

AN ASSESSMENT OF JUST IN TIME PROCUREMENT SYSTEM ON ORGANIZATION PERFORMANCE: A CASE STUDY OF CORN PRODUCTS KENYA LIMITED

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ABSTRACT

Just in time can be defined as making what the customer needs, when it is needed and in the quantity needed using the minimum resource of people, material and machinery. Purchasing and maintaining a reliable purchasing system to any organization is very important to the performance of that organization. However, lack of proper procuring systems will lead to low performance hence making the organization to be inefficient in serving its customers and also it gives bad image to its customers. The main aim of this study was to examine the nature of just-in- time procurement system on organization performance. A descriptive survey design was adopted for the purpose of this study. The researcher used stratified random sampling procedure to select a sample that represents the entire population. A sample size of 50 respondents was achieved. The study found that JIT system had positive effects on the organization since its implementation four years ago. Some of the advantages of JIT include; Improve returns on investments by reducing carrying cost, quality goods delivered at all the time and increased collaborative relationship that facilitated good suppliers-customer relation. The researcher recommended that management should strive to promulgate policies and procedures at all levels for easier adaptability and coordination.

Key Words: Procurement; Open tender; Procurement System; Vendor

1.0 INTRODUCTION

1.1 Introduction

Just in time (JIT) concept has been applied with considerable success in manufacturing environment. This research was to provide an insight of JIT concept and the pre-requisite for successful application of JIT in either private or public sectors. Although JIT concept has many advantages, current study suggests that its application has not been applied in total to many organizations. Nevertheless the essence of JIT concept in the context of supply management can and should be explored.

The JIT concept was developed by Taiichi Ohno, of Japan to improve competitiveness in the global market and was later adopted by many Japanese industries. By early 1980s many Western managers found themselves losing ground in the manufacturing sector. The Japanese industries success has been attributed to this concept. JIT is a broad based philosophy of management, Which embraces everybody in the organization and covers every process towards a culture of never ending or continuous improvement by removing wastes and non-value adding processes. Just in time IT in manufacturing and inventory is seen as an evil, because it covers up quality problems and is costly to maintain. The essence of JIT is to purchase materials and the material are therein time for consumption and these materials must be of high quality to enable smooth running of the system.

Procurement systems have increasingly taken a pivotal strategic role in supply-chain management. Although the strategic role of the procurement systems have not been fully subjected to rigorous theoretical and empirical scrutiny. Extensive research has remained largely unreliable and theoretically under-developed. Systematic purchasing techniques can cause sustainable competitive advantage by enabling firms to foster close working relationships with a limited number of suppliers, promote open communication among supply-chain partners and develop long-term strategic relationship orientation to achieve mutual gains. Procurement systems have assumed an increasingly pivotal strategic role, evolving from an obscure buying function into a strategic business partner. Researchers have documented how strategic procurement systems actively participate in corporate planning process, facilitate beneficial organization-environment alignment and foster cross-functional integration among supply-chain activities, among other things. Moreover, procurement systems have a key liaison role between external suppliers and user departments within the organization in creating and delivering value to achieve the main objective of their organization. As organizational capabilities enable a firm to enact or seize opportunities or neutralize threats from turbulent environments, they can greatly enhance the firm's competitive and survival prospects. Therefore a sound procurement system will enable the firm to be at a competitive advantage over other firms.

Dynamic procurement systems given the increasing importance of strategic collaboration among firms, the issue of how firms build dynamic capabilities for effectively managing supply partners to achieve sustainable competitive advantage has attracted a great deal of attention (Lorange, 1988; Kanter, 1994; Dyer, 2000). Thus, firms with a strategic orientation that emphasizes development of strategic purchasing systems are more likely to achieve greater economic benefits compared to firms that subscribe to the traditional systems. Procurement systems accomplish this role when aligned with supply chain activities, functions and systems to achieve operational efficiency and flexibility. When purchasing and supply management executives participate in articulating and communicating unique strategic vision for achieving synergistic benefits through strategic collaboration (Kanter, 1994; Lado, 1997), they may generate "managerial rents" and superior firm performance. Furthermore, these systems contribute to a firm's performance through enhancing customer responsiveness.

