The Impact of Inventory Management on Profitability: A Case of Distribution and Wholesale Firms in Ghana

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Authors' contributions

This work was carried out in collaboration between all authors. Authors EM and ABM designed the study. Author EM performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors ABM and PA managed the analyses of the study. Author PA managed the literature searches. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

The study assessed the impact of inventory management on the profitability of wholesale and distribution firms in the Kumasi Metropolis, Ghana. The study adopted a descriptive approach as the research design and quantitative data anlaysis was done.The study was conducted on distribution and wholesale businesses within the Kumasi Metropolis between February, 2016 and January, 2017. Convenience sampling technique was used to select 100 firms from among the target population of all the wholesale and distribution firms operating within the Metropolis. Questionnaires were used to gather primary data from respondents whereas secondary data were collected from annual financial records of the firms. A LINLOG regression model was used to establish the impact of inventory management on profitability. The study established that inventory management has a positive and significant impact on the profitability of distribution and wholesale businesses. The study also found out that, even though, some of the distribution and wholesale businesses have put in place appropriate measures regarding inventory management, the general

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outlook of inventory management among the surveyed distribution and wholesale businesses in the region was relatively far from impressive.

Based on the results of the study, it is concluded that effective and efficient inventory management has a positive impact on the profitability of wholesale and distribution companies. It is thus recommended that wholesale and distribution firms should put in place adequate policies involving the conduct of inventory checks, handling of discrepancies, amendment of inventory records and handling of stores to enhance the effective management of inventory.

1. INTRODUCTION

Literature has acknowledged the fact that, companies which are expected to excel in competitive environment have to design and operate inventory management and product distribution function effectively. The prime aim for effective and efficient inventory management systems is the attainment of an optimum level of investment in inventory for required businesses operational performances. Effective management and control of inventories in business operations requires effective means of communication and coordination as well as bringing together all other interrelated management function such as planning and decision making.

In the opinion of [1], inventory is the stock stored for the purpose of reselling at a profit. Several authors (e.g. [2-4] and [5]) acknowledge that inventory represents the largest cost of a company especially trading firms: distributors, wholesalers and retailers. Inventory has often been referred to as 'piles of money' at the warehouse, and on the shelf. Normally, it consists of about 50% - 60% of the firm's total investment [2]. This calls for greater attention to be paid to the effective and efficient management of inventory in order to facilitate the operation of companies. This will ensure that businesses have the right quantity of goods on hand to avoid stock-outs, to prevent shrinkage (spoilage/theft), as well as the right proportions of goods for proper accounting. Firms which neglect the management of inventories will have to face serious problems relating to their long-term profitability, growth, and survival [3]. Many companies have failed because they had too much capital (funds) tied up in inventories or their pile of inventories became obsolete, impaired or lost [6].

Many companies, firms and organisations (e.g. Cocoa Processing Company, Golden Web, Produce Buying Company) all over Ghana virtually operate below capacity. Most of these businesses find it difficult to manage and control the volume of inventories for operations [7]. [2] also reported that the management of these companies often face working capital management problems, especially controlling inventory. Such problems include inadequacy of raw materials, obsolescence of materials, high transportation and storage cost, and pilferage, among others. Wholesale and distribution firms in Ghana offer various range of consumer goods and products. These goods and product constitute both perishable and non-perishable goods. In the face of large quantities of these ranges of products on offer, some of which are perishable, effective and efficient inventory management practices are essential primarily to avoid spoilage, damages, high storage costsand obsolescence. A study by [3] found out that inventory management is of prime significance in order for businesses to maintain smooth operation of activities and make profit. This shows that effective management of inventories affords flexibility in operations. Distributors and wholesalers are therefore expected to ensure optimum levels of inventories in stores so that mechanisms of efficiency and effectiveness of operations are maintained.

As has been noted, lack of attention to the effective and efficient management of inventory may cause severe difficulties and potential losses because of adverse short-run developments even for firms with favourable long-run prospects. Ineffective and inefficient management of inventory has dire implications for a firm's working capital needs, and may subject customers, creditors and investors to potentially diversifiable yet unforeseen business risks. Sadly, a scan through literature found no empirical evidence that links inventory management with profitability among firms operating within the wholesale and distribution industry whose scale of operations involves dealing with large volumes of inventory, in

Ghana. In fact, many of the studies found to have been conducted on the link between inventory management and profitability happened to have been done in other countries (e.g. [1,3,6,8,4] and [9]). The Ghanaian evidence, especially within the mechandise industry is unknown.

