International Journal of Management and Business Research

IJMBR

Volume 6, Issue 2, pg. 1038-1048, 2024

ISSN 29769-91723

INVENTORY MANAGEMENT PRACTICES AND PERFORMANCE OF FAST-MOVING CONSUMER GOODS IN MANUFACTURING FIRMS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

Inventory management is critical in manufacturing or production. Effective inventory management practices can significantly enhance operational efficiency, reduce costs, and improve customer satisfaction. The manufacturing sector in Kenya has been a key contributor to Kenya's industrial growth, as evidenced by the market entry of international firms and increased investments on the existing firms. The sector has however been experiencing performance challenges leading to closure of some firms. The general objective of the study was to examine effect of inventory management practices on performance of Fast-Moving Consumer Goods Manufacturing Firms in Nairobi City County, Kenya. The specific objectives were to examine effect of demand Forecasting and batch tracking on performance of Fast-Moving Consumer Goods Manufacturing Firms in Nairobi City County, Kenya. This study used a descriptive research design. The study targeted 118 Fast-Moving Consumer Goods (FMCG) manufacturing firms in Nairobi City as unit of analysis while stores, operations, ICT, and sales and marketing managers were the unit of observation. The target population was therefore 472 management staff in stores, operations, ICT, and sales and marketing. The sample size of 216 respondents was determined using Taro Yamane 1967 sampling formula. The study adopted stratified random sampling. The study collected primary data using questionnaires. A pilot test was conducted with 10% of the sample size hence 22 management staff. Content and construct validity was used to assess if the items in the questionnaire match with the constructs under conceptual framework. Questionnaire reliability was measured using Cronbach's Alpha Coefficient. The data collected was scrutinized, coded, and keyed into SPSS version 28 for analysis. Descriptive statistics includes frequency, percentage, and mean. The inferential statistics includes correlations and regression. Findings were presented in tables and figures, interpreted and discussed accordingly. The pilot test results revealed that the data collection instruments used in the study are both valid and reliable. Findings show that; there is a strong significant relationship between demand Forecasting and firm performance ($r=0.810$, $p=0.000$), and a strong significant relationship between Batch tracking and employee performance ($r=0.598$, $p=0.000$). The recommendations are that; firms should adopt fully integrated supply and demand forecasting models that will produce accurate forecasts to effectively manage the stocks, and firms should adopt Electronic Batch Record Systems which reduces human errors in batch records. This will help in identifying the products that are fast selling and products that are less important to the customers.

Key Words: Inventory Management Practices, Demand Forecasting, Batch Tracking, Performance, Fast-Moving Consumer Goods Manufacturing Firms

Background of the Study

Inventory management refers to all the activities involved in developing and managing the inventory levels of raw materials, semi-finished materials(working-in-progress) and finished good so that adequate supplies are available and the costs of over or understocks are low (Guan, Huang, & Qin, 2022). Inventory management is primarily about specifying the size and placement of stocked goods. Inventory management is required at different locations within a facility or within multiple locations of a supply network to protect the regular and planned course of production against the random disturbance of running out of materials or goods (Vessils, 2020). According to Mohamad, Suraidi, Rahman and Suhaimi (2016) an effective inventory management is able to generate more sales for the company which directly affects the performance of the company. For an inventory management to be effective, there must be a system which is managed by a group of employees who are experts in this area

Inventory management is critical in manufacturing or production. Effective inventory management practices can significantly enhance operational efficiency, reduce costs, and improve customer satisfaction (Caprarulo et al., 2023). Inventory management is one of the key strategies employed by modern organizations as a way of having a competitive advantage over competitors and a way of maximizing profits at large. The primary objective of managing inventory is the acquisition of the right quantity and quality of materials at the right time, whilst keeping the cost of holding stock as low as possible to fully acquire the benefits of managing inventory (Ajeyi, et al, 2021).