1.2 Problem Statement

Purchasing and maintaining a reliable purchasing system to any organization is very important to the performance of that organization. Also a proper purchasing system should ensure that the organization is updated with proper information about the changes in purchasing and how to plan and control it. Different organizations use different purchasing systems whereby the organization ensures that, whatever purchasing system they have chosen is convenient to their operations. A good procurement system (PS) will ensure that the organization gets all its supplies. As in the (6Rs) right time, right quantity, right quality, right price, right Source and the right place, therefore, enhancing the organization efficiency in serving their customers. Therefore, the research was to investigate whether organizations relay utilize JIT fully and if so how does the suppliers and customers benefit with it.

However, lack of proper procuring systems will lead to low performance hence making the organization to be inefficient in serving its customers and also it gives bad image to its customers. Also due to lack of a proper purchasing system, the organization is not able to protect itself against future scarcity of commodities and future price crisis. Therefore, does JIT be at position to solve such problem in the organization. The major procuring systems used by organizations include; Just in Time, hand-to-mouth, speculative systems. Most organizations use the traditional systems of buying or acquiring supplies as need arises. This therefore reduces the efficiency, performance and responsiveness of these firms as compared to those applying purchasing systems to strategize their performance and operations.

A good JIT procurement system ensures that all the equipments and services required by the customers are always available for them and hence a superior service and products from the organization (Bowell,J.1987).JIT is a procurement system which is very efficient and enables the company to have a competitive advantage over the other but JIT procurement system has not been fully adopted and used in many organizations despite its many advantages, compared to other old methods of procurement system such as hand to mouth and speculative system. The previous research has been too general and does not specifically deal with issues that affect JIT application in Kenya

1.3 Purpose of the Study

The main aim of study was to examine the nature of just-in- time procurement system on organization performance.

2.0 LITERATURE REVIEW

2.1 Definition of JIT

Just in time can be defined as making what the customer needs, when it is needed and in the quantity needed using the minimum resource of people, material and machinery. From this definition it can be seen that JIT is more than delivering an item where and when required and at right time. JIT is both a production scheduling and inventory control technique and an aspect of total quality management. As production control technique is more concerned with adding value and eliminating waste by ensuring any resource needed for a production operation-whether raw material, finished product or anything in between- are produced and available precisely when needed.

JIT has many definitions; some of the common definitions are ; (i) a system that produces the required item at the right time and in the quantities needed ; (ii) a manufacturing system where the parts that are needed to complete the finished products are produced or arrived at a assembly site as they are needed; (iii) a philosophy that centre on the elimination of waste in manufacturing process (iv) an inventory control philosophy whose goal is to maintain just enough materials in the right time to make just the right amount of product.

It could be observed that those definitions include either the term “manufacturing” or the reference to “making a product.” However, JIT principle is also applicable in non-manufacturing environment. Pooler said, JIT is a combination of philosophy and process that needs time to implement and not two JIT programmes are exactly the same. A successful JIT programmes involves total quality surveillance, JIT manufacturing techniques and an involvement of people.

JIT is a philosophy that crusades for the elimination of waste through the cooperative effort of everyone in the organisation. JIT goals are consistent with normal inventory goals, but represent a tightening up philosophy. Distilled to its essence, JIT procurement system attempts to tighten the record keeping, and to carry minimum stock by receiving frequent deliveries in smaller quantity. Material receipts are planned as close as possible to need, targeting at 100% reliability. Perhaps perfection may not be attainable, but its pursuit is urged by striving to eliminate waste.

