E-procurement Application for a Distributor Company

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Abstract

The problem in business is that the procurement process is still manual. As a result, purchasing and supplier departments are limited in sharing information and negotiating. As a foreign supplier, this is an obstacle and creates various problems for the company, especially for the purchasing department. Therefore, companies need an electronic procurement (e-procurement) to resolve problems in the procurement process. The methodology used is (1) value network analysis method with impact analysis approaches and value creation analysis, (2) design method with object oriented analysis and design (OOAD). The result is a prototype of a model for e-procurement for information exchange, negotiations with suppliers. The selection of a supplier is more objective and based on the evaluation of the supplier's performance.

Keywords
Procurement, e-procurement, prototype, object oriented analysis

1.   Introduction

The information revolution has pushed business competition to become increasingly competitive. Every company is required to increase competitiveness in order to be able to win the competition business. The role of information technology is very strategic in supporting competitive advantage[2]. Business people have begun to think about how to adapt to the development of information technology so that companies have an advantage and are able to compete.

The information system application is a form of contribution to the application of information technology to be able to create and support business competitiveness and business processes in the company[3]. At the current distributor company, the company's procurement system still uses manual methods, from contacting suppliers, agreement's on prices and product orders, only using telephone, fax or e-mail, causing the purchasing department and the supplier to have limitations in exchanging information. Of course this becomes an obstacle and causes several problems for the purchasing department in the procurement process, such as errors in the number of product orders, errors in the products ordered, errors in choosing the right supplier and price accordingly, and changes in the ordering schedule that suddenly - arrived because marketing has agreed to change orders with customers. These problems have an unfavorable impact, which causes customer satisfaction is not fulfilled[4].

The company realizes the need to implement e-procurement to maintain its excellence and improve customer service, as well as to overcome problems that often occur in conventional procurement processes[5]. Companies need 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 by changing its old procurement system to e-procurement.

Procurement refers to all activities that involve the process of getting goods from suppliers including purchasing and also inward logistical activities such as transportation, incoming goods and storage in warehouses before the goods are used[6]. Procurement functions include information to complete purchase orders, modification and overall supplier searches.

As for e-procurement, it is like an electronic integration and management of all procurement activities including purchase requests, authorization, ordering, shipping and payments between buyers and suppliers[4]. Another definition of e-procurement is the procurement of goods and services for companies using electronic facilities[7]

Many experts classify the types of e-procurement applications based on different features and types of technology that support them[8][9]. In general, there are several types of e-procurement applications [10][11][12]:

1. E-catalog: Traditionally, catalogs are usually printed in the form of books or brochures. E-catalogs are usually equipped with a search facility, so that companies can easily get information about the desired product or service.
2. E-auction: This application is to help the auction process. Suppliers who submit bids electronically and during auction, suppliers can revise their bid prices.
3. B2B market exchanges. This application allows multiple buyers and multiple sellers to meet virtually.
4. B2B private exchanges. This application can be used to help process routine transactions with suppliers. Companies can send POs electronically, check delivery status, make payment transactions.

The objectives of e-procurement are[13][14]:

1. Increase the productivity of purchasing staff, give them more time and reduce work pressure.
2. Reducing the purchase price through product standardization, the reserve auction, discounts, and combined purchases.
3. Improve information flow and management. In information about suppliers and prices.
4. Build efficient cooperative relationships.
5. Ensure delivery on time.
6. Reduce processing time and order fulfillment through automation.
7. Make the buying process quick and simple.
8. Shorten invoice reconciliation.
9. Reduce administrative processing costs.
10. Find new suppliers who can provide goods faster and cheaper.
11. Minimizing human error (human error) in the purchase and delivery process.
12. Monitor purchasing behavior.

2. Methodology

This research was carried out at Distributor Company that is, as part of the commercial product purchase process. The data comes from interviews and observations with employees and managers of the company. They were used to carry out the analysis and design of the e-procurement system.
The analysis and design methods used are:

1. Analysis method. The analysis method used is the value added network analysis with an impact analysis and an approach to value added analysis. This analysis is used to identify all value exchange activities contained in the company network, both internal and external activities in the company.