The essence of inventory is to have the right goods quality and quantity at the right place and right time. This process is needed as a part of the supply chain network to protect production system against any kind of disturbance. Inventory management include verifying the availability of resources and materials, as well as their quantity and quality, as well as when and where they are needed in the manufacturing process. Properly executing and adhering to inventory management procedures increases profitability while lowering production expenses such as storage by supplying resources when and where they are required (Bialas, Revanoglou, & Manthou, 2020).

Statement of the Problem

Kenyan manufactures of fast-moving consumer goods contribute significantly to the Kenyan economy. In 2022, the value added by the industry to the Gross Domestic Product (GDP) grew by 3.8%. The industry has been a key contributor to Kenya's industrial growth, as evidenced by the market entry of international firms and increased investments on the existing firms among them Coca Cola, Unilever, Procter & Gamble and Johnson & Johnson (KPMG, 2023). Although there is high potential of growth of the FMCGs manufacturers in Kenya, some FMCGs manufacturers such as Cadbury Kenya closed down its Nairobi plant due to poor performance (Okumu & Kariuki, 2021).

The growth of FMCG through the manufacturing sector in relation to the GDP has been on an erratic trajectory, with 5.7% in 2015, 5.9% in 2016, 4.97% in 2017, 6.37% in 2018, 5.47% in 2019, and 1.57% in 2020 (Kenya Economic Outlook, 2020). According to the Kenya Association of Manufacturers (2019), the return on assets of FMCG reduced by 8% in 2019 while market share reduced to 78.9% in 2019 as compared to 2018 where it was at 86.9%. There was also a decline in productivity between 2018 and 2019 by 14%. In addition, Proctor and Allan company profits condensed by 3% in 2017 from 2018. The declining performance has been associated with poor compensation of employees, delay of salaries, poor working conditions (Jepherson, Ngugi & Moronge, 2021). The market share of FMCG is highly dominated by a few companies which take up almost 70% of the market while the majority of the firms share the 30% of the market. This is an indication that majority of the firms are struggling to make it big in the big. They are struggling to penetrate the market and the volume

is sales is significantly lower than the best performing firms. The high competition has also contributed to low sales volume in some companies as the supply of some products gets higher than the demand (Competition Authority of Kenya, 2023).

There exists various studies on inventory management and firm performance. Mulandi, and Ismail (2019) on effect of inventory management practices on performance of commercial state corporations in Kenya concluded that inventory management has positive and significant relationship with the performance of commercial state corporations in Kenya. Arasa, and Achuora (2020) on influence of strategic inventory management practices on the performance of supermarkets in Nairobi County, Kenya established a positive significant relationship between strategic inventory management practices and performance of supermarkets. Muo, Ndolo, and Odari (2023) on the role of inventory management practices on the performance of electoral systems in Kenya found a strong and significant role of inventory management practices on the performance of electoral systems. Okumu and Bett (2019) on inventory management and organization performance in the steel industry concluded that organization performance among steel firms in Nairobi County is influenced by inventory management practices. There is however s a study limitation regarding inventory management practices in Fast-Moving Consumer Goods Manufacturing Firms in Nairobi City, Kenya. This study sought to fill the research gap by examining the effect of inventory management practices on performance of Fast-Moving Consumer Goods Manufacturing Firms in Nairobi City, Kenya.

Objectives of the Study

The general objective of the study was to examine effect of inventory management practices and performance of Fast-Moving Consumer Goods Manufacturing Firms in Nairobi City County, Kenya.

Specific Objectives

i. To establish examine effect of demand forecasting on performance of Fast-Moving Consumer Goods Manufacturing Firms in Nairobi City County, Kenya.
ii. To find out the effect of batch tracking on performance of Fast-Moving Consumer Goods Manufacturing Firms in Nairobi City County, Kenya.

