

The Effect of Periodic Inventory Management Practice on Performance of Selected Polytechnics in Southwest, Nigeria.

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ABSTRACT: The relevance of inventory management system in higher institutions, in Nigeria, particularly in southwest, region had not been effectively harness due to insufficient manpower. Thus, this paper examined the effect of periodic inventory management practice on performance of polytechnic in Southwest, Nigeria. To investigate the study a survey research design was adopted to gather primary source of data for the study through the administration of questionnaire to 736 respondents from which only 720 copies were validly considered. The descriptive statistics of mean and standard deviation and inferential statistics of Ordinary Least Square were adopted for the study. The result of the OLS revealed that period inventory management practice had a significant positive effect on the performance of the selected Polytechnics. The study concluded that period inventory system enhanced the performance of the Polytechnics in Southwest, Nigeria. It was recommended that period inventory system should be adopted by the Polytechnics since its suited the institutions period request for stock.

KEYWORDS: Period Inventory, Users Friendly, Easy to Account for Cost, Organizational Performance

1. INTRODUCTION

The declining performance and rising magnitude of inefficiency among store employees in Nigerian polytechnics is the first thing that triggered this study. Statistical facts, such as Nigeria's Human Capital Index, could be used to illustrate the low or declining performance of the Civil Service. For instance, the poverty rate in Nigeria rose in the past three decades. It rose from 27.2% in 1990 to 46.3% in 2000, and in 2002, it dropped to 42.7%. By 2016, the poverty rate in Nigeria had risen to 65.6% (National Bureau of Statistics, 2022). By and large, the above stated statistical facts are indicative of the poor social conditions in Nigeria, which are some of the consequences of the faulty and/or non-implementation of policies, and the poor monitoring and evaluation of government policies and programmes - as a result of public sector corruption, inadequate material resources, lack of policy continuity (Makinde, 2022), lack of technical know-how, bureaucratic corruption, and the poor performance of public employees. Onyeacholem (2022) argues that the main reason for the high rate of non-implementation or poor implementation of policies, programmes and projects (that are meant to enhance Nigeria's Human Capital Index, Gross Domestic Product, and Physical Infrastructure Development) is the Nigerian civil servants' poor attitude to work.

The educational institutions, especially the polytechnics, contribute significantly to the economy in several ways such as training of technical manpower, middle level management employees as well as providing employment opportunities for both academic and non-teaching staff. The education sector in Nigeria contributes significantly to the gross domestic product of the country (National Bureau of Statistic2022). The contributions of the education sector are germane to the economy and more than double of the manufacturing sector, especially in the area of technological change in the economy. More so, higher education stimulates research and hereby raises productivity which undoubtedly benefit the society. Regrettably, this subsector of the industry is facing both financial and non-financial problems due to poor inventory management practices. Some studies showed that a large number of enterprises fail because of incompetent staff put in charge of inventory management (Liedholm, MacPherson & Chuta 2020). The study by Tushabomwe (2022) revealed that poor record keeping and lack of basic inventory management experience and skills by staff of most central stores are major contributors to failure. Hence, it is imperative to empirically investigate the view of Tushabomwe (2020) in the context of some selected polytechnics in Southwest Nigeria.

Majority of studies like, (Atnafu & Balda, 2018; Otuya & Eginwin, 2019) have adopted qualitative approach and have not obtained deep insights of how inventory management systems contribute to organizational performance and yet polytechnics have intensive capital in inventories whose management is vital to the sustainability of the Nigerian education system. If nothing urgent

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is done to address this challenge, the already lean resources of the government could further rendered unproductive as a result of ineffective inventory management. As the name implies, periodic inventory control systems does not pathway inventory on a daily basis, instead, they are said to consent establishments to comprehend the opening and finish level of inventory within certain duration of time. By so doing, costs associated with routine stock management are reduced to the barest minimum thereby enhancing efficiency utilization of resources. Though adopting periodic inventory system sounds beneficial to manufacturing organizations, its applicability in tertiary institution seems not to have been given adequate attention, thus, addressing the gap in this paper.

Therefore, looking at the foregoing, the hypothesis to be tested for the study is stated as;

H₀: Periodic inventory management system has no positive and significant effect on employees' performance in selected polytechnics in Southwest, Nigeria

2. LITERATURE REVIEW

This section focuses on the review of literature under three categories, namely, conceptual, theoretical and empirical review of literature.

Conceptual Review

Meaning and Definition of Inventory Management

Inventory management is defined as a science based art of ensuring that just enough inventory stock is held by an organization to meet demand (Edwin & Florence, 2020). Inventory is the availability of any stock or resources used in an organization. Inventory systems is the set of policies that controls and monitor inventory level and determine what level should be maintained, how large an order should be made and when stock should be replenished. Inventory control is the supervision of the storage, supply and accessibility of items to ensure an adequate supply without excessive over supply. Inventory control means availability of materials whenever and wherever required by stocking adequate number and kind of stocks. The sum total of those related activities essential for the procurement, storage, sales, disposal or use of material can be referred to as inventory management. Inventory managers have to stock-up when required and utilize available storage space resourcefully so that available storage space is not exceeded (Ezeagba, 2021).

Maintaining accountability of inventory assets is the responsibility of staff in central stores or any other stores within the polytechnic. They have to meet the set budget and decide upon what to order, how to order and when to order so that stock is available on time and at the optimum cost (Anichebe & Agu, 2018). Hence, Inventory management involves planning organizing and controlling the flow of materials from their initial purchase unit through internal operations to the service point through distribution (Syed et al, 2016). When making decisions on inventory, management has to find a compromise between the different cost component, such as the cost of supplying inventory, inventory holding cost and cost resulting from sufficient inventories (Thogon & Jane, 2019; Serhil, 2020). According to Ryon (2019), inventory control is the activity which organizes the availability of item to the customers. It coordinates the purchasing, manufacturing and distribution functions to meet the marketing needs.

