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Inventory Management Practices and Sustainable Cash Flows of Small Scale Pharmaceutical Enterprises in Eket Urban, Akwa Ibom State, Nigeria

¹ Ukpe Uduak Bernard, ² Usen Paul Umo, ³ Dorathy Christopher Akpan
^{1, 2, 3} Department of Accounting, Akwa Ibom State University, Ikot Akpaden, Nigeria

Corresponding Author: Usen Paul Umo

Abstract

When a high volume of inventory is held in stock, a greater part of the companies' fund is tied down and the company is likely going to face liquidity crises and lack of operating cash flows to sustain the company. The main objective of the study is to examine the effect of inventory management practices on sustainable cash flows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State. The independent variable, inventory management practices was proxied by inventory holding period, inventory turnover, vendor managed inventory, economic order quantity and inventory intensity, while the dependent variable, was proxied by operating cash flows. The research design adopted for this study is survey design and primary data used were derived using the study self-constructed 5-point Likert questionnaire. The population of the study is 77 staff of the 20 pharmacies in Eket Urban. Judgmental sampling technique was adopted to select a sample of 66 staff consisting of the accountants, managers and store personnel of the pharmacies. The hypotheses of the study were tested using pool ordinary least square regression

analysis and the statistical package employed was SPSS version 21. The result of the analysis revealed that inventory holding period $\{-0.414(0.001)\}$ has a significant effect on operating cashflows; inventory turnover $\{0.347(0.005)\}$ has a significant positive effect on operating cashflows; economic order quantity $\{0.377(0.038)\}$ has a significant positive effect on operating cashflows; vendor managed inventory $\{-0.116(0.094)\}$ has a nonsignificant effect on operating cashflows; inventory intensity $\{0.192(0.059)\}$ has a nonsignificant positive effect on operating cashflows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria. The study was concluded that effective inventory management can enhance sustainable cashflows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria. Based on the findings of this study, it was recommended among others that management of pharmacies in Eket should adopt efficient inventory management strategies, such as just-in-time (JIT) systems, to reduce the inventory holding period and inventory intensity.

Keywords: Inventory Management Practices, Inventory Holding Period, Inventory Turnover, Vendor Managed Inventory, Economic Order Quantity, Inventory Intensity, Sustainable Cash Flows, Operating Cash Flows

1. Introduction

This section presents a general idea of the research work carried out with particular discussion on the background of the study, statement of the problem, objectives of the study and research hypotheses.

1.1 Background of the Study

Inventory management constitute one of the critical aspects of business operations that directly impact on a company's cash flows, profitability, and overall financial health (Skiptoa *et al.*, 2023) ^[74]. Efficient inventory management practices are essential for maintaining sustainable cash flows and ensuring long-term success in today's competitive business environment. Managing inventory effectively involves balancing the costs associated with holding inventory against the benefits of having adequate stock levels to meet customer demand. Inefficient inventory management can lead to excess inventory, tying up working capital, increasing storage costs, and risking obsolescence (Agu, 2024) ^[2]. On the other hand, inadequate inventory levels can result in stockouts, lost sales opportunities, and customer dissatisfaction. The right stock should be available in the right place and in the right quantity, acquired at the lowest price possible. Stock-outs mostly occur when there is demand in the market and there is little stock for fast selling items, which would lead to lost sales and customer loyalty (Tanveer *et al.*, 2020).

Since inventory control is necessary for a business to run successfully, it is a crucial corporate function. This is mostly because inventories do affect an organization's day-to-day operations greatly. According to Wanjira and Njagiru (2018) ^[85], a successful inventory management system aims to decouple production components, safeguard against stock outs, meet projected demand, smooth production requirements, hedge against price increases, take advantage of quantity discounts, and permit operations. While excess inventory incurs additional costs that may lower the company's profits, inadequate inventory has the potential to negatively impact the seamless operation of the business (Panigrahi, 2022) ^[59]. Long-term storage of excess stock is undesirable due to the fact that high inventory levels raise carrying costs, and as inventory rises, profitability falls (Priyanka & Hemant, 2020) ^[61]. Thus, having an appropriate inventory control strategy in place will help guarantee that businesses always maintain the right amount of assets.

Inventory management practices refer to the methods, techniques, and strategies used to manage and control inventory levels, including the planning, organizing, and controlling of inventory (Nyabwanga & Ojera, 2021) ^[51]. Inventory management practices involve the use of inventory holding period, inventory turnover and inventory intensity techniques (Kolawole *et al.*, 2020). Inventory holding periods reflects the average number of days of stock held by a firm. Inventory Turnover is a financial ratio that measures how efficiently a company manages its inventory by indicating how many times inventory is sold and replaced over a specific period, typically a year. Vendor Managed Inventory (VMI) is a supply chain management strategy where the vendor or supplier takes responsibility for managing and replenishing a customer's inventory based on agreed-upon stock levels and performance metrics. The Economic Order Quantity (EOQ) is a fundamental concept within inventory management that helps organizations determine the optimal order quantity that minimizes total inventory costs. Inventory intensity refers to the proportion of a company's total assets that are tied up in inventory. It is a measure of how much of a company's resources are devoted to holding and managing inventory.

Sustainable cash flows is the monetary achievement attained by a company as a result of sound financial management that would lead to improved sales, profit margin, return on equity, return on capital employed and shareholders value added. It is the most important indicator of business growth because it demonstrates the companies' capacity to increase income levels. Poor inventory management practices (such as excessive stockpiling or inadequate inventory control), can adversely impact on sustainable cash flows by tying up resources in unsold inventory, increasing holding costs, and leading to potential obsolescence or wastage (Priyanka & Hemant, 2020) ^[61]. Conversely, efficient inventory management can enhance sustainable cash flows by optimizing stock levels, reducing waste, and ensuring timely replenishment to meet customer demand without unnecessary financial strain.

Inventories, which are among working capital factors and have the smallest amount of liquidity, have an important effect on the sustainable cash flows of enterprises. Efficient inventory management can lead to cost savings, improved cash flow, and increased profitability, while poor practices can result in significant financial losses. Effective inventory turnover ensures that cash is not unnecessarily locked in

unsold stock, allowing businesses to maintain a healthy and consistent cash flow which leads to sustainable cash flows. This sustainability is critical for meeting financial commitments, seizing growth opportunities, and maintaining operational efficiency. Efficient inventory management aligns stock levels with demand, reducing overstocking and the risk of obsolescence (Cabungcal *et al.*, 2023) ^[18]. This limits write-offs and preserves cash that would otherwise be lost in unsold or wasted goods. Good cash flows from high turnover enhances the company's ability to pay suppliers promptly, potentially leading to discounts or better terms. This further reduces costs and support sustainable cash flow (Mansoori & Muhammad, 2022) ^[42]. Given the significant impact of inventory management on cash flow profitability and sustainability, it is imperative for businesses to optimize their inventory practices.

1.2 Statement of the Problem

Effective inventory management allows an organization to meet or exceed customer expectations by creating stocks of each product that maximize cash flows. Corporate policy that promotes efficient inventory management is the first component of successful inventory management. However, maintaining a balance between inventory supply and demand has proven to be difficult in inventory management. In an ideal world, a company would want to have enough inventory to meet customers' demands in the event of stock-outs. However, because carrying inventory is expensive, the company does not want to have an excessive amount of inventory on hand. When a high volume of inventory is held in stock, a greater part of the companies' fund is tie down and the company is likely going to face liquidity crises and lack of sustainable cash flows to service the operations of the company which ultimately hinders sustainable cash flows.

Empirical studies reviewed showed that related studies have been carried out in this area. But it is observed that most of the studies focused on listed companies particularly in the manufacturing trading firms (Joseph *et al.*, 2023; Akintola, 2023) ^[33, 3]. Moreso, other studies in inventory management were done outside Akwa Ibom state of Nigeria and small scale pharmaceutical enterprises in Eket were not given priority. Moreso, there was no consensus on the effect of inventory management on sustainable cash flows because of varying findings. This study went a bit further to ascertain whether non listed companies such as pharmaceutical stores located in Eket, Akwa Ibom State also practice inventory management and to ascertain whether it affect their sustainable cash flows. Thus, it was based on these gaps, that this study was carried out to ascertain the effect of inventory management practices on sustainable cash flows of small scale pharmaceutical enterprises located in Eket Local Government Area, Akwa Ibom State Nigeria.

1.3 Objectives of the study

The main objective of the study was to examine the effect of inventory management practices on sustainable cash flows of small scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria. The specific objectives of the study included the following:

1. To examine the effect of inventory holding period on operating cash flows of small scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State, Nigeria.
2. To ascertain the effect of inventory turnover on

- operating cash flows of small scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State, Nigeria.
3. To Examine the effect of Vendor Managed Inventory (VMI) strategy on operating cash flows of small scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State, Nigeria.
 4. To ascertain the effect of Economic Order Quantity (EOQ) strategy on operating cash flows of small scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State, Nigeria.
 5. To determine the effect of inventory intensity on operating cash flows of small scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State, Nigeria.

1.4 Research hypotheses

The following hypotheses were formulated for the study;

Ho₁: Inventory holding period does not have any significant effect on operating cash flows of small scale pharmaceutical enterprises.

Ho₂: Inventory turnover does not have any significant effect on operating cash flows of small scale pharmaceutical enterprises.

Ho₃: Economic Order Quantity does not have any significant effect on operating cash flows of small scale pharmaceutical enterprises.

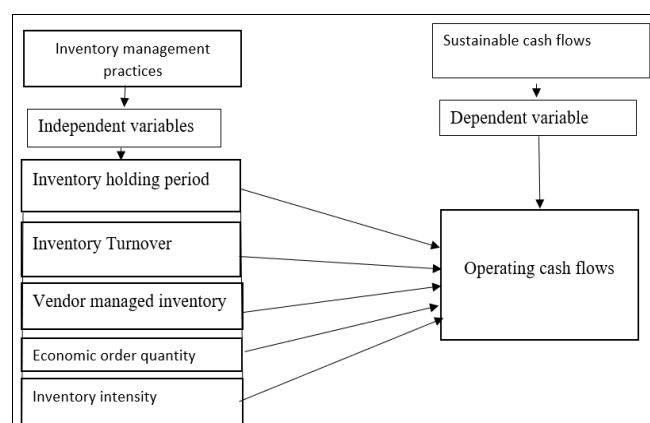
Ho₄: Vendor managed inventory does not have any significant effect on operating cash flows of small scale pharmaceutical enterprises.

Ho₅: Inventory intensity does not have any significant effect on operating cash flows of small scale pharmaceutical enterprises.

2. Review of Related Literature

2.1 Conceptual Framework

The variables of this study and their inter-relationship are presented in this section. These variables are inventory management practices (inventory holdings period, inventory turnover, vendor managed inventory, economic order quantity and inventory intensity) and sustainable cash flows (operating cash flows). It was estimated that sustainable cash flows is a function of inventory management practices. This is depicted in the diagram below;



Source: Author's conceptualization (2025)

Fig 2.1: Model of variables and their inter-relationships

2.1.1 Inventory management practices

Inventory management practices refer to the methods, techniques, and strategies used to manage and control inventory levels, including the planning, organizing, and

controlling of inventory. These practices aim to balance the need to maintain sufficient inventory levels to meet customer demand with the need to minimize inventory holding costs and reduce waste. Joseph *et al.* (2023) ^[33] defined inventories as assets held for sale in the ordinary course of business; in the process of production for such sale; or in the form of materials or supplies to be consumed in the production process or in the rendering of services. Inventory Management encompasses all operations management functions from purchasing of raw materials through the production processes to the final delivery of the end products (Cabungcal *et al.* 2023) ^[18]. It deals with the overseeing and controlling of the ordering, storage and use of components that a company will use in the production of the items it will sell as well as the overseeing and controlling of quantities of finished products for sale. According to Panigrahi (2022) ^[59], effective management of inventory provides an important competitive power to companies. Inventory Management is a tool to optimize performance in meeting customer service requirements at the same time adding to profitability by minimizing costs and making the best use of available resources (Agu, 2024) ^[2].

Several decades ago, inventories of raw materials, work-in-progress components and finished goods were kept as high as possible against the possibility of running out of materials in stock (Salawati *et al.* 2012) ^[69]. However, keeping large inventories tied down resources and generates hidden costs (Salawati *et al.*, 2012) ^[69]. Likewise, too much inventory consumes physical space, creates a financial burden, and increases the possibility of damage, spoilage and loss (Nyabwanga & Ojera, 2021) ^[51]. Inventory management is essentially about verifying the size and situation of stocked goods, and it is vital within various areas within an office or organization in order to secure the ordinary and organized course of creation, compared to the irregular yet troubling influence of running out of materials or goods. Powerful inventory management determines how the advantage of an organization can be augmented. The expansion of benefits relies upon limiting expenses and amplifying income.

2.1.2 Components of inventory management

The components of inventory include holding period, turnover, vendor managed inventory, economic order quantity and inventory intensity.

2.1.2.1 Inventory holding period

The inventory holding period, also known as the average inventory days, refers to the amount of time it takes for a company to sell its entire inventory. Inventory holding periods reflects the average number of days of stock held by a firm. According to Mohamad and Saad (2020) ^[45] longer storage times represent a greater investment in inventory for a particular level of operations. Inventory includes raw materials, work in progress, finished goods or goods purchased for resale. Company success is partly depending on how effective the management manages their inventory (Tanveer *et al.*, 2020) Many companies, particularly pharmaceutical companies, might hold large amount of inventory. They usually hold inventory so that they can meet customers' demand as soon as it arises. If a company has a longer inventory holding period, it means that the inventory is tied up in the shelves for an extended period before being sold. Long inventory holding periods tie up working capital in inventory, reducing the availability of cash for other operational needs. Holding onto inventory for an extended

period increases the risk of obsolescence, spoilage, or damage, which can lead to write-offs and further strain cash flow. According to Mansoori and Muhammad (2022) ^[42], the longer the inventory remains unsold, the higher the carrying costs associated with storage, insurance, and depreciation, putting additional pressure on cash flow. Conversely, a shorter inventory holding period indicates that inventory is being sold more quickly, leading to faster turnover and cash conversion cycle. Napompech (2022) ^[49] noted that shorter inventory holding periods improve cash flow by freeing up working capital, allowing the company to invest in growth opportunities, pay down debt, or meet other financial obligations. Reduced inventory holding periods minimize the risk of inventory obsolescence and ensure that inventory levels are aligned with customer demand, optimizing cash flow efficiency.