LITERATURE REVIEW

Theoretical Review

Theory of Economic Order Quantity

The Theory of Economic Order Quantity was first as developed in 1913 by Ford W. Harris and later modified by Coleman (2002) and Ogbo (2011). EOQ model focuses on ordering portions that minimizes the stability of the cost between the inventories holding costs and the re-order costs. The model makes an assumption that all other variables are constant and disregards the fact that uncertainties are frequent and ordinary in all firms. For instance, uncertainty comprises of change in the level of demand, damage while transporting an item and holdups during the delivery process. In this case, uncertainty in the level of demand would consequently compel EOQ to be adjusted so as to shield against uncertain business situation.

One challenge of EOQ is that it tends to ignore the necessity to have shield stocks, which are preserved in order to cater for deviations during lead-time and demand making, and as such, it makes it complex to be practiced. Economic order quantity should be adopted in the event of fluctuation in demand particularly for consumer goods manufacturing firms. This theory supports the variable on demand forecasting. The state of the economy determines supply and demand patterns of a product. Availability of enough money in circulation result to a higher purchasing power high demand of products. The firm management must therefore carry out research to determine the most probable period that the demand may be high and ensure that enough products are available.

Dynamic Capability Theory

Dynamic capability theory was first developed by David Teece, Gary Pisano and Amy Shuen (Chien & Tsai, 2012). The theory describes a business aptitude to organize its assets in an effort to improve performance deliberately. An organization should be able to respond satisfactorily and appropriately to a wide variety of external factors. This requires the adoption of different strategies that will harness multiple capabilities of the organization and put them into use. This will give the company the ability to integrate, develop, and leverage on the environmental competitive advantage. Indeed, the current business world is very dynamic. Changes ranging from organizational structures, culture, marketing and customer's tastes and preferences are taking a different path. Krajewskiet al (2009) indicates that efficient supply chains have the aptitude of make to stock, low inventory investment, and low capacity cushion. They also have the qualities to make to short lead-time, timely delivery, and emphasis low process. Changes in marketing strategy, organizational structure as well as tastes and preferences among customers is prevalent and as such retailers should be able to process customers' orders quickly. Evidently, e-ordering integrates the in-house and external procurement components to address dynamics in the way organizations achieve operational excellence by reducing cost and saving on time used to purchase goods (Mwenga, 2016). This theory is related to batch tracking since keeping track of the market trends enable the supply chain managers to control the production level.

Conceptual Framework

A conceptual framework provides a mental sketch of the study by linking the independent variables and the dependent variable (Quinlan & Babin, 2019). The proposed study seeks to find out how the independent variables affect the dependent variable. This connection between the independent and dependent variables is illustrated in Fig 2.1.

