



<https://doi.org/10.5281/zenodo.17632282>

## Inventory Control Techniques and Operation of Medium Scale Enterprises in A Post Covid-19 Era in Calabar Municipality Local Government Area, Cross River State, Nigeria

Jeremiah Chukwuemeka Oshine<sup>1</sup>, Agnes A. Ewuru<sup>2</sup>, Ubong Edet Uko<sup>3</sup>, Peace Emmanuel Edim<sup>4</sup>,  
Joseph Rapuruchukwu Emetom<sup>5</sup>, Gideon Emmanuel Etim<sup>6</sup>, Ogbuchi Daniel Okey<sup>7</sup>

<sup>1, 2, 3, 4, 5, 6</sup>, Department of Business Education, Faculty of Vocational and Entrepreneurial Education, University of Calabar, Calabar, Nigeria

<sup>7</sup> Information Engineering, Federal University of ABC, Santo Andre, Sao Paulo, Brasil. [oshinejeremiah@gmail.com](mailto:oshinejeremiah@gmail.com)

### ABSTRACT

*The purpose of this study was to determine the relationship that exists between inventory control techniques and operation of medium scale enterprises in Calabar Municipality Local Government Area of Cross River. To achieve this purpose, four specific objectives were stated, four research questions asked and four null hypotheses formulated to guide the study. The descriptive survey design was adopted for the study. The population of the study comprised 1078 medium scale business owners. A sample size of 400 respondents was systematically selected for the study. The questionnaire which was validated by three validates was used to collect data for the study. The data collected was subject to test using the Pearson Product Moment Correlation (PPMC) at 0.05 level of significance. Based on the statistical evaluation, it was revealed that periodic review system, economic ordering quantity, continuous stocktaking and activity-based costing principles relate significantly with operation of small and medium scale enterprises. It was recommended among others that proper stock should be kept by business operators.*

**Keywords:** Inventory, inventory control technique, medium scale enterprises, business.

### INTRODUCTION

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Most people who fall sick with COVID-19 will experience mild to moderate symptoms and recover without special treatment. The virus can spread from an infected person's mouth or nose in small liquid particles when they cough, sneeze, speak, sing or breathe. These particles range from larger respiratory droplets to smaller aerosols. You can be infected by breathing in the virus if you are near someone who has COVID-19, or by touching a contaminated surface and then your eyes, nose or mouth. The virus spreads more easily indoors and in crowded settings. COVID-19 has triggered a substantial short-term economic contraction, shuttered many firms, whether big or small, thrown tens of millions out of work, and has other effects on business activities. In order to reduce unemployment, poverty, and food insecurity rates from further skyrocketing during any time, small and medium enterprises around the globe have been identified as key players (Engidaw, 2022).

Medium scale business has over the years being seen as a major boost to the economy and with the effect of COVID-19 on economies all over the world, their protection has become important more than ever. Since the first case of the pandemic surfaced, the government has been taking various sweeping health and economic measures to mitigate its impact. Recognized by the government as a driver for economic growth and job creation, small businesses, or more commonly referred here as small and micro enterprises, the sector has been growing steadily for the past decade or so. However, facing the wrath of the coronavirus pandemic, most of these firms face difficulty surviving in the current climate for even above five months (Ethiopian press agency, 2020).

After the COVID-19 pandemic, it became very important for medium scale business to

keep proper inventories of their operations. Inventories refer to stock of items used in the operation of a business concern. Inventory according to Omoile (2015) are items used within the production and supply system such as raw materials supplies of components or spare parts, work-in-progress and finished goods. They include items used within the production system such as raw materials, supplies of components or spare parts, work-in-progress and finished goods (Omoile, 2015), Stock usually represents a substantial part of medium scale enterprises asset particularly working capital. If they are purchased in little quantities, there is the possibility that they could easily be out of stock thus causing production and sales difficulties. If inventories are bought in larger quantities and held in store till when needed, there is the fear that inventories could lose their form due to shrinkages, evaporation, obsolescence or that they could be pilfered.

