

**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. 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. 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 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

24 **1. INTRODUCTION**

25 Traditionally, there are four financing decisions which every financial manager makes in the
26 day-to-day running of the firm. They include investment decisions (long-term asset mix);
27 financing decisions (capital-mix); dividend decisions (profit allocation) and the liquidity
28 decisions (short-term asset-mix). The economy of Ghana until 2006 was dominated by
29 agriculture, but is now led by service accounting for about 51% of national output (2010
30 Ghana Millennium Development Goals Report). This shows how very vital the service sector
31 has become in terms of job creation and gross domestic product growth in the Ghanaian
32 economy. With the enormous benefits that the economy gain from the service sector, except
33 few which are based on the financial sector, specific studies on working capital management
34 and profitability focusing on service companies in Ghana are largely unavailable. Generally,
35 although several studies have examined the nature of the relationship between working
36 capital management and profitability of firms (See Deloof, 2003; Padachi, 2006; Raheman
37 and Nasr, 2007; Raheman et al., 2010; Akoto et al., 2013), there is no consensus on the
38 nature of this relationship. For example; On one hand, some literature suggests that cash
39 conversion cycle (a proxy for working capital management) is positively related to firm
40 profitability (Falope and Ajilore, 2009; Gill et al, 2010; Akoto et al., 2014), implying that
41 longer cash conversion cycles increase the firm's profitability. On the other hand, other
42 studies however, suggests that shorter cash conversion cycles increase the firm's
43 profitability (Deloof, 2003; Wang, 2002; Lazaridis and Tryfonidis, 2006). Thus a study such
44 as this, contributes significantly and adds value to the existing literature on working capital
45 management and firm profitability nexus.

46 Working capital starvation is generally credited as a major cause if not the major cause of
47 small and medium scale business failure in many developed and developing countries
48 (Rafuse, 1996). The success of a firm depends ultimately, on its ability to generate cash

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

63 **2. LITERATURE REVIEW**

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

70 Working capital refers to short-term resources available to a company for financing its day-
71 to-day activities (Korankye and Adarquah, 2013). Yeboah and Yeboah (2014) supported this
72 definition by also defining working capital as the investment required for running daily
73 business activities. In the same vein, Addae and Nyarko-Baasi (2013) said working capital

74 meets the short-term financial requirements of a business enterprise and thus referred to
75 working capital as a trading capital, not retained in the business in a particular form for
76 longer than a year. They further claimed that the money invested in it changes form and
77 substance during the normal course of business operations.

78

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

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

93 The return on equity (ROE), computed as the net profit after tax divided by total equities
94 measures the income earned on each unit of shareholders' capital. This measure has a
95 shortfall of generating higher ratio for banks with high financialleverage which is normally
96 associated with higher risk. This is true because with any level of profit after tax, as banks

97 become highly leveraged or equity falls, the ROE is bound to increase due to the lower
 98 denominator (equity).

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

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

112 **Table 1: Linear Relationship between Working Capital Accounts, Working Capital**
 113 **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

114 Source: Gomes (2013)

115 The choice of working capital policy affects the profitability of firms. The conservative
 116 working capital policy as described by Gomes (2013), Ajibolade and Sankay (2013) and

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

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

142

143 The empirical literature has been giving conflicting results on the relationship between the
144 components of working capital management and profitability. While some studies found a
145 positive relationship between components of working capital management and firm
146 profitability, others studies showed a negative relationship. Also, some others show no
147 relationship and then again, whilst some of the components are negatively related, others are
148 positively related.

149

150 Deloof (2003) examined the influence of working capital management on profitability of
151 firms listed on a European Stock market and reported a negative relationship and thus
152 supporting the view that shorter cash conversion cycles increase firm profitability. Other
153 studies found similar results and so supports the theoretical literature (Mohamad and Noriza,
154 2010; Raheman and Nasr, 2007; Shin and Soenen, 1998).

155

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

160

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

166

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

174

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

184

185 Applying multiple regression technique, Onwumere, Ibeand Ugbam (2012) in studying the
186 impact of working capital management on profitability of Nigerian firms revealed that,
187 aggressive investment working capital policies (TCA/TA) of Nigerian firms have a positive
188 significant impact on profitability measured by return on assets (ROA) whilst aggressive
189 financing working capital policies (TCL/TA) of Nigerian firms have a positive non-
190 significant impact on profitability of Nigerian firms.

