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Effects of Inventory Management on the Performance of Small and Medium Enterprises (SMEs) in Nigeria

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Abstract
Inventory management which is one of the components of working capital management is expected to enhance the performance of enterprises and by extension, the share holder's value. The relation between cash management and performance was investigated for a sample of 211 small and medium sized enterprises in Kaduna North and South Local Government Areas of Kaduna Nigeria for the period 2008-2012. The inventory management was used as the independent variable while performance of SMEs was considered as the dependent variable. Correlation coefficients and regression analysis were used as measures of the relations. The inventory management showed significant positive relations with performance of SMEs. The regression results rejected the null hypothesis that inventory management does not affect the performance of SMEs. It (regression results) however ensured the positive relation between cash management and performance measures of Small and Medium Enterprises (SMEs).

Keywords: *Inventory Management, Performance, Small and Medium Enterprise*

Background to the Study

Inventory means Tangible property which is held for sale, in the ordinary course of business or, in the process of production (WIP) for sale or for consumption in the production of goods and services which will be used for sale in the ordinary course of business or while its management refers to an optimum investment in inventories striking a balance between adequate stock and that too by keeping investment at minimum level (Optimum level of inventory) Parang N.D. (2009).

The objective of Inventory management is to turn over inventory as quickly as possible without losing sales from stock-outs. It is an important aspect of working capital management because inventories themselves do not earn any revenue. Holding either too little or too much inventory incurs costs. Inventory is generally made up of three elements such as raw materials, work-in-progress (WIP) and finished goods (Arnold, 2008; Cinnamon, Helweg-Larsen, & Cinnamon, 2010; Gitman, 2009).

Material requirement planning (MRP) and perpetual inventory control (PIC) system are key techniques of inventory management. Most of the companies take cash discounts, but their annual cost of working capital funds is high that ranges between 15-20% (Pandy and Perera, 1997). Firms may have an optimal level of working capital that maximizes their value. On the one hand, large inventory and a generous trade credit policy may lead to high sales. Larger inventory reduces the risk of a stock-out. Trade credit may stimulates sales because it allows customer to assess product quality before paying long, Malitz and Ravid (1993); Deloof and jegers, (1996). Suppliers may have significant cost advantages over financial institutions in providing credit to their customers; it can also be an inexpensive source of credit for customers Perstersen and Rajan, (1997).

Atrill (2006) argued that efficient inventory management practices should answer the questions: how much should be ordered? And when should it be ordered? These questions relate to the problem of determining the economic order quantity and the problem can be answered by the analysis of the costs of maintaining certain levels of inventory as there are costs involved in holding too much stock and there are also costs involved in holding too little, hence the need to put in place an effective stock management system to ensure reliable sales forecasts to be used in stock ordering purposes.

Ross et al. (2008), Blinder and Manccini (1991) observed the Economic Order Quantity model as one of the approaches of determining the optimal inventory level takes into account the inventory carrying costs, inventory shortage costs and total costs helps in the determination of the appropriate inventory levels to hold. They further stated that, maintaining optimal inventory levels reduces the cost of possible interruptions in the production process or of loss of business due to the scarcity of products, reduces supply costs and protects against price fluctuations. Singh (2008) observed that the level of Inventory had a profound influence on the management of working capital. In view of the above he therefore, stressed on the need to prudently handle the Inventory.

The inventory conversion period has a negative effect on a business's performance. For instance, shortening the inventory conversion period could increase stock out costs of inventory which results in losing sales opportunities and leads to poor performance (Deloof, 2003). Managers of firms should therefore keep their inventory to an optimum level since mismanagement of inventory will lead to tying up excess capital at the expense of profitable operations Lazaridis and Dimitrios, (2005).

Investment in inventory is a function of the cost of holding such inventory, storage, obsolescence, opportunity cost of investments in inventory, rate of return on other equivalent-risk investment opportunities. The higher the cost of holding inventory, the lower will be the level of inventory a firm will hold. Discounts on bulk purchases also determine the amount of inventory held in a firm. Benefits of holding inventory are reduction in stock-outs for production and sales with its attendant costs (Barine 2012).