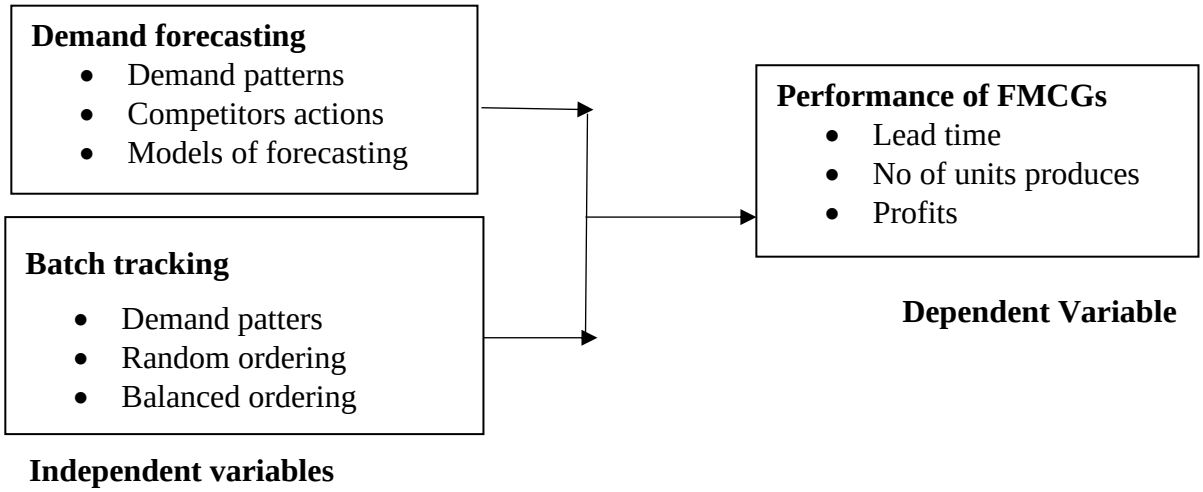

Figure 2.1: Conceptual Framework

Demand Forecasting

Demand forecasting refers to the process of predicting future customer demand for products or services. Demand planning and forecasting are a set of business processes that involve predicting future demand and aligning procurement, production, and distribution capabilities to meet that forecast. Accurate and timely demand and forecast plans are one of the most important components of an effective supply chain (Ding et al., 2019). Companies use forecasting models to understand consumer needs and expectations. As a result, a lot of research goes into the analysis of consumer preferences and behavior using forecasts often obtained from transaction records and consumer data. All of these seek to manage a product in the supply chain in the correct manner. Companies may engage in the extraction of similar behavior from given historical data to establish customer cluster segments. Clustering is

important as it enhances the accuracy of demand forecasting since predictions are established for every segment that contains similar consumers (Seyedan & Mafakheri, 2020).

Demand forecasting aims at identifying the demand behavior of consumers. In order to determine its target inventory level, each stage of the supply chain must forecast both the expected demand and the standard deviation of demand. Demand forecasting plays a pivotal role in shaping numerous managerial choices within the supply chain. These decisions encompass aspects such as, order fulfillment, production planning, demand planning, and inventory management. Demand forecasting entails the examination of historical sales data, shifts in market, and other pertinent data to project the anticipated quantity of goods or services needed over a defined timeframe (Abolghasemi et al., 2020). Demand forecasts also help in timing of purchases to ensure they correspond to sales fulfillment time and ensures that these inventories sit in the warehouses for a shorter time and reduce the warehousing cost as well. A good demand forecasting process has a direct impact on the planning of inventory levels by harmonizing; developing production requests to manufacturing; planning for new product launches; planning for promotions and planning for seasonal variations in demand (Craig & Günter, 2019).

Batch Tracking

Batch tracking refers to the process of tracking the movement of a group of goods manufactured or processed at the same time under uniform conditions. Batch tracking is an inventory management practice through which businesses can trace and monitor the history of a group of items with similar properties as those items make their way through production and distribution channels, all the way to customers. Should quality issues arise, batch tracking helps identify the source of the problem and locate other items that share it. Batch tracking also contributes to the ability to smoothly and efficiently recall defective or potentially hazardous items. And in its most ubiquitous use, batch tracking helps food suppliers manage their sales from inventory on the basis of expiration dates, minimizing food waste and improving suppliers' profit (Gregory, Singh, Gray, & Hobbs, 2021).

When batch tracking is used, businesses can log precise details about their sellable items: materials used, assembly location, date products were received, expiration date, etc. That information is traceable through the batch number, and with good recordkeeping can be accessed even when the product is in a customer's possession. When products are registered by their owners, batch information, combined with registration information, can greatly simplify communications if defects or recalls arise down the road (Tsai & Hung, 2023).

Empirical Review

Demand Forecasting and Firm Performance

Acar (2019) found that demand forecasting systems, besides helping the company to keep up with changing market conditions easily, it also provides convenience to the company in operational applications with its strategic and managerial level plans. As the demand forecasting performance goes down, the rate of fulfillment the demands of the customer on time goes down. As a result, the companies head for accelerated services with quickly obtainable results, and other costly actions. Also, as the deviations in long-term plans are high, the determination of the control frequency and methods of the plans are very significant for a successful demand forecasting system.

Atemauswa (2019) analyzed the influence of both internal and external factors on the apparel industry of South Africa. The study adopted exploratory and descriptive approach. The study employed a qualitative case study method. The study's target population was the employees working in the apparel planning department of Apparel Retailer A. The research findings indicated that demand forecasting serves various important purposes, such as aiding in budget

management, informing cost-effective investment decisions, monitoring the return on investment, and ensuring efficient inventory management within the organization.