Inventories must be kept in a particular way to ensure their safety; otherwise greater loss would be suffered from holding stocks (Baggott, 2017). Proper inventory control techniques in medium scale enterprises help to ensure that optimum ' level of inventories is being held at the right quantity and quality and at the least possible cost. Inventory control techniques refers to the various systems and methods applied in a firm to deal with the stock to ensure that just enough stocks are kept in the enterprises to avoid wastage, losses, production stoppages, sale disruption etc. (Abohi, 2013). According to Ikechukwu (2015) asserted that for any supermarket to achieve a considerable height in terms of reliance, accountability and profitability in its operations, it must undertake inventory management measures. This is because it enhances departmental performance in specific and organizational performance in general. The researcher further posited that economic ordering quantity is a useful tool to management in ensuring that they make the best use of inventory related resources because of its precise nature and it also lends itself to incorporation within a computerized managerial decision-support system.

Small and medium scale enterprises (SMEs) constitute the main stabilizing force in the Nigeria economy. Most Nigerians earn their living by operating small and medium scale enterprises. Only a negligible percentage of the Nigerian population holds full-time employment in the civil service and the large corporations (Akpan, 2014). Nigerians in their millions engage in small and medium scale farming, manufacturing, distributive trade, transport services, hotel and catering services, repairs and maintenance services etc. Small and medium scale enterprises, according to the Nigerian bank for commerce and industry in Akpan (2014) prior to its merger with other financial institutions to form bank of industry, is a firm with asset base (including working capital but excluding cost of land) not exceeding 750, 000.00 naira. For the successful operation of this sector, proper inventory control techniques are required, because inventories are the soul and life wire of any enterprise.

For any medium scale enterprise to maximize profit and minimize cost, optimum level of inventory must be maintained using different inventory control techniques. Management of any medium enterprise must exercise great care and skill to avoid the problem of production interruption and sales that is associated with overstocking, under-stocking, obsolescence etc. purchase order to be placed must reflect the current trend of demand to avoid unnecessary tying down of capital in slow-moving stocks. As a measure of control, the mathematical method of finding the lowest amount of inventory to be ordered at a time so that costs of purchasing and holding inventory are minimized must be applied within an enterprise. Total inventory balance reflecting in the stock ledger card (bin card) must be consistently compared with actual physical stock in stores to avoid pilferage and clerical error etc. Activities Based Costing (ABC), as a technique of controlling inventory in a small and medium scale enterprise requires that, items of stock must be classified into three groups (A,B,C) to ensure that sophisticated control is exercised over inventory with high value. Various stock control levels established in an enterprise help to ensure that just enough Inventory are provided within an enterprise (Okoye, 2019)

In line with this, Charles (2017) contended that effective control of inventories can be costly, time and effort consuming. The researcher further asserted that not all items kept by the organization

require meticulous and close-study and monitoring particularly if such items are low value items that are randomly used in the production system. There are some items, whose quantities are small but whose values are exorbitant. The main objectives of this study is to examine the relationship between inventory control techniques and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality.

### **Research questions**

The following research questions were raised:

- i. What is the relationship between periodic review systems and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality?
- ii. What is the relationship between economic ordering quantity (EOQ) and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality?
- iii. What is the relationship between continuous stocktaking and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality?
- iv. What is relationship between activity-based costing (ABC) principle and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality?

## **LITERATURE REVIEW**

### **Conceptual framework**

#### **Periodic review system**

In periodic review technique, purchase orders are placed at fixed intervals of time and the quantity to be ordered on any occasion will be decided by reviewing the trend of demand for a usage of the item concerned (Uche, Owolabi, Ojaide, Abdullah, Awosope, Esan, Adebisi, Awao, Adewunmi, Awosope, Esan, Odejayi, Adebisi, Asaolu and Popoola 2019). Abohi (2013) stated that using this method requires management to determine the replenishment cycle or period when order is placed for new stock. Stock levels are reviewed for each item at fixed intervals, say weekly, bi-monthly or monthly. The cycle length will depend on the nature of the stock items.

In line with this, Okoye (2019), posited that using this method requires that the physical quantities of materials on hand are ascertained at a particular time. The researcher further states that, a non-working day is always preferred to avoid disruption of the enterprise activities.

