

## Using E-Procurement to Minimize Risks in Customer Service

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### Abstract

In a company both manufacturing companies and distributor companies, initially the purchase part is considered as a cost center, it turns out that now it has turned into a profit center for the company so that it plays an important role in the procurement process. Where the buying part must make the purchase in a timely manner, the right amount, good quality, the selection of the right supplier and the most appropriate price. Therefore, the company sees the need for the implementation of e-procurement so that the company can excel and compete and maintain and improve its customers, and to overcome problems that often occur in the conventional procurement process. It is important for companies to take a purchasing strategy that can provide convenience in relationships with suppliers and speed of exchanging information regarding procurement of goods. One of them is to change the old procurement system into e-procurement. The methodology used is the value network analysis method with the impact analysis and value creation analysis approach, which analyzes the solutions needed in the development of e-procurement. The result is a model of e-procurement that can be used to exchange information, negotiate with suppliers, and select suppliers who are more objective with supplier performance assessments. With the e-procurement system, it will be able to overcome problems that often occur in the conventional product procurement process, and the company can excel and compete and can maintain and improve its customers.

### Keywords

Procurement, value network analysis, value creation analysis

## 1. Introduction

The ever-increasing development of information technology has encouraged business competition to become increasingly competitive. Every company is required to have competitiveness to be able to win the competition itself. The role of information technology is strategic in supporting competitive advantage. Businesspeople are starting to think about how to adapt to the development of information technology in order to still be a company that has an advantage and is able to compete with its competitors. Information system application is one form of contribution to the application of information technology to be able to create and support business competitiveness and business processes in the company.

In a company both manufacturing companies and distributor companies, initially the purchase part is considered as a cost center, it turns out that now it has turned into a profit center for the company so that it plays an important role in the procurement process. Where the buying part must make the purchase in a timely manner, the right amount, good quality, the selection of the right supplier and the most appropriate price. Because of the demand for fast, accurate, and quality product information from suppliers for the purchase part, making the business world realize the importance of a purchasing strategy that can improve the procurement process.

Similarly, for distributor companies, must be able to compete with their competitors who are also engaged in the same field. Currently, the product procurement system still uses manual means, namely starting from contacting suppliers, agreements on the price and order of products, only utilizing telephone, fax, or email, causing between the purchase and supplier parts have limitations in exchanging information (Goerlandt and Montewka, 2015). Of course, this becomes an obstacle and causes some problems for the purchase part in the procurement process, such as the occurrence of errors in the number of product orders, errors in the products ordered, errors in choosing the right supplier and the appropriate price, and sudden changes in the order schedule because marketing has agreed on order changes with customers. These problems have a less good impact, which causes customer satisfaction to be not met.

Therefore, the company sees the need for the implementation of e-procurement so that the company can excel and compete and maintain and improve its customers, and to overcome problems that often occur in the conventional procurement process (Ntwali et al., 2020). It is important for companies to take a purchasing strategy that can provide convenience in relationships with suppliers and speed of exchanging information regarding procurement of goods. One of them is to change the old procurement system into e-procurement (Leiss and Larkin, 2019).

## 2. Literature Review

The procurement process begins when the warehouse section checks the availability of stock. If there is a product item that has reached a minimum stock that is within  $\pm 2$  months the product will run out, then the warehouse section must report it to the purchase section to immediately make the purchase of the product. The purchase section must first seek approval from the chairman (Birungi and Muthoni, 2021). Next, the purchase section will send an email to the supplier to request product offers. If the supplier can fulfill the product the company needs, then they provide a product offer, and the price by sending a reply email to the company. The bidding process takes place via email and phone which is finally decided on the agreed price (Larkin et al., 2019). The chairman confirms to the purchase section to make a Purchase Order containing a list of products ordered and then sent to the supplier by fax. Then the supplier will confirm over the phone that the Purchase Order has been received. Suppliers immediately send the ordered products to the warehouse (Duramany-Lakkoh, 2021).

Arriving at the product sent by the supplier, the warehouse section checks the number, type of product and the quality of the product received, whether it matches what is ordered. If it is appropriate, then the warehouse section will update the stock (Aven, 2016). But if something is not appropriate then the warehouse section will report to the purchase section, after which the purchase section will confirm to the supplier that the product is not suitable, by sending a Purchase Return. In accordance with the agreement, suppliers will provide price reductions on damaged or defective products by providing a credit note (Larkin, P., et al., 2019). Furthermore, the accounting & finance section will pay according to the total listed on the PO, minus the Credit Note if any.