Ngatuni (2018) examined the factors that affect inventory management in Unga Group Limited in Kenya. The study used a descriptive research design. The target population was 41 management staff. The findings showed that demand forecasting has a positive impact on inventory management in the manufacturing industry. The study recommended that companies should equip their staff with proper training on analyzing consumption trends of the customers and adhere to stock record procedures.

Ogola and Ndeto (2021) sought to establish the effect of demand forecast updating on inventory management at the Brookside Dairies Limited. This study used a descriptive research design. The target population of this study are the 303 employees of Brookside Dairies Limited based in the head office in Nairobi City, Nairobi County. The study concluded that the use of demand forecasting updating have a significant influence on Inventory Management. The study also concluded that a unit increase in the use of Demand Forecasting Updating on its own results in an increase in Inventory Management. Bongei, Ngacho, and Kibet (2020) studied supply chain management integration and demand management practices on organizational performance of Kenya Medical Research Institute. The study used the explanatory research design. The study's targeted a population of 3518 employees and sampled 359 respondents. Questionnaires were used to collect data. The study findings indicated that demand management practices influenced organizational performance. The study found a positive significant relationship between demand management practices and organizational performance in research institutions in Kenya.

Batch Tracking and Firm Performance

Hjertqvist and Östman (2017) examined how equally sized batches affect the length of the production plan, and what batch size is optimal to achieve efficient production planning. The examination was conducted with respect to lean principles and a mathematical model was built to simulate the use of different batch sizes. In order to run the simulation, both historical and new data was used. Results showed that a batch size of 2.0 hours is optimal as the length of the production plan then varies the least in the allowed interval. Equally sized batches exclusively were not found to contribute to a more efficient production planning. Smaller batch sizes in combination with equally sized batches were however shown to decrease the variation in the production plan, and to result in increased stock turnover and decreased inventory level

Marsh and Eyers (2016) studied effect of electronic batch record systems on firm performance. This study used existing literature to explore the implementation of an EBRS at a Life Science manufacturing company. Results showed that as manufacturing operations become increasingly sustainable and seek to evolve towards paradigms such as Industry 4.0 and the Smart Factory, the importance of process control becomes paramount. Strictly controlling manufacturing processes improves production efficiency and this can be supported by Electronic Batch Record Systems (EBRS). EBRS significantly reduced human errors in batch records, compared to a hardcopy system, thereby yielding improvements in production efficiency.

RESEARCH METHODOLOGY

This study used a descriptive research design. The study targeted Fast-Moving Consumer Goods (FMCG) manufacturing firms in Nairobi City. According to KAM (2023), there are 118 FMCGs in Nairobi County. The firms were the study's unit of analysis. The unit of observation was management staff in stores, operations, ICT, and sales and marketing. Therefore, the study target comprised of 472 respondents (4 management staff from each firm). The sample size was determined using Taro Yamane 1967 sampling formula.

Table 3. 1: Sample Size

Category	Population	Sample Size
Stores manager	118	54
Operations manager	118	54
ICT manager	118	54
Sales and marketing manager	118	54
Total	**472**	**216**

The study adopted stratified random sampling. The study collected primary data using questionnaires. A pilot test was conducted with 10% of the sample size hence 22 management staff took part in the pilot study. Data was analysed using descriptive and inferential statistics. Descriptive statistics included frequency, percentage, and mean. The inferential statistics included correlations and regression.

RESEARCH FINDINGS AND DISCUSSIONS

The sample size of study was 216 management staff Fast-Moving Consumer Goods manufacturing firms in Nairobi City. The pilot test respondents were 10% of the total hence 22 respondents. The researcher distributed 194 questionnaires to the respondents and 156 were successfully filled and returned. Thus the response rate of was 80.4%. The response rate is sufficient are recommended by Mugenda, and Mugenda (2008) that a response rate of 80% .