Pandey (2005) noted that excessive working capital results in unnecessary accumulation of inventories leading to inventory mishandling, wastage and theft; higher incidence of bad debts; complacency of management inefficiency; increasing speculative profit from accumulated inventories and consequent loss of profits. Inadequate working capital, he added, stagnate growth from investment capital inadequacies, increased operating inefficiencies; increased inefficiencies in the utilization of fixed assets, making operating plans implementation difficult reducing profitability.

Based on the above background, the study was designed to assess the effect of inventory management on the performances of small and medium enterprises in Nigeria. The study was anchored on the specific objectives as stated under.

Objective of the Study

To establish the effect of inventory management on the performances of small and medium enterprises in Kaduna North and South Local Government areas of Kaduna State Nigeria.

Literature Review

Christopher and Kamalavalli (2011) investigated the influence of the management of working capital on the profitability of Indian Corporate Hospitals by taking a sample of 14 out of the fifty one listed corporate hospitals in India using panel data analysis for the period 1996-97 to 2005-06. The results of their analysis depicted that Inventory Turnover ratio, Debtors Turnover ratio and Working Capital Turnover were positively related with the Return on Investment, a variable used for the measurement of a firm's profitability.

Azam M. Haider S.I. (2011) investigated the impact of Working Capital management on firms' performance for non- financial institutes listed in Karachi Stock Exchange (KSE-30) Index. Panel data was analyzed by applying Canonical correlation for the time period of 2001 to 2010. It was found that inventory turnover in days has negative relationship with Return on Assets and Return on Equity which means that companies performance can be increased by reducing inventory in days.

Another attempt to explore the relationship between the variables of Working Capital Management and Profitability was made by Haitham Nobanee and Maryam AlHajjar. Their analysis was based on a sample containing 2123 Japanese non-financial firms listed in the Tokyo Stock Exchange for the period from 1990 to 2004. The authors, after analyzing the results, suggested that Japanese firms should focus on shortening their Receivable Collection Period, Inventory Conversion Period and Cash Conversion Cycle to enhance profitability. Lengthening the Payable Deferral Period could also add to profitability, they argued. However, they deemed the over lengthening of the Payable Deferral Period to be equally risky as it could harm the firm's credibility and credit reputation in the long run. Wang (2002) analyzed a sample of Japanese and Taiwanese firms, emphasized that the way the working capital is managed has a significant impact on the profitability of firms and increase in profitability by reducing number of day's accounts receivable and reducing inventories.

Samiloglo and Demirgunes (2008) conducted a study to examine the relationship between working capital management and profitability. Applying multiple regression analyses over a sample of manufacturing firms listed in Istanbul stock exchange for the period of 1998-2007, they found that the accounts receivable cycle, the inventory conversion period have negative impact on profitability, which means the shorter cycle of these variables cause increasing in profitability.

Mathuva (2009) examined the influence of working capital management components on corporate profitability by using a sample of 30 firms listed on the Nairobi Stock Exchange (NSE) for the periods 1993 to 2008. He used Pearson and Spearman's correlations, the pooled ordinary least square (OLS), and the fixed effects regression models to conduct data analysis. The key findings of his study were that: i) there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers (accounts collection period) and profitability, ii) there exists a highly significant positive relationship between the period taken to convert inventories into sales (the inventory conversion period) and profitability, and iii) there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability.

Conceptual Framework

Inventory management has been identified as independent variable while performance which include (profitability, growth in sales, return on assets and return on equity) of the small and medium enterprises (SMEs) was the dependent variable. A good inventory conversion period indicates proper working capital management also, meaning that a shorter inventory conversion period finally leads to higher performance in small and medium enterprises.