Furthermore, according to [1], it is widely assumed that the profitability of a business largely depends on the manner in which its working capital, particularly inventory is managed. Again [4] showed that poor, excessive and inadequate inventory management is detrimental to a firm's success. The socio-economic and cultural environment in Ghana is fundamentally different from many of these countries in which these studies were conducted, and probably, their finding might not be applicable within the Ghanaian context. A review of the literature pertinent to Ghana found very few studies conducted on the subject matter (see for e.g. [10]). It appears, a lot more needs to be discovered in this all-important area of business management. Besides, no known study has specifically investigated the effect of inventory management on the profitability of wholesale and distribution firms (a prominent sub-sector) in Ghana. There was thus a knowledge gap in this area which this study sought to fill. The present study sought to assess the impact of inventory management on the profitability of wholesaleand distribution firms in the Kumasi Metropolis in Ghana.

2. LITERATURE REVIEW

2.1 Inventory Management Systems in the Wholesaleand Distribution Chain

In this fast moving and rapid changing business environment, inventory brings significant effects on the daily business operations. Inventory management or control involves many levels of the organization, starting from the lower (shop floor workers) to the top level (top management commitment). Thus inventory management calls for the commitment of employees in the organization. [1]) define inventory as the quantity of goods, raw materials, or other resources that are idle at any given point in time. Inventory may consist of raw materials and supplies to be consumed in production, work-in-progress or partly manufactured goods, and finished inventory or goods ready for sale [1]. [11] also defined inventory as any item or resource used in an organization. Synthesising the definitions above, inventories consist of raw materials,

component parts, supplies or finished products, among others which are purchased from an outside source and goods manufactured by the firm itself. In simple words, inventory refers to stocks of raw materials, partly finished goodsand finished goods held by a firm. [3] explained that inventory management is an activity which organises the availability of items to production and the customers. [1] also defined inventory management as the means by which materials of the correct quality and quantity are made available as and when required, with due regard to economy in storage and ordering costs, purchase prices and working capitals.

Unam [11] highlighted that distributors carry ten to thirty percent of additional inventory that is unnecessary. According to the author, this results in unnecessary carrying cost, loss of customers, reduced sales and profit volumes as a result of careless and inefficient inventory management. The researcher pointed out the need to set out control mechanisms for physical inventory in order to determine the true cost of carrying inventory and an accurate running report to measure the turns of inventory. Inventory optimization is a process that lets distributors and wholesalers reduce the amount of inventory they carry while improving service levels, ensuring that the right stock is available when and where it is needed, increasing returns and reducing lost sale opportunities.

According to [12] inventory management in the supply chain consists of all stages, direct and indirect, involved in satisfying customer requests. [13] asserted that the main aim of supply chain management is to deliver the correct product to the correct place at the correct time while ensuring cost efficiencies. The authors identified; sourcing/procurement, manufacturing and distribution or inventory disposal as the three main components of a supply chain. [5] also contends that, in today's business environment, every distribution chain wants not only to maximise the wide cost, but also keep minimum inventory along the distribution chain while maximising service level requirements of the customers. In explaining the researchers' views, the new innovative technology has appropriately shortened the product life cycle as well as increased demand variability of the respective products. The researcher therefore concluded that inventory should not be allowed to fall below the minimum level or above the maximum level. Holding excess inventory in the distribution chain will undoubtedly block the cash flow and indeed

result in an adverse effect on the liquidity and profitability of firms.

2.2 The Effects of Inventory Management on Profitability

According to [6], the viability and survival of any business relies on the ability to effectively manage inventory. This is true from the point of view of both liquidity and profitability. The authors further asserted that when there is poor management of inventory, funds may be unnecessarily tied up in idleassets. Explaining this claim, the authors argued that this will reduce liquidity of the company and also the company will not be in a position to invest in productive assets like plant and machinery which are deemed beneficial to the profitability, growth and survival of the company. [2] also contend that inventory should be available in proper quantity at all times, neither more nor less than what is required. [2] further opine that inadequate inventory adversely affects smooth running of business, whereas excess of it involves extra cost, thus reducing profit margins which have long run impact on the growth, existence and survival of the business. A major constituent of working capital is inventory which in turn establishes an effective link between production and sales level [3]. It therefore becomes more critical for companies and organisations to effectively and efficiently manage their inventories.