Vessils (2020), posits that inventory management refers to all the activities involved in developing and managing the inventory levels of raw materials, semi-finished materials(working-in-progress) and finished good so that adequate supplies are available and the costs of over or under stocks are low. Inventory management is primarily about specifying the size and placement of stocked goods. Inventory management is required at different locations within a facility or within multiple locations of a supply network to protect the regular and planned course of production against the random disturbance of running out of materials or goods. Inventory management has to do with art and science of maintaining stock levels of a given group of items incurring the least cost consistent with other relevant targets and objectives set by management (Lwiki, Ojera, Mugenda & Wachira, 2018).

Naliaka and Namusonge (2020) described inventory management as a fine line between the replenishment lead time, carrying costs, asset management, inventory forecasting, valuation of inventory, future inventory price forecasting, physical inventory, inventory visibility, available space for inventory, quality management, replenishment, returns, defective goods and demand forecasting. To this end, this study will adopt Vessils (2020) definition of inventory management which explains inventory management as all the activities involved in developing and managing the inventory levels of raw materials, semi-finished materials(working-in-progress) and finished good so that adequate supplies are available and the costs of over or understocks are low.

Inventory Management Practices

Inventory management practices involve the use of many techniques of managing inventories in an organization, these techniques are Economic Order Quantity (EOQ) method, Stock levels, ABC analysis, Strategic Supplier Partnership, Electronic Data Interchange (EDI), Just- In- Time, bar coding and Lean inventory system. All these methods can be used by any organization in managing

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inventories (Tungo, 2019). In this study, emphasis of the researcher is on inventory management practices proxies used in this study and they are: periodic inventory systems.

Types of Inventory Management Practices

Periodic Inventory Systems

Periodic inventory control systems does not pathway inventory on a daily basis, instead, they are said to consent establishments to comprehend the opening and finish level of inventory within certain duration of time. These types of inventory control systems capture inventory by employing actual inventory amounts. When actual inventory is whole, the stability in the purchases account moves into the inventory account and is accustomed to concur with end inventory cost. They are user friendly as there are few problems of using a periodic inventory system (Chopra, 2020). This shall form the focused of this study.

Just-In Time (JIT) Inventory

Just-In-Time technique is construed as aggregated practices that are used to do away with waste wherein materials, parts, and in place ordering immediately different items needed to meet instantly manufacturing requirements (Mazanai, 2022). These large-scale business methods are thought to cover the full inventory supply chain. Shared product design with suppliers and customers, moving away from incompatible sourcing nearby suppliers, minimal machine determined times, and overall preventative protection are all identified components of JIT (Mazanai, 2022). According to Mazanai (2022), JIT is an inventory technique used to improve a commercial enterprise's return on investment by reducing inventory and its associated wearing fees, as well as enhancing performance and, as a result, saving inventory management costs and lead time expenses.

Vendor Managed Inventory

Vendor Managed Inventory (VMI) is a supply chain method whereby the vendor or supplier is given the duty of managing the purchaser's inventory (Smaros et al., 2023). The vendor is given access to its purchaser's inventory and demand statistics for reasons of tracking the customer's stock level. Moreover, the vendor has the authority and the obligation to replenish the purchaser's inventory according to collectively agreed inventory control concepts and targets (Smaros et al., 2023).

Perpetual Inventory Control Systems

The perpetual inventory control system is concerned with regular updating inventory records and accounts at any time when inventory items are collected, traded from inventory, transported as of one area to alternative, retrieved from inventory, and discarded (Enikanselu 2018). The author further points out that, some establishments prefer perpetual inventory control systems because they deliver up-to-date inventory information and better hold negligible manual inventory counts. They are also chosen because they are considered fast and accurate in capturing inventory on continual basis when they are properly utilized and managed (Enikanselu, 2018). For the matter of emphasis, Chopra (2020) adds that perpetual inventory control performs better when used together with a database of inventory amounts by storeroom staffs using barcode scanners.

In spite of the importance, they have for the better performance of the organization, perpetual inventory control systems have some shortcomings. First, these systems are technologically dependent as it is impossible to maintain them manually. Instead, they require technical equipment and software, which results in a large rate of execution, particularly for businesses with a great number of locations or warehouses. In addition, they need necessary periodic maintenance and upgrades, which also add extra cost. Second, because they do not employ a consistent inventory system, a perpetual inventory system may cause recorded inventory to differ from real inventory over time. Third, since so much time occurs between physical inventory counts, they make it problematic to discover where inconsistencies in inventory amounts arise when employing a periodic inventory management system (Enikanselu, 2018). As a result, inaccuracies, stolen products, and inadequately scanned objects have an impact on the inventory that is recorded thereby creating an expected deviation from the actual inventory counts. Therefore, the choice and use of any inventory control system need careful consideration considering strengths and weaknesses it has, and on top of this its impact on an organizational performance.

Meaning and Definition of Employee Performance

Anitha (2018) reports that the performance of an individual or an organization depends strongly on all organizational activities, policies, practices, knowledge management practices and employee engagement. These elements are vital determinants fostering high levels of employee performance.

Islami, Mulolli and Mustafa (2018) on their part recognize managing performance as a planned process of which the key elements are agreement, measurement, support, feedback and positive reinforcement, which shaped outcomes in terms of performance expectation. Also, Bataineh (2017) highlight Employee's performance as a combination of efficiency and effectiveness of the employee's daily tasks to meet the expectations of the stakeholders. Isaac, Abdullah, Ramayah and Mutahar (2017) show that employees highly agree that implementing the internet in their job helped them in improving task process, education acquisition

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and the quality of their communication which lead to improving individual performance as well as organization. On the other hand, Pawirosumarto, Sarjana and Gunawan (2017) tie between employee performance and work environment that contains physical and nonphysical factors around employees which have a positive and significant effect on improving employee performance. While Smith and Bititc (2017) emphasis on improving performance measurement systems and performance management practices as factors of work's environment which enhance employee's engagement levels. Also, Mensah (2018) support their ideas when considered talent management as a critical success factor within companies which become the most core managerial value in our highly dynamic and uncertain market environment of the twenty-first-century era.

