

**THE IMPACT OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY
OF GLOBAL HAULAGE COMPANY, GHANA**

ABSTRACT

*The study examines the impact of working capital management on profitability of firms in Ghana. This study ~~therefore~~ employed the autoregressive distributed lag (ARDL) technique to examine the relationship between working capital management and profitability of firms in Ghana using Global Haulage Company Ltd as a case study with a period range of 1995 to 2013. The regression results showed that debt ratio, firm size and current assets to total assets ratio are negatively related to firm profitability whilst current liabilities to total assets ratio is positively related to firm profitability. **The service sector accounts for about 51% of national output and this show how vital the service sector has become in terms of job creation and gross domestic product growth in the Ghanaian economy.** The study therefore recommends that, management should use less of debt in financing their activities to be able to increase profit since high debt ratio adversely impact on profitability. Also, aggressive working capital policies should be pursued if management's goal is to increase profit. In addition, policy makers should check and work on the managerial inefficiencies which are making the firm experience diseconomies of scale.*

Keywords: Working capital, Profitability, Working capital management, Firm, Global Haulage Company Ltd, Ghana

NB: *1. It is suggested that "therefore in the abstract should be removed to make to statement to flow.
2. The section highlighted in RED in the abstract is interchanged as it is best suited in its current position*

1. INTRODUCTION

Traditionally, there are four financing decisions which every financial manager makes in the day-to-day running of the firm. They include investment decisions (long-term asset mix); financing decisions (capital-mix); dividend decisions (profit allocation) and the liquidity decisions (short-term asset-mix). The economy of Ghana until 2006 was dominated by agriculture, but is now led by service accounting for about 51% of national output (2010 Ghana Millennium Development Goals Report). This shows how very vital the service sector has become in terms of job creation and gross domestic product growth in the Ghanaian economy. With the enormous benefits that the economy gain from the service sector, except few which are based on the financial sector, specific studies on working capital management and profitability focusing on service companies in Ghana are largely unavailable. Generally, although several studies have examined the nature of the relationship between working capital management and profitability of firms (See Deloof, 2003; Padachi, 2006; Raheman and Nasr, 2007; Raheman *et al.*, 2010; Akoto *et al.*, 2013), there is no consensus on the nature of this relationship. For example; On one hand, some literature suggests that cash

43 conversion cycle (a proxy for working capital management) is positively related to firm
44 profitability (Falope and Ajilore, 2009; Gill et al, 2010; Akoto et al., 2014), implying that
45 longer cash conversion cycles increase the firm's profitability. On the other hand, other
46 studies however, suggests that shorter cash conversion cycles increase the firm's
47 profitability (Deloof, 2003; Wang, 2002; Lazaridis and Tryfonidis, 2006). Thus a study such
48 as this, contributes significantly and adds value to the existing literature on working capital
49 management and firm profitability nexus.

50 Working capital starvation is generally credited as a major cause if not the major cause of
51 small and medium scale business failure in many developed and developing countries
52 (Rafuse, 1996). The success of a firm depends ultimately, on its ability to generate cash
53 receipts in excess of disbursements. The cash flow problems of many small businesses are
54 exacerbated by poor financial management and in particular the lack of planning cash
55 requirements (Jarvis et al., 1996). It has therefore become imperative that managers
56 understand how working capital management relate to the profitability of their business.
57 Most especially, the economy of Ghana recently has been going through macroeconomic
58 challenges where GDP growth rate is falling, high interest rate making it impossible for
59 companies to borrow and expand its operations. An economy with deteriorating currency
60 which makes it difficult for companies to do foreign trade. Inflation and unemployment
61 cannot be left out because of its effects on companies with this everlasting "dumsor" (load
62 shedding). In the light of the above, it is very crucial that critical attention is given to the
63 performance of working capital management on profitability of firms in Ghana. Based on this
64 background, this paper aims to examine the relationship between working capital
65 management and profitability of firms in Ghana using Global Haulage Company Ltd as a
66 case study.

67 **2. LITERATURE REVIEW**

68 Adu (2013) claim that the concept of working capital was first advanced by Carl Marx (1867)
69 even though Marx did not explicitly mention working capital in his work. She claims
70 that, workers gave credit to the firm by accepting periodical payment of wages which funded
71 a portion of work-in-process. Thus, the concept of working capital as is understood today, is
72 embedded in Marx's 'variable capital' which was used to mean expenditure for payrolls
73 advanced to workers before they complete the goods they are working on.

74 Working capital refers to short-term resources available to a company for financing its day-
75 to-day activities (Korankye and Adarquah, 2013). Yeboah and Yeboah (2014) supported this
76 definition by also defining working capital as the investment required for running daily
77 business activities. In the same vein, Addae and Nyarko-Baasi (2013) said working capital
78 meets the short-term financial requirements of a business enterprise and thus referred to
79 working capital as a trading capital, not retained in the business in a particular form for
80 longer than a year. They further claimed that the money invested in it changes form and
81 substance during the normal course of business operations.

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83 Performance of firms is judged base on whether its profitability is high or low. Profitability
84 can be measured on gross profit margin, operating profit margin, net profit margin, return on
85 asset and/or return on equity (Nurazleena, Norazida and Wan Nazihah, 2015). The term
86 profitability as defined by Adagye (2015) is the ability of the business organization to
87 maintain its profit year after year. Athanasoglou, Brissimis and Delis (2005) also defined
88 firm profitability as the ability of the firm to generate more revenue than cost, in relation to
89 the firm's capital base. Profitability is therefore importance because it is the main purpose of
90 business (Adagye, 2015).

91 Rao and Lakew (2012) asserted that ratios instead of the real value of profits are used in
92 measuring firm profitability because ratios are not influenced by variations in the general
93 price level and are the most frequently used ratios in measuring bank profitability in the
94 banking literature. Extensively used as measures of bank profitability throughout many
95 literature reviewed in many studies have been the return on asset (ROA) and the return
96 on equity (ROE).

97 The return on equity (ROE), computed as the net profit after tax divided by total equities
98 measures the income earned on each unit of shareholders' capital. This measure has a
99 shortfall of generating higher ratio for banks with high financialleverage which is normally
100 associated with higher risk. This is true because with any level of profit after tax, as banks
101 become highly leveraged or equity falls, the ROE is bound to increase due to the lower
102 denominator (equity).

103 Return on Assets (ROA) which is computed as the firms' after tax profit over total assets
104 (Flemini et al., 2009) indicates how effectively a firm manages its assets to generate income
105 (Davydenko, 2010). ROA according to Flemini et al. (2009) may be biased due to off-
106 balance-sheet activities where ROA is overstated in the evaluation of firm profitability, but
107 believe such activities are negligible. Nonetheless, it has always been a very good and
108 preferred measure of profitability.

109 Although profitability does not necessarily mean liquidity, profitability ensures firm survival,
110 growth and debatably, firm's liquidity levels (Agyei and Yeboah, 2011). Profitability is
111 influenced by either internal factors or external factors. The internal factors refers to those
112 factors that the firm can control some of which include capital structure, size, growth, age,
113 management efficiency, reputation among others whilst the external factors are those beyond
114 the control of the firm such as economic conditions (interest rate, Exchange rate risk,
115 inflation, etc).

