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Effects of Stock Management Strategies on Supermarkets Performance; a Case of Nakumatt Supermarket

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Abstract:

Maintaining adequate stock levels has been an invention which has greatly impacted on organization's performance. It has led to improved preparedness in firm's economic uncertainties. In Kenya, many firms have been caught unawares by shortages in raw materials and hence have been unable to produce products in time. This has led to shortage in particular products in the market. The study used the following objectives: To establish the effect of Just-in-time strategy on performance of Nakumatt supermarket; To examine the effect of Material Requirement Planning strategy on performance of Nakumatt supermarket; To determine the effect of Economic Order Quantity strategy on performance of Nakumatt supermarket, and; To assess the effect of Distribution Resource Planning strategy on performance of Nakumatt supermarket. The theories underpinning this study included: resource based view; Economic Order Quantity (EOQ) Model; Theory of Constraints, and; The Neoclassical of Exogenous Growth Theory. The target population of interest was Management and employees of Nakumatt supermarket in Nairobi. The study targeted a population of 387. A sample of 80 was used for the study. The sample was distributed between managers and other employees. The study used questionnaire to collect information from the respondents. After the collection of data from the fieldwork, all questionnaires were adequately checked for reliability and verification, editing, coding, and tabulation was carried out. The data was analyzed using descriptive and inferential statistics. Regression model was used to analyse inferential statistics. The study findings revealed that Just-in-time strategy was indeed significant related to supermarket performance. The results on the effect of material requirement planning strategy on supermarket performance revealed that there was a significant relationship. Concerning the effect of order quantity strategy on supermarket performance it was established that indeed the strategy affected supermarket performance. Finally, it was established that distribution resource planning strategy was important in matching material supply to demand, match inventory to customer service requirements and increase the speed the firm can react to the marketplace. Among the independent variables, just-in-time strategy had the highest influence on supermarket performance ($\beta = 0.479$), followed by material requirement planning ($\beta = 0.371$), then distribution resource planning strategy ($\beta = 0.264$), and finally distribution resource planning strategy ($\beta = 0.231$). The study recommended that supermarkets need to reorder new stock well in advance of the anticipated stock out levels. This will give it more supply chain stability; there should be an effective integration of information such as Electronic Data Interchange and Material Requirement Planning Systems in order to decrease capital cost in inventory levels; there is need for the supermarkets to use economic order quantity strategy as it optimizes the order quantity for each product when an order is placed, reducing the company's product stock out issue and finally, supermarkets should form strategic alliances with their distributors so as to have a more improved working relationship characterized by a shared mindset and good information flow.

1. Introduction

1.1. Background to the Study

Inventory control refers to a planned method of purchasing and storing the materials of the lowest possible cost without affecting the production and distribution schedule. Inventories which comprise of raw materials, consumable stores, machinery and equipment, work-in-progress, general stores and finished goods are to be purchased and stored. Inventory control therefore is a scientific method of determining what, where and how much to purchase and how much to have in stock for a given period of time, (Lysons, 2000). Inventory involves a retailer seeking to acquire and maintain a proper merchandise assortment while ordering, shipping, handling and related costs are kept in check systems and processes that identify inventory requirements, set targets, provide replenishment techniques and report actual and projected inventory status. Handles all functions related to the tracking and management of material. This work includes the monitoring of materials moved into and out of stock room locations and reconciling of the inventory balances and management of inventories with the primary objective of determining/ controlling stock levels within the physical distribution function to balance the need for product availability against the need for minimizing stock holding and handling costs.

Historically, inventory management has been referred to as excess inventory and inadequate management or shortage of inventory and adequate management practice. Several penalties could be apportioned to excesses in either direction. Inventory problem has escalated as progress in technology increases the ability of organizations to produce goods faster in multiple design variation and greater quality, (Cetinkaya & Lee, 2009). Since the mid-1980's inventory management, production planning and scheduling has become the obvious strategic benefit (Larrson et al., 1995).

Colling (2010) argue that in the United States of America and other Western countries, improvement in productivity was achieved through reducing the direct manufacturing labour expenses cost per unit of output. This strategy was justifiable because of the high labour content in many manufactured products. However, the ratio of unit cost due to labour has constantly decreased in recent years. Even large manufacturing firms, such as the United States (US) auto assemblers, purchase up to 60 percent of the value of the product. This implies that management of raw materials inventories is an area that shows great promise for productivity improvement.

Japanese firms earned more deserved attention in the mid-to late 1980s due to their notable performance on quality and inventory management. The constant alert of the bar code being scanned at a check-out lane shows a pillar of modern system of inventory management stock tracking. In the earliest days of shop keeping, merchants write down procurement or they looked at how many units where gone at the day's end and then did their best to forecast future needs. The key skills where experience and intuition, but it remains an imperfect method, even when applied to operations that where quite small by today's standards, (Miller, 2010).

After the industrial turn around, the main goals of businesses are efficiency and mass production, along with an improved customers experience at the point of sale. The first modern check-out system was designed by a team at Harvard University in the early 1930s. Punch cards that corresponded with catalogue items were in use. The punch card would be read by a computer and pass the information to the stock room which would bring the item up front to the waiting customers. Owning to the automated system, the machines could also generate billing records and manage inventory. The system is too expensive to use, but a version of it is in use today in some stores where cards are placed with product information by merchants on the aisle for customers to select and bring to the check-out line (Miller, 2010). This usually applies to items that are expensive or large and also controlled items such as medicines. Researchers created the forerunner of the modern bar coding system in the late 1940s and early 1950s because they knew merchants needed a better system. Ultraviolet light-sensitive ink and reader are used to mark items for sale. The system lacked the computing power needed to make it work and it was too cumbersome. Technology had yet to catch up with their ideas (*ibid*).

In Nigeria, the size of industry, small, medium, and large scale has a significant effect on both the numerical strength of staff and level of involvement in inventory management of both raw material and the finished product. The type of inventory system in practice in any organization depends on many factors among which are economic stability of the place, infrastructural facilities available, transportation network and many more which are called constraints (Agu & Augustine, 2013).

In Kenya, the concept of Vendor Inventory Management has not yet been widely embraced by many manufacturing and retail organizations and this has made many organizations to experience increased cost in the execution of inventory management functions (Mugo, 2008). In Kenya retail outlets, VMI effectiveness as a system is affected by inventory flow, the quality of ICT and quality of information and sharing but is not affected by the quality of relationship. This indicates that relationship among VMI partners is developed on the basis of implementing the system based on trust and reliability (Benson, 2011). However, the quality of ICT is most important to facilitate sharing of information among the VMI partners in the supply chain (Fisher, 2007). VMI as a system is suitable for large and medium size supermarkets which have well established network systems and the capability to effectively run the system. Very small partners/suppliers may not afford to have a large warehouse, or afford to lease a large warehouse for an effective VMI. Secondly, a supermarket that is too small owing to its low buying power would lack capacity to support demand for goods that VMI warehousing requires (Benson, 2011).

1.1.1. Historical Perspective

Nakumatt is a Kenyan supermarket chain. "Nakumatt" is an abbreviation for Nakuru Mattress. The man who founded Nakumatt Supermarket, started out with a small shop in Embakasi, Nairobi, but turned the business into a retail chain colossus after undergoing several tribulations, including a bankruptcy that temporarily forced him to shut down to join his brother's business as a casual worker. Mangalal Shah's entrepreneurial journey that led to what would later become Nakumatt started when his family immigrated to Kenya from India in 1947. He set up a small shop in Embakasi to serve the many workers who were toiling in quarries around the area at the time, but later left for Kisumu to search for greener pastures. His quest for better business opportunities led him to shift from the lakeside town to Elburgon and later, Nandi Hills (Kepha, 2008).

It is while he was in Nandi Hills in 1961 that one of his two sons, Atul Shah who is the current chief executive of Nakumatt was born. Four years later, 1965 to be precise, the family shifted to Nakuru and set up a clothing store opposite the Nakuru open air market. Shah named the shop Vimal Fancy Store, after his first-born son. The business started well and in 1970, the founder's first-born son, Vimal Shah joined in. The clothes business was so successful that in 1972, the pair opened another clothes business. Shah named the second shop, which was located on Nakuru's Kenyatta Avenue, Tiku Fancy Store, after his youngest daughter. It became an instant hit with customers and in 1973, father and son decided to close the first shop to concentrate their efforts in the new entity. "It used to sell ready-made garments from Kenyan manufacturers. By 1975, the business had become so successful that Shah was convinced he should diversify. He started exporting ready-made clothes and materials to Uganda. Along the way, the entrepreneur gained popularity among traders but started a trend that would later make life difficult for him and his family (Mbogo, 2003).

Towards the end of 1976, the entrepreneur had given out a lot of goods on credit, but his benefactors were not quick to return these favors. Most of the people he had supplied goods on credit disappeared and as a result, Shah became bankrupt and closed his once thriving shop. According to his son, Atul, by the time the founder of Nakumatt folded his once thriving clothes enterprise, he had

accumulated debts estimated at around Sh1.2 million. With the debts over his head and desperate to find a way to fend for his family, Shah found reprieve after he was employed by his brother Hasmukh who was then running a shop called Nakuru Mattresses. While their father was working for his brother, his two sons-Vimal and Atul opened a small shop where they used to stitch and sell bed sheets. The two named their shop FurMatts (Mbogo, 2003).