According to Hermina and Yosepha (2019), the word performance was coined from the word job performance or actual performance which indicates the work performance or actual achievement by someone. The authors stated that performance or work performance is the work quality and quantity achieved by an employee in carrying out his function in accordance with the responsibilities given to him.

Performance in the view of Al Mehrzi and Singh (2020) is the result or level of success of a person as a whole during a certain period in carrying out tasks compared to various possibilities, such as work standards, targets or targets or predetermined criteria that have been mutually agreed upon. Furthermore, Yang, Lee and Cheng (2020) state that performance is basically what employees do or do not do. Performance management is the entire activity carried out to improve the performance of a company or organization, including the performance of each individual and work group in the company. According to Shmailan, 2020, employee performance is an action, what employees do in carrying out the work done by the company. Performance in carrying out its functions is not independent, but always relates to employee job satisfaction and the level of reward given, and influenced by individual skills, abilities, and traits.

The term "employee performance" signifies individual's work achievement after exerting required effort on the job which is associated through getting a meaningful work, engaged profile, and compassionate colleagues/employers around (Karakas, 2020; Pradhan & Jena, 2020). Effective employee performance management system is imperative if an organization want to attain success. The performance-driven objective is expected to be aligned with the organizational policies so that the entire process moves away from being event-driven to become more strategic and a people-centric perspective (London, 2023; Mone & London, 2019; Pradhan & Jena, 2020). In this study, employees' performance will be viewed from the perspective of Shmailan (2020) which sees it as an action and what employees do in carrying out their day to day responsibilities

Dimensions of Employees Performance

In this study employee performance will be measured in terms of task performance, adaptive performance and contextual performance.

Task Performance: Task performance according to Pradhan and Jena (2020) comprises of job explicit behaviors which includes fundamental job responsibilities assigned as a part of job description. Task performance requires more cognitive ability and is primarily facilitated through task knowledge, task skill and task habits. Task knowledge is a requisite technical knowledge or principles to ensure job performance and having an ability to handle multiple assignments. Task skill is the applications of technical knowledge to accomplish task successfully without much supervision, while task habits is an innate ability to respond to assigned jobs that either facilitate or impede the performance (Conway in Pradhan & Jena, 2020). The main trust of task performance are the ability to do the job and prior experience. In an organizational context, task performance is a contractual understanding between a manager and a subordinate to accomplish an assigned task. Entrusted task performance is broken into two segments: technical-administrative task performance and leadership task performance. The expected job performance comprising of planning, organizing, and administering the day-to-day work through one's technical ability, business judgment and so on are called as technical-administrative task performance. Leadership task performance is labeled through setting strategic goals, upholding the necessary performance standards, motivating and directing subordinates to accomplish the job through encouragement, recognition, and constructive criticisms (Borman, & Brush in Pradhan & Jena, 2020; Tripathy, 2019). Job performance in the context of task performance in this study is effectiveness with which job occupants execute their assigned tasks, that assists in realizing the fulfillment of organization's vision while rewarding organization and individual proportionately (Borman & Motowidlo in Pradhan & Jena, 2022). Task performance in relation to organizational formal reward system is the demonstrated skill and behavior that influences the direct production of goods or service, or any kind of activities that provides indirect supports to organization's core technical processes.

Adaptive Performance: It is an individual's ability to acclimatize and provide necessary support to the job profile in a dynamic work situation. Literatures have shown that once the employees derive a certain amount of perfection in their assigned tasks, they try to adapt their attitude and behavior to the varied requirements of their job roles (Huang, Ryan, Zabel & Palmer, 2019; Parker, Williams, & Turner, 2006). An effective adaptive performance necessitates employees' ability to efficiently deal with

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volatile work circumstances, for example, technological transformations, changes in one's core job assignment, restructuring of organization and so on (Baard, Rench, & Kozlowski, 2019). Evolutions of various new occupations as an offshoot of technological innovation need employees to engage in fresh learning and get oneself adaptable with changes in an efficient manner (Griffin, Parker & Mason, 2020). In view of this, employees are expected to adjust their interpersonal behavior in such changed circumstances to work successfully with a wide range of peers and subordinates. In the context of wholesome work performance, Griffin, Neal, and Parker (2019) cited that job proficiency may aid for task performance, but adaptability and pro-activeness to one's job role is important to address uncertain business environments.

Contextual Performance: This means helping or assisting other employees to adapt to the various job roles. Contextual performance consists of different dimensions such as teamwork, allegiance, and determination (Bergeron, 2019). Contextual performance is a kind of attitude like volunteering for extra work, helping others in solving difficult task, upholding enthusiasm at work, cooperating with others at the time of need, sharing critical resources and information for organizational development, abiding by the prescribed rules and regulations, and supporting organizational decisions for a better change (Coleman, & Borman, 2020; Motowidlo, & Schmit in Pradhan & Jena, 2019).

Measurement of Employee Performance

The most difficult part of the performance appraisal policy is to accurately and objectively measure the employee performance (Bond & Fox, 2017). Measuring the performance covers the evaluation of the main tasks completed and the accomplishments of the employee in a given time period in comparison with the goals set at the beginning of the period (Rudman, 2023). According to Kuvaas (2020), measuring also encompasses the quality of the accomplishments, the compliance with the desired standards, the costs involved and the time taken in achieving the results. Bond and Fox (2017) contend that measuring employee performance is the basis of performance appraisal policy and performance management. Accurate and efficient performance measurement not only forms the basis of an accurate performance review but also gives way to judging and measuring employee potential (Fletcher & Bailey, 2023).

