

Working Capital Management and Performance of Listed Manufacturing Firms: Evidence from West Africa

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Abstract: This study explored working capital management and performance of listed manufacturing firms: an evidence from West Africa. Data employed in this study were generated from secondary source; the dependent variables for this study were return on capital employed and return on equity; while the explanatory variables were mainly, average receivables period, average payment period, and inventory turnover period, alongside firm size as control variable. The study spanned through a period of 11 years (2012-2022). Forty (40) listed manufacturing firms in West Africa were purposively selected for this study. The data generated for this study were analyzed using descriptive analysis, correlation analysis, pooled OLS estimator, fixed effect estimator and random effect estimator. In addition, post estimation test (F-test and Hausman test) were conducted. The findings of this study revealed that, average payable period has significant positive effect on return on capital employed of selected listed manufacturing firms in West Africa, while average receivable period and inventory turnover have insignificant negative effect on return on capital employed. Additionally, the results of the study revealed that, average receivable period and inventory have insignificant negative effect on return on equity of selected listed manufacturing firms in West Africa, while average payable period has insignificant positive effect on return on equity. In line with the findings of this study, the study concluded that, working capital management significantly affects return on capital employed, but only when average payable period is considered. Furthermore, this study concluded that working capital management has insignificant effect on return on equity of quoted manufacturing firms in West Africa.

Keywords: Working capital management, Performance, Listed manufacturing firms, Average receivable period, Average payable period, Inventory turnover period, Liquidity, Solvency, West Africa.

1.0 Introduction

The discourse of working capital management cannot be over flogged, since working capital management is one of the vital factors that determine the survival of a business both in short-term and long-term period, this is why working capital management stands

compelling and beguiling in assessing the performance of firms; since it relates to the efficient and effective management of the day-to-day running of the business transaction. According to Runyora (2012), working capital management is essential for ensuring fund adequacy as regards the daily operation of the firm's business activities. Deloof (2003) opined that, working capital management is a fundamental part of the firm financial strategy for value creation and competitive advantage, as it aimed towards maintaining optimal level of working capital components. It proffers an important and significant indication of financial management, as it shows how well a business firm is being managed from the point of view of the short-term activities of the business (Windaus, 2014). Working capital management measures operational efficiency and financial health of the firm by addressing whether firms have short term assets to offset its short term liabilities in a manner that enhances the operating cycle of the firm, that is, it ensures their ability to meet daily operating expenses and stockholdings for business transactions (Sani & Nwite, 2002; Rawat& Dave, 2017). Therefore, working capital management entails management decision on short term financing geared towards determination of adequate cash flow for operating expenses and short term obligations.

The performance of manufacturing firms in West African Countries has not been impressive due to working capital deficiency and poor management. According to Haruna (2016), most financial managers of West African manufacturing firms engage in an inappropriate method of working capital planning and coordination which have resulted in improper management of working capital. As pointed out by Agyemang et al (2019), the major cause of deteriorating growth and dwindling performance of firms in Ghana is as a result of inability to generate cash inflow that exceed outflow which stems from the poor financial management planning, specifically, deficient planning for cash requirements. Furthermore, Sani and Nwite (2018) stated that, Nigerian firms are faced with the problem of liquidation, merger and acquisition, stemming from insufficient liquidity as a result of inappropriate planning of cash inflow and outflow. As such, with the deficient working capital management for firms in West African countries, it became difficult to meet the finance requirement for business expansion, increased productivity and smooth running of the business as well as meeting the need of the customers, given satisfaction to customers in form of product quality and timely delivery.

In view of previous studies conducted on the effect of working capital management on performance of listed manufacturing firms in West Africa (Adediran et al(2012); Adeleke & Mukolu (2013); Amalenu & Amit (2015); Joseph and Amah (2016); Poojitha (2019) and Ayebainasuoton, (2021), it was noted that, there where dichotomy in the findings of these previous studies. Moreover, previous studies conducted on the discourse of working capital management and performance of listed manufacturing firms in West Africa were done disaggregate on country base level. This implies that to the best of the researchers

knowledge, no study on working capital management and performance of listed manufacturing firms in West Africa has been done from an holistic view point. Additionally, previous studies proxy performance using return on assets (ROA) and Operating profit (EBIT).

