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PERPETUAL INVENTORY MANAGEMENT PRACTICE APPLIED BY STORES OFFICERS IN PUBLIC TERTIARY EDUCATIONAL INSTITUTIONS IN SOUTH-EAST NIGERIA

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ABSTRACT
This study examined the perpetual inventory management practice applied by Stores Officers in public tertiary educational institutions in South-East Nigeria. One research question guided the study. Two null hypotheses were tested at 0.05 level of significance. Related literature pertinent to the study were reviewed which exposed the need for the study. Descriptive survey research design was adopted, using a population of 747 Stores Officers in all the public tertiary educational institutions. Taro Yamani formula was used to select a sample size of 261 Stores Officers. A structured questionnaire developed by the researcher was used for data collection. Cronbach Alpha method was used to establish the reliability of the instrument. The reliability yielded coefficient value of 0.80. Out of the 261 copies of the questionnaire distributed, 208 (representing 79.69 %) were duly completed, retrieved and used for data analysis. Data collected were analyzed using mean, standard deviation and ANOVA. Mean was used to analyze data related to the research questions and standard deviation was used to explain how the responses of the respondents varied. ANOVA was used to test the hypotheses at 0.05 level of significant. The results showed that perpetual inventory management practice was lowly applied by Stores Officers in public tertiary educational institutions in South-East Nigeria. The results further revealed that Stores Officers in universities, polytechnics and colleges of education do not differ significantly in their mean ratings on the extent they apply perpetual inventory management practice in public tertiary educational institutions in South-East Nigeria. Also, there is no significant difference among the three groups in terms of their mean ratings on the extent they apply perpetual inventory management practice in public tertiary educational institutions in South-East Nigeria based on experience. Therefore, the null hypothesis of no significant difference was not rejected. Based on the findings, the researcher recommended among others, that the management of tertiary educational institutions should sponsor their stores personnel to training in the area of inventory control management that will empower them to adequately apply different inventory management practices for smooth running of the institutions.

Keywords: Perpetual inventory management**,** inventory management practice, stores officers and tertiary educational institutions.

Introduction

Tertiary educational institutions purchase different materials and equipment known as inventory. Inventory is an asset in the form of materials and equipment in the production and service delivery processes. These materials and equipment are often properly stored in order to avoid discrepancies or loss and hence, the need for inventory control system for effective and efficient management. Inventory has helped in the growth and survival of an institution by ensuring regular supply of materials and equipment as at when required. Daniel (2017) defined inventory management simply as the management of inventory or stock. In educational institutions, inventory includes equipment and materials used in instructional delivery such as books, magazines, among others. According to International Federation of Accountants (IFAC, 2015), inventories encompass goods purchased and held for resale including, for example, merchandise purchased by an entity and held for resale, or land and other property held for sale. Inventories also include materials and supplies awaiting use in the production process and goods purchased or produced by an entity, which are for distribution to other parties for no charge or for a nominal charge; for example, educational books produced by a health authority for donation to schools. According to Kyalo, Iravo and Maurice (2018), inventories are materials stored, waiting for processing, or experiencing processing. They are ever-present throughout all sectors of the economy. In the context of this study inventory is the tangible material assets in an educational institutions (especially tertiary institutions) excepting fixed assets which are used to ensure smooth running of that institution in order to enhance teaching and learning. Supply of these materials is affected by funding such that where funding is insufficient as in the Nigerian situation, inventory supply is inadequate or grossly inadequate in some cases for effective teaching and learning. This calls for prudent management of inventory; hence Fedena (2019) averred that it is important to safeguard school equipment and materials in order to ensure efficiency of use.

Inventory management in schools is the management of educational tools and resources to ensure that they are cared for properly and utilized in the ideal fashion to achieve high returns on the expenditure and labour on them. Inventory management thus affects multiple concerns an institution would have from ensuring that their investment has good returns but also ensuring that all their stakeholders benefit from everything the institution has to offer. Tertiary education institutions have a responsibility to manage their inventory and assets appropriately, because there are so many stakeholders involved. This is why Pontius (2020) explained that educational institutions receive funding, tuition, and other endowments that make them especially accountable to these stakeholders. More importantly, these institutions fall under the governance of the Governmental Accounting Standards Board (GASB) or the Financial Accounting Standards Board (FASB) this makes their compliance with the standards critical to their continued operations. Standards in financial reporting activities of tertiary institutions in the South-East would

facilitate inventory management. It is also a truism that the standards and practices would be applied to control corrupt practices by store officers. In view of the fact that inventory management is very important to educational institutions, both the administration and employees are expected to be aware of the best practices associated with the management of inventory and fixed assets. Schools have two types of stock namely educational materials, equipment and supplies. These equipment cost money and if they are left in a warehouse unused, quickly become outdated and no longer usable. This underscores the need for tertiary institutions to establish policies to ensure proper inventory management.