The business got much needed boost in early 1978 when what was then referred to as the 'coffee boom' hit East Africa. The price of coffee, which was the major export of the region rose phenomenally in the world market, leaving many farmers in Kenya and Uganda, which were Shah's primary market, with a lot of disposable income. Sales up Then, a trouser was retailing at a standard Sh20, but the farmers and many other workers who had benefited from the coffee boom and the ensuing good life made sure they flew out the shelves in thousands. Sales went up and by June of the same year, the two brothers had managed to pay off Sh300, 000 of their father's Sh1.2 million debts. Together with their father, they joined hands and bought Nakuru Mattress from their uncle, Hasmukh who later moved to UK. "Business was so good that by the end of 1979, they had paid off all the debts that my father had accumulated. With the yolk of debt removed from their backs, the three started to diversify their product range. Besides the mattresses and clothes, they started importing other retail products like sufurias, umbrellas and plastic basins. By 1982, Nakuru Mattresses and FurMatts, which were then operating as a unit had the largest variety of retail goods in Nakuru. They opened the first store outside Nakuru in Eldoret in 1984. Two years later, the family opened their first store in Nairobi on Ukwala Road-behind the Bus Station, paving way for a phenomenal growth (Kepha, 2008).

As of December 2015, Nakumatt had nearly 65 stores in the African Great Lakes countries of Kenya, Uganda, Rwanda and Tanzania. It employed over 5,500, and had gross annual revenue in excess of US\$450 million. At that time, it had plans to enter other African countries and to increase the number of stores in the countries where it already had a presence.

1.2. Statement of the Problem

In the ancient times, depletion of stock in stores was caused by various regional carrying capacities. In this case the operative cause of low stocks is an imbalance of population with respect to their basic needs supply. Most low stocks are basic reserves. However, the low stocks are caused by a combination of political, economic and biological factors. Kimani (2015) found out that chemists mainly use economic order quantity and Just in Time as the main stock control techniques. The other stock control techniques are rarely used. The supermarkets have not been effectively managed in fighting the crisis of stock control; Inventory is one of the most valuable assets a company has, yet benchmark results show that most companies fail to manage it effectively. The majority of manufacturers and distributors rely on out-of-date, too simplistic, or overly localized inventory policies. By doing so, companies tie up working capital, harm customer retention, and hurt shareholder value-added. Faced with lengthening supply channels and tighter service-level demands from customers, many companies are now wholesale reexamining how to flow inventory across their supply chains and how to set inventory policies.

In general, companies are finding they have been burdened with inventory misconceptions, oversimplification, corporate discomfort with changing inventory strategies, and significant underinvestment in breakthrough collaboration and optimization technology, (Weygandt, 2007). Inventories occupy the most strategic position in the structure of working capital of most business enterprises. It constitutes the largest component of current asset in most business enterprises. In the sphere of working capital, the efficient control of inventory has passed the most serious problem to supermarkets because a significant proportion of the current assets of supermarkets are blocked in inventories. The turnover of working capital is largely governed by the turnover of inventory. It is therefore quite natural that inventory which helps to maximize profit occupies the most significant place among current assets. (Riley 2012) argues that the aim of stock control is to minimize the cost of holding these stocks whilst ensuring that there are enough materials for production to continue and be able to meet customer demand.

Therefore, this research is to investigate the challenges facing supermarkets in maintaining adequate stock levels. In South Africa, Shoprite which is one of the leading retail outlets experienced a declined profit margin by over 18% due to increased inventory management costs (Jeffrey, 2009). While in Kenya, supermarkets such as Uchumi and Nakumatt are still struggling to effectively embrace the concept of VIM as a strategy to reduce inventory management cost and realize increased profit margin (Jeffrey, 2009). At Nakumatt, the company has entered into contract with various suppliers where they supply directly to the shelves. However, this has brought numerous challenges to the organizational ranging from stock run outs to overstocking. Some supermarket chains keep growing both within and outside Kenya, while others close down some branches. The study sought to find out how stock management strategies affect performance of supermarket chains in Kenya.

1.3. Objectives of the Study

The study was guided by the following objectives.

1.3.1. General Objective

To establish the effect of stock management strategies on supermarkets' performance: A case of Nakumatt supermarket.

1.3.2. Specific Objectives

The study used the following objectives:

1. To establish the effect of Just-in-time strategy on supermarkets' performance.
2. To examine the effect of Material Requirement Planning strategy on supermarkets' performance.
3. To determine the effect of Economic Order Quantity strategy on supermarkets' performance.

4. To assess the effect of Distribution Resource Planning strategy on supermarkets' performance.

1.4. Research Questions

1. What effect does Just-In-Time strategy have on supermarkets' performance?
2. How does Material Requirement Planning affect supermarkets' performance?
3. What effect does Economic Order Quantity have on supermarkets' performance?
4. How does Distribution Resource Planning strategy affect supermarkets' performance?

1.5. Significance of the Study

The study would enable the development of various guidelines and solutions to various challenges facing Nakumatt supermarkets in stock management,

This study would be important to the organization in that it may lead to profit maximization. This is by way of identifying non-costly methods of managing stock. The study would help the organization by increasing of their market share and their competitive advantage in the market.

Interested researchers would find this work a basis on which to build further research. The study may also be useful to researchers as it will add to the existing body of knowledge on effective stock management strategies.

On the Government and other stakeholders would understand the kind of logistics needed in order to have sustainable stock levels to meet customer needs

Customers are going to have enough products to purchase without being limited on what to purchase hence customer needs are satisfied.

The study would be of significance to both potential and current investors. This is because they may get to understand, from this study, how a stock management strategy affects an organization.

1.6. Scope of the Study

This study was done at Nakumatt holdings, head office in Nairobi. The target population of the study comprised all employees and management of Nakumatt holdings in Nairobi. The target population was 387. The research study was conducted between January 2017 and June 2017.

1.7. Limitations of the Study

The researcher encountered various limitations that tended to hinder access to information sought by the study. The main limitation of study was its inability to include all supermarkets. This was overcome by doing a case study of Nakumatt supermarket.

Another limitation of the study was that the respondents were not willing to give out information, by filling up the questionnaires, or they were too busy for it. In order to overcome this limitation, the researcher informed the branches selected in advance that they had been chosen. This was to enable respondents in the supermarket prepare early and create a time for questionnaire filling. Further, the researcher used contact persons and made follow ups.

2. Literature Review

2.1. Introduction

This literature review formed the framework on which the research was based as it helped to develop a good understanding of and insight into relevant previous research an emerging trend. This chapter looked at theoretical framework, empirical review, conceptual framework, critique of the existing literature, research gap and summary of the literature reviewed

2.2. Theoretical Framework

The theoretical framework is the structure that can hold or support a theory of a research study. The theoretical framework introduces and describes the theory that explains why the research problem under study exists, (Swanson, 2013). A theoretical framework consists of concepts and, together with their definitions and reference to relevant scholarly literature, existing theory that is used for a particular study. The theoretical framework must demonstrate an understanding of theories and concepts that are relevant to the topic of research paper and that relate to the broader areas of knowledge being considered. The theoretical framework is most often not something readily found within the literature. The researcher must review course readings and pertinent research studies for theories and analytic models that are relevant to the research problem you are investigating. The selection of a theory should depend on its appropriateness, ease of application, and explanatory power.

According to Swanson (2013), the theoretical framework strengthens the study in the following ways: An explicit statement of theoretical assumptions permits the reader to evaluate them critically; the theoretical framework connects the researcher to existing knowledge. Guided by a relevant theory, you are given a basis for your hypotheses and choice of research methods; articulating the theoretical assumptions of a research study forces you to address questions of why and how. It permits the researcher to intellectually transition from simply describing a phenomenon you have observed to generalizing about various aspects of that phenomenon, and; Having a theory helps the researcher identify the limits to those generalizations. A theoretical framework specifies which key variables influence a phenomenon of interest and highlights the need to examine how those key variables might differ and under what circumstances.

2.2.1. Resource Based Theory

The resource-based view (RBV) gives valuable insights into why organizations with valuable, rare, inimitable, and well-organized resources at their disposal may have a competitive edge over the others and enjoy superior performance. Resources are either tangible or intangible in nature. According to Resource Based Theory resources are inputs into a firm's production process; can be classified into three categories as; physical capital, human capital and organizational capital (Crook, 2008). A capability was a capacity for a set of resources to perform a stretch task of an activity. Each organization is a collection of unique resources and capabilities that provides the basis for its strategy and the primary source of its returns. In the 21st-century hyper-competitive landscape, a firm is a collection of evolving capabilities that is managed dynamically in pursuit of above-average returns. Thus, differences in firm's performances across time are driven primarily by their unique resources and capabilities rather than by an industry's structural characteristics.

The RBV theory relies on the organization's internal attributes to explain organization's heterogeneity in strategy and performance. Based on this view, a firm can be taken as an organized, unique set of factors known as resources and capabilities which are related sources of advantages to the firm. Resources are an organization's accumulated assets, including anything the organization can use to create, produce, and/or offer its products to a market. As pointed out by Amit and Schoemaker, (1993), resources are eligible for legal protection; can operate independently of firm members; and can intervene as factors in the production process to convert input into output that satisfies needs (Grant, 1991). As Barney (1995) contends, resources such as capital, equipment, and the skills of individual employees, patents, finance, and talented managers form the necessary inputs into a firm's production process.