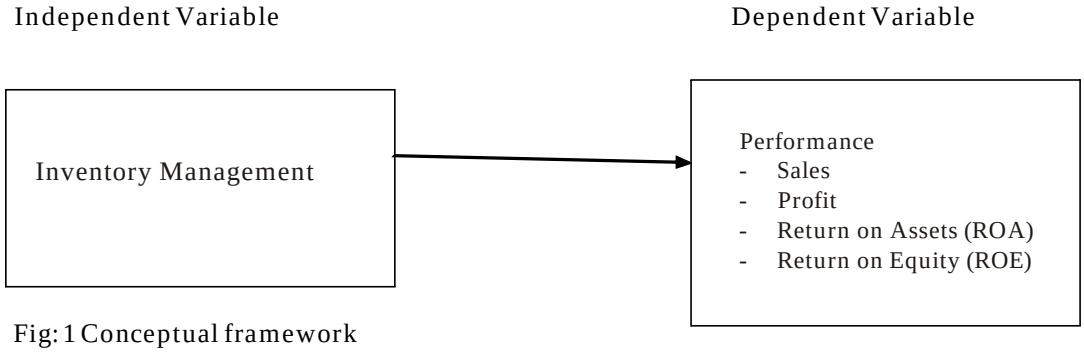

Fig: 1 Conceptual framework

Methodology

The research used both qualitative and quantitative tools for analyzing data. In effect the research was carried out by employing data collection techniques including questioners and interviews as advocated by Curran and Blackborn (2001) where they averred that a single study may use qualitative and quantitative techniques and procedures as well as primary and secondary data.

Data was analyzed using descriptive statistics: weighted averages, mean and standard deviation. Regressions Analysis which indicate the impact of Inventory Management on Performance and Correlation analysis which shows the relationship between the variables (cash management and performance) were used. Simple linear regression analysis with the formula y=a+bx where a & b are the regression coefficient, y=slope of the line and x=the intercept were then used to determine and quantify the relationship between the variables (inventory management and performance of SMEs). The performance model adopted for this study was as summarized below:

P = β0+β1CM+? where: β0, and β1cm, are coefficients; CM- Cash Management; P- Performance indicator and e- Error variable.

Results and Discussions

The study sought to investigate if inventory management affects the performance of small and medium enterprises in (SMEs) Nigeria. Table 1 therefore, presents the frequency and percentage distribution of the findings on the independent variable inventory management in the two local government areas of Kaduna State Nigeria.

From Table 1, it can be seen that 67.6% of the respondents affirmed that their firm has inventory management policy and that, the optimum inventory management is being achieved in their firm while 33.3% of them apply the Economic order Quantity (EOQ) model when ordering for goods in their firm.

The findings above conform to the views expressed by Long, Malitz and Ravid, (1993); Deloof and Jegers, (1996) who stated that firms may have an optimal level of working capital that maximizes their value and that large inventory and a generous trade credit policy may lead to high sales. Lager inventory reduces the risk of a stock-out. This view was also echoed by Deloof (2003), Lazaridis and Dimitrios, (2005) who averred that maintaining optimal inventory levels reduces the cost of possible interruptions or of loss of business due to the scarcity of products, reduces supply costs and protects against price fluctuations and is in conformity with advocacy of Finau (2011) that the importance of inventory, to have a proper perpetual control system to monitor and manage inventory in the business.

The finding also agree with the suggestions of Lazaridis and Dimitrios (2005) that managers of firms should keep their inventory to an optimum level since mismanagement of inventory will lead to tying up excess capital at the expense of profitable operations.

Table 1Descriptive analysis of the items in the questionnaire

Item	No		Yes		Average	Average response
	F	%	F	%		
Does your firm have inventory management policy?	60	32.4	126	67.6	.6765	Yes
Does your firm apply the Economic order Quantity (EOQ) model when ordering for goods?	124	66.7	62	33.3	.3333	No
Optimum inventory management being achieved?	60	32.4	126	67.6	.6765	Yes

Sections 1.1 to 1.3 present findings on each of the specific question which was used in obtaining information on this variable.