JIT purchasing practices are characterized by a small supplier base whose firms are located close to the buyer’s plant, make frequent deliveries and are considered long-term partners with the buying company. JIT calls for empowering employees and using their knowledge and experience to achieve quality at source. Treating employees with respect, keeping them informed and motivating them to produce innovative ideas which are the essential ingredient to achieve the goal of JIT. JIT is team approach based, including all parties involved in the internal process, suppliers and customers. JIT is hailed as creation of a flexible environment that keeps things simple. JIT does not exist in isolation and it is not an island of excellence as it encompasses already proven technique and programs that work well. It does not replace Material Resource Planning (MRP) Economic Order Quantity (EOQ), Enterprise Resource Planning (ERP), JIT emphasizes their proper execution.

2.2 Organization Performance Indicators

JIT purchasing has been defined by (Dobler et al 1996) as an inventory control philosophy whose goal is to maintain just enough material in just right place at just the right time to make just the right amount of product. JIT purchasing concept can provide competitive advantages in manufacturing and service oriented firms. One of the most critical success factors of a manufacturing organization in producing quality product is its ability to acquire quality material at the right time and right quantity. JIT require close attention of its

supply base and in-bound logistics. JIT could bring improvement on internal and external communication, improve supplier performance and warehouse space requirement reduction. Internal process can be brought under control and focus should on the extension on the application of JIT philosophy to suppliers. This requirement had provided the foundation and urge for long-term partnership and strategic alliance.

Just in Time or JIT is a philosophy from Japan. JIT manufacturing involves efficient production of high quality goods using minimum amount of Raw materials, WIP (Work in progress), and Finished Products. Just in Time or JIT philosophy aims at eliminating all kinds of waste. JIT also seeks continuous improvement in terms of quality and productivity. The system operates with very little inventory and the output reaches at the next workstation 'Just in time'. The final assembly is put just before the sale takes place. The goods will not be produced until and unless they are needed, and this depends on the demand for the product. There are Seven Ws in Just in Time or JIT of it tends to curb: Waste of overproduction, Waste of waiting, Waste of transportation, Waste of processing, Waste of stocks, Waste of motion, Waste of defectives.

2.3 Elements of Just In Time

In Just in Time or JIT more attention is paid to the value added time, the value added time should be more than the non value added time. JIT tend to minimize set up time and Small size of the batches. The Kanban system is used to control the flow of materials and goods, Kanban is Japanese word and it means an instruction card. In the Just in Time or JIT system, preventive maintenance measures are taken to make sure that there is no uncertainty factor and waste of any sort. Uniform plant loading is adopted to manage variations. The workers are given the right kind of training so that production goes along in the desired manner and the customer demand is met on time, JIT gives importance to the relations with the vendors. The vendors must be reliable and supportive. The concept of quality at source is adopted. This means that the workers take responsibility for the quality of what they are producing.

Efficiency is the using resources in such a way as to maximize the production of goods and services. A system can be called economically efficient if: No one can be made better off without making someone else worse off. More output cannot be obtained without increasing the amount of inputs. Production proceeds at the lowest possible per-unit cost.

2.4 Benefits of just in time

The benefit of implementing and perfecting JIT procurement techniques, which are attested by world-class companies are;

2.4.1 Reduced paperwork

This is achieved by long term orders and frequent deliveries, this minimizes the paperwork related to frequent order release. Since the material received is defect free, the paper work related complaints and return of material is eliminated. JIT procurement ensures there is reduction in material rejected because the supplier make and supply in small quantities in frequent deliveries. This allows the supplier to have a better control on the process ,helping to ensure that defects are discovered early, corrective action are taken on non-conformity and parts which are of high quality only are delivered. Reduced rejection in incoming material will also eliminate production stoppages during process due inferior inputs of materials. It will also eliminate the sorting, rework, and process scrap reduce cycle time.

2.4.2 Better buyer-supplier relation

Long-term partnership and continuous communication eliminates the need for frequent re-bidding. Partnership in areas like design, development, and manufacturing allows the buyer to cut the cost of the final product. Close buyer-supplier relationship is the key to long-term benefit for both parties. Japanese companies negotiate increasingly extended supply contracts with a supplier with whom they have developed a sense of confidence. Sony has arrangements with its key suppliers to deliver its parts to the hour required, which allows Sony not to hold large quantities of stock. A long-term relation between buyer and supplier allows joint planning with minimal inspection by supplier and precise delivery schedule, (Barnett 1988).