116

117 **NB: This literature review is not anchored on any theory! The study ought to be supported by**
118 **theories on working capital management or any theory that establishes a nexus between**
119 **working capital management and firm performance.**

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123 **Table 1: Linear Relationship between Working Capital Accounts, Working Capital**
 124 **Policies and Profitability.**

	Profitability	Risk	Accounts Payable	Inventories	Accounts Receivable	WCM Investment/Length
	Linear Relation					
Conservative Policy	Lower	Lower	Shorten	Higher levels	Extended	Higher Investment/Longer
Aggressive Policy	Higher	Higher	Extended	Lower levels	Shorten	Lower Investment/Shorter

125 Source: Gomes (2013)

126 The choice of working capital policy affects the profitability of firms. The conservative
 127 working capital policy as described by Gomes (2013), Ajibolade and Sankay (2013) and
 128 Agyei and Yeboah (2011) to imply a higher investment in working capital accounts, for
 129 instance higher levels of inventories, larger quantity of current assets in relation to total
 130 assets extending more trade credit to customers and reducing supplier's financing result in a
 131 lower profitability and lower risk. However, empirical studies show that conservative
 132 working capital policy positively affect profitability due to higher levels of inventories that
 133 prevents interruptions in operating cycle process; higher sales (Petersen and Rajan, 1997
 134 cited in Gomes, 2013) and a reduction of supply costs that reduce both the risk of price
 135 fluctuation among business cycles and the risk of losing customers as a result of product
 136 scarcity (Gomes, 2013). When more trade credit is extended to customers, conservative
 137 working capital policies may increase profitability because extend trade credit ensure that the
 138 contracted services have been carried out, making way for customers to check if purchased
 139 products and services are as agreed in quality and quantity terms prior to payment, leading to
 140 repeated sales (Gomes, 2013). It also reduces asymmetric information between buyer and
 141 seller (Smith, 1987 in Gomes, 2013), thereby strengthening the long-term supplier-customer
 142 relationships, increasing sales in periods of low demand and reduces transaction costs
 143 (Gomes, 2013). The reduction on supplier's financing allows customers to capitalise on
 144 prompt payment discounts due to early payments and reduction of the costs of external
 145 financing (Gomes, 2013).

146 Conversely, to follow the aggressive working capital policy will imply lower investments in
 147 working capital accounts through lower levels of investment in inventories, shortening trade
 148 credit to customers and postponing payments to suppliers and that results in an increase in
 149 profitability and risk for firms (Ajibolade and Sankay, 2013; Agyei and Yeboah, 2011;
 150 Gomes, 2013). According to Ajibolade and Sankay (2013), there is a moderate working
 151 capital policy where the firm's risks are moderated; however, the firms would be unable to
 152 pay-off matured obligations.

153
 154 The empirical literature has been giving conflicting results on the relationship between the
 155 components of working capital management and profitability. While some studies found a
 156 positive relationship between components of working capital management and firm
 157 profitability, others studies showed a negative relationship. Also, some others show no

158 relationship and then again, whilst some of the components are negatively related, others are
159 positively related.

160

161 Deloof (2003) examined the influence of working capital management on profitability of
162 firms listed on a European Stock market and reported a negative relationship and thus
163 supporting the view that shorter cash conversion cycles increase firm profitability. Other
164 studies found similar results and so supports the theoreticalliterature (Mohamad and Noriza,
165 2010; Raheman and Nasr, 2007; Shin and Soenen, 1998).

166

167 Addae and Nyarko-Baasi (2013) used a method of panel data estimation to show the
168 relationship between working capital management and profitability in an emerging market.
169 The results indicated that, there was a negative relationship between accounts receivables,
170 number of day's accounts payable, Days of inventory turnover and firm's profitability.

171

172 The impact of working capital management on profitability of 386 Small and Medium Sized
173 Export Companies in Tunisia observed from 2001 to 2008was studied by Bellouma (2011)
174 using panel data regression models. A negative relationship between gross operating
175 profitability and the days of sales outstanding, the days of inventory outstanding, the days of
176 payable outstanding and the cash conversion cycle was found.

177

178 Again, Korankye and Adarquah (2013) empirically analysed working capital management
179 and its impact on profitability of listed manufacturing firms in Ghana using Panel data
180 obtained from the financial statements of listed manufacturing firms in Ghana for eight (8)
181 years from 2004 to 2011inclusive. The findings revealed that working capital cycle is
182 statistically significant but negatively associated with firm profitability. The study also found
183 that inventory turnover period, account receivables collection period and account payables
184 payment period each negatively correlates with profitability.

185

186 However several studies reported a positive relationship between working capital
187 management components and profitability. For example in Vietnam, Dong and Su (2010)
188 found a positive and significant relationship between payables deferral period and firm
189 profitability. Such findings were also supported by Mathuva (2010) in Kenya, Falope and
190 Ajilore (2009) in Nigeria, Gill et al (2010) and Akoto et al. (2013) in Ghana. Adagye (2015)
191 undertook a study to ascertain the relationship between working capital management and the
192 profitability of DMBs in Nigeria by applying the ordinary least square regression. The results
193 indicated a positive relationship between Returns on Equity (ROE), Returns on Assets (ROA)
194 which represented profitability and the elements of working capital management.

195

196 Applying multiple regression technique, Onwumere, Ibeand Ugbam (2012) in studying the
197 impact of working capital management on profitability of Nigerian firms revealed that,
198 aggressive investment working capital policies (TCA/TA) of Nigerian firms have a positive
199 significant impact on profitability measured by return on assets (ROA) whilst aggressive
200 financing working capital policies (TCL/TA) of Nigerian firms have a positive non-
201 significant impact on profitability of Nigerian firms.

202

203 Nevertheless, some studies have found that firm profitability is independent of working
204 capital management. Zawaira and Mutenheri (2014) studied the relationship between
205 profitability and components of working capital management using a panel data regression
206 model employing a sample of 32 non-financial firms listed on the Zimbabwe Stock Exchange.
207 The regression results show that profitability is not associated with receivables collection
208 period, inventory conversion period, cash conversion cycle, quick ratio, current asset to
209 total asset ratio, current liabilities to total asset ratio, debt ratio and age of company.

210

211 However, the relationship between payables deferral period and profitability is negative and
212 significant, although it is very small. Other studies that found similar results include Sharma
213 and Kumar (2011) and Ganesan (2007), Padachi (2006) in Mauritius. Also, Ajibolade and
214 Sankay (2013) in their study, Working Capital Management and Financing Decision:
215 Synergetic Effect on Corporate Profitability did not find any significant relationship between
216 the firm's working capital composition and profitability.

217

218 Yeboah and Yeboah (2014) studying the Effect of Working Capital Management of Ghana
219 Banks on Profitability using for Ordinary Least Square and Panel estimation approach. The
220 two methods produced the same relationship between WCM and profitability. The OLS uses
221 the components of the Cash Conversion Cycle (CCC) (Creditors Payment Period (CPP) and
222 Debt Collection Period (DCP)) and the results showed a negative relationship with
223 profitability whilst the results show that Total Debt to Total Assets (TDA) which measures
224 leverage of the firm has a positive relationship with bank profitability in Ghana. Agyei and
225 Yeboah (2011) in their attempt to examine whether the relationship between working capital
226 management practices and profitability of Banks engaged all commercial banks from Ghana,
227 over a ten-year period (1999-2008). The study applied a panel data methodology within the
228 framework of the random effects model and the results showed that while cash operating
229 cycle has a significantly positive relationship with bank profitability, just like debtors'
230 collection period, creditors' payment period exhibits a significantly opposite relationship
231 with profitability.