2. The design method used is the OOAD approach (Object Oriented Design and Analysis), which is represented with the UML notation as use case diagrams, class diagrams, sequence diagrams, communication diagrams and user interfaces.

3. Result and Discussion

Figure 1 is an overview of the product procurement process that runs at the Company, which can be seen in the rich picture below.
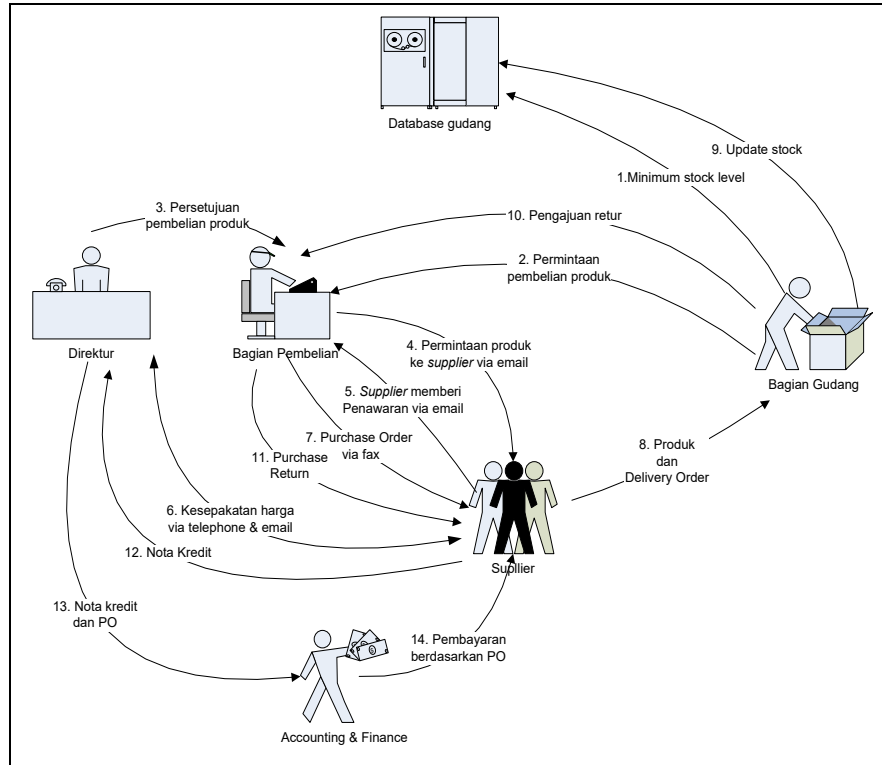
Figure 1. Rich picture of current Procurement Process

To fulfill consumer orders, companies must go through a procurement process. This process begins when the warehouse area checks stock availability in the warehouse system. If a product reaches its minimum stock within ± 2 months, the product in stock is sold out. The unit must report it to the purchasing department in order to purchase the product immediately.

The purchasing department must first obtain the director's approval. When the director approves the purchase of a product, the purchasing department sends an email to the supplier requesting a product offer. If the supplier can meet the product desired by the company, the supplier can offer the product and price by sending a response email to the company.

The tender process carried out by the director is carried out by email and telephone, which in turn leads to a price decision. When a price agreement is drawn up, the director of the purchasing department confirms that he is placing an order listing the products ordered and faxing them to the supplier. The supplier then confirms by phone that the order has been received. The supplier sends the ordered product to the warehouse immediately.

When the supplier sends the product to the warehouse, this unit checks the quantity, type of product and quality of the product received, depending on the order. If necessary, the warehouse updates the inventory. However, if quantities or types of products do not match, the warehouse will inform the purchasing department.

The purchase then confirms to the director and supplier that the product is unsuitable and sends a return. In accordance with the agreement between the company and the supplier, the supplier will grant a discount on damaged / defective products by means of a credit. The accounting and finance department pays for payments in accordance with the total amount specified in the order minus the credit, if applicable.