2.4.3 Reduction in inventories and logistic costs

According to (Buton1988) total logistics costs includes consolidation, transportation and inventory costs. Logistic cost in buying activity varies from 5 to 25 per cent depending on the volume and distance, in any company. JIT requirement like consolidation of small shipment at a designated location, and long-term contract with carriers companies can reduce total logistic cost.

Through the implementation of JIT procurement results in working with short lead-time and with reduced inventories. Since the whole procurement cycle is coordinated so well that push inventories are not needed to take care in case there is a problems, reduction in inventories improves productivity and allows better utilization of working capital, lab our, and machines.

In the past inventories have been considered as an asset. Inventory has ability to temporary change the balance sheet, and the accountants use it to hide losses and show it on the asset side of the balance sheet. In long run inventory start corroding profits .The notion that inventory is a safety measure just in case something goes wrong it can cover up, is wrong. Inventory can never become safety: it should always be seen as threat. Elimination of inventories is critically required to perfect JIT procurement.

2.4.4 Accurate forecasting

The JIT system has less tolerance to fluctuation in demand; hence forecast must be accurate. Accurate forecasting allows procurement to buy the right quantities at the right time, allow manufacturing to supply finished goods to the end-customer as per delivery schedules. Since inventories are lowered drastically, production is enabled to develop accurate forecast of demand and in turn accurate requisitions are placed for material with the procurement department.

2.4.5 Reduced lead-time

Reducing lead-time can improve competitive advantage. A company that can offer significant shorter and a more reliable delivery times than its competitors will often be able to increase the market share and may even be able to charge more for its products and services. Reducing lead-time by as much as 50 per cent can often be surprising easy, and often does not cost much. The key as in so many things in day to day working is to understand what is happening, what takes times and what causes things to go wrong (Todd 1994). An enormous reduction in lead-time can be obtained through extensive communication between the buyer and the supplier regarding inventories, production schedules, change orders, quality issues through EDI,E-mail or network of computers.

Yasin, Wafa and Small, (2001) studied how communication is affected by the introduction of JIT. The study suggests that JIT improves communication internally within organization and externally between the organization and its customers and vendor. This factor also result is a closer relationship between buyer and supplier and form of a mutual dependency. In the same study, it is examined how JIT is increasing productivity and enchasing customer responsiveness. It is examined whether the quality initiative are driven or not. Another research that is referred to customer focus is from (Ahmad, S&S.2003); JIT has the ability to respond to changes in customer needs. It is a philosophy that links the customer with the production system.

2.5 Challenges facing JIT

Many managers assume JIT is a supplier programme, which is not the case. A company cannot start JIT by inviting suppliers to attend a seminar, and asking them to provide daily/weekly deliveries in two to three months with zero defect quality and quantity as required. On one side, the buyer has to give the supplier a reasonable time to develop and, concurrently, unless the buyer implements JIT manufacturing within the plant, JIT will have less effect on the overall performance of the plant productivity. Once the buyer company's house is in order, it can involve partnership programme with suppliers and work towards JIT procurement goal. If this is going to take time, the buyer company can simultaneously work on implementing issues of JIT manufacturing and procurement activities.

JIT cannot be implemented quickly, JIT represents a goal which ultimately eliminates waste in the in the procurement process. This can be achieved only through fundamental changes in management thinking. Implementing JIT require a cultural change within the company, modification in layouts, set-up time reductions, cell manufacturing, supplier partnership, frequent deliveries in small lots, and defect-free materials. Unless the buyer combines the benefits of all these elements, he cannot get the full benefit of implementation. The implementation period varies from company to company, depending on the commitment to implement change. It is not a very difficult task, if done with a will. The change can be implemented, on an average, within six month to a few years.