To seal the already identified GAP in previous studies, this study was conducted to examine working capital management and performance of listed manufacturing firms in West Africa from a holistic view point. Furthermore, the performance measures employed in this study were return on capital employed (ROCE) and return on Equity (ROE), while working capital management was proxy using average receivable period (ARP), average payment period (APP), inventory turnover (INVT) and firm size (FS) as control variables. The specific objectives for this study are:

Evaluate the effect of working capital management on return on capital employed of listed manufacturing firms in West Africa;

Assess the effect of working capital management on return on equity of listed manufacturing firms in West Africa.

2.0 Literature review

Working Capital

Working capital is a financial account measure which describes the operating liquidity available to a firm. Working capital according to Cyprian and Tobias (2014) is classified into gross and net working capital; gross working capital describes the amount of funds pooled in current assets and mostly used in carrying out the day-to-day operation in the firm. While net working capital refers to the deficit or surplus between current assets and current liabilities. Working capital represents the funds available to finance production, inventories and provide credit to customers (Ola & Mark, 2015). It can be described as trading capital required to take up short term financial obligations of a firm (Osundina & Osundina, 2014).

Working capital management

Working capital management is the process of managing the components of current assets and current liabilities (Deloof, 2003). As opined by Ismail et al (2015), working capital management has to do with the planning for the procurement and usage of short-term asset especially the cash. Working capital management addresses the process of effective management of each aspects of working capital by managers. It is a managerial accounting approach aimed at setting efficient administration of working capital, that is, current assets and current liabilities (Robert et al 2012). Working capital management deals with the management of inventory, cash, account receivables, prepaid expenses, accrued expenses and account payables of the firm or organization by the manager (Sani & Nwite, 2020). It is concerned with effective control mechanism of the managers

towards the coordination and planning of current asset and liabilities with the aim of enhancing liquidity position of the firm (Diallo & Obotto, 2003).

Performance of a firm

Performance of a firm has to do with the subjective measure of how well a firm can use assets from its primary mode of business and generate revenues and create value for its shareholders (Nduta, 2015). As asserted by various researchers, financial performance of manufacturing firm is greatly impacted by working capital decisions a firm undertakes given the fact that working capital primarily constitutes current assets and current liabilities. According to Haruna (2016), for proper examination of the effect of working capital management on financial performance one should carry out such test on the effect of working capital not only on return asset (ROA), but return on equity (ROE), and return on capital employed (ROCE) so as to show clearly, some performance indicators of a firm. Where Return on Asset (ROA) is how much a firm generates profit and effectiveness with given resources (Adeel, Muhammed, Farhan & Hina, 2010). It can also be indicated as the product of net income per sales and sales per total assets, usually called the asset turnover. Return on equity (ROE) is a measure of earnings (income) available for the owners of the company (both ordinary shareholders and preferred shareholders) on the capital they invested in the company (Dyah, 2015). This means that ROE is used to calculate how much profit in monetary terms, a firm generates with the money the investor (shareholder) have invested. This is represented as the net profit after tax. While return on capital employed (ROCE) is used to measure the overall profitability of a business and it shows how efficient management utilizes its resources to generate profit (Raymond, Adigwe & Akame, 2015).

Adediran et al(2012) studied the impact of working capital management on the profitability of small and medium scale enterprises in Nigeria. The researchers measured working capital management using number of days account receivables, number of days inventory turnover and cash conversion cycle. While performance was measured using, return on capital employed, gross profit margin and net profit margin. The finding revealed that, working capital management has negative relationship with return on capital employed and gross profit margin, while working capital management has positive relationship with net profit margin. The researchers concluded that, there is the need for organizations to maintain adequate working capital that will not only meet daily operations of the organizations but also enhance the various the various performance of the organizations. The study recommended that, management of organizations should ensure the development of adequate and efficient working capital policy for the organizations.

Adeleke and Mukolu (2013) studied working capital management and organization performance in Nigeria. The researchers particularly investigated the impact of working

capital on performance of firms. The study modeled working capital, equity and turnover as explanatory variables while return on capital employed was used as dependent variable. Secondary data were extracted for ten quoted firms in Nigeria and analyzed with ordinary least square regression. Result of the analysis depicted that working management capital exerts negative impact on return on capital employed for six firms but positive effect for the remaining four firms. Result also indicated that the working capital management of all the ten firms had no significant effect on their return on capital employed. Therefore, the study recommended that government should intervene in the business units by providing favorable environment for better performance and enhanced profitability.

