

Assessing the Effects of Inventory Management Practices on Performance of Small and Medium-Size Enterprises in Accra

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ABSTRACT: *The study investigates the effects of inventory management practices on performance of small and medium size enterprises in Accra. The study employed the purposive sampling technique to gather data from 110 staff of SME firms in Accra. The statistical Package for Social Sciences version 23 was used for data analysis. Findings of the study showed that Economic Order Quantity (EOQ), Vendor Managed Inventory (VMI) and ABS analysis are the inventory management practices in the SME industry in Accra. The study also showed a significant positive relationship between inventory management practices and organizational performance. Policy implications as well as managerial and direction for future studies are discussed.*

KEYWORDS: *inventory management practices, performance, SME, Accra*

INTRODUCTION

In today's highly competitive market, businesses need to maintain an appropriate level of inventory to meet the customer demands at any time. According to Dey & Seok (2024), the success of an inventory management process entails the balance of costs of inventory with the benefits of the inventory. As shared by Khan (2022), inventory in business is one of the tangible and visible components of a company. Inventory management is the act of keeping and placing stock in a business. Extant literature demonstrates that organizations have problem keeping the inventory (Alnaim & Kouaib, 2023; Gołaś, 2020; Pando *et al.*, 2021) leading to loss of profits. Effective inventory management practices enable organizations to provide goods and services that the customers demand for in the right quantity, quality and cost at the appropriate time. Inventories constitute a major component of the total assets of every business organisation and according to Singh *et al.* (2022), they include stock of raw materials, work in progress, and finished goods as

Publication of the European Centre for Research Training and Development-UK well as other supplies held by a firm to facilitate their operations. As indicated by Tan *et al.* (2024), inventories comprise both assets and other items held in the ordinary course of business. Just as other forms of assets, inventories are held by business organisations to benefit their future operations. In the estimation of Jonsson & Mattsson (2021), inadequate inventory could disturb the smooth running of a firm, while excess inventory could also lead to needless holding cost, which can consequently cause a firm to experience a dip in both its profitability and overall performance. In buttressing this, Otchere *et al.* (2023) posited that excessive stock is not desirable, especially for longer periods as high inventory levels lead to high crying cost and a reduction in profitability. Therefore, maintaining an ideal size of inventory at all times so as to avoid extra holding cost and stock out has become imperative. Kasim *et al.* (2023) contend that firms must hold an appropriate level of stock so as to meet both production and sales needs. This is because insufficient stock puts a firm at a risk of incurring stock out, while extreme level of stock might also lead to waste.

Small and Medium Sized firms in Ghana operate in an environment characterized by complexity, risks and financial uncertainty because many of them rely on loans from financial institutions to run their businesses. Their reliance on loans from financial institutions has created the need for the firms to apply effective inventory management practices to enhance performance and sustainability. However, these firms continue to struggle with the application of effective inventory management practices as many of the SMEs are operated by firms with little or no formal education. Trainings manuals provided by the government of Ghana and stakeholders in a bid to strengthen the SME sector ends up in shelve gathering dust. Clearly, the absence of effective inventory management practices leaves the firms handicapped as most of them are either have stock shortage or keep too much stock. Shortage of finished goods, for instance, could create a feeling of disappointment among customers, a situation which could possibly lead to loss of customers and sales. Too much inventory, on the other hand, consumes physical space, creates financial burden, and increases possibility of damage, spoilage and loss (Chan *et al.*, 2023).

The question is: How have inventory management practices enhance the performances of small and medium size enterprises in Accra?