232

233 Makori and Jagongo (2013) also found the existence of negative correlation between Return
234 on Assets and the firms average collection period and cash conversion cycle but a positive
235 correlation between Return on Inventory Holding Period, Accounts Payment Period when
236 they studied the relationship between working capital management and firm profitability of
237 manufacturing and construction firms listed on Nairobi securities exchange in Kenya.

238

239 Furthermore, Agyemang and Asiedu (2013) studied the relationship between working capital
240 management and profitability of listed manufacturing companies in the Accra Metropolis
241 using panel data regression analysis of cross-sectional and time series data. The components
242 of working capital management used in the study included accounts payable days, inventory
243 days and cash conversion cycle. The results revealed that, there is negative relationship
244 between inventory days, accounts payable day and net operating profit. Cash Conversion
245 Cycle on the other hand is positively related but no statistical significance on profitability.

246 With these mix results even though some of the studies depended on the same estimation
 247 technique but of course at different firms and different sample size, it is therefore not
 248 surprising that Fahim et al. (2015) took it upon themselves to provide a new model for
 249 assessing working capital management using the Tehran stock exchange market. The results
 250 of their research indicated a lack of an inverse U-shape relationship between CCC and
 251 NWC/TA (as the proxy for working capital) and ROA in the Iranian companies, whereas the
 252 relationship of current ratio (CR) and quick ratio (QR) with ROA has a significant inverse U-
 253 shape one. They argued base on their research findings that, the level of current and quick
 254 ratios which were earlier used to serve investors and financial institutions as a base for
 255 evaluation of WCM relative merits cannot be recommended to all managers as a reliable
 256 measure to rank their companies in terms of liquidity and short-term solvency. Thus, they
 257 refute a universal applicability of the desired ratios to all types of companies and this
 258 argument can be made for other components of WCM. This goes to support firm-specific
 259 study of components of WCM and profit relationships.

260

261 3. METHODOLOGY

262 3.1 Model Specification

263 Following Yeboah and Yeboah (2014), Agyemang and Asiedu (2013) and Addae and
 264 Nyarko-Baasi (2013), the model offered below was applied for the analysis in the study;

265 In this study, the independent variables is conceptualized as; ratio of current assets to total
 266 assets, ratio of current liabilities to total assets and since other variables affect profitability
 267 apart from the components of working capital management, debt ratio and size of Global
 268 Haulage company limited is included as control variables.

269 $ROA_t = f(CATA_t, CLTA_t, DR_t, SIZE_t) \dots \dots \dots 1$

270 To interpret the results as elasticities, the operational form of Equations 3.1 is transformed
 271 into log linear form as;

272 $\ln ROA_t = \beta_0 + \beta_1 \ln CATA_t + \beta_2 \ln CLTA_t + \beta_3 \ln DR_t + \beta_4 \ln SIZE_t + v_t \dots \dots \dots 2$

273 Where,

274 $\ln CATA_t$ = log of current assets to total assets in time t,

275 $\ln CLTA_t$ = log of current liabilities to total assets in time t,

276 $\ln DR_t$ = log of debt ratio in time t,

277 $SIZE_t$ = Size of Global Haulage company limited in time t,

278 v = error term

279 β_i = parameter $I = 0, 1, 2, 3, 4$

280 The ratio of current assets to total assets is included in the model since high current assets to
281 total assets ratio implies more liquid the firm and more conservative in working capital
282 investment reducing profitability. It is therefore expected to be negative.

283 Higher current liability to total asset ratio imply lower investments in working capital
284 accounts through lower levels of investment in inventories, shortening trade credit to
285 customers and postponing payments to suppliers and that results in an increase in profitability
286 and risk for firms. This gives a positive relationship between current liability to total asset
287 ratio and profitability.

288
289 A large firm size is expected to be more profitable because of economies of scale and better
290 bargaining power. Firms that are well managed and guard themselves against diseconomies
291 of scale are expected to outperform small firms and so the relationship between size of
292 Global Haulage company limited is expected to be positive.

293 Also, when debt ratio is low, it implies the company is financially sound and is able to rely
294 on its internal funds. Such companies can therefore increase their profitability; hence the
295 coefficient of debt ratio is expected to be negative. In other words, $\beta_1 < 0$, $\beta_2 > 0$, $\beta_3 < 0$ and
296 $\beta_4 > 0$.

297 To estimate equations 2, instead of cross-sectional data or panel data, the study employs time
298 series techniques for the reason that advances in time series theories have rendered time
299 series estimates more advantageous over the use of cross section estimates (Jansen and Bruce,
300 1992). According to Bandiera and Natraj (2013), cross-country regressions cannot provide
301 causal evidence because cross-country differences in respective variables may be as a result
302 of cross-country variation in growth of an economy or development level. This is because,
303 the means of development is linked to changes in relative prices (Munshi and Rosenzweig,
304 2006) and also to technological advancement which influences firms operations and hence
305 profitability could be a consequent of the process of development. Fernandez (2010) also
306 argues that legal rights concerning wages among others could lead to biasness due to country
307 differences and development levels. Consequently, the study followed the “footsteps” of
308 Srinivasan and Bhagwati (1999) by employing more in-depth firm-specific times series
309 analysis.

310 **3.2 Data Type and Source**

311 This study employed mainly secondary sources of data for its analysis over the period 1995
312 to 2013 (19 observations). All the variables are annual data extracted from the annual reports,
313 financial statement and accounts of various years of the Global Haulage Company Limited.
314 Those items that are observed to be showing signs contrary to reasonable expectations from
315 the balance sheet and profit and loss accounts were removed.

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3.3 Definition of Variables

Profitability (Return on Assets [ROA])

To analyse the impact of components of working capital on profitability of Global Haulage Company Limited, Return on Assets (ROA) is used as a proxy for profitability. Profitability can be represented by ROA, return on equity, net operating profit, gross operating profit margin among others. The ROA was chosen as the dependent variable in this study because it relates the profitability of the firm to its asset base hence it is seen as a better measure (Baveld, 2012; Makori and Jagongo, 2013)

It was measured as;

$$ROA = \frac{\text{Net Profit after Tax}}{\text{Total Assets}} \dots\dots\dots 3$$

Current Asset to Total Asset (CATA)

The ratio of current asset to total assets measures a firm's degree of conservativeness in working capital investment policy such that a low figure imply that, the firm is conservative in working capital.

It is computed as;

$$CATA = \frac{\text{Current Assets}}{\text{Total Assets}} \dots\dots\dots 4$$

Current Liabilities to Total Asset (CLTA)

The current liabilities to total assets ratio measures working capital financing policy of the firm. Firms are regarded as more aggressive in their management of current liabilities when they depend more on the use of current liabilities in which case the firm's liquidity is at risk.

It is represented as;

$$CLTA = \frac{\text{Current Liabilities}}{\text{Total Assets}} \dots\dots\dots 5$$

Size of the Firm

Size of a firm can either be calculated as the natural log of sales or the natural log of total assets. Both exist in working capital literature (Sharma and Kumar, 2011; Karaduman et al., 2011). However, the study utilise the natural log of total assets as the measure for size of firm. It is computed as;

$$SIZE = \ln(\text{Total Assets}) \dots\dots\dots 6$$

352 **Debt Ratio (DR)**

353 The debt ratio shows the proportion of a firm's debt relative to its assets. It highlights the
354 firm's leverage and potential risks. It is measured by the ratio of total debt (sum of short and
355 long term loans) to total assets. It is measured as;

356
$$DR = \frac{\text{Total Debt}}{\text{Total Assets}} \dots\dots\dots 7$$

357 **3.4 Estimation Technique**

358 In this section, the researcher discusses the methodologies used in analyzing the dataset. The
359 following tests were employed: Dickey-Fuller Test for Unit root test for stationarity, Co-
360 integration test, Autoregressive Distributive Lag Model, etc. The study relied on Stata 12 and
361 Eviews 9 statistical computing software for the analysis and all the statistical tests were
362 carried out at 1%, 5% and 10% levels of significance.