#### **Economic ordering quantity (EOQ) and operation of medium scale enterprises**

According to Ikechukwu (2015), the economic ordering quantity is that quantity at which the cost of procuring the annual requirement of an item and the investment carrying cost are equal. That is where the total of the two costs are lowest. Lucey (2013) contended that EOQ is the calculated order quantity which minimizes the balance of cost between ordering and carrying cost. It is the stock comprising holding cost and ordering cost. In fact, it equates holding cost with ordering cost. The same view was shared by Lucey (2014), Abohi (2014) and Ikechukwu (2015) that the primary aim of EOQ is to determine the right quantity to order is to ensure that the total of these two cost (purchasing and Inventory carrying costs) are at minimum possible. The cost of holding stock could be reduced to reasonable extent if the average quantity of stock held could be reduced and this could be made possible in a small and medium enterprise by reducing the re-order quantity but the implication is frequent orders being placed.

#### **Continuous stocktaking system**

According to Agbawe (2016) continuous stocktaking is a systematic process which allow the comparison or checking of actual stock against what is maintained in the stock record on a constant basis. The system is operated by checking a few items each day so that all items are checked two or three times a year, thus rendering the annual stocktaking processes a worthless assignment Abohi (2013), maintained that it is a system whereby a proportion of all stock items is checked daily so that over the years, all stock items are checked at least once. The objective of this system is to avoid

production or sales disruption which is normally occasioned by periodic stocktaking system in small and medium scale enterprises.

### **Activity-based costing (ABC) principle**

Uche, Owoiabi, Ojaide, Abdullah, Soetan, Bammeke, Anao, Adewunmt, Awosope, Esan, Odeyaji, Adebisi, Asaolu and Popoola (2019) opined that activity-based costing is a technique of controlling stock wherein stock items are classified into expensive, inexpensive or a middle cost range for the purpose of simplifying stores procedures without incurring unnecessary high cost. The Investigators stated that inventories are also classified into A, B and C groups according to their value to the enterprise (medium scale). ABC is a method of charging overhead to cost units on the basis of benefits received from a particular indirect activity. ABC seeks not only to allocate overhead to product costs on a more realistic basis than simply production volume, but also attempt to show the relationship between overhead costs and activities that cause them (Adeniji, 2014).

### **Theoretical framework**

#### **Theory of Inventory Control by Markus Zizler (2007)**

The study is based on the theory of inventory control by Markus Zizler. The theory sees inventory control as the volitional break of the operative material flow; and thus, deliberately composed stocks develop. Inventory Control needs a storage that means a room, building or area to store the item. The in-pouring items are called storage input, the outpouring items storage output. The theory stipulates that inventory control must contain all activities and considers all consequences, which are connected with the storage of items. On the one hand, there is the mere technical and logistical aspect of inventory control, for example the storage layout. On the other hand, there are general questions, which are related to the total stock of a company. One of the most important focuses of the theory is on the quantity of inventories. For the stock of a retail market, the outflow is induced through customer demand and the replenishment is secured through orders. The stock disposal therefore consists of ordering the right quantity (lot size) at the right time. Fewer orders produce less order costs; but for a higher level of order quantity the storage costs rise. The advantage of a great inventory is that there is a high level of service and most customer requirements can be fulfilled. Real (short term) inventory problems are those, who deal with order costs, storage costs and the service level. Problems of long term inventory control do not belong to this issue, because the order costs are considered global and not for each order.

The situation is similar with intermediate storages. These storages are strongly bound to production and we cannot speak of a proper inventory problem. But the results of inventory control theory can be used for the disposal of intermediate storages. The areas of application are all inventories of the retail market. But also, the inventories of industrial purchasing and selling are pliable to the models of inventory control. Subsequent to the inventory of finished items from industrial selling there is a system of distribution. The disposal of such hierarchical systems is in the domain of multi-echelon inventory control; that is an extension of real inventory control theory. This theory is relevant to this work in the sense that all the variables under study deals with proper storage in order to accurately take stocks of the business.

### **Empirical framework**

According to Abohi (2014) identified the following as the advantages of periodic review system in a small and medium scale enterprise:

- A. Attendant cost of annual stocktaking are avoided, or at least minimized,
- B. The system is deterrent to fraudster's activities.
- C. Discrepancies are discovered as they arise and investigated immediately.
- D. The keeping of stock levels within limits matches investment in stock with capital invested, release fund for investment in other profitable areas.
- E. All eliminating obsolete stock.