Tertiary educational institutions in this study include public universities, polytechnics and colleges of education which are established to meet the nation's need for socio-economic development through knowledge-sharing, research and development. Managing inventories by stores officers at public tertiary institutions is one of the major challenges for higher educational institutions in Nigeria especially South-East. Store Officers in tertiary educational institutions are responsible for the entire layout of the storeroom and all items therein. According to Russell (2021), store officer oversees financial and management matters relating to stock supplied or received in an organization, business or company. Store officer keeps track of information in order to keep businesses and supply chains on schedule. In the store, the store officer identifies goods through coding, control inventory analysis dispose materials that are no more useful and purchase raw materials for production. They ensure proper scheduling, record keeping, and inventory control. In the context of this study, store officer is a person who is responsible for acquisition, distribution and storage of all office and institution supplies in tertiary educational institution. Achieving these expectations in the every growing public tertiary institution calls for inventory management practices. Many practices are available for effectively managing inventories. According to Daniel (2017), the inventory management practices that are universally adopted by firms include Economic Order Quantity (EOQ) model, ABC model, Vendor Managed Inventory (VMI), Just-In-Time model, Bar-coding, Periodic review, Perpetual Review, Simulation, among others. This study focused on perpetual inventory management practices in public tertiary institutions.

Perpetual inventory maintains a continuous record of physical quantities of inventory. It records the purchase of each item of inventory. Perpetual inventory allows for more real-time inventory tracking, making it superior to other methods. However, the system requires consistent record-keeping and monitoring. This system is essential for adequate management planning and controls over inventory maintained and stock out (Yitayew, 2014). The perpetual inventory control system continually updates inventory records and accounts for additions and subtractions when inventory items are received, sold from stock, moved from one location to another, picked from inventory, and scrapped. According to Yunis (2019), some organizations prefer perpetual inventory control systems because

they deliver up-to-date inventory information and better handle minimal physical inventory counts. Perpetual inventory control systems are also preferred for tracking inventory because they deliver accurate results on a continual basis when managed properly. According to Chopra (2015), this type of inventory control system works best when used in conjunction with a database of inventory quantities and bin locations up-dated in real time by warehouse workers using barcode scanners. Perpetual inventory system is preferred in organizations due to the fact that it delivers inventory information that are not outdated thus handle minimal physical inventory counts.

In a perpetual first-in, first-out (FIFO) system, the company includes sales as they happen in the ledger. The company still performs physical inventories, but only to confirm the accuracy of the ledger's data. They perform these either yearly or by cycle counting. The biggest difference in the ledger in a perpetual system as compared to a periodic system is that the balance is a running tally of not only the units but the value (or total cost) of those units. The unit cost moved over in the balance is based on when the stock sold came in. Stock maintains the value the company purchased it for throughout its lifecycle in the company. In a perpetual last-in, first out (LIFO) system, the company also uses the running ledger tally for purchases and sales, but they sell the inventory that they last purchased before moving to older inventory. In other words, the cost of what they sell is the same as what they most recently paid for that inventory. In a perpetual weighted average calculation, the company keeps a running tally of the purchases, sales and unit costs. The software recalculates the unit cost after every purchase, showing the current balance of units in stock and the average of their prices. The next sales transaction reflects this newly calculated unit cost.

Respondent variable that can influence the inventory management practices applied by store officers in public tertiary educational institutions in South-East Nigeria could be type of institution and years of experience. Type of institution in this research study means all conventional federal universities and colleges of education. Federal tertiary educational institutions are likely to apply inventory management practices before the State follows. Odimmega in Ile and Mbanugo (2022) reported that there was a significant difference in the views of accounting officers in the universities, polytechnics and colleges of education on the use of accounting techniques and standards. Stores Officers in this study are among the account officers. The knowledge, experience and expertise of accounting officers such as Stores Officers may determine the extent of application of inventory management practices in tertiary educational institutions in South East Nigeria. According to Boger in Ile and Odimmega (2018), Nigerian tertiary institutions do not attract grants from international agencies because of lack of internal transparency and accountability. Boger further stated that experienced accounting professionals can carefully adopt generally accepted principles in preparation of financial statements in order to ensure transparency and accountability of accounting information. It is on the basis of this background that this study was

conceived to determine the economic order quantity inventory management practices applied by Stores Officers in public tertiary educational institutions in South-east Nigeria.