Moreover, the resource-based view is grounded in the perspective that an organization's internal environment, in terms of its resources and capabilities, is more critical to the determination of strategic action than is the external environment (Camisón, 2005). Instead of focusing on the accumulation of resources necessary to implement the strategy dictated by conditions and constraints in the external environment the resource-based view suggests that a firm's unique resources and capabilities provide the basis for a strategy. The business strategy chosen should allow the organization to best exploit its core competencies relative to opportunities in the external environment.

This theory argues about using resources in a way that is not easy for others to replicate. It is important than a firm plans its requirements well so as to achieve a good performance. This theory relates to the study through the second objective which is to examine the effect of Material Requirement Planning strategy on performance of Nakumatt supermarket.

2.2.2. Economic Order Quantity (EOQ) Model

The most well-known result in the inventory control area may be the classical Economic Order Quantity (EOQ) formula. This simple rule has had and still has an enormous number of practical applications. The EOQ is essentially an accounting formula that determines the point at which the combination of order costs and holding costs are the least. The result is the most cost-effective quantity to order. The effects of inflation and time-value of money on an economic order quantity model have been discussed by Moon & Lee (2000). Authors have considered the normal distribution as a product life cycle in addition to the exponential distribution. Assumptions underlying the EOQ formula are: Demand is constant and continuous in time; Ordering and holding costs are constant over time; The order quantity does not need to be an integer, and; The whole order quantity is delivered at the same time.

This model anchors to the third objective which is to determine the effect of Economic Order Quantity strategy on performance of Nakumatt supermarket.

2.2.3. Theory of Constraints (TOC)

Theory of constraints (TOC) is a philosophy which emphasizes that all management actions should center on the firm's constraints. While it agrees with JIT that inventory should be at the lowest level possible in most instances, it advocates that there be some buffer inventory around any capacity constraint (e.g., the slowest machine) and before finished goods. Goldratt (2003) insights into distribution and supply chain.

It is important that an organization keeps amount of stock that will reduce its stock out and holding costs. This theory, therefore, relates to the study through the first objective which is to establish the effect of Just-in-time strategy on performance of Nakumatt supermarket.

2.2.4. The Neoclassical of Exogenous Growth Theory

The most basic proposition of growth theory is that in order to sustain a positive growth rate of output per capita in the long run, there must be continual advances in technological knowledge in the form of new goods, new markets, or new processes. This proposition can be demonstrated using the neoclassical growth model developed by Solow (1956) and Swan (1956), which shows that if there were no technological progress, then the effects of diminishing returns would eventually cause economic growth to cease. The basic building block of the neoclassical model is an aggregate production function exhibiting constant returns in labor and reproducible capital. We abstract initially from all issues concerning population growth and labor supply by assuming a constant labor supply normalized to equal unity. Thus, the aggregate production function can be written as a function of capital alone:

$Y = F(K)$. This function expresses how much output Y can be produced, given the aggregate capital stock K, under a given state of knowledge, with a given range of available techniques, and a given array of different capital, intermediate and consumption goods.^{*} We assume that all capital and labor are fully and efficiently employed, * so $F(K)$ is not only what can be produced but also what will be produced. A crucial property of the aggregate production function is that there are diminishing returns to the accumulation of capital.

The Neoclassical of Exogenous Growth Theory, talks about issues concerning resources such as labour. This easily relate to distribution resource planning. The theory, therefore, relates to the study through the fourth objective which is to assess the effect of Distribution Resource Planning strategy on performance of Nakumatt supermarket.

2.3. Conceptual Framework

The conceptual framework represents diagrammatically and explains the relationship among the variables in the situation being examined. The framework assists in testing the relationship among variables and therefore, improving the understanding of the situation (Swanson, 2013). According to the conceptual framework adopted, there exists dependent variable and independent variables as shown in the diagram and explained further in the subsequent items.

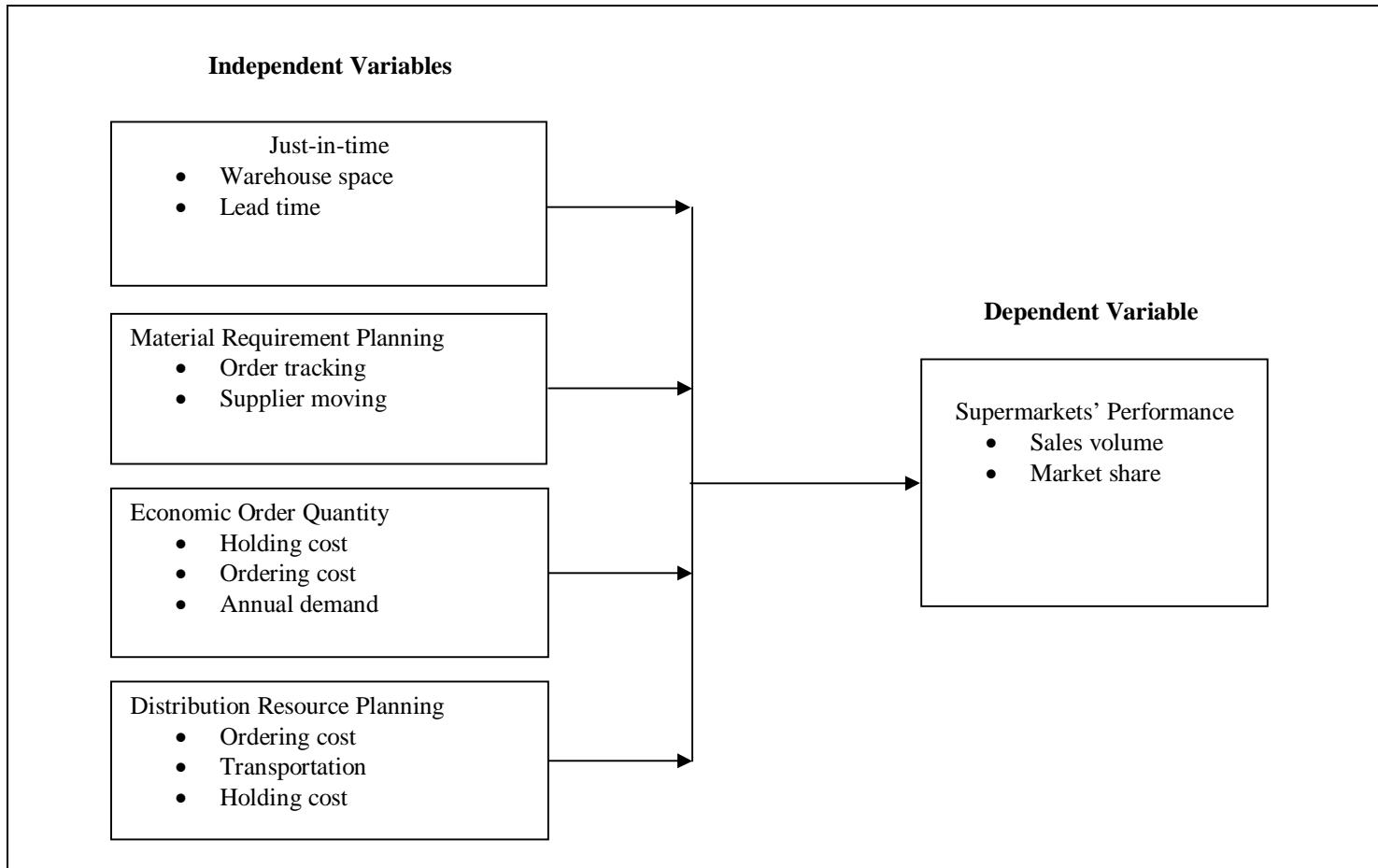


Figure 1: Conceptual Framework

2.3.1. Just in Time (JIT) and Performance

According to Lysons (2000) Just-in-time production is making available what the customers need, whom it is needed and in the quantity needed using the minimum resources of people, material and machinery. The objective of JIT is zero defects; all products will more than meet the quantity expectations of customers. Zero set up time resulting in shorter production time, shorter production time, shorter production cycles and smaller inventories.

Zero inventories included work in progress, finished goods and sub-assemblies, will be reduced to zero, which is the opposite of the traditional manufacturing philosophy of maintaining better stock as precaution against unreliable supplies or fluctuating demand. Zero handling or elimination as far as possible of all non-value adding activities and zero lead time in some markets. This is impossible but the aim is to increase flexibility by using small batches of components or assemblies (Lysons 2000).

The benefits of JIT to an organization and its purchasing function in particular are summarized as follows: part cost, low scrap cost, low inventory carrying cost, quality fast detection and correction of unsatisfactory quantity and untimely high quality of purchased parts. There is designing of features, powers of engineering change requirements and administrative efficiency, fewer suppliers, minimal expediting and order release work, simplified communication and receiving activities. Productivity reduced rewards, reduced expectation, reduced parts, related delays and capital requirements, reduced inventory of purchased parts, raw materials, work in progress and finished goods (Ouma, 2011).

2.3.2. Manufacturing Requirement Planning (MRP) and Performance

Lysons and Farrington (1996) posit that the extension to computerized MRP (Material Requirement Planning) to link together such function as production planning and control, engineering, purchasing, marketing, financial, cost accounting and human resource management into an integrated.