191

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

199

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

206

207 Yeboah and Yeboah (2014) studying the Effect of Working Capital Management of Ghana
208 Banks on Profitability using for Ordinary Least Square and Panel estimation approach. The
209 two methods produced the same relationship between WCM and profitability. The OLS uses
210 the components of the Cash Conversion Cycle (CCC) (Creditors Payment Period (CPP) and
211 Debt Collection Period (DCP)) and the results showed a negative relationship with
212 profitability whilst the results show that Total Debt to Total Assets (TDA) which measures
213 leverage of the firm has a positive relationship with bank profitability in Ghana. Agyei and
214 Yeboah (2011) in their attempt to examine whether the relationship between working capital
215 management practices and profitability of Banks engaged all commercial banks from Ghana,
216 over a ten-year period (1999-2008). The study applied a panel data methodology within the

217 framework of the random effects model and the results showed that while cash operating
218 cycle has a significantly positive relationship with bank profitability, just like debtors'
219 collection period, creditors' payment period exhibits a significantly opposite relationship
220 with profitability.

221

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

227

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

235 With these mixed results even though some of the studies depended on the same estimation
236 technique but of course at different firms and different sample size, it is therefore not
237 surprising that Fahim et al. (2015) took it upon themselves to provide a new model for
238 assessing working capital management using the Tehran stock exchange market. The results
239 of their research indicated a lack of an inverse U-shape relationship between CCC and
240 NWC/TA (as the proxy for working capital) and ROA in the Iranian companies, whereas the
241 relationship of current ratio (CR) and quick ratio (QR) with ROA has a significant inverse U-

242 shape one. They argued base on their research findings that, the level of current and quick
 243 ratios which were earlier used to serve investors and financial institutions as a base for
 244 evaluation of WCM relative merits cannot be recommended to all managers as a reliable
 245 measure to rank their companies in terms of liquidity and short-term solvency. Thus, they
 246 refute a universal applicability of the desired ratios to all types of companies and this
 247 argument can be made for other components of WCM. This goes to support firm-specific
 248 study of components of WCM and profit relationships.

249

250 **3. METHODOLOGY**

251 **3.1 Model Specification**

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

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

258 $ROA_t = f(CATA_t, CLTA_t, DR_t, SIZE_t) \dots\dots\dots 1$

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

261 $\ln ROA_t = \beta_0 + \beta_1 \ln CATA_t + \beta_2 \ln CLTA_t + \beta_3 \ln DR_t + \beta_4 \ln SIZE_t + v_t \dots\dots\dots 2$

262 Where,

263 $\ln CATA_t$ = log of current assets to total assets in time t,

264 $\ln CLTA_t$ = log of current liabilities to total assets in time t,

265 $\ln DR_t = \log$ of debt ratio in time t,

266 $SIZE_t =$ Size of Global Haulage company limited in time t,

267 $v =$ error term

268 $\beta_i =$ parameter $I = 0, 1, 2, 3, 4$

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

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

277

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

282 Also, when debt ratio is low, it implies the company is financially sound and is able to rely
283 on its internal funds. Such companies can therefore increase their profitability; hence the
284 coefficient of debt ratio is expected to be negative. In other words, $\beta_1 < 0$, $\beta_2 > 0$, $\beta_3 < 0$ and
285 $\beta_4 > 0$.

286 To estimate equations 2, instead of cross-sectional data or panel data, the study employs time
287 series techniques for the reason that advances in time series theories have rendered time

288 series estimates more advantageous over the use of cross section estimates (Jansen and Bruce,
289 1992). According to Bandiera and Natraj (2013), cross-country regressions cannot provide
290 causal evidence because cross-country differences in respective variables may be as a result
291 of cross-country variation in growth of an economy or development level. This is because,
292 the means of development is linked to changes in relative prices (Munshi and Rosenzweig,
293 2006) and also to technological advancement which influences firms operations and hence
294 profitability could be a consequent of the process of development. Fernandez (2010) also
295 argues that legal rights concerning wages among others could lead to biasness due to country
296 differences and development levels. Consequently, the study followed the “footsteps” of
297 Srinivasan and Bhagwati (1999) by employing more in-depth firm-specific times series
298 analysis.