According to [9], the main objective of inventory management is to minimize the total cost of relevant costs to ensure profitable operations. The authors contend that the quantity of inventory ordered at once affects inventory ordering and holding costs and will ultimately have a bearing on profitability. Conversely, if many small orders are placed, ordering costs will be high but annual holding costs will be low. For the organisation to be profitable, it would be necessary to increase the order size to obtain large volume discounts and hence lowering costs,and this lowering costs with large orders will off-set the higher holding cost. [2] contend that profitability would only be achieved at optimum level of relevant costs i.e. holding costs and ordering costs. The authors further contend that excessive inventories are the enemy of retail and wholesale profitability.

A number of researchers have established a link between inventory management and profitability of firms. [10)] argues that effective inventory management allows a distributor to meet or exceed customers' expectations of product availability with theamount of each item that will maximize their company's net profit or minimize its total inventory investment. [10] continued that, effective inventory management is the result of outstanding inventory control and inventory management. The author concluded that effective inventory management has a positive link with profitability. [14] also asserts that effective inventory management helps business to know what products are 'out there' and how much you have of each item, know exactly where each piece of each product is located in the warehouse, ensure that all inventory remains in saleable or usable condition and store products to minimize the cost of filling customer orders.

A study to assess the effect of inventory management practices on operational performance of a tea processing firm was conducted by [15]. The study specifically determined the effect of material requirement planning on operational performance; established the influence of continuous replenishment on operational performance; established the extent to which distribution resource planning influence operational performance and the effect of vendor managed inventory on operational performance. Purposives ampling and stratified random sampling techniques were applied to select a sample of fifty five (55) respondents out of 119 respondents for the study. The study indicated that there was a positive correlation between the use of inventory control systems and operational performance of tea processing firms. Similarly, [12] used gross operating profit as a measure of profitability and found a positive relationship between inventory management and profitability.

In the Ghanaian context, [10] investigated the relationship between effective inventory management and profitability. A cross sectional data from 2004 to 2014 was gathered for the analysis from the annual reports of four manufacturing firms listed on the Ghana Stock Exchange. Measures of profitability were examined and related to proxies for efficient inventory management by manufacturers. The Ordinary Least Squares (OLS) regression model stated in the form of a multiple regression model was applied in the analysis. The study revealed that inventory management has a significantly strong and positive effect on the profitability of the selected manufacturing firms in Ghana.

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Padachi [16] in his study used return on total assets as a measure of profitability to examine the relation between working capital management and corporate profitability. The study investigated a sample of 58 small manufacturing firms, using panel data analysis for the period 1998 to 2003. The key variables used in the analysis were inventory days, account receivable days, account payable days and cash conversion cycle. The regression result indicated that high investment in inventories and receivables was associated with lower profitability. As previously noted, in a distribution and wholesale business, costs associated with inadequate inventory includes the extra costs of processing back orders and opportunity cost of lost sales.Opportunity costs are considered greater if dissatisfied customers subsequently patronize other establishments. On the other hand, holding excessive inventory leads to increased inventory holding cost, ordering cost, spoilages, pilferages etc. In this case, the profitability of an organization remains fragile if no proper inventory management and control are considered.

3. RESEARCH METHODOLOGY

Descriptive approach was chosen because the nature of the research warrants the use of this method or approach of research. This method was employed to enable induction to be made regarding other individuals who could not be covered in the research. A survey design was adopted for this study. In the view of [17], survey gathers information about variables rather than individuals. This design is regarded as the most appropriate for the study because survey studies, utilizes questionnaires, observations, tests, and interviews as tools in obtaining information. Geographically, the scope of the study comprises distribution and wholesale businesses in Ghana, particularly within the Kumasi Metropolis.