The problems can be identified from the description of the business processes as follows:

(1) The process of product acquisition management is still quite complicated and lengthy, which leads to delays in purchasing and the performance of the purchasing department is not optimal.

(2) The use of paper, telephone and fax when purchasing inefficient goods, which results in higher costs, the possibility of human error is greater and the ordering process takes longer.

(3) Companies find it difficult to objectively determine the best suppliers because there are a large number of suppliers and there is a lack of information about the performance of the suppliers in terms of price, opportunity and quality of the products previously supplied by the suppliers. . So the relationship between the company and the supplier is not well established.

The Propose e-Procurement System

Figure 2 is the proposed product procurement process at Distribution Company, which begins when the product's stock in the warehouse has reached the minimum stock level:

1. The warehouse makes a purchase request to request the purchase of the product.
2. After the director receives approval to purchase the product, the purchasing department makes a request based on the purchase request and sends it to the suppliers who provide the product.
3. For suppliers who receive the request email and want to make an offer to the company, the supplier must access the company's electronic procurement website.
4. To obtain the right to access the electronic procurement system, the supplier must first register and complete data about the company.
5. Before the provider receives access rights, he must wait until the director's approval is confirmed by email. If the director approves the registration of the provider, the provider can access the system.

In addition, companies and suppliers are connected and can work together, as Figure 2 the rich picture below:
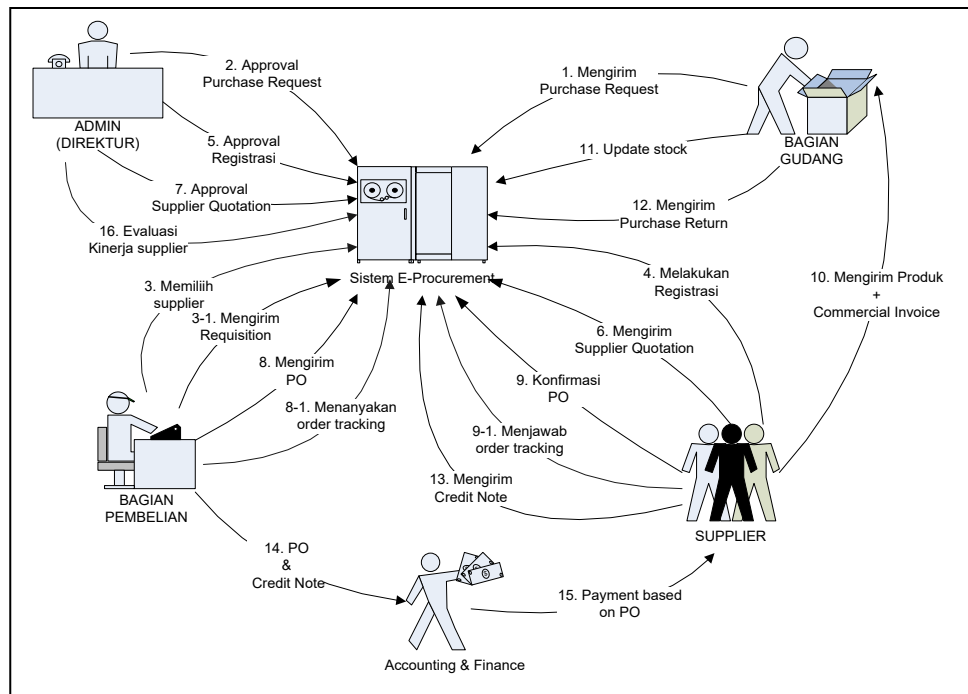

Figure 2. Rich Picture system proposed

In Figure 3 the use case diagram, actors involved in the e-procurement system, there are four, namely the admin, the purchasing section, the warehouse and suppliers. Admin actor is the person who handles approval of purchase requests, registering suppliers, approving supplier quotations that offers from suppliers, and evaluating supplier performance. While the purchasing section is the part that is tasked with making requisitions, making purchased orders, asking for order tracking, and making reports. Meanwhile, the warehouse section is the part that makes purchase requests, records the material received

form, records purchase returns and records products. Meanwhile, suppliers can register, make supplier quotations, create credit notes and make tracking orders.