### Value Network Analysis

A company's future success depends on how effectively it can convert intangible assets such as human knowledge, internal structure, way of working, reputation, and corporate business relationships, into a more valuable value (Larkin, P. et al., 2019). But to be able to change the asset, a mechanism is needed to change the value of the network.

To perform analysis used value network analysis techniques. This technique can clearly analyze all the components involved in business, both for the analysis of internal factors and external factors.

In value network analysis, there are three basic analytical approaches that can be done (Larkin, P. *et al.*, 2019). The first analysis is exchange analysis which measures the overall pattern of exchange and value creation contained in the system. While the second and third analysis are impact analysis and value creation analysis, both focused on each role that has to do with changing values, where this will go both ways, namely changing the input value and changing the output value.

### 3. Methods

The analysis method begins by value network analysis. In the value network divide into value network internal and value network external. Furthermore, exchange analysis, and impact analysis to be performed. In the last, value creation analysis, Finally, proposed troubleshooting summarized all the analyzed.

## 4. Results and Discussion

### 4.1 Value Network

The core process of the value network, divided into two activities, namely the internal value network and the external value network. An internal value network includes activities that focus on a set of relationships between individuals, between working groups, and between the various working groups that support the formation of organizations.

While the external value network includes activities related to outside parties such as suppliers, investors, strategic business partners and customers.

The value network below describes all the components involved in the business, both the activities contained within the company and the external-related batteries of the company. Here is a summary of his activities

#### 4.1.1 Value Network Internal

Based on the value network analysis, there are four internal activities that support the company, which consist of:

##### a. Infrastructure

The following are infrastructure activities that support the company's business processes so that the operational infrastructure is well organized.

- Control activities in each division. Ensuring established policies, supervision and planning designed by each division in accordance with established procedures. Where the established procedures should be carried out by all employees according to the stipulated steps.
- Information system management activities. Ensuring each division receives and carries out its duties in accordance with the authorization granted.

From these activities, it is expected to increase the value of the company's network, such as: ensuring smooth business processes, ensuring the flow of information runs well and preventing the misuse of responsibilities.

##### b. Technology

Activities carried out in supporting the development of technology in the company include designing systems that can help in accelerating and facilitating business processes. And to facilitate communication, the provision of internet and computers is also done to facilitate internal activities within the company.

From the activity will be able to increase the value of the network owned by the company, such as: improving employee performance, improving information technology facilities in the company, and better information management.

##### c. Human Resources

In addition to networking, to support a growing company requires competent human resources as well. Here are the human resources activities carried out to support the company's business processes to produce competent resources, among others:

- Employee recruitment and termination activities. Keeping the company to always have qualified and competent employees in their fields.

- Employee competency development activities. Employee competencies need to be improved and developed, for this reason there is a need for training according to employee needs.
- Activities to monitor the fulfillment of the rights and obligations of employees. Keeping the company to have employees who are loyal and work well.

From these activities, it is expected to increase the value of the company's network, such as: obtaining competent human resources and increasing employee work productivity.

#### **d. Procurement**

As a distributor company, the procurement of goods in providing product needs for consumers is the main activity. The following are procurement activities carried out to ensure the company's main business processes, including:

- Monitoring the availability of goods in the warehouse activity.
- The activity of collecting price quotes from suppliers.
- Best supplier selection activities to ensure quality and timeliness.
- Warehouse maintenance activities and their capacity.

From these activities, it is expected to increase the value of the company's network, such as: the smooth running of the company's operational processes and guarantee the quality of goods.

#### **4.1.2 Value Network External**

Based on the value network, there are three corporate activities related to external parties, they are:

##### **a. Network Infrastructure Development, Operation and Maintenance**

For companies, it is very important to build, operate and maintain network infrastructure, a network that can provide capacity and access both for employees within the company and for business partners. That supports the actors involved in the network so that it can connect properly.

In building a network, this company cooperates with other resources, namely a special workforce of specialist networks in charge of building networks within the company. Thus, the company has been supported by advanced and adequate technologies, but in operating and maintaining the network, the company cannot run this network on its own but there needs to be outside actors involved in the network such as business partners, who in this case are suppliers.

Some of the activities contained in Network Infrastructure Development, Operation and Maintenance, they are:

- a. Product supply request activity to suppliers.
- b. The activity of receiving offers from suppliers.
- c. The activity of the negotiation process with the supplier.
- d. The activity of sending orders to be purchased to suppliers.