Statement of the Problem

Inventory management is critically important to all institutions (tertiary educational institution inclusive). Materials flow has to be maintained if output and distribution are to be maintained. The most common problem in inventory management in most tertiary educational institutions includes under stocking, high ordering costs, high over stocking costs, issuing of materials, tracking of inventory, staff minimal knowledge on reporting the amount of inventory in stock and accurately reflects the level of goods on hand. This results in improper valuation of stock and maintaining of accurate data on a continual basis to attain optimal inventory levels which affects institution's financial reporting. This makes the study on perpetual inventory management practice applied by stores officers in public tertiary educational institutions in South-East Nigeria imperative.

Research Question

One research question guided the study:

1. To what extent do stores officers apply perpetual inventory management practice in public tertiary educational institutions in South East Nigeria?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

1. Store Officers in universities, polytechnics and colleges of education do not differ significantly in their mean ratings on the extent they apply perpetual inventory management practice in public tertiary educational institutions in South-East Nigeria.
2. There is no significant difference in the mean ratings of the respondents on the extent they apply perpetual inventory management practice in public tertiary educational institutions in South-East Nigeria based on experience (1 – 5 years, 6 – 10 years, above 10 years).

Research Method

Descriptive survey research design was adopted for the study. According to Nworgu (2015), a descriptive survey research design is the one which aims at collecting data and describing in a systematic manner the characteristics, features or facts about a given population using a questionnaire. The study was conducted in South-East Nigeria which is located in the eastern part of the River Niger. South-East Nigeria consists of Abia State, Anambra State, Ebonyi State, Enugu State and Imo States. The population of this study consisted of 747 Stores Officers in all the public tertiary educational institutions (five federal universities, three polytechnics and four federal colleges of education) in South-East Nigeria. A sample size of 261 stores officers was used for the study. The sample size was derived using Taro Yamani formula. Data for this study was collected using a structured questionnaire titled "Perpetual Inventory

Management Practices applied in Public Tertiary Educational Institutions (PIMPPTEI)". The respondents were requested to rate the items on a 5-point rating scale of Very Highly Applied (VHA), Highly Applied (HA), Moderately Applied (MA), Lowly Applied (LA) and Very Lowly Applied (VLA) with values 5, 4, 3, 2 and 1 respectively. The instrument was validated by three experts in business education. Cronbach Alpha method was used to establish the reliability of the instrument. The reliability yielded coefficient value of 0.80. Out of the 261 copies of the questionnaire distributed, 208 (representing 79.69 %) were duly completed, retrieved and used for data analysis. Data collected were analyzed using mean, standard deviation and ANOVA. The application of Statistical Package for Social Sciences (SPSS) version 23 was used for data analysis. For the hypotheses, p-value was used for decision making. Where the calculated p-value was less than the stipulated level of significance 0.05 ($p < 0.05$), it implies that there was a significant difference between respondents' mean scores and the null hypothesis is rejected. On the other hand, if the p-value is greater than or equal to the alpha level of 0.05 ($p \geq 0.05$), it means that there was no significant difference in the respondents mean scores and is not rejected.

Presentation of Results

Research Question: To what extent do stores officers apply perpetual inventory management practice in public tertiary educational institutions in South East Nigeria?

Table 1: Mean ratings of Stores Officers on their extent of application of perpetual inventory management practice in tertiary educational institutions in South-East Nigeria. N = 208

S/No	Perpetual Inventory Management	Mean	SD	Decision
1.	Ensures perpetual inventory records are periodically reviewed	2.05	0.58	Lowly applied
2.	Updating records promptly	1.85	0.77	Lowly applied
3.	Making postings to the perpetual inventory records promptly from pre-numbered, signed receiving reports	1.79	0.62	Lowly applied
4.	Records are made promptly from issue requisition	2.07	0.75	Lowly applied
5.	Making sure that additions to records are referenced to supporting invoices for easy verification of the records	2.22	0.74	Lowly applied
6.	Ensuring continuous record of physical quantities of inventory	2.09	0.68	Lowly applied
7.	Tracking the real time movement of materials and equipment	1.90	0.72	Lowly applied
8.	Reporting lost goods in the closing inventory	2.01	0.71	Lowly applied
9.	Recording inventory purchases into the raw materials account	2.01	0.69	Lowly applied
10.	Ensuring matching of supply and demand	1.97	0.74	Lowly applied
Cluster Mean		**2.00**		**Lowly applied**

Table 1 shows that the mean score of all the 10 items on perpetual inventory management practice ranges between 1.79 and 2.22 which indicates that each of them is lowly applied. The cluster means score of 2.00 shows that, and whole perpetual inventory management practices are lowly applied by Stores Officers in tertiary educational institutions in South-East Nigeria. The standard deviations of 0.58 to 0.77 are within the same range, showing that the respondents are not wide apart in their responses.