Thus, managing the inventory holding period effectively is essential for optimizing cash flow within a business. By monitoring and controlling the inventory holding period through efficient inventory management practices, companies can strike a balance between maintaining adequate inventory levels to meet customer demand and minimizing the negative impact of excess inventory on cash flow. Keeping the inventory turnover rate healthy and aligning inventory levels with sales cycles can contribute to improved liquidity, sustainable cash flows, and sustainable growth.

2.1.2.2 Inventory turnover

Inventory Turnover is a financial ratio that measures how efficiently a company manages its inventory by indicating how many times inventory is sold and replaced over a specific period, typically a year. According to Etale and Sawyerr (2020), a high inventory turnover indicates efficient inventory management, where the company quickly sells products and minimizes holding costs. A high turnover ensures inventory is not sitting idle, reducing the risk of stock becoming outdated or obsolete. Indicates strong sales or effective inventory management but may also point to insufficient stock leading to potential stockouts. On the other hand, low inventory turnover suggests overstocking, weak sales, or inefficiencies in inventory management, leading to higher costs and potential losses. By monitoring and optimizing inventory turnover, companies can enhance their overall operational effectiveness and sustainable cash flows (Akintola, 2023) ^[3].

According to Ashok (2013) ^[9], any company's ability to succeed and expand depends on having an adequate and timely flow of inventory. Any company's operating efficiency and liquidity can also be evaluated with inventory. Inventory turnover, which is a measurement of how frequently stock or inventory is replaced annually, can be used to test inventory applications. All types of inventories constitute a significant portion of capital, and a company's ability to manage its inventory effectively determines whether it will succeed or fail because doing so not only helps to address the liquidity issue but also boosts profitability (Panigrahi, 2022) ^[59]. Salla (2013) ^[68] contends that managerial and technological resources play a critical role in inventory management success. According to Ashok (2013) ^[9], keeping inventory creates a connection between sales and production. Ashok (2013) ^[9] found an inverse relationship between profitability and inventory conversion period using a sample of 20 major cement companies in India. Anuo (2014) ^[8] found in another study that a firm's

financial structure, as demonstrated by its cash, trade credit policy, and leverage, has a major impact on the accumulation of inventory, suggesting that a firm's financial strength influences the growth of its inventory. The risks associated with having too many inventories include increased stockholding costs, which can lower a company's profitability, and operational disruptions from having too few inventories (Atrill, 2021).

2.1.2.3 Vendor Managed Inventory (VIM)

Vendor Managed Inventory (VMI) is a supply chain management strategy where the vendor or supplier takes responsibility for managing and replenishing a customer's inventory based on agreed-upon stock levels and performance metrics. In VMI arrangements, the vendor monitors the customer's inventory levels, sales data, and consumption patterns to proactively replenish products or supplies, ensuring that the customer always has the right amount of inventory on hand. According to Tella (2023) ^[79], Vendor Managed Inventory (VMI) is an inventory management strategy where a supplier (vendor) takes on the responsibility of managing and replenishing the inventory of their products at a customer's (buyer's) location. Instead of the buyer placing purchase orders, the vendor monitors the customer's sales and inventory data (often in real-time) and proactively decides when and how much to replenish (Althaqafi, 2020).

A crucial element of VMI is the real-time or regular sharing of inventory, sales, and often demand forecast data from the buyer to the supplier. This is typically done through electronic data interchange (EDI) or other integrated systems. This seems to contradict the principle of pull scheduling, since the previous process (production) deciding how much and when it will be sent to the store/retailer. Within the VMI, suppliers have to monitor sales and inventory, then information will be generated when the procurement is done (Liu *et al.*, 2020) ^[39]. The implementation of VMI in the supply chain simplifies the steps that occur when the purchase information made by the last consumer can be accessed directly by the distributor / supplier. Thus, the feedback to determine the speed of the flow of goods can be known. By applying VMI, the sales information at stores/retailers to suppliers, can be simplified, so that information can be immediately known (Maina & Were, 2024) ^[41]. Ukpe *et al.* (2021) ^[82] noted that VMI offers several benefits for both vendors and customers. For vendors, VMI can lead to better demand forecasting, improved production planning, reduced stockouts, increased sales, and enhanced customer satisfaction. For customers, VMI can result in lower inventory carrying costs, reduced stock obsolescence, enhanced product availability, streamlined ordering processes, and closer collaboration with suppliers. By leveraging data sharing, performance metrics, and technology, VMI can help improve inventory management, supply chain efficiency, customer service, and overall business performance for both vendors and customers.

2.1.2.4 Economic Order Quantity

The Economic Order Quantity (EOQ) is a fundamental concept within inventory management that helps organizations determine the optimal order quantity that minimizes total inventory costs. According to Ogbo *et al.* (2021) ^[53], EOQ is used to identify the ideal balance between ordering costs and holding costs, aiming to reduce overall costs associated with maintaining inventory levels.

Inventory management is critical in pharmaceutical stores, due to the perishable nature of some products and regulatory requirements, applying the EOQ model can lead to improved efficiency and profitability. The EOQ model incorporates various factors, including ordering costs, holding costs, and demand patterns, to calculate the optimal quantity to order.

By determining the EOQ, pharmaceutical stores can minimize costs associated with ordering and holding inventory, leading to improved profitability. Ordering costs refer to expenses related to placing and receiving orders, such as transportation costs and administrative expenses. Holding costs, on the other hand, include expenses associated with storing inventory, such as storage space, insurance, and obsolescence. Implementing the EOQ model in companies requires accurate data on demand patterns, ordering costs, and holding costs (Munyaka, 2022) ^[47]. By calculating the EOQ, store managers can make informed decisions on order quantities, order frequency, and inventory levels. This can lead to reduced stock outs, lower carrying costs, and improved cash flow, ultimately impacting profitability.

2.1.2.5 Inventory intensity

Inventory intensity refers to the proportion of a company's total assets that are tied up in inventory. It is a measure of how much of a company's resources are devoted to holding and managing inventory. According to Althaqafi (2020), a higher inventory intensity ratio indicates that a larger proportion of the company's assets are tied up in inventory. Inventory requires significant investment, which could be used for other purposes, such as expanding the business or reducing debt. Inventory intensity serves as a key parameter of inventory management because it provides insights into how effectively a company is managing its inventory levels relative to its sales volume and total assets. Cabungcal *et al.* (2023) ^[18] also noted that a high inventory intensity indicates that a company is tying up a significant amount of capital in inventory relative to its assets, which can lead to increased holding costs, obsolescence risks, and reduced cash flow efficiency. On the other hand, a low inventory intensity suggests that a company is operating with leaner inventory levels, which can lead to lower holding costs, improved cash flow, and better responsiveness to changes in customer demand. However, maintaining excessively low inventory levels may also increase stockouts, lead time issues, and the risk of lost sales.

According to Pluskota *et al.* (2020), inventory intensity is an important metric for companies in industries where inventory management is critical, such as retail, manufacturing, and distribution. By monitoring inventory intensity, companies can identify areas for improvement and optimize their inventory management practices to reduce costs, improve efficiency, and enhance profitability. By monitoring inventory intensity as a parameter of inventory management, businesses can assess the effectiveness of their inventory control strategies, identify opportunities for improvement, and make informed decisions to optimize inventory levels, enhance operational efficiency, and balance inventory investment with revenue generation (Etale & Sawyerr, 2020). Effective inventory management practices, such as implementing just-in-time (JIT) inventory systems, demand forecasting, inventory optimization techniques, and supply chain optimization, can help businesses strike the right balance and achieve optimal

inventory intensity levels to support sustainable growth and profitability.

Inventory intensity varies across industries. For example, retail and manufacturing typically have higher intensity due to the need for large inventory, while service-oriented businesses have lower intensity. Comparing a company's ratio with industry benchmarks helps assess competitiveness and operational effectiveness.

2.1.3 Sustainable cash flows

Sustainable cash flows refer to a company's ability to generate consistent and stable cash flows over time without depleting resources or compromising financial health. This concept is crucial in finance and accounting, enabling investors and analysts to evaluate a company's long-term value creation. Ross *et al.* (2019) ^[66] defined sustainable cash flows as maintainable over time without eroding the company's asset base. Investors and analysts use this concept to evaluate financial performance and prospects. Sustainable cash flows stem from operational cash generation rather than external financing or asset sales.

According to Brealey *et al.* (2017) ^[17], sustainable cash flows are linked to profitability, asset efficiency, and financial leverage. Companies with sustainable cash flows tend to have higher stock prices and lower bankruptcy risk. This cushion against unexpected expenses, debt obligations and revenue shortfalls enable investments in growth opportunities, dividend payments and share repurchase. Brealey *et al.* (2017) ^[17] emphasize analyzing cash flows to assess financial health. They argue companies should prioritize investments generating sustainable cash flows over short-term gains for long-term financial stability and shareholder value.

A company's ability to generate sustainable cash flows determines its value, as noted by Cabungcal *et al.* (2023) ^[18]. Sustainable cash flows provide a foundation for investment, growth and shareholder returns. When evaluating sustainable cash flows, analysts consider profitability, working capital management, capital expenditures and debt servicing. Daniela *et al.* (2020) ^[21] stated operating efficiency, asset utilization and financing decisions influence this ability. Analyzing these factors helps assess a company's capacity for stable long-term cash flows.

2.1.3.1 Operating cash flow

According to IAS 7, operating cash flow is the cash flow from main revenue generating activities of an entity that is neither investing nor financing activities. Gregory (2015) ^[28] is of the view that cash flow from operating activities demonstrates cash inflows and outflows which arise from revenues and expenses. In this respect, income statement and statement of financial position should be used to identify the amount of cash inflow or outflow. Cash sales and cash collections from trade receivables constitute cash inflows from these activities. On the other hand, Gombola and Ketz (2022) ^[27] stated that cash payments for inventories, operating expenses, taxes, interests and dividends are considered as the cash outflows. In addition, this section is regarded as crucial for companies since it highlights their success in operations and working capital management. Habib (2018) ^[29] is of the view that two methods are available for the determination of cash flows from operating activities. The first method, which is called as the indirect method, expresses net income on cash basis by making adjustments for non-cash items. Nevertheless, the second method or the direct method, considers

comprehensive cash flows by examining accounts related to operating activities.

This component of cash flow involves activities leading to the determination of profit. They are the normal activities arising from the ordinary course of the business of an enterprise and transactions arising therefrom are usually included in the profit and loss account in arriving at operating profit (Daniela *et al.*, 2020) ^[21]. Etale and Sawyerr (2020). noted that successful operations of a company would be met only if the company generates enough cash that meets their daily operations, pay taxes and dividends.

2.1.4 Relationship between inventory management practices and sustainable cash flows

Inventories, which are among working capital factors and have the smallest amount of liquidity, have an important effect on the financial performance of enterprises, especially in terms of cash flows. If a company has a longer inventory holding period, it means that the inventory is tied up in the shelves for an extended period before being sold. Long inventory holding periods tie up working capital in inventory, reducing the availability of cash for other operational needs. According to Joseph *et al.* (2023) ^[33], holding onto inventory for an extended period increases the risk of obsolescence, spoilage, or damage, which can lead to write-offs and further strain cash flow. The longer the inventory remains unsold, the higher the carrying costs associated with storage, insurance, and depreciation, putting additional pressure on cash flow. Conversely, a shorter inventory holding period indicates that inventory is being sold more quickly, leading to faster turnover and cash conversion cycle. - Shorter inventory holding periods improve cash flow by freeing up working capital, allowing the company to invest in growth opportunities, pay down debt, or meet other financial obligations. Reduced inventory holding periods minimize the risk of inventory obsolescence and ensure that inventory levels are aligned with customer demand, optimizing cash flow efficiency (Nyabwanga & Ojera, 2021) ^[51].

Faster inventory turnover can also help improve profitability by reducing carrying costs and increasing sales velocity, ultimately boosting cash flow. Effective inventory turnover directly influences sustainable cash flow by optimizing the cycle of cash tied up in inventory and sales. High inventory intensity can also increase the risk of inventory shrinkage, damage, or theft, leading to additional financial losses. Where a company holds a large amount of inventory relative to its sales, a significant portion of the company's capital is tied up in inventory. This tie-up of capital in excess inventory can lead to reduced cash flow because the funds are not readily available for other purposes such as investments, expansion, debt repayment, or working capital needs. Holding excessive inventory levels increases carrying costs in terms of storage, insurance, depreciation, and obsolescence, further straining cash flow (Joseph *et al.*, 2023) ^[33]. Conversely, low inventory intensity, where a company operates with lean inventory levels in relation to its sales, can positively impact cash flows. Maintaining optimal inventory levels ensures that capital is not unnecessarily tied up in excess inventory, freeing up cash for other operational needs or investments.