Research Objectives

The study investigates the effects of inventory management practices on performance of small and medium size enterprises in Accra. Specifically, the study seeks to:

1. assess the inventory management practices adopted by SMEs in Accra and;
2. examine the relationship between inventory management practices and performance of SMEs in Accra

Significance of the Study

Inventory management practices (IMP) are prevalent in managing and controlling inventory in an organisation. Efficient inventory management enhances gross profits and net profits by reducing operational expenses of the firm. Therefore, the findings of the study will be useful to firms in the

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SMEs sector to appreciate the importance of effective inventory management practice to enhance efficiency and sustainability. The government agencies and stakeholders responsible for informal business oversight responsibilities will as well be exposed to some of the challenges faced by SMEs firms in managing inventory effectively. Finally, the study will contribute to academic literature

Scope of the Study

The study focuses on the effects of inventory management practices on performance of small and medium size enterprises in Accra. Only three of the inventory management practices are delineated. Also, the study was quantitative in nature with a sample size of 200. The geographical setting for the study was Accra. Other regions will fall outside the scope of the study

LITERATURE REVIEW

The concept of Inventory Management

Inventory refers to the value or quantity of raw materials, supplies, work in progress (WIP) and finished stock that are kept or stored for use as need arises (Mahajan *et al.*, 2024). Inventory management is the art and science of maintaining stock levels of a given group of items incurring the least cost consistent with other relevant targets and objectives set by management (Alam *et al.*, 2024). Inventory management involves overseeing the storage and movement of raw materials, semi-finished items, and completed goods (Rashid & Rasheed, 2023). The goal according to Rashid & Rasheed (2023) is to ensure that there is always an adequate supply of inventory and to minimize related expenses. Inventory management involves "system and processes of maintaining the appropriate level of stock in a warehouse" (Demizu, 2023). These activities includes identifying necessary inventory requirements, and creating replenishment processes, tracking and monitoring the usage of items/stock, reconciling inventory balances as well as reporting inventory status (Baker *et al.*, 2024). It is basically the process of efficiently controlling the amount of stock in order to avoid excess inventory. Reliable inventory management will therefore minimise the cost associated with inventory (Baker *et al.*, 2024).

Inventory Management Practices

Inventory management practices delineated in this study include: Economic Order Quantity (EOQ) and Vendor Managed Inventory (VMI) and ABS analysis,

Economic Order Quantity (EOQ)

EOQ is a technique for inventory management that minimizes ordering and holding costs for the year. EOQ is a crucial accounting formula that determines when the combination of inventory carrying cost, order and costs are the least (Rosihan, 2024). The result obtained from the formula gives the most effective quality to order. As explained by Rosihan (2024), there are two models used in EOQ: Q and P models. In the Q model, whenever the stock on hand reaches the recorder point, a fixed quantity of materials is ordered. Advantages of the Q model are that the inventory

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materials are at the most economical quantity and inventory control personnel automatically devote attention to stocking the only items that are needed, when they are needed. A major disadvantage of the Q model is that the suppliers may be inconvenienced by orders that are raised at irregular intervals. In the P model, the stock position of every item in the inventory is closely monitored. Advantages of the P model are that the inventory and ordering costs are low and the model can be used on materials that are used irregularly or in seasons. Sales estimates are easily calculated for seasonal materials and the purchase of these materials can be planned in advance (Rosihan, 2024). A disadvantage of the P model is that is inefficient because it compels a periodic review of inventory.

Vendor Managed Inventory (VMI)

This is a process where the vendor makes orders for clients and customers according to the demand information they get from the customers (Smith & Racic, 2023). Both the customer and the vendor are held together by an agreement that concludes the costs, the inventory level and the fill rates. VMI uses EDI (Electronic Data Interchange) to specify their delivery quantities which are sent to clients and customers by the use of distribution channel (Smith & Racic, 2023). VMI is an inbound logistic plan based on the idea that the dealer should be in charge of managing customer's inventories by using the demand information provided by the customer himself (Ru, 2024). This eliminates a step in the information chain and creates a better demand visibility for the supplier, who can synchronize his manufacturing process to the actual demand with the result of having less inventories and lower logistic costs (Ru, 2024). VMI plays a major role in cost management. In this case, the supplier holds stock on site or near the buyer. By doing this, the customer is given instant access and the power to get stock while they pay for only what they have sold.

