

**THE IMPACT OF INVENTORY MANAGEMENT ON PROFITABILITY: A CASE
OF DISTRIBUTION AND WHOLESALE FIRMS IN GHANA**

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 analysis 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 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,

26 amendment of inventory records and handing over of stores to enhance the effective
27 management of inventory.

28

29 **Key Words:** Inventory Management, Wholesale and Distributon firms, Ghana, Working
30 Capital, Profitability, Return on Assets.

31 **1.0 Introduction**

32 Literature hasacknowledged the fact that, companies which areexpected to excel in
33 competitiveenvironment have to design and operate inventory management and product
34 distribution functionseffectively. The primeaim for effectiveand efficient inventory
35 management systems is theattainment of an optimum level of investment in inventory for
36 required businesses operational performances.Effective management and control of
37 inventories in business operationsrequireseffective means of communication and coordination
38 as well as bringing together all other interrelated management functionssuch as planning and
39 decision making.

40 In the opinion of (1), inventory is thestock stored for the purpose of reselling at a profit.
41 Several authors (e.g. (2), (3), (7) and (15)) acknowledge that inventory represents the largest
42 cost of a company especially trading firms: distributors, wholesalersand retailers. Inventory
43 has often been referred to as ‘piles of money’at thewarehouse, and on the shelf. Normally, it
44 consists of about 50% - 60% of the firm’s total investment(2). This calls for greater attention
45 to be paid to theeffectiveand efficient management of inventory in order to facilitate the
46 operation of companies. This will ensure that businesses have the right quantity of goods on
47 hand to avoid stock-outs, to prevent shrinkage (spoilage/theft), as well as the right
48 proportions of goodsfor proper accounting.Firms which neglect the management of

49 inventories will have to face serious problems relating to their long-term profitability, growth,
50 and survival (3). Many companies have failed because they had too much capital (funds) tied
51 up in inventories or their pile of inventories became obsolete, impaired or lost (4).

52 Many companies, firms and organisations (e.g. Cocoa Processing Company, Golden Web,
53 Produce Buying Company) all over Ghana virtually operate below capacity. Most of these
54 businesses find it difficult to manage and control the volume of inventories for operations (5).
55 (2) also reported that the management of these companies often face working capital
56 management problems, especially controlling inventory. Such problems include inadequacy
57 of raw materials, obsolescence of materials, high transportation and storage cost, and
58 pilferage, among others. Wholesale and distribution firms in Ghana offer various range of
59 consumer goods and products. These goods and products constitute both perishable and non-
60 perishable goods. In the face of large quantities of these ranges of products on offer, some of
61 which are perishable, piling up in inventory, effective and efficient inventory management
62 practices are essential primarily to avoid spoilage, damages, high storage costs and
63 obsolescence. A study by (3) found out that inventory management is of prime significance in
64 order for businesses to maintain smooth operation of activities and make profit. This shows
65 that effective management of inventories affords flexibility in operations. Distributors and
66 wholesalers are therefore expected to ensure optimum levels of inventories in stores so that
67 mechanisms of efficiency and effectiveness of operations are maintained.

68 As has been noted, lack of attention to the effective and efficient management of inventory
69 may cause severe difficulties and potential losses because of adverse short-run developments
70 even for firms with favourable long-run prospects. Ineffective and inefficient management of
71 inventory has dire implications for a firm's working capital needs, and may subject customers,
72 creditors and investors to potentially diversifiable yet unforeseen business risks. Sadly, a scan

73 through literature found no empirical evidence that links inventory management with
74 profitability among firms operating within the wholesale and distribution industry whose
75 scale of operations involves dealing with large volumes of inventory, in Ghana. In fact, many
76 of the studies found to have been conducted on the link between inventory management and
77 profitability happened to have been done in other countries (e.g. 1; 3; 4; 6;7 and 8). The
78 Ghanaian evidence,especially within the mechandise industry is unknown.

79 Furthermore, according to (1), it is widely assumed that the profitability of a business largely
80 depends on the manner in which its working capital, particularly inventory is managed. Again
81 (7) showed that poor, excessiveand inadequate inventory management is detrimental to a
82 firm'ssuccess. Thesocio-economic and cultural environment in Ghana is fundamentally
83 different from many of these countries in which thesestudies were conducted, and probably,
84 their findingsmight not beapplicablewithin the Ghanaian context. A review of the literature
85 pertinent to Ghana found very few studies conducted on the subject matter (see for e.g. 9).It
86 appears, a lot more needs to be discovered in this all-important area of business management.
87 Besides, no known study has specifically investigated theeffect of inventory management on
88 the profitability of wholesale and distribution firms (a prominent sub-sector) in Ghana. There
89 wasthus a knowledge gap in this area which thisstudy sought to fill. The present study sought
90 toassess the impact of inventory management on the profitability of wholesaleand distribution
91 firms in the Kumasi Metropolis in Ghana.