299 **3.2 Data Type and Source**

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

306 **3.3 Definition of Variables**

307 ***Profitability (Return on Assets [ROA])***

308 To analyse the impact of components of working capital on profitability of Global Haulage
309 Company Limited, Return on Assets (ROA) is used as a proxy for profitability. Profitability
310 can be represented by ROA, return on equity, net operating profit, gross operating profit
311 margin among others. The ROA was chosen as the dependent variable in this study because it

312 relates the profitability of the firm to its asset base hence it is seen as a better measure
313 (Baveld, 2012; Makori and Jagongo, 2013)

314 It was measured as;

315 $ROA = \frac{Net\ Profit\ after\ Tax}{Total\ Assets}$ 3

316 ***Current Asset to Total Asset (CATA)***

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

320 It is computed as;

321 $CATA = \frac{Current\ Assets}{Total\ Assets}$ 4

322 ***Current Liabilities to Total Asset (CLTA)***

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

326 It is represented as;

327 $CLTA = \frac{Current\ Liabilities}{Total\ Assets}$ 5

328 ***Size of the Firm***

329 Size of a firm can either be calculated as the natural log of sales or the natural log of total
330 assets. Both exist in working capital literature (Sharma and Kumar, 2011; Karaduman et al.,

331 2011). However, the study utilise the natural log of total assets as the measure for size of
332 firm. It is computed as;

333 $SIZE = \ln(Total\ Assets)$6

334 **Debt Ratio (DR)**

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

338 $DR = \frac{Total\ Debt}{Total\ Assets}$7

339 **3.4 Estimation Technique**

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

345 **3.4.1 Exploratory Data Analysis**

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

350 **3.4.2 The Test for Unit Root**

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

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

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

363
$$\Delta y = b_0 + b_1 y_{t-1} + \sum_{i=1}^n (B_i \Delta y_{t-i}) + u_t \dots\dots\dots 8$$

364 For all $t=0, 1 \dots$ and u is a white Noise. b_0 is the constant term and b_1 is the estimated
365 parameter of the first levellag. y_{t-1} is the first levellag, B_i is the vector of the estimated
366 parameters of the lagged values of the differenced value and Δy_{t-i} stands for the vector of the
367 lagged value of the differenced value of the series. Δ represents the first- differenced
368 operator.

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

371 $H_0: b_1=0$

372 $H_1: b_1 \neq 0$

373 **3.4.3 Co-integration**

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

385 **3.4.4 The ARDL Co-integration Test**

386 This study employs the autoregressive distributed lag (ARDL) technique to test for the long-
387 run and short-run impact of components of working capital management on profitability in
388 Global Haulage Company Limited. The ARDL model is employed for this study because; the
389 ARDL model is a highly significant approach to find the co-integration even with small
390 sample size. Also, the ARDL approach does not need all of the variables to be integrated of
391 the same order unlike other co-integration techniques which requires that; the ARDL
392 technique can be applied whether the variables are $I(1)$ and/or $I(0)$. In effect, the ARDL
393 technique avoids the pre-testing problems connected to standard co-integration, which
394 demands that the variables be already categorised into $I(1)$ or $I(0)$ (Pesaran et al, 2001). This
395 model is even the more appropriate model for empirical work in a case where the stationarity
396 properties of the data are uncertain. Bahmani-Oskooee et al. (2004) observe that, in
397 ascertaining the order of integration of each variable in the model, the result may differ

398 depending on which test one uses hence the results could contradict. For instance, when one
 399 apply the Augmented Dickey Fuller and the Phillips-Perron tests for unit root, it is easy to
 400 wrongly conclude that there is nonstationarity when there is actually stationarity around a
 401 one-time structural break. The ARDL approach is therefore the best for this study because it
 402 avoids these problems.

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

$$407 \Delta \ln R_t = \alpha_0 + \sum_{i=1}^p a_i \Delta \ln CATA_{t-i} + \sum_{i=0}^p b_i \Delta \ln CLTA_{t-i} + \sum_{i=0}^p c_i \Delta \ln DR_{t-i} + \sum_{i=0}^p d_i \Delta SIZE_{t-i} + \delta_1 \ln R_{t-1} + \delta_2 \ln CATA_{t-1} +$$

$$408 \delta_3 \ln CLTA_{t-1} + \delta_4 \ln DR_{t-1} + \delta_5 SIZE_{t-1} + v_t \dots \dots \dots 9$$

409
 410 Where all the variables are as defined earlier and Δ is the first difference operator. The
 411 parameters a, b, c, d, e, f, j denote the short run dynamics of model 9 to be estimated through
 412 the error correction framework and δ_i are the long run multipliers in the ARDL model with α
 413 as constant and v as disturbance term.