ABC Analysis

In the views of Eze & Uchenu (2021), ABC analysis can be used to provide a clear view and meaning of the whole assortment of products in the inventory, thereby making it an efficient method to control inventory investment. ABC inventory classification is a very popular inventory control technique that follows the Pareto Principle which states that, for many events, roughly 80% of the effects come from 20% of the causes. In a case of a business, it could be stated that roughly the 20% of the end products generates the 80% of the income. In ABC analysis, a company reviews its inventory and sorts all items into three categories, called "A" items, "B" items and "C" items. A typical breakdown would possibly describe "A" items as those that produce 70% of income, "B" items as those that produce 25% of income and "C" items, as those that produce 5% of income. This classification might be different from company to company but managers should be able to find the pattern that suits best their needs. Clearly, "A" items require closer attention and should be handled differently. Assigning higher Service Levels for those items is a wise choice. The higher service level will lead to higher inventory but will also decrease the probability of a stock out. A 5% probability of a stock out for an "A" item will result to much higher losses than of a 5% probability for a "C" item. A 99% Service Level for an "A" item could have about the same impact as an 85% Service Level for a "C" item and managers should position against each category

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accordingly.

Empirical Review on Inventory Management Practices and Performance Relationship

The significance of inventory management is underscored by extant literature (Anantadjaya, 2023; Mahajan, 2024; Rashid & Rasheed, 2023). Inventory management practices (IMP) are prevalent in managing and controlling inventory in an organisation. Panigrahi *et al.* (2021) conducted a study entitled: “Inventory management and performance of manufacturing firms. Data were collected from five selected manufacturing firms from the state of Odisha, India. Respondents of the study are some key officials, viz. operations manager, production manager, purchase manager and warehouse manager from various manufacturing firms. Panigrahi *et al.* (2021) conclude that inventory management practices have significant impact on firm performance. Similarly the study of Olowolaju & Mogaji (2020) found a positive and significant relationship between the inventory management techniques and the profitability. Also, Almrdoif & Attia (2021) found a positive connection between inventory management practices on productivity. More so, the study of Acquah (2024) concluded that effective inventory management positively affects the performance of organization. However, Olusegun *et al.* (2023) found otherwise. Inferring from the literature, the study hypothesized as follows

H1: there is a significant positive relationship between inventory management practices and performance

METHODOLOGY

Research Design

Research design as described by Sekaran (2000) “is that which involves the planning of the actual location of the study, how to select the sample and collect data and how to analyse the data”. Zikmund *et al.* (2012) describe research design as “a detailed blueprint used to guide the implementation of a research study towards the realization of its objectives. The study employs the explanatory design. According to Saunders *et al.* (2009), explanatory design helps a researcher to obtain information about a situation or problem in order to explain the relationship among variables; since the study intends to investigate the relationships between the stated variables, the adopted design is considered appropriate.

Population of the Study

Banerjee *et al.* (2007) define population “as an entire group about which some information is required to be ascertained. The population for this study consists of 20 SME firms in Accra

Sampling Technique and Sample Size

Fowler (2008) describes sampling “as the processes of selecting units from a population of interest so that by studying the sample, we may fairly generalize our results back to the population from

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Sample Size

Agresti & Finlay (2009) define sample size as "a sub-set of a population". For the study, a sample size of 110 was selected to represent the entire population of the twenty (20) selected SME firm in Accra. As shared by Kent (2007), a sample size of one hundred and ten (110) and is sufficient for quantitative research. Since the sample-size is beyond 100, the chosen sample-size is considered appropriate.

Sources of Data

Field survey was used to solicit data from respondents. Questionnaire was the instruments used for the data collection.

Distribution of Questionnaires

Questionnaire administration was carried out by the researcher. It has taken the researcher one month to gather data from the respondents. Each respondent spent about 16 minutes in responding to the questionnaire.

Data Analysis

The study employed the use of Statistical Package for Social Sciences (SPSS) version 23.0 for the data analysis. Presentations of the findings were tabulated and discussed with reference to existing studies to ensure easy understanding.

Validity and Reliability

Reliability suggests the degree to which measurements are conducted effectively. To ensure reliability, the Cronbach Alpha (α) was used. According to Devellis (2003), the Cronbach alpha coefficient should be above 0.7. Cronbach alpha values above 0.7 are acceptable and values that are above 0.8 are preferable. The validity of the study was also ensured by pre-testing the questionnaire.