2.1.4.1 Inventory turnover and sustainable cash flows

Inventory turnover is a key efficiency ratio that measures how many times a company sells and replaces its inventory over a specific period. Faster inventory turnover can also

help improve profitability by reducing carrying costs and increasing sales velocity, ultimately boosting sustainable cash flows. According to Doutimariye and Genesis (2022) ^[23], effective inventory turnover directly influences sustainable cash flows by optimizing the cycle of cash tied up in inventory and sales. A high turnover indicates that products are selling quickly, converting inventory into cash more rapidly. This frees up working capital that can be reinvested in operations, pay off debts, or pursue growth opportunities. Umenzekwe *et al.* (2021) ^[83] observed that when there is higher inventory turnover the inventory holding will reduce, less time is spent holding inventory, the risks of obsolescence are reduced, these directly boosting profitability. High turnover often signifies strong sales performance and effective demand forecasting. It ensures products remain fresh and relevant, potentially leading to higher sales volumes and better pricing strategies. For products with short shelf lives or rapidly changing trends (e.g., fashion, electronics), high turnover minimizes the risk of being stuck with outdated or unsaleable stock. Also, Slow-moving inventory ties up significant capital, limiting a company's financial flexibility. Joseph *et al.* (2023) ^[33] found that inventory turnover has a positive impact on return on assets of listed manufacturing firms in Nigeria. In addition to this, the study indicated that inventory holding period has a positive significant effect on return on assets of listed manufacturing firms in Nigeria. Doutimariye and Genesis (2022) ^[23] found a negative and insignificant relationship between inventory turnover and profit after tax; Umenzekwe *et al.* (2021) ^[83]; inventory turnover period had a significant negative relationship with return on investments.

2.1.4.2 Inventory Holding Period and Sustainable cash flows

The inventory holding period (also known as "Days Inventory Outstanding" or "Days Sales of Inventory") measures the average number of days a company holds its inventory before selling it. If a company has a longer inventory holding period, it means that the inventory is tied up in the shelves for an extended period before being sold. Long inventory holding periods tie up working capital in inventory, reducing the availability of cash for other operational needs. According to Joseph *et al.* (2023) ^[33], holding onto inventory for an extended period increases the risk of obsolescence, spoilage, or damage, which can lead to write-offs and further strain cash flow. Bah *et al.* (2023) ^[12] opined that the longer the inventory remains unsold, the higher the carrying costs associated with storage, insurance, and depreciation, putting additional pressure on cash flow. Conversely, a shorter inventory holding period indicates that inventory is being sold more quickly, leading to faster turnover and cash conversion cycle. - Shorter inventory holding periods improve cash flow by freeing up working capital, allowing the company to invest in growth opportunities, pay down debt, or meet other financial obligations (Akintola, 2023) ^[3]. Reduced inventory holding periods minimize the risk of inventory obsolescence and ensure that inventory levels are aligned with customer demand, optimizing cash flow efficiency (Nyabwanga & Ojera, 2021) ^[51]. Joseph *et al.* (2023) ^[33] found that inventory holding period has a positive significant effect on return on assets of listed manufacturing firms in Nigeria; Bah *et al.* (2023) ^[12] found a positive significant relationship between inventory holding period and on the Returns on

Assets. Also, Akintola (2023) ^[3] demonstrated that the inventory conversion period (ICP) significantly reduces the return on asset for Nigerian consumer goods companies.

2.1.4.3 Vendor Managed Inventory (VMI) and Sustainable cash flows

Vendor Managed Inventory (VMI) is a supply chain management strategy where the supplier (vendor) is responsible for managing the inventory levels of their customer. Maina and Were (2024) ^[41], noted that VMI can lead to significant cost reductions across the entire supply chain, improved cash flow, reduced bullwhip effect (demand variability amplification), and enhanced profitability for both parties involved. In this inventory management system, Migwi and Kwasira (2024) ^[44] stated that the vendor monitors the customer's inventory and replenishes it as needed, often based on agreed-upon stock levels and forecasts. The customer often holds less safety stock as the vendor is responsible for replenishment, leading to lower storage, insurance, and obsolescence costs. VMI improves inventory accuracy and responsiveness, reducing the likelihood of stockouts and lost sales. With VMI, vendors gain real-time visibility into customer demand, enabling more accurate forecasting and optimized production schedules and this can lead to lower production costs and improved efficiency. Better demand visibility allows for more stable production, avoiding costly rush orders or idle capacity. By ensuring product availability, vendors can improve customer satisfaction and capture more sales. Maina and Were (2024) ^[41] found that that vendor managed inventory have significant effect on performance of retail outlets. Migwi and Kwasira (2024) ^[44] on the other hand established that supplier relationship was significant in determining the success of VMI implementation.

2.1.4.4 Economic Order Quantity (EOQ) and Sustainable cash flows

The Economic Order Quantity (EOQ) is a classic inventory management formula that calculates the optimal order quantity that minimizes the total inventory costs, which include ordering costs (costs associated with placing an order, like administrative fees, transportation) and holding costs (costs associated with storing inventory). According to Ordu (2024) ^[57], the primary benefit of EOQ is its ability to find the sweet spot between ordering too frequently (high ordering costs) and ordering too much (high holding costs). By minimizing these combined costs, James (2024) ^[31] noted that EOQ directly contributes to higher profitability. By ordering the optimal quantity, businesses avoid tying up excessive capital in inventory or incurring unnecessary ordering expenses, thus freeing up cash flow. EOQ provides a structured approach to order scheduling, leading to more predictable and streamlined inventory processes. This reduces the time and resources spent on inventory management. While EOQ primarily focuses on cost minimization, by determining the "just right" order quantity, it helps prevent both the financial burden of excess inventory and the lost sales opportunities from stockouts. Knowing the optimal order quantity allows for better planning and allocation of warehouse space, labor, and other resources. Joseph *et al.* (2023) ^[33] found a positive significant relationship between EOQ strategy and sustainable cash flows of firms. Ordu (2024) ^[57] found that application of economic quantity inventory management strategy has a significant positive effect (Coef. = 0.20; P - value = 0.000) on operating profits.

2.1.4.5 Inventory intensity and sustainable cash flows

Inventory intensity typically refers to the proportion of a company's total assets that are tied up in inventory. High inventory intensity can also increase the risk of inventory shrinkage, damage, or theft, leading to additional financial losses. Where a company holds a large amount of inventory relative to its sales, a significant portion of the company's capital is tied up in inventory. This tie-up of capital in excess inventory can lead to reduced cash flow because the funds are not readily available for other purposes such as investments, expansion, debt repayment, or working capital needs. Holding excessive inventory levels increases carrying costs in terms of storage, insurance, depreciation, and obsolescence, further straining sustainable cash flows (Joseph *et al.*, 2023) ^[33]. Conversely, low inventory intensity, where a company operates with lean inventory levels in relation to its sales, can positively impact cash flows and thus sustainable cash flows.

Conversely, a lower ratio indicates that a smaller portion of assets is locked in inventory, suggesting more efficient use of capital. If a company can generate the same level of sales with less inventory, its profit margins, indicating better overall asset management. Doutimiareye and Genesis (2022) ^[23] found a negative a negative significant relationship between intensity and profit after tax.

2.2 Theoretical framework

This study is supported by liquidity theory, economic order theory and lean theory and these are discussed below;

2.2.1 Liquidity Theory by James Tobin (1953) ^[80]

Liquidity theory, also known as liquidity management theory, focuses on the ability of a company to meet its short-term financial obligations promptly and efficiently (Tobin, 1953) ^[80]. It deals with how firms manage their current assets and liabilities to ensure they have enough cash and liquid resources to cover day-to-day operations and unforeseen expenses. According to Jose (2016), liquidity theory as a function of current assets and current liabilities is an important factor in determining working capital policies and indicates firm's capability of generating cash in case of need. Current ratio, acid-test and cash ratios as traditional measures of liquidity are incompetent because these balance sheet-based measures cannot provide detailed and accurate information about effectiveness of working capital management. Formulas used for calculating these ratios consider both liquid and operating assets in common. Besides, mentioned traditional ratios are also not meaningful in terms of cash flows (Rahman *et al.*, 2021). Daniel and Ambrose (2018) has insisted on using ongoing liquidity measures in working capital management. Ongoing liquidity refers to the inflows and outflows of cash through the firm as the product acquisition, production, sales, payment and collection process takes place over time. As the firm's ongoing liquidity is a function of its cash conversion cycle, it would be more appropriate and accurate to evaluate effectiveness of working capital management by cash conversion cycle, rather than traditional liquidity measures (Skipta *et al.*, 2023).

This study is anchored on this theory because this theory states that liquidity is essential for the smooth functioning of business operations and the ability to seize growth opportunities. A firm with inadequate liquidity may struggle to meet its short-term obligations, leading to financial distress or even insolvency. Conversely, excessive liquidity

can indicate inefficient use of resources that could have been employed more profitably elsewhere. The efficient management of working capital plays a crucial role in determining a company's sustainable cash flows. By maintaining an optimal level of liquidity through effective inventory management practices, firms can improve their ability to generate profits, manage risk, and grow sustainably.

2.2.2 Economic order quantity theory by Harris (1913)

The Economic Order Quantity (EOQ) theory is arguably the most widely used and well-established theory for studying the effectiveness of inventory control systems in enhancing profitability. The EOQ model was first introduced by Ford W. Harris in 1913 and later refined by R. H. Wilson in 1934. The EOQ theory provides a framework for determining the optimal order quantity that minimizes total inventory costs, taking into account factors such as ordering costs, holding costs, and demand patterns. James (2024) ^[31] noted that in EOQ model, some costs (ordering costs) decline with inventory holdings, while others (holding costs) rise and that the total inventory-associated cost curve has a minimum point. According to Shajema (2018) ^[73], the Economic Order Quantity model of inventory management is used to mark the optimum size of delivery and to choose the cheapest deliverer which guarantees minimization of total costs of investments in inventories. Increasing order quantity decreases ordering frequency and costs, but increases average inventory and holding costs. Conversely, decreasing order quantity reduces average inventory, but results in more frequent ordering and higher ordering costs.

The Economic Order Quantity (EOQ) theory is highly relevant to this study as it helps to identify the optimal order quantity that minimizes total inventory costs, which is a crucial factor in achieving profitability. By optimizing the order quantity, businesses can reduce both ordering costs and holding costs, ultimately leading to improved sustainable cash flows. Additionally, the EOQ theory takes into account important factors such as demand patterns, ordering costs, and holding costs, providing a comprehensive framework for decision-making in inventory management. This allows companies to make data-driven decisions regarding their inventory levels, order frequencies, and supplier selection, all of which play a significant role in determining profitability.

2.2.3 Lean theory by Krafcik (1988)

John Krafcik is credited with popularizing the concept of lean production in the Western business world when he introduced the term in 1988, but the foundational principles of lean manufacturing originated from the Toyota Production System developed by Toyota in the 1950s. Lean theory is a management philosophy that focuses on eliminating waste in processes to improve efficiency and maximize value for customers. In the context of inventory control systems, lean principles can be applied to streamline operations, reduce inventory levels, and increase profitability. One key aspect of lean theory is the concept of Just-in-Time (JIT) inventory management. JIT is a system in which inventory levels are kept at a minimum and only replenished when needed, reducing the costs associated with excess inventory storage. By implementing JIT inventory control, companies can minimize waste, improve cash flow, and increase profitability. This theory also emphasizes continuous improvement and kaizen, which involve

identifying and eliminating inefficiencies in processes. By continuously evaluating and optimizing inventory control systems, companies can improve their overall operational efficiency, reduce costs, and ultimately enhance profitability. A study conducted by Raja *et al.* (2019) ^[62] found that implementing lean practices in inventory management resulted in significant improvements in inventory turnover and cost reduction, leading to increased profitability for the organization. Similarly, research by Blackburn *et al.* (2020) ^[15] demonstrated that companies that adopt lean principles in inventory control systems experience higher levels of profitability compared to those that do not.

2.3 Empirical reviews

Inventory management is a very essential aspect of firms' growth and sustainable performance and many researchers have carried out empirical studies on this area both locally and internationally. Some of these studies were reviewed in this section specifically to identify the variables used, methodology employed and the findings made. This enabled is to identify the possible gaps and the areas that needed more researches. Some of these studies are reviewed below; Ogbuji *et al.* (2025) ^[52] examined the relationship between inventory control systems and profitability of Supermarkets in Port Harcourt. Existing literature indicated that inventory control is a determining factor for the success or failure of any firm. The purpose of this study was to bring to fore the importance of inventory control systems on profitability of Supermarkets. This paper adopted a survey method. Forty (40) Supermarkets were studied. A total of 120 copies of the questionnaire were distributed to top, middle and lower managers of the firm. Pearson's Correlation technique was employed to test the hypotheses as contained in the SPSS Version 20.0. The findings of this study indicated that vendor managed inventory, just-in-time and material requirement planning had significant relationship with profitability.

Shajema (2025) ^[71] investigated the effect of inventory control practices on performance of retail chain stores in Nairobi County. The study specifically focused on vendor management inventory system, lean practices, inventory stock taking and strategic supplier management practices. A descriptive survey design was adopted for the study. The focus was on all the 144 retail chain stores in the county as indicated in the Nairobi County Report. Primary data was collected using structured questionnaire presented in Likert scale. The findings revealed a positive and significant effect of vendor management inventory system, lean practices, inventory stock taking and strategic supplier management practices on performance of retail chain stores in Nairobi County, Kenya.

Agu *et al.* (2024) ^[2] examined the relationship between inventory management and profitability of manufacturing companies in Nigeria. The study made use of both primary and secondary data. Primary data for the study was collected through the use of a questionnaire which was administered on employees of sampled companies (Nigerian Breweries, PZ Industries and Innoson Nigeria Limited) with a response rate of 270 out of 285. Secondary data was obtained from annual reports of the sampled companies. They employed descriptive statistics, Pearson's correlation and regression techniques for the analysis of data. The results provided evidence that inventory control significantly affected the

productivity of manufacturing firms.

Ifeanyi *et al.* (2024) ^[30] examined the relationship between working capital and sustainable cash flows. Specifically, forty (40) consumer and industrial goods companies out of the population of fifty-seven (57) for the period of ten (10) years, 2011-2022. Ordinary least squares (OLS) regression method and Pearson Correlation were used for the study. The independent variable was represented by Average Payment Period (APP), Cash Conversion Cycle (CCC), Inventory Conversion Period (ICP) and Average Collection Period (ACP), while the dependent variable was represented by Return on Assets. The findings showed that Cash Conversion Cycle (CCC), Average Payment Period (APP) and Inventory Conversion Period (ICP) showed significant positive impact on Return on Assets (ROA). However, Average Conversion Period (ACP) showed a negative impact on Return on Assets. Also, the control variables adopted in this study (size, growth, leverage and current ratio) have significant impact on sustainable cash flows of firms selected for the study.