Amalenu and Amit (2015) investigated the relationship that exists between working capital management and profitability of pharmaceutical companies in India. The researchers engaged variables such as current ratio, debt equity ratio, stock turnover ratio, quick ratio, debtor turnover ratio, creditor turnover ratio, working capital cycle and cash position ratio as measures of working capital management. While profitability was measured using return on capital employed. Data for these variables were extracted over the period 2003-2013 from financial statement of one hundred and forty pharmaceutical companies and analyzed with descriptive statistics, correlation analysis and multiple regression method. Result depicted that all the variables has no significant effect on return on capital employed. Therefore, the researchers concluded in the study that, there is no relationship between working capital management and profitability of pharmaceutical companies in India. As such, they suggested that future researches can explore other measures of working capital management in assessing relationship among the key variables engaged in the study.

Poojitha (2019) conducted a review on working capital management and profitability of firms in Vijayawada. The researcher modeled working capital management using current ratio, quick ratio, debt asset ratio, while profitability was measured by return on capital employed and return on shareholder's equity. The study revealed that, working capital management directly affects the profitability and liquidity of firms. The researchers concluded that, working capital management very much has effects on the development of firms.

Yakubu et al (2020) examined impact that working capital management has on financial performance of quoted firms in Nigeria. The study engaged cash conversion cycle, debt-equity ratio and inventory conversion ratio as measures of working capital management with firm size added as control variable while return on equity was employed as dependent variable. Data were collected from nine selected firms over period dated 2009-2019 and analyzed with Ordinary Least Square technique. Result showed that cash conversion cycle, debt-equity ratio and inventory conversion ratio, inventory conversion

period and firm size had positive impact on return on asset. Result of the study also revealed that cash conversion cycle has significant impact on return on equity, while the effects of other variables were insignificant. As such, the study concluded working capital management has connection with firm financial performance through management of the cash conversion cycle.

Ayebainasuoton, (2021) conducted a study on the relationship between working capital management, strategies and performance of Nigerian manufacturing firms. The study modeled working capital using, cash conversion cycle, account payable period, account receivable period, inventory conversion period, working capital investment strategy and working capital financing strategy. While performance was proxy using return on capital employed, economic value added and Tobin’s Q. The study recommended that, firms should apply aggressive working capital strategies, so as to ease the cash conversion cycle as well as for quick conversion of inventory to cash.

3.0 Research method

Forty (40) listed manufacturing firms in West Africa were purposively selected for this study. A period of 11 years (2012-2022) was covered in this study. This study made use of secondary source of data. This study adapted the model used in the study of Yakubu et al (2020), where the linear form of the model is shown as:

$$ROE_{it} = \alpha_0 + \alpha_1ARP_{it} + \alpha_2ICP_{it} + \alpha_3APP_{it} + \delta_4CCC_{it} + \delta_5DR_{it} + \delta_6CR_{it} + \delta_7QR_{it} + \mu_1$$

----- (3.1)

However, this study modified the model used by Yakubu et al (2020), by measuring performance using two performance proxies, while both the functional and linear form of the models used in this study, are shown as:

Functional form

$$ROCE_{it} = f(ARP, APP, INVT, FS)$$

$$ROE_{it} = f(ARP, APP, INVT, FS)$$

Linear form

$$ROCE_{it} = \alpha_0 + \alpha_1lnARP_{it} + \alpha_2lnAPP_{it} + \delta_3lnINVT_{it} + \delta_4lnFS_{it} + \mu_1$$

----- (3.2)

$$ROE_{it} = \alpha_0 + \alpha_1lnARP_{it} + \alpha_2lnAPP_{it} + \delta_3lnINVT_{it} + \delta_4lnFS_{it} + \mu_1$$

----- (3.3)

The data generated for this study were analyzed using descriptive analysis, correlation analysis, pooled OLS estimator, fixed effect estimator and random effect estimator. In addition, post estimation test (F-test and Hausma test) were conducted.