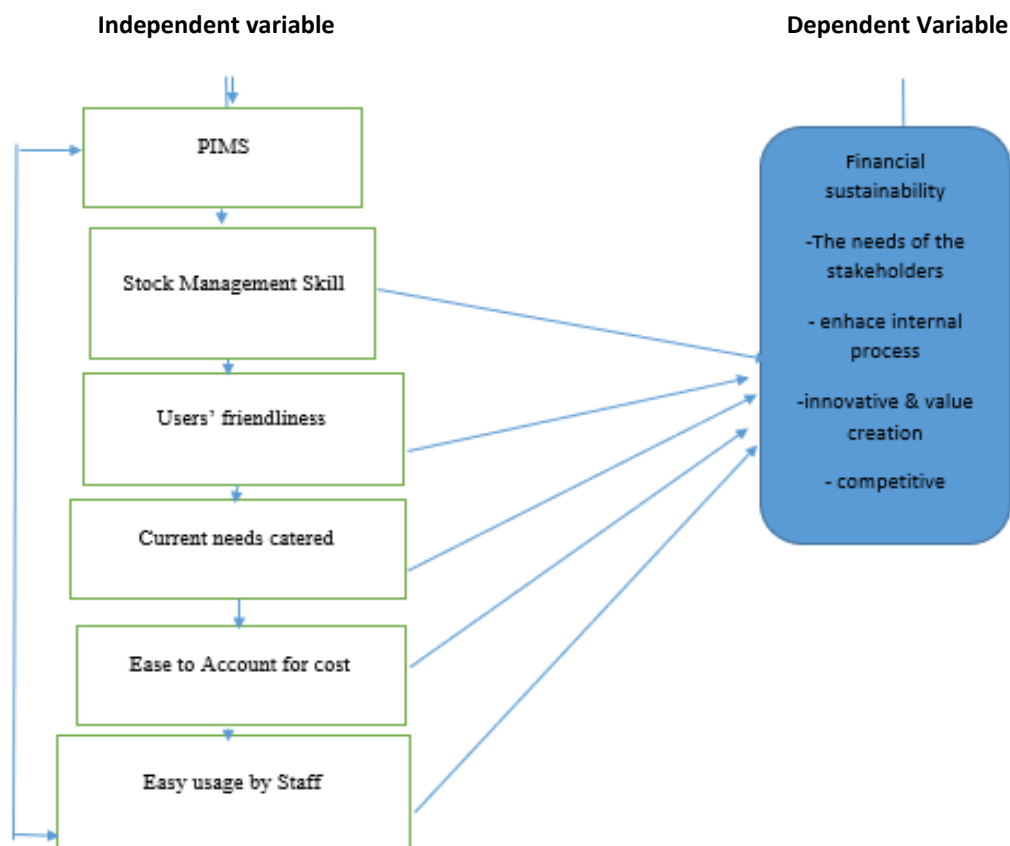
For the purpose of measuring employee performance, different input forms can be used for taking the feedback from the various sources like the supervisor, peers and the employee (Mello, 2020). According to Rudman (2023), all the perspectives thus received should be combined in the appropriate manner and to get an overall, complete view of the employees' performance. According to Anderson (2022), for an organization to be effective for its goals, it is very important to monitor or measure its employee performance on a regular basis. Effective monitoring and measuring also includes providing timely feedback and reviews of the employees for their work and performance according to the predetermined goals and solving the problems faced (Mani, 2022). Rudman (2023) highlights that timely recognition of the accomplishment also motivates and helps to improve the performance of employees.

Theoretical Framework

This study was hinged on the resource based theory propounded by Wernerfelt (1984). According to Wernerfelt (1984) there are two major assumptions of the theory, namely, The heterogeneous nature of resources assumes that firms achieve competitive advantage when organization makes use of resources that are significantly different from that of competitors (Kim, Shin, kim & Lee, 2011). The second assumption of resource-based view theory is that firm's resources are non-movable and non-transferable that is, resources attributed to a particular company do not move from one company to another at least in a short run (Akio, 2005). A company achieves a competitive advantage when it has key resources (these can be physical resources, human resources or organizational resources) that its competitors do not have (Barney, 1991). Criticizing this theory, Carr and Pearson (2002) argued that a firm might lose its competitive advantage if important inventory management skills are scarce or getting lost as they are not easily duplicated or substituted. Another major drawback of RBV is that the theory is operationally invalid in the sense that it is only applicable in a static environment which is not the case for real life situation (Therious, Aggelidis & Theriou, 2009). Evidence of usage of this theory include Sulastri (2006) who argued that RBV approach is useful by employing various strategies in controlling inventories in the organization through optimal utilization and allocation to be more competitive and improve on performance. Resource based view theory has been largely criticized from the dynamic point of view and this view remains the most prominent of all other critical views. RBV theory is found very relevant to this study because the various strategies of RBV can be used in controlling inventories in the organization through optimal utilization. Similarly, timely usage of stock reduces the cost of keeping stock and the attendant associated problems

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Conceptual Framework



Source: Adapted from Pradha and Jena (2020).

Empirical Review

Gołaś (2020) conducted a study on the effect of inventory management on employees' performance and profitability: evidence from the Polish food industry in Europe. The main purpose of this study was to verify the causative link between inventory performance and profitability of food companies. This was done using the panel data methodology at the level of Polish food industry sub-sectors. The study takes account of the inventory mix, which includes the stocks of raw and other materials, work-in-progress, finished products and commodities. As shown by the analysis, the 2005–2017 period witnessed a decline in the share of inventories in total assets and in current assets. That trend was accompanied by an improvement in inventory management efficiency. The study also found that the day's sales of inventory for total stocks clearly tends to become shorter due to a reduction in the days in inventory ratio for materials and finished products. Based on panel regression models, this study demonstrated that an improvement in inventory management efficiency is positively correlated with financial performance, measured as the return on operating assets.