Inventory control methods differ primarily in frequency or review of the status of inventory, care and cost expended in making the review especially estimating future usage of an item. The case of critical items and high value materials, it experienced supervisory personnel responsible for material control. For low-value item a quarterly, semiannual review may be adequate on low-cost items, large order of three to six months' supply and large safety stocks are appropriate since carrying cost and usually low and risk of obsolescence is often negligible (Oghenekome, 2012)

According to Kaplan (2016), Pandey (2014) and Drury (2014) opined that there are three costs associated with economic ordering quantity and they are as follows:

- a. Annual Holding Costs: This is the average cost of holding all the stock items in store throughout year. Bromwich (2016), contended<sup>1</sup> that, it may be calculated as a percentage of purchase price or an item or materials. The examples of annual holding cost according to Kaplan (2016) are: interest on capital invested in stock; Storage charges (rent, lighting etc.), Stores staffing, equipment maintenance and running cost, Material handling cost; Audit, stocktaking, stock recording costs and Insurance cost. Cost due to deterioration, obsolescence, pilferage evaporation etc.
- b. Ordering cost: These are basically the cost of obtaining stock and examples are: transport cost, set up and tooling costs and clerical cost
- c. Stock-out cost: These are costs of running out of stocks and examples are: Loss of contribution or profit through lost sales, Loss of future sales because of lack of patronage by customers, Cost of production stoppages caused by lack of work-in-progress and raw materials, and extra costs associated with urgent, often small quantity, replenishment orders.

Economic ordering quantity can be graphically represented thus:

#### Economic ordering quantity graph

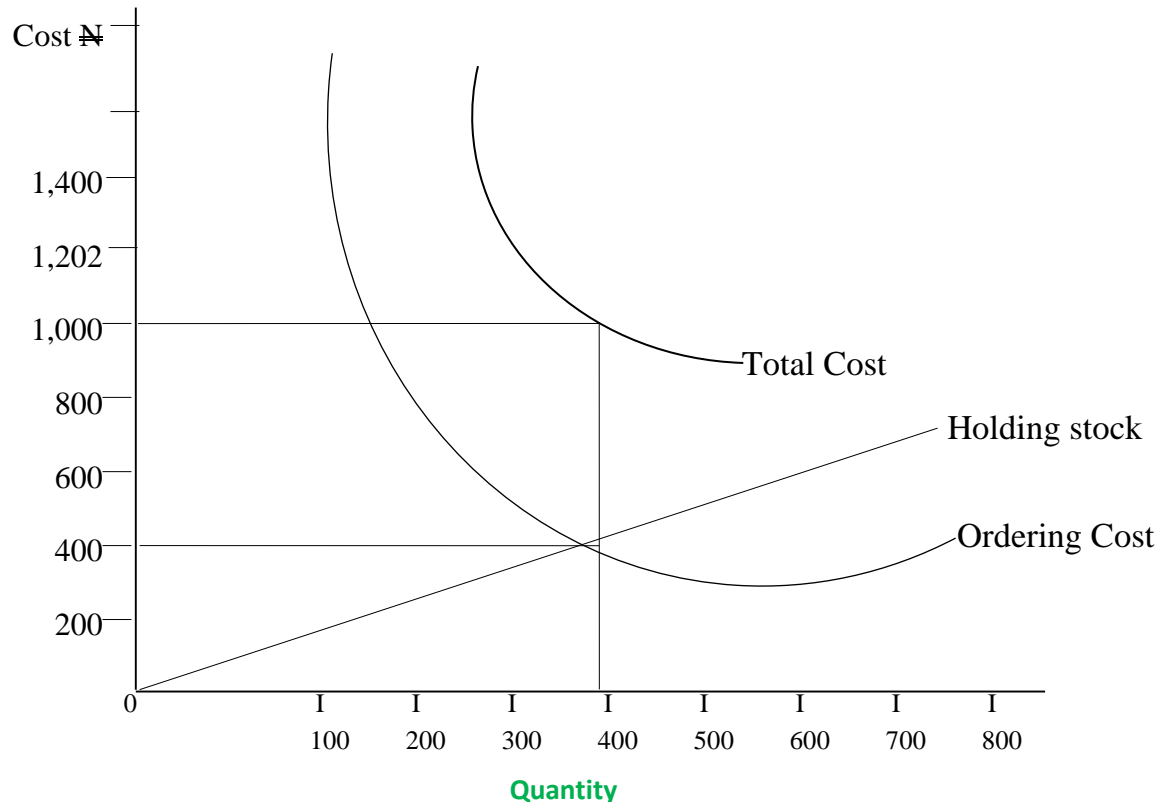


Figure 1: Graphical representation of the Economic Ordering Quantity (EOQ) model, showing the relationship between order quantity and costs. The point where the ordering cost and holding cost

curves intersect indicates the most cost-efficient order size. Adapted from Abohi, 2014.