Maina and Were (2024) ^[41] studied the influence of vendor managed inventory on performance of retail outlets in Kenya. a case of Tuskys supermarket limited. The main objective of the study was to investigate the influence of vendor managed inventory on performance of retail outlets in Kenya with specific reference to Tuskys supermarkets Limited. The study reviewed relevant design with survey of a total of 400 employees working at Tuskys supermarket headquarters offices situated in Nairobi. The employees were selected from; supply chain management department, focusing on top management, middle level management and junior staff. The study adopted a descriptive research design, with stratified random sampling technique to select a sample size of 80 respondents. Questionnaires were used as the main data collection instruments and a pilot study were conducted to pre-test questionnaires for validity and reliability. Data were analyzed using descriptive statistics and inferential statistics with SPSS Version 23 statistical software. The findings indicated that vendor managed inventory have significant effect on performance of retail outlets.

James (2024) ^[31] determined the effects of inventory control on profitability of industrial and allied firms in Kenya. It was explained by economic order quantity model (EOQ) which is based on minimization of costs between stock holding and stock ordering. Correlational research design was adopted. The study employed both primary data collected through the use of a questionnaire and secondary data through the use of a record survey sheet. The results of the analysis indicated that the correlation coefficient between inventory control practices and profitability was 0.601 at 0.01 significant level. This implies there is a positive and significant relationship between inventory control practices and profitability of industrial and firms. R2 value was 0.361 which means that 36.1% of the corresponding variation in profitability can be explained by change in inventory control practices. The rest 63.9% can be explained by other factors that are not in the model. The ANOVA results on inventory control practices and profitability had an F-value of 48.909 which was significant with a P- value = 0.000 meaning that the overall model was significant in the prediction of profitability in industrial and allied firms in Kenya.

Migwi and Kwasira (2024) ^[44] studied the success factors for the implementation of vendor managed inventory systems in retail supermarkets in Nakuru Town, Kenya. The target population was employees of procurement departments of ten retail supermarkets in Nakuru town. A census of all the procurement employees in the retail supermarkets was undertaken. The study utilized descriptive design. Data was collected using structured questionnaires and analyzed using both descriptive (measures of central tendencies) and inferential statistical techniques (Pearson correlation). Analysis was done using Statistical Package for Social Sciences (SPSS) version 24. The study established that supplier relationship was significant in determining the success of VMI implementation.

Ubabudu *et al.* (2024) ^[81] assessed the effectiveness of inventory management on the profitability of manufacturing sectors in Nigeria Bottling Company, Kaduna. The study is quantitative and utilizes both primary and secondary data. A survey instrument was developed to collect primary data from a sample of 100 managers and employees within the Nigeria Bottling Company, Kaduna. Additionally, secondary data was collected from annual reports and financial statements of the company. The primary data collected was analyzed using statistical techniques such as descriptive statistics and regression analysis, while the secondary data was analyzed using content analysis. This mixed-method approach allowed for a comprehensive examination of the effectiveness of inventory management on the profitability of the manufacturing sectors in the Nigeria Bottling Company, Kaduna. From the result of data analysis, the hypothesis there is a positive relationship between inventory management and prompt delivery in manufacturing sectors (Nigerian Bottling Company) Kaduna, was rejected and the alternate was accepted.

Ordu (2024) ^[57] explored EOQ in a just in time (world) and analyse the impact of EOQ on operating profit. Big manufacturing companies – as well as other companies, do not stand a chance in today's environment if they do not have an appropriate inventory control model intact. The Economic Order Quantity (EOQ) and Just in Time (JIT) have been used for many years, but yet some companies have not taken advantage of it. The research design adopted for this study was the ex post facto research and secondary data were employed. The population of this study was 13 listed manufacturing companies in Malaysia and purposive sampling technique was employed to select 11 manufacturing companies. The method of data analysis employed was the panel least squares regression analysis and the statistical package employed was E views version 10. The result of the analysis revealed that the application of economic quantity inventory management strategy has a significant positive effect (Coef. = 0.20; P -value = 0.000) on operating profits of these company and also the use of just in time operating profits of these companies too.

Wanzala and Lawrence (2024) ^[86] investigated the impact of working capital management on the sustainable cash flows of these firms, particularly those listed on the Nairobi Securities Exchange (NSE), from 2003 to 2022. Working capital management was measured using the average age of inventory, average collection period, average payment period, and cash conversion cycle, whereas sustainable cash flows was measured using return on asset, return on equity, and net operating profit margin. Using panel regression

analysis, the results showed that the average inventory age, average collection period, average payment period, and cash conversion cycle were all negatively related to sustainable cash flows for NSE-listed commercial and service firms. Based on the findings, it was recommended that Kenyan commercial and service firms adopt prudent optimal working capital management practices to improve firm sustainable cash flows and maximize shareholder wealth.

Oluwagbemiga *et al.* (2024) ^[55] investigated the relationship that exists between Lean production and supply chain innovation in baked foods supplier to improve performance using data from 40 manufacturing companies listed on the Nigerian stock exchange during the period from 2013 to 2022. The study relied on secondary data extracted from the audited financial statements of the selected companies. Inventory management, budgetary control and cash management, production overhead cost, and administrative overhead cost were taken as independent cost management variables, while profitability (operating profit) was taken as a dependent variable representing the firm's performance. The result indicates that a positive, significant relationship exists between cost management practices and the firm's performance in the manufacturing organization.

Joseph *et al.* (2023) ^[33] examined the effect of inventory management on the sustainable cash flows of selected manufacturing firms in Nigeria. The ex-post facto design was adopted in this study. 56 listed manufacturing firms in the Nigerian Stock Market were selected as the population of the study. Eleven (11) companies were selected using a purposive sampling method. Multiple Ordinary Least Square regression technique, specifically the panel regression model was applied in testing the hypotheses of the study. Firstly, the study revealed that cash conversion cycle has a negative significant effect on return on assets of listed manufacturing firms in Nigeria. The second hypothesis tested showed that account inventory turnover has a positive impact on return on assets of listed manufacturing firms in Nigeria. In addition to this, the study indicated that inventory holding period has a positive significant effect on return on assets of listed manufacturing firms in Nigeria.

Bah *et al.* (2023) ^[12] examined the impact of inventory management on the profitability of a manufacturing company. A case study research design was applied on the inventory system of a reputable manufacturing company. The secondary data employed in this study was collected from the financial statement the company for the period 2015-2020, in which the data were analysed using the Multiple linear regression model. The result shows that Raw Material Cost and Storage Cost are having negative and insignificant relationship on the profitability of a manufacturing company. On the other hand, Inventory Conversion Period had a positive and significant relationship on the Returns on Assets.

Cabungcal *et al.* (2023) ^[18] investigated the impact of inventory management on the operational efficiency and sustainable cash flows of micro, small, and medium enterprises (MSMEs) in Santiago City. A correlational descriptive cross-sectional survey design was utilized on a sample of randomly selected 314 participants belonging to the merchandising MSMEs from Santiago City. Primary data was collected using self-administered questionnaires analyzed using frequency and percentage, mean and standard deviation, and linear regression. The results showed that MSMEs are efficient in inventory management,

operation and have good sustainable cash flows. It further suggests a strong positive relationship between inventory management and operational efficiency and a moderate positive relationship between inventory management and sustainable cash flows.

Akintola (2023) ^[3] investigated the impact of inventory management and operating cash flow on sustainable cash flows of consumer goods companies in Nigeria. Return on asset was used as the dependent variable in this study to measure sustainable cash flows, and inventory conversion period and inventory holding cost were used as the independent variables to measure inventory management. Ex-post factor research approach was used in the study since secondary data were used. All twenty-one (21) consumer goods companies that are listed on the Nigerian stock exchange are the study's targeted demographic. Out of the entire population of 21 consumer goods firms throughout a five-year period (2018–2022), ten (10) consumer goods firms are included in the sample size for this study. The annual reports of the chosen Nigerian consumer goods corporations provided secondary data. Using the E-views version 10 software, Panel Least Squares Regression Analysis was used to evaluate the acquired data. The study's findings demonstrated that the inventory conversion period (ICP) significantly reduces the return on asset for Nigerian consumer goods companies. The study also demonstrated that the cost of keeping inventory has a small but favourable impact on the return on assets of Nigerian consumer products companies.

Seyed and Hariprasad (2023) ^[72], identify the considerations for adapting Value Stream Mapping in a product development environment and provide a "best practice" approach for VSM. The findings from a literature review and interviews were tested during a case study at Renault Trucks. According to this study, identifying key specific objectives, choosing the suitable scope and project, and noticing the information and output uncertainties are the main subjects that should be considered during the application of VSM in the product development area. Based on the findings, a step-by-step procedure is provided that helps organizations apply VSM in a product development environment.

Lewis and Onyinyechi (2023) ^[38] determined the impact of inventory management on the profitability of two (2) industrial goods firms listed on the Nigerian Stock Exchange. The independent variable (Inventory Management) was measured using opening inventory, closing inventory and average inventory. The dependent variable (Firm Profitability) was measured using Profit After Tax gathered for the study for a period of 5 years (2015-2019), was analysed using descriptive statistics, correlation analysis and ordinary least square method. The results of the study showed that inventory management had a significant effect on Profit After Tax.

Tella (2023) ^[79] investigated the impact of inventory cost management on the profitability of manufacturing firms in Nigeria. The study made use of secondary data sourced from the annual report of sampled firms. Data collated were analyzed using both descriptive and inferential statistical method of analyses. It was discovered in the study that raw materials exert insignificant positive impact on profit after tax ($\beta = 7.912884$, $P = 0.354$), that finished goods exert significant positive impact on profit after tax ($\beta = 34.81571$, $P = 0.000$), also that work in progress exert insignificant

negative impact on profit after tax ($\beta = -24.62591$, $P = 0.506$). Based on the results, the study thus concluded that the connection between inventory cost and profitability of manufacturing firms varies depending on the subset of inventory cost focused on, which much significant accorded to the dominance of finished goods inventory.

Lyndon and paymaster (2022) ^[40] examined the effect of inventory cost management on the profitability of listed brewery companies in Nigeria. Inventory cost management proxy by raw material cost, work-in progress cost and finished goods cost was regressed against profitability proxy by gross profit margin. Secondary time series data was collected from the annual reports and accounts of selected brewery companies from the NSE from 2005 to 2014. A multiple regression technique was used to analyse the data obtained from NSE. The study revealed that work-in-progress has positive influence on the profitability of brewery companies in Nigeria. The study is characterised with limited empirical review; it did not take inventory turnover as one its independent variable which this current study looked at.

Ekakitie *et al.* (2022) ^[24] studied the optimization of profit through inventory control practices of firms. Four inventory control practices formed the objectives with two hypotheses raised to guide the study. The study was empirically analysed. The findings revealed a positive significant relationship between the objectives, Just-In-Time, Material Requirement Planning (MRP), Economic Order Quantity and safety stock on profit maximization.

Doutimiareye and Genesis (2022) ^[23] investigated the relationship between inventory management techniques and sustainable cash flows of listed Oil and Gas Companies in Nigeria. The Researcher used ex-post facto research design. Targeted population comprised of ten listed Oil and Gas Companies in Nigeria which were sampled to eight (8) using purposive sampling technique. Secondary data were used and it was sourced from annual reports and statement of accounts of the selected companies between 2013 and 2020. Descriptive statistics, correlation analysis and ordinary least square regression were employed with the aid of Microsoft Excel, SPSS 25 and E-View 10. The result of the study showed that there is a negative and insignificant relationship between inventory turnover and profit after tax; negative and insignificant relationship between operating cycle and profit after tax; negative and insignificant between inventory conversion period and profit after tax; negative significant relationship between intensity and profit after tax.

Nahid *et al.* (2022) examined how the development of working capital management influences on profitability and liquidity as two important factors of sustainable cash flows of companies in Kenya. This paper was an analytical - descriptive research that reviews the existing literature in this field and classifies them into two groups including the impact of working capital strategies on the performance and the other one was the impact of working capital indicators on the performance. This survey investigated the relationship between working capital strategies and working capital indicators with the performance of organization. The survey result showed that the impact of working capital strategies and indicators on profitability and liquidity considered simultaneously in development of working capital management.

Jibrin and Ine-Tonbarapa (2022) ^[34] examined lean accounting practices and sustainable cash flows of listed

consumer food products manufacturing companies in Nigeria. The target population for the study is nine (9) listed consumer food products manufacturing companies on the floor of the Nigerian Stock Exchange (NSE) as at 31 August 2021. The unit of respondent of the study were three hundred and thirty-six (336) knowledgeable and competent staff within the production, marketing and finance departments of the nine (9) listed consumer goods manufacturing companies. The sample size was therefore determined by using the Taro-Yame sampling techniques to be 183. The instrument of the study is triangulation (primary data and secondary data). The formulated research questions were analyzed with descriptive statistics. The hypotheses were tested using the multiple regression analysis with the aid of E-view (10). The findings of the study were that: there is significant relationship between just-in-time costing (JITC) and return on equity (ROE) of listed consumer food products manufacturing companies in Nigeria. Meanwhile, there is an insignificant relationship between value stream mapping (VSMC) and return on equity (ROE) of listed consumer food products manufacturing companies in Nigeria. And There is significant influence of the firm size on the relationship between lean accounting practices and sustainable cash flows of listed consumer food products manufacturing companies in Nigeria.

Eneje *et al.* (2022) investigated the effects of raw materials inventory management on the profitability of brewery firms in Nigeria using a cross-sectional data from 1989 to 2008 which was gathered for the analysis from the annual reports of the sampled brewery firms. Measures of profitability were examined and related to proxies for raw materials inventory management by brewers. The OLS stated in the form of a multiple regression model was applied in the analysis. The study revealed that raw materials inventory management designed to capture the effect of efficient management of raw materials inventory by a company on its profitability is significantly strong and positive and influences the profitability of the brewery firms in Nigeria. The study concluded that efficient management of raw material inventory is a major factor to be contained with by Nigerian brewers in enhancing or boosting their profitability.