Figure 3. Use Case Diagram

Based on the flow of procedures in the rich picture, the objects involved in it can be identified. These objects can be separated into data objects which are described in Figure 4 Class diagrams below.
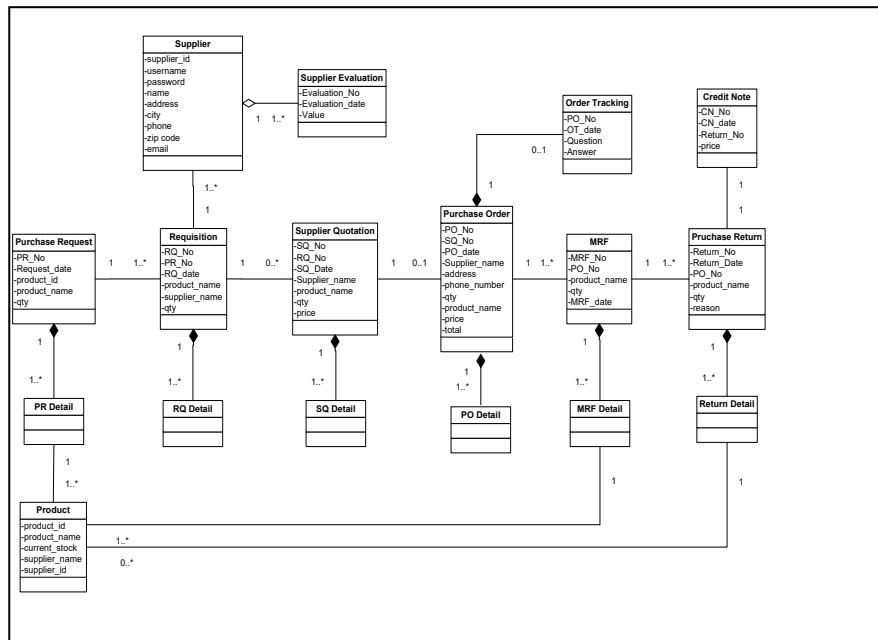

Figure 4. Class Diagram

The create Purchase Request(PR) in Figure 5 has been appear when the warehouse unit presses the create new PR button. This page is used to make product purchase requests to the purchasing department. The warehouse section will enter product data that has reached the minimum stock and the amount that must be purchased. Then press the save button to be sent to the purchase section

Figure 5. Purchase Request

The supplier quotation (SQ) in Figure-6 created after the supplier presses the proffer button on the requisition page. This page is used to make a price quote or supplier quotation to the company from the received request quotation (RQ). The supplier will enter the necessary data to make SQ and then press the submit button to send the offer to the purchasing department and save it into the database.

Figure 6. Create Supplier Quotation

The purchase order page on Figure-7 created when the purchasing department presses the create PO button on the supplier quotation page. This page is used to place orders from approved supplier quotations. The purchasing department will enter the data needed to make the PO and then press the save button to save it into the database and send it to the supplier

Figure 7. Create Purchase Order (PO)

Next, the create material received form (MRF) page will appear after the warehouse section presses the create MRF button on the material received form page. This page is used to create or record items received by the warehouse based on existing purchase orders. The warehouse section will enter the data needed to create an MRF and then press the save button to be saved into the database.

Finally, the create evaluation supplier page that appears when the admin accesses the supplier evaluation menu. This page is used to make an assessment of supplier performance based on the criteria and weighted value against each of the criteria desired by the company.

4. Conclusion

The slow process of ordering products is because the company's business processes are still manual and result in a lot of costs. The number of suppliers is very large and the company carries out the supplier selection process only for the extent of working experience. Through the development of an e-procurement system, it will improve the performance of procurement of goods to be more effective and efficient, and can assist in the supplier selection process

Acknowledgements

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Biography / Biographies

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