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Empirical Study on the Impact of Account Receivables and Inventory Conversion Cycle on Profitability of Manufacturing Firms Listed on Ghana Stock Exchange

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Abstract

The purpose is to investigate the effect of account receivables and inventory conversion cycle on performance of Manufacturing Firms Listed on Ghana Stock Exchange. The paper adopted cross-sectional study which adopts quantitative research approach. A panel data of six (6) listed Ghanaian manufacturing firms on the Ghana Stock exchange for the periods 2011 to 2020 was used for the study. Data was obtained from the audited financial statements of the firms. Correlation and Ordinary Least Square (OLS) multiple regressions were employed to analyse the data. The finding revealed that there is statistically negative (Beta = −0.201) and significant (P-value = 0.000) effect of account receivables period on return on assets. The study revealed that there is statistically significant negative effect between inventory conversion period and return on asset (Beta = −0.273, $P < 0.05$). The results indicated that (current ratio, sales growth and cash to sales) had no significant positive effect (Beta = 0.115, $P > 0.05$), (Beta = 0.071, $P > 0.05$), (Beta = 0.092, $P > 0.05$) on return on asset.

Keywords

Account Receivables Period, Inventory Conversion Period, Ghana, Return on Asset, Working Capital Management

1. Introduction

Working capital has been documented as organizations life line and their sustainability depends comparatively on how well they manage their working capi-

tal (Salawu & Alao, 2014). Nwankwo (2010) noted that the subject of working capital denotes the capital employed by business organizations for their day to day operation. Conversely, current assets are resources that their economic benefits are accrued within one accounting year and are easily being traded for cash within a year. However, Anand (2002) considered WCM as integral element of corporate finance because it has a direct impact on profitability and liquidity. Similarly, Pinku & Paroma (2018), emphasize that, efficiency of WCM depends on the balance between liquidity and profitability. Mwangi et al. (2014) and Filbeck (2005), additionally, argued that, organizations with low liquidity of WC are more likely to be associated with high risk which is deemed to provide higher profit.

Moreover, Mwangi et al. (2014) agreed that organizational achievement is relatively reliant on the capability and efficiency of a financial manager to control meritoriously the components of WC and to upsurge value for shareholders. Kasahun (2020) indicates that WCM should be considered critical as part of companies' overall corporate strategy. Nevertheless, the net of WCM is seen as the variances involving current assets and current liabilities. Yaday et al. (2009) indicated that, the excess among current assets and current liabilities signifies the liquidity margin present to fulfill the cash requirements to sustain day to day operations as well as advantage from profitable investment prospects.

Prior studies by Javid (2014) and Yazdanfar & Öhman (2014) showed major inconsistencies in account receivables, inventory conversion cycle and firm profitability. The study therefore seeks to highlight the theoretical and practical managerial challenges with the view of offering solutions and recommendation based on the outcomes of the study.

Majority of the prior studies related to account receivables, inventory conversion on profitability in the manufacturing and health care industry, are drawn from developed economies with very little in the developing economies while also have mixed conclusion. This paper, actually, attempts to fill this gap and contribute to the existing body of knowledge by using powerful instruments, like correlation and Ordinary Least Square (OLS) multiple regression, to explore how profitable manufacturing and health care firms cover the period from 2011 to 2020. The study explores the impact of accounts receivables, inventory conversion cycle with profitability in sample of manufacturing and health care firms in Ghana. The conclusion of the study may direct management of Ghanaian manufacturing and health care firms, and from other similar countries. To understand how account receivables and inventory conversion cycle impact their profitability, which may argument their financial decision making. Based on this, the purpose of this study is therefore to investigate the impact of account receivables and inventory conversion cycle on performance of Manufacturing Firms Listed on Ghana Stock Exchange.

Objectives of the Study

1) To investigate relationship between account receivable period and manu-

facturing firms profitability.

2) To investigate relationship between inventory conversion period and manufacturing firms performance.