363 **3.4.1 Exploratory Data Analysis**

364 The methodology applied in this section is descriptive statistics. This procedure enabled the
365 researcher to achieve objective one and two and also gives more understanding about the data
366 set and their distributions. The data distribution was examined using standard descriptive
367 statistics namely line graph, mean and standard deviation.

368 **3.4.2 The Test for Unit Root**

369 There exist unit root in most time series data making it a requirement to first test for the
370 existence of unit root in the dataset before estimating coefficients of the model when using
371 time series data. This test also helps determine the order of integration of each of the
372 variables used. A stochastic process is considered to have no unit root if its expected value
373 and variance are constant overtime. If one or more of these conditions are not met then the
374 process is said to have unit root or non-stationary (Enyaah, 2011).

375 In such a situation, it is imperative to perform such test in other to find the exact estimated
376 values. The Dickey-Fuller Test (DF) was used to check the stationarity following Dickey and
377 Fuller (1981). The objective of this unit root test is to check whether or not the variables of
378 interest are integrated of order one i.e. $I(1)$ or order zero $I(0)$ before proceeding to estimate
379 the coefficients of the model in order to avoid bogus regression results.

380 The DF test is performed base on the model generated below;

381
$$\Delta y = b_0 + b_1 y_{t-1} + \sum_{i=1}^n (B_i \Delta y_{t-i}) + u_t \dots\dots\dots 8$$

382 For all $t=0, 1 \dots$ and u is a white Noise. b_0 is the constant term and b_1 is the estimated
383 parameter of the first levellag. y_{t-1} is the first levellag, B_i is the vector of the estimated
384 parameters of the lagged values of the differenced value and Δy_{t-i} stands for the vector of the

385 lagged value of the differenced value of the series. Δ represents the first- differenced
386 operator.

387 In a unit root test as per the above regressions, the null hypothesis to be tested is that the
388 coefficient of y with one lag is;

389 $H_0: b_1=0$

390 $H_1: b_1\neq 0$

391 **3.4.3 Co-integration**

392 When all the time series data for unit root are checked and is established to be integrated,
393 then the study will proceed to test for co-integration among the variables of interest. The
394 variables can be tested by either applying the Engle Granger (1987) estimation method or the
395 Johansen- Juselius estimation method (Johansen, 1988; Johansen and Juselius, 1990) to
396 defeat the problem of spurious correlation and misleading inferences. However, the Engle
397 Granger estimation method and the Johansen- Juselius estimation method are rendered
398 inappropriate when the variables are integrated of different orders. The Autoregressive
399 Distributed lag (ARDL) bounds test is appropriate in such a situation. The co-integration test
400 will help to determine whether a group of non-stationary series is co-integrated or not. If the
401 variables are co-integrated, the relationship may be taken to mean a long run relationship.
402 Therefore, in this study the ARDL bounds test method was used.

403 **3.4.4 The ARDL Co-integration Test**

404 This study employs the autoregressive distributed lag (ARDL) technique to test for the long-
405 run and short-run impact of components of working capital management on profitability in
406 Global Haulage Company Limited. The ARDL model is employed for this study because; the
407 ARDL model is a highly significant approach to find the co-integration even with small
408 sample size. Also, the ARDL approach does not need all of the variables to be integrated of
409 the same order unlike other co-integration techniques which requires that; the ARDL
410 technique can be applied whether the variables are $I(1)$ and/or $I(0)$. In effect, the ARDL
411 technique avoids the pre-testing problems connected to standard co-integration, which
412 demands that the variables be already categorised into $I(1)$ or $I(0)$ (Pesaran et al, 2001). This
413 model is even the more appropriate model for empirical work in a case where the stationarity
414 properties of the data are uncertain. Bahmani-Oskooee et al. (2004) observe that, in
415 ascertaining the order of integration of each variable in the model, the result may differ
416 depending on which test one uses hence the results could contradict. For instance, when one
417 apply the Augmented Dickey Fuller and the Phillips-Perron tests for unit root, it is easy to
418 wrongly conclude that there is nonstationarity when there is actually stationarity around a
419 one-time structural break. The ARDL approach is therefore the best for this study because it
420 avoids these problems.

421 In order to run the long run estimation, the conditional error correction (ECM) version of the
422 ARDL Bounds test was first applied to check for long run relationship. The various lags of
423 the variables are expected by the Akaike Information Criterion (AIC).The dynamic structure
424 of the ARDL (p,q) model takes the following form;

$$\Delta \ln R_t = \alpha_0 + \sum_{i=1}^p a_i \Delta \ln CATA_{t-i} + \sum_{i=0}^p b_i \Delta \ln CLTA_{t-i} + \sum_{i=0}^p c_i \Delta \ln DR_{t-i} + \sum_{i=0}^p d_i \Delta SIZE_{t-i} + \delta_1 \ln R_{t-1} + \delta_2 \ln CATA_{t-1} + \delta_3 \ln CLTA_{t-1} + \delta_4 \ln DR_{t-1} + \delta_5 SIZE_{t-1} + v_t \dots \dots \dots 9$$

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427

428 Where all the variables are as defined earlier and Δ is the first difference operator. The
 429 parameters a, b, c, d, e, f, j denote the short run dynamics of model 9 to be estimated through
 430 the error correction framework and δ_i are the long run multipliers in the ARDL model with α
 431 as constant and v as disturbance term.

432 The ARDL framework is carried out in three stages (Pesaran *et al.*, 2001). First, the presence
 433 of co-integration predicted by the theory is tested using an F-test. The F statistic tests for the
 434 joint significance of all the lagged levels variables (coefficient of the long run effect). The
 435 null hypothesis of no co-integration among the variables of interest is tested against the
 436 alternative hypothesis as stated below;

437 $H_0: \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = 0$

438 $H_1: \text{Not all the } \delta_s \text{ is zero}$

439 The two critical values bounds presents a cointegration test when the independent variables
 440 are $I(h)$ (where $0 \leq h \leq 1$): a lower value assuming the regressors are $I(0)$ and an upper value
 441 assuming purely $I(1)$ regressors. If the F-statistic is greater than the upper critical value, the
 442 null hypothesis of no co-integration is rejected regardless of the orders of integration. The
 443 null hypothesis cannot be rejected if the F-statistic is below the lower bound. If the result
 444 falls between the lower and upper bounds, the result is inconclusive.

445 **3.4.5 Diagnostic and Stability Tests**

446 In every research work, the results should be reliable for policy implementation. Hence
 447 diagnostic tests are done to examine the reliability of the results of the study. The study tested
 448 for the significance of the variables and other diagnostic tests such as serial correlation,
 449 functional form, normality; heteroscedasticity and structural stability of the model were
 450 carried out.