JIT is not about shifting inventory. Many buyers have the notion to achieve JIT procurement is to ask the supplier to hold inventory and supply it as and when the buyer needs it. Eventually JIT, the extra cost incurred by the supplier holding the inventory will be passed on to the buyer. Hence, neither party will reap the benefits of JIT until the supplier too has reduced his inventories to a minimum and ultimately throughout the supply. The real objective must be that every participant in the supply chain should reduce the total inventory pipeline (Bowell 1987)

3.0 RESEARCH METHODOLOGY

3.1 Research design

The research is descriptive in nature. Descriptive research design is a scientific method, which involves observing and describing the behavior of a subject without influencing it in any way. Descriptive research, according to (Best, 1981), is non experimental in that it deals with relationships between non-manipulated variables in a natural rather than artificial setting. It is design to obtain pertinent and precise information concerning the current phenomena and where possible to draw valid general conclusions from the facts discovered, (Lockesh, 1984). Since the events or conditions have already occurred or exist, relevant variables are merely selected for an analysis of their relationships, (Best, K. 1993). This researcher was involved in a critical assessment of just in time and the effects in procurement system in the company.

The research design that had been adopted by researcher was a case study method where the researcher focused on a single organization it makes the findings a good representation of real situation. The study aimed at collecting information from respondents Heads of departments, heads of sections and the staff on their undertaking in relations to Just in time and the effects on the organization. The researcher used both primary and secondary data. Primary data was obtained through questionnaire, interviews and observations while secondary data was obtained from the internet, journals and books.

3.2 Sampling Procedure and Sample Size

The respondents were selected based on stratified random sampling. The strata were composed of the heads of various departments, heads of sections and the staff from the various departments. To get the sample size from each stratum, simple random sampling was used whereby the heads of department were selected ten because they are the policy maker and influence the use of finance in the organization. The heads of section and employee were 15 and 25 respectively as they are the ones who implement and have experience on the system.

Table 1: Sample Size

Category	Target population	% of the population	Sample Size
Heads of Department	15	66.67%	10
Heads of section	30	50%	15
Staff	140	19.67%	25
Total	265		50

3.3 Data Collection

The research used data from primary and secondary sources. The primary data was collected through questionnaire and interviews. Personal interviews gave an in depth into the information and are flexible; that can be structured differently and will eliminate misinterpretation. Structured questionnaires had the advantage in that the respondent had adequate time to respond to questions and also free from bias because the respondent was guided and answers were not influenced by the interviewer. The secondary data was collected from published material, journals and internet sources.

3.4 Data Analysis

The data collected were analyzed by both qualitative and quantitative approaches. The qualitative analytic techniques to be used were a quick impressionist summary and thematic analysis. A quick impressionist summary was used where the results were obvious and required no further analysis. Thematic analysis was useful because just in time procurement system is wide and involves a lot of steps and procedures which needed separate analysis. Quantitative techniques such as percentages and frequencies were used. The use of graphics i.e. tables and charts to present findings were used.

4.0 EMPIRICAL RESULTS AND DISCUSSION

4.1 Effects of Just in time on Performance

4.1.1 Specification of goods

When the respondent were asked the question on whether the delivery of goods corresponded to the specifications given to the suppliers, the entire respondent gave an absolute affirmative answer yes. Although the respondents unanimously agreed that there are cases when the goods have been rejected by the user department .The reasons which they gave on why the user department a times rejected the goods supplied were; changes of production and user needs, changes in production process and this was incases were the suppliers are not aware of the changes.

4.1.2 Quality of goods

The respondents were asked in their opinion to rank whether the quality of goods they procured were good, fair or poor quality. The majority of the respondents agreed that the quality they procured was the best and they stated it this been influenced by JIT system. The JIT philosophy shows that quality of goods procured enabled the easier management of the entire process especially through Total Quality Management.

The quality is seen as a fundamental requirement on which everything else is needed for competitive advantage is built, quality is not negotiable this is because it is only a tool for improving the market shared but also a vital tool to gain competitive advantage(Ulkakar,2003, p.121).