2. Literature Review, Conceptual Framework and Research Hypothesis

2.1. The Concept of Working Capital

Working capital (WC) has been of keen interest to all business sectors all over the world (Ray, 2012). The choice of capital structure adopted by manufacturing companies plays a major role in their overall performance; thus, profitability (Ray, 2012). To understand WC, so many efforts have been put into both theoretical and empirical perspectives. WC plays a key role in the assessment of companies' performances by taking a critical look at the liquidity of organizations which is managed. Manufacturing companies have become very concerned about liquidity management behaviors, thus, developing strategies to manage their WC effectively and resourcefully, thereby, improving the overall performance of these companies. Various studies have indicated that WC is the most effective performance determinant or factor in manufacturing companies (Altaf & Shah, 2017; Shah & Chaudhry, 2016). Akinwande (2009) defines working capital as "the surplus of a firm's current asset over current liabilities". The implication is that, a firm's inventories, short-term investments, account receivables, cash and cash equivalents, prepaid expenses are financed by its short-term liabilities. To (Deng, 2013), working capital is regularly employed to detail organization's level of liquidity.

2.2. Working Capital Management Policy

To (Ireri, 2006), WC policy has a key responsibility in organizations continued existence given that its effect profitability as well as the associated risk those organizations are likely to face. Moreover, Afza and Nazir (2008) documented that, WCM policy is a plan entailing choice concerning short term assets and liabilities of companies such that their utilization and how their combination has strategic consequence on the risk and performance of the companies. Sohail (2016) proposed that, working capital policy is pivoted on the risk and trade off inbuilt in unconventional policies. Effective WC policies are fundamental to companies' long-run development and continued existence. WCM policies of companies have a considerable effect on its liquidity as well as profitability. Both (Mathur, 2003) and (Arnold, 2008) agree that WCP has three categories; the defensive, aggressive and conservative policies.

Defensive Policy: Under this policy, a firm acquires fixed assets and a greater part of its current assets by both equity and long-term financing. The main aim of the firm is to adopt a funding approach that builds a relationship between the life span of the assets and the tenor of the source of financing (Paramasivan,

2009). The policy seeks to minimize risk by reducing current liabilities. However, this affects profitability due to the cost of borrowing for a longer term (Arnold, 2008). The firm will therefore not keep higher cash or cash balances, stocks or offer flexible credit terms. Firms that operate in questionable economies mostly adopt this policy. Arnold (2008) pointed out that, holding up tall level of inventory to meet unplanned increase in demand and to ensure production continuity. The expected cash conversion cycle for such a policy is longer. This policy might have harmful influence on the level of performance because the cost of borrowing might surpass the advantages of the policy (Arnold, 2008).

Aggressive Policy: Short-term debts may be adopted by a firm to finance current assets due to the lower cost of borrowing associated with such debts (Osundina, 2014). Short-term debts are riskier in nature especially in cases where firms offer credit trades (Paramasivan, 2009). Default from trade customers may inhibit the firm's financial performance of the company. Paramasivan (2009) argued that in the aggressive policy the entire projected prerequisite of current assets and part of fixed assets must be financed by debts that have shorter life span. This makes the policy riskier however, less expensive and more profitable. Furthermore, few finance managers take even more risk by financing long term asset with short term debts and this approach push the working capital on the negative side (Hussain, Farooz, & Khan, 2012). Firms will go in for financing that has lower costs. This is to make sure the firm always has enough to settle its liabilities. It is advisable for companies that adopt the aggressive working capital policy to offer shorter tenor for credit sales, keep smaller volumes of cash or cash balances as well as hold smaller volumes of inventory in stock (Gorondutse & Hilman, 2013). Adopting the aggressive working capital approach means a firm will have a minimal CCC because of longer credit through reduction of stock period and receivables (Gorondutse & Hilman, 2013).

Conservative Policy: This is a mixture of the aggressive and defensive working capital policies. Here, the firm uses financing that have shorter tenors to finance those current assets that are chronological while using financing methods that have longer tenors to finance fixed assets and current assets that are enduring (Brigham, 2007). Paramasivan (2009) suggests that another name for this policy is "low profit, low risk" policy. While minimizing the inability for a firm to meet financial obligations, the approach also seeks to minimize the ability for the firm to acquire more current assets.

Moderate Approach: The approach of moderate indicated that, investment in current assets is seen to be neither high nor low to a specified degree of sales (Mathuva, 2011). This approach is purposely carried out to maintain liquidity as well as profitability. Current asset to total ratio can be employed to analyze the investment policy practiced by companies for financing current asset. A high ratio associated with companies illustrates that, those companies have more investment in current assets (Karadagli, 2012).