Product supply demand activity until order delivery, can be detailed as follows:

- a. The warehouse department routinely checks the availability of products in the warehouse.
- b. When the stock has reached the ROP, the warehouse will send a list of items to be purchased (Purchase Request) to the purchasing department.
- c. The purchasing department will send a list of product requests along with product specifications that the company wants to buy (Requisition) to the supplier.
- d. If the supplier can fulfill the product demand, the supplier will send a product offer and price (Supplier Quotation) to the company.
- e. The purchasing department will receive product offers and prices from suppliers. If the Director agrees to buy, the Director will negotiate with the supplier.
- f. Furthermore, the supplier will provide the results of the negotiation decision to initiate cooperation with the company or not.
- g. If an agreement occurs, then the purchasing department will place an order for the product to the supplier by sending a Purchase Order.

With the existing activities and procedures are expected to provide and increase the value of the company's network, they are:

- a. No errors occurred during delivery.

- b. Cooperation with suppliers is getting better.
- c. The process of procurement of goods can run smoothly.

**b. Service Development and Operations**

To improve relationships with business associates and customers, the company must develop existing services and provide satisfactory service to all parties receiving the service. Some activities carried out to strengthen the company's relationship with business partners, among others:

Activities to improve cooperative relationships with suppliers (contracts).

- a. The company submits a cooperation proposal to the supplier.
- b. The supplier confirms the approval of the cooperation proposal to the company.
- c. The company profile is given to the supplier while the supplier profile is given to the company.
- d. Both parties make a cooperation contract and sign it. The contract consists of agreements between the two parties, such as pricing, product delivery procedures, etc.

Activities of controlling the receipt of goods from suppliers.

- a. The supplier sends the product to the warehouse
- b. The warehouse section checks the suitability of the product, quality and quantity ordered based on the Purchase Order.
- c. If the product does not match, the warehouse department will make a Purchase Return for the product that is not suitable, damaged/defective and submits it to the supplier.
- d. The supplier will send a price reduction letter (Credit Note) for the products that are not suitable to the company.
- e. Thus, the credit note will reduce the total price on the Purchase Order.

With the existing activities and procedures are expected to provide and increase the value of the company's network, they are:

- a. There was no error when receiving the product order.
- b. The products received are guaranteed quality.
- c. Increased trust between companies and suppliers.

**c. Service Delivery**

Satisfactory service will improve good relationships with business partners and customers. But to meet each different need, the company differentiates services into two, namely core services and services that add value.

Some of the core services contained in the company, they are:

- a. Controlling the selection of the right supplier.

The selection of the right supplier indirectly provides benefits for the company. And conversely, the selection of suppliers is not right, making the company unable to get maximum profit and can not compete with its competitors who can provide better prices even with the same quality.

- a. Serving product offerings from suppliers.

Offers provided from suppliers are collected so that the best offer can be selected.

- b. Serving product ordering to suppliers.

Orders to suppliers are made to meet the needs of the customer. Ordering products to suppliers is made when the stock of goods in the warehouse has reached ROP.

- c. Serving product receipts from suppliers.

Product acceptance determines whether a product is received. Not checking the condition of the product when receiving the product from the supplier and the product has reached the customer's hands, this will result in the company experiencing losses because the customer is not satisfied and can move to buy elsewhere.

Some services that add value (value-added services) contained in the company; they are:

- a. Provide customer service for customers to ensure the quality of the product.

With the existing activities are expected to provide and increase the value of the company's network, they are:

- a. Customers are loyal to the company by providing guaranteed products.
- b. Provide added value for the company in the eyes of suppliers.

#### 4.2 Exchange Analysis

Exchange analysis is done to measure the overall pattern of an existing exchange of values. However, before conducting exchange analysis, it is necessary to do network mapping first, to get the exchange of what values are contained in the network, both inputs and outputs obtained from existing business processes. This order consists of 3 simple elements, namely roles, deliverables, and transactions.

The following image below is an exchange of value contained in the network, which consists of inputs received and output resulting from each part, both tangible and intangible.

Once identified the roles, deliverables and transactions contained in the network, it can be done exchange analysis. Exchange analysis measures the condition of the network on, the result is that there is still no integration that provides a way for either input value or output to be able to move / move in the system. Exchanges contained in companies are tangible and intangible exchanges, generally tangible exchanges that are more dominant in the company, because the company still does not utilize intangible value properly, such as information provided or received is not stored either by the company. In the company there is a system that has not been optimal such as there is still a weak and ineffective relationship in negotiation relationships with suppliers due to the use of conventional means.