It can be observed from the graph that as order size on quantity increases, the average stock held and hence the annual holding cost increases. The holding costs and ordering costs are therefore inversely related. There is an equilibrium point (where the ordering costs equal the holding costs). At this point when 400 units are ordered, total annual cost is lower at ₦ 1,000.00 if the order size per order is reduced below this point say 300 units, total annual cost will increase to ₦ 1,100.00. In the same vein, an increase of the order size to 500 units will result to an increase or total annual cost in ₦ 1,050.00. Therefore, this equilibrium order quantity minimizes total annual cost of inventory in a small and medium scale enterprise.

Mathematically, EQO can be derived by the following formula:

$$\frac{\sqrt{2 \cdot f \cdot d}}{h}$$

Where; f = fixed ordering cost  
d = annual demand  
h = carrying or holding cost per item per Annum (Horngren, 2015).

According to Ikechukwu (2015) the system (EQO) object is to minimize the total cost (direct and indirect) that are associated with holding inventories. An effective inventory management system is dependent upon the development of efficient planning and control techniques and the proper implementation and administration of policies, systems and procedures which minimizes total cost relative to inventory decision and related functions such as customers services requirements, production scheduling, purchasing and traffic, determining the size of inventory to carry. Based on these it can be rightly said that for effective inventory control techniques to exist all departments in an enterprise must be alive to their inventory-related responsibilities and ensure adequate supervision.

### RESEARCH METHOD

The survey descriptive design is adopted for this study. Esene (2007), stated that survey is the technique for obtaining data from people, using questionnaire. The design is considered appropriate since information on inventory control techniques were sought from the owners of medium scale enterprises using questionnaire. It is therefore considered suitable for this study. The research was conducted in Calabar Municipality Local Government Area of Cross River State. It is situated in the Southern part of Cross River State with its headquarters in Calabar. It has an area of 264km<sup>2</sup> with an estimated population of 191,630 (NPC, 2006), in southern senatorial district of Cross River between latitude 7<sup>0</sup> North and longitude 9<sup>0</sup> East of the Equator. It is bounded by Calabar River to the West, Akpabuyo Local Government Area to the East, Odukpani Local Government Area in the North and Atlantic Ocean to the South. The three dominant ethnic groups are the Efiks, Quas, and the Efuts which share common culture and religion. English and Efik are the languages widely spoken. Christians are predominantly across the area with Muslims and Traditional religious groups.

The population of the study comprised 1,078 owners of medium scale enterprises in Calabar municipality of Cross River State that are registered with Small and Medium Enterprises Development Agency of Nigeria (SMEDAN). "Inventory Control Techniques and Operation of Medium Scale Enterprises Questionnaire (ICTOMSEQ)" to collect data for this study. The questionnaire was divided into six parts (A-F) namely: medium scale enterprises', periodic review system; economic ordering quantity; continuous stocktaking, activity-based costing principle and inventory control levels while part F was used to collect data on the operation of medium scale enterprises in post COVID-19 era in Calabar Municipality. Each part contained four statements eliciting information on the variables in the study. The respondents were required to tick in the boxes provided for their responses.

The response options were:

Strong Agree	(SA)	4 Points
Agree	(A)	3 Points
Disagree	(D)	2 Points
Strong Disagree (SD)		1 Point

The instrument was given to three research validates for face validation. Two validates were from the Department of Vocational Education and one from the Measurement and Evaluation in the University of Calabar

## RESULTS AND DISCUSSION

### Research Question 1

What is the relationship between periodic review system and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality?

**Table 1: Result of mean responses of the relationship between periodic review system and operation of medium scale enterprises**

S/NO	ITEMS	X	Decision
1.	Studying trend of demand helps to eliminate obsolete stock in an enterprise.	2.81	Positive
2.	Holding of safety stock is necessary in ensuring continuous production.	2.70	Positive
3.	Interval review of stock helps to avoid overstocking in an enterprise.	2.79	Positive
4.	Placing order at fixed interval of time is not necessary in avoiding obsolete stock in an enterprise.	2.64	Positive
	Cluster Mean	2.74	Positive

Table 1 shows that the mean score of respondents ranged between 2.84 to 2.81 with a cluster mean of 2.74. These results show that there is positive relationship between periodic review system and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality.

