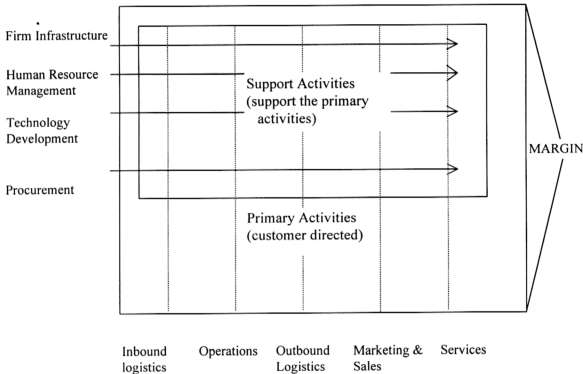


Purchasing and Inventory control system

The basic activity and requirement

In a manufacturing environment, we can analyse the need of information system in terms of a value chain. The activities in a value chain are divided into Support Activities and Primary Activities. The value chain is as follows: -



Source : Adapted from Michael Porter, *Competitive Advantage* (New York : Free Press, 1985), p..370

These activities are inter-related whether directly or indirectly and the requirement of each activity in the information system will be different. The purchasing and inventory control activities are equally important in contributing to the competitiveness of the organisation. The design of the information system both software application and hardware architecture must be aligned with the objective of purchasing and inventory control. (Computer Technology Research Corporation, 1991, p.65)

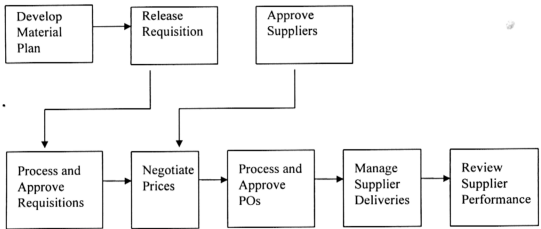
In a value chain analysis, the purchasing function which is to add value into the material purchase by making a good decision in terms of price, source of supply, quality of material, quantity and the right timing of delivery. The value adding process shall be enhanced by means of changing the usual

purchasing practise and the smart usage of information system analytical tools for making a better decision in order to achieve lower material cost.

Megasteel may adopt the same information system for purchasing function that is currently being used in Amsteel but this approach will not help Megasteel to attain the position of high technology, low cost producer. A thorough study on the role of information system in transforming the current reactive status of purchasing into a pro-active position shall be carried out. Before we continue to establish the information requirement we shall first study the potential contribution of information system to the purchasing and inventory control activity.

The purchasing activities, as a whole, comprise of the followings: -

Purchasing and planning



A typical purchasing process (adapted from Amsteel Mills purchasing)

Definition

Purchasing is defined as “the acquisition of needed goods and services at optimum cost from competent, reliable sources. (Eberhard E.Scheuing, *Purchasing Management* (Englewood Cliffs, N.J.: Prentice-Hall. 1989), p.4) We shall study the major business processes of purchasing and the need of information system in enhancing these processes.

Sources of Goods and Services

Approve Suppliers

In this process, the purchasing manager shall determine the best source to use. For the documentation purpose, the potential new supplier must complete a vendor profile form. This form will then be scrutinised by the top management. A set of basic criteria must be fulfilled before the supplier can be accepted as an approved source. These criteria may include the pay-up capital, ownership, plant infrastructure and year of experience, etc. If the supplier is found qualified by the top management, the vendor master file is then created to capture all the relevant particular of the qualified supplier into the system. This process may take a long time and man power to accomplish

if done manually. It is important to note that purchase order can only be issued to the approved supplier

The role of information system

The sourcing activity is becoming tougher each day because the number of new sources is increasing each day and the purchasing manager must be able to get access to both the domestic and international sources.

Traditionally the purchasing manager will search in the printed purchasing guide (e.g. Yellow Pages) for the sources available locally and the trade magazines for the international sources. In order to be able to access to more sources both domestic and internationally in a much shorter time and less effort, the Information System should provide the network to enable the search of new sources in an easier and more effective manner. Linking the system to the Internet is a preferable feature.

