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EFFECTS OF CASH MANAGEMENT TECHNIQUES ON FINANCIAL PERFORMANCE AND FIRM VALUE OF SELECTED MANUFACTURING FIRMS IN NIGERIA

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Abstract

This study empirically investigated the effects of cash management techniques on financial performance and firm value of selected manufacturing firms in Nigeria. The time coverage was 2008 to 2020 using samples of 46 quoted manufacturing firms in Nigeria. Research design adopted was ex-post facto design while analytical technique employed was Structural Equation Modeling (SEM) with a battery of diagnostic and model fit tests: normality test by Kolmogorov-Smirnov and Shapiro-Wilk approaches, unit root test, Pearson's correlation test, goodness of fit test by Chi-Square, incremental fit test by Tucker Lewis approach, and parsimonious fit tests. Findings uncovered that cash conversion cycle (CCC),Cash and cash equivalent (CASH), cash flow adequacy ratio (CFAR), and financial leverage (FL) through the mediation of Return on Assets (ROA) interact positively with firm value, while through same mediation, the effect of current ratio (CR) on firm value was found to be negative. Also, through the mediation of ROA, the effects of CCC, CASH, CR and FL were significant ($p<0.05$) while that of CFAR was insignificant ($p>0.05$). On the other hand, through the mediation of economic value added, the effects of CASH and CFAR on firm value were positive while those of CCC, CR and FL were negative. In this same mediation of EVA, the effects of all the cash management techniques were insignificant ($p>0.05$). Based on these findings, the conclusion was drawn that Return on Assets (ROA) is a positive mediator of firm value while Economic Value Added (EVA) is a negative mediator in assessing the effect of cash management techniques for manufacturing firms in Nigeria. In line with the findings, it was recommended among others that firms in the manufacturing sector should minimize the cash conversion cycle length and employ the most effective credit collection policies and terms taken cognizance of the reputation of their firm in relation to suppliers / creditors. Also, adequate liquid and other current assets should be maintained by the firms to cover maturing liabilities / loan obligations.

Keywords: Financial Performance, Firm value, Economic Value Added, Cash management

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1. INTRODUCTION

Firm owners and investors always anticipate a positive return on their investments. That is to say, the main purpose of every firm owner is to make profit for the shareholders. Formerly put, every profit-oriented organisation strives to maximize the net income and present value of their net assets while recognizing immediate and long run consideration. When a company grows, it stands to support economic growth of a country (Anggita, 2020) and vice versa. In order to enhance a company's value or promote the performance management of the company, one of the essential steps is to find out the various factors that determine or affects the market price of the company; such as fixed assets (currently referred to as non-current assets), capital structure and most importantly the financial strength of the firm.

Cash is among the most fundamental and indispensable part of the whole financial management of a business entity. Cash management techniques entails devising means of ensuring that organisations have adequate fund (money and money equivalents) to meet such short-term obligations as payment to employees via salaries and wages, creditors and accrued expenses. It also involves striking a balance (trade-off) between profitability and liquidity (Akinbuli, 2009). Also, cash management technique includes planning and controlling the firm's current (liquid) resources and guaranteeing that cash inflows synchronizes with cash outflows. Further, it involves accelerating collections, controlling payments, efficient short-term investment of cash surpluses, financing cash shortages economically, cash pooling cum centralization, and cash flow forecasting.

Both cash and non-cash management is vital so as to guarantee the organisations long haul achievement and to accomplish its general objectives, which is the maximization of owner's wealth. It is also required to be effective so as to optimize the firm's cash positions. For cash management practices of firms to be effective, their top management would have insisted on the employment of up-to-date liquidity management-measuring indices. These include cash conversion cycle index, net liquidity balance index, cash flow adequacy index and net cash flow index. Meanwhile, optimizing a firm's cash position entails ensuring that the current assets covers adequately current liabilities particularly in the periods of liquidity squeeze. Lots of hard evidence exists in the assertions of Manyo and Ogakwu (2013) and Akinbuli (2009) that many businesses closed during the global financial crises (GFC) of 2008.