4.1.3 Time estimate for JIT had been implemented

When asked to estimate the duration of time it took for the company to implement JIT 62% of the respondent said that it had taken 5 years, 30% said it had taken 3 years while 8% of the respondent did not know when it was implemented. The variance of the respondent which the researcher got showed that the respondent some had idea on JIT procurement system.

But the researcher got clarification from the interview he had with the heads of department that the implementation of JIT has been implemented for exactly four years and three months, although the respondent stated the implementation was gradual.

4.2 Delays on goods ordered

The respondents were asked whether there are cases of delays of goods ordered and results are shown below

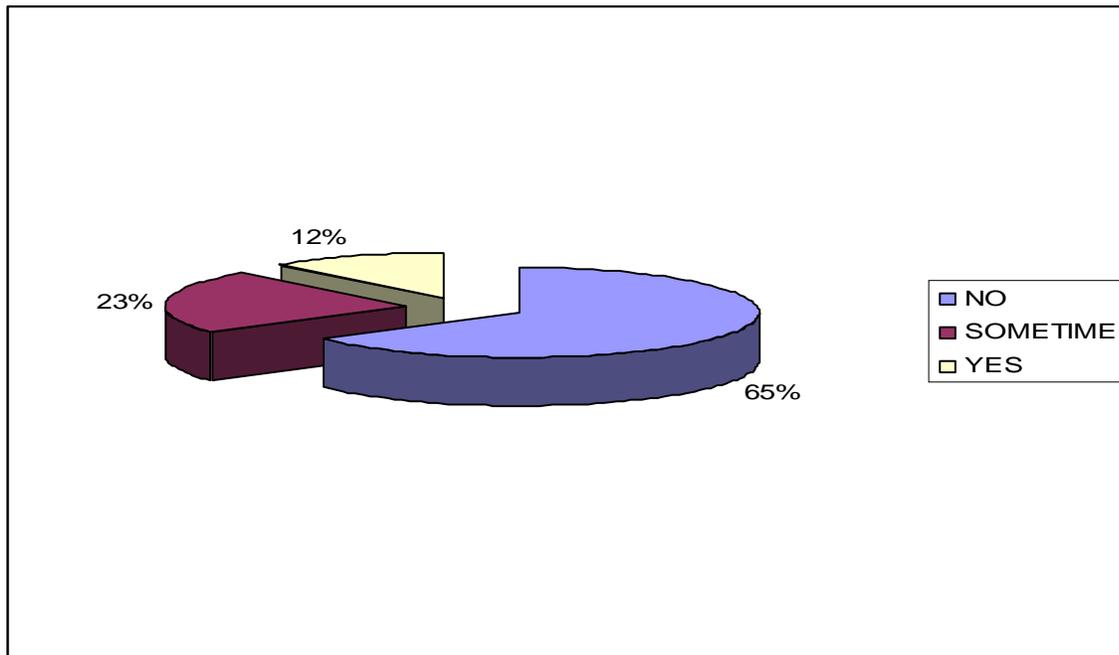


Figure 1: Delays on the Goods Ordered

About, 12% stated yes that there were delays, they pointed out the following as the reasons which caused delays; Transportation problem by courier companies and transporters at times carry several goods to different customers and by the time the goods reach the premise the goods have been delayed or it is too late. Although 88% of the respondents gave an overwhelming vote of no when they were asked whether the supplier failed to supply the goods. Also the respondent gave an absolute no when they were asked whether there were cases the supplier did not supply materials because the organizations did not pay them immediately. This showed that the organization had set aside funds for procurement of goods. However, the researcher got clarification from the heads of department where they said that they had payment terms which they had with the supplier and they were bound by those terms of contract between them.

4.3 Relationship between the buyer and suppliers

In order to perfect JIT procurement, the relationship with suppliers becomes very important to get consistent quality material at a short lead-time. He also stated further that Most Japanese companies perfected in JIT by buying from the same companies repetitively so that it allowed the supplier to understand the buyer's requirements fast enough and move on the learning curve speedily(Ulkakar,2003, p.130). Figure 2 shows how the respondents ranked the buyer –supplier relation.