4.0 Data analysis and results

4.1 Descriptive statistics

Table 4.1 Descriptive analysis

variables	obs	mean	std. dev.	min	max
ROCE	440	5.311491	9.902236	-21.40723	21.10621
ROE	440	3.215184	7.481762	-28.45296	21.49759
ARP	440	138.7254	73.64495	0	390.9458
APP	440	150.749	74.5035	.6185222	397.7601
INVT	440	97.52176	61.61999	0	327.7018
FZ	440	2.357636	.997969	.326049	4.822318

Note: *ROCE*= return on capital employed (%); *ROE*= return on equity (%); *ARP* = average receivables period (days); *APP*= average payment period (days); *INVT*= inventory turnover (days); *FZ*= firm size (Log of Total Assets)

Source: authors computation (2023)

In line with the estimation statics on table 4.1, it showed that, performance measures with regards to return on capital employed and return on equity on the average stood at 5.31%, 3.21% with standard deviation of 9.9 and 7.48, respectively revealing minimum and maximum of -21.41% and 21.11% for return on capital employed as well as -28.45% and 21.49% for return on equity. The results also indicated that, average receivable period, average payment period, inventory turnover and firm size on the average stood at 138.72 days, 150.75 days, 97.52 days, and 2.36 with standard deviation of 73.6, 74.5, 61.61 and 0.99 respectively. Minimum and maximum values also stood at 0 day and 390.94 days for average receivable period, .6185 day and 397.76 days for average payment period, 0 day and 327.701 days for inventory turnover, as well as 0.32 and 4.822 for firm size.

4.2 Correlation analysis

Table 4.2: Correlation matrix

	ROCE	ROE	ARP	APP	INVT	FZ
ROCE	1.0000					
ROE	0.5108	1.0000				
ARP	0.0349	0.1242	1.0000			
APP	0.1580	0.0508	0.2243	1.0000		

INVT	0.0696	0.1171	0.6379	0.3509	1.0000	
FZ	0.1118	0.0808	0.1126	0.2058	-0.0729	1.0000

Source: authors computation (2023)

Table 4.2 showed correlation coefficients revealing the direction and strength of relationship between the variables of the study, as well as whether multicollinearity exists among the explanatory variables of the study. The results also revealed that, return on capital employed and return on equity have positive relationship with average payment period, average receivables period, inventory turnover, and firm size. Lastly, the results showed that, there is relatively weak relationship among the pairs of explanatory variables engaged in the study; hence, there is possibility of the absence of multicollinearity in the models used for this study.

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Table 4.3: Pooled ols estimation result

variables	coefficients	standard error	z-stat	prob
C	-.4965798	.5423421	-0.92	0.360
lnACP	-.0369623	.103348	-0.36	0.721
lnAPP	.2854707	.1045936	2.73	0.007
lnINVT	.0875979	.0909545	0.96	0.336
FZ	.1208641	.065117	1.86	0.064
R-square= 0.4594 Adj R-square= 0.4464 F-statistics= 4.56 Prob(F-stat)= 0.0002				

Source: authors computation (2023)

Table 4.3 reported pooled ols estimation result with coefficient and probability of -.0369623 and 0.721 ($p > 0.05$) for lnARP which revealed that return on capital employed reduces by 0.036% when there is 1% average receivables period. This means that, average

receivables period has insignificant negative effect on return on capital employed of selected listed manufacturing firms in West Africa. The results also indicated coefficient and probability of .2854707 and 0.007 ($p < 0.05$) for lnAPP as well as .0875979 and 0.336 ($p > 0.05$) for lnINVT which revealed that there is about 0.285% and 0.087% increase in return on capital employed when there is 1% increase in average payment period and inventory turnover, hence, average payment period and inventory turnover have positive effect on return on capital employed, although only the effect average payment period is significant. Reported R-square statistics of 0.4594 reflected 45.94% systematic variation in firm return on capital employed of selected listed manufacturing firms in West Africa can be explained by variation in average receivables period, average payment period and inventory turnover including control variables when firm heterogeneity is not incorporated in the model.