Moreso, effective management of the firm's liquid resources makes use of cash budgets and forecasts, bank relations / concentration, forecasting disbursement, international cash management, and the means of fueling these liquid assets (Nobanee et al., 2011). A well-maintained capital will guarantee smooth running of the business through the circulation of the vital ingredient within the firm (cash, inventory, receivables). Hence, the number of days assets is outstanding, which determines the credit policy of the firm; the number of days inventory are held, which signifies the inventory management policy; and the cash conversion cycle, which is the comprehensive assessment of the quality and

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efficiency of the already established working capital management practices, are the tools that make sure that the daily operations of the firm are not hindered if well managed.

In practice, firms adapt tighter credit routines, adequate cash budgeting, synchronizing and forecasting system, shorter cash conversion cycle (CCC), shorter receivables period and stretched payables period taken customers' and suppliers' reactions under consideration, and utilizing cash and trade discounts for bulk purchases and earlier payments (Gill et al., 2010). Studies have shown that shorter cash conversion cycle aligns with increasing profits therein trade debtors and other accounts receivables were recouped earlier than later using efficient credit managers thereby ensuring exorbitant external borrowings are avoided (Nobanee et al., 2011). Anticipating cash revenue and matching them with expected disbursements as and when due is facilitated using these modern indices. Income adequacy index assists management to make arrangements ahead of time for the foreseeable shortfall in cash and cash equivalents (Uremadu & Efobi, 2012).

Intervening effect of cash management techniques on financial performance and firm value is of paramount importance because they require a balance to be maintained between the associated business risk and the level of efficiency to achieve the specified working capital, financial performance and value of firm. In most cases in manufacturing company, the quantity of cash maintained by the firms is usually over and above the successive year figure, which could have been invested, in a profitable project to increase the profit earning capacity of the firm. This will give rise to excess cash in the till. Obim, Takon and Mgbado (2020) maintain that surplus cash cause undesirable expenses on purchases and overstocking of inventory which will make the organisation to incur carrying cost, theft, waste and losses. Therefore, effective and efficient cash management technique is well desired because it has significant effect on profitability and sustainability of companies. Also, efficient short term planning is often times facilitated using cash and cash equivalents in alignment with other components of working capital (Obim, et al., 2020). This study however, sees the need to ascertain the effectiveness of cash management techniques on financial performance and firm value of selected manufacturing firms in Nigeria.

2. REVIEW OF RELATED LITERATURE

2.1 Cash Management and Techniques

Cash management is the practice of planning and controlling cash flows into and out of the business (John, 2018). It also entails taking the necessary actions to sustain adequate levels of cash to meet operational and capital requirements and to obtain the maximum yield on short-term investments. Efficient cash management involves the determination of the most favourable cash to hold by considering the trade-off between the opportunity cost of holding too much cash and the trading cost of holding too little (Nyabwanga et al., 2011).

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As recognized by Alfred (2007), management of cash in any business is crucial, as it aids the achievement of liquidity, and brings about proper planning with regard to cash disbursement and receipts over cash positions to keep the firm sufficiently liquid and to use excess cash in some profitable venture. It also helps to predict accurately the cash flow behaviour of the business, develop appropriate strategies which serves as an innovation to cash receipts and payments, and finally aids to maintaining adequate control over cash position to keep the firm sufficiently liquid and to use excess of cash in some profitable ventures. There are various techniques by which cash can be managed; among which are:

Cash Conversion Cycle

The concept of cash cycle was introduced by Gitman (1974) as a method of managing a firm's working capital and its implications for firm liquidity and profitability. Richards and Laughlin (1980) subsequently operationalised the cash cycle concept into the Cash Conversion Cycle (CCC) theory for analyzing firms' working capital management efficiency. The CCC theory posits that, all things being equal, efficient working capital management (i.e. a short cash conversion cycle) will increase a firm's liquidity, profitability and concomitantly its value; while inefficient working capital management (i.e. a long cash conversion cycle) will lead to lower profitability and lower firm value.

Contextually, cash conversion cycle measures the time it takes a firm to convert money invested in inventory and other input resources into cash. It deals with current assets and current liabilities. Tan and Author, (2019) opine that the cash conversion cycle is derived from three components: inventory conversion period, receivable conversion period, and payable deferral period. It is not yet standardized the technique to compute each component, hence, researchers and practitioners use 360 days or 365 days in the formula for calculating conversion periods (days). The formula is presented thus:

$$\text{CCC} = \frac{\text{Inventory} \times 365}{\text{Cost of Sales}} + \frac{\text{Accounts Receivable} \times 365}{\text{Credit Sales}} - \frac{\text{Accounts Payable} \times 365}{\text{Cost of Sales}}$$

Credit sales are estimated using the total sales figure.