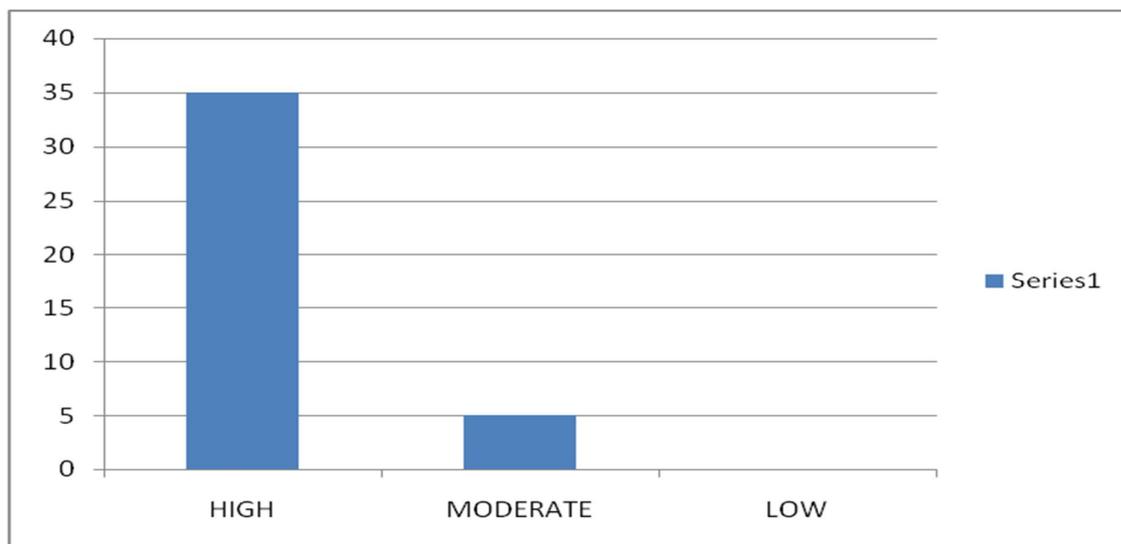


Figure 2: Relationships between the buyer and supplier

The respondent absolutely ranked high the relationship between the company and incumbent suppliers. They gave the following as the reasons for their relationship between them as; some of the suppliers were their customers, they were involved into contractual agreement that were mutually beneficial, they had also long-term partnership relationship, payments were made promptly as at the stipulated periods, suppliers supplied goods which meet specifications and quality and above all the company had worked with the suppliers for many years.