#### 4.3 Impact Analysis

Impact analysis shows how the role of realizing the value of the inputs it receives and making real gains can contribute to a company's success. Table 1 and table 2 below is an impact analysis worksheet for each role, which shows how the purchase section or warehouse section is aware of the inputs it receives that can impact the company, both impacting the company's finances and impacting the company's intangible assets.

Table 1. Impact Analysis of Purchasing (and Director)

<i>Transaction</i>		<i>Impact Analysis</i>				
<i>Deliverable</i>	<i>From</i>	<i>What activities generated</i>	<i>Impact on Financial Resources</i>	<i>Impact on Intangible assets</i>	<i>Overall cost/risk</i>	<i>Overall benefit</i>
Product quantity information	Warehouse Section	Making a purchase, Create a Purchase Order.	Adding administrative costs.	Ensuring product availability.	L	M
Negotiation by email & phone	Supplier	Making offers, cooperation decisions.	Increasing communication costs, increase sales.	Getting the best supplier.	M	H
Product offer by email	Supplier	Cooperation decisions, making PO	Increase communication costs.	Knowing the current product & prices.	M	L
Purchase Request by phone	Warehouse Section	Creating Purchase Orders.	Adding administrative costs.	Knowing the product information that must be purchased.	L	L
Credit Note	Supplier	Reducing prices on Purchase Orders, make payments.	Reducing return costs, increase communication costs.	Saving time on product returns and exchanges.	M	H

Table 2. Impact Analysis of the warehouse section

<i>Transaction</i>		<i>Impact Analysis</i>				
<i>Deliverable</i>	<i>From</i>	<i>What activities generated</i>	<i>Impact on Financial Resources</i>	<i>Impact on Intangible assets</i>	<i>Overall cost/risk</i>	<i>Overall benefit</i>
Product quantity information	Warehouse part	Forecasting, warehouse stock information.	Adding administrative costs.	Avoiding product shortages, ensure product availability.	M	L

Product check results	Warehouse part	Quantity information, stock updates.	Increasing employee costs and sales.	Ensuring the availability of quality products and products received.	M	L
<i>Purchase order</i>	Purchasing department	Product checking, recording the products received.	Adding administrative costs.	Ensuring that the product ordered is as received, avoid shipping errors.	M	M

The table above, shows the purchase section realizes the inputs it receives can have an impact on the company, both impacting the company's finances and impacting the company's intangible assets. Shown, the purchase section receives a deliverable input "product amount information" from the "warehouse section". From the deliverable input, the resulting activity is the purchase part can "make a purchase and make a Purchase Order". And it is known that the impact of these activities will have an impact on the company's financial or intangible assets, which will increase administrative costs and can ensure the availability of products. From all that, it can also be known the effect on cost, the risks and benefits for low, medium, or high companies.

#### 4.4 Value Creation Analysis

Value creation analysis examines how each role adds value to the network. Like the theory of value chain analysis, each value chain activity must add value to a product or service. Thus, in a value network, the role must find a way by using this output to be able to provide greater value in the form of products and services.

This value creation analysis will focus on the creation of value and output from each actor, such as more impact analysis to see how the actor benefits or benefits from an input.

Which is the result of the above value creation analysis, real ways can be taken (actions that can be taken) to create and expand the output of value, as well as take advantage / benefits, which can directly generate revenue for the company. Here is a worksheet of value creation analysis for each role.

#### 4.5 Proposed Troubleshooting

Based on business processes and analysis, there are several problems and obstacles that must be found solutions. These problems and constraints, among others, in handling the product procurement process are still quite complicated and long even though the company desperately needs a fast and precise flow of information.

In addition, in the selection of suppliers is also not objective, an objective assessment is needed for each supplier. And to support it all, there needs to be a solution so that the procurement process and supplier selection can be precise in terms of quality, delivery time and cost.

It is also known from the inputs received and the output produced by each part is not managed properly, even though if it can be managed properly, the company can get its profits and benefits and can generate revenue.

The solution offered is with e-procurement, which can support and manage all product procurement activities between the company and the supplier and improve the performance of the purchase part so that the procurement process becomes faster. So, with the e-procurement system, the company can facilitate the procurement process and business activities can be integrated with each other well, which will provide indirect benefits / benefits for the company.

#### Problems Analysis

Based on the analysis conducted, the company faced several problems related to the company's product procurement process, they are:

1. The use of paper, telephone and fax in the process of procurement of goods is not efficient, causing the costs incurred to be greater, the possibility of human error is greater, and the ordering process takes longer.
2. The company is difficult to determine the best supplier objectively because there are many suppliers and a lack of information about the performance of suppliers, in terms of price, timeliness and product quality provided by suppliers so far. So that the relationship between the company and the supplier is not well established.