Cash and Cash Equivalents (CCE)

Cash is one of the most essential figures contained by the assets portion in statement of financial position of every firm. Cash and cash equivalents (CCE) are the most liquid current assets found on a business's statement of balance sheet. Cash equivalents are short-term commitments in the interim idle that are easily convertible into a known cash amount (Hermanson, 1998). An investment generally counts to be a cash equivalent when it has a short maturity period of 90 days or even less(if maturity period is more than 90 days (for example, 100 days), then it will not be seen as cash and cash equivalents) from date of acquisition and when it carries an insignificant risk of changes in value. Equity investments typically are excluded from cash equivalents, except they are essentially cash equivalents, for instance, if the preferred shares acquired within a short maturity period and with specified recovery date (Denis, 2013).

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Current Ratio

Liquidity management reflects the organisation's ability to repay short-term liabilities. In the work of Durrah et al. (2016), it includes operating expenses and financial expenses resulting from the company in the short term; as well as part of long-term debt arising in a financial year or the operating cycle, whichever is longer.

Liquidity ratios indicate the entity's capacity to meet its short-term liabilities, as the weakness of the value of these ratios shows that the organisation may encounter difficulties in meeting short-term financial liabilities (Amengor, 2010). Particularly, the current ratio is a relationship of current assets to current liabilities. It measures the company's ability to pay short-term liabilities such as payable accounts and short-term loans, which represents the ratio of current assets to current liabilities. It is calculated as follows:

$$\text{Current Ratio} = \frac{\text{Currentassets}}{\text{Currentliabilities}}$$

The magnitude of this ratio expresses high liquidity of the company, thus a greater capacity to meet the short-term liabilities. In contrast, decrease in the ratio (i.e., less than 1) expresses the deficit of liquidity, which can lead to a decline in the company's energy. If the ratio is equal to 1, it means that current assets equal to current liabilities (Robinson et al., 2015).

Cash Flow Adequacy Ratio

Cash flow is the net amount of cash and cash-equivalents moving into and out of a business (Eneh & Ndubuisi, 2019). It is used to assess the quality of a business firm's income. That is, how liquid a company is, which can indicate whether the company is positioned to remain solvent (Okoye et al., 2016). Positive cash flow is an indication that a firm's liquid assets are increasing, while negative cash flow indicates that a firm's liquid assets are decreasing.

Cash flow adequacy ratio determines if the cash flow of a particular company is enough to meet current commitments, particularly in the area of asset acquisition, payout of dividends and payment of financial obligations (Accounting and Tax, 2009). The formula is shown below:

$$\text{Cash flow adequacy ratio} = \frac{\text{Operating cash flow}}{\text{Non Current Asset} \mp \text{Current liability} + \text{Cash Dividen}}$$

In its interpretation, a cash flow adequacy ratio of less than 1 means that the company must either liquidate its investments or obtain additional equity or debt financing to meets its capital expenditures, debt repayment and dividend policy obligation.

Financial Leverage

The pecking order theory states that companies prioritize their sources of financing according to the principle of least effort (Eneh & Ndubuisi, 2019). This means that firms

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first make use internal financing at startup. When this is depleted, they outsource for debt financing, and when they cannot get any capital anymore through debt financing, they raise capital through equity financing. This theory was first suggested by Donaldson (1961) and later on modified by Myers and Majluf (1984). This phenomenon can be explained by the fact that internal financing is the cheapest way to raise additional capital. The access to external financing is at times limited for young companies. And even though they are able to attract external financing, they would pay a very expensive price for it. Young companies mainly have a higher failure risk (Huyghebaert & Van de Gucht, 2007). Therefore, the possibility for young companies to grow is often limited.

2.2 Financial Performance

Financial performance is a measure of an organisation's financial condition or financial outcomes resulting from management decisions carried out by organisation members (Okobo, Ugwoke & Akpan, 2022). The performance is the result of strategies the firm employs to achieve financial goals (Tumba, Onodugo, Akpan & Babarinde, 2022). Eton et al. (2019) the financial performance of business entities is determined by the financial statements of the business entities, which are a collection of reports on the business financial results for a given period of time. An organisation's cash flow management policy, which manages working capital in the form of cash receivables from customers, inventory holding and cash payments to suppliers, is broadly linked to improved organisational financial performance.