451 The Breusch-Pagan-Godfrey test for heteroscedasticity, Breusch-Godfrey Serial Correlation
 452 LM Test for serial correlation, the Jacque-Berra test for normality and also, the Ramsey
 453 RESET Test for stability were applied in the analysis of diagnostic and stability tests of the
 454 long-run coefficients together with the short-run dynamics. The Breusch-Pagan-Godfrey test
 455 involves testing the null hypothesis that the error variances are all equal against the
 456 alternative hypothesis that the error variances are a multiplicative function of one or more
 457 variables. A large chi-square would indicate that, heteroskedasticity is present, thus it
 458 indicate that the error term is a multiplicative function of the predicted values. The Breusch-
 459 Godfrey Serial Correlation LM Test was employed to test whether adjacent residuals are
 460 correlated which is in violation of the regression assumption that the error terms are
 461 independent. The Breusch- Godfrey test can be used when (1) the independent variables are
 462 stochastic or not (2) the regression equation is autoregressive or not (3) whether the
 463 regression equation is first order autoregressive or higher order autoregressive. The

464 nullhypothesis states that, the error terms are uncorrelated whilst the alternative hypothesis
 465 states that the error terms are correlated. Therefore, when the null hypothesis is accepted, it
 466 implies that the error terms are not correlated otherwise they are correlated.
 467 Following Pesaran et al.(2001), the stability of the regression coefficients is evaluated by the
 468 Ramsey RESET Test for stability and they can show whether or not the regression equation
 469 is stable over time. This stability test is appropriate in time series data, especially when we
 470 are uncertain about when structural change might have taken place.

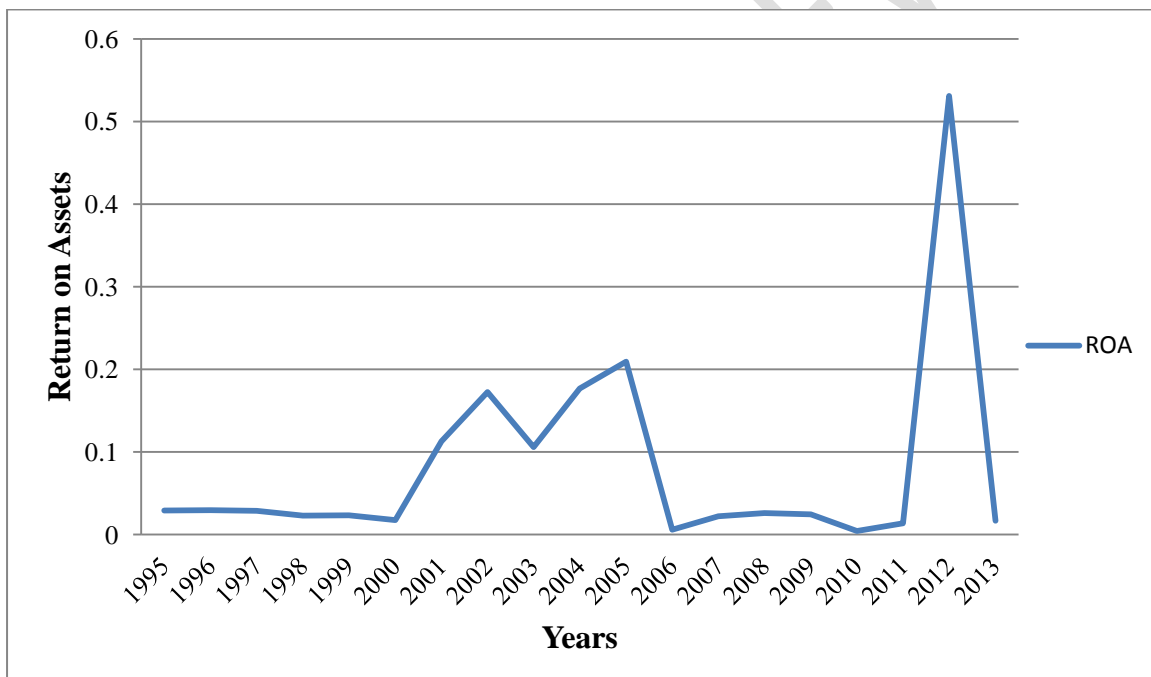
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472 **4. EMPIRICAL RESULTS AND DISCUSSION**

473 **4.1 Trend Analysis of Profitability (ROA)**

474 Fig 1 shows the linear trend for profitability (ROA) of Global Haulage Company Limited
 475 between the period 1995 and 2013. The graph suggests that return on assets which is a proxy
 476 for profitability did not experience a constant trend from 1995 to 2013. ROA kept fluctuating
 477 from 1995 till it got to its lowest point in 2010 and rose to peak highly around the year 2012.

478 **Fig 1: Trend Analysis of Profitability (ROA)**



479
 480

Source: Global Haulage Company Limited Annual Financial Statements

481 From Fig 1, ROA started with a negative trend from 1995 moving downwards until the year
 482 2000 where it started picking up, increasing steadily to 2002 where ROA recorded a figure of
 483 0.172447. From there, it drop again in 2003 and began to rise again. The negative trend or
 484 low ROA could be as a result of poor management practices and also, the implementation of
 485 the structural adjustment programme in 1993 where exchange rate liberalization, tightening
 486 of monetary policy, foreign trade reforms, financial sector reforms and price deregulation
 487 were adopted might have had a toll on companies in Ghana including Global Haulage
 488 Company. ROA continued to rise from 2003 to 2005 and fell abruptly from 0.209 in 2005 to
 489 0.006 in 2006. From 2006, ROA maintained a low figure but increased and had a constant

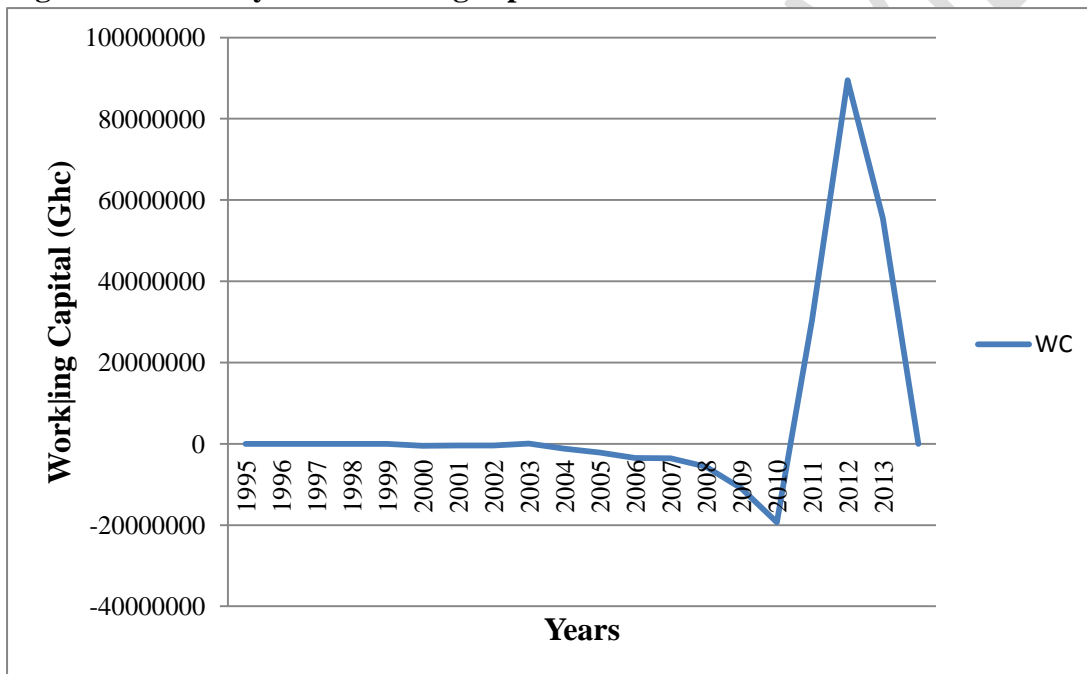
490 trend until it fell to its lowest point in 2010 at 0.004 over the study period. The high taxes to
 491 make up for the over spending in 2004 due to the elections coupled with the revaluation of
 492 the Ghanaian cedi in 2007 may have made things difficult for the management hence the fall
 493 in ROA from 2004 to 2010. ROA began to rise a bit from 2010 and suddenly jumped to its
 494 highest peak over the study period in 2012 to 0.531. ROA had a negative trend from 2012 to
 495 2013. Generally, ROA had a low and stable trend for most of the years in the study.