Kwadwo (2022) investigated the impact of efficient inventory management on the profitability of manufacturing firms in Ghana. The study adopted the cross-sectioned design and employed the use of secondary data. The cross sections data gathered covered the period 2004- 2014 from the annual reports of four manufacturing companies listed in Ghana stock Exchange (GSE). The four companies were selected through the judgmental sampling procedure. Measures of profitability were examined and linked to proxies for efficient inventory management by manufacturers. The ordinary least square (OLS) that came in the form of multiple regression models was employed in data analysis. The study found that there is a significantly strong correlation between inventory management and profitability of manufacturing firms in Ghana.

Agu, Obi and Eke (2022) sought to ascertain the extent at which inventory control affect the productivity of selected manufacturing firms, to determine the nature of the relationship between demand management and customer satisfaction of selected manufacturing firms and to determine the effect of Just – in- time on the growth of selected manufacturing firms. The study had a population size of 996, out of which a sample size of 285 was realized using Taro Yemini's formula at 5% error tolerance and 95% level of confidence. The instrument used for data collection was primarily questionnaire and interview. Out of 285 copies of the questionnaire that were distributed, 270 copies were returned while 15 were not returned. The descriptive survey research

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design was adopted for the study. The hypotheses were tested using Pearson product moment correlation coefficient and simple linear regression statistical tools. The findings indicate that inventory control significantly affects productivity of selected manufacturing firms. There is a positive relationship between demand management and customer satisfaction of selected manufacturing firms. Just – in – time has a significant effect on growth of the selected manufacturing firms. The study concluded that inventory management is essential in the operation of any business. Inventory as an asset on the balance sheet of companies has taken on increased importance because many companies are applying the strategy of reducing their investment in fixed assets.

3. METHODOLOGY

The study was conducted in southwest geopolitical zone of Nigeria. The Southwest is one of the zones of Nigeria representing both a geographic and political region of the country's Western Coast. It comprises six states- Ondo, Osun, Ekiti, Oyo, Ogun and Lagos. The zone was used because it has the highest number of polytechnics in Nigeria (NBTE, 2023). Beside this, all the polytechnics in the zone operate standard central store with sufficient number of staff required to execute this study. Additionally, the choice of the study area was informed by the increasing growth of polytechnic education in Ondo, Osun, Ekiti, Oyo, Ogun and Lagos, as well as the conducive and secured academic environment in the areas which pave way for research exercise. This study adopts survey research design. Survey research design is adjudged to be appropriate for this study because it provides an accurate account of the behaviour, opinions, beliefs, and knowledge of a particular individual or group through the use of questionnaire. The choice of the survey method is consistent with Hair, Money, Samuel and Page (2017) submission that such a method is usually interested in the assessment of the characteristics of the population of study. Besides, the survey research design helps to evaluate the implications and interrelationship between inventory management system and employees performance. The target population of the study comprises 736 management staff in selected polytechnics in Southwest, Nigeria. The management staff to be included in the study are the Rectors, Deputy Rector Academics, Deputy Rector Administration, Registrars, Deputy Registrars, Bursars, Directors in the bursary, Librarians, Deputy Librarians, Deans of Schools and Head of Departments of sixteen (16) Polytechnics in Southwest, Nigeria which had existed for minimum of ten (10) years prior to this study. Criterion sampling technique was adopted for the study. Criterion sampling involves the identification of a certain criterion of importance, articulation of this criterion and systematic review and study of cases that meet the criterion. In this study, only polytechnics (federal, state and private) that had existed for not less than ten (10) years from the period of conducting this study were selected. Subsequently, purposive selection of sixteen (16) polytechnics which had existed for 10 years and above prior to this study. Using year of establishment and a minimum of ten years prior to the time this study, four (4) federal, six (6) state and six (6) private polytechnics respectively were selected for the study. Primary data were used for the study. Primary data used for the study were sourced from the management staff of the sixteen selected Polytechnics used for the study and were collected with the aid of questionnaire. The instrument used for primary data collection is the questionnaire. The questionnaire was exposed to content validity test by giving the draft copy of the questionnaire to a lecturer in the department of test and measurement, Obafemi Awolowo University, Ile-Ife. The comment and observations of the lecturer were integrated as part of the correction, thus, confirming that the instrument used for the study was valid. More so, the reliability test was carried out using Cronbach alpha coefficient that gave a reliability coefficient of 0.98, thus, affirming that the questionnaire used was reliable. The descriptive statistics and inferential statistics of Ordinary Least Square test (OLS) were used to investigate the objective of the study.

Model Specification

The model for the study followed the work of Akinjide and Ojo (2023) but with slight modification that indicated the inclusion of period inventory parameters of User Friendliness, Current Needs Catered For, easy to Account For Cost and Easy Usage by Staff. Functionally, the model for this study is defined as;

$$OPER = f(SMS, USF, CNCF, EAFC, EUS) \quad (3.1)$$

In mathematical form the functional model in (3.1) is redefined as;

$$OP = \alpha + \beta_1 SMS + \beta_2 USF + \beta_3 CNCF + \beta_4 EAFC + \beta_5 EUS + \epsilon \dots\dots\dots (3.2)$$

Where:

OPER = Organizational Performance

SMS= Stock Management Skills

USF= User Friendliness

CNCF= Current Needs Catered For

EAFC= Easy to Account For Cost

EUS= Easy Usage by Staff

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α = Constant

$\beta_1 - \beta_5$ = Slope of the Gradient

ϵ = Error Term

Presentation and Discussion of Result

Table 1 Presented the frequency distribution of respondents' demographic characteristics.