Both primary and secondary data were collected to help realize the study's objectives. The primary data were obtained through questionnaires distributed to the store officers, accountants or managers of the selected firms. Unlike observations and interview, the use of questionnaire allowed the researchers to collect large amount of data in a relatively short time. Again, the use of questionnaires allowed the respondents to provide responses at their own free time. It also enabled the respondents to consult and make references from other

materials/sources in order to provide more reasoned and accurate data. Secondary data were also collected from the annual financial records of the firms. The annual net profit after tax and total asssets figures were the numerical data taken from the annual financial records of the firms. The use of both primary and secondary data enhanced the reliability and validity of the data collected. The secondary data was collected as follow up to the responses provided through the primary data collection. This enabled the researchers to authenticate the figures elicited from respondents via the questionnaires, and also builds rapport between the researchers and the respondents.

Wholesalers and distributors in Kumasi were selected for the study. Moreover, as a criteria, wholesale or distribution firms with audited annual financial records were targeted for the study. Wholesale or distribution firms were chosen for the study because a large part of their assets is inventory. It is therefore expected that effective inventory management is very pivotal towards improved performance. For the purpose of the study, the population was made up of the store officers, owners, managers, accountants or store keepers of the various wholesale and distribution firms in Kumasi. These groups were selected for the study because they were directly in charge of the management of all financial transactions and inventory of their respective firms. Information relating to inventory management could thus be appropriately elicited from this target population.

The study made use of convenience sampling which is a non-probability technique to select the wholesale and distribution firms. This sampling technique involves selecting sample respondents for study based on convenience, availability and accessibility of target respondents. The individuals selected and included in the study were those that were available and willing to take part in the study. The researchers had the freedom to choose whoever was appropriate to respond to the questionnaires. This technique was employed because of the indifferent attitude of businesses towards research study. An initial encounter with some members of the target respondents indicated that, some of them were not willing to cooperate by furnishing the researchers with their annual financial reports for the smooth conduct of the study. Consequently, the researchers conveniently sampled only willing respondents for inclusion in the study. Additionally, the store officers, the managers

and/or accountants of the wholesale and distribution firms were purposively selected on the basis that they were better placed to provide the necessary data needed for the study. A total of one hundred (100) wholesale and distribution firms were selected for the study.

For the purpose of the study, a well-structured questionnaire was used to gather data from the respondents. One hundred (100) questionnaires were distributed to the store officers, managers and/or accountants of the selected wholesale and distribution firms. The questionnaires were distributed and collected by the researchers in person. Additionally, the annual audited financial records of the wholesale and distribution firms obtained for the year, 2015 were utilised.

Returned questionnaires were edited to correct eerrors and to sort out responses deemed to have been misconceived or misunderstood in order to ensure credibility of the data gathered. The data was therefore carried in topical and chronological order and then presented in a descriptive manner. Again, the data gathered was organised and classified into categories and themes to allow for some level of quantitative analysis to be done. The Statistical Package for Social Sciences (SPSS), Version 21 and Microsoft Excel were used in the quantitative data analysis. The analyses were presented via means of tables, mean, standard deviation (SD) and other appropriate statistical methods. Finally, information from the data analysis was summarized and thereafter, conclusions and recommendations were made.

3.1 Econometric Model Specification

A semi log or LINLOG regression model was developed to examine the impact of inventory management on the profitability of distribution and wholesale firms. A LINLOG regression is the combination of both linear and logarithm regression in a single regression model for analysis. LINLOG regression is a suitable means of transforming an extremely skewed variable into one that is more approximately normal. Earlier studies, [15] and [16] have used similar techniques to establish the impact of inventory management and profitability. The dependent variable of the model is return on assets (ROA), a proxy for profitability. Again, the independent variable for the regression model is inventory management whilst the size of the firms (with the natural log of total assets used as proxy for size) and the age of the firms were introduced as control variables. These control variables were introduced because, the extant literature generally reports of their significant effects on profitability of firms. The size of the firms (measured by the total assets) was introduced in the model because it is believed that larger firms generally perform better than smaller firms. It has been thus asserted that the size of a firm affects the performance of a firm. Again, a firm that has survived many years of existence is believed to perform better than newly established firms. This is because, older firms would ordinarily have a large customer base, many suppliers, appropriate technology, and personnel with the required experience to help them perform better than their newly established counterparts. As a result of this, the study puts forward that, the age of a firm impacts on its performance. The regression model is specified below;

$$ROA = a + B_1 InvMgt + B_2 Size + B_3 Age + u$$

3.2 Assumptions and Notations

The variables and thea priori assumptions in the regression model are explained as;