Karanja *et al.* (2022) ^[36] also conducted a study on adoption of modern management accounting techniques in small and medium (SMEs) in developing countries: A case study of SMEs in Kenya. Their study shows that modern costing techniques such as target costing, Activity based costing (ABC), Just in Time method (JIT) as well as other non-conventional methods were adopted as an attempt to enhance enterprise efficiency and innovation for better planning and improved product/service pricing. The findings showed that SMEs in Kenya have intuitively adopted varying management accounting techniques. From the sample, the majority of SMEs are faced with constraints on capital management.

Bouadam and Maiza (2022) ^[16] aimed to test the relationship between working capital management and the profitability of Algerian small and medium enterprises in the province (wilaya) of Sétif. The research design adopted for the study was ex post facto. A secondary panel dataset ranging from 2009 to 2020 for 68 listed manufacturing companies was obtained from the Bloomberg portal. The Ordinary Least Square method was used to test the formulated hypotheses. The validity of the hypotheses was tested

according to the panel data model. Statistically significant results were reached between the variables, as there is a direct relationship between inventory management and the rate of return on assets (ROA).

Radzuan (2022) did a study on inventory management practices and its effects on vendor managed inventory performance. This study tried to shed the lights on the effects of inventory management practices, which include visibility of demand, replenishment decision, inventory ownership, inventory location, and inventory control limits on VMI performance. Quantitative methodology was chosen as the method to gather the data where those manufacturing companies being selected according to the list from the Federation of Malaysian Manufacturer (FMM). The data were gathered from 101 manufacturing companies whose manufacturing based located in Malaysia. Data analysis was conducted by employing descriptive analysis, factor analysis, reliability analysis, and a simple multiple regression. The findings showed that visibility of demand and inventory control limits were the main predictor of service performance. Meanwhile, only inventory location contributed to cost performance of VMI.

Ogbo *et al.* (2021) ^[53] studied the relationship between effective system of inventory management and organization performance in the seven-up bottling company, Nile Mile Enugu. A total of eighty-three respondent constitutes the sample for the study. Four research questions and Four hypotheses were generated and tested at 10% (that is 0.10) significant level using descriptive statistics and non-parametric test (chi-square that is, $F\hat{6}$). The result of the analysis showed that flexibility in inventory control management is an important approach to achieving organizational performance. The study also found that there is a relationship between operational feasibility, utility of inventory control management in the customer related issues of the organization and cost effectiveness technique are implemented to enhance the return on investment in the organization.

Umenzekwe *et al.* (2021) ^[83] carried out a study to determine the relationship between components of working capital and sustainable cash flows of selected Nigerian manufacturing firms. The ex-post facto research design was adopted and six companies were purposively selected for the period 2013-2020. Data was collected from the annual reports and accounts of the sampled companies and tested by means of fixed and random effects panel data estimation tool. Findings indicated that average payment period had a significant positive relationship with return on investments, while inventory turnover period had a significant negative relationship with return on investments. Also, average collection period had a significant negative relationship with return on investments. Given the findings, it was concluded that working capital management significantly influence sustainable cash flows of manufacturing companies. The study therefore recommended that manufacturing companies should ensure optimal mix of working capital proxies in order to optimize sustainable cash flows.

Ukpe *et al.* (2021) ^[82] examined the effect of inventory control techniques on the profitability of manufacturing firms in Nigeria with a special focus on Champion Breweries Plc. Uyo, Akwa Ibom State, Nigeria. A survey research design was adopted in which thirty-eight (38) workers of Champions Breweries Plc were administered questionnaires to collect data for the study. Secondary data

was obtained from the annual reports and accounts of the company for the period 2012 to 2016. Three research hypotheses were tested using descriptive statistics of percentage and t-test at a significance level of 5%. Data analysis reveals that Champion Breweries Plc has a high component of its inventory in engineering spares, also the company started making profit from the year 2015 during the period covered by the study, lest of the hypotheses shows that the company's profitability is affected by the techniques it uses to manage control its inventories, the test also reveals that high inventory costs affect profit negatively.

Srou and Ahmed (2021) ^[76] examined the impact of inventory management which was measured by inventory turnover on firm's performance which will be measured by firm's profitability using return on assets and return on equity. The data was collected from the Egyptian stock exchange market. The analysis of this study was done using (Eviews 12) for both descriptive statistics and multiple regression. The results of this study indicate that there is a positive correlation between inventory turnover and return on assets ($R^2 = 0.769321$) and also with Return on Equity ($R^2 = 0.669593$) which were found to be statistically significant at 5% level.

Nnadi and Nduoko (2021) ^[48] examined the effect of lean inventory strategies on firm performance in the oil and gas industry in Nigeria using a regression approach. Lean inventory was measured using two dimensions; namely, just in time and total quality management, while firm performance was measured in terms of productivity and delivery performance. The study further examined the moderating effect of organizational support on lean inventory practices and firm performance. The sample comprises 96 senior employees from 10 selected oil and gas companies in Rivers State, with a 79% response rate. The employees were purposely selected from three functional departments: production, human resource and marketing. The study found that that both just in time and total quality management have positive and highly significant effect on both productivity and delivery performance. Both lean inventory strategies significantly account for approximately 72% and 67% of the variance of firm productivity and delivery performance, respectively. However, for each performance measure, the magnitude of the effect of just in time is much higher than that of total quality management. The study established the fact that organizational support has a positive moderating influence on the relationship between inventory leanness and firm performance.

Sunday and Joseph (2021) ^[77] examined the effect of inventory management on profitability of SMEs in Nigeria. The study used a descriptive research design. The population consists of all SMEs operating in Delta State. 10 SMEs were randomly selected from stratum making a total of 300 respondents. Data for the study were obtained through the administration of a self-designed questionnaire to managers or accountants of the sampled firms. The questionnaire was structure to elicit information about the trading and financial activities for the last two accounting years. A multiple regression analysis was conducted to test the model established for the study. Findings of the study revealed that inventory turnover has a significant positive relationship with sustainable cash flows of SMEs. The study also reveals that there is negative relationship between inventory conversion period and profitability and no

significant positive relationship between inventory, leanness and profitability.

Atnafu and Balda (2021) ^[11] examined the impact of inventory management practice on firms' competitiveness (price, quality and delivery) and organizational performance. Data for the study were collected from 188 micro and small enterprises (MSEs) operating in the manufacturing sub-sector in Ethiopia and the relationships and hypothesis proposed in the conceptual framework were tested using structural equation modeling (SEM). Inventory management was measured by ABC, EOQ, JIT and vendor managed inventory. Firm performance was measured by profitability, level of output, cost efficiency and market share. The results indicate that higher levels of inventory management practice can lead to an enhanced competitive advantage and improved organizational performance. Also, competitive advantage can have a direct, positive impact on organizational performance.

Althaqafi (2021) ^[6] explored the relationship between inventory control and the sustainable cash flows of a particular company through the use of a case study approach. It also examined factors that draw back the process of inventory control. The results showed that the profitability of a company has a significant relationship with inventory management, and this suggests that if the management of inventory is done effectively, it ensures more profitability, while poor management translates to a poor sustainable cash flow.

Umo and Anthony (2021) ^[84] examined the effect of working capital management and sustainable cash flows of deposit money banks in Nigeria and the study covered the period of 10 years 2009 to 2018. Data for the study were extracted from the firms' annual reports and accounts. After running the OLS regression, a robustness test was conducted for validity of statistical inferences, the data was empirically tested between the regressors and the regressed, A multiple regression was employed to test the model of the study using OLS. The results from the analysis revealed a strong positive relationship between current ratio and quick ratio and ROA of Listed Deposit Money Banks in Nigeria, while cash ratio was found to be inversely but significantly related to ROA of Listed Deposit Money Banks in Nigeria. In line with the above findings, the study recommended that the management should put more attention on their liquidity in order to maintain an adequate liquidity as the study has empirically proved that higher liquidity signifies more profitability, the listed Deposit Money Banks in Nigeria should try and maintain a higher quick ratio as it will have a positive impact on their profitability. Finally, the management should reduce the amount held in cash as current asset and concentrate more in investing them, so that it could yield higher return rather than tie down the idle cash.

Kolawole *et al.* (2021) ^[37] evaluated the relationship between inventory management and profitability of manufacturing firms in Nigeria using International Breweries PLC as a case study. The study adopted gross profit as proxy for profitability (the dependent variable), while components of inventory management such as raw materials inventory, work-in-progress, finished goods inventories among others were used as the explanatory variables representing inventory management. Secondary data for the study were collected from the annual reports of the company for the period 2009 to 2020. They employed

simple linear regression technique as the statistical tool for data analysis. The results showed that inventory management had strong influence on profitability of International Breweries PLC in Nigeria.

Aljaaidi and Bagais (2021) ^[7] investigated the association between Days Inventory Outstanding (DIO) and firm performance of energy industry in Saudi Arabia, from 2013-2019. The sample comprises of 21 firm year observations. Firm performance was measured by 2 dependent variables ROA and ROE. The Regression results indicated that DIO was negatively associated with firm performance. Vikas and Sandeep Malik (2020) examined the effect of a well-managed inventory on a manufacturing company as well as to enhance the performance of inventory management in an organization and to reduce risk those are facing inventory management. Data used were collected through personal interviews, discussion with Finance-Executive and from the company for the past years since 2014-2019. This paper used ABC analysis and economic order quantity (EOQ) to test the effect. Therefore, implementing advanced inventory management always sounds good in theory, in practice, the balance of cost and benefit should be considered.

Ndubuisi *et al.* (2021) ^[50] examined the relationship between inventory management and sustainable cash flows of brewery firms in Nigeria for the period 2010 to 2016. The study adopted ROA, revenue growth and ROE to proxy sustainable cash flows (the dependent variable), while inventory conversion period was used as the independent variable. Secondary data for the study was collected from annual reports of 7 sampled breweries and NSE fact book. They employed OLS regression method based on STRATA version 13 software for data analysis. The results indicated a significant positive relationship between inventory conversion period, ROA and growth in revenue; but the relationship between inventory conversion period and ROE was positive though not significant.

Otuya and Eginiwin (2021) ^[56] investigated the effect of inventory management on profitability of SMEs in Delta State involving a sample of 30 firms. The study adopted inventory turnover, inventory conversion period and inventory leanness to represent inventory management, while gross profit margin was used as proxy for profitability (the dependent variable). Primary data for the study was obtained through the use of a questionnaire. They employed descriptive statistics and multiple regression analysis to evaluate data. The results revealed mixed findings: inventory turnover had significant positive relationship with gross profit margin; inventory conversion period had significant negative relationship with profitability; and inventory leanness had positive but insignificant link with profitability.

Tanveer *et al.* (2021) ^[78] studied on the impact of working capital management on firm's sustainable cash flows with evidence from Pakistan and empirically explored the impact of working capital management on firm's performance of fifty (50) listed non-financial companies as sample, on Pakistani Stock Market for the period of ten (10) years, 2009-2018. The independent variable was represented by Inventory Turnover (ITO), Cash Conversion Cycle (CCC), Average Collection Period (ACP) and Average Payment Period (APP), while the dependent variable was represented by Return on Assets (ROA), Return on Equity (ROE) and Earnings per Share (EPS). Multiple regressions were used and the findings showed that inventory turnover had

negative impact on Return on Assets, but Average Collection Period had positive and statistically significant impact on Return on Assets.

Opoku *et al.* (2021) ^[54] examined the effect of different inventory management practices on the operational performance of manufacturing firms Listed in Ghana between 2019 and 2020. The variables that were used in the study are: SPP, ABC, VMI, EOQ, and MRP AND JIT. The study concluded that any unit increase in any of the practices would lead to significant and positive unit increase in operational performance of the firm's studied.

George (2020) analyzed whether the inventory management has any direct impact on the net profits of the company. Inventory management was measured by inventory conversion cycle and inventory turnover ratio; net profits measured the firm performance. Five years' financial data of five selected companies were considered for the study. Tools such as ratio analysis, trend analysis and correlation analysis have been used for analyzing the data. The study showed that inventory conversion cycle is directly related to the net profits of the company.

Seth *et al.* (2021) ^[70] examined the impact of working capital management on firm profitability in Poland and reports a negative relationship between CCC and profitability. The indicators used were inventory holding period, receivable collection period and Net liquid balance. The research adopted the ex-post facto, with secondary data obtained from annual reports of the twenty (20) purposively selected firms. With the use of least square variable regression analysis, the findings revealed that inventory holding period, receivable collection period and Net liquid balance had a significant effect on Return on assets and return on equity. The study revealed that the coefficients of Net liquid balance and Working capital requirement added more value to the Return on assets and return on equity, more than Cash conversion cycle and then recommended that to enhance the Return on Assets and Return on Equity, non-financial firms should focus on the use of Net Liquid Balance and Working Capital Requirement, which have been shown to be better predictors of sustainable cash flows. Etale and Sawyerr (2021) ^[26] examined the relationship between inventory management and sustainable cash flows of GlaxoSmithKline Nigeria PLC in a case study. The study adopted inventory to assets ratio and inflation as the predictive variables while return on assets representing sustainable cash flows was used as the response variable. Secondary data for the study was collected from the annual reports of GSK and CBN Statistical Bulletin for the period 2011 to 2018. The study employed descriptive statistics and multiple regression analysis based on the E-view 10 software to analyse data. The results showed that all the predictive variables had positive relationship with return on assets, but only inventory to assets ratio showed a negative relationship with sustainable cash flows. The regression results also showed that the coefficient of determination (R-squared) value of approximately 0.89 indicating that 89% of changes in the response variable were accounted for by the combined effect of changes in the predictive variables. The combined effect of variations of the predictive variables significantly explained changes in the response variable with probability of F-statistic value of 0.004325 (at 5% level of significance).