92

93 **2.0 Literature Review**

94 **2.1 Inventory Management Systems in the Wholesaleand Distribution Chain**

95 In this fast moving and rapid changing businessenvironment, inventory bringssignificant
96 effects on the daily business operations. Inventory management or control involves many
97 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. (10) 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 goods and 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. (12) also defined inventory management as the means by which materials of the correct quality and quantity are made available and when required, with due regard to economy in storage and ordering costs, purchase prices and working capitals.

(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 (13) inventory management in the supply chain consists of all stages, direct and indirect, involved in satisfying customer requests. (14) 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. (15) 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 (4), 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 idle assets. 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,

146 existenceand survival of the business. A major constituent of working capital is inventory
147 which in turn establishesan effective link between production and sales level (3). It therefore
148 becomes more critical for companiesand organisations to effectively and efficiently manage
149 their inventories.

150 According to (8), the main objective of inventory management is to minimize the total cost of
151 relevant costs to ensure profitable operations. The authors contend that the quantity of
152 inventory ordered at onceaffects inventory ordering and holding costsand will ultimately
153 havea bearing on profitability. Conversely, if many small ordersare placed, ordering costs
154 will be high but annual holding costs will be low. For the organisation to be profitable, it
155 would be necessary to increase the order size to obtain large volume discounts and hence
156 lowering costs,and this lowering costswith large orders will off-set the higher holding cost.(2)
157 contend that profitability would only beachieved at optimum level of relevant costs i.e.
158 holding costs and ordering costs. The authors further contend that excessive inventoriesare
159 theenemy of retail profitability.

160 A number of researchers haveestablished a link between inventory management and
161 profitability of firms. (9)argues that effective inventory management allowsa distributor to
162 meet or exceed customers' expectations of product availability with theamount of each item
163 that will maximize their company's net profit or minimize its total inventory investment.
164 (9)continued that,effective inventory management is the result of outstanding inventory
165 control and inventory management. The author concluded that effective inventory
166 management has a positive link with profitability. (12) alsoasserts that effective inventory
167 management helps business to know what products are 'out there'and how much you have of
168 each item, know exactly whereeach piece of each product is located in the warehouse, ensure

169 that all inventory remains in saleable or usable condition and store products to minimize the
170 cost of filling customer orders.

171 A study to assess the effect of inventory management practices on operational performance of
172 a tea processing firm was conducted by (10). The study specifically determined the effect of
173 material requirement planning on operational performance; established the influence of
174 continuous replenishment on operational performance; established the extent to which
175 distribution resource planning influence operational performance and the effect of vendor
176 managed inventory on operational performance. Purposive sampling and stratified random
177 sampling techniques were applied to select a sample of fifty five (55) respondents out of 119
178 respondents for this study. The study indicated that there is a **positive** correlation between the
179 use of inventory control systems and operational performance of a tea processing firm.
180 Similarly, (13) also used gross operating profit as a measure of profitability and found a
181 positive relationship between inventory management and profitability.

182 In the Ghanaian context, (9) investigated the relationship between effective inventory
183 management and profitability. A cross-sectional data from 2004 to 2014 was gathered for
184 the analysis from the annual reports of four manufacturing firms listed on the Ghana Stock
185 Exchange. Measures of profitability were examined and related to proxies for efficient
186 inventory management by manufacturers. The Ordinary Least Squares (OLS) regression
187 model stated in the form of a multiple regression model was applied in the analysis. The study
188 revealed that inventory management has a significantly strong and positive effect on the
189 profitability of the selected manufacturing firms in Ghana.

190 (16) in his study used return on total assets as a measure of profitability to examine the relation
191 between working capital management and corporate profitability. The study investigated
192 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 inventories days, accounts receivables days, accounts payable days and cash conversion cycle. The regression result indicated that high investment in inventories and receivables is 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 controls are considered.

3.0 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 observation 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 assets 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 there 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 management 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

242 choose whoever was appropriate to respond to the questionnaires. This technique was
243 employed because of the indifferent attitude of businesses towards research study. An initial
244 encounter with some members of the target respondents indicated that, some of them were
245 not willing to cooperate by furnishing the researchers with their annual financial reports for
246 the smooth conduct of the study. Consequently, the researchers conveniently sampled only
247 willing respondents for inclusion in the study. Additionally, the store officers, the managers
248 and/or accountants of the wholesale and distribution firms were purposively selected on the
249 basis that they were better placed to provide the necessary data needed for the study. A total
250 of one hundred (100) wholesale and distribution firms were selected for the study.

251 For the purpose of the study, a well-structured questionnaire was used to gather data from the
252 respondents. One hundred (100) questionnaires were distributed to the store officers,
253 managers and/or accountants of the selected wholesale and distribution firms. The
254 questionnaires were distributed and collected by the researchers in person. Additionally, the
255 annual audited financial records of the wholesale and distribution firms obtained for the year,
256 2015 were utilised.