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

419 $H_0: \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = 0$

420 $H_1: \text{Not all the } \delta_s \text{ is zero}$

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

427 **3.4.5 Diagnostic and Stability Tests**

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

433 The Breusch-Pagan-Godfrey test for heteroscedasticity, Breusch-Godfrey Serial Correlation
434 LM Test for serial correlation, the Jacque-Berra test for normality and also, the Ramsey
435 RESET Test for stability were applied in the analysis of diagnostic and stability tests of the
436 long-run coefficients together with the short-run dynamics. The Breusch-Pagan-Godfrey test
437 involves testing the null hypothesis that the error variances are all equal against the
438 alternative hypothesis that the error variances are a multiplicative function of one or more
439 variables. A large chi-square would indicate that, heteroskedasticity is present, thus it
440 indicate that the error term is a multiplicative function of the predicted values. The Breusch-
441 Godfrey Serial Correlation LM Test was employed to test whether adjacent residuals are
442 correlated which is in violation of the regression assumption that the error terms are
443 independent. The Breusch- Godfrey test can be used when (1) the independent variables are
444 stochastic or not (2) the regression equation is autoregressive or not (3) whether the
445 regression equation is first order autoregressive or higher order autoregressive. The

446 null hypothesis states that, the error terms are uncorrelated whilst the alternative hypothesis
447 states that the error terms are correlated. Therefore, when the null hypothesis is accepted, it
448 implies that the error terms are not correlated otherwise they are correlated.

449 Following Pesaran et al.(2001), the stability of the regression coefficients is evaluated by the
450 Ramsey RESET Test for stability and they can show whether or not the regression equation
451 is stable over time. This stability test is appropriate in time series data, especially when we
452 are uncertain about when structural change might have taken place.

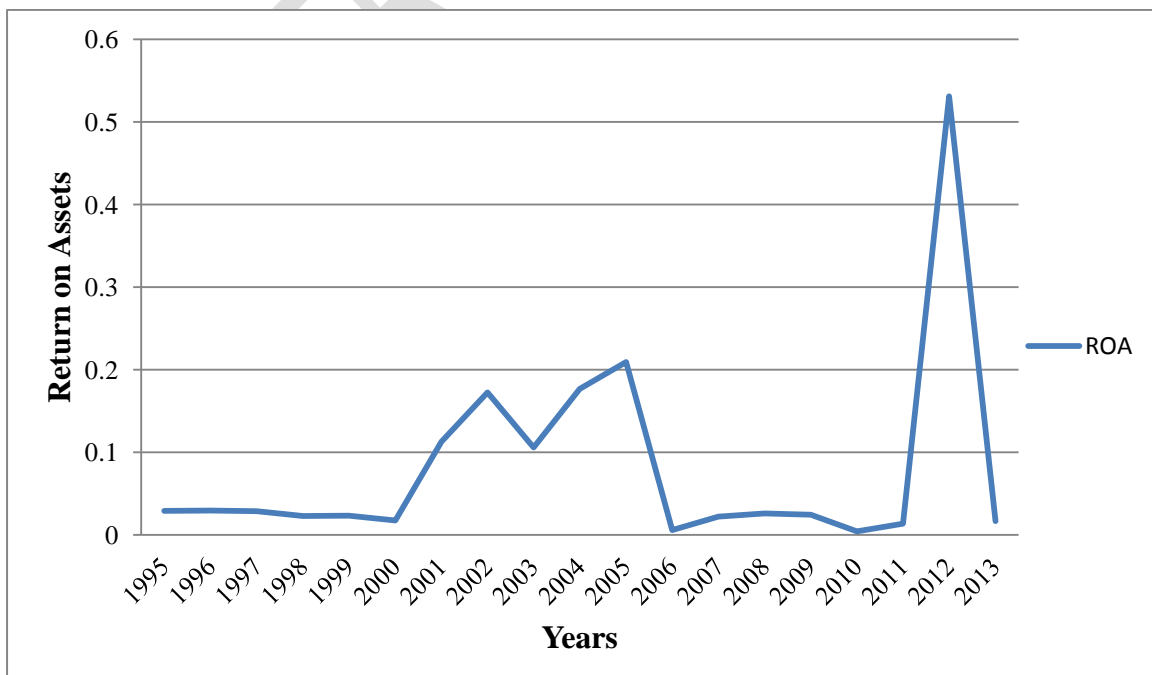
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454 4. EMPIRICAL RESULTS AND DISCUSSION