Pluskota *et al.* (2021) ^[60] compared the main and alternative markets of the Warsaw Stock Exchange according to the

mutual influence of financial liquidity and profitability. The companies listed on those two markets are in a different stage of development and it is expected that the direction of the mutual impact of liquidity and profitability will be opposite. The Granger causality test was applied for the data representing the financial liquidity and profitability ratios. It was found that the mutual impact of liquidity and profitability is not opposite and profitability has a greater influence on financial liquidity in case of both markets which means that although the companies listed on the main and alternative WSE markets differ with regard to the stage of development, their management goals are the same.

Kakeeto *et al.* (2021) ^[35] explored the effect of Inventory management on organizational profitability using Gumutindo Coffee Cooperative Enterprise Limited as a case study. The study tests the hypothesis: Inventory Management has a significant positive effect on organizational profitability. The study used a descriptive research design and adopted a case study strategy. Out of a population of 345 staff, a sample size of 181 was derived. However, only 168 responded out of the 200 questionnaires sent out. The study revealed that inventory management positively affected profitability of the organization with a Pearson correlation coefficient of 0.455. The adjusted R² was 0.202 implying that 20.2% of changes in GCCE profitability are accounted for by inventory management.

Sonko and Akinlabi (2021) ^[75] examined the effect of inventory management on profitability of food and beverage manufacturing companies in Lagos State, Nigeria. A cross-sectional survey research design was adopted. The target population comprised of 2027 top, middle and lower level managers within the selected food and beverage companies in Lagos State, Nigeria. Stratified random sampling technique was used for the study. A validated questionnaire was used. Cronbach's alpha coefficients for the constructs ranged from 0.702 to 0.955. Data was analysed using descriptive and inferential statistics. The findings revealed that inventory management had significant effect on profitability of selected food and beverage manufacturing companies in Lagos State, Nigeria (Adj. R² = 0.538, F (4, 351) = 104.185, p < 0.05).

Deloof (2021) ^[22] studied the relationship between inventory conversion period and corporate profitability using a sample of 1,009 large Belgian non-financial firms for a period of 2008 – 2018. The study employed correlation and regression analysis techniques to obtain data and found a significant negative relationship between gross operating income and inventory turnover days of Belgian firms. The study was carried out in Belgium while the current study scope covered 2008 – 2019. This current study is updated.

Bagaka (2020) ^[13] researched on the role of material management on performance of sugar manufacturing industries in Kenya. This study sought to establish the effect of material management on performance of Mumias Sugar Company Limited. The study adopted the descriptive design. The population under consideration which was the unit of analysis comprises of Mumias Sugar Company. Stratified random sampling was used to select 79 respondents in the Company. The study utilized a research questionnaire. At the completion of the data collection process, the questionnaires were sorted, coded and analyzed. The Statistical package for social sciences (SPSS) was used to generate the required frequencies and percentages to answer the research questions. The study found that

materials procurement and inventory control positively influenced the performance of sugar manufacturing industries in Kenya.

Mudimba and Nyawira (2020) ^[46] carried out a study to determine the effect of Inventory management practices and sustainable cash flows in large manufacturing firms in Kenya. The research was conducted with the following four aims: To examine the degree at which inventory management systems influence sustainable cash flows; to establish the degree at which inventory planning influences sustainable cash flows in large manufacturing firms and to assess the degree at which inventory modeling influences sustainable cash flows in large manufacturing firms. Also, the research was directed by Economic Order Quantity, Collaborative Planning, Forecasting and Replenishment Model, Deming Cycle Model, transaction of cost economics (TCE). The findings of the study show that all firms need to adopt inventory management practices so as to enjoy the advantages.

Panigrahi (2019) examined the relationship between inventory conversion period & firms' profitability. The dependent variable, gross operating profit is used as a measure of profitability & the relation between inventory management & profitability is investigated for a sample of five top Indian cement companies over a period from 2001-2018. This study employs regression analysis to determine the impact of inventory conversion period over gross operation profit taking current ratios. The relation between firm size & production was positive so as firm size increases profitability increases. The relation between current ratio & GOP was negative.

Sahari *et al.* (2019) this study empirically examined the relationship between inventory management and firm performance and capital intensity on a sample of financial data for 82 construction firms in Malaysia for the period 2006–2017. By employing regression and correlation techniques, Inventory management was measured by JIT and inventory days' techniques, firm performances were measured by ROA. It was found that inventory management is positively correlated with firm performance. In addition, the results indicate that there is a positive relationship between inventory management.

Akinleye and Adeboboye (2019) ^[4] assessed working capital management and performance of listed manufacturing firms in Nigeria 20 firms were sampled, over 10 years. The study employed static data analyses and panel Granger causality test. Result showed that average collection period exerts insignificant negative effect on return on capital employed of the sampled firms, while average collection period also exerts insignificant negative effect on earnings per share of the sampled firms. The result further showed that, average payment period exerts insignificant positive effect on return on capital employed of the sampled firms, but average payment period exerts insignificant negative effect on earnings per share of the sampled firms. The study concluded that, average collection period and average payment exert insignificant effect on return on capital employed of listed manufacturing firms in Nigeria, also; average collection period and average payment period exert insignificant effect on earnings per share of listed manufacturing firms in Nigeria.

Rono and Miroga (2019) ^[65] examined the influence of lean inventory management techniques on performance of manufacturing firms in Nairobi City County Kenya. The

study was guided by the following objectives, the material requirement planning, the just in time technique, Analysis based costing and vendor managed inventory. The research objectives and research questions set out and the scope of study limited to manufacturing firms in Nairobi County, Kenya. The research used descriptive research design. Data was analyzed using both descriptive and inferential statistics where regression analysis was used to establish the effect of independent variables on the dependent variable. The population was 455 respondents drawn from manufacturing firms in Nairobi County with a sample size population of 213. The data was analyzed with SPSS version 23. The study findings showed that the four variables had a significant influence on firm performance.

Nasieku and Oluyinka (2019), reviewed the literature on cost accounting techniques being practiced by manufacturing and service industries within the last decade. Virtually all techniques that are appropriate for manufacturing companies are also appropriate for service companies. However, the most common techniques in manufacturing companies include Just in Time (JIT), Activity Based Costing (ABC), Target Costing, Life Cycle Costing, Throughput Accounting, and Kaizen Costing, while Activity Based Costing is the most commonly used technique in the service sector. However, Activity Based Costing, Budgetary Control, Cost Volume Profit Analysis, and Standard Costing are common to both the manufacturing and service sectors. In contrast to the postulations of many academic authors that traditional techniques have lost relevance and should be discontinued, this review shows that traditional techniques, including the heavily criticized Standard Costing, Absorption Costing, and Marginal Costing, were still used frequently by many companies within the last decade.

Bawa *et al.* (2019) ^[14] investigated the impact of inventory management on firm performance of listed manufacturing firms in Ghana. The study used a cross-sectional secondary data designed to test whether there is any relationship between inventory management and firm's performance of listed manufacturing firms in Ghana. The sample of this study included 140 firm-year observations from 14 listed manufacturing firms in Ghana Stock Exchange (GSE) over a 10-year period, from 2007 to 2016. Measures of firm performance which were profitability and operating cash flows were examined. Regression equations stated in the form of return on assets and operating cash flow was used in analysing firm performance data. Pearson correlation and multiple regression analysis was also used as proxies in relatedness to effective inventory management. The empirical results provided evidence that the main variable, inventory management have no effect on firm's performance and is insignificantly related to firm performance of manufacturing firms in Ghana.

Capkun *et al.* (2019) ^[19] studied the relationship between inventory management and sustainable cash flows in manufacturing companies in Ethiopia, they studied 52 businesses for the period between and 2012-2018. The study used multiple regressions to determine the correlation between sustainable cash flows and various inventory management practices. The study measured sustainable cash flows using gross profits and operating profit results and inventory levels in regard to raw materials, partially manufactured products and finished products. The results revealed a positive correlation between a company's raw

material and its sustainable cash flows. The study also noted that degrees of correlation vary depending on the type of inventory and the sustainable cash flows reference. The study was done in another country while the current study is carried out in Nigeria; also, the study used gross profit to measure sustainable cash flows while this current study used ROA to measure sustainable cash flows.

Kolawole *et al.* (2019) evaluated the degree of relationship between inventory management and profitability of manufacturing firms in Nigeria. International Breweries Plc was adopted as case study. Secondary data were sourced from the company's annual reports for the period of 10 years. A simple linear regression model was specified to test the correlation between variables used. Stock turnover ratio was used to capture the relationship between costs of sales incurred in generating total revenue and the inventory utilized in for production and distribution. The result generated from the study showed that the company operates an efficient Inventory Management System which has strong influence on its profitability. The correlation coefficient (r) was 85.3% while r^2 was 72.7%.

Mayowa (2019) ^[43] examined the effect/impact of inventory control technique on profitability of manufacturing firms in Nigeria. Secondary data were used obtained from the audited financial statement of quoted manufacturing firm listed on the Nigerian Stock Exchange. The study employed descriptive research design. The data were analyzed using pooled, fixed and random effect to accept null hypothesis or reject and arriving at a conclusion after Hausman test was carried out to determine the best model. The results of the study revealed that ISC (Inventory Storage cost) and COS (Cost of Sales) has a positive and negative significant effect on profitability at ($p > 0.05$). ICP (Inventory coverage period) has a positive significant effect at (0.05). Third hypothesis revealed that ICP has a positive significant effect on profitability combining hypothesis one.

Alaaraj and Bakri (2019) examined the effect of lean manufacturing on sustainable cash flows from the perspective of managers in the industrial sector in South Lebanon. The methodology of this study was quantitative in which 152 self-administered questionnaires were distributed randomly among managers. The data was analyzed using SPSS software. Descriptive statistics were identified and proposed hypotheses were tested using Pearson correlation and regression analysis. The results showed that lean manufacturing has a significant and positive effect on sustainable cash flows.

Fernando *et al.* (2019) described some links between Just in Time (JIT) manufacturing strategy and performance financial analysis among 150 Malaysian firms. A rational, deductive, analytical and objective method was used; based on previous findings, a series of functions along with pre-post and linear regression analyses models are described as explicative of the relationships between JIT and financial statements analysis. Results show that the Dirac function, value transformation function, and transform kernel provide the foundations for a conceptual link between JIT and company performance in financial statements. Besides, the JIT relationship to business performance is explained by the following three models, selected from literature: a) the pre-post model, which explains changes in inventory and asset turnover and their relationship to JIT; b) the two-stage self-selection regression analysis model, which explains how sales, inventory, company size, and JIT adoption influence

ROA changes; and c) the lean manufacturing model, which includes JIT and allows for the explanation of firm financial data".

Rahman *et al.* (2019) investigated the effect of working capital management on firm performance with the moderating role of ownership structure in Kenya. A random sample of 77 firms for the period 2011-2017 was selected. By using fixed effect model the study demonstrated statistically significant negative relationship of leverage, average collection period and quick ratio on firm performance, while current ratio, account payable and inventory turnover found with positive significant effect on Firm Performance; the effect of working capital on firm performance was Management, Firm positively affected by Institutional ownership and negatively affected Performance, Ownership by Managerial ownership. Thus, the results suggest that the owner/manager needs to manage their limited resources efficiently for the improvement of profitability. It is also advised that investor and shareholder pay attention to the level of institutional and managerial ownership at the time of investment.

Daniel and Ambrose (2019) ^[20] investigated the impact of inventory management on earnings per share (EPS). The study employed a balanced panel data of five manufacturing companies which are listed on the Nairobi Securities Exchange (NSE). Pearson's correlation and ordinary least squares regression models were used. The study covers a period of 10 years that is 2009 –2018. The study found that a negative relationship exists between inventory management and Earnings per Share. According to the study, inventory holding period has no any significant effect on the manufacturing companies' Earnings per Shares. The researchers concluded that banks can create value for their shareholders by improving on their working capital management.

2.4 Summary and gap in empirical review

This study examined the effect of inventory management practices on sustainable cash flows of selected small scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State. It was deduced from the reviews that effective management of inventory is integral to the sustainable cash flows of any company. By optimizing inventory, receivables, and payables, these firms can enhance liquidity, reduce costs, and gain a competitive edge in a fast-paced industry. The empirical studies reviewed showed that related studies have been carried out in this area. However, it was observed that most of the studies looked at other sectors. For instance, manufacturing firms (Joseph *et al.*, 2023) ^[33]; consumer goods sectors Akintola (2023) ^[3]. In addition to this, there was no consensus on the effect of inventory management on sustainable cash flows because of varying findings. Thus, it was based on these gaps, that this study was carried out to ascertain the effect of inventory management practices on sustainable cash flows of small scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State.

3. Research Methodology

This section presents the methodology which were employed in this research work. Discussions included the research design, population of the study, sample size and sampling technique, sources of data collection and method of data analysis, model specification and measurement of variables.

3.1 Research design

The study adopted descriptive and survey research design. These designs were considered suitable for the study because the data used were primary and were usually acquired through the use of a self-constructed questionnaire.

3.2 Population

The population of this study comprised of seventy-seven (77) staff of the twenty (20) small scale pharmaceutical enterprises located in Eket Urban, Akwa Ibom State, Nigeria as at the time of the study (see Appendix iv). The total number of staff of these small scale pharmaceutical enterprises is seventy-seven (77) as in the year of this study (2025). This information was obtained from the Local Office Headquarters of these pharmaceutical enterprises known as Association of Pharmacists and Patent Medicine Dealers which is located in Eket Urban, Akwa Ibom State, Nigeria. Thus, the seventy-seven (77) workers form the research population.

3.3 Sample size determination

The sample size of this study is 66 staffs judgmentally selected from the small scale pharmaceutical enterprises.

3.4 sampling technique

The study adopted judgement sampling technique to select managers, accountants and other workers of these enterprises that were considered to understand the concepts of inventory management and sustainable cash flows.

3.5 Sources of data

This study made use of primary data obtained through the structured questionnaire constructed by the researcher.