Demographic Variable	Frequency	% Percentage
Gender		
Male	474	65.83
Female	246	32.17
Age in years		
20-30	141	19.58
31-40	168	23.33
41-50	328	45.56
51 and above	83	11.53
Educational Qualification		
HND/B.Sc.	515	71.53
MBA/MSc/MA	145	20.14
Ph.D.	-	-
OTHERS	60	8.33
Years of working Experience		
1-5	133	18.47
6-10	281	39.03
11-15	178	24.72
16 and above	128	17.78
Marital Status		
Single	84	11.67
Married	580	80.56
Divorced	30	4.17
Widow	26	3.61

Source: Researcher's Fieldwork, 2024

Table 1 presented the frequency distribution of respondents' demographical characteristics. Looking at the result in the table, the frequency distribution of respondents by gender revealed that 65.83% of the respondents in the selected polytechnic in Southwest Nigeria were male while 32.17% of the respondents were female. This indicated that a substantial number of the respondents were male. As a result of this, any opinion generated from this category of respondent might influence the outcome of the study. More so, the frequency distribution of respondents according to age in years showed that 19.38% of the respondents were between 20-30 years of age while 23.33%, 45.56% and 11 the.53% respondents were 31-40, 41-50 and 51 and above years of age. This implied that an adequate number of the respondents were 41-50 years of age, invariably, the variable might influence the way the respondents responded to the test statement.

In addition, the frequency distribution of respondents by educational qualification revealed that 71.53% of the respondents had HND/BSC while 20.14% and 8.33%% of the respondents had MBA/MSc/MA and others such as professional certificates in Store-keeping and purchasing and supply and procurement respectively. The result revealed that a sufficient number of the respondents had HND/BSC. This variable might affect positively the way the respondents rated the test items on inventory and employees performance.

Furthermore, the frequency distribution of respondents by years of working experience indicated that 18.47% of the respondents had between 1-5 years of working experience on the job while 39.03%, 24.72% and 17.78% of the respondents had 6-10, 11-15 and 16 and above years of working experience on the job. This implied that a substantial number of the respondents had 6 -10 years of working experience as store keepers. This variable might influence greatly the outcome of the study.

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Also, the frequency distribution of respondents by marital status showed that 11.67% of the respondents were single while 80.56%, 4.17% and 3.61% of the respondents had married, divorced and widowed respectively. This implied that a substantial number of the respondents had married, thus, enabled diversity in opinions of the respondents regarding the test items.

Table 2 Mean and Standard Deviation Computed for the variable of Perception of Respondent on Periodic Inventory Practice Management

S/N	Variable	N	Mean	STD	Rank	Remark
1	Periodic supply of inventory when they are needed has taught me stock management skills.	720	4.49	0.63	1 st	A good Determinant of PIS
2	PIS issuer friendly as there are few problems associated with using it.	720	4.26	0.72	2.5 th	A good Determinant of PIS
3	Our institution designed PIS uniquely and current needs are catered for.	720	4.31	0.72	2.5 th	A good Determinant of PIS
4	Store employees find it easy to account for cost associated with PIS.	720	4.12	0.90	5 th	A good Determinant of PIS
5	PIS is designed for easy usage by staff in Central stores of Nigeria's Polytechnics.	720	4.13	0.89	4 th	A good Determinant of PIS

Source: Researcher's Fieldwork, 2024 ** Acceptable mean =3.00 on a five point likert scale

** A test item was a good determinant of PIS if mean calculated > or equal to 3.00 or otherwise

**STD= Standard Deviation **Rank was done on the basis of STD

The mean values obtained for the test items on period inventory revealed that a substantial number of the respondents agreed with all the test items. The implication of this was that an adequate number of the respondents supported the fact that period inventory enhanced employee stock management skills, the inventory method was users friendly, the inventory helped in catering for current needs of the institution, aided stock employee to be able to account for inventory cost easily and PIS simplified usage for staff in the central store. This inferred was hinged on the fact that the mean value computed for the test items were greater than the acceptable mean of 3.00 with standard deviation that showed slight dispersion from the mean. This reconfirmed period inventory could aid the selected institutions performance.

Table 3 Mean and Standard Deviation computed for the variable of Organizational Performance

S/N	Variable	N	Mean	STD	Rank	Remark
1	Inventory management practices adopted has helped this institution to be financially sustainable	720	4.08	0.97	3 rd	Enhanced Performance
2	Inventory management practices adopted has helped this institution to meet the needs of the stakeholders	720	4.13	0.82	2 nd	Enhanced Performance
3	Inventory management practices adopted enhances the internal processes of this institution	720	4.21	0.74	1 st	Enhanced Performance
4	Inventory management practices adopted has helped this institution in its innovativeness and value creation	720	3.80	1.04	5 th	Enhanced performance
5	Inventory management practices adopted has helped this institution to remain competitive in the educational sector.	720	4.04	0.98	4 th	

Source: Researcher's Fieldwork, 2024 ** Acceptable mean =3.00 on a five point likert scale

** A test item had enhanced performance if mean calculated > or equal to 3.00 or otherwise

**STD= Standard Deviation **Rank was done on the basis of STD

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Table 3 presented the mean and standard deviation obtained for the respondents perception of the variable of organizational performance. Checking the result in Table 4, it was discovered that with the aid of period inventory system, organization performance might increase. The performance of the selected polytechnics especially with regard to financial sustainability as regard inventory control, meeting the needs of stakeholders, effective internal control, enhanced innovation and value creation and ensue competitiveness had been enhanced through the adoption of period inventory system. This assertion was hinged on the fact that the mean value obtained for all the test items of performance were fact greater than the acceptable mean of 3.00 with standard deviation that indicated slight variability from the mean.