### Hypothesis One

There is no significant relationship between periodic review system and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality.

**Table 2: Pearson Product Moment Correlation analysis of the relationship between periodic review system and operation of medium scale enterprises (n=400)**

Variables	X	X <sup>2</sup>	XY	r-cal
	Y	Y <sup>2</sup>		
Periodic review system	5542	78012	68653	.78*
Medium scale ent.	4880	60871		

Significant @ p<.05, df = 398

Table 2 shows that the calculated r-value of .78 is greater than the critical r-value of .139 at 398 degree of freedom and alpha level of .05, hence, the relationship was significant. Since the calculated r-value is greater than the critical r-value, the null hypothesis was rejected. This implied that there was significant relationship between periodic review system and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality.

### Research Question Two

What is the relationship between Economic Ordering Quantity (EOQ) and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality?

**Table 3: Result of mean responses of the relationship between (EOQ) and operation of medium scale enterprises**

S/NO	ITEMS	X	Decision
1.	Economic ordering quantity helps to reduce stock-out cost in an enterprise.	2.82	Positive
2.	Application of economic ordering quantity in an enterprise ensures reduction in holding cost.	2.54	Positive
3.	Economic ordering quantity serves to increase carrying cost in an enterprise	2.52	Positive
4.	Application of economic ordering quantity helps in minimizing inventory deterioration.	2.70	Positive
	Cluster Mean	2.65	Positive

Table 3 shows that the mean score of respondents ranged between 2.52 to 2.82 with a cluster mean of 2.65. These results show that there is positive relationship between economic ordering quantity (EOQ) and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality.

### Hypothesis Two

There is no significant relationship between economic ordering quantity and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality.

**Table 4: Pearson product moment correlation analysis of the relationship between economic ordering quantity and operation of medium scale enterprises (n=400)**

Variables	X	X <sup>2</sup>	XY	r-cal
	Y	Y <sup>2</sup>		
Economic ordering qty.	5542	77911	68453	.69*
Medium scale ent.	4880	60871		

Significant @  $p < .05$ ,  $df = 398$

Data presented in table 4 reveal that the calculated r-value of .69 is greater than the critical r-value of .139 at 398 degree of freedom and .05 level of significance. Therefore, the null hypothesis was rejected and the alternative hypothesis was accepted. This means that there was significant relationship between economic ordering quantity and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality. The implication of this result is that, determination of economic ordering quantity enhances successful operation of medium scale enterprises.

### Research Question Three

What is the relationship between continuous stocktaking and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality?

**Table 5: Result of mean responses of the relationship between continuous stocking and operation of medium scale enterprises**

S/NO	ITEMS	X	Decision
1.	Physical counting of stocks act as a deterrent to pilfering activities	3.01	Positive



	in an enterprise.		
2.	Continuous stocktaking exercise reveal discrepancies between store records and actual physical stocks.	3.22	Positive
3.	Continuous stocktaking does not facilitate the defection of fraud.	3.61	Positive
4.	Continuous stocktaking helps to track sakes disruption in an enterprise.	3.82	Positive
	Cluster Mean	3.42	Positive

Table 5 shows that the mean score of respondents ranged between 3.01 to 3.82 with a cluster mean of 3.42. These results show that there is positive relationship between continuous stocktaking and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality.

### Hypothesis Three

There is no significant relationship between continuous stocktaking and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality.

**Table 6: Pearson Product Moment Correlation Analysis of the relationship between continuous stocking and operation of medium scale enterprises (n=400)**

Variables	X	X <sup>2</sup>	XY	r-cal
	Y	Y <sup>2</sup>		
Continuous stocking	5471	7577	67702	0.84*
Medium scale ent.	4880	60871		

Significant @ p<.05, df = 398

From table 6, the result shows that the calculated r-value of .84 was greater than the critical r-value of .139 at 398 degree of freedom and .05 level of significance. Therefore, the null hypothesis which states that there was no significant relationship between continuous stocktaking and operation of medium scale enterprises was rejected and the alternative hypothesis upheld.

### Research question 4

What is the relationship between activity-based costing principle and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality?