3.5.1 Method of data collection

The research instrument that was used in the collection of data for this study was the questionnaire (see Appendix 1). The Likert 5-point questionnaire was adopted for use in collecting data from the respondents. Thereafter, Microsoft Excel was used to code the information that was used for the analysis. The questionnaires were coded thus: 5-Strongly Agree, 4-Agree, 3-Undecided, 2-Disagree, and 1-Strongly Disagree. Furthermore, both the dependent variable and the independent variables were operationalized using a 5-point Likert Scale Questionnaire. A total was obtained for each response of the participants relating to the questions in the questionnaire in relation to the variables under study (see appendix iii).

3.6 Test of validity

The researcher's supervisor from the Departments of Accounting, Akwa Ibom State University evaluated the content validity and construct validity of the instrument. They also ascertained the applicability of each item on the research instrument to the study's objectives. When creating

the final copies of the questionnaire, the researcher adopted the recommendations and modifications made.

3.7 Test of reliability

In this study, the Alpha Cronbach test was employed to ascertain the reliability of the research work. The output from the test is shown below:

Table 3.2: Reliability Statistics

Cronbach's Alpha	N of Items
.812	30

Source: SPSS 21 Output (2025)

The acceptable threshold of the result coefficient for the items is 0.6 and above. From the result below, the research instrument was proven reliable.

3.8 Method of data analysis

The technique of data analysis employed in this study was the ordinary least square regression analysis. This enabled the researcher to examine the effect of the firm inventory management practices on sustainable cash flows of pharmaceutical selected for this study. The data were analyzed using SPSS 21 statistical package, and the outcome was used to test the research hypotheses formulated.

3.9 Model Specification

In line with the previous researches, the researcher adapted and modified the Model of Anene *et al.* (2023) in determining the effect of inventory management practices on sustainable cash flows of the selected small scale pharmaceutical enterprises in Eket, Akwa Ibom State, Nigeria. This is given below:

Sustainable cash flows = f (inventory management practices)
Sustainable cash flows = f (inventory holding period, inventory turnover, vendor managed inventory, economic order quantity, inventory intensity).

$$\text{FINP} = \beta_0 + \beta_1 \text{INVP} + \beta_2 \text{INVT} + \beta_3 \text{VMIN} + \beta_4 \text{EOQU} + \beta_5 \text{INTI} + \epsilon$$

Where:

FINP	=	Sustainable cash flows
INVP	=	Inventory holding period
INTO	=	Inventory turnover
VMIN	=	Vendor managed inventory
EOQU	=	Economic order quantity
INTI	=	Inventory intensity
β_0	=	Model intercept
β_1 - β_3	=	Coefficient to be estimated
ϵ	=	Stochastic error term

3.10 Measurement of variables

Table 3.1: Operationalization of Variables

S. No	Variable	Measurement	Sources	Apriori sign
1	Operating cash flows	Transformed from respondents' responses using 5-Point likert scale	Anene <i>et al.</i> (2023)	
2.	Inventory holding period	Transformed from respondents' responses using 5-Point likert scale	Anene <i>et al.</i> (2023)	-
3	Inventory Turnover	Transformed from respondents' responses using 5-Point likert scale	Anene <i>et al.</i> (2023)	+
4	Vendor managed inventory	Transformed from respondents' responses using 5-Point likert scale	Opoku <i>et al.</i> (2020)	+
5	Economic order quantity	Transformed from respondents' responses using 5-Point likert scale	Mudimba and Nyawira, (2020) [46]	+
6	Inventory intensity	Transformed from respondents' responses using 5-Point likert scale	Anene <i>et al.</i> (2023)	-

Source: Researchers operationalization (2025)

3.11 Decision rule

The decision rule that was used in this study is stated as follows: The null hypotheses were rejected where the probability value (p-value) was less than 0.05 ($p < 0.05$). Conversely, the null hypotheses failed to be rejected where the p-value was greater than 0.05 ($p > 0.05$).

All statistical analyses were conducted at a 95 per cent confidence level, corresponding to a 0.05 level of significance. This level was chosen to ensure a reasonable balance between Type I and Type II errors, allowing for statistically valid inferences about the relationship between independent and dependent variable.

4. Data Presentation, Analysis and Discussions of Findings

This section presents the data collected for this study, the statistical and econometric analysis of the data using different tools, hypotheses testing, as well as making deductions from the testing and analysis of the data, and discussion of the findings.

4.1 Data presentation

The copies of questionnaire were sent and administered to the sampled respondents and the summary is as shown in Table 4.1 below;

Table 4.1: Summary of questionnaires administered

Questionnaires	Number of questionnaires	Percentage (%)
Administered	66	100.00
Filled	64	96.97
Not filled	2	3.03
Total	66	100.00

Source: Field survey (2025)

Table 4.1 above shows that a total of 66 copies of questionnaires were sent out to the sampled respondents at the sampled pharmacies in Eket Urban. Out of the administered questionnaires, 64(96.57%) were correctly filled, while 2(3.03%) were not completed.

4.2 Data analysis

4.2.1 Analysis of respondents' demographics

The demographic data of the study included the gender, age bracket, highest educational qualification and years of working with the pharmacy. For confidentiality reasons which has now been a global privacy concern, the researcher could not ask for too much demographics. however, the data obtained were presented in Table 4.2 below.

Table 4.2: Gender of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	41	64.1	64.1	64.1
Female	23	35.9	35.9	100.0
Total	64	100.0	100.0	

Source: Field survey (2025)

Table 4.2 presented the gender of respondents examined. It was observed that from the total number of respondents (64), 41 making up about 64% were males while 23 (36%) were females. This indicates that majority of the respondents were males while minority were females.

Table 4.3: Age of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 20-30	13	20.3	20.3	20.3
31-40	21	32.8	32.8	53.1
41-50	18	28.1	28.1	81.2
51 and above	12	18.8	18.8	100.0
Total	64	100.0	100.0	

Source: Field survey (2025)

From Table 4.3 above, it was observed that 13 of the respondents which comprises 20.3% were between 20-30 years old, 21, which was 32.8% were between age 31-40. Respondents between 41-50 years old were 18 in number, making up 28.1% and finally 12 respondents (18.8%) aged from 51 years and above. This table summarizes that most of the staffs in the selected pharmaceutical enterprises were relatively middle aged (31-50).

Table 4.4: Educational qualification of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid SSCE	6	9.4	9.4	9.4
ND/NCE	9	14.1	14.1	23.5
HND/B.Sc	39	60.9	60.9	84.4
M.Sc and above	10	15.6	15.6	100.0
Total	64	100.0	100.0	

Source: Field survey (2025)

From the output in Table 4.4 above, 6(9.4%) of the respondents were SSCE holders, 9(14.1%) were OND/NCE holders, 39(60.9%) were HND/B.Sc holders and 10(15.6%) had M.Sc. and above for their qualifications. This connotes that majority of the sampled respondents were HND/B.Sc. holders.

Table 4.5: Years of working with pharmacy

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Below 5 years	13	20.3	20.3	20.3
5-10 years	22	34.4	34.4	54.7
11-15	15	23.4	23.4	78.1
16 years and above	14	21.9	21.9	100.0
Total	64	100.0	100.0	

Source: Field survey (2025)

From the computation in Table 4.5 presented above, 13 of the respondents constituting about 20.3% had less than 5 years of working in the enterprises; 22(34.4%) of the respondents had about 5-10 years of working in a pharmacy; 15(23.4%) had between 11-15 years of working in a pharmacy; and 14(21.9%) of them had more than 15 years of working experience in pharmacy(s). From these, we can see that majority of our respondents had between 5-10 years of experience of working for or in a pharmacy.

4.2.2 Correlation analysis

Table 4.6: Correlation results

	FINP	INVP	INVT	EOQU	VMIN	INTI
FINP	1					
INVP	.664**	1				
INVT	-.022	-.212	1			
EOQU	.037	-.016	-.067	1		
VMIN	.039	-.128	.088	.108	1	
INTI	-.127	.080	-.086	-.218	-.367**	1

Source: Field survey (2025)

Table 4.3 presents the Pearson's correlation coefficients for the variables in the study. As expected, each variable showed a perfect correlation with itself, with a coefficient of 1.000. Looking at the associations, inventory holding period (INVP) had a strong positive correlation with operating cashflows (0.664). This suggests that as inventory holding period increases, cashflows tends to rise but this relationship should not be interpreted as causal. Inventory turnover (INVT) showed a negligible negative correlation with operating cashflows (-0.022), implying that inventory turnover has no relationship with cashflows in the studied enterprises, though again, this relationship was not causal. Economic order quantity (EOQU), had a negligible positive correlation with operating cashflows (0.037). This suggests that economic order quantity has no association with operating cashflows of the studied pharmacies. For vendor managed inventory (VMIN), the correlation with operating cashflows was just 0.039. Again, this was positive but negligible, indicating practically no association. Lastly, inventory intensity (INTI) also showed weak negative correlation with operating cashflows, with a coefficient of -0.127, indicating that increase in inventory intensity comes with decrease in operating cashflows of the studied enterprises. These results also showed the absence of multicollinearity since all the associations were seen to be weak apart from one.

4.2.3 Regression analysis

Table 4.7: Model summary for the effect of inventory management practices on sustainable cash flow of selected small scale pharmaceutical enterprises in Eket, Akwa Ibom State

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.731 ^a	.534	.494	2.73194	1.936

a. Predictors: (Constant), INVP, INVT, VMIN, EOQU, INTI

b. Dependent Variable: FINP

Source: Field survey (2025)

Table 4.8: ANOVA for the effect of inventory management practices on sustainable cash flow of selected small scale pharmaceutical enterprises in Eket, Akwa Ibom State

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	28.184	5	0.835	11.129	.000 ^b
Residual	94.010	58	0.642		
Total	122.194	63			

a. Dependent Variable: FINP

b. Predictors: (Constant), INVP, INVT, VMIN, EOQU, INTI

Source: Field survey (2025)

Table 4.9: Coefficients for the effect of inventory management practices on sustainable cash flow of selected small scale pharmaceutical enterprises in Eket, Akwa Ibom State

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	10.112	2.8922		4.238	.000		
INVP	-.432	.166	-.414	-3.527	.001	.820	1.087
INVT	.388	.148	.347	3.128	.005	.732	1.102
EOQU	.391	.134	.377	2.927	.038	.818	1.114
VMIN	-.142	.127	-.116	-1.825	.094	.927	1.013
INTI	.209	.141	.192	2.002	.059	.887	1.145

a. Dependent Variable: FINP

Source: Field survey (2025)

Table 4.7, 4.8 and 4.9 above represent the results obtained from the regression analysis for this study. The model summary indicated that the pooled OLS regression had an R-squared value of 0.534. This implies that the independent variables of the study could explain approximately 53% of the systematic changes in the sustainable cash flow of the selected small scale pharmaceutical enterprises. However, the unexplained part (47%) could be attributed to other variables not captured in the model but captured in the error term. Also, the result of the F-statistics (11.129) in the ANOVA with associated p-value of 0.000 indicate that the independent variables (proxies of inventory management practices) have a statistically significant effect on the dependent variable (sustainable cash flow) of the sampled pharmaceutical enterprises.

4.3 Test of hypotheses

This section presents the research hypotheses tested in both the null and alternative forms where H_0 denotes the null hypothesis while H_1 denotes the alternative hypothesis.

Hypothesis One

H₀₁: Inventory holding period does not have any significant effect on operating cash flows of small scale pharmaceutical enterprises.

H₁₁: Inventory holding period has a significant effect on operating cash flows of small scale pharmaceutical enterprises.

According to the results from Table 4.9, it was observed that the relationship between inventory holding period and operating cashflows of small scale pharmaceutical enterprises presented a coefficient of -0.414 and a probability value of 0.001. The p-value was statistically significant at the 5% level of significance, and as such, the null hypothesis was rejected and the alternate accepted. Thus, inventory holding period has a significant effect on operating cash flows of small-scale pharmaceutical enterprises.

Hypothesis Two

H₀₂: Inventory turnover does not have any significant effect on operating cash flows of small-scale pharmaceutical enterprises.

H₁₂: Inventory turnover has a significant effect on operating cash flows of small-scale pharmaceutical enterprises.

Output from Table 4.9 for this hypothesis presented coefficient and p-value of 0.347 and 0.005 respectively. This entails a significant relationship between inventory turnover and operating cashflows of small scale pharmaceutical enterprises in Eket, Akwa Ibom State. This was so as the p-value; 0.005 was less than 0.05 (5% significance level). Thus, the null hypothesis stated above was rejected and the alternate equally stated above was accepted, and was concluded that inventory turnover has a significant effect on operating cash flows of small-scale pharmaceutical enterprises.

Hypothesis Three

H₀₃: Economic Order Quantity does not have any significant effect on operating cash flows of small scale pharmaceutical enterprises.

H₁₃: Economic Order Quantity has significant effect on operating cash flows of small scale pharmaceutical enterprises.

According to the regression coefficients presented above in Table 4.9, economic order quantity was found to possess a regression coefficient of 0.377 and a p-value of $0.038 < 0.05$ when tested against operating cash flows. On this note, the null hypothesis was rejected and the alternate hypothesis was accepted. Thus, Economic Order Quantity has significant effect on operating cash flows of small scale pharmaceutical enterprises.

Hypothesis Four

H₀₄: Vendor managed inventory does not have any significant effect on operating cash flows of small scale pharmaceutical enterprises.

H₁₄: Vendor managed inventory has a significant effect on operating cash flows of small scale pharmaceutical enterprises.

The result obtained from Table 4.9 presented a negative regression coefficient (-.116) and an associated p-value of $0.094 > 0.05$ for the relationship between vendor managed inventory and operating cash flows. These warranted the acceptance of the null hypothesis. This implies that vendor managed inventory does not have any significant effect on operating cash flows of small scale pharmaceutical enterprises.

Hypothesis Five

H₀₅: Inventory intensity does not have any significant effect on operating cash flows of small scale pharmaceutical enterprises.