Test of Hypothesis Three

H₀: Periodic inventory management system has no positive and significant effect on employees' performance in selected polytechnics in Southwest, Nigeria

Objective Three: Assess the effect of periodic inventory management systems on employees' performance in selected polytechnics in Southwest, Nigeria.

Table 4 Regression Result

Dependent variable = Organizational Performance (OPER)

Variable	Coefficient	Standard Error	Z-Calculated	P-value
C	5.124293	7.688537	0.666485	0.8450
SMS	0.064903	0.012138	5.347092	0.0000
USF	0.355497	0.134750	2.638184	0.0085
CNCF	0.346517	0.137265	2.524449	0.0118
EAFC	0.193756	0.007769	24.93963	0.0000
EUS	0.380431	0.107526	3.538027	0.0004
	OTHER	TEST	STATISTICS	
R-squared	0.597839		Mean dependent var	10.02643
Adjusted R-squared	0.591477		S.D. dependent var	2.534356
S.E. of regression	2.415659		Akaike info criterion	8.610178
Sum squared resid	4137.305		Schwarz criterion	8.648546
Log likelihood	-1642.139		Hannan-Q-uinn criter.	8.624995
F-statistic	85.37816		Durbin-Watson stat	1.782665
Prob(F-statistic)	0.000000			

Source: Researcher's computation, 2023 (E-view 10).

**Components of PIS SMS= STOCK MANAGEMENT SKILLS, USF= USER FRIENDLY, CNCF= CURRENT NEEDS CATERED FOR, EAFC= EASY TO ACCOUNT FOR COST & EUS= EASY USAGE BY STAFF

Organizations adopted the periodic inventory system of management in order to avoid unnecessary cost incurred in holding inventory in stock. In this way, an organization using period inventory was sure to have lower cost holding, thus, increasing both financial and non-financial performance. Looking critically at the result in table 4.10, it was discovered that the relationship between the variable of stock management skills and performance of the selected polytechnics was positive and significant. This inferred was premised on the fact that the regression coefficient computed for the variable of SMS of 0.06 was positive with a significant t-statistics value of 5.35. The value showed that a unit increase in the variable of SMS could cause a 0.43% increase in the performance of the selected polytechnics. The sign of the variable of SMS was in conformity with a priori expectation. As a result of this the variable of stock management skills was a good measurement of the period inventory system that enhanced the

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performance of the polytechnics since the variable was significant. The p-value of the t-statistics computed for the variable of SMS of 0.0000 was less than the critical value of 5%. This showed that the variable stock management skills was significant on the performance of the selected polytechnics. Polytechnics were established to offer the service of qualitative education to the society. As a result of this, the store managers of these polytechnics must realize their performance towards effective manage of materials in stock could affect the overall performance of the polytechnics. Hence, with periodic inventory system the store managers and other assistants could learn how to manage stock efficiently and effectively in order to improve the performance of the polytechnics regarding satisfying the materials needs of departments, units and directorates. This might be achieved through knowledge of the periodic prioritization of necessary materials needs of a department. It could also be achieved through periodic inventory exposure of the central stores' assistants to various soft wares' used in periodic inventory system. With period system of inventory central store employees were expected to know how to evaluate costs of order and holding inventory on a periodic basis. This knowledge of inventory costs enhanced the skills of the central employees regarding the management of inventory costs, thus, freeing more incomes for the polytechnics.

Moreover, the result in table 4.10 indicated that the effect of the variable of users friendly on the performance of the polytechnics in South-West, Nigeria was positive and significant. This assertion was based on the fact that the regression coefficient computed for the variable of user friendly (USF) of 0.36 was positive with a significant t-statistics value of 2.64. The values revealed that a 1% increase in the variable of USF could cause an approximately 0.36% increase in the performance of the selected polytechnics. The sign of the variable of USF was in conformity with a priori expectation for the test item. Therefore, Users friendly might be a good measurement of the performance of the selected polytechnics. The result further revealed that the p-value of the t-statistics calculated for the variable of users friendly of 0.0085 was less than the critical value of 5%. This implied that USF was significant on the performance of the selected institutions. Polytechnics could performance effectively if other non-financial aspect of the institutions contributed immensely to the performance of the selected polytechnics. In this way, the periodic inventory management adopted by the institutions was expected to be within the scope and limit of the central store employee understanding and knowledge. This was necessary in order to improve the contribution of the central store towards reducing the costs of holding and ordering inventory in order to increase the financial and non-financial performance of the polytechnics. Hence, PIS must adapt to the skills and knowledge of the store employees so that the utilization of the inventory system, could affect positively the productivity of the organizations.

In addition, it was found that the relationship between the variable of current needs catered for (CNCF) and performance of the selected polytechnics was positive and significant. This assertion was based on the fact that the regression coefficient computed for the variable of CNCF of 0.35 was positive with a significant t-statistics value of 2.52. The regression coefficient showed that a 1% increase in the variable of CNCF could lead to 0.35% improvements in the performance of the selected Polytechnics. The sign of the variable of CNCF was in conformity with a priori expectation for the test item, hence CNCF was a good variable of PIC that enhanced the performance of the organization. Meanwhile, the p-value of the t-statistics computed for the current need catered for of 0.0118 was less than the critical value of 5%. The value indicated that the null hypothesis which stated that the variable of CNCF was not significant on the performance of the selected polytechnics was rejected. As a result of this the variable of CNCF was significant on the performance of the polytechnics. The ability of the department, unit and directorate to meet t6he goal specific by the organization for the department could increase if the inventory management adopted by the institution could cater for the needs of the various units. In this way, the periodic inventory control system must be able to identify the needs of the various segments of the organization with a view to meet the needs. For instance, a department that needed instructional materials in order to be effective in teaching must be able to get the required needs. More so, the non-academic unit that needed additional file jacket for proper documentation of students must be able to get the requested files through PIS without much stress. This arrangement improved the capacity of the units to be able to meet the goals set out for them, thus, enhancing the achievement of the overall goals of the polytechnics. Periodic inventory must identified needs, made order for the needs and ensure that the costs of ordering and holding of stock were not too much as to wipe out the entire incomes of the polytechnics. This was the parts of the way the PIS might affect performance of the organization positively.