496

497 **4.2 Trend Analysis of Working Capital**

498 Fig 2 shows the linear trend for working capital which is the difference between current
 499 assets and current liabilities of Global Haulage Company limited from 1995 to 2013. From
 500 the graph, working capital seems to maintain a constant horizontal trend for most of the years
 501 under study. However, working capital experience steep rise and falls in the latter part of the
 502 period under study. Working capital had its lowest point in 2010 and peaked highly around
 503 the year 2012

504 **Fig 2: Trend Analysis of Working capital**



505
506

Source: Global Haulage Company Limited Annual Financial Statement

507 From fig 2, working capital of Global Haulage Company limited starting from 1995,
 508 maintained a horizontal trend steadily up to 2003. From 2003, working capital began to fall
 509 with little fluctuations, maintaining the negative trend until 2010 where it recorded its lowest
 510 over the period to -19336467.30 in Ghana cedis. The negative figure means that current
 511 liabilities were more than current assets implying that liquid assets for operational cost were
 512 inadequate. Working capital sharply rose from 2010 to 89513599.60 Ghana cedis in 2012 and
 513 thereafter falls again to 55565827.40 Ghana cedis in 2013.

514

515 **4.3 Descriptive Statistics**

516 To understand the relevant aspects of working capital management, a descriptive analysis is
 517 carried out. The descriptive statistics presents the mean, median and standard deviation of the
 518 variables under study in this project work. It also presents the maximum and minimum values

519 of these variables which help visualise the maximum and minimum values a variable
 520 achieved. Table 2 presents the descriptive statistics of components of working capital and
 521 profitability of Global Haulage Company limited from 1995 to 2013.

522 **Table 2: Summary Statistics, using the observations 1995 - 2013**

	LNROA	LNDR	LNCLTA	LNCATA	SIZE
Mean	-2.808	-1.251	-0.945	-2.918	13.190
Median	-3.548	-0.935	-0.868	-3.170	15.420
Maximum	4.025	-0.440	-0.203	-0.719	19.364
Minimum	-5.448	-2.871	-2.129	-5.809	3.854
Std. Dev.	2.033	0.814	0.560	1.312	5.869
Observations	19	19	19	19	19

LNROA=Log of Return on Assets, LNCATA=Log of Current Assets to Total Assets ratio, LNCLTA=Log of Current Liabilities to Total Assets, LNDR=Log of Debt ratio and SIZE=Firm Size

523 Source: Author's Estimation based on Annual reports of the company

524 **NB: Please check 2013-1995 = 18 years or 18 observations. What we have in**
 525 **the summary statistics is 19 observations. Pls cross check.**

526 From Table 2, the mean value for the return on assets is – 2.807876 (-280.79%) with a
 527 standard deviation of 2.033190 (203.32%). This means that, ROA can deviate from the mean
 528 by 203.3%. ROA ranges between -5.447685 and 4.024915. That is to say ROA can fall as
 529 low as -5.447685 and can also rise as high as 4.024915. Debt ratio averages around -
 530 1.250823 and the deviation from the mean is about 0.813792. Also, debt ratio could be as low
 531 as -2.870968 and as high as -0.440320 over the period under consideration.

532 The ratio of current liabilities to total assets has a mean value of -0.944927 whilst the
 533 standard deviation from the mean is -2.128632. The maximum value that current liabilities to
 534 total assets ratio can attain is -0.203341 whilst the minimum value it can attain is -2.128632.
 535 The median is -0.867501. The ratio of current assets to total assets has an average of -
 536 2.918317 with a standard deviation of 1.312346. Within a year, the current assets to total
 537 assets ratio can rise a maximum of -0.719491 and can also fall to a minimum of -5.809143.
 538 The size of the firm recorded a mean value of 13.18992 with the standard deviation from the
 539 mean being 5.868889. In year, the firm can expand to a maximum size of 19.36396 and also
 540 shrink to a minimum of 3.854182.

541 **4.4 Results and Analysis of the Unit Root Test**

542 As discussed in chapter three, unit root test was conducted by applying the Dickey Fuller
 543 (DF). Table 3 shows the results of the DF unit root test at levels and at first difference. The
 544 DF test employed included a constant only for both tests. From the table, the null hypothesis
 545 were rejected for the variables; log of return on assets (LNROA), log of current liabilities
 546 (LNCLTA) (both at 5% significance levels), log of debt ratio (LNDR) (at 1% significance
 547 levels), and log of current assets to total assets ratio (LNCATA) (at the 10% significance

548 levels) in their levels which imply they achieved stationarity at their levels, whilst only firm
 549 size (SIZE) was stationary at first difference at 1% significance levels. Therefore, not all the
 550 underlying series in the present study are integrated of order one [i.e. $I(1)$] and there is no I
 551 (2) variable hence the reason for applying ARDL model.

552 **NB:** It is always better to restrict the decision rule for accepting or rejecting the hypothesis of
 553 of stationarity to at a particular confidence level eg 1%, 5% and 10%. For social science
 554 study, 5% is usually recommended.

555 **Table 3: Dickey Fuller Unit Root Results**

VARIABLE	LEVEL	FIRST DIFFERENCE
LNROA	-3.466 I(0)**	-6.099*
LNCATA	-2.853 I(0)***	-6.343*
LNCLTA	-3.030 I(0)**	-5.135*
LNDR	-3.943 I(0)*	-6.506*
SIZE	-1.228	-4.300 I(1)*

*Note: I(0), I(1) denotes integration of order zero and order one, and *,** and *** indicates significance at the 1%, 5% and 10% level respectively. The null hypothesis for the DF is unit root is present
 LNROA=Log of Return on Assets, LNCATA=Log of Current Assets to Total Assets ratio, LNCLTA=Log of Current Liabilities to Total Assets, LNDR=Log of Debt ratio and SIZE=Firm Size*

556 **4.5 Results and Analysis of the Co-integration Test**

557 The autoregressive distributed lag (ARDL) bounds test was used to estimate for the presence
 558 of co-integration. The study selected the maximum number of lags as 4 using the Akaike
 559 Information Criterion (AIC) for the equations. Using the bounds test, when the F-statistic is
 560 greater than critical value bounds, reject the null hypothesis that there is no co-integration
 561 otherwise accept.

562 From Table 4, the F- statistic (4.734) is more than the 5% upper critical value bound.
 563 Therefore, the null hypothesis is rejected implying that there is co-integration between the
 564 components of working capital management and the company’s profitability. Having
 565 established the co-integration among the variables, the ARDL method is applied in the
 566 estimation of the parameters of the equation 3.4 in chapter three.