455 4.1 Trend Analysis of Profitability (ROA)

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

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



461
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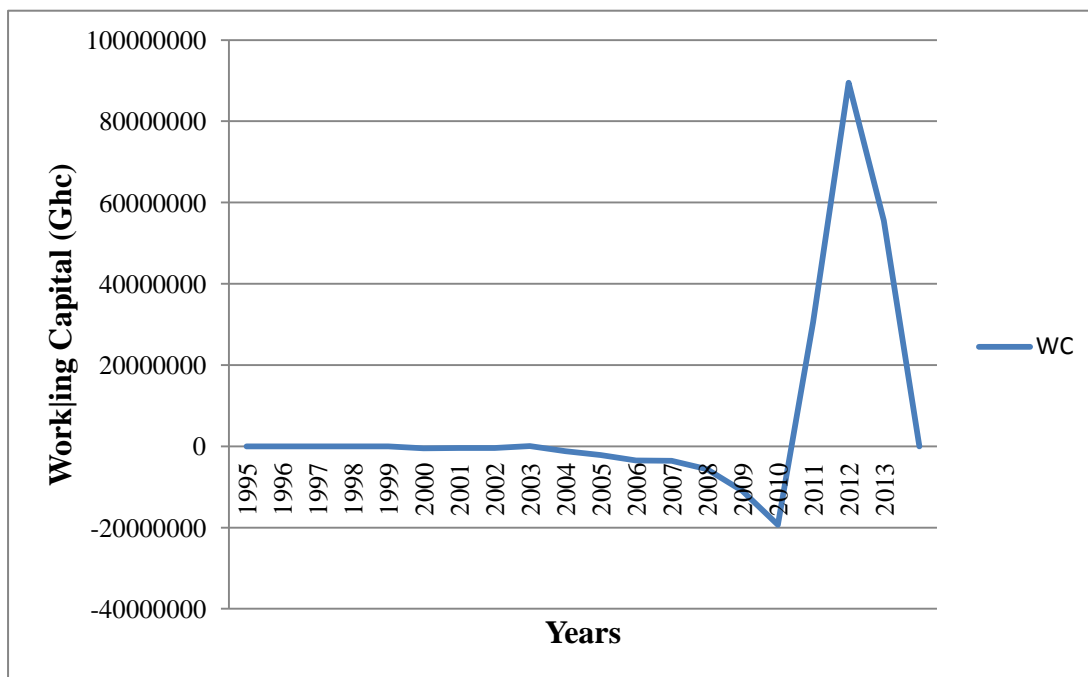
Source: Global Haulage Company Limited Annual Financial Statements

463 From Fig 1, ROA started with a negative trend from 1995 moving downwards until the year
464 2000 where it started picking up, increasing steadily to 2002 where ROA recorded a figure of
465 0.172447. From there, it drop again in 2003 and began to rise again. The negative trend or
466 low ROA could be as a result of poor management practices and also, the implementation of
467 the structural adjustment programme in 1993 where exchange rate liberalization, tightening
468 of monetary policy, foreign trade reforms, financial sector reforms and price deregulation
469 were adopted might have had a toll on companies in Ghana including Global Haulage
470 Company. ROA continued to rise from 2003 to 2005 and fell abruptly from 0.209 in 2005 to
471 0.006 in 2006. From 2006, ROA maintained a low figure but increased and had a constant
472 trend until it fell to its lowest point in 2010 at 0.004 over the study period. The high taxes to
473 make up for the over spending in 2004 due to the elections coupled with the revaluation of
474 the Ghanaian cedi in 2007 may have made things difficult for the management hence the fall
475 in ROA from 2004 to 2010. ROA began to rise a bit from 2010 and suddenly jumped to its
476 highest peak over the study period in 2012 to 0.531. ROA had a negative trend from 2012 to
477 2013. Generally, ROA had a low and stable trend for most of the years in the study.

478 **4.2 Trend Analysis of Working Capital**

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

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



486 Source: Global Haulage Company Limited Annual Financial Statement
487

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

495 **4.3 Descriptive Statistics**

496 To understand the relevant aspects of working capital management, a descriptive analysis is
497 carried out. The descriptive statistics presents the mean, median and standard deviation of the
498 variables under study in this project work. It also presents the maximum and minimum values
499 of these variables which help visualise the maximum and minimum values a variable

500 achieved. Table 2 presents the descriptive statistics of components of working capital and
 501 profitability of Global Haulage Company limited from 1995 to 2013.