Variable	Explanation	A priori
ROA	Return on Assets as a proxy for profitability: Dependent variable	
InvMgt	Inventory Management (independent variable), measured by the average mean of inventory control measures and management	+
Size	Natural Logarithm of Total Assets: control variable	+
Age	The Age of the firms, measured by the number of years the businesses has been in existence: control variable	+
a	Constant	+
B_1, B_2, B_3	The slopes of the line	
u	The Error term	

4. RESULTS AND DATA ANALYSIS

4.1 Inventory Management Practices

Inventories represent one of the most important resources of SMEs, especially, distribution and wholesale businesses. It is thus important that they are managed well to boost the performance of a business. Table 1 presents the results of the inventory management practices among distribution and wholesale businesses in the Kumasi Metropolis.

The questionnaire distributed asked respondents of the distribution and wholesale businesses whether they always had enough inventories available to meet their daily operations. The response obtained (mean = 4.39) indicated that most of the distribution and wholesale businesses always had inventory for business operations. Similarly, the study ascertained that majority of the distribution and wholesale businesses hardly experienced times where there were inadequate inventories. As shown in Table 1, majority (mean = 2.18) of the surveyed distribution and wholesale businesses hardly had times of inadequate inventory. The respondents were further asked whether there were times of excess inventory or over stocking. Table 1 shows that majority (mean = 3.02) of the distribution and wholesale businesses sometimes had excess inventory.

As shown in Table 1, most (mean = 3.65) of the distribution and wholesale businesses indicated that their products mostly got spoilt in their warehouses. Respondents from the distribution and wholesale businesses surveyed were further asked to indicate whether they offered quantity discounts. The result (mean = 3.27) presented in Table 1 shows that majority of the distribution and wholesale businesses mostly offered quantity discounts. Due to the risk associated with the keeping of goods at a warehouse, it is always advisable to have insurance policies to cover the inventories against burglary, fire, natural disaster, spoilages etc. Consequently, the distribution and wholesale businesses were asked to indicate whether they had insurance coverage over their inventory. As can be seen from Table 1, majority (mean = 2.04) of the distribution and wholesale businesses hardly had insurance policies as required. This confirms the lack of insurance interest among Ghanaian businesses. This might be attributed largely to the entrenched notion among the Ghanaian populace that insurance companies are mostly

reluctant to indemnify their clients when it becomes necessary, thus the apathy towards insurance policies among the distribution and wholesale businesses.

Holding inventory comes with a cost. Too much of it increases storage cost and too little of it increases transportation costs to and from the supplier's warehouse as well as the cost of stock out. It is thus important for businesses to know or establish their economic order quantity so as to minimize the costs associated with holding inventory. The distribution and wholesale firms were thus asked whether they knew the economic order quantity of their inventory. The results obtained showed that majority (mean = 2.31) of the distribution and wholesale firms hardly knew the economic order quantity of their inventory. The respondents that indicated that they knew their economic order quantity were further asked to indicate whether they used the economic order quantity anytime they ordered inventory. The result presented in Table 1 shows that majority (mean = 3.14) sometimes used the economic order quantity when they ordered inventory.

Regular inventory count is one of the most important practices in inventory management. As a result, the study ascertained the frequency at which the distribution and wholesale firms undertook inventory counts. As shown in Table 1, most (mean = 2.97) of the distribution and wholesale firms did not count their inventories regularly. Records keeping with regards to inventory are also one of the most important activities in inventory management. Because of this, the distribution and wholesale firms were asked whether they kept accurate inventory records. Table 1 shows that majority (mean = 3.52) of the distribution and wholesale firms mostly maintained accurate inventory records.