Hypothesis 1: Stores officers in universities, polytechnics and colleges of education do not differ significantly in their mean ratings on the extent they apply perpetual inventory management practice in tertiary educational institutions in South-East Nigeria.

Table 2: Summary of ANOVA on the perpetual inventory management practice applied by stores officers in tertiary educational institutions in South-East Nigeria based on type of institution

Source of Variance	Sum of Square	Df	Mean Square	F	P-value	Decision
Between Groups	.163	2	.082	.036	.964	Not Sig
Within Groups	461.356	205	2.251			
Total	461.519	207				

Table 2 shows that at 205 degree of freedom, type of institution do not significantly influenced the mean ratings of the respondents on the extent of their application of perpetual inventory management practice in tertiary educational institutions in South-East Nigeria. F-ratio is .036 and *P-value* (.964) is greater than the stipulated 0.05 level of significance (P-value > alpha level). Therefore, the null hypothesis is not rejected.

Hypothesis 2: There is no significant difference in the mean ratings of the respondents on the extent they apply perpetual inventory management practice in public tertiary educational institutions in South-East Nigeria based on experience (1 – 5 years, 6 – 10 years, above 10 years).

Table 3: Summary of ANOVA on the perpetual inventory management practice applied by stores officers in tertiary educational institutions in South-East Nigeria based on years of experience

Source of Variance	Sum of Square	df	Mean Square	F	P-value	Decision
Between Groups	2.196	2	1.098	.490	.613	Not Sig
Within Groups	459.323	205	2.241			
Total	461.519	207				

Table 3 shows that at 205 degree of freedom, experience do not significantly influenced the mean ratings of the respondents on the extent of their application of perpetual inventory management practices in tertiary educational institutions in South-East Nigeria. F-ratio is .490 and *P-value* (.613) is greater than the stipulated 0.05 level of significance (P-value > alpha level). Therefore, the null hypothesis is not rejected.

Discussion of Findings

The results of the study revealed that perpetual inventory management practice was lowly applied by Stores Officers in tertiary educational institutions in South-East Nigeria. This implies that Stores Officers have not fully applied perpetual inventory management in updating records promptly, making sure that additions to records are referenced to supporting invoices for easy verification of the records and tracking the real time movement of materials and

equipment. The application of perpetual inventory management practice in financial reporting activities of tertiary educational institutions by stores officers will help in maintaining inventory at suitable levels and at the lowest possible cost to ensure uninterrupted supplies. The study carried out by Yunis (2019) stated that some organizations prefer perpetual inventory control systems because they deliver up-to-date inventory information and better handle minimal physical inventory counts. In line with this, Otchere, Adzimah and Aikens (2016) found that perpetual inventory management is relatively good and the organization checks inventory continuously and at fixed time intervals (monthly) to keep their stock always available to meet customer demands. This implies that the management of tertiary educational institutions will ensure that staff are qualified to perform duties assigned and ideal inventory levels are maintained.

The findings further indicated that Stores Officers in universities, polytechnic and colleges of education do not differ significantly on their mean ratings on the extent of application of perpetual inventory management practice in public tertiary educational institutions in South-East, Nigeria. Also, there was no significant difference in the mean ratings of the respondents on the extent they apply perpetual inventory management practice in tertiary educational institutions in South-East Nigeria based on years of experience. It followed that the null hypothesis of no significant difference was not rejected. This disagrees with the findings of Otchere, Adzimah and Aikens (2016) who found a significant difference.

Conclusion

Perpetual inventory management practice have not been fully applied by Stores Officers in public tertiary educational institutions in South-East Nigeria. The use of perpetual inventory in public tertiary institutions will help to ensure efficiency in the output of the institutions. Based on the findings of the study, it is concluded that the management of public tertiary educational institutions should design and develop inventory systems that could enable adequate turnover and ensure a constant review of various inventory system in the institutions to enable them maintain productivity.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. Management of tertiary educational institutions should sponsor their stores personnel to training in the area of inventory control management that will empower them to adequately apply different inventory management practices for smooth running of the institutions.
2. The National Universities Commission (NUC), the National Board for Technical Education (NBTE) and National Commission for Colleges of Education (NCCE) should lay emphasis on proper inventory management techniques and measuring of efficiency

deviations to identify weaknesses in the process of managing inventories.

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