Demand Forecasting

The first objective was to examine effect of demand forecasting on performance of Fast-Moving Consumer Goods Manufacturing Firms in Nairobi City County, Kenya. Respondents were asked to tick on the extent to which they agree/disagree with statements related to demand forecasting. Findings are presented in Table 1.

Table 1: Demand Forecasting

Key: SD=Strongly disagree, D=Disagree, NS=Not Sure, A=Agree, SA= Strongly agree, M=Mean, Std.=Standard Deviation

Statements	SD %	D %	N %	A %	SA %	M	Std.
The firm makes accurate demand forecasts for required inventory to be supplied on time	7.7	7.1	5.8	20.5	59.0	3.84	1.267
Firm makes accurate demand forecasts that match customer demands	61.5	14.1	4.5	11.5	8.3	1.91	1.370
Our constant usage of proper EOQ Model in our inventory management have led to improved service delivery	4.5	14.7	5.1	46.2	29.5	4.19	1.146
Forecasting leads to a reduction in inventory holding in the firm	12.8	12.8	5.1	46.2	23.1	3.76	1.322
Wrong forecast results to increased cost of managing stock	8.3	14.7	6.4	15.4	55.1	4.06	1.402
Forecasting reduces out of stock situations along the supply chain	7.1	16.7	7.1	16.0	53.2	4.08	1.382
Demand forecasting helps to expand the outlet by adding a product line	9.0	14.1	6.4	37.2	33.3	4.28	1.304
Historical forecasting is effective in identifying customer needs and boosting their retention	0.8	3.0	7.7	58.3	30.1	4.15	0.717
Average						**3.84**	**1.240**

Findings show that majority of the respondents strongly agreed that demand forecasting helps to expand the outlet by adding a product line(M=4.28, Std.=1.304). Respondents also agreed that; there is constant usage of proper EOQ Model in the inventory management which have led to improved service delivery(M=4.19, Std.=1.146), historical forecasting is effective in identifying customer needs and boosting their retention(M=4.15, Std.=0.717), forecasting reduces out of stock situations along the supply chain(M=4.08, Std.=1.382), wrong forecast results to increased cost of managing stock(M=4.06, Std.=1.402), the firm makes accurate demand forecasts for required inventory to be supplied on time (M=3.84, Std.=1.267), and forecasting leads to a reduction in inventory holding in the firm (M=3.76, Std.=1.322). The respondents disagreed that firm makes accurate demand forecasts that match customer demands(M=1.91, Std.=1.370).

Findings shows that the firms conducts demand forecasting through suitable models like the EOQ and historical forecasting. Demand forecasting has enabled firms to manage inventories effectively.. The outlets with likelihood of high demand are stocked more while outlets with less demand are stocked less. Demand forecasting also helps to ensure that there are no stock outs and as well reduces inventory holding. However, due to constantly changing customers tastes and preferences, majority of the firms are not able to accurately forecast demands that match customer demands. Findings are in support of Atemauswa (2019) that demand forecasting aids in budget management, informing cost-effective investment decisions, monitoring the return on investment, and ensuring efficient inventory management within the organization.

Batch Tracking

The third objective sought to find out the effect of batch tracking on performance of Fast-Moving Consumer Goods Manufacturing Firms in Nairobi City County, Kenya. Respondents were asked to tick on the extent to which they agree/disagree with statements related to batch tracking. Findings are presented in Table 2.