To ensure effective management of inventory, it is important that inventories are always reconciled with the inventory records. The researchers therefore asked the respondents whether inventories were always reconciled with inventory records. The response obtained as presented in Table1 (mean = 2.66) showed that the distribution and wholesale firms did not reconcile inventory with inventory records. This is rather surprising since the normal thing to do when there is discrepancy between inventory records and inventory count is to investigate. However, the respondents indicated that some of the discrepancies were so negligible that the time and resources spent on their investigation were

not worth it. To prevent the unavailability of inventory, it is important that every business set and know the level of inventory at which additional inventory should be procured. To this end, the distribution and wholesale firms were asked if they knew the reorder level of their inventory. Table 1 shows that majority of the distribution and wholesale firms (mean = 2.51) hardly knew the reorder level of their inventory.

Table 1 further presents the results on whether there existed different storage facilities and warehouses for different goods and products. From Table 1, it can be ascertained that majority (mean = 2.38) indicated that there were no different storage facilities and warehouses for different products. From the foregoing analysis, it can be seen that there are some efforts to ensure effective inventory management among distribution and wholesale firms in Kumasi. Even though, the results indicate that some of the distribution and wholesale firmsi n Kumasi have put in place some measures over inventory management, the general outlook of inventory management among distribution and wholesale firms in Kumasi however, was not effective and efficient.

4.2 The Relationship between Inventory Management and Profitability

Table 2 presents the correlation results between profitability (measured by Return on Assets) and inventory management (measured by the variables in Table 1), size of the firms (measured by total assets) and the age of the firms. The correlation coefficient between profitability and inventory management is 0.46. This indicates that a positive relationship exists between profitability and inventory management. This relationship is significant at 0.01. Thus, an effective inventory management leads to an increase in the profitability in the operations of distribution and wholesale firms in Kumasi. This finding is justified because proper management of inventory means that resources may not be unnecessarily tied up in idle assets (inventory) and also the firms will be in a position to invest in productive assets like plant and machinery which are considered beneficial to the profitability, growth and survival of the company. Additionally, when inventory is managed properly, costs associated with transportation, inventory storage and spoilages will considerably be reduced. This eventually leads to an increase in the

Table 1. Inventory control measures and management

Question	Mean	SD	Max	Min
Availability of stock to meet demand	4.39	0.66	5	4
Are there times of inadequatestock?	2.18	1.65	4	1
Are there times of over stock?	3.02	1.74	5	2
Do some productsspoil (rot) in the warehouse?	3.65	1.32	4	2
Does the firm offer quantity discounts?	3.27	1.45	4	1
Are thereadequate insurance coverage?	2.04	1.69	4	1
Do you know theeconomic order quantity (EOQ)?	2.31	1.91	4	1
Do you useEOQeach time you order stock?	3.14	1.51	4	1
Do you do inventory counts regularly?	2.97	1.82	4	1
Do you maintain accuratestock records?	3.52	1.44	5	2
Do you do regular reconciliation between inventory and inventory records?	2.66	2.65	5	1
Is the reorder level known?	2.51	1.76	4	1
Do you normally haveexpired products?	2.55	1.27	3	1
Do you have different warehouse for different facilities?	2.38	1.84	4	1
Average mean	**2.30**			

Source: Researcher's Field Work, 2016
Mean Scale: 5 = Always; 4 = Mostly; 3 = Some Times; 2 = Hardlyand 1 = Never

Table 2.The relationship between inventory management and profitability

	Profit (ROA)	Inventory management	Size	Age
Profit (ROA)	1			
Inventory management	0.46**	1		
Size	0.53	0.62	1	
Age	0.16**	0.11**	0.38	1

*** Significance at 0.01*

Table 3. Theimpact of inventory management on profitability

	Unstandardized coefficients		Standardized coefficients	t-test	p-value
	B	**Std. error**	**Beta**		
Constant	68.34	1.675		19.46	.001
Inventory management	0.381	0.111	1.04	6.18	.004
Size/Total assets	0.462	0.143	0.401	7.44	.02
Age	0.416	0.357	0.682	6.39	.01

Source: Field Study, 2016
$\alpha = 0.05$; $R^2 = 0.743$; Adjusted $R^2 = 0.698$; F = 55.29; probability of F-statistic = 0.000

profitability of firms. This result comes with little surprise because earlier studies have found a positive link between profitability and inventory management. For instance, [15] found a significant correlation between the use of inventory control systems and operational performance of a tea processing firm. Similarly, [8], [4]] and [16] also established a significant positive link between inventory management and profitability.