Also, the result in table 4.10 indicated that the effect of the variable of easy to account for cost (EAFC) on the performance of the selected polytechnics was positive and significant. This assertion was hinged on the fact that the regression coefficient computed for the variable of EAFC of 0.19 was positive with a significant t-statistics value of 24.94. The regression coefficient revealed that a 1% increase in the variable of EAFC could cause a 0.19% improvement in the performance of the polytechnics. The sign of the variable of EAFC was in tandem with a priori expectation for the variable. Also, the p-value of the t-statistics computed for the variable of EAFC of 0.0000 was less than the critical value of 5%. The implication of this was that EAFC was significant on the performance of the selected organization. Polytechnics must realize that the major goal of using an inventory management

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technique was to cut-down on the costs of inventory. With periodic inventory system the objective must be to attain an inventory cost level that could contribute more to incomes than costs. This according to Smith (2021) could only be achieved if PIS was used to determine inventory level; that could achieve economic order quantity for the organization. Thus, in this way, the store managers who were the representative of the management must continuously determine the economic order quantity on which costs of ordering and holding inventory periodically could be minimized. With this in mind the lower cost of holding and ordering inventory might be obtained, hence, enhancing the performance of the institutions as it related to cost efficiency and effectiveness. On this note, Akintaju, Alawode and Ojo (2021) opined that the major target of inventory management model is to reduce cost of inventory, thus, enabling an organization to eliminate continuous inventory cost of ordering and holding stock. This added seriously to incomes and facilitates the performance of an organization with regard to other performance indicators.

In continuation, the result in table 4.10 showed that the relationship between the variable of easy usage by staff (EUS) of the central store and performance of the selected polytechnics was positive and significant. This inferred was premised on the fact that the regression coefficient computed for the variable of EUS of 0.38 was positive with a significant t-statistics value of 3.54. The regression coefficient indicated that a 1% increase in the variable of EUS of PIS by the central store staff might cause a 0.38% increase in the performance of the selected polytechnics. The sign of the variable of EUS was in tandem with a priori expectation for the variable. The result further revealed that the p-value of the t-statistics calculated for the variable of EUS of 0.0004 was less than the critical value of 5%. This implied that the null hypothesis which stated that easy usage of PIS by staff of the central store was not significant on the variable of performance was rejected. It was essential to state that EUS was significant on the performance of the selected polytechnics. Period inventory system was easy to use, understand and create better interaction between the staff and PIS tool in order to enhance the efficiency and effectiveness of the system. In this way, PIS tool must not be cumbersome, complex and difficult to use by staff of the central store. Designing PIS tools in this way might make the computation of the various control store levels difficult. It could generate inventory costs that might not be accurate, therefore, affecting the accuracy of the financial reporting balances and consequently understated the financial performance of the selected polytechnics. Therefore, the periodic inventory system (PIS) adopted by the polytechnic must be simple, easy to use, easy to understand and effective in the ascertainment of the relevant inventory control levels in order to have correct information on costs of inventory that enhanced performance.

The results of other test statistics computed for the test indicated that periodic inventory system if rightly applied might affect the performance of the organizations positively. For instance, the coefficient of determination (R^2) computed for the test of 0.60 showed that approximately 60% of the performance of the selected polytechnics was as a result of the adoption of the PIS. As a result of this PIS might be a good explanatory variable for the performance of the selected polytechnics. Moreover, the p-value of the F-Statistics computed for the test of 0.0000 was less than the critical value of 5% with significant Statistics of 85.38. This implied that the joint null hypothesis three which stated that Periodic inventory management system had no positive and significant effect on performance of the selected polytechnics in Southwest, Nigeria, was rejected. It was reasonable to state that Periodic inventory management system had positive and significant effect on performance of the in selected polytechnics in Southwest, Nigeria. The results of the information criterions revealed that PIS provided better information on the flow of performance of the polytechnics. All deviances and restrictions for the test were within the acceptable limit, thus, showing that PIS greatly boosted the performance of the selected polytechnics in South-West, Nigeria. More so, the Durbin-Watson statistics computed for the test of 1.782665 showed that there was no serial correlation between the variables of period inventory system and performance of the polytechnics. This reaffirmed that PIS might one of the inventory systems that if applied might enhance the efficiency and effectiveness of the selected polytechnics.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study discovered that period inventory system if rightly applied positively influenced the performance of the selected polytechnic. Therefore, it was concluded that stock management skills as a period inventory variable enhanced organizational performance. User friendly as a PIS variable improved organizational performance. More so, current needs catered for as PIS determinant was positively related to the performance of the institutions. In addition, easy to account for cost and easy usage by staff as variables of period inventory system contributed positively to the performance of the selected polytechnics.

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Recommendations

The following recommendations are made.

- The selected polytechnics must as a matter of priority considers only inventory management that can adapt very well with the polytechnics model of operations. For instance, JIT inventory management can only be used in a polytechnics that has the necessary inventory software or JIT system inventory software that can facilitate the use of JIT inventory management system.
- In addition, periodic inventory since its lower the cost of holding stock of inventory may be used by the polytechnics but care must be taken when inventory needs of the polytechnics consistently fluctuates overtime, thus, indicating the need to change the inventory system. In this way, the polytechnics are advised to only use the periodic inventory when inventory needs of the units, directorates and departments are static in demand.

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