Table 2: Batch Tracking

Statements	SD %	D %	N %	A %	SA %	M	Std.
Firm manage inventory in batches that comprise items and products with similar characteristics and production	3.2	5.8	2.6	41.7	46.8	3.77	0.983
The entire inventory is categorized into batches	3.2	10.6	3.8	50.9	31.4	3.83	0.802
Products that share common characteristics, such as production date, expiration date, or supplier information are grouped together	1.3	9.0	1.9	27.6	60.3	4.43	0.984
Every batch of products has a unique identification number allotted to it, which is used to track and trace the entire batch	1.9	1.9	1.9	20.6	73.6	4.78	0.732
It is easy to manage the production & expiration date of each batch of products	10.9	3.54	13.5	16.0	21.8	3.54	1.483
Batch tracking helps to identify the individuals who have procured products	0.6	15.8	7.3	17.3	59.0	4.28	0.989
Batch tracking allows for effective traceability of products throughout the supply chain	1.3	3.8	10.5	60.0	24.4	3.83	0.610
The firm has automated the recording and tracking of inventory, reducing the reliance on manual input	1.9	9.6	10.9	15.4	62.2	3.71	0.834
Average						**4.02**	**0.927**

Findings show that the respondents staff strongly agreed that; every batch of products has a unique identification number allotted to it, which is used to track and trace the entire batch(m=4.78, std.=0.732), products that share common characteristics, such as production date, expiration date, or supplier information are grouped together(m=4.43, std.=0.984), batch tracking helps to identify the individuals who have procured products(m=4.28, std.=0.989), firm manage inventory in batches that comprise items and products with similar characteristics and production(m=3.77, std.=0.983), the entire inventory is categorized into batches(m=3.83, std.=0.802), batch tracking allows for effective traceability of products throughout the supply chain(m=3.83, std.=0.610), the firm has automated the recording and tracking of inventory, reducing the reliance on manual input(m=3.71, std.=0.834), and it is easy to manage the production & expiration date of each batch of products(m=3.54, std.=1.483).

Findings imply that the firms manage inventories in batches. The items and products with similar characteristics are grouped together. This is according to the type o the product, quantity, production and expiry date. This makes it easier to manage the firm inventories and also to keep track of the products from manufacturing to distribution. Batching also helps in keeping good records of the firm inventories as well as effective tracing o products in the entire supply chain. The inventory system is full automated which reduces human errors caused by manual inventory management. The respondents however agreed that it is not easier for customers to track the orders while on shipment. Findings are in agreement with Hjertqvist and Östman (2017) batching contribute to a more efficient production planning. effective batching helps to achieve optimum stock levels and also improve supply chain management.

Firm Performance

Respondents were asked to tick on the extent to which they agree/disagree with statements related to performance of Fast-Moving Consumer Goods Manufacturing Firms in Nairobi City. Findings are presented in Table 3.

Table 3: Firm Performance

Key: SD=Strongly disagree, D=Disagree, NS=Not Sure, A=Agree, SA= Strongly agree, M=Mean, Std.=Standard Deviation

Statements	**SD** %	**D** %	**N** %	**A** %	**SA** %	**M**	**Std.**
Profitability has improved over the years	29.5	44.9	10.9	10.9	3.8	1.89	0.846
There is improved product quality	1.3	10.6	3.8	14.4	69.9	4.39	0.715
Customers complaints have reduced	1.3	11.9	1.3	8.3	77.2	4.22	0.724
Sales volume in our firm has improved over the years	17.3	55.1	0.6	17.3	9.6	2.45	1.030
The market share for our products has been improving	10.3	69.2	9.6	7.7	3.2	2.36	0.860
Average						**3.06**	**0.835**

Findings show that the respondents strongly agreed that customers complaints have reduced (M=4.22, Std.=0.724). They also agreed that there is improved product quality (M=4.39, Std.=0.715). The firm managers disagreed that; profitability has improved over the years (M=1.89, Std.=0.846), sales volume has improved over the years (M=2.45, Std.=1.030), and the market share for products has been improving(M=2.36, Std.=0.860).

Correlation Analysis

Correlation analysis was carried out to examine the strength of relationship between the study variables. The significance level for significant relationship was <=0.05. Correlation results are presented in Table 4.