H₁₅: Inventory intensity has a significant effect on operating cash flows of small scale pharmaceutical enterprises.

The result obtained from Table 4.9 presented a regression coefficient (.192) and an associated p-value of $0.059 > 0.05$ for the relationship between inventory intensity and operating cash flows of the studied pharmacies. These warranted the acceptance of the null hypothesis. This implies that inventory intensity does not have any significant effect on operating cash flows of small scale pharmaceutical enterprises.

4.4 Discussion of Findings

Inventory holding period and operating cash flows

According to the results from Table 4.9, it was observed that the relationship between inventory holding period and operating cashflows of small scale pharmaceutical

enterprises presented a coefficient of -0.414 and a probability value of 0.001. The p-value was statistically significant at the 5% level of significance, and as such, it was concluded that inventory holding period has a significant negative effect on operating cash flows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State, Nigeria. This implies that increase in inventory holding period causes decrease in operating cashflow of the studied pharmaceutical enterprises. This entails a direct variation or relationship between the two variables. What this means is that if pharmaceutical enterprises hold inventory for a relatively longer period of time without selling them, it tends to reduce their available cash and cash equivalents.

The inventory holding period, also known as the average inventory days, refers to the amount of time it takes for a company to sell its entire inventory. Even if the fact as to whether these pharmacies have long or short inventory holding period is unknown, various implications have been given in the literature for scenarios where firms have high inventory holding period. Akintola (2023) ^[3] argued that longer storage times (inventory holding) presents a greater investment in inventory for a particular level of operations. Not just that, in another view, long inventory holding period could mean low sales or poor sales volume for firms. And so, during these periods, losses could be associated. This view was seen in Mansoori and Muhammad (2022) ^[42] who mentioned that the longer the inventory remains unsold, the higher the carrying costs associated with storage, insurance, and depreciation, they also hammered that these put additional pressure on cash flow and of course, negative.

This negative relationship established also implies that the shorter the time an enterprise holds on to inventory, the higher its cashflow goes. That's because a shorter inventory holding period indicates that inventory is being sold more swiftly, bringing about faster turnover and cash conversion cycle. In view of this, Napompech (2022) ^[49] noted that shorter inventory holding periods improve cash flow by freeing up working capital, allowing the company to invest in growth opportunities, pay down debt, or meet other financial obligations. This finding is in line with many views in related literature including Joseph *et al.* (2023) ^[33] who emphasized that holding onto inventory for an extended period can lead to write-offs and further strain cash flow; as well as Akintola (2023) ^[3] who was an advocate for shorter inventory holding periods. Be it as it may, this finding is contrary to that of Bah *et al.* (2023) ^[12] which was a positive significant relationship between inventory holding period and the Returns on Assets, which was a very unexpected result there.

Inventory turnover and operating cash flow

Output from Table 4.9 for this hypothesis presented coefficient and p-value of 0.347 and 0.005 respectively. This entails a significant relationship between inventory turnover and operating cashflows of small scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State. This was so as the p-value; 0.005 was less than 0.05 (5% significance level). Thus, it was found that inventory turnover has a significant positive effect on operating cash flows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State. This finding entails that increase in inventory turnover causes increase in operating cashflow of the studied enterprises. In other words, as inventory turnover rate

increases, operating cashflow increases too. Since inventory turnover indicates how many times a firm has sold and replaced inventory, it means that the more times a firm sells and replaces inventory, the higher the components of its cash and cash equivalents becomes.

This is in line with the apriori expectation of this study as it was expected that inventory turnover would have a positive relationship with cashflows. This finding advocates for high inventory turnover for firms. According to Etale and Sawyerr (2021) ^[26], a high inventory turnover indicates efficient inventory management, where the company quickly sells products and minimizes holding costs. They also added that high turnover ensures inventory is not sitting idle, reducing the risk of stock becoming outdated or obsolete. To add to that, high inventory turnover may indicate strong sales or effective inventory management but may also point to insufficient stock leading to potential stockouts. This is so because there is a very thin line between stockouts and high rate of stock turn. When inventory finishes in the store, it could be stockout which is detrimental to the objectives of any given firm. Low inventory turnover on the other hand, means low sales and brings risks associated with having too many inventories coupled with increased inventory holding costs, which can lower a company's profitability, cash and operational disruptions from having too few inventories (Atrill, 2021).

Checking with related literature, this finding is in line with the findings of Joseph *et al.* (2023) ^[33] which was that inventory turnover has a positive impact on return on assets of listed manufacturing firms in Nigeria. The finding is however, contrary to Doutimiareye and Genesis (2022) ^[23] who found a negative and insignificant relationship between inventory turnover and profit after tax; as well as Umenzekwe *et al.* (2021) ^[83] who established that inventory turnover period had a significant negative relationship with return on investments.

Economic order quantity and operating cashflow

According to the regression coefficients presented above in Table 4.9, economic order quantity was found to possess a regression coefficient of 0.377 and a p-value of $0.038 < 0.05$ when tested against operating cash flows. On this note, Economic Order Quantity was found to have a significant positive effect on operating cash flows of small scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State, Nigeria. This means that the higher the economic order quantity, the higher the cashflows of the sampled pharmaceutical. In other words, operating with a fixed or planned economic order quantity results in increase or availability of cash and cash equivalents for the organization. An explanation for this is that when pharmacies in question; manage their inventory using an economic or optimal order quantity, they reduce unnecessary ordering costs and avoid frequent stockouts.

This finding is in line with the apriori expectation of this study and points to "efficiency". Don't forget that when there is efficiency especially with inventory, customer demands would be met, this is also a matter of consistency, which could lead to better sales performance and higher cash inflows. This agrees with the view of Ordu (2024) ^[57] who was of the opinion that the primary benefit of EOQ is its ability to find the sweet spot between ordering too frequently (high ordering costs) and ordering too much (high holding costs). James (2024) ^[31] also noted that EOQ

directly contributes to higher profitability. Empirical studies on the subject matter tended to agree with this study's finding as Joseph *et al.* (2023) ^[33] found a positive significant relationship between EOQ strategy and sustainable cash flows of firms. Similarly, Ordu (2024) ^[57] found that application of economic quantity inventory management strategy has a significant positive effect on operating profits.

Vendor managed inventory and operating cash flow

The result obtained from Table 4.9 presented a negative regression coefficient (-.116) and an associated p-value of $0.094 > 0.05$ for the relationship between vendor managed inventory and operating cash flows. This implies that vendor managed inventory does not have any significant effect on operating cash flows of small scale pharmaceutical enterprises. Taking a deeper dive, the coefficient of the effect came out a negative one, this indicates that to a little extent, vendor managed inventory has a detrimental effect on operating cashflows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State, Nigeria. This negative coefficient indicates a possible inverse variation between the two variables. This indicates that an increase in VMI may lead to a slight decrease in operating cash flows.

According to Tella (2023) ^[79], Vendor Managed Inventory (VMI) is an inventory management strategy where a supplier (vendor) takes on the responsibility of managing and replenishing the inventory of their products at a customer's (buyer's) location. Instead of the buyer placing purchase orders, the vendor monitors the customer's sales and inventory data (often in real-time) and proactively decides when and how much to replenish (Althaqafi, 2021) ^[6]. In past literature, several benefits have been highlighted even if this study found it to have no significance. For example; Ukpe *et al.* (2021) ^[82] noted that VMI offers several benefits for both vendors and customers. For vendors, VMI can lead to better demand forecasting, improved production planning, reduced stockouts, increased sales, and enhanced customer satisfaction. They added that for customers, VMI can result in lower inventory carrying costs, reduced stock obsolescence, enhanced product availability, streamlined ordering processes, and closer collaboration with suppliers.

This finding is not in line with apriori expectation of the study. This study also contradicts most findings from past literature. For example; Maina and Were (2024) ^[41] who noted that VMI can lead to significant cost reductions across the entire supply chain, improved cash flow, reduced bullwhip effect (demand variability amplification), and enhanced profitability for both parties involved. In this inventory management system. This was contrary because it was a significant finding. Migwi and Kwasira (2024) ^[44] on the other hand established that supplier relationship was significant in determining the success of VMI implementation.

Inventory intensity and operating cashflow

The result obtained from Table 4.9 presented a regression coefficient (.192) and an associated p-value of $0.059 > 0.05$ for the relationship between inventory intensity and operating cash flows of the studied pharmacies. This shows that inventory intensity has a statistically non-significant positive effect on operating cashflow of small scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State,

Nigeria. This also implies that inventory intensity does not have any significant effect on operating cash flows of small scale pharmaceutical enterprises. Despite the insignificance, a positive coefficient was the case. This coefficient suggests that increase in inventory intensity caused a slight increase in operating cashflows of the studied pharmacies. The positive direction of the coefficient suggests that pharmacies with higher inventory intensity, meaning they commit a larger portion of their resources to inventory, might be managing their cash flows more effectively. This could be because keeping more stock available helps them meet customer needs more reliably, avoid running out of essential products, and possibly strengthen customer loyalty. All these factors can contribute to more stable and improved cash flow over time.

According to Althaqafi (2021) [6], a higher inventory intensity ratio indicates that a larger proportion of the company's assets are tied up in inventory. Cabungcal *et al.* (2023) [18] argued that a high inventory intensity indicates that a company is tying up a significant amount of capital in inventory relative to its assets, which can lead to increased holding costs, obsolescence risks, and reduced cash flow efficiency. This study is contrary to Joseph *et al.* (2023) [33] who found that holding excessive inventory levels increases carrying costs in terms of storage, insurance, depreciation, and obsolescence, further straining sustainable cash flows. This was a significant finding. In contrary also, Genesis (2022) found a negative significant relationship between intensity and profit after tax.

5. Summary, Conclusion and Recommendations

5.1 Summary of findings

This study examined the effect of inventory management practices on sustainable cashflows of small scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria. The independent variable; inventory management practices was proxied by inventory holding period, inventory intensity, inventory turnover, vendor managed inventory, and economic order quantity and the dependent variable; sustainable cashflows was proxied by operating cashflows. The empirical findings derived from this research were as follows:

1. Inventory holding period $\{-0.414(0.001)\}$ has a significant negative effect on operating cashflows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria. This implies that the longer the inventory holding period, the lower the operating cashflows of the studied pharmacies.
2. Inventory turnover $\{0.347(0.005)\}$ has a significant positive effect on operating cashflows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria. This means that the higher the inventory turnover rate, the higher the operating cashflows of these pharmaceutical enterprises.
3. Economic order quantity $\{0.377(0.038)\}$ has a significant positive effect on operating cashflows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria. This implies that existence of an EOQ level interprets into a high operating cashflows for these pharmaceuticals in question.
4. Vendor managed inventory $\{-.116(0.094)\}$ has an insignificant negative effect on operating cashflows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria. This means that vendor

managed inventory has nonsignificant effect on operating cashflows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria.

5. Inventory intensity $\{.192(0.059)\}$ has nonsignificant positive effect on operating cashflows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria. This means that inventory intensity has no significant effect on operating cashflows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria.

5.2 Conclusion

This study scrutinized the effect of inventory management practices; specifically, inventory holding period, inventory intensity, inventory turnover, vendor managed inventory, and economic order quantity on sustainable cashflows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria. Taking ideas from multiple theories including the liquidity, economic order quantity and lean theories, the study operating cashflow as proxy for sustainable cashflow. The findings showed that while, inventory turnover and economic order quantity significantly affected operating cashflow positively, inventory holding period exerted a significant negative effect. Vendor managed inventory and inventory intensity had no significant effect on operating cashflow of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria. As such, the study concluded that effective inventory management can enhance sustainable cashflows of small-scale pharmaceutical enterprises in Eket Urban, Akwa Ibom State Nigeria.

5.3 Recommendations of the study

In line with the findings of this study, the following recommendations were made

1. The management of pharmaceutical stores in Eket Urban Nigeria, should adopt efficient inventory management strategies, such as just-in-time (JIT) systems, to reduce the inventory holding period. Implementing technology-driven inventory tracking systems can help optimize stock levels and avoid unnecessary capital lock-up.
2. These companies should focus on strategies to enhance sales and streamline supply chains to maintain high inventory turnover. Implementing lean inventory management techniques can ensure faster inventory movement and improve liquidity.
3. Small scale pharmaceutical enterprises should adopt and strictly apply economic order quantity models to optimize their inventory levels.
4. Vendor managed inventory systems should either be reviewed and improved to enhance their contribution to cashflows or not considered seriously when increase in cashflow is the main goal.
5. The management of these pharmacies should balance inventory levels with operational needs to avoid tying up excess funds in stock.

5.4 Suggestion for further studies

Further researchers could explore the effect of vendor managed inventory and inventory intensity on cashflows using larger samples or markets in other sectors so as to check the consistency of the insignificant results observed earlier in this study.

5.5 Contribution to knowledge

This study contributes to knowledge by providing novel empirical evidence on the relationship between inventory management and operating cash flows in small and medium scale pharmaceutical enterprises, in Eket Town Akwa Ibom State, which has largely been ignored by researchers. Relating to each specific finding, the following were the contribution to knowledge of the study.

The following contributions were made:

1. The findings on inventory holding period and sustainable cash flows provides empirical evidence that a longer inventory holding period significantly reduces operating cash flows, highlighting the importance of efficient working capital management.
2. The findings on inventory turnover and sustainable cash flows confirms that higher inventory turnover improves financial performance emphasizing the need for businesses to focus on inventory efficiency.
3. The findings on economic order quantity and operating cash flows contributes to knowledge by emphasizing that economic order quantity is a key driver operating cash flows in small-scale pharmaceutical enterprises.
4. The findings on vendor managed inventory and operating cash flows challenges the common assumption that vendor managed inventory necessarily leads to improved cash flows by reducing inventory holding costs and optimizing inventory levels.
5. The findings on inventory intensity and operating cash flows challenges the established fact that excessive inventory pile up reduces cash flows as funds are tied up in inventory. However, a contrary finding was made here that inventory intensity may not really impacts operating cash flows.

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