**Table 7: Result of mean responses of the relationship between activity-based costing principles and operation of medium scale enterprises**

S/NO	ITEMS	X	Decision
1.	Activity based costing ensures meticulous monitoring of inventories with high monetary value in an enterprise.	2.84	Positive
2.	Activity based costing does not ensure control over items with smallest value in an enterprise.	2.66	Positive
3.	Application of activity based costing principles in an enterprise help to minimize cost.	2.57	Positive
4.	Activity based costing helps in the allocation of overhead cost to products in an enterprise.	2.72	Positive
	Cluster Mean	2.70	Positive

Table 6 shows that the mean score of respondents ranged between 2.57 to 2.84 with a cluster mean of 2.70. These results show that there is positive relationship between activity-based costing principle and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality.

#### Hypothesis Four

There is no significant relationship activity based costing principle and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality of Cross River State.

The independent variable is activity based costing principle while the dependent variable is operation of medium scale enterprises. Pearson Product Moment Correlation (PPMC) was used to test this hypothesis. The result of the analysis is shown in Table 9.

**Table 8: Pearson Product Moment Correlation Analysis of the relationship between continuous stocking and operation of medium scale enterprises (n=400)**

Variables	X	X <sup>2</sup>	XY	r-cal
	Y	Y <sup>2</sup>		
Activity based costing princ.	5542	77720	68520	0.81*
Medium scale ent.	4880	60871		

Significant @  $p < .05$ ,  $df = 398$

From table 8 shows that the calculated r-value of .84 is greater than the critical r-value of .139 at 398 degree of freedom and .05 level of significance. Therefore, the null hypothesis which states that there is no significant relationship between based costing principle and operation of medium scale enterprises is rejected and the alternative hypothesis upheld.

#### Discussion of findings

##### **The relationship between periodic review system and operation of medium scale enterprises**

The result of the first hypothesis revealed that there is a significant relationship between periodic review system and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality of Cross River State. The finding is in agreement with Abohi (2014) who noted that the keeping of stock levels within limits matches investment in stock with capital Invested, release fund for investment in other profitable areas. Abohi (2014) also maintained that sound periodic review system act as deterrent to fraudsters' activities and helps in eliminating obsolete stock. This finding is also in line with Uche, Owolabi, Ojaide, Abdullah, Awosope, Esan, Adebisi, Awao, Adewunmi, Awosope, Esan, Odejayi, Asaolu and Popoola (2009) opinion that the successful operation of small scale enterprises depends on periodic review system.

##### **The relationship between Economic Ordering Quantity (EOQ) and operation of medium scale enterprises**

The result of the second hypothesis revealed a significant relationship between economic ordering quantity and operation of medium scale enterprises. The findings is in consonance with Ikechukwu (2015) assertion that economic ordering quantity is a useful tool to management in ensuring that inventory related resources are put to best use.

##### **The relationship between continuous stocktaking and operation of medium scale enterprises**

The analysis of hypothesis three as presented in table four revealed that continuous stocktaking has positive relationship with the operation of medium scale enterprises in post COVID-19 era in Calabar Municipality of Cross River State. This implies that continuous stocktaking enhances the operation of medium scale enterprises. This finding collaborates Abohi (2013) opinion that the objective of continuous stocktaking is to avoid production and sales difficulties which is normally occasioned by periodic stocktaking in medium scale enterprises. The finding is in consensus with Charles (2017) view that there must be daily or frequent comparison of actual physical stock with bin-cards and store ledger with a view to identifying discrepancies and investigating their causes in an enterprise.

## **The relationship between activity-based costing (ABC) principle and operation of medium scale enterprises**

Finding from analysis of hypothesis four revealed a positive relationship between activity-based costing principles and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality of Cross River State. This finding agrees with Odetayo (2016) assertion that the benefit of this principle is that varied attention is given to the various stock categories which ensure that close and sophisticated control are applied to "A" items, less control to "B" items and lesser control to "C" items to avoid unnecessary cost. Successful operation of medium scale enterprises is a function of adhering to activity based costing principle. The finding of this study is also in line with Charles (2017) opinion that adequate control must be exercised over items with high monetary to save enterprises from serious financial loss due to damages or loss of these very important items.