567 **Table 4: Bounds Test Results for the Existence of Co-integration**

Test Statistic	Value	k
F-statistic	4.734**	4

Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
1%	3.74	5.06

Note: ** indicates significance at the 5% level

4.6 Results and Analysis of the Long Run Relationship

The equation 9 in chapter three was estimated for Global Haulage Company Limited using annual data from 1995-2013 using the ARDL estimation technique. The results are based on the Akaike Information Criterion (AIC) using a maximum lag of one for equation 9. The results of the long-run estimates are presented in Table .

From Table 5, only one variable is statistically significant in the long run and only one variable did not meet its expected theoretical signs. Whilst log of current liabilities to total assets ratio (LNCLTA), log of current assets to total assets (LNCATA), log of debt ratio (LNDR) meet their theoretical signs, firm size (SIZE) did not meet its theoretical sign. Also, whilst LNCATA, SIZE, LNDR is not statistically significant, LNCLTA is statistically significant.

Table 5: ARDL Long Run Results

Variable	Coefficient	Std. Error	Prob.
Constant	-0.611	2.017	0.769
LNDR	-3.054	1.85	0.134
LNCLTA	3.483	1.219	0.019**
LNCATA	-0.153	0.435	0.733
SIZE	-0.155	0.135	0.280

Note: *, ** and *** indicates significance at the 1%, 5% and 10% level respectively. LNROA=Log of Return on Assets, LNCATA=Log of Current Assets to Total Assets ratio, LNCLTA=Log of Current Liabilities to Total Assets, LNDR=Log of Debt ratio and SIZE=Firm Size

580

The coefficient of LNDR is -3.054 are interpreted as, a 1% increase in debt ratio will lead to 3.054% decrease in return on assets which represents profitability. This means that ROA is elastic with respect to debt ratio. However, this coefficient is statistically not significant. Return on assets is elastic with respect to current liabilities to total assets ratio with a coefficient of 3.483. This means that, when current liabilities to total assets ratio increases by a percentage unit, return on assets respond by increasing more by 3.48%. This result meet what theory says in terms of the sign and it is statistically significant at 5% significant level. Higher current liability to total asset ratio imply lower investments in working capital accounts through lower levels of investment in inventories, shortening trade credit to customers and postponing payments to suppliers and that results in an increase in profitability. Though current assets to total assets ratio meet the theoretical sign, it is not significant. The coefficient -0.155 means that, a one unit increase in CATA will cause ROA to decrease by 0.155.

595 **4.7 Results and Analysis of the Short Run Dynamic Model**

596 The next step is to investigate the short run dynamics within the ARDL framework having
 597 estimated the long run co-integration model. Thus all the values of the variables at
 598 levellagged is retained in the ARDL model. Estimation results based on the Akaike
 599 Information Criterion are presented in the table below.

600 Basically, the Error Correction Model (ECM) reconciles the short-run behaviour of the
 601 variables with their long-run behaviour. The coefficient of ECM indicates the speed of
 602 convergence to reestablish equilibrium in the dynamic model. The ECM coefficient presents
 603 how quick variables can return to stability and it is expected to be significant with a negative
 604 sign. Table 6 shows the expected negative sign of ECM is highly significant. This confirms
 605 the existence of the co-integration relationship among the variables in the model yet again.
 606 The coefficient of ECM_{t-1} of -0.557 implies that the deviation from the long-term return on
 607 assets equilibrium is corrected by 55.70% by the coming year.

608 **Table 6: Estimated Short Run Error Correction Model using the ARDL Estimation**
 609 **Technique**

Dependent Variable: LNROA
 Selected Model: ARDL(1, 1, 1, 0, 1)
 Sample: 1995 - 2013

Variable	Coefficient	Std. Error	Prob.
D(LNDR)	-2.320	0.551	0.002***
D(LNCLTA)	3.053	0.502	0.000***
D(LNCATA)	-0.085	0.252	0.742
D(SIZE)	-0.822	0.189	0.002***
ECM_{t-1}	-0.557	0.208	0.025**

Cointeq= LNROA - (-3.0538*LNDR + 3.4834*LNCLTA -0.1531*LNCATA -0.1550*SIZE - 0.6107)

*Note: *** and ** indicates significance at the 1% and 5% level respectively. LNROA=Log of Return on Assets, LNCATA=Log of Current Assets to Total Assets ratio, LNCLTA=Log of Current Liabilities to Total Assets, LNDR=Log of Debt ratio and SIZE=Firm Size*

610

611 The short run results maintained the results in the long run in terms of the sign and the
 612 elasticity status of the variables. In the short run, except log of current assets to total assets
 613 ratio (LNCATA), all the variables such as log of debt ratio (LNDR), log of current liabilities
 614 to total assets ratio (LNCLTA) and firm size (SIZE) are statistically significant in the model.
 615 Whilst LNDR and LNCLTA are elastic, LNCATA and SIZE are inelastic as shown in Table
 616 6.

617 Debt ratio is statistically significant at 1% significance level and its coefficient -2.32 implies
 618 that, a percentage unit increase in debt ratio will lead to a 2.32% decrease in return on assets.

619 This result conforms to the findings of Bagchi and Khamrui (2012), Gomes (2013) and
620 Makori and Jagongo (2013).

621 LNCLTA has a coefficient of 3.053 which means that, a 1% increase in LNCLTA will lead
622 to a 3.05% increase in LNROA in the short run similar to the result in the long run. LNCLTA
623 is also statistically significant at 1% significance level. Omesa, Maniagi, Musiega and
624 Makori (2013) also had similar findings in their work.

625 Current assets to total assets ratio remain to be negatively related to return on assets and
626 statistically not significant in the short run. The coefficient -0.085 is interpreted as, a unit
627 increase in LNCATA will result in a 0.085 decrease in LNROA. Finally, firm size
628 surprisingly is negatively related to the firm's profitability, contrary to apriori expectation
629 and was statistically significant at 1% significance level. The coefficient -0.822 implies that,
630 when firm size increase by a unit, LNROA falls by 0.822. This might be as a result of
631 diseconomies of scale due to managerial inefficiency arising from expansion of the firms
632 operations and branches. Also, it could be that managers expand firm size to achieve their
633 own parochial interest such as benefits associated with a larger firm since they will receive
634 higher remuneration when the firm increases in size. The findings is consistent with Goddard
635 et al. (2005) and Yeboah and Yeboah (2014) but contradicts the findings of Zawaira and
636 Mutenheri (2014).

637 **4.8 Model Diagnostics and Goodness of Fit**

638 The coefficient of determination (Adjusted R-Squared) shows that, about 76.37% of the
639 variations in return on assets are explained by the predictors which include current liabilities
640 to total assets ratio, current assets to total assets ratio, firm size and debt ratio. The F-statistic
641 is also statistically significant at 1% significance level which means that all the predictors
642 jointly determines the level of return on assets in Global Haulage Company Limited.

643 The model passed all the diagnostic tests including the serial correlation test, the
644 heteroscedasticity test, normality test and correct functional form test as presented on the
645 table below. The diagnostic tests in the regression model are presented in Table 7. Based on
646 these probability statistics from the regression, the model is good for analysis and policy
647 interpretation.