Inventory Management Policy.

Table 1 shows that 67.6% of the respondents have inventory management policy for their firms while 32.4% of the respondents stated that they do not have inventory management policy in their firm. The findings therefore indicates that majority of the SMEs have inventory management policy which means they utilize the techniques in managing their inventory. Pandy and Perera (1997) observed that material requirement planning (MRP) and perpetual inventory control (PIC) system are key techniques of inventory management and that most of the companies take cash discounts, but their annual cost of working capital funds is high that ranges between 15-20%.

Application of Economic Order Quantity (EOQ)

A cursory look at table 4.4 shows that only 33.3% of the respondent applies the EOQ in ordering for goods while the majority constituting 67.7% does not. This could possibly mean that they apply the rule of thumb in ordering for their goods just as Nyabwanga et al (2012) in their research found out that although, the SSEs regularly reviewed inventory levels and prepare inventory budgets, the ability to apply theories of inventory management in inventory budgeting is very limited with a substantial number of SSEs indicated that they

determined their inventory levels based on owner-manager's / manager's experience. A study by K between 15-20wame (2007) established similar results which showed that up to 90% of small businesses relied on manager's experience in their management of working capital.

In the view of Atrill (2006), efficient inventory management practices should answer the questions: how much should be ordered? And when should it be ordered? These questions relate to the problem of determining the economic order quantity and the problem can be answered by the analysis of the costs of maintaining certain levels of inventory as there are costs involved in holding too much stock and there are also costs involved in holding too little, hence the need to put in place an effective stock management system to ensure reliable sales forecasts to be used in stock ordering purposes. This observation was further corroborated by Ross et al. (2008) who stated that the Economic Order Quantity model as one of the approaches of determining the optimal inventory level takes into account the inventory carrying costs, inventory shortage costs and total costs helps in the determination of the appropriate inventory levels to hold.

Whether optimality being achieved.
Table 1 reveals that majority of the respondents representing 67.6% stated that they do achieve optimum level in inventory management while 32.4% said they do not, suggesting that majority of the SMEs in the study areas do attain optimum level in the management of inventory. This finding is in line with the view of Deloof (2003) that maintaining optimal inventory levels reduces the cost of possible interruptions or of loss of business due to the scarcity of products, reduces supply costs and protects against price fluctuations. This was further strengthened by the observation of Long, Malitz and Ravid, (1993); Deloof and Jegers, (1996) who observed that firms may have an optimal level of working capital that maximizes their value, on the one hand, large inventory and a generous trade credit policy may lead to high sales. Larger inventory reduces the risk of stock-out. Trade credit may stimulate sales because it allows customers to assess product quality before paying.

Peter and Rajan (1997) observed that suppliers may have significant cost advantages over financial institutions in providing credit to their customers; it can also be an inexpensive source of credit for customers. Managers of firms should therefore keep their inventory to an optimum level since mismanagement of inventory will lead to tying up excess capital at the expense of profitable operations Lazaridis and Dimitrios, (2005). Findings by Kwame (2007) established that majority of small businesses always review their inventory levels and prepare inventory budgets and which is further supported by assertion of Lazaridis and Dimitrios (2005) that this process enhances the management of inventory and enable businesses to avoid tying up excess capital in idle stock at the expense of profitable venture.

Regression Analysis
Regression Analysis was carried out on Inventory Management via a hypothesis as indicated below, to determine whether the independent variable can be relied on in explaining the change in the dependent variable, performance of Small and Medium Enterprise (SMEs) in Nigeria

Hypothesis 01: the null hypothesis that inventory management does not have a significant effect on the performance of Small and Medium Enterprises in Nigeria is tested at 5% level of significant using linear regression analysis

Table 2 Table of regression analysis

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	67.330	5.837		11.534	.000
	Inventory Management	41.868	9.427	.406	4.441	.000
a. Dependent Variable: Performance of SMPE, $R^2 = 0.165$, $R = 0.406$						

$Y = 67.330 + 41.868*x$

The above analysis shows that the value of the correlation R = 0.406, implying that there is 40.6% linear relationship between the inventory management and performance of SME. The coefficient of determination (R^2) of 0.165 or 16.5% suggests that inventory management can explain up to 16.5% of the change in performance.