Table 4.4: Fixed effect estimation result

variables	coefficients	standard error	t-stat	prob
C	.6789434	.9578048	0.71	0.479
lnARP	-.1895899	.1516462	-1.25	0.212
lnAPP	.4793931	.1243906	3.85	0.000
lnINVT	-.1633369	.0921328	-1.77	0.077
FZ	-.4308609	.2205015	-1.95	0.051
R-square= 0.6351 Adj R-square= 0.5934 F-statistics= 15.24 Prob(F-stat)= 0.0000				

Source: authors computation (2023)

The results of fixed effect estimation in table 4.4 revealed coefficient and probability of .4793931 and 0.000 ($p < 0.05$) for lnAPP which revealed that, return on capital employed rises by about 0.48% when there is 1% increase in average payment period. This means that, average payment period has significant positive effect on return on capital employed of selected listed manufacturing firms in West Africa. The results also indicated coefficient and probability of -.1895899 and 0.212 ($p > 0.05$) for lnARP as well as -.1633369 and 0.077 ($p > 0.05$) for lnINVT which revealed that, 0.18% and 0.16% decrease in return on capital employed when there is 1% increase in average receivables period and inventory turn, hence, average receivables period and inventory turnover can be said to have insignificant negative effect on return on capital employed. Reported R-square statistics of 0.6351 reflected 63.51% systematic variation in return on capital employed of

selected listed manufacturing firms in West Africa can be explained by variation in average receivables period, average payment period and inventory turnover including control variables when firm heterogeneity is incorporated as intercept term in the model.

Table 4.5: random effect estimation result

variables	coefficients	standard error	z-stat	prob
C	-.0725433	.738478	-0.10	0.922
lnARP	-.1492234	.129351	-1.15	0.249
lnAPP	.4406116	.1168343	3.77	0.000
lnINVT	-.129283	.0886459	-1.46	0.145
FZ	-.100363	.1361094	-0.74	0.461
R-square= 0.6444 Wald Chi2(6)= 21.29 Prob(F-stat)= 0.0016				

Source: authors computation (2023)

The results of random effect estimation in table 4.5 revealed coefficient and probability of .4406116 and 0.000 ($p < 0.05$) for lnAPP which revealed that return on capital employed increases by 0.440% when there is 1% increase in average payment period respectively. This means that, average payment period has significant positive effect on return on capital employed of selected listed manufacturing firms in West Africa. The results also indicated coefficient and probability of -.1492234 and 0.249 ($p > 0.05$) for lnARP as well as -.129283 and 0.145 ($p > 0.05$) for lnINVT which revealed that there is 0.149% and 0.129% decrease in return on capital employed when there is 1% increase in average receivables period and inventory turnover; hence, these explanatory variables can be said to have insignificant negative effect on return on capital employed. Reported R-square statistics of 0.6444 reflected that, 64.44% systematic variation in return on capital employed of selected listed manufacturing firms in West Africa can be explained by variation in

average receivables period, average payment period and inventory turnover including control variables when firm heterogeneity is incorporated as error term in the model.

Table 4.6: Restricted f test of heterogeneity (cross-sectional and time specific)

	f-statistics	probability
cross sectional	15.94	0.0000

Source: authors computation (2023)

Table 4.6 reveals result of the heterogeneity test conducted with respects to cross-sectional. As reported in table 4.6, f-statistics has values of 15.94 with probability values of 0.0000. Hence, the table revealed that, there is enough evidence to reject the null hypothesis that all differential intercept corresponding to the cross sectional specific units are equal to zero. Therefore, it can be concluded that, there is cross sectional heterogeneity/uniqueness effect among the selected manufacturing firms. Hence the pooled OLS estimator restriction is not valid, as cross-sectional heterogeneity effect is too significant to be ignored.

Table 4.7: Hausman test

null hypothesis	chi-square stat	probability
difference in coefficient not systematic	13.68	0.0334

Source: authors computation (2023)

Table 4.7 reveals a chi-square value of 13.68 alongside a probability value of 0.0334. The result shows that, there is enough evidence to reject the null hypothesis, which states that; differences in coefficients of fixed effect estimator and random effect estimation are not systematic. Therefore, given the fact the difference between fixed effect estimates and random effect estimates is significant, the most consistent and efficient estimation for the investigation conducted in the study is the fixed effect cross section estimate presented in table 4.4