### **CONCLUSION**

Based on the result of the results and findings of the study, it was concluded that: periodic review system has significant and positive relationship with the operation of medium scale enterprises in post COVID-19 era in Calabar Municipality, there exist a significant and positive relationship between Economic Ordering Quantity (EOQ) and operation of medium scale enterprise in post COVID-19 era s in Calabar Municipality, there exist a significant and positive relationship between continuous stocktaking and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality and significant and positive relationship exist between Activity Based Costing (ABC) principle and operation of medium scale enterprises in post COVID-19 era in Calabar Municipality.

### **REFERENCES**

- Abohi, A. A. (2013). *Basic Cost Accounting Two*. 2<sup>nd</sup> (ed). Benin City: Justice Jeco Publishers Limited.
- Abohi, A. A. (2014). *Management Accounting two*. 1<sup>st</sup> (ed.) Benin City: Justice Jeco Publishers Limited.
- Adenji, A. A. (2014). *Management Accounting*. 3<sup>rd</sup> (ed.) Lagos: El-Toda Ventures Limited.
- Agbawe, C. O. (2016). *Auditing and investigation*. Effrum: House of Mama.
- Akpan, A. E. (2014). *Fundamentals of entrepreneurship*. Ikot Ekpen: Brain Publishers (Nig.) Limited.
- Baggot, T. (2017). *Cost and Management Accounting made simple*. 4<sup>th</sup> (ed.) London: WH Allen.
- Bigg, N. W. (2017). *Cost accounts*. London: Macdonald's and Evans Ltd.
- Charles, D. A. (2017). Inventory control and management in an oil services organization in Delta State. Auchipol: Unpublished HMD Project.
- Ehikioya, B. O. (2020). *Functional areas of management*. 1<sup>st</sup> (ed.). Benin City: Ribway Publishers Limited.
- Engidaw, D. T. (2022). *Dictionary of management*. London: Gower Press.
- Esene, R. A. (2007). *Research methods in education, Social Sciences and Vocational Studies*. 2<sup>nd</sup> (ed.). Agbor: Royal Pace.
- Ethiopian Press Agency, (2020). *Small business management*. 2<sup>nd</sup> (ed). New York: Houghton Mifflin Company.
- Federal Government of Nigeria (1990), *Companies and Allied Matters Act No.1*. Lagos: Federal Government Press.
- Ibekwe, O. U. (2015). *Modem business management*. Enugu: New Africa Publishing Company Limited.
- Ikechukwu, A. S. (2015). *Effective inventory control and management of a supermerit in asaba*. DELSU: Unpublished B.Sc. Project.
- Kaplan R. S. (2016). Flexible Budgeting in an Activity-Based Costing Framework. *International Journal of Accounting Horizons*. 1(1). 104-109.
- Kotler, P. C. (1991). *Marketing management*. 10<sup>th</sup> (ed.). India: Asoke Prentice.
- Lucey (2014), Abohi (2014) and Ikechukwu (2015)
- Lucey, T. (2013). *Costing*. 6<sup>th</sup> (ed.). Great Britain: Biddies Limited.

- Lucey, T. (2014). *Costing. 7<sup>th</sup> (ed.)*. Great Britain: Biddies Limited.
- Ndidi, E. S. (2017). *Elements of cost accounting. 1 (ed)*. Benin City: Justice Jeco Publishers Limited.
- Odetayo C. T. (2016). *Cost account: A managerial emphasis. 9<sup>th</sup> (ed.)*. New York: Prentice Hall Incorporation.
- Oghenekome, C. O. (2012). Inventory management and the operation of Small Scale Enterprises in Ozoro. DESPOZ: Unpublished ND Project.
- Okoye, A. C. (2019). *Storage and control of stock for industry and public*. London: Pitman Publishing Company.
- Omoile, P. A. (2015). *Fundamentals of management. 1<sup>st</sup> (ed.)*. Asaba: Pee Jen Publication.
- Osuala E. C. (2005). *Introduction to research methodology. 3<sup>rd</sup> (ed)*. Onitsha: Africa First Publishers Limited.
- Rosen, L. S. (2016). *Topics in management accounting*. New York: Houghton Mifflin Company.
- Uche, R. U., Owolabi, D. Abdullaj, Z. A., Soetan T. A, Bammeke, S. A., Anao, A. R., Adewunmi, W., Awosope, C. O., Esan, E. O., Odejayi, M., adebuyi, K. A., Asaolu T. O. and Popoola, T. (2019). *Management accounting*. Ibadan: VI Publishing Limited. 55-60.