The p-value (0.000) of the slope of the regression model is less than 0.05 we therefore reject H_0 and conclude that working capital management (inventory) have a significant effect on the performance of Small and Medium Enterprises in Nigeria. This also means that at 5% level of significance or 95% level of confidence, inventory management plays a significant role in the performance of Small and Medium Enterprises in Nigeria and that the model is statistically significant in explaining the change in the dependent variable (performance) considering that the *P-value* is less than .05 at the 95% level of confidence.

The finding is in agreement with the argument of Smith, (1980); Blinder and Manccini, (1991) and Singh (2008) that, Working capital management is important because of its effects on the firm's profitability, risk, and consequently its value and that maintaining high inventory levels reduces the cost of possible interruptions in the production process or loss of business due to the scarcity of products, reduces supply costs, and protects against price fluctuations, among other advantages; observing further that the level of Inventory had a profound influence on the management of working capital and therefore, the need to prudently handle the Inventory.

The above findings and assertions also concurred with the views of Long, Malitz and Ravid(1993); Deloof and Jegers(1996) that firms may have an optimal level of working capital that maximizes their value, large inventory and a generous trade credit policy may lead to high sales, reduces the risk of a stock-out and that, trade credit may stimulate sales because it allows customers to access product quality before paying and also the emphasis by Lazaridis and Dimitrios (2005) that enhancing the management of inventory thus enable businesses to avoid tying up excess capital in idle stock at the expense of profitable ventures. The conclusions by Yusufu Amin (2012) that, efficient and effective management of

inventories ensures business survival and maximization of profit which is the cardinal aim of every firm reinforces the above findings, views and assertions.

Empirically, the finding is in agreement with the study of Christopher and Kamalavalli (2011) whose results of their analysis depicted that inventory turnover ratio among other components of working capital positively related with the Return on Investment, a variable used for the measurement of a firm's performance, Shah and Sana (2006) who used a very small sample of 7 oil and gas sector firms to investigate this relationship for period 2001-2005 which the results suggested that managers can generate positive return for the share holders by effectively managing working capital and Padachi (2006) who examined the trends in working capital management and its impact on firm's performance and results proved that high investments in inventories and receivables are associated with lower profitability but also found out that inventory days and cash conversion cycle had positive relation with profitability.

Considering the value of R-square (0.165) which implies that 16.5% of the performance of SMEs in Nigeria is determined by the working capital management (inventory), this study, therefore, established that there is need to implement sound inventory management policies and monitoring systems by managers of SMEs in Nigeria so as achieve optimum results.

Summary

In this section, summary of the findings of the study are base on the specific research objectives of the study. In this section, the study sought to determine whether working capital management (Inventory) affects the performance of Small and Medium Enterprises (SMEs) in Nigeria. It was found out that 67.6% of the respondents affirmed that their firm has inventory management policy and that, the optimum inventory management is being achieved in their firm while 33.3% of them apply the Economic order Quantity (EOQ) model when ordering for goods in their firm.

The findings dovetailed with the views expressed by earlier scholars like, Long, Malitz and Ravid, (1993); Deloof and Jegers, (1996) who stated that firms may have an optimal level of working capital that maximizes their value and that large inventory and a generous trade credit policy may lead to high sales. Lager inventory reduces the risk of a stock-out. The finding also agree with the suggestion of Lazaridis and Dimitrios (2005) that managers of firms should keep their inventory to an optimum level since mismanagement of inventory will lead to tying up excess capital at the expense of profitable operations.