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Table 4.8: Pooled ols estimation result

variables	coefficients	standard error	t-stat	prob
C	.0858933	.4074187	0.21	0.833
lnARP	.051219	.0776372	0.66	0.510
lnAPP	.0076966	.0785729	0.10	0.356
lnINVT	.0631079	.0683269	0.92	0.004
FZ	.0739043	.0489173	1.51	0.833
R-square= 0.4447 Adj R-square= 0.4315 F-statistics= 3.38 Prob(F-stat)= 0.0029				

Source: authors computation (2023)

Table 4.8 on the Pooled ols estimation results showed coefficient and probability of .051219 and 0.510 ($p > 0.05$) for lnARP, .0076966 and 0.356 for lnAPP, as well as .0631079 and 0.004 ($p < 0.05$) for lnINVT which revealed that, return on equity increases by 0.05%, 0.007% and 0.063% when there is 1% increase in average receivables period, average payment period and inventory turnover respectively. This means that, all the working capital management variables engaged have positive effect on return on equity, and that, only the effect of inventory turnover is statistically significant, when firm heterogeneity is not considered. Reported R-square statistics of 0.4447 reflected that, 44.47% systematic variation in return on equity of selected listed manufacturing firms in West Africa can be explained by variation in average receivables period, average payment period and inventory turnover including control variables when firm heterogeneity is not incorporated in the model.

Table 4.9: Fixed effect estimation result

variables	coefficients	standard error	t-stat	prob
C	3.036872	.7135121	4.26	0.000
LnARP	-.1081638	.1129681	-0.96	0.339
LnAPP	.0588781	.0926642	0.64	0.526
LnINVT	-.027986	.0686339	-0.41	0.684
FZ	-.7339488	.1642615	-4.47	0.000
R-square= 0.6356 Adj R-square= 0.5939 F-statistics= 15.72 Prob(F-stat)= 0.0000				

Source: authors computation (2023)

The results of fixed effect estimation in table 4.9 revealed coefficient and probability of -.1081638 and 0.339 ($p > 0.05$) for LnARP as well as -.027986 and 0.684 ($p > 0.05$) for LnINVT which revealed that, return on equity reduces by 0.108 and 0.02% when there is 1% increase in average receivables period and inventory turnover respectively. This means that, average receivables period and inventory have insignificant negative effect on return on equity of selected listed manufacturing firms in West Africa. The results also indicated coefficient and probability of .0588781 and 0.526 ($p > 0.05$) for LnAPP which revealed that, there is 0.058% increase in return on equity when there is 1% increase in average payment period and this explanatory variable can be said to have insignificant positive effect on return on equity. Reported R-square statistics of 0.6356 reflected 63.56% systematic variation in return on equity of selected listed manufacturing firms in West Africa can be explained by variation in average receivables period, average payment period and inventory turnover including control variables when firm heterogeneity is incorporated as intercept term in the model.

Table 4.10: Random effect estimation result

variables	coefficients	standard Error	z-stat	prob
C	1.502886	.5599087	2.68	0.007
lnARP	-.0253206	.0979977	-0.26	0.796
lnAPP	.0332257	.088296	0.38	0.707
lnINVT	-.0123917	.0669412	-0.19	0.853
FZ	-.2169115	.1038037	-2.09	0.037
R-square= 0.5054 Wald Chi2(6)= 15.78 Prob(F-stat)= 0.0083				

Source: authors computation (2023)

The results of random effect estimation in table 4.10 revealed coefficient and probability of -.0253206 and 0.796 ($p > 0.05$) for lnARP as well as -.0123917 and 0.853 ($p > 0.05$) for lnINVT which revealed that, return on equity reduces by 0.025 and 0.012% when there is 1% increase in average receivables period and inventory turnover respectively. This means that, average receivables period and inventory have insignificant negative effect on return on equity of selected listed manufacturing firms in West Africa. The results also indicated coefficient and probability of .0332257 and 0.707 ($p > 0.05$) for lnAPP which revealed that, there is 0.033% increase in return on equity when there is 1% increase in average payment period, this explanatory variable can be said to have insignificant positive effect on return on equity. Reported R-square statistics of 0.5054 reflected that, 50.54% systematic variation in return on equity of selected listed manufacturing firms in West Africa can be explained by variation in average receivables period, average payment period and inventory turnover including control variables when firm heterogeneity is incorporated as error term in the model.