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

266

267 3.1 Econometric Model Specification

268 Asemi log or LINLOG regression model was developed to examine the impact of inventory
 269 management on the profitability of distribution and wholesale firms. A LINLOG regression is
 270 the combination of both linear and logarithm regression in a single regression model for
 271 analysis. LINLOG regression is a suitable means of transforming an extremely skewed
 272 variable into one that is more approximately normal. Earlier studies (10;16) have used similar
 273 techniques to establish the impact of inventory management and profitability. The dependent
 274 variable of the model is return on assets (ROA), a proxy for profitability. Again, the
 275 independent variable for the regression model is inventory management whilst the size of the
 276 firms (with the natural log of total assets used as proxy for size) and the age of the firms were
 277 introduced as control variables. These control variables were introduced because, the extant
 278 literature generally reports of their significant effects on profitability of firms. The size of the
 279 firms (measured by the total assets) was introduced in the model because it is believed that
 280 larger firms generally perform better than smaller firms. It has been thus asserted that the
 281 size of a firm affects the performance of a firm. Again, a firm that has survived many years
 282 of existence is believed to perform better than newly established firms. This is because, older
 283 firms would ordinarily have a large customer base, many suppliers, appropriate technology,
 284 and personnel with the required experience to help them perform better than their newly
 285 established counterparts. As a result of this, the study puts forward that, the age of a firm
 286 impacts on its performance. The regression model is specified below;

287
$$ROA = a + B_1 InvMgt + B_2 Size + B_3 Age + u$$

288 Assumptions and Notations

289 The variables and the a 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	
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4.0 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 data (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 stock.

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.

340 To ensure effective management of inventory, it is important that inventories are always
 341 reconciled with the inventory records. The researchers therefore asked the respondents
 342 whether inventories were always reconciled with inventory records. The response obtained as
 343 presented in Table 1 (mean = 2.66) showed that the distribution and wholesale firms did not
 344 reconcile inventory with inventory records. This is rather surprising since the normal thing to
 345 do when there is discrepancy between inventory records and inventory count is to investigate.
 346 However, the respondents indicated that some of the discrepancies were so negligible that the
 347 time and resources spent on their investigation were not worth it. To prevent the
 348 unavailability of inventory, it is important that every business set and know the level of
 349 inventory at which additional inventory should be procured. To this end, the distribution and
 350 wholesale firms were asked if they knew the reorder level of their inventory. Table 1 shows
 351 that majority of the distribution and wholesale firms (mean = 2.51) hardly knew the reorder
 352 level of their inventory.

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

Question	Mean	SD	Max	Min
Availability of stock to meet demand	4.39	0.66	5	4

Are there times of inadequate stock?	2.18	1.65	4	1
Are there times of over stock?	3.02	1.74	5	2
Do some products spoil (rot) in the warehouse?	3.65	1.32	4	2
Does the firm offer quantity discounts?	3.27	1.45	4	1
Are there adequate insurance coverage?	2.04	1.69	4	1
Do you know the economic order quantity (EOQ)?	2.31	1.91	4	1
Do you use EOQ each 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 accurate stock 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 have expired 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			

Table 1: Inventory Control Measures and Management

Source: Researcher's Field Work, 2016

Mean Scale: 5 = Always; 4 = Mostly; 3 = Some Times; 2 = Hardly and 1 = Never

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 profitability of firms. This result comes with little surprise because earlier studies have found a positive link between profitability and inventory management. For instance, (10) found a significant correlation between the use of inventory control systems and operational performance of a tea processing firm. Similarly, (6), (7) and (16) also established a significant positive link 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

Table 2: The relationship between inventory management and profitability

** Significance at 0.01

4.3 The Impact 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

393 (α) of 0.05. This means that effective management of inventory has a significantly positive
394 impact on the profitability of distribution and wholesale firms, implying that, the more
395 effective and efficient inventory management is, the better and more enhanced profitability
396 becomes. It can further be observed that the R^2 and adjusted R^2 values obtained for
397 this LINLOG regression model are 0.743 and 0.698 respectively. The R^2 value of about 0.743
398 means that the explanatory variables account for about 74.3% of the variations in the
399 profitability of distribution and wholesale firms.

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

408 Similarly, in the distribution and wholesale industry, the main aim of inventory management
409 is to reduce the total relevant costs incurred in order to facilitate profitable operations. In these
410 businesses, the quantity of inventory ordered at once impacts on the ordering and holding
411 costs of inventory, which eventually have a bearing on profitability. Equally, if orders are
412 placed in many small units, ordering costs will be high but annual holding costs will be low.
413 As indicated in literature, for these distribution and wholesale firms to be profitable, it is
414 necessary to increase the order size to obtain large volume discounts and slightly, lowering
415 ordering costs will off-set higher holding costs. This result of this study confirms the
416 findings of earlier studies such as (6), (7), (10), (12) and (16).

	Unstandardized		Standardized	t-test	p-value
	Coefficients		Coefficients		
	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

Table 3: The impact of inventory management on profitability

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

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, the result 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 handing over of stores etc.

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 products 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 the study 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 handing 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 needed

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

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