It coordinates the efforts of production, engineering purchasing, marketing and human resource to achieve a common strategic or business plan, there is also better utilization of marketing, finance and human resources in addition to physical plant and requirements, changes easily factored into the system as they arise such as the rush orders cost of resources used or considered for use can be converted into money values thus facilitating budgeting and budgetary (Lyson and Farrington, 1996).

2.3.3. Economic Order Quantity (EOQ) and Performance

The EOQ is a standard formula used to arrive at a balance between holding too much or too little stock. It's quite a complex calculation, so you may find it easier to use stock control software. The effects of inflation and time-value of money on an economic order quantity model have been discussed by Moon and Lee (2000). It is an item of stock that minimizes cost. The basic EOQ model makes the following assumptions: demand is uniform that is certain, constant and continuous over time. The lead time is constant and certain. There is no limit on order either to store capacity or other constraints. The cost of placing is independent of the size of order; the delivery charge is also different of the quantity ordered. The cost of holding a unit of stock does not depend on the quantity of stock. All prices are constant and certain; there are no bulk purchase discounts exactly the same quantity is ordered each time that a purchase is made.

The basic formulae to calculate EOQ is:- $EOQ = \sqrt{2DC/H.C}$

Where D= annual demand of stock

C = cost of ordering per order

H.C = Holding cost

2.3.4. Distribution Resource Planning and Performance

Distribution Resource Planning is a system for forecasting or projecting requirements for finished products at the point of demand (Farrington & Lysons, 2006). DRP systems are designed to take forecast demand and reflect this through the distribution system on a time-phased requirement basis (Baily, Farmer, Barry, Jessop, & David, 2008). From these projections, aggregated, time- phased requirements schedules for each echelon in the distribution system can be derived (Rushton, Croucher, & Baker, 2011).

Distribution resource planning system acts by pulling the product through the distribution system once demand has been identified (Baily, Farmer, Barry, Jessop, & David, 2008). According to Rushton, Phil, & Baker, (2011) the system works to the elimination of inventory. The distribution resource planning system tries to combine the need for lower inventory investment with improved customer service. According to Hansen and Mowen (2007) lowering inventory level would give organization a competitive advantage due to production of quality products at lowering prices and it will respond faster to customer needs. Businesses seek ways to reduce the time to bring products and services to market place to gain competitive edge (Hanke & Wichern, 2009). It enables physical resources requirements to be planned together with production and purchasing control. It controls the entire logistics system (Baily, Farmer, Barry, Jessop, & David, 2008).

2.3.5. Procurement Performance

According to Holmstrom (2007), the implementation of the “traditional” VMI leads to wasting significant opportunities that could instead be exploited by managing the supply network as a whole rather than as a series of dyads. In fact, when optimization is local, each supplier-customer dyad optimizes its processes without taking the impact on the other supply network members into account. As a consequence, the implementation of the traditional VMI allows only a partial optimization of the supply network, as it usually only involves supplier-customer delays.

Poor supplier management creates problems in monitoring and selecting competent suppliers and this leads to delay in delivery, which creates stock out costs. The supermarket employees lacked enough skills and this created a problem of in competency. The existing storage facilities were not adequate and this created more problems in ordering large quantities and distributing of inventory to supermarket branches around the country, (Nelson, 2009).

2.4. Empirical Review

A study by Danese, (2007) found out that in many US retail outlets the success of the extended stock management approach has depended on the adoption of a central information system allowing suppliers/manufacturing plants to decide how much and when to deliver taking into account all the necessary information concerning different supply network members. Such a system supports the production planning and order cycle processes within the supply network on two levels, the first based on the sales forecasts of the distribution centers including a horizon of 18 months; and the second based on the suppliers/manufacturing plants decisions concerning the order confirmation within the frozen period, taking into account possible unexpected requirements, (Murray, 2007).

In his study, Scott (2007) found that out most retail outlets managers in China tend to consider VMI as an approach for managing materials and information flows between one or more customers and their immediate suppliers. Eisenhardt (2009) concurred that fierce competition in today's global markets has forced business enterprises to invest in, and focus attention on, their supply networks in a much broader sense. Zhang (2004) noted that Chinese and Japanese companies employs just in time technique to strengthen

relationship between supply chain network participants and thus business relationships in various Chinese firms extends beyond enterprise boundaries and seeks to organize entire business processes throughout a value chain of multiple organizational.

A survey by marketing research international (2009) revealed that effective integration of information such as Electronic Data Interchange and Material Requirement Planning Systems could play a major influence in supporting effective implementation of VIM practice in many retail outlets. Economic order quantity is the optimum size of the order that minimizes the cost of ordering and holding cost. Concern has been raised that Nakumatt supermarket management lacked to apply the EOQ as the inventory systems used failed to minimize the cost of ordering and holding stock (Brian, 2008).

2.5. Critique of the Existing Literature

It is only when these requirements are seen together as part of a large picture that ways can be found to effectively balance their different demands. Customer service at its most basic level means consistently high order fill rates, high on time delivery rates and a very low rate of products returned by customers for whatever reason. Internal efficiency for organizations in a supply chain means that these organizations get an attractive rate of return on their investments in inventory and other assets. Manufacturers procure raw material and process them into finished goods, and sell the finished goods to distributors, then to retailer and/or customer. When an item moves through more than one stage before reaching the final customer, it forms a “multi-echelon” inventory system. A large amount of researches on multi-echelon inventory control has appeared in the literature during the last decades. A multi-echelon inventory model for a deteriorating item was developed by Rau et al. (2003). An optimal joint total cost has been derived from an integrated perspective among the supplier, the producer and the buyer. A deteriorating item inventory model in a supply chain was proposed by Wu and Wee (2005). Shortages in inventory were allowed and fully backlogged. Two-echelon inventory model with lost sales was proposed by Hill et al. (2007). All this has been said but in my opinion, there is a need to delight wholesalers and retailers the importance stock management through supply chain management.

A study by Danese, (2007) found out that in many US retail outlets the success of the extended stock management approach has depended on the adoption of a central information system allowing suppliers/manufacturing plants to decide how much and when to deliver taking into account all the necessary information concerning different supply network members. Such a system supports the production planning and order cycle processes within the supply network on two levels, the first based on the sales forecasts of the distribution centers including a horizon of 18 months; and the second based on the suppliers/manufacturing plants decisions concerning the order confirmation within the frozen period, taking into account possible unexpected requirements, (Murray, 2007).

Nelson (2009) noted that poor supplier management created problems in monitoring and selecting competent suppliers and this led to delay in delivery, which created stock out costs. The supermarket employees lacked enough skills and this created a problem of in competency. The existing storage facilities were not adequate and this created more problems in ordering large quantities and distributing of inventory to supermarket branches around the country.

Zhang (2004) noted that Chinese and Japanese companies employs just in time technique to strengthen relationship between supply chain network participants and thus business relationships in various Chinese firms extends beyond enterprise boundaries and seeks to organize entire business processes throughout a value chain of multiple organizational.

2.6. Research Gaps

Most of the studies looked at were done in developed countries such as China Japan and the United States of America. The studies were done between 2004 and 2009. A gap in this study exists in that studies were done in developed countries rather than developing countries. Very few studies have been done in developing countries such as Kenya. This study will fill this gap by conducting the study in a developing country, Kenya. The period in which the studies were done (2004-2009) is too long in the past. This study seeks to fill this gap by considering a period that is more current than that under the reviewed studies. Furthermore, few studies have been done in supermarkets. This study seeks to fill this gap by conducting the study in Nakumatt holding.

2.7. Summary of the Literature Reviewed

The study reviewed different literature and studies done by other researchers. The study looked at four different theories namely: inventory theory; Economic Order Quantity theory; theory of constraint, and; Neoclassical of Exogenous Growth theory. The study further reviewed studies done by other in countries such as United States of America, Japan and China.

3. Research Methodology

3.1. Introduction

This chapter outlined the overall methodology that was used to carry out the study. This included the research design, population and sample size, procedure of data collection, validity and reliability of research instruments, data analysis and presentation.

3.2. Research Design

The study adopted a case study design. A case study design is a basic type of research method which enables the study to closely examine the data within a specific context (Kothari, 2004). In this case the study selected a small geographical area (Nakumatt holdings), explore and investigated contemporary real-life phenomenon through a detailed contextual analysis of a limited number of events or conditions, and their relationships.

3.3. Target Population

Mugenda and Mugenda (2003) defined the target population as that population to which the researcher wishes to generalize result of the study. The target population of interest was Management and employees of Nakumatt holdings in Nairobi. Nairobi has population of 9 managers, 378 employees in the stores department and supply chain department of Nakumatt holdings. This brings a total of 387. The target population of the study was, therefore, 387. This is summarized in Table 1.