502 **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

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

504 From Table 2, the mean value for the return on assets is – 2.807876 (-280.79%) with a
 505 standard deviation of 2.033190 (203.32%). This means that, ROA can deviate from the mean
 506 by 203.3%. ROA ranges between -5.447685 and 4.024915. That is to say ROA can fall as
 507 low as -5.447685 and can also rise as high as 4.024915. Debt ratio averages around -
 508 1.250823 and the deviation from the mean is about 0.813792. Also, debt ratio could be as low
 509 as -2.870968 and as high as -0.440320 over the period under consideration.

510 The ratio of current liabilities to total assets has a mean value of -0.944927 whilst the
 511 standard deviation from the mean is -2.128632. The maximum value that current liabilities to
 512 total assets ratio can attain is -0.203341 whilst the minimum value it can attain is -2.128632.
 513 The median is -0.867501. The ratio of current assets to total assets has an average of -
 514 2.918317 with a standard deviation of 1.312346. Within a year, the current assets to total
 515 assets ratio can rise a maximum of -0.719491 and can also fall to a minimum of -5.809143.
 516 The size of the firm recorded a mean value of 13.18992 with the standard deviation from the
 517 mean being 5.868889. In year, the firm can expand to a maximum size of 19.36396 and also
 518 shrink to a minimum of 3.854182.

519 **4.4 Results and Analysis of the Unit Root Test**

520 As discussed in chapter three, unit root test was conducted by applying the Dickey Fuller
521 (DF). Table 3 shows the results of the DF unit root test at levels and at first difference. The
522 DF test employed included a constant only for both tests. From the table, the null hypothesis
523 were rejected for the variables; log of return on assets (LNROA), log of current liabilities
524 (LNCLTA) (both at 5% significance levels), log of debt ratio (LNDR) (at 1% significance
525 levels), and log of current assets to total assets ratio (LNCATA) (at the 10% significance
526 levels) in their levels which imply they achieved stationarity at their levels, whilst only firm
527 size (SIZE) was stationary at first difference at 1% significance levels. Therefore, not all the
528 underlying series in the present study are integrated of order one [i.e. $I(1)$] and there is no I
529 (2) variable hence the reason for applying ARDL model.

530 **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*

531 **4.5 Results and Analysis of the Co-integration Test**

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

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

542 **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*

543

544 **4.6 Results and Analysis of the Long Run Relationship**

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

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

555 **Table 5: ARDL Long Run Results**

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

556

557 The coefficient of LNDR is -3.054 are interpreted as, a 1% increase in debt ratio will lead to
558 3.054% decrease in return on assets which represents profitability. This means that ROA is
559 elastic with respect to debt ratio. However, this coefficient is statistically not significant.
560 Return on assets is elastic with respect to current liabilities to total assets ratio with a
561 coefficient of 3.483. This means that, when current liabilities to total assets ratio increases by
562 a percentage unit, return on assets respond by increasing more by 3.48%. This result meet
563 what theory says in terms of the sign and it is statistically significant at 5% significant level.
564 Higher current liability to total asset ratio imply lower investments in working capital
565 accounts through lower levels of investment in inventories, shortening trade credit to
566 customers and postponing payments to suppliers and that results in an increase in
567 profitability.
568 Though current assets to total assets ratio meet the theoretical sign, it is not significant. The
569 coefficient -0.155 means that, a one unit increase in CATA will cause ROA to decrease by
570 0.155.

571 **4.7 Results and Analysis of the Short Run Dynamic Model**

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

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

584 **Table 6: Estimated Short Run Error Correction Model using the ARDL Estimation**
 585 **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*

586

587 The short run results maintained the results in the long run in terms of the sign and the
588 elasticity status of the variables. In the short run, except log of current assets to total assets
589 ratio (LNCATA), all the variables such as log of debt ratio (LNDR), log of current liabilities
590 to total assets ratio (LNCLTA) and firm size (SIZE) are statistically significant in the model.
591 Whilst LNDR and LNCLTA are elastic, LNCATA and SIZE are inelastic as shown in Table
592 6.

593 Debt ratio is statistically significant at 1% significance level and its coefficient -2.32 implies
594 that, a percentage unit increase in debt ratio will lead to a 2.32% decrease in return on assets.
595 This result conforms to the findings of Bagchi and Khamrui (2012), Gomes (2013) and
596 Makori and Jagongo (2013).