4.4 The comparison of the cost using JIT with other methods

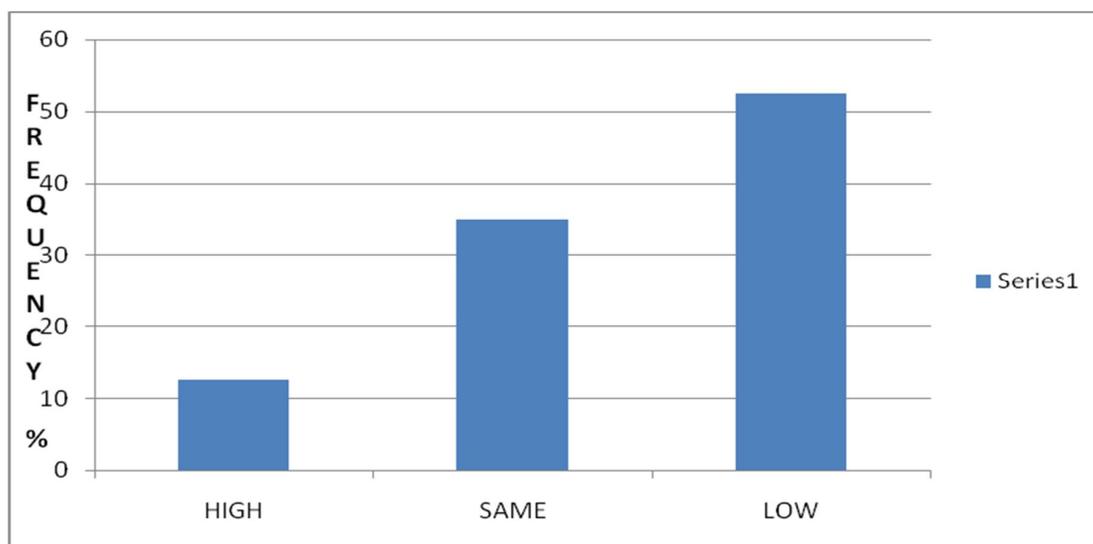


Figure 3: Show comparison of cost procurement with other methods

The respondents were asked to compare JIT procurement with other methods methods such as open tendering, they were of the opinion that open tendering formed 52.5% of the responses they said that JIT mode of procurement was low, 35% stated that the cost was the same while 12.5% of respondent said that

JIT prouement was high .Ulkalkar stated that total logistical cost includes consolidation, transportation, and inventory costs. He further stated that logistics cost in buying activity varied from 5% to 25% depending on volume and distance,in any company. JIT requirement like consolidation of small shipment at a designated location, and long-term contract with carrier companies could reduce total logistic cost (Ukalkar, 2003, p.121).

4.5 Reasons Why the Company Use JIT

Following the interviews and responses obtained by the researcher: JIT philosophy was adopted by Corn Products (k) Ltd for the following reasons:

- (i) To improve returns on investments (ROI) by reducing carrying cost
- (ii) JIT philosophy saved on warehouse space and cost
- (iii) The need to have quality goods delivered at all the time
- (iv) It increased collaborative relationship that facilitated good suppliers-customer relation,(v) JIT philosophy also encouraged the Total quality management(TQM) principle of zero defect, proliferation or wastage. This philosophy also discouraged double handling of goods.
- (v) Finally, JIT philosophy saved on holding cash that would otherwise be employed in other business.

4.6 Challenges facing JIT

Despite the benefit of JIT system the respondents also acknowledged the presence of challenges into this philosophy. These challenges included:

- (i) The lack of understanding to JIT philosophy and the logistical challenges accompanied by the philosophy
- (ii) JIT was partly affected due seasonality of supplies especially in Corn Product (k) Ltd
- (iii) Abrupt changes in demand took long for JIT partners to fully and promptly adopt into them.
- (iv) JIT philosophy required elaborate communication and as such any communication problems constituted to challenges
- (v) JIT philosophy needed to have a strong sense of trust among the partners without which transparency would greatly be compromised.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

The study found that JIT system had positive effects on the organization since its implementation four years ago. Some of the advantages of JIT includes; Improve returns on investments (ROI) by reducing carrying cost, JIT philosophy saved on warehouse space and cost, quality goods delivered at all the time and increased collaborative relationship that facilitated good suppliers-customer relation. JIT philosophy also encouraged the Total quality management (TQM) principle of zero defect, proliferation or wastage. This philosophy also discouraged double handling of goods. Finally, JIT philosophy saved on holding cash that would otherwise be employed in other business.

However JIT philosophy was not 100% perfect and therefore needed to be improved. Some of the views given included: Better communication and integration of systems with the suppliers, Frequent visits to the supplier to audit their process, Use of standard specifications rather than own tailored specifications, Training workers on the use and importance of JIT philosophy in the organization and the management should also be committed to the policies of JIT implementation.

5.2 Recommendations

This section was informed from the questionnaire items related the recommendations of the study. The research informed the study that there was a felt need to improve on the communication and configuration of the integrated system; this could further call upon the use of enterprise resource planning (ERP) system. For the sake of compatibility of the entire system for both the suppliers and focal firm there was the need to use standard specifications which would not require much impromptu variations. The research also established that there was need for cross-functional teams as facilitated by visits to each other's companies for further learning, collaborative relationship and joint designs of programs and plates for machinery. Finally, management should strive to promulgate policies and procedures at all levels for easier adaptability and coordination.

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