Population Category	Frequency
Managers of Nakumatt supermarket	9
Employees of Nakumatt supermarket	378
Total	387

Table 1: Target Population

3.4. Sampling Frame

The sampling frame showed the distribution of the sample. A sample of 80 was used for the study. The sample was distributed between managers and other employees. The sample consisted of two managers and seventy-eight employees of Nakumatt supermarket. The sample size was arrived at using the following formula as suggested by Kothari (2004):

$$n = (N c_v^2) / (c_v^2 + (N-1) e^2)$$

Where:

n= Sample size

N= Population

C_v= Coefficient of variation (take 0.5)

e= Tolerance at desired level of confidence, take 0.05 at 95% confidence level

Therefore:

$$n = (387 * 0.5^2) / (0.5^2 + (387-1) (0.05^2))$$

$$n= 80$$

Population Category	Target population	Sample size
Managers of Nakumatt	9	2
Employees of Nakumatt	378	78
Total	387	80

Table 2: Sampling Frame

3.5. Sample and Sampling Technique

A sample is a small population of targeted population selected using some systematic form (Mugenda & Mugenda, 2003). A stratified random selection of 80 was taken from both the managers of the supermarket and that of employees using a stratified random sampling technique. This meant that 2 respondents were chosen from departmental managers of the supermarket and 78 respondents (computed using the formula above) was chosen from subordinates.

3.6. Data Collection Instruments

The study used questionnaire to collect information from the respondents. The questionnaire had both open and closed ended questions only. The questionnaire included Likert scale so as to ensure that respondents give only necessary information. The questionnaire was used to collect primary information from the respondents. This information was then used in data analysis.

3.7. Data Collection Procedure

Mugenda and Mugenda (2003) describe primary data as first-hand information collected, compiled and published for some purpose. The data was collected from the primary source since the data was collected from the field. The main instrument to collect data was structured and semi-structured questionnaires. They contained closed ended as well as open ended questions. The questionnaires were formulated from the research questions which touched each objective of the study. The questionnaires were presented to the respondents then collected back after giving them enough time to read and answer the questions.

3.8. Pilot Study

The term pilot study is used in two different ways in social science research. It can refer to so-called feasibility studies which are "small scale version[s], or trial run[s], done in preparation for the major study" (Polit et al., 2001). However, a pilot study can also be the pre-testing or 'trying out' of a particular research instrument. One of the advantages of conducting a pilot study is that it might give advance warning about where the main research project could fail, where research protocols may not be followed, or whether proposed methods or instruments are inappropriate or too complicated. In the words of De Vaus (1993) "Do not take the risk. Pilot test first." These are important reasons for undertaking a pilot study, but there are additional reasons, for example convincing funding bodies that your research proposal for the main study is worth funding. Thus, pilot studies are conducted for a range of different reasons. These reasons include: Developing and testing adequacy of research instruments; Assessing the feasibility of a (full-scale) study/survey; Designing a research protocol; Assessing whether the research protocol is realistic and workable; Establishing whether

the sampling frame and technique are effective; Assessing the likely success of proposed recruitment approaches; Identifying logistical problems which might occur using proposed methods; Estimating variability in outcomes to help determining sample size; Collecting preliminary data; Determining what resources (finance, staff) are needed for a planned study; Assessing the proposed data analysis techniques to uncover potential problems; Developing a research question and research plan; Training a researcher in as many elements of the research process as possible; Convincing funding bodies that the research team is competent and knowledgeable; Convincing funding bodies that the main study is feasible and worth funding, and; Convincing other stakeholders that the main study is worth supporting.

3.8.1. Validity of the Research Instruments

Kothari (2004), describe validity of research instruments as degree to which it measures what is intended by the researcher. This judgment is made better by a team of professional experts in a particular field. In order to ensure validity of the instrument, piloting of the instrument was conducted before actual data collection was carried out. The pilot study was done at Nakumatt supermarket. The researcher conducted the pilot test to ensure that the right questions relating to the area of study are asked. In conducting the pilot study, 8 questionnaires (10% of the sample size) were given out to respondents.

3.8.2. Reliability of the Research Instruments

Mugenda and Mugenda (2003) describe reliability of research instruments as the measure of degree to which a research instrument yields results after repeated trials. The researcher piloted the study instruments on the non-sampled members of the population to assess the reliability of the instruments after a period of two weeks; the researcher then collected the filled questionnaires. In order to ensure reliability of the instrument, piloting of the instrument was conducted before actual data collection was carried out. The pilot study was done at Quick Mart supermarket in Nakuru town. In conducting the pilot study, 8 questionnaires (10% of the sample size) was given out to respondents. The questionnaire for the pilot study were subjected to a Cronbach test where an alpha of 0.7 or more lead to acceptance of the questionnaire. The Cronbach alpha of 0.7 was accepted because it was in conformity with the recommendation of Mugenda and Mugenda (2003).

3.9. Data Analysis and Presentation

3.9.1. Data Analysis

Once the questionnaires have been administered, the mass of raw data collected must be systematically organized in a manner that facilitates analysis. If empirical or quantitative analysis is anticipated, the responses in the questionnaire should have been assigned numerical values (Mugenda & Mugenda, 2003). After the data was collected, the researcher conducted data cleaning, and then the data was coded and entered in the computer for analysis using the Statistical Package for Social Sciences (SPSS 22.0). Data was then analyzed using descriptive statistics such as frequency counts, means and standard deviation. Inferential statistics was analysed using regression model. The regression model used was as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Where;

Y is procurement performance of the supermarket

β_0 is a constant and represents the value of Y when X_1, X_2, X_3 & $X_4 = 0$.

$\beta_1 - \beta_4$ represents the regression coefficients which measures the average change in the value of the dependent variable

X_1 is Just in Time

X_2 is Material Requirement Planning

X_3 Economic Order Quantity

X_4 is Distribution Resource Planning

3.9.2. Data Presentation

After analyzing the research data, the researcher presented the information in form of tables.

4. Research Findings and Discussions

4.1. Introduction

This chapter presents the results and discusses the findings obtained from the questionnaires in this study. The questionnaire was the primary tool that was used to collect data and was distributed to personnel in the Stores department and supply chain department of Nakumatt Supermarket in Nairobi. The data collected was analysed using descriptive and inferential statistical methods for each variable and the findings presented in tabular summaries, and their implications discussed.

4.2. Response Rate

A response rate of 77.5% resulted from the self administered method that allowed the researcher to drop the questionnaire to the respondents and then collect them at a later date when they had fill the questionnaires. Eighteen of the original 80 questionnaires were either not returned or were found to be unusable for the study; hence, their results were not included in the findings. In general, this

rate was considered adequate for data analysis since according to Best and Khan (2006) return rates of more than 60% are considered to be very good. Table 3 gives the response rate of the questionnaires.

Target No. of respondents	No. of questionnaires Returned	Response Rate (%)
80	62	77.5%

Table 3: Response Rate

4.2.1. Results of the Pilot Study

A total of 8 questionnaires were obtained from Nakumatt Supermarket in Nakuru town. From Table 4, the Cronbach's alpha of; 0.804, 0.759, 0.712, 0.747 and 0.762 for Just-in-time Strategy, Material Planning Requirement Strategy, Economic Order Quantity Strategy, Distribution Resource Planning Strategy and Supermarket Performance were above the threshold value of 0.7. A Cronbach alpha of more than 0.7 indicates that the data collection instrument is reliable (Sekaran, 2003). It was therefore concluded that the research instruments were reliable and hence could be used in the study. The results of the reliability test were as presented in Table 4

Indicator	Cronbach Alpha	No of Items
Just-in-time Strategy	0.804	7
Material Planning Requirement Strategy	0.759	7
Economic Order Quantity Strategy	0.712	5
Distribution Resource Planning Strategy	0.747	4
Supermarket Performance	0.762	5

Table 4: Reliability test

4.3. Demographic Information

This section presents personal information of the respondents who participated in the research study. It is the demographic characteristics of the sampled population. This section has analysed gender issues, age of the respondents and their education level.

4.3.1. Gender of the Respondents

Each of the respondents was requested to indicate their gender as one of the key attributes of mapping out respondent's characteristics. Their responses were as provided in Table 5. From the analysis majority of the respondents (73%), were male while 27% were female. This shows that male respondents were more than female. The distribution however did not represent a fair gender balancing, an indication that Nakumatt Supermarket was considering recruiting male as compared to female. The management of Nakumatt Supermarket should look into this and consider recruiting female employees when vacancies arise.

Gender	Frequency	Percent
Male	45	73
Female	17	27
Total	62	100

Table 5: Gender Distribution

4.3.2. Age of the respondents

The age distribution of the respondents was examined and the outcome was as presented in Table 6. From the analysis, it was evident that a majority making up 43.2% of the respondents were aged between 31-40 years followed by those who were aged between 20-30 years represented by 25.6%. Those who were aged between 41-50 years accounted for 23.6% while those above 50 years made up 7.6%. Taking together the percentage of the respondents who were between 20-30 years and 31-40 years, it was evidenced that majority (68.8%) of the respondents were below 40 years of age. This meant that Nakumatt supermarket was employing young people and middle age people who were still energetic and this was so encouraging.

Age Bracket	Frequency	Percent
20-30 years	16	25.6
31-40 years	27	43.2
41-50 years	14	23.6
Above 50 years	5	7.6
Total	62	100

Table 6: Age distribution of the Respondents

4.3.3. Education Level of the Respondents

It was important to establish the education level held by the study respondents in order to ascertain if they were equipped with relevant knowledge and skills on stock management practices and strategies. The outcome was as presented in Table 7. As presented in Table 7, majority (41.3%) had Diploma certificate, 30.7% had university education level and so they had attained degree, 23.2% had College

certificates while 4.8% had secondary education level. Taking together the percentage of the respondents who had diploma and degree, it was evidenced that majority (64.5%) had either university education or college education. This finding implied that majority of the respondents were well educated and suggest that Nakumatt supermarkets was relying on its highly trained management and staff to enable them make prudent decisions on stock management strategies. Furthermore, these findings implied that the respondents had technical knowledge and skills on the study problem and thus provided the study with reliable information on the effects of stock management strategies on supermarket performance.