Dealing in the international trade can be more complex than the domestic trade because of the uncertainty in terms of instability of legal and political system, instability of foreign transportation method, or instability of foreign monetary systems. (Robert E. Markland, Shawnee K. Vickery, Robert A. Davis, 1995, p.364). The information system and the advance telecommunication network can help the purchasing manager to access to an up to date information around the world almost instantly. This leads to a prompt action by the manager in encountering any untoward circumstances, for example the natural disaster or the workers strike in the foreign country. As a result, the information system reduces the risk of dealing with international sources.

The build-in security features in the information system can help to curb the abuse of purchasing authority. The information system can control on the unauthorised purchase of material by disabling the issuing of purchase order to the unapproved source. This also brings to a control on the unethical purchasing behaviour.

Negotiate prices

The purpose of purchasing is to buy goods and services at the lowest total cost and not necessarily the lowest price. (Markland,Vickery,Davis,1995, p.364) This means that the quality and specifications of material must first meet the firm's quality standards before any purchase is done. If the technical specs are met the purchasing manager must negotiate on the commercial terms to attain best possible price from the supplier. The objective is of course to achieve a lower material cost. Negotiation skill is both an art and science, which can be enhanced with the help of information system. Information gathering and analysis can be a tedious task without the information system.

The contribution of information system

Prepare for the negotiation

The information systems shall provide the information on the purchased price history, delivery performance, total purchase value per annum, price trend and market trend etc. Statistics analytical tools shall be applied to generate charts and graph for evaluation purpose. These information must be the latest and updated information to support the managers in the process of negotiation with the supplier. Timely and accurate information will lead to a better decision making that will have impact on the cost of material and competitiveness of organisation. Material like the Aluminium, Palm oil and Ferro alloys are the commodity traded in the world market therefore the purchasing staff must be able to asses to the latest information for accurate decision making. Consequently the lower cost is achieved by obtaining the right quality, right source, right price and the right quantity. Lower labour cost for the purchasing department through saving of time manpower.

Develop Material plan

The inventory management team shall carry out this task. The information system is required to generate the material purchase plan based on the relevant information input into the system. There are more than hundred of items used in the steel mill and each material may have its own set of variable thus making the planning work of the inventory manager tedious and time consuming and sometimes full of error when done manually.

The contribution of Information System

If the information system is available, the computerised material purchase plan will shorten the time and labour required in the its preparation. For Megasteel, the information system can consolidate the total requirement of the two steel mills (and three in the future) both Amsteel and Megasteel for the common items. We will be able to achieve a synergy in the material requirement plan between Megasteel and Amsteel.

A smooth work flow system can be achieved to reduce the work-in- process and production down time. By providing the accurate information on the quantity required to maintain the necessary inventory level, and taking into consideration the manufacturing and delivery lead time required, the information system will then proceed to generate the material requirement plan. With the accurate information on the right quantity and delivery time provided by the system, the information system shall prompt to the purchasing manager to start the process of purchasing. The relevant information on the material specifications, quantity required, delivery schedule shall be issued to the potential suppliers for tendering of quotation before close of tender. The total cycle time required for planning is reduced tremendously with the help of information system.

Release requisition

After the material plan has been completed the inventory controller will continue to raise the material requisition for the further purchasing process. The material plan has to be approved, by the material control manager, before it is released . The purchase order can only be issue if there is an approved material requisition. The approved material requisition is then passed on to the purchasing manager for further action.

The contribution of information system

When the requisition is done manually there will be high possibility of occurrence where requisition being left out due to carelessness when the number items is high. If this happens, the production will be affected due to shortage of material. Information system can help to reduce this human error and therefore, increase the efficiency and productivity of the inventory controller.

When done manually, the purchase requisition will have to be printed out and deliver to the purchasing department. There will a waiting time before the document reaches the purchasing department, to the worst scenario the document are misplaced and does not reach the purchasing department at all. There will be a serious shortage of lead-time for the delivery of material and as a result causing a shortage of material. The information system can provide a work flow environment to prevent the occurrence of missing document and waiting time. An on-line facility to route the requisition to the respective party shall be implemented to cut down on the usage of paper and reduce waiting time for the hardcopy to be deliver from one department to another.