2.3. Empirical Review

Phuong & Hung (2020), investigated the relationship between WCF and firm profitability in Vietnam. The study employed regression method using a total sample of 5295 firms listed on the Vietnam stock market ranging from 2009 to 2018. The result revealed that there is significant indirect linkage between account receivables and cash conversion cycle on firm profitability. Similarly, Salawu & Alao (2014), investigated the effect of WCF on manufacturing firms' performance in Nigeria. Based on this, the results of the study indicated that there is significant positive relationship between average collection period and profitability. Also, Afeef (2011), determined the effect of WCF and firm profitability. The study employed multiple regression method to analyse the gathered data. The result revealed there is indirect relationship between inventory conversion period and receivable collection period with firms' profitability. Soukhakian & Khodakarami (2019), investigated the relationship between WCF and profitability of firms. The study indicated there is significant positive impact between account receivables and firms profitability.

2.4. Conceptual Framework of Working Capital

Turner (2013) indicates that the conceptual framework presents the background for carrying out research as well as transcribing findings. The conceptual framework for this current study is working capital management (WCM) (**Figure 1**).

2.4.1. Average Number of Days Account Receivable and Profitability

Salman et al. (2014) clearly pointed out that, accounts receivable management involves making good credit customers choice as well as increasing the rate of collecting from them. Economically, when debtors are permitted to cling to payments for longer period, companies are pushed into a position that incurs an opportunity cost. The adverse implication is that, companies would have to forgo investing in other positive net present value activities. To Mathur (2003), account receivables, demonstrates that, it is one of the company's most essential and strategic component of its assets aside the capital injected into financing

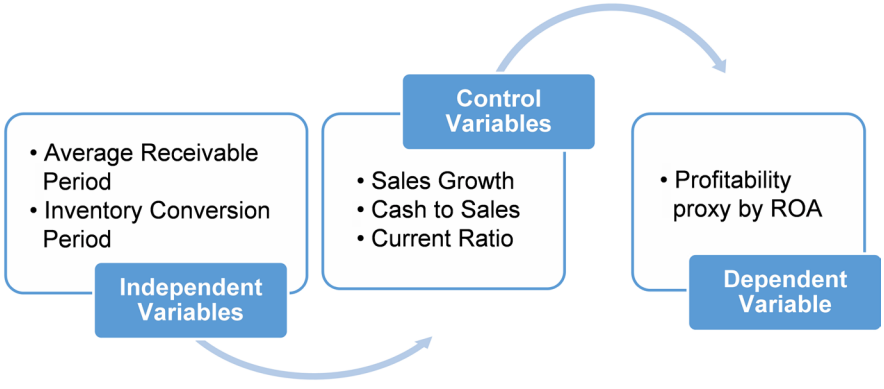

Figure 1. Conceptual framework.

fixed assets such as plant and machinery as well inventory. The connections between accounts receivable and profitability have been considered to have different opposing perspectives based on research findings. Empirical studies by Nobanee (2011); Raheman & Nasr (2007) demonstrate that, ADR is positively associated with profitability. The implication is that companies that adopt conservative approach to WCM are linked with this finding. On the contrary, studies by Tauringana & Afrifa (2013); Falope & Ajilore (2009) reported different findings indicating that, ADR and profitability are adversely connected. It is also believed that companies employed aggressive approach to WCM would experience this outcome. These arguments lead us to propose:

H_1: There is a negative relationship between account receivable period and profitability.

2.4.2. Average Number of Days Inventory and Profitability

Brigham & Houston (2007) explained that inventory represent a key ingredient of total working capital. Operationally, it has been argued that, proficient management of inventory would bring significant earnings to companies' shareholders (Mathuva, 2011). Therefore, competent inventory management shall include the management of two contradictory goals which consists of minimization of investment in inventory as well as preservation of the smooth movement of raw materials for manufacturing and sales on the other. Lazaridis & Tryfonidis (2006) contended that a well-organized management of inventory guarantees a constant working capital which eventually raises profitability. The consequence is that companies are required by necessity to continuously do their best to maintain an optimum level of inventory. A high level of inventory leads to unutilized inventory leading to tide up of capital, account payable and receivables contribute to the risk (Talat & Nazir, 2011). McInnes (2000) argues that, about 94% of companies in no way build linkages among their WCM components. Turnover is considered as important measures of proficient supervision of inventory; it is computed as annual sales dividing average inventory. This signifies how efficient our investment in inventory is. Larger turnover leads to larger efficiency and reduction in inventory may lead to inventory shortage. Empirical findings with regards to the influences of accounts receivable on profitability have been established to have diverse contrasting standpoints. Nobanee (2011) & Raheman & Nasr (2007) in their works proved that, inventory holding component (ADI) of WCM has positive connection with profitability which is based on the application of conservative approach to WCM. Conversely, it has been revealed that, there is no substantial relationship between ADI and profitability. These findings were evidenced by (Tauringana & Afrifa, 2013; Falope & Ajilore 2009; Deloof, 2003). The application of aggressive approach to WCM is linked with this finding. The implication to manufacturing companies is that the strategy of managing WC has a substantial influence on the level of profitability of a firm. As such, efforts must be carried out to decrease the number of days' inventory.

