

INVENTORY MANAGEMENT AND ITS EFFECTS ON CUSTOMER

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Abstract- This study examines inventory management and the role it plays in improving customer satisfaction. It looks at how food companies have been under pressure to streamline their inventory systems, and the consequences of such actions. It also examines how many retailers are trying to implement a “perfect order” system and how suppliers are constantly under pressure to meet the demands of these retailers. Many food companies are, therefore, looking at various inventory management systems as they believe this will have a positive effect on the satisfaction of their customers. The paper also outlines the methodology used in the research and concludes by pointing out the limitations of the research as well as suggestions for further research.

Index Terms- Inventory Management; Customer Satisfaction; Grocery Companies

I. INTRODUCTION

Many food companies have been under pressure to streamline their supply chain, minimize large inventories, and cut holding cost on inventory. In the past, inventory management has focused on not running out of finished goods. This caused manufacturers to stockpile large amounts of raw materials, work in process, and finished goods. The extra finished goods would be to protect them from going out of stock. There are different costs associated with inventory. The holding cost is when the inventory comprises of raw materials, work in process, or finished goods. The inventory cost is in the range of 20 to 40 percent of annual inventory in dollars. Another variables associated with the holding cost is the opportunity cost, which comprises of any increase in rents due to the need for more space for inventory, higher rates for insuring the inventory, and the cost of goods that are outdated. Manufacturers and retailers can incorporate technology to assist in the managing of this inventory (Atkinson, 2005).

The study of customer satisfaction has shown that there could be a disproportional relationship between cause and effect, or between a factor and its consequence on the organization. For instance, a five percent increase in loyalty can increase profits by 25 to 85 percent (Cacioappo, 2000). Loyal customers are six times more likely to repurchase or recommend the purchase of the product or service to someone else. Studies have shown that on average, four percent of the customers will be dissatisfied or complain about the product and/or service. The various studies have also shown that a dissatisfied customer is likely to tell nine other people, while a satisfied customer will tell five people about the good treatment (Cacioappo).

II. RESEARCH QUESTION

The main reason for this research paper is to see how inventory management can be improved to produce the perfect order. In other words, how can inventory management be improved to produce customer satisfaction and the “perfect order”? The null hypothesis is usually based on the simplest set of assumptions and they do not model reality (Fitch, 1997). The null hypothesis is noted to be H₀. H₀: Improving inventory management will have no affect on customer satisfaction and assist in improving the “perfect order”.

Organizations using modern inventory management processes are utilizing new and more refined techniques. These techniques help to optimize inventories, which decrease inventory and lower costs, and to maximize customer service. With these improvements in inventory management, organizations are becoming more competitive in the delivery of high level customer service and value (R. Michael Donovan and Co., n.d.).

The alternative hypothesis is what the research is hoping to find or prove. The alternative hypothesis is noted to be H₁ (Newlin, 2007). H₁: Improving

inventory management will improve customer satisfaction and assist in improving the “perfect order”. The reason for testing the hypothesis is find a way to improve inventory management, in order to have a good affect on customer satisfaction. Another reason for testing the hypotheses is to see if they are true (Weisstein, 2007).

The directional hypothesis expresses how the independent variable affects the dependent variables (Marion, 2004). Using technology in inventory management will improve customer service and vendor partnerships, increase data integrity, and produce detailed performance measurements

III. LITERATURE REVIEW

There are a good number of works that are related to this topic, but two studies are of particular relevance and interest. The first study analyzed a decision maker having the capability to buy from two different suppliers and using the “periodic-review inventory model” (Fox, Metters & Semple, 2006, p. 389). The first supplier was defined by high variable cost and insignificant fixed cost. The second supplier had low variable cost and high fixed cost. When using different suppliers, there were tradeoffs between variable and fixed cost. Other components were considered such as to “make or buy, order routing, temporary labor, and consumer store preference” (p. 390). The first model was the “concave ordering costs for two suppliers” (Fox, Metters & Semple, p. 393). The x-axis represented the order size and the y-axis represented the order cost. Also, “the n-period dynamic model” was used and it relied on “both quasi-convex and K-convex functions” (p. 393). The first theorem was the “optimal choice” with respect to a “finite horizon,” while the second theorem dealt with “convergence of optimal cost.” The third theorem was the “optimal choice,” but with respect to “infinite horizon,” which was used for discounting. The study showed that the use of the “(s, S) policy is optimal for a broad class of two-supplier problems with discount costs and lost sales, provided the demand density is log-concave” (pp. 394-5). According to Fox, Metters and Semple, one of the limitations was the broad view of products. Another was that for backorders, the theorems would have had to be modified.

IV. FINDINGS

When using a customer satisfaction survey, there has to be a clear objective. The company should have an understanding of the customer’s expectations and their requirements. Then they can determine how the company and its competitors are satisfying these expectations and requirements. Based on the findings of the survey, there should be development of products or standards. The company should look at trends to be able to take action in a timely manner. It is also important to establish standards and priorities to be able to rate these goals. Before the customer survey can be designed, there has to be a determination of how the information will be gathered. How will the information be able to help the organization? In what way can the organization use the information to keep the present customers and to gain new ones (Cacioppo, 2000)? The survey used a Likert scale which had A) Strongly Disagree B) Moderately Disagree C) Slightly Disagree D) Slightly Agree E) Moderately Agree F) Strongly Agree. The number assigned to each letter was A=0, B=1, C=2, D=3, E=4, and F=5.

The surveys were given to three participating retailers and one distributor, all in the grocery industry since that was our focus. While they answered the questions, some of the questionnaires targeted their customers to gauge their level of satisfaction.

V. CONCLUSIONS

The limitations of the survey were the small number of participants. A further study would take a larger sampling of the population to determine the customers that were having problems with shipments and their overall customer satisfaction. Plus, the middlemen should be examined for shortages and their technology use. The large scale sampling should show more about the shortages and the affect on the financial performance of both the distributors and the retailers. The problems with the survey included the fact that many participants were confused on the ranking of different things such as customer service, product, product delivery, innovation, and technical services. Other participants complained about the structure of the survey questions and answers. When studying inventory management, there is a need to further study these variables, “customer needs, vendor partnerships, technology, data integrity, and performance measurements” (Lee & Kleiner, 2001, p. 40) and their affects on inventory management. In

customer satisfaction, there may need to be further study on customer satisfaction surveys and their effectiveness. Also, a further study of the effects of new technologies applications such as RFID will have on the inventory management process in relations to customer satisfaction. The interest in this research was by the fact that major retailers such as Wal-Mart or Tesco, who have been testing and implementing RFID technology, were about to require their vendors to use this technology. We wanted to know whether the same results could come from small grocers. Finally, it is worth stating that all the small business is opted to keep the inventory management system as they saw how it improved their customer service. It is, therefore, understandable why many food companies are implementing similar systems.

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