4.3 TheImpact of Inventory Management on Profitability

A LINLOG regression was performed to ascertain the impact of inventory management on the profitability of distribution and wholesale firms in Kumasi. As can be seen in Table 3, the coefficient of inventory management is significantly associated with profitability. The coefficient of inventory management is 0.381. This means that effective inventory management leads to a 38.1 percentage point increase in the profitability of distribution and wholesale firms. The result is significant having a p-value= 0.004, which is less than the alpha (α) of 0.05. This means that effective management of inventory has a significantly positive impact on the profitability of distribution and wholesale firms, implying that, the more effective and efficient inventory management is, the better and more enhanced profitability becomes. It can further be observed that the R^2 and adjusted R^2 values obtained for this LINLOG regression model are 0.743 and 0.698 respectively. The R^2 value of about 0.743 means that the explanatory variables account for about 74.3% of the variations in the profitability of distribution and wholesale firms.

This result was actually anticipated. Since the management of inventory is concerned with determining when to procure, the quantity to order, and the most effective source of supply for each product in each store, it ensures the right quantity of goods are received at the appropriate time, in the right location such that the costs associated with handling and holding of inventories are reduced. Consequently, when inventory is managed effectively, it can result in reduced cost, decreased obsolescence and increased customer satisfaction. In such asituation, one will be spot on in deducing that the level of profit earned by these distribution and wholesale firms partly depends on the success of inventory management.

Similarly, in the distribution and wholesale industry, the main aim of inventory management is to reduce the total relevant costs incurred in order to facilitate profitable operations. In these businesses, the quantity of inventory ordered at once impacts on the ordering and holding costs of inventory, which eventually have a bearing on profitability. Equally, if orders are placed in many small units, ordering costs will be high but annual holding costs will be low. As indicated in literature, for these distribution and wholesale firms to be profitable, it is necessary to increase the order size to obtain large volume discounts and slightly, lowering ordering costs will off-set higher holding costs. This results of this study confirms the findings of earlier studies such as [8,4,15,14] and [16].

5. CONCLUSION

Using LINLOG regression analysis, to examine the impact of inventory management on profitability of distribution and wholesale businesses, the study found out that inventory management has a positive and significant impact on the profitability of distribution and wholesale businesses. The study concludes that there is a relatively positive and significant relationship between inventory management and profitability. There were however little efforts to ensure effective inventory management among distribution and wholesale businesses in the Kumasi Metropolis. Even though, there sult

indicates that some of the distribution and wholesale businesses in the Kumasi Metropolis have put in place appropriate measures regarding inventory management, the general outlook of inventory management among distribution and wholesale businesses in the region was relatively far from impressive.

From this study, it is evident that effective and efficient inventory management positively affects the profitability of companies. This means that companies should effectively manage their inventories to realize higher levels of profit and maintain their long run survival and growth. The implication of the findings of this study is that, firms and businesses can increase the level of their profitability if they put in place adequate policies regarding their inventory management. This may involve the conduct of inventory checks, handling of discrepancies, amendment of inventory records and handling over of stores etc.

6. RECOMMENDATIONS

From the findings of the study, the following recommendations are put forward.

It was evidenced from the study that different warehouse and storage facilities are not provided for different product and goods. Some items required more inventory space than others. This is where another basic inventory cost, known as holding costs, comes into focus. It is therefore recommended that different and modern warehouse and storage facilities are provided to accommodate inventories and stores in order to reduce the degree of spoilage of goods and products.

It was also ascertained from thes tudy that regular inventory checks, investigation of discrepancies, setting of reorder and economic order levels were not implemented by majority of the wholesale and distribution firms.It is thus recommended that the wholesale and distribution firms should put in place adequate policies involving the conduct of inventory checks, handling of discrepancies, amendment of inventory records and handling over of stores to enhance the effective management of inventory. Inventory is an important asset in every organisation. It is however just one of the many components of working capital. The research has established a positive and significant relationship between inventory management and profitability. Further research would be need to be conducted

to ascertain how the other components of working capital affect the profitability of wholesale and distribution firms.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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