These arguments lead us to propose:

H_2: There is a negative relationship between inventory conversion period and profitability.

3. Methodology

3.1. Research Approach

Quantitative research was employed as the research approach. The justification of the said approach is that it allows for adequate numerical data that is involve with hypothesis analysis. Also, the quantitative research helps give objective data that clearly communicate through statistics and numbers and finally, it allows for generalization of results.

3.2. Research Design

The study adopted cross-sectional study to address the objectives of the study. The motivation for the choice of cross-sectional study is because it allows all data to be collected at a point in time and gives room for the study to obtain a multiple outcomes relating to the study. Lastly, it helps collect data from large pool of the study subjects as well as ensures comparison of difference between groups.

3.3. Data and Data Type Sources

The study sampled six (6) listed consumable and health care manufacturing firms on Ghana Stock Exchange from 2011-2020. The head of finance departments from each of the sampled listed consumable and health care manufacturing firms were employed to participate in the study through provision of relevant information. The study adopted secondary source of information through the audited financial statements from the sampled firms. The justification of the adopted of the sampled listed firms was based on availability of complete data for the period under investigation.

3.4. Model Specification

The study adopted multiple regression that was in line with the works by Abuzayed (2012), and Afrifa & Padachi (2016). The study estimated the following models;

$$\text{Model 1}: \text{ROA}_{it} = \alpha + \beta_1 \text{CR}_{it} + \beta_2 \text{SG}_{it} + \beta_3 \text{CS}_{it} + \beta_4 \text{ARP}_{it} + \varepsilon_{it} \quad (1)$$

$$\text{Model 2}: \text{ROA}_{it} = \alpha + \beta_1 \text{CR}_{it} + \beta_2 \text{SG}_{it} + \beta_3 \text{CS}_{it} + \beta_4 \text{ICP}_{it} + \varepsilon_{it} \quad (2)$$

where i denotes the cross-section, t denotes time-series dimension, while β_0 is the beta coefficient, and ε_{it} indicates the error term. Also, CR represents current ratio, SG represents sales growth, CS represents cash to sales, ARP represents account receivables period, ICP represents inventory conversion period and ROA represents return on assets.

3.5. Variable Description and Measurement (Table 1)

Table 1. Variables description and measurement.

Abbreviation	Variable	Measurement	Expected sign
ROA	Return on Assets (Dependent Variable)	This is measured as Net profit/total assets	
ARP	Account Receivables Period (Independent Variable)	This is measured by Average debtors X 365 Sales	+/−
ICP	Inventory Conversion Period (Independent Variable)	This is measured by Average inventory X 365 Cost of Sales	+/−
CR	Current Ratio (Control Variable)	This was measured by company's current assets by its current liabilities.	+/−
SG	Sales Growth (Control Variable)	This is express as the change in current sales minus previous sales	+/−
CS	Cash to Sales (Control Variable)	This measures by company's cash over sales	+/−

Source: Research team own construct, 2023.

4. Results and Discussions

4.1. Descriptive Statistics

The study descriptive statistics as shown in Table 2 was based on using mean, standard deviation, skewness and kurtosis. Based on this, the result is illustrated in Table 2.

The study revealed the results of the descriptive statistics of six (6) manufacturing firms listed on the Ghana Stock Exchange using 10 year observations. The study indicated that inventory convention period shown average mean of 48.2 days with standard deviation of 40.2. The implication is that the manufacturing firms in Ghana manufacture and sell out their inventory within 48.2 days. Thus, the higher average mean score indicates that the manufacturing firms hold large part of their inventories which made it difficult to process and sell within a short period. Hence, the study shown that manufacturing firms such as Dannex Ayrton Starwin Limited took longer period in manufacturing their drugs than Fan Milk which uses a shorter period in manufacturing their fun milk foods. This implies that manufacturing forms that are found within the consumable goods industry are likely to have shorter period in converting their input into finished products as compare to those manufacturing firms found within the healthcare industry.