Education Level	Frequency	Percent
Secondary	3	4.8
Certificate	14	23.2
Diploma	26	41.3
Degree	19	30.7
Total	62	100

Table 7: Education level of the Respondents

4.4. Descriptive Statistical Results

This section presents the results of the descriptive statistical analysis of the data and their interpretations. The descriptive statistics used are the means and standard deviations. The descriptive statistics helped to show the basic features of the study.

4.4.1. Just-In-Time Strategy on Nakumatt Supermarket Performance

The first objective of the study was to establish the effect of Just-in-time strategy on performance of Nakumatt supermarket. Statements concerning Just-in-time system were put forward and was rated on a 5 point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The results on this are summarized in Table 8.

Results in Table 8 revealed that majority of the respondents strongly agreed that JIT leads to minimal amounts of inventory obsolescence, since the high rate of inventory turnover keeps any items from remaining in stock and becoming obsolete. This was shown by a mean score of 4.13. Respondents also agreed that since production runs are very short, it is easier to halt production of one product type and switch to a different product to meet changes in customer demand. as shown by a mean score of 3.82. It was also revealed that the very low inventory levels mean that inventory holding costs (such as warehouse space) are minimized. This was shown by a mean score of 3.79. Further findings showed that Just-in-time strategy enabled the supermarket invest far less cash in its inventory, since fewer inventories is needed as depicted by a mean of 4.13. Fewer inventories can be damaged within the company, since it is not held long enough for storage-related accidents to arise as shown by a mean score of 3.34. Majority of the respondents strongly agreed that having fewer inventories due to JIT gives materials handlers more room to manoeuvre, so they are less likely to run into any inventory and cause damage. This was indicated by a mean score of 4.32. It was also revealed that majority of the respondents (mean=3.51) were of the opinion that an investment should be made in information technology to link the computer systems of the company and its suppliers, so that they can coordinate the delivery of parts and materials.

In general, all the statements had a mean of above 3.34 meaning that the respondents agreed to all the statements relating to just-in-time strategy on performance of supermarket. Therefore, the results implied that just-in-time strategy positively affected the performance of Nakumatt supermarket. This finding corroborates with the findings of Scott (2007) who found out most retail outlets managers in China tend to consider Just-in-time systems as an approach for managing materials and information flows between one or more customers and their immediate suppliers.

Just-in-time Strategy	N	Min	Max	Mean	Std. Deviation
JIT leads to minimal amounts of inventory obsolescence, since the high rate of inventory turnover keeps any items from remaining in stock and becoming obsolete.	62	1	5	4.13	1.032
Since production runs are very short, it is easier to halt production of one product type and switch to a different product to meet changes in customer demand.	62	2	5	3.82	0.892
The very low inventory levels mean that inventory holding costs (such as warehouse space) are minimized.	62	1	5	3.79	1.084
The supermarket invests far less cash in its inventory, since fewer inventories is needed.	62	2	5	4.13	0.768
Fewer inventories can be damaged within the company, since it is not held long enough for storage-related accidents to arise.	62	1	5	3.34	0.703
Having fewer inventories due to JIT gives materials handlers more room to manoeuvre, so they are less likely to run into any inventory and cause damage.	62	2	5	4.32	0.802
An investment should be made in information technology to link the computer systems of the company and its suppliers, so that they can coordinate the delivery of parts and materials.	62	2	5	3.51	0.691

Table 8: Just-in-time Strategy on Nakumatt Supermarket Performance

4.4.2. Material Requirement Planning Strategy on Nakumatt Supermarket Performance

The study also sought to examine the effect of Material Requirement Planning strategy on performance of Nakumatt Supermarket. The status of this variable was described in terms of measurability of material requirement planning strategy and was rated on a 5 point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The results on this are summarized in Table 9.

Material Requirement Planning leads to availability of the right materials required for production, on time as indicated in Table 9 by majority (mean = 3.43) of the respondents. Most (mean = 4.52) felt that material requirement planning leads to timely delivery of manufactured goods to customers. Similarly, majority of the respondents (mean= 3.39) agreed that material requirement planning helps in optimal use of manufacturing resources. The findings also indicate that material requirement planning leads to a decrease in capital cost due to decreased inventory levels and optimal use of production resources according to majority (mean = 4.41) of the respondents who strongly agreed with this construct. The findings of this variable further revealed that material requirement planning enables collections of the business data for analysis and better planning (mean = 4.05). Other findings indicate that material planning system requires proper training for end users, as to get maximum out of the system (mean = 3.47). The last indicator of this variable revealed that material resource planning system requires substantial investment of time and capital. This was evidenced by majority respondents (mean = 3.58) who agreed to the statement.

Without distinction of one from others, all the statements had a mean of above 3.43 meaning that the respondents agreed to all the statements relating to material requirement planning strategy on performance of supermarket. These findings indicate that Material requirement planning strategy could lead to availability of the right material required for production on time and also, lead to timely delivery of goods to customers hence affecting positively the performance of Nakumatt supermarket. This finding agrees with the findings of a survey by marketing research international (2009) which revealed that effective integration of information such as Electronic Data Interchange and Material Requirement Planning Systems played a major influence in decreasing capital cost due to decrease in inventory levels.

Material Planning Strategy	N	Min	Max	Mean	Std. Deviation
Material Requirement Planning leads to availability of the right materials required for production, on time	62	1	5	3.43	0.792
Material Requirement Planning leads to timely delivery of manufactured goods to customers	62	1	5	4.52	0.698
Material Requirement Planning helps in optimal use of manufacturing resources	62	1	5	3.39	0.795
It leads to a decrease in capital cost due to decreased inventory levels and optimal use of production resources	62	1	5	4.41	0.793
It enables collecting the business data for analysis and better planning	62	3	5	4.05	0.691
Material planning system requires proper training for end users, as to get maximum out of the system.	62	2	5	3.47	0.683
Material resource planning system requires substantial investment of time and capital.	62	1	5	3.58	0.699

Table 9: Material Requirement Planning Strategy on Nakumatt Supermarket Performance

4.4.3. Economic Order Quantity Strategy on Performance of Nakumatt Supermarket

There was also need to determine the effect of Economic Order Quantity strategy on performance of Nakumatt Supermarket. This objective was measured by respondents responding to statement that were related to Economic Order Quantity strategy. The statement were rated on a 5 point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The results on this are summarized in Table 10.

Results of Table 10 indicated that the demand or usage is even through-out the period as indicated by a mean of 3.62. In the same breadth, the respondents agreed that demand or usage for a given period is known i.e. deterministic as shown by a mean of 3.58. The respondents also agreed that per unit price of material does not change and is constant irrespective of the order size as revealed by a mean of 3.53. The respondents agreed to with mean of 3.47 that the cost of carrying is a fixed percentage of the average value of inventory. Respondents held the opinion (mean 3.51) that cost per order is constant whatever be the size of the order.

In the main, it can be inferred from the analysis that economic order quantity strategy improved the performance of Supermarket. This is evidenced by the mean scores which were above 3.47 meaning that the respondents agreed to all the statements related to economic order quantity strategy. These results agree with the findings of Gonzalez et al., (2010) who analysed an Economic Order Quantity and Reorder Point Inventory Control Model for Company XYZ and found out that company XYZ was able to reduce their overall total cost from \$13,654 to \$5,366. This was a cost reduction of approximately 61%, which summed to a total saving of about \$8,300 per quarter.

Economic Order Quantity Strategy	N	Min	Max	Mean	Std. Deviation
Constant or uniform demand: The demand or usage is even through-out the period	62	2	5	3.62	0.575
Known demand or usage: Demand or usage for a given period is known i.e. deterministic	62	2	5	3.58	0.648
Constant unit price: Per unit price of material does not change and is constant irrespective of the order size	62	2	5	3.53	0.652
Constant Carrying Costs: The cost of carrying is a fixed percentage of the average value of inventory	62	2	5	3.47	0.683
Constant ordering cost: Cost per order is constant whatever be the size of the order	62	1	5	3.51	0.706

Table 10: Economic order quantity Strategy on Nakumatt Supermarket performance

4.4.4. Distribution Resource Planning Strategy on Nakumatt Supermarket Performance

Assessing the effect of distribution resource planning strategy on performance of Nakumatt supermarket was the fourth and last objective of this study. This objective was described in terms of the statement relating to distribution resource planning was rated on a 5 point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The results on this are summarized in Table 11.

It can be seen from Table 11 that majority of the respondents agreed (mean=3.48) that distribution resource planning connects current inventory and forecasts of field demand to manufacturing's MPS and MRP. Similarly, the finding showed that distribution resource planning can anticipate future requirements in the field (mean=3.42). The study also sought to establish whether distribution resource planning match material supply to demand, match inventory to customer service requirements and increase the speed the firm can react to the marketplace. As can be seen from the table majority (mean=4.45) strongly agreed to the statement. Consequently, the study revealed that distribution resource planning provides savings by better aggregation of transportation and dispatching as shown by a mean of 3.39.