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661 **Table 7: Model Diagnostics and Goodness of Fit**

<i>Model Criteria/Goodness of Fit</i>	
R-Squared	0.875
R-Bar-Squared	0.763737
S.E. of Residuals	1.013
F-stat.	7.869
P-value	0.003
Mean of Dependent Variable	-2.767
S.D. of Dependent Variable	2.084
Residual Sum of Squares	9.237
Equation Log-likelihood	-19.537
DW-statistic	2.436

<i>Diagnostics</i>	<i>Test Statistic</i>
$\chi^2_{Auto}(3)$	5.334 [0.149]
$F_{RESET}(3,6)$	2.743 [0.135]
$\chi^2_{Norm}(1)$	1.522 [0.467]
$\chi^2_{HETERO}(8)$	6.442 [0.598]

χ^2_{Auto} , F_{Reset} , χ^2_{Norm} and χ^2_{HETERO} are Breusch-Godfrey Lagrange multiplier statistics for test of serial correlation, Ramsey Reset test for functional form misspecification, Jacque- Bera test for non-normal errors and Breusch-Pagan-Godfrey test for heteroskedasticity, respectively. These statistics are distributed as F- statistic and Chi-square values with degree of freedom in brackets (). Values in parentheses [] are probability values.

662

663 Finally, when analysing the stability of the long run coefficients together with the short run
 664 dynamics, the Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUM of
 665 Squares) are employed. The stability of the regression coefficients is appropriate in time
 666 series data, especially when we are uncertain about when structural break might have taken
 667 place (Bahmani-Oskooee, 2001). This test show whether or not the regression equation is
 668 stable over time.

669 The null hypothesis for both the CUSUM and CUSUM of square is that the coefficient of
 670 vector is the same in every period and are plotted against the critical bound of the 5%
 671 significant level (i.e. all coefficients in the error correction model are stable). As shown in
 672 Fig 3, the plot of both the CUSUM and CUSUM of square residuals are within the
 673 boundaries. This implies that the stability of the parameters has remained within its critical
 674 bounds of parameter stability confirming the stability of the long run coefficients of the
 675 model.

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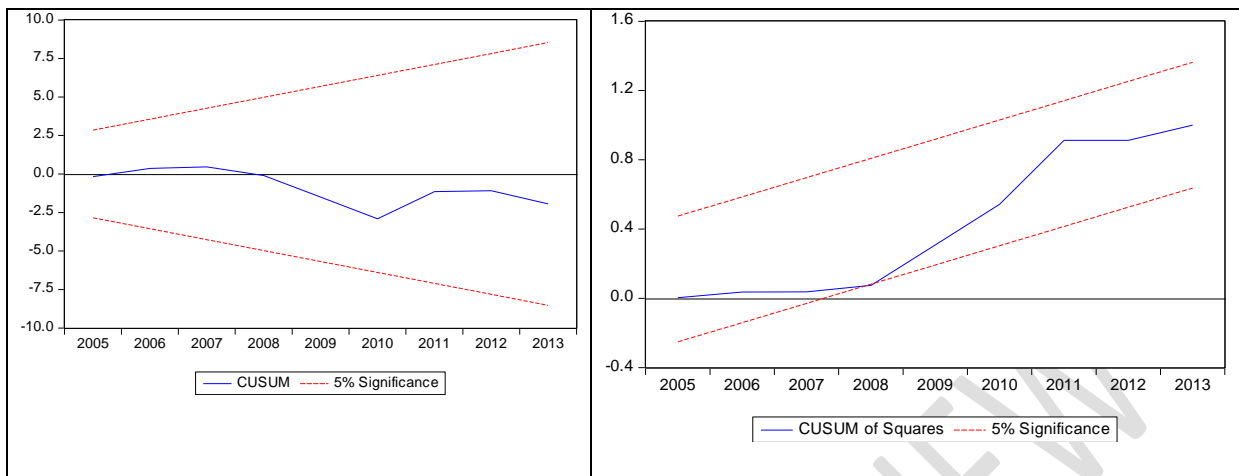
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682 **Fig 3: Plots of CUSUM and CUSUM of Squares**



683

684 5. RECOMMENDATION AND CONCLUSION

685 5.1 Policy Implication and Recommendations of the Study

686 Base on the above major findings, the ensuing policy recommendation is worth noting;

687 Debt ratio is negatively related to profitability, showing that firms with more debt ratio are
688 less profitable. Since high debt ratio adversely impact on profitability, management should
689 use less of debt in financing their activities to be able to increase profit.

690

691 Also, the positive impact of current liability to total assets ratio on profitability is accounted
692 through lower levels of investment in inventories, shortening trade credit to customers and
693 postponed payments to suppliers and that results in an increase in profitability. By
694 implication, aggressive working capital policy which lowers investments in working capital
695 thereby increasing current liability to total asset ratio is appropriate if management's goal is
696 to increase profit. Hence aggressive working capital policies should be pursued cautiously
697 since it also poses risk to the company.

698

699 The significant negative relationship between firm size and firm profitability suggest that the
700 firm is experiencing diseconomies of scale due to managerial inefficiency arising from
701 expansion of the firms operations and branches or managers expand the firm size to achieve
702 their own parochial interest such as benefits associated with a larger firm and therefore will
703 do whatever it takes regardless of some warning signs. Policy makers should therefore put in
704 place measures to check these managerial inefficiencies and self-interest of managers to
705 improve the profitability of the firm.

706

707 **NB: There is no recommendation for Current asset to Total Liability!**

708 **5.2 Conclusion**

709 This article empirically studied the impact of working capital management on firm
710 profitability in Ghana using Global Haulage Company limited as a case by applying time
711 series data extracted from financial statements and annual reports of the company from 1995
712 to 2013. From the results, except current liability to total assets ratio which is significant in
713 the long run, all the variables are only significant in the short run. Current assets to total
714 assets ratio is not significant both in the short run and the long run. In essence, this study has
715 shown that effective working capital management is a necessity for improving firm
716 profitability. Therefore, managers must employ efficient and effective working capital
717 management policies and practices for better performance of their companies.

718 **5.3 Limitation and Areas for Further Research**

719 This study is only limited to one haulage company (Global Haulage Company Limited) in
720 Ghana even though there are several haulage companies in the country. One of the main
721 drawbacks usually encountered in studies of this nature on developing countries like Ghana
722 is the unavailability of reliable data. As a result, the selection of a relatively small sample
723 size for the analysis became inevitable. Caution should therefore be exercised in generalizing
724 its findings to all manufacturing companies or to companies in other industries.

725 Although the objectives of the study were achieved, the study applied few proxy variables for
726 components of working capital management which may be bias estimators of the unobserved
727 variables. For instance, components such as ratio current assets to total assets, current
728 liability to total assets ratio were used in contrast to studies that used several proxy variables
729 including current ratio, average collection period, inventory turnover.

730 It is therefore suggested that in-depth studies including these other factors are necessary. The
731 scope of the study may also be extended to cover a larger sample of manufacturing
732 companies over a longer period of time to yield more insights into the study of the variables
733 of interest in this study.

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890 **NB:** Inconsistency in referencing style adopted, eg **4(15), 191-201** Vs Vol 4, No15, pp 191 -
891 201. The author has to chose one as he has to be consistent.

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895 **GENERAL COMMENT**

896 A very good article and I recommend it for publication. Analysis was well done and well
897 presented. With the few corrections pointed out, the article will make a good read for the
898 public and researchers in working capital management.

UNDER PEER REVIEW