The financial performance has become an issue of common concern as it reflects its development condition. Good financial performance is the precondition for a company to achieve sustainability. There are various indices for measuring a firm/organization's performance. Some of which are: Profit after Tax (PAT), Earnings before Interest after Tax (EBIAT), Return on Investment (ROI), Return on Equity (ROE), Return on Assets (ROA), Earnings per Share (EPS), Net Profit Margin (NPM), Market value added (MVA), Economic value added (EVA),among others. This study considered only ROA and EVA. The choice of these two variables is embedded that they are nearer to the real cash flows of a business entity (Costin, 2017) and therefore would give better result in this study.

Return on Assets (ROA)

This is an indicator of how profitable a firm is in relation to its total assets. ROA shows how efficient management is in utilizing its assets to generate earnings. Calculated by dividing a firm's annual profit by its total assets, ROA is displayed as a percentage. Sometimes this is referred to as "return on investment". Mathematically, ROA= $\frac{\text{Net profit}}{\text{Total Assets}}$.

Economic Value Added (EVA)

This is a measure of a firm's financial performance based on the residual wealth calculated by deducting cost of capital from its operating profit (adjusted for taxes on a cash basis). Economic Value Added shows the real measure of performance based on real economic profits of the firm's product, which allows measurement of its success or

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failure over a period of time. Also referred to as "economic profit", the formula for calculating EVA is as follows:

EVA= Net operating Profit after Taxes (NOPAT) – (Capital × Cost of Capital)

The EVA explains that companies can create wealth if they manage to earn more than their own capital costs and liabilities (Costin, 2017). It is usually measured annually or for a lifetime. Eva is useful in performance measure because it allows dissecting a firm's market value into known and unknown (expected) components. The present value of future stream of EVAs usually have two components - present value of current EVA and present value of expected EVA improvements over the current level (Profile, 2019).

EVA proponents claim that the firm value can be measured by discounting future EVAs instead of future cash flows (Mans-kempet al., 2018). In the work of Petrescu and Apostol (2009), it is useful to investors who wish to ascertain how well the product has added value to them and as well, can be used for comparative analysis with rapid similar industries. The definition given by Stern Value Management to EVA indicates that EVA is the difference between the net operating profit after tax of a business organisation and the cost of the opportunity capital invested in the business organisation.

EVA = NOPAT – Cc = NOPAT – IC * WACC

Where

Cc = capital cost = WACC* IC

IC = invested capital

WACC = weighted average cost of capital

EVA = Economic Value Added

NOPAT = net operating profit after tax

ROCE = return on capital employed

Understanding of EVA enables monitoring of investment decisions closely not only at the level of corporate but at line staff as well (Girotra & Yadav, 2001).

2.3 Firm Value

Measurement of firm value can be done by looking at the development of share prices in the secondary market, if the share price increases means firm value increases, because the value of the firm is actually the stock market value coupled with the market value of bonds or long-term debt(Muhammad & Thamrin, 2018).The stock market has attracted the attention of many investor and scholars. It has become one of the most critical aspects of a modern market economy (Setiawan, 2018). The increase in share prices indicates people's confidence in the business, so investors are willing to pay higher, this is in line with their belief to get high return as well.