Table 4.11: Restricted f test of heterogeneity (cross-sectional and time specific)

	f-statistics	probability
cross sectional	16.38	0.0000

Source: authors computation (2023)

Table 4.11 reveals result of the heterogeneity test conducted with respects to cross-sectional. As reported in table 4.11, f-statistics has a value of 16.38 with probability values of 0.0000. Hence, the table revealed that, there is enough evidence to reject the null hypothesis, which states that; all differential intercept corresponding to the cross sectional specific units are equal to zero. Therefore, it can be concluded that, there is cross sectional heterogeneity/uniqueness effect among the selected manufacturing firms. Hence, the pooled OLS estimator restriction is not valid, as cross-sectional heterogeneity effect is too significant to be ignored.

Table 4.12: Hausman test

null hypothesis	chi-square stat	probability
difference in coefficient not systematic	9.37	0.1537

Source: author's computation (2023)

Table 4.12 reveals a chi-square value of 9.37 alongside a probability value of 0.1537. The result shows that, there is enough evidence to reject the null hypothesis, which states that; the differences in coefficients of fixed effect estimator and random effect estimation are not systematic. Therefore, given the fact that the difference between fixed effect estimates and random effect estimates is insignificant, the most consistent and efficient estimation for the investigation conducted in the study is the random effect cross section estimate presented in table 4.10

Discussion

Results indicated that, having a prolonged account receivables period is detrimental to the return on capital employed of listed manufacturing firms considered in West Africa; possibly because it directly denied the firms of financial resources required to enhance operational activities as well as indirectly impeded firms influence on investors' decision, hence reduces return generating capacity, such that income/profit earned may become lower. This relates to the findings of Owolabi and Alayemi (2012) as well as Amar and Masood (2013), but these findings are contrary to that of Joseph and Amah (2016) among others. On the other hand, the results also showed that, having a delayed period before the repayment of owing funds is beneficial because it can give the business the chance to use available funds in operations that enhances income and profit relative to capital

employed. This therefore, is in line with the findings of Joseph and Amah (2016), but against that of Olaoye and Adeboboye (2019). Lastly, the results, also reflected that, there would be decline in return on asset with a delayed period for inventory turnover possibly because of the effect it could have on the returns from operations, which may limit financial capacity to meet customers demand and enhance returns/income; hence, the tendency for lower income, and the results supports the findings of Amar and Masood (2013) among others.

Results also indicated that having a prolonged account receivables period is detrimental to the return on equity of listed manufacturing firms considered in West Africa possibly because it directly denied them of financial resources required to enhance operational activities as well as indirectly caused the same through its influence on investors' decision; hence, reduces return generating capacity such that, income/profit earned may become lower. This relates to the findings of Mwirigiet al(2018), Mwingi and Obwogi (2018), Sani and Nwite (2020) as well as Umar and AbdulQuadri (2021), but contrary to that of Ndowabile (2018). On the other hand, result showed that, having a delayed period before the repayment of owing funds is beneficial because it can give the business the chance to use available funds in operations that enhances income and profit relative to equity. This therefore is in line with the findings of Mwirigiet al (2018), Mwingi and Obwogi (2018), Umar and AbdulQuadri (2021); however the findings is contrary to the findings of Sani and Nwite (2020). Lastly, the results reflected that, there would be decline in return on asset with a delayed period for inventory turnover possibly because of the effect it could have on the returns from operations, which may limit financial capacity to meet customers demand and enhance returns/income and invariably lead to lower income. However, the results support the findings of Mwirigiet al(2018), Mwingi and Obwogi (2018), Umar and AbdulQuadri (2021), but it is contrary to that of Ndowabile (2018), Zainabet al(2018), Sani and Nwite (2020) as well as Yakubuet al(2020).

5.0 Conclusion and recommendation

In view of the analysis conducted in this study, it was concluded that, working capital management significantly affects return on capital employed, but only when average payable period is considered. Furthermore, this study concluded that working capital management has insignificant effect on return on equity of quoted manufacturing firms in West Africa. Moreover, based on the findings, it was recommended that, listed manufacturing firms in West Africa must design an appropriate working policy that will help to enhance the management of account receivables, so as to avoid huge backlog of bad debt; which can affect firms liquidity, solvency and overall performance.

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