Table 4: Coefficient of Correlation

	Variables	Firm performance	demand Forecasting	batch tracking
Firm performance	Pearson Correlation	1		
	Sig. (2-tailed)			
Demand Forecasting	Pearson Correlation	.810**	1	
	Sig. (2-tailed)	.000		
Batch tracking	Pearson Correlation	.598**	.839	1
	Sig. (2-tailed)	.000	.006	

**. Correlation is significant at the 0.05 level (2-tailed).

Findings show that; there is a strong significant relationship between demand forecasting and firm performance (r=0.810, p=0.000), a strong significant relationship between job sharing and employee performance (r=0.598, p=0.000), Findings support various scholars who also found a relationship between inventory management and firm performance; Ogola and Ndeto (2021) concluded that the use of demand forecasting updating have a significant influence on inventory management, Marsh and Eyers (2016) found that Electronic Batch Record Systems significantly reduced human errors in batch records, compared to a hardcopy system, thereby yielding improvements in production efficiency

Regression Analysis

Table 5: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant/Y Intercept	.693	.073		9.529	.000
Demand forecasting	.449	.046	.868	9.720	.000
Batch tracking	.369	.093	.339	3.973	.000

Results show that a unit change in demand forecasting would have a significant unit change on performance of Fast-Moving Consumer Goods Manufacturing Firms (β_1=0.449, t=9.720, p value= 0.000), a unit change in batch tracking would have a significant unit change on performance of Fast-Moving Consumer Goods Manufacturing Firms (β_1=0.369, t=3.973, p value= 0.000),

Regression results show that demand forecasting had the greatest effect on firm performance, followed by batch tracking, Findings concur with Muo, Ndolo, and Odari (2023) that there is a strong and significant role of inventory management practices on the performance of electoral systems. Okumu and Bett (2019) concluded that organization performance among steel firms in Nairobi County is influenced by inventory management practices.

Conclusion

Demand forecasting have a strong effect on performance of fast moving consumer goods manufacturing firms. The firms use various techniques to predict demand in the market which helps in managing stocks. Demand forecasting helps to forecast to estimate the future of products based on historical data, market trends, customer behavior, among others. Through accurate demand forecasting, firms are able to plan purchasing, production, distribution, and storage activities to meet customer needs and avoid overstocking or understocking. Demand forecasting helps to improve operational flexibility, waste minimization and improved quality in operation therefore improving on firm performance.

Batch tracking have a significant effect on performance o fast moving goods manufacturing firms. The firms manages inventories in batches. The firms further trace and monitor the

history of products with similar properties from production and distribution channels. Batching in the firms include grouping the goods with similar characteristics together, and allocating unique identification numbers to every group. Batching helps to identify the customers and as well identify the goods that are moving faster than others. Batch tracking has made it easier to manage the production and expiration dates which may reduce rates of returns of and wastage in the manufacturing firms.

Recommendations

The firms should adopt fully integrated supply and demand forecasting models such as spreadsheets, enterprise resource planning (ERP) systems, artificial intelligence (AI), and machine learning (ML). These tools and models can help you process large amounts of data, apply sophisticated algorithms, generate multiple scenarios, and visualize results. The models will help to produce accurate forecasts to effectively manage the stocks. In order to accurately forecast customers' demands, the firms should frequently carry out research on customer needs to produce and increase the stocks of the most preferred products. This will help them remain competitive hence improve on sales and profitability. These models will help to prevent delay and shorten the renewal cycle by allowing planners to compare stock across all locations and generate a detailed replenishment report for each product. Such reports help prevent stock-outs from occurring, especially during new product launches and global disruptions.

The firms should ensure that the batches are neither too big nor too small for easier stock management. The firms should also adopt Electronic Batch Record Systems which reduces human errors in batch records, compared to a hardcopy system. This will help to improve production efficiency and also improved inventory record management.

Areas for Further Studies

A similar study on other manufacturing sector since this study only focused on Fast-Moving Consumer Goods Manufacturing Firms

A study on Fast-Moving Consumer Goods Manufacturing Firms in another county in Kenya since this study was conducted in Nairobi County

A study focusing on other inventory management practices which causes 27.6% changes in firm performance

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