#### Proposed Troubleshooting

From the problems faced, it is recommended that the company can implement an e-procurement system to overcome product procurement problems in the company and provide a database to accommodate data related to product

procurement, where the data can be used for the purpose of making reports and analysis of supplier assessments. And most importantly, this e-procurement system will be managed by an administrator, who has full power over the system. Here's the expected troubleshooting by implementing an e-procurement system:

- The system will facilitate the exchange of information between parties involved in the procurement process.
- The system can be a liaison between suppliers and companies so that both can establish a good relationship.
- The system can evaluate supplier performance objectively and provide the best supplier proposal to the purchasing department.

#### 4.6 Rating of Performance Supplier

In the process of buying goods, it is very important to get the right source so that the quality of the goods obtained, the time and price level are also right. But it is difficult for companies to make choices because the company has many suppliers for each product. And each supplier has a different performance from each other. Therefore, to determine which supplier is better when it comes to transactions, companies need an objective assessment of each supplier. In the e-procurement system built, there is a function to assess supplier performance, which will be assessed based on three criteria, namely: On Time Delivery, Quality, and Total Cost.

- **On Time Delivery**

On Time Delivery is calculated based on a comparison between the promised date and the actual date the component received. OTD is given a weight of 40% of the total supplier value. This OTD assessment is calculated based on one Purchase Order. If there is more than one Purchase Order to be assessed, then the OTD value is calculated to be the average value of the supplier.

Formula:

$$\text{OTD} = \frac{\text{Quantity of goods received on time} \times 100\%}{\text{Promised number of items}}$$

- **Quality**

Quality assessment is calculated based on a comparison between the number of goods received and the number of returned goods. The results are reported in the form of part per million (PPM) which is the average value of damage per unit of normalized material into one million. PPM is given a weight of 40% of the total supplier value.

Formula:

$$\text{PPM} = \frac{1,000,000}{\text{Amount received}} \times \text{Amount returned}$$

- **Total Cost**

The assessment of the total cost or total price is calculated based on the maximum price comparison that the company can receive with the price quote from the supplier. TC is given a weight of 20% of the total supplier value.

Formula:

$$\text{TC} = 1 - \frac{\text{Total costs incurred}}{\text{Maximum reasonable price}} \times 100\%$$

The formula for the total value of suppliers based on the weight of each criterion:

$$\text{Total} = (\text{OTD} \times 40\%) + (\text{PPM} \times 40\%) + (\text{TC} \times 20\%)$$

This final total is the value that will be compared between suppliers and ranked from highest to lowest. The supplier with the highest value is the best supplier of choice in table 3.

Table 4 shows the supplier performance assessment that is used to assess the performance of each supplier. That can be used as a consideration for the purchase part in choosing the right supplier.



Table 3. Value Creation Analysis of Purchasing and Director)

Value Creation Analysis			
What we output?	How do we add to, enhance, or extend value?	Cost/Risk	Benefit
Product Request Letter	Giving easy access to request products from suppliers.	L	M
Purchase Order	Giving access to order products quickly.	L	M
Return Submission	Giving access to apply for returns directly.	L	M
Negotiation	Providing convenience in expressing decisions quickly.	L	M

Table 4. Value Creation Analysis of the warehouse section

Value Creation Analysis			
What we output?	How do we add to, enhance, or extend value?	Cost/Risk	Benefit
Product Purchase Request Letter	Providing access to easily request product purchases.	L	M
Product quantity information	Providing easy access for the purchasing department to immediately place an order for the product.	L	M
Product check results	Providing prompt information on damaged/defective products received so that the purchasing department can directly apply for a return to the supplier.	L	M

## 5. Conclusion

The importance of procurement of supplies is to support service to customers. Inadequate procurement of goods causes between the purchase and supplier parts to experience limitations in exchanging information and negotiations. Of course, as a distributor company for overseas suppliers, this becomes an obstacle and causes some problems for the company, especially the purchase part. Therefore, the company sees the need for an e-procurement system, to be able to handle problems that arise in the procurement process. The methodology used is (1) the value network analysis method with the impact analysis and value creation analysis approach, which analyzes the solutions needed in the development of e-procurement.

The result is a model in the form of a draft e-procurement model that can be used to exchange information, negotiate with suppliers and select suppliers who are more objective with supplier performance assessments. With the e-procurement system, it will be able to overcome problems that often occur in the conventional product procurement process, and the company can excel and compete and can maintain and improve its customers.

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## Biography

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