Ethical Consideration

In the views of Zikmund (2000), ethics involves 'the codes of behaviour adopted by the researcher'. It is also the moral principles that guide researchers to conduct research without deception or intention to harm the participants of the study. Polychronidou *et al.* (2014) also shared that the participants' volunteering rights and confidentiality must be of importance to the research process. Guiding by this principle, participants were encouraged to participate at will.

DISCUSSIONS AND FINDINGS

Demographic Characteristics of Respondents

The findings of the study showed the dominance of female respondents in the SME sector in Accra as female respondents accounted for 65.0% as against 35.0% of males.

The results of the study showed that the age groups 50-59(85) and 40-49(70) were the majority representing 38.7% and 31.8% respectively. This was followed by age group 30-39(50). The least age group is 20-29(15). It can be concluded that majority of the firms in the SME sector in Accra are in the age group 50-59 and 40-49 respectively. The result is in consonance with a similar study (Eze & Uchenu, 2021)

The findings of the study showed that diploma certificate holders (36.4%) were fairly the majority followed by WASSCE holders (29.5%). BECE certificate holders accounted for (6.0%) whilst those with no certificate recorded (6.8%). The findings are consistent with prior notion that firms in the SMEs sector have minimal or no education

The results revealed that 150(68.2%) of the respondents which is the majority have been in the SME sector for between 1-3 years. 29.5% of the respondents between 4-6 years and 2.3% between 7-9 years. The findings are an admission that the respondents have considerable knowledge about the SME industry in Ghana. This considerable knowledge is helpful in enriching the study

Reliability Statistics

The study ascertained the internal consistency and stability of the responses received, the Cronbach alpha reliability test was conducted. A Cronbach alpha of 0.7 is found reliable. From the study, the coefficient value of Cronbach alpha realized for the four variables is 0.780 which is higher implying a high internal consistency. Table 1 presents the results obtained.

Table 1: Reliability Text

SN	Viable	Cronbach Alpha
1	Economic Order Quantity (EOQ)	0.088
2	Vendor Managed Inventory (VMI)	0.804
3	ABS Analysis	0.764

Source: Field Survey, 2024

The first research question sought to assess the inventory management practices adopted by SMEs

Publication of the European Centre for Research Training and Development-UK in Accra. The responses of the respondents were measured on a 5- point Likert scale rated as 1= *Strongly disagree*; 2= *Disagree*; 3=*Neither agree nor disagree*; 4=*Agree* and 5=*Strongly agree*. Descriptive statistics such as mean and standard deviation were used for the analysis of the responses.). According to Dess *et al.* (2005), on a scale of 1-5, the midpoint is 2.9, hence any mean score below 2.9 denote disagreement and any mean score above 2.9 represents Agreement. Also, Saunders, Lewis and Thornhil (2015) posit that anytime measures of central tendencies are computed, it is imperative to compute their measure of variations. Table 2 presents the findings

Table 2: Descriptive Statistics of Inventory Management Practices

Statement	Mean	Standard Deviation
We mostly employ the Economic Order Quantity (EOQ) practices to effectively management our inventory	3.48	1.37
Vendor Managed Inventory (VMI) as inventory management practice is usual used by our firm to management inventory	3.68	1.29
Usually, in our firm, the ABS analysis of inventory management is what is applied in our firm	3.44	1.25