Process and Approve Requisitions

After receiving the requisitions from the inventory control manager, the purchasing manager shall assign the buyer in-charge to the respective

requisition. Without the information system, the purchasing would have to make a manual record of who (which buyer) is handling the requisition and the date of assignment.

In a information system workflow environment, the requisition is routed electronically to the purchasing department. The purchasing manager shall then assign the requisition to the respective buyer through the system. This facility provided by the information system enable the purchasing manager to follow-up on the status of requisition to avoid delay and mistake by the buyer in-charge. Monitoring function of the manager can be more efficient with the help of information system. Implicitly information system plays a supervising role in this instant.

Process and Approve Purchase Orders

When the price of material has been concluded and approved by the purchasing manager according to the authorising limit. Purchase order or the purchase contract shall then be issued to the supplier. Hard copy of purchase order will also be generated through the system, which will be sent to the supplier after being authorised by the purchasing manager.

In order to save on the printing cost , postage, handling, and avoid the delay in postal delivery it is also recommended that the suppliers are link up with the purchasing department through EDI system for the transmission of purchase order electronically. The information system should be integrated with the other business function. The information of the purchase order is important to the accounts department for payment purpose.

Manage Supplier Deliveries

The report shall be provided to the respective buyers to follow-up on the delivery of the supplier. Without the on-line information system, the inventory

control department will have a hard time advising the purchasing department about the delivery status of the material.

With the on-line system linking the receiving department with the purchasing department, the report can be generated easily by the purchasing department. This information on delivery can also be sent electronically to the supplier for counter-measure via telecommunication network. This will be one of the success factor in the implementation of consignment stock practise in Megasteel. It is one of the conditions that the suppliers must have an up-to-date information about the inventory stock and this can be achieved with the suitable information system.

Review Supplier Performance

It is one of the functions under the vendor development programme. The strength and weaknesses of the suppliers will be analyse to assist the supplier in the improvement of cost, quality and delivery. In turn it benefits the firm in achieving its objectives.

With the information system, information on price, quality, delivery and terms of payment can be recorded in the system and enable statistical analysis to be carried out on the historical data with high accuracy and efficiency. Therefore, a comparison among suppliers can be done to identify the better source to deal with in the future.

A continuous cost down practice can be more effective with the accurate information about the supplier's business performance. This information can be available through the Internet and it is important that purchasing manager are assessed to this facility.

Centralised Purchasing

More than 60% of the Megasteel's material are the same as Amsteel or similar kind if not entirely the same. Therefore it was decided that the purchasing activity and the material inventory planning activity are to be centralised. That means the same purchasing staff will be handling the material purchase for both Megasteel and Amsteel. The centralised purchasing will be stationed in the Megasteel office physically.

However, the central purchasing staffs will only handle the common and strategic items. Both Amsteel and Megasteel shall maintain a small number of purchasing staff for the purchase of other items e.g. the production maintenance parts. The rationale for centralised purchasing is to tap the benefit of the economy of scale, improved the bargaining power. The same pool of purchasing experts in the same area will also cut down on the size of purchasing labour force.

A common type of information system to manage both the Megasteel and Amsteel's purchasing activity can help the centralised purchasing manager exert control over the two separate operations. This will also enable the consistency in the purchasing policy in Megasteel and Amsteel .

Consignment Stocks

The concept of consignment stocks will also be introduced in Megasteel to help reduce the inventory cost and to improve the much needed cash flow of Megasteel. In this concept, the material supplier is to maintain the required stock level and the payment shall only be made for the item which are consumed by Megasteel. The supplier is responsible to advise the inventory control staff for the replenishment of material and the material requirement plan.

The information system is required to provide the supplier with an accurate information on the usage of material and the stock level in Megasteel. Inaccurate or late information to the supplier will result in shortage of material or over stocking of material that leads to deterioration of material quality, expiry of shelf life. Information system and the advance telecommunication system can provide an efficient link and the flow of information towards achieving objectives of the consignment stock system.