The value of the correlation R = 0.406, implies that there is 40.6% linear relationship between the inventory management and performance of SME. The coefficient of determination (R^2) of 0.165 or 16.5% suggests that inventory management can explain up to 16.5% of the change in performance. The p-value (0.000) of the slope of the regression model which is less than 0.05 means that at 5% level of significance or 95% level of confidence, means that inventory management plays a significant role in the performance of Small and Medium Enterprises in Nigeria and that the model is statistically significant in explaining the change in the dependent variable (performance) considering that the *P-value* is less than .05 at the 95% level

of confidence. This re-echoed the argument of Smith, (1980); Blinder and Manccini, (1991), Singh (2008) and the findings of Christopher and Kamalavalli (2011) that, Working capital management is important because of its effects on the firm's profitability, risk, and consequently its value and whose results of their analysis depicted that inventory turnover ratio among other components of working capital positively related with the Return on Investment respectively. The study, established that there is need to implement sound inventory management policies and monitoring systems by managers of SMEs in Nigeria so as achieve optimum results.

Conclusion

Inventory which is a tangible property comprising of raw materials, work-in-progress (WIP) and finished goods held for sale, in the ordinary course of business or, in the process of production (WIP) for sale or for consumption in the production of goods and services which will be used for sale in the ordinary course of business is an important aspect of working capital management because inventories themselves do not earn any revenue. Holding either too little or too much inventory incurs costs hence the need to strike a balance between adequate stock and that too by keeping investment at minimum level (Optimum level of inventory). Inventory management objective is to turn over inventory as quickly as possible without losing sales from stock-outs. Material requirement planning (MRP) and perpetual inventory control (PIC) system are therefore key techniques employed in the inventory management.

Lager inventory reduces the risk of stock-out therefore, to maintain optimum level of inventory, the pertinent issue for efficient inventory management practices should answer the questions: how much should be ordered? And when should it be ordered? These questions relate to the problem of determining the economic order quantity (EOQ), and the problem can be answered by the analysis of the costs of maintaining certain levels of inventory as there are costs involved in holding too much stock and there are also costs involved in holding too little, hence the need to put in place an effective stock management system to ensure reliable sales forecasts to be used in stock ordering purposes.

The Economic Order Quantity model as one of the approaches of determining the optimal inventory level takes into account the inventory carrying costs, inventory shortage costs and total costs which help in the determination of the appropriate inventory levels to hold. It is argued by scholars like Lazaridis and Dimitrios(2005) that, Managers of firms should keep their inventory to an optimum level since mismanagement of inventory will lead to tying up excess capital at the expense of profitable operations. In this regard, many studies on inventory management have emphasized that the way the working capital is managed has a significant impact on the profitability of firms and increase in profitability by reducing number of day's accounts receivable and reducing inventories is paramount.

Recommendation

Descriptive analysis of this study showed that a vast majority of the respondents (67%) indicated that they have instituted inventory management policies and monitoring system. It is therefore, recommended that these policies should continue to be monitored for continued positive results. Based on the establishment that inventory management has positive standardized beta coefficient (0.406), it is also recommended that the SMEs should pay more attention to the management of inventory since it has a positive effect on their performance and ensures that stocks are sufficient to meet customer demands at all times while at the same time avoiding holding unnecessary surplus stocks that may increase holding costs.

The SMEs should seek knowledge on the use of stock optimization techniques so as to be able to determine right quantities of stock to hold at any given time. They should also continue to optimize inventory so as to avoid over investment with its attendant inventory costs, lost returns on excess cash holdings and receivables; and under investment with its attendant stock-out, large inventory and a generous trade credit policy may however lead to high sales. Maintaining optimal inventory levels also reduces the cost of possible interruptions in the production process or of loss of business due to the scarcity of products, reduces supply costs and protects against price fluctuations.

The SMEs can also adopt the Just-in-Time method which is an approach to managing inventory that strives to minimize inventory of raw materials and WIP by receiving raw materials inventory as it is required. This has the advantage of enhancing and monitoring the availability of the inventory level in the business and also helps to reduce the amount of carrying costs tied up in stock that in turn may increase the cash flow of operating activities in the business.

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