597 LNCLTA has a coefficient of 3.053 which means that, a 1% increase in LNCLTA will lead to
598 a 3.05% increase in LNROA in the short run similar to the result in the long run. LNCLTA is
599 also statistically significant at 1% significance level. Omesa, Maniagi, Musiega and Makori
600 (2013) also had similar findings in their work.

601 Current assets to total assets ratio remain to be negatively related to return on assets and
602 statistically not significant in the short run. The coefficient -0.085 is interpreted as, a unit
603 increase in LNCATA will result in a 0.085 decrease in LNROA. Finally, firm size
604 surprisingly is negatively related to the firm's profitability, contrary to apriori expectation
605 and was statistically significant at 1% significance level. The coefficient -0.822 implies that,
606 when firm size increase by a unit, LNROA falls by 0.822. This might be as a result of
607 diseconomies of scale due to managerial inefficiency arising from expansion of the firms
608 operations and branches. Also, it could be that managers expand firm size to achieve their
609 own parochial interest such as benefits associated with a larger firm since they will receive
610 higher remuneration when the firm increases in size. The findings is consistent with Goddard

611 et al. (2005) and Yeboah and Yeboah (2014) but contradicts the findings of Zawaira and
 612 Mutenheri (2014).

613 **4.8 Model Diagnostics and Goodness of Fit**

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

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

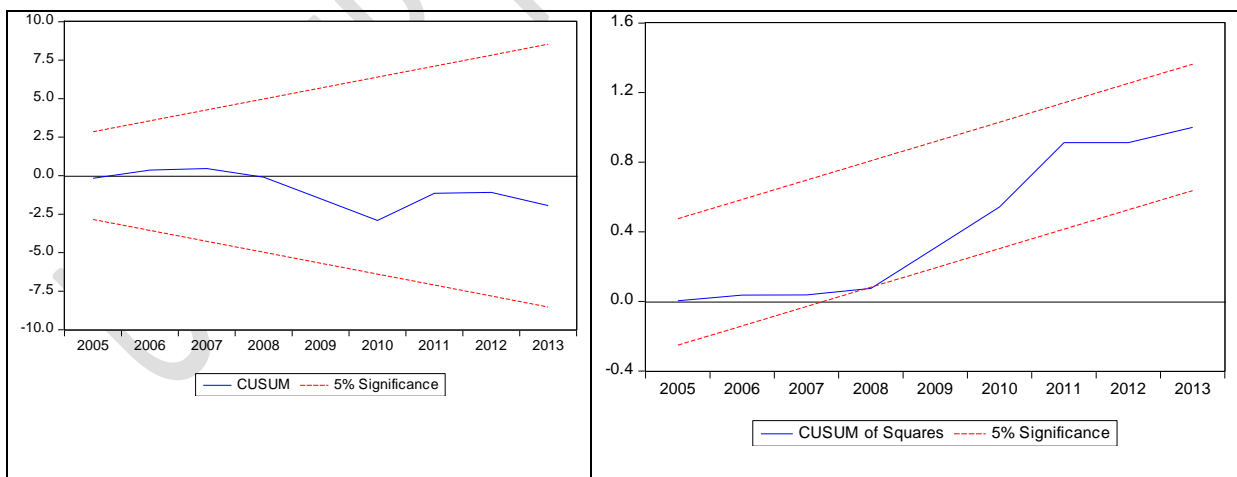
624 **Table 7: Model Diagnostics and Goodness of Fit**

<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.	

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

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

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



639

640

641 **5. RECOMMENDATION AND CONCLUSION**

642 **5.1 Policy Implication and Recommendations of the Study**

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

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

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

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

661 **5.2 Conclusion**

662 This article empirically studied the impact of working capital management on firm
663 profitability in Ghana using Global Haulage Company limited as a case by applying time
664 series data extracted from financial statements and annual reports of the company from 1995

665 to 2013. From the results, except current liability to total assets ratio which is significant in
666 the long run, all the variables are only significant in the short run. Current assets to total
667 assets ratio is not significant both in the short run and the long run. In essence, this study has
668 shown that effective working capital management is a necessity for improving firm
669 profitability. Therefore, managers must employ efficient and effective working capital
670 management policies and practices for better performance of their companies.

671 **5.3 Limitation and Areas for Further Research**

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

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

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

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