By and large, all the statement relating to distribution resource planning strategy had a mean of above 3.39. This meant that the respondents agreed to all the statement relating to distribution resource planning strategy. The results therefore implied that distribution resource planning strategy positively affected the performance of Supermarket. These findings confirmed the findings of Hansen and Mowen (2007) who found that distribution resource planning lowers inventory level which gives organization a competitive advantage due to production of quality products at low prices and responds faster to customer needs. Businesses seek ways to reduce the time to bring products and services to market place to gain competitive edge (Hanke & Wichern, 2009). It enables physical resources requirements to be planned together with production and purchasing control. It controls the entire logistics system

Distribution Resource Planning Strategy	N	M in	M ax	Me an	Std. Deviation
Distribution resource planning connects current inventory and forecasts of field demand to manufacturing's MPS and MRP.	62	2	5	3.48	0.808
Distribution resource planning can anticipate future requirements in the field.	62	2	5	3.42	0.73
Distribution resource planning match material supply to demand, match inventory to customer service requirements and increase the speed the firm can react to the marketplace	62	3	5	4.45	0.667
Distribution resource planning provide savings by better aggregation of transportation and dispatching	62	2	5	3.39	0.781

Table 11: Distribution Resource Planning Strategy on Nakumatt Supermarket Performance

4.4.5. Distribution Resource Planning Strategy on Nakumatt Supermarket Performance

Lastly, there was need to establish supermarket performance of Nakumatt supermarket. This was the dependent variable and was determined by certain parameters namely; market share, sales volumes, revenue earned and supermarket margin. These measurements were rated on a 5-point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The results on this are summarized in Table 12.

The results in Table 12 suggest that the number of units sold affected sales volume and by extension performance of supermarket (mean = 3.36). This led to improvement of market share hence supermarket performance (mean = 3.54). The results also suggest that revenues earned by supermarket improved the performance of the supermarket (mean = 3.35). It was noted that weight of goods sold affected the performance of supermarket positively (mean = 3.59) and more importantly the supermarket margin has a positive impact on supermarket performance (mean = 3.42).

Organizational Performance	N	Min	Max	Mean	Std. Deviation
Number of units sold affects sales volume and by extension performance	62	2	5	3.36	0.729
Units sold improve market share hence supermarket performance	62	2	5	3.54	0.627
Revenues earned by supermarket improve the performance of the supermarket	62	1	5	3.35	0.892
Weight of goods sold affect performance positively	62	2	5	3.59	0.579
The supermarket margin has a positive impact on supermarket performance	62	1	5	3.42	0.866

Table 12: Distribution Resource Planning Strategy on Nakumatt Supermarket Performance

4.5. Inferential Statistical Results

This section presents the results of the regression analysis done in the study to evaluate the relationships between the independent and dependent variables. Multiple regression model was used.

4.5.1. Regression Analysis

In this study, multivariate regression analysis was used to determine the significance of the relationship between the dependent variable and all the independent variables pooled together. The value obtained for R, which is the model correlation coefficient = 0.564 which was higher than any zero-order value in Table 13. This indicates that the model improved when more variables were incorporated when trying to determine the relationship between stock management strategies and supermarket performance. The model also indicates that the model could explain up to 68.8 % of the variations in supermarket performance.

R	R Square	Adjusted R Square	Std. Error of the Estimate
.837 ^a	.701	.688	2.352

Table 13: Multiple Linear Regression Analysis Model Summary

- a. Predictors: (Constant), Supermarket Performance
- b. Predictors: (Constant), Just-in-time strategy, Material Requirement Planning strategy, Economic Order Quantity strategy, Distribution Resource Planning strategy

The researcher conducted a multiple regression analysis so as to determine the relationship between Supermarket performance and the four variables. As per the SPSS generated Table above, the equation ($Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$) becomes:

$$Y = 3.298 + 0.356X_1 + 0.306X_2 + 0.165X_3 + 0.265X_4$$

The beta value was used to determine which strategy was more important in determining supermarket performance. It can be deduced from the findings in Table 14 that the most important strategy was Just-in-time Strategy ($\beta = 0.479$) followed by Material Requirement Planning Strategy, Distribution Resource Planning Strategy and Economic Order Quantity Strategy in that order. The beta values for those strategies 0.371, 0.264 and 0.231 respectively indicate that the dependent variable would change by a corresponding number of standard deviations when the respective independent variables change by one standard deviation.

Table 14 provides a summary of the multiple linear regression analysis correlation coefficients.

Model	Unstandardized Coefficients	Standardized Coefficients		t	Sig.	
		B	Std. Error			
1	(Constant)	3.298	1.496		2.205	.031
	Just-in-time Strategy	.356	.069	.479	5.184	.000
	Material Requirement Planning Strategy	.306	.058	.371	4.011	.002
	Economic Order Quantity Strategy	.165	.062	.231	2.665	.010
	Distribution Resource Planning Strategy	.265	.085	.264	3.131	.003
a. Dependent Variable: Supermarket Performance						

Table 14: Multiple Linear Regression Analysis Correlation Coefficients

5. Summary, Conclusion and Recommendations

5.1. Introduction

This chapter provides a detailed summary of the major findings of the actual study; it then draws conclusions and discusses implications emanating from these findings. Finally, it makes some recommendations and suggestions on areas of further study. The main aim of the study was to establish the effects of stock management strategies on supermarket performance.

5.2. Summary of Major Findings

5.2.1. Just-In-Time

The first objective of the study was to establish the effect of just-in-time strategy on performance of Nakumatt supermarket. Results revealed that majority of the respondents strongly agreed that JIT leads to minimal amounts of inventory obsolescence, since the high rate of inventory turnover keeps any items from remaining in stock and becoming obsolete. Respondents also agreed that since production runs are very short, it is easier to halt production of one product type and switch to a different product to meet changes in customer demand. It was also revealed that the very low inventory levels mean that inventory holding costs (such as warehouse space) are minimized. Further findings showed that Just-in-time strategy enabled the supermarket invest far less cash in its inventory, since fewer inventories are needed. Fewer inventories can be damaged within the company, since it is not held long enough for storage-related accidents to arise. Majority of the respondents strongly agreed that having fewer inventories due to JIT gives materials handlers more room to manoeuvre, so they are less likely to run into any inventory and cause damage. This finding was in agreement with the findings of Scott (2007) who found out most retail outlets managers in China tend to consider Just-in-time systems as an approach for managing materials and information flows between one or more customers and their immediate suppliers.

5.2.2. Material Requirement Planning

The study also sought to examine the effect of material requirement planning strategy on performance of Nakumatt supermarket. Findings revealed that material requirement planning leads to availability of the right materials required for production, on time. Most

of the respondents felt that material requirement planning leads to timely delivery of manufactured goods to customers. Similarly, majority of the respondents agreed that material requirement planning helps in optimal use of manufacturing resources. The findings also indicate that material requirement planning leads to a decrease in capital cost due to decreased inventory levels and optimal use of production. The findings of this variable further revealed that material requirement planning enables collections of the business data for analysis and better planning. Other findings indicated that material planning system requires proper training for end users, as to get maximum out of the system. The last indicator of this variable revealed that material resource planning system requires substantial investment of time and capital. This finding agreed with the findings of a survey by marketing research international (2009) which revealed that effective integration of information such as Electronic Data Interchange and Material Requirement Planning Systems played a major influence in decreasing capital cost due to decrease in inventory levels.

5.2.3. Economic Order Quantity

Concerning the effect of economic order quantity strategy on performance of Nakumatt supermarket, it was established that the demand or usage is even through-out the period as indicated. In the same breadth, the respondents agreed that demand or usage for a given period is known i.e. deterministic. The respondents also agreed that per unit price of material does not change and is constant irrespective of the order size. The respondents agreed that the cost of carrying is a fixed percentage of the average value of inventory. Respondents held the opinion that cost per order is constant whatever the size of the order is. These results relate with the findings of Gonzalez et al., (2010) who analysed an Economic Order Quantity and Reorder Point Inventory Control Model for Company XYZ and found out that company XYZ was able to reduce their overall total cost by approximately 61%.

5.2.4. Distribution Resource Planning

Finally, concerning the effect of distribution resource planning strategy on performance of Nakumatt supermarket, it was established that majority of the respondents agreed that distribution resource planning connects current inventory and forecasts of field demand to manufacturing's MPS and MRP. Similarly, the finding showed that distribution resource planning can anticipate future requirements in the field. The study also sought to establish whether distribution resource planning match material supply to demand, match inventory to customer service requirements and increase the speed the firm can react to the marketplace. Consequently, the study revealed that distribution resource planning provides savings by better aggregation of transportation and dispatching. These findings confirmed the findings of Hansen & Mowen (2007) who found that distribution resource planning lowers inventory level which gives organization a competitive advantage due to production of quality products at low prices and responds faster to customer needs. Businesses seek ways to reduce the time to bring products and services to market place to gain competitive edge. It enables physical resources requirements to be planned together with production and purchasing control. It controls the entire logistics system.

