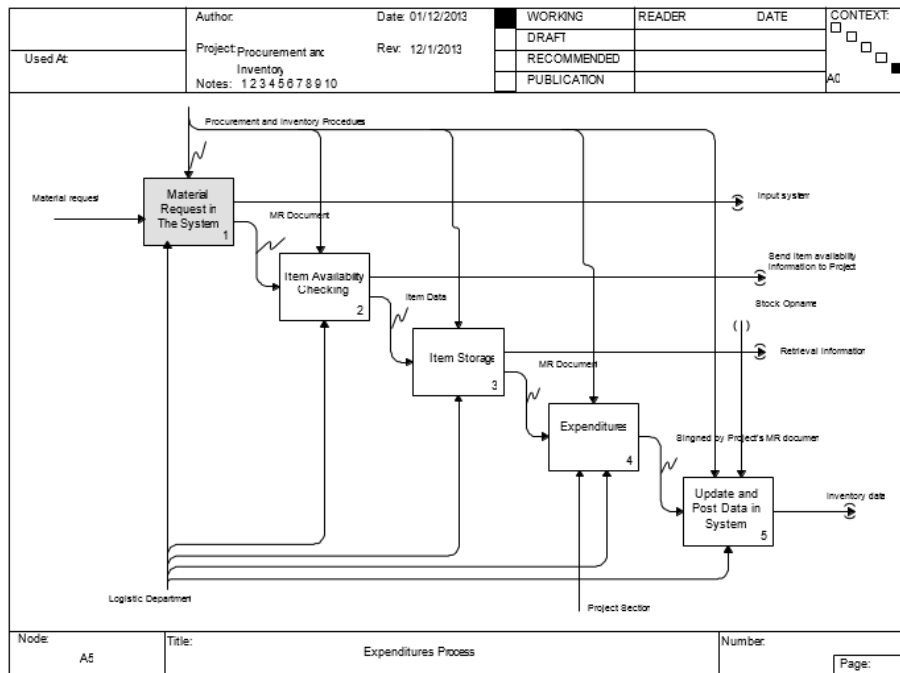


Figure 7. IDEF0 A5 Diagram of Process of Expending Items (To-Be)

## 5. Discussion

Modeling of business processes will help to understand the ongoing processes. The results of the analysis of business processes will be used to design a To Be System that has better performance.

The results of the process mapping and the analysis of process time using flow maps in the As-Is process, it is known there are a number of things that cause the length of time the procurement of Items and the process will potentially cause delays in terms of supply of Items, action needs to be taken to improve the process has no added value, including:

- Automation (Automation Process), Automation is closely related to the use of information technology, this automation needs to minimize the potential duration of the process the use of Information Technology (IT) can be made to speed up the process and facilitate the approval of Purchase Request (PR) and Purchase Order (PO) activities.
- Elimination (Eliminating Process), Eliminating the process means that the existing process becomes non-existent because it is considered unnecessary or can be replaced with a completely new process. The process that is eliminated is all processes that have no added value. Personnel performance that causes the length of the process of making Material Request (MR) documents in the system, this happens because the workload of personnel is too much or the lack of personnel responsibility for the work done, because human factors play an important role in daily operations, performance and ultimately result in organizational success. Eliminating the work of making Material Requests (MR) by project admin personnel in the system and transferring the work to the logistics department is expected to reduce processing time.
- Integration (Combining), Combining processes into one process. The simplified task is then integrated in order to produce a smooth flow. Previously the units in the sub-process of the demand for Items were involved working separately. It takes a long time to complete the work; then the work is combined in one process because the two are interconnected.



Table 4. Impact and Anticipation Due to Process Improvements

Improvement Process	Positive Impact	Negative Impact	Anticipation of Impact
<i>Automation</i> (Process automation)	The cost savings and improve the accuracy of the information exchange.	The use of computers aims to ease and speed up work, on the other hand, it can lead to unemployment because the workload decreases with the presence of computers.	Structured and scheduled training, continuous communication between the BPR implementation team and users
	Reduce costs by reducing errors and time required to achieve the task.	There is also the possibility of misuse of data for personal interest. Ease of management information in the form of data centers provides the opportunity to move the data that had belonged to private or confidential can be accessed by others.	Focus on results of work on personal tasks
	Avoid human mistakes when there are complex and repetitive tasks.	Dependence on computers creates weaknesses when the power goes out or the computer has a virus, so the data cannot be accessed	An adequate work integration approach
	Provide easy access to information, effective and efficient.	Limitations of technological capabilities are used, personnel data processors do not understand and are not familiar with the new technology that raises complex issues.	Structured and scheduled training; evaluation of progress to determine what works and what doesn't
	Help employees in carrying out their duties effectively and efficiently.	The staff needs to learn a new system, resulting in a slowdown of work.	Structured and scheduled training, use of technology to streamline operations group
<i>Elimination</i> (Elimination Process)	Accelerate the flow of orders and information; if the levels are not productive, the process is eliminated.	If there is no business process created/standardized along with the implementation of the system, there can be confusion.	Revising procedures for implementation on a regular basis
		Staff can get a mutation, demotions.	Use progress evaluation to determine what works and what doesn't
<i>Integration</i> (Combine)	Integrate and coordinate several functions at once.	Unclear leadership, differences in work culture.	Integration approach an adequate job, staff motivation by reward
		The lack of incorporation as a result of conflict among decision makers.	

## 6. Conclusion

This research produces a complete model of the IDEF0 method that provides information on functions (i.e., activities, actions, processes, and operations), systematic and sequential system descriptions so that they are easily understood from the procurement and storage process.

The result of the process flow map analysis identifies the total time from receipt of the project order to the product leaving in 51 days 1615 minutes. FGD was conducted to identify and produce three subprocesses consisting of 6 activities that most influence the amount of time the process of procurement and supply of Items and require improvement.

Improvement of business processes is done and shows that improvements to business processes can reduce the processing time from receipt of project orders to the delivery of the item takes 27 days 1445 minutes. A comparison of the total time before and after improvements to the procurement and storage business processes can shorten the processing time by 46%.

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## **Biographies**

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