Source: Field Survey, 2024

The respondents agreed that Economic Order Quantity (EOQ) practices were used to effectively management inventory ($M=3.48$; $SD=1.37$). Vendor Managed Inventory (VMI) as inventory management practice was usual used to management inventory ($M=3.68$; $SD=1.29$) ABS analysis of inventory management was applied to management inventory ($M=3.44$; $SD=1.25$). The findings imply that all the above inventory management practices are employed by SME firms to enhance efficiency and sustainability since the mean score is above 2.9 as indicated by Dess *et al.* (2015). The findings of the study are corroborated by extant literature (Claassen *et al.* 2023; Govindan, 2022; Schwarz, 2022). Also, in the study of Dong & Xu (2022), Vendor Managed Inventory was found to be useful in managing inventory. Ru (2024) also posits that Vendor Managed Inventory can be used to eliminate a step in the information chain and creates a better demand visibility for the supplier, who can synchronize his manufacturing process to the actual demand with the result of having less inventories and lower logistic costs. Also, Senthilnathan (2022) shared that EOQ can be used to minimise the Total Incremental Cost (TIC), beyond the cost of purchasing, in consideration of two main total costs: Total Ordering Cost (TOC) and Total Handling Cost (THC) which is helpful in inventory management. More so, Eze & Uchenu (2021) intimated that the ABC analysis can be used to provide a clear view and meaning of the whole assortment of products in the inventory, thereby making it an efficient method to control inventory investment

Simple Regression Analysis

Regression analysis was used to predict a single dependent variable from one or more independent

Publication of the European Centre for Research Training and Development-UK variables. However, when the problem involves a single independent variable, the statistical technique is called simple regression. Also, when the problem involves two or more independent variables, it is a multiple regression. For this study, the use of only one single independent variable that is inventory management was to test the dependent variables (firm performance) hence, the use of a simple regression. Table 3 presents the findings

Table 3: Summary of Simple Regression Analysis between Inventory Management Practices and Organizational Performance

Variables	β	R^2	T	F	P-value
IMP->OP	.868	.6648	36.080	2462.442	.000

Note: N=110, $p < .05$, Adjusted $R^2 = .648$ IMP means inventory management practices, OP means organizational performance

The result from the linear regression analysis showed significant effects of inventory management practices on organizational performance ($\beta = .868$, $t = 36.080$, $p = 0.00$). This means that the effect of inventory management practices resulted to an increase in organizational overall performance. The findings are in tandem with the work of Acquah (2024). In the study of Acquah (2024), the author concluded that effective inventory management positively affects the performance of organization. This is also shared by Panigrahi *et al.* (2021). In their study, Panigrahi *et al.* (2021) concluded that inventory management practices have significant impact on firm performance. Almrdo & Attia (2021) also found a positive connection between inventory management practices and productivity. Effective inventory management is imperative to ensure that there is always an adequate supply of inventory and to minimize related expenses.

CONCLUSION

The findings of the study showed the dominance of female respondents in the SME sector in Accra. From the study, it can be concluded that majority of the firms in the SME sector in Accra are in the age group 50-59 and 40-49 respectively. A fairly majority of the respondents was diploma certificate holders and WASSCE holders respectively. Also, a preponderance (68.2%) of the respondents have been in the SME sector for between 1-5 years. The results of the study revealed that Economic Order Quantity (EOQ), Vendor Managed Inventory (VMI) and ABS analysis are the inventory management practices in the SME industry in Accra.

The study showed a significant positive relationship between inventory management practices and organizational performance as demonstrated by the beta value of .868, translating into 86.8% with the implication that inventory management practices could lead to 86.8% increase in organizational performance. The study can conclude that inventory management practices can induce organizational performance positively

POLICY AND MANAGERIAL IMPLICATIONS

Policy Implications

Small and Medium Enterprises (SMEs) have a strategic importance in developing countries such as Ghana as they contribute to national income, employment, exports, and entrepreneurship development. Therefore, the government and its agencies should provide periodic informal training on inventory management practices to firms in the SMEs industry to enhance their skill in inventory management. Such training is vital since a thriving SME environment could curb not only the high rate of unemployment bedeviling the country but also contribute significantly to national development

Managerial Implications

Management of SMEs should also seek assistance from inventory management experts to enable them deliver effectively and efficiently. This is imperative for profit maximization. Also, the management should whip up members interest and desire in attaining informal education or training for a better appreciation of inventory management nuances

Direction for Future Studies

The study investigates the effects of inventory management practices on performance of small and medium size enterprises in Accra. Only three of the inventory management practices were examined. Future studies could focus on much more practices. Also, the study was quantitative in nature. It will be appreciate for a qualitative study in future as well

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