Table 2. Summary of descriptive statistics of the variables.

Variables	Observation	Mean	Std. D	Skewness	Kurtosis
ROA	10	0.625	0.238	1.365	1.3
ARP	10	44.024	38.140	1.341	1.5
ICP	10	48.20	40.20	2.052	1.4
CR	10	0.318	0.537	0.356	1.2
SG	10	1.045	0.184	0.261	1.3
CS	10	0.104	0.361	0.124	1.2

Source: Field data, 2023.

The study also revealed that the account receivables indicated a mean score of 44 days with standard deviation of 38. This implies that majority of the manufacturing firms accepted cash from their respective debtors within 44 days. The implication is that manufacturing firms found within the healthcare industry in Ghana are mostly found of supplying their drugs products to health facilities which are largely owned by government of Ghana. Therefore, it took long time for these firms to be paid as result of the bureaucratic nature that existed within the government payment system. This shows that large volume of sales that was made by these healthcare firms accounted for delayed in receipt of debt from their customers as compared to the consumable good firms. The study indicated that the size of the firms under study is more approximately close to normal distribution with the study skewness closer to 0 and kurtosis is almost 3.

4.2. Reliability and Validity Test

Table 3 revealed the VIF results of the study variables. Based on this, the VIF was conducted to test the multicollinearity among the predictors' variables. Hence, the acceptable rate for the maximum VIF is 10. The study results indicated that all the independent variables values are found within the range of 1.029 to 1.042. The implication is that VIF variable values are not correlated with each other and the predictors are significant at 0.000. The study result was in line with the work by Chatterjee & Hadi (2012).

4.3. Correlation Matrix

The correlations of the variables under study were presented in **Table 4**. The study indicated that the coefficients are less than 0.6. Based on the standard of Pedroni et al. (2020), the result in **Table 4** support the conclusion there is no evidence of multicollinearity problem in the results of the study. Based on the results in **Table 4**, the study revealed that there is an adverse significant correlation between account receivables period and return on assets ($r = -0.301$, p-value < 0.05). The study is consisted with the work by Mansoori & Muhammad (2012);

Table 3. Variance inflation factor results of the variables.

Variables	VIFs
ROA	1.035
ARP	1.042
ICP	1.037
CR	1.029
SG	1.031
CS	1.030

Source: Field data, 2023.

Table 4. Correlation matrix.

	ARP	ICP	CR	SG	CS	ROA
ARP	1					
ICP	−0.418**	1				
CR	0.198**	0.121	1			
SG	0.110**	0.124	−0.520	1		
CS	0.096**	0.084	0.069	0.015	1	
ROA	−0.301	−0.431	−0.214	−0.151	0.026	1

*, **Significant at the 0.05 and 0.01 levels, respectively (two-tailed); Correlation coefficients are significant at *$p < 0.01$; and **$p < 0.05$; Source: Field Data, 2023.

Naimulbari (2012) & Dong (2010) indicated a negative relationship between account receivables and the profitability of the firm. Again, there is significant negative correlation between inventory conversion period and return on asset (r = 0.418, p-value < 0.05). Also, there is no significant positive correlation between firms current ratio and return on asset (r = 0.198, p-value < 0.05). Further, the study indicates that there is a direct no significant correlation between sales growth and return on asset (r = 0.110, $p < 0.05$). Finally, the study indicated there is no significant direct correlation between cash to sales and return on asset (r = 0.096, p-value < 0.05).

4.4. Regression Analysis

As showed in Table 5, the study revealed the regression estimation which indicated 48.7% (Adjusted-R square = 0.487) variability in return on asset was caused by account receivables period, inventory conversion period, current ratio, sales growth and cash to sales. In other words, by account receivables period, inventory conversion period, current ratio, sales growth and cash to sales explained only 0.487 units on return on assets as a dependent variable. The study also

Table 5. Effect of account receivables and inventory conversion period on profitability.