5.3. Conclusion

Based on the findings of this study the following conclusions are drawn, first it was established that just-in-time strategy significantly affected the performance of supermarket. It was the most significant variable of the study. Material requirement planning has also been identified as the second most strategy that affected the performance of supermarket. The study findings also showed that economic order quantity strategy was the least significant variable of the study in affecting supermarket performance. It was also established that distribution resource planning was the third most significant factors that affected the performance of supermarket. Looking at the p values of all the four variables, they had. Therefore, the study finds that all the variables of the present study were all significant to supermarket performance and that they needed to be addressed in the order prescribed in the multiple regression model.

5.4. Recommendations

Following the foregoing findings, the study recommends that;

5.4.1. Just-In-Time

Concerning just-in-time strategy, supermarkets needs to reorder new stock well in advance of the anticipated stock out levels. This will give it more supply chain stability. Moreover, the staff need more training on just in time purchasing so as to enable them use their resources to make decisions based on total supply chain information.

5.4.2. Material Requirement Planning

With regard to the second objective, the study recommends that there should be an effective integration of information such as Electronic Data Interchange and Material Requirement Planning Systems in order to decrease capital cost in inventory levels.

5.4.3. Economic Order Quantity

There is need for the supermarkets to use economic order quantity strategy as it optimizes the order quantity for each product when an order is placed, reducing the company's product stock out issue.

5.4.4. Distribution Resource Planning

Finally, in relation to distribution resource planning strategy, the supermarkets should form strategic alliances with their distributors so as to have a more improved working relationship characterized by a shared mindset and good information flow.

5.5. Areas for Research

This study focused on establishing the effect of stock management strategies on supermarket performance. The researcher recommends that similar studies be done in other firms such as wholesalers and franchises. Similar objectives may be used for the recommended study areas. It is important to find out how JIT, MRP, EOQ and DRP affect the performance of those firms.

6. Acknowledgement

I would like to acknowledge the fact that this could not be a success without the help of different group of individuals. I acknowledge my supervisor, Dr. Assumptah Kagiri, for her guidance and invaluable advice during this whole process. Last but not least I thank the Almighty God for being graceful towards me during this whole process.

7. Dedication

I dedicate this work to my Dad Oira, my wife Carolyne, my daughter Tamara and my workmates Kabaya, Cate and Sonia. You were a pillar of strength to me when I was doing this paper. May God bless you all.

8. Abbreviations and Acronyms

- DRP Distribution Resource Planning
- FIFO First in First Out
- JIT Just in Time
- LIFO Last in First Out
- MRP Manufacturing Resource Planning
- QLP Quality Logistic Planning
- TQM Total Quality Management
- WMS Warehouse Management System

9. Definition of Terms

Competition	Merriam-Webster (2006) defines competition in business as "the effort of two or more parties acting independently to secure the business of a third party by offering the most favorable terms.
Effectiveness	It's the ability to work well and produce good results by using available time, money supplies in the most effective way. World English Dictionary (2006)
Efficiency	World English Dictionary (2006) defines Efficiency as, the quality or state of being efficient; competence.
Just-In-Time	According to Lysons (2000) Just-In-Time production is making available what the customers need, whom it is needed and in the quantity needed using the minimum resources of people, material and machinery.
Lead-time	Merriam-Webster (2005) defines lead time as the amount of time that elapses between when a process starts and when it is completed. Lead time is examined closely in manufacturing, supply chain management and project management, as companies want to reduce the amount of time it takes to deliver products to the market. In business, lead time minimization is normally preferred.
Procurement	Procurement process involves communication with the suppliers, request for tenders, price negotiation, ordering, receipt and invoicing Johnston (2003).
Sourcing	Business dictionary (2005) definition of sourcing It's the responsibility of purchasing department to develop strategic sourcing initiatives to leverage the organization's annual buying power and cost containing opportunities without imposing restrictions on products required by the staff.
Stock	World English Dictionary (2006) defines Stock as the goods or merchandise kept on the premise of a business or warehouse and available for sale or distribution
Supermarket	World English Dictionary (2006) defines Supermarket as A large retail market that sells food and other household goods and that is usually operated on a self-service basis

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APPENDICES**Appendix 1: Letter of Introduction**

Dear participant,

My name is Ibrahim Oira pursuing Master's Degree course at Jomo Kenyatta University of Agriculture and Technology in Procurement and logistics Management. The course requires a student to write a proposal and later on write a project before the completion of the course.

This questionnaire is designed to study effect of stock management strategies on effectiveness of supermarkets stock management. The information you provide will help me better understand the challenges supermarkets face in maintaining adequate stock levels in Kenya. I request you to respond to the questions frankly and honestly. Your response will be kept strictly confidential.

In order to ensure the utmost privacy, I have provided an identification number for each participant. This number will be used only for follow-up procedures whenever necessary. The number, name (optional), or the completed questionnaire will not be made available to anyone other than the research team.

Thank you very much for your time and cooperation. I greatly appreciate your help in furthering this research endeavor.

Yours sincerely,

IBRAHIM OIRA

Student at Jomo Kenyatta University of Agriculture and Technology

Appendix 2: Proposed Questionnaire

- Effects of Stock Management Strategies on Supermarkets Performance; A Case of Nakumatt Supermarket

Instructions

- a) You can write one name
- b) Feel free to answer questions by either a tick or a statement as required
- c) Information provided will be treated as confidential

• **Section A: Biodata**

1. Please indicate your gender.

- a) Male ()
- b) Female ()

2. Indicate your age

- a) 20-30 ()
- b) 31-40 ()
- c) 41-50 ()
- d) Over 50 ()

3. Indicate your level of Education.

- a) Primary ()
- b) Secondary ()
- c) Certificate ()
- d) Diploma ()
- e) Degree ()

• **Section B: Just-In-Time**

4. How do you agree with the following statements concerning Just-In-Time system? (Strongly agree, agree, indifferent, disagree and strongly disagree are represented by 5,4,3,2 and 1 respectively)

Just-in-time	5	4	3	2	1
JIT leads to minimal amounts of inventory obsolescence, since the high rate of inventory turnover keeps any items from remaining in stock and becoming obsolete.					
Since production runs are very short, it is easier to halt production of one product type and switch to a different product to meet changes in customer demand.					
The very low inventory levels mean that inventory holding costs (such as warehouse space) are minimized.					
The supermarket invests far less cash in its inventory, since fewer inventories is needed.					
Fewer inventories can be damaged within the company, since it is not held long enough for storage-related accidents to arise.					
Having fewer inventories due to JIT gives materials handlers more room to manoeuvre, so they are less likely to run into any inventory and cause damage.					
An investment should be made in information technology to link the computer systems of the company and its suppliers, so that they can coordinate the delivery of parts and materials.					

5. In your opinion, how does Just-In-Time strategy affect supermarkets' performance?

- Section C: Material Requirement Planning**

6. How do you agree with the following statements about MRP? (Strongly agree, agree, indifferent, disagree and strongly disagree are represented by 5,4,3,2 and 1 respectively)

Material Requirement Planning	5	4	3	2	1
Material Requirement Planning leads to availability of the right materials required for production, on time					
Material Requirement Planning leads to timely delivery of manufactured goods to customers					
Material Requirement Planning helps in optimal use of manufacturing resources					
It leads to a decrease in capital cost due to decreased inventory levels and optimal use of production resources					
It enables collecting the business data for analysis and better planning					
Material planning system requires proper training for end users, as to get maximum out of the system.					
Material resource planning system requires substantial investment of time and capital.					

7. In your opinion, how does Material Requirement Planning strategy affect supermarkets' performance?

.....

.....

.....

- Section D: Economic Order Quantity**

8. How do you agree with the following statements about EOQ? (Strongly agree, agree, indifferent, disagree and strongly disagree are represented by 5,4,3,2 and 1 respectively)

Economic Order Quantity	5	4	3	2	1
Constant or uniform demand: The demand or usage is even through-out the period					
Known demand or usage: Demand or usage for a given period is known i.e. deterministic					
Constant unit price: Per unit price of material does not change and is constant irrespective of the order size					
Constant Carrying Costs: The cost of carrying is a fixed percentage of the average value of inventory					
Constant ordering cost: Cost per order is constant whatever be the size of the order					

9. In your opinion, how does Economic Order Quantity strategy affect supermarkets' performance?

.....

.....

.....

- Section E: Distribution Resource Planning**

10. How do you agree with the following statements concerning DRP? (Strongly agree, agree, indifferent, disagree and strongly disagree are represented by 5,4,3,2 and 1 respectively).

Distribution Resource Planning	5	4	3	2	1
DRP connects current inventory and forecasts of field demand to manufacturing's MPS and MRP.					
DRP can anticipate future requirements in the field.					
Match material supply to demand, match inventory to customer service requirements. Increase the speed the firm can react to the marketplace					
Provide savings by better aggregation of transportation and dispatching					

11. In your opinion, how does Distribution Resource Planning strategy affect supermarkets' performance?

.....

.....

.....

- Section F: Supermarket Performance**

8. How do you agree with the following statements about Supermarket performance? (Strongly agree, agree, indifferent, disagree and strongly disagree are represented by 5,4,3,2 and 1 respectively)

Performance	5	4	3	2	1
Number of units sold affects sales volume and by extension performance					
Subscriptions have a positive relationship with supermarket performance					
Weight of goods sold affect performance positively					
Units sold improve market share hence supermarket performance					
Revenues earned by supermarket improve the performance of the supermarket					
The supermarket margin has a positive impact on supermarket performance					