Items	Return on Assets	Return on Assets	Std. Error	Sig.
	Step 1	Step 2		
	Beta (t-value)	Beta (t-value)		
Constant	2.034 (3.119)		0.652	0.000
ARP	−0.201 (−2.277)		0.088	0.000
ICP	−0.273 (−3.976)		0.069	0.000
Control Variables				
CR		0.115 (2.018)	0.057	0.093
SG		0.071 (3.263)	0.022	0.062
CS		0.092 (2.248)	0.041	0.081
R	0.524	0.482		
R Square	0.432	0.379		
F-statistics	17.041**	17.061**		
ΔR Square	0.487	0.412		
ΔF	17.041	17.061		

Significant at 95% confidence interval.

revealed that there is statistically negative (Beta = −0.201) and significant (p-value = 0.000) effect of account receivables period on return on assets. This implies that a day increase in number of days account receivables tend to reduce firms return on asset by 20.1% and vice versa. Thus, H1 is fully supported, which concluded that a number of days accounts receivable has statistcally significant and negative effect on return on asset.

Also, the study revealed that there is statistically significant negative effect between inventory conversion period and return on asset (Beta = −0.273, T = −3.976, p-value = 0.000). This implies that a day increase in number of days inventory will reduce return on asset by 27.3% and vice versa. Thus, H2 is fully supported, which concluded that a number of days inventory has statistically significant and negative effect on return on asset. Lastly, the study results revealed the control variables. Hence, the results indicated that (current ratio, sales growth and cash to sales) had positive no significant effect (Beta = 0.115, $p > 0.05$), (Beta = 0.071, $p > 0.05$), (Beta = 0.092, $p > 0.05$) respectively on return on asset.

5. Conclusion and Recommendations

The study concluded that there is statistically significant negative effect between accounts receivables and inventory conversion period on firms' profitability. The

study's finding is consistent with the work by Soukhakian & Khodakarami (2019); Rahman, Iqbal and Nadeem, (2019) and Phuong and Hung, 2020, which indicates that there is adverse effect of number of days accounts receivables and number of days inventories on firms profitability. However, the study results are inconsistent with the work by Kasahun (2020); Dong and Su (2010), which indicates that there is direct effect of accounts receivables and inventory period on firms profitability. Based on the results, the implication is that the manufacturing firms with higher return on asset had smaller number of days inventory. Hence, the firms are efficient in ensuring that their raw materials were properly converted into finished products which also led to marketing of their products. The implication is that the inventory is sold out within short period which led to increase in sales as well as improved firms return on asset. The study shows that it is important for firms that deem to have higher return on asset in order to reduce the number of days inventory to 48 or lower.

The study also observed that firms with higher return on asset tend to have smaller days of accounts receivables. The study also concluded that manufacturing firms had good credit policies which tend to serve as innovative incentives to ensure that debtor makes good of their indebtedness in short period. The implication is that the firms are able to have more liquid to settle their trade creditors which tend to lead to more order of inventories. The firms attained certain level of goodwill from their creditors which tend to lead to constant supply of inventory to serve their firms customers satisfactory. This resultant effect is that there are repeat purchases which improve firms' profitability.

The study also revealed that the number of days account receivables had average score of 44.024 which was lower than inventory conversion period of 48.152. The implication is that the manufacturing firms in Ghana are able to convert trade debtors into cash within one and half months. This signified an improvement in return on asset which translated into maximization of shareholders' wealth irrespective of whether pay-out ratio is high or not. Thus, the changes that occurred in the firms pay-out ratios are considered not relevant on the assumption that WCM tends to affect shareholders wealth at point where the return on asset is high with the assurance that there are prompt payment form debtors. Therefore, shareholders will be paid either divided which can therefore be plough back as retained earning which affects capital gains which directly affects firm wealth. Based on this, the study concluded that WCM tend to impact on firms profitability and shareholders wealth. Therefore, the study recommends that the manufacturing firms in Ghana should reduce number of days accounts receivables to 44 days or lower with the motivation of improving return on asset.

6. Limitation and Suggestion for Further Research

The study was limited based on the small sample size. Therefore, it is difficult for the study to make general generalization of the results using the small sample size to represent the entire population of the manufacturing and health care

firms in the country. Therefore, it is important for future research to increase the sample size includes the all firms across the regions of Ghana. This will help the study to make general conclusion on the subject matter. Also, the study was limited since a single source of information was employed. Hence, future research should adopt mixed method of study. This will help the study to divergent source of information to complement each result.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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