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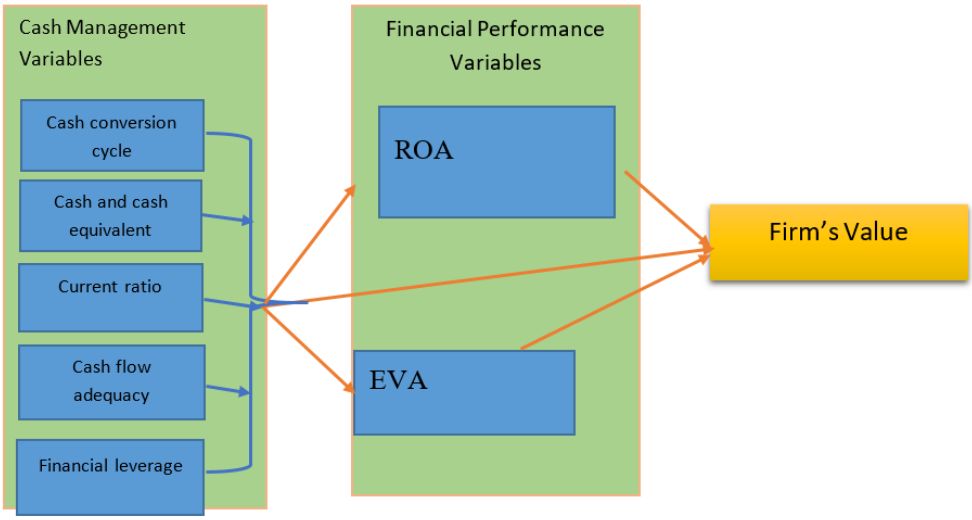
Also firm value can be measured by summing the market value of bonds or long-term debt with the stock market value. The market value of bonds is relatively stable, while stock market value is very volatile, as stock market prices move over time. Company value can be measured by price to book value (PBV); that is, comparison between stock prices with book value per share. Furthermore, another related sign is the book value per share, the ratio of capital (common equity) to the number of shares outstanding (shares outstanding).

Conceptual Framework

Figure 1: The conceptual framework for the intervening effect of cash management techniques on financial performance and firm value



2.4 Theoretical Framework

Although there are series of theories relating to this study, for instance, Financial Approach Theory, Trade-off Theory of Liquidity, Operational Approach to Theory using Cash Models, Dividend Signaling Theory, and many more. The study is underpinned to the Dividend Signaling Theory by Bhattacharya's (1979). The theory proposes that the value of a firm's stock is influenced by the financial performance of the firm and investors believe that an unexpected dividend increase is a favourable signal. Particularly, according to this theory, information presented in the firm's financial report becomes a signal for investors in making investment decisions. Investors need relevant and reliable information as an analytical tool in making investment decisions. When firms published information that contains a positive value (good news), then the trend of the market will react positively. Based on signaling theory, the motivation of company management to current financial information is to give a signal of prosperity for shareholders, both in the form of dividend growth and increase in stock price. The underlying concept is that the value of a firm's stock is influenced by the financial performance of the firm. However,

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information is individual, meaning that individuals may respond differently to the same source of information (Puspitaningtyas, 2015; 2017).

2.5 Empirical Review

Cash Conversion Cycle and Financial Performance

Yasiret al. (2014) examined cash conversion cycle and its impact on firm performance of cement industry in Pakistan. The study used the sample of 16 companies selected from cement industry of Pakistan for six years period that is from 2007 to 2012. Correlation and regression analysis were employed to examine the relationship between cash conversion cycle (CCC) and organisation's performance i.e. return on assets (ROA). The findings of the study shows negative relationship between firms cash conversion cycle and profitability.

In Nigeria, Nwakaego and Ikechukwu (2015) evaluated the effect of cash conversion cycle on the performance of health care firms. Variable studied are cash conversion cycle, sales growth rate and debt ratio. Source of data were secondary from the Annual Reports of the 3 selected firms. The findings indicate that both cash conversion cycle and debt ratio had negative but significant effect on the profitability of health care firms in Nigeria, while sales growth rate had positive and significant effect on those firms under review.

Ikechukwu and Nwakaego (2016), in the examination of effect of cash conversion cycle on the financial performance of building materials/chemical and paint manufacturing companies in Nigeria. Cash conversion cycle, receivable ratio, payable ratio, and inventory ratio are the variables used and secondary data were sourced from the annual reports and accounts of Health care firms in Nigeria. The findings using least square multiple regression revealed that, Inventory ratio and Accounts receivable ratio has significant positive effect on company's profitability, accounts payable ratio and cash conversion cycle (CCC) has positive and non- significant effect on company's profitability.

Chang (2018) analysed cash conversion cycle and corporate performance by adopting enterprises from different countries as samples. Analytical tool employed was regression mechanism. Findings indicate a negative relationship between the CCC and firm's profitability and value, supporting that an aggressive working capital policy is capable of enhancing corporate performance; however, this effect reduces or reverses when firms is at the lower ebb of CCC level. Results remain identical after considering endogenous problems, changes in macroeconomic environments, economic development status, financial crises, corporate governance, and financial constraints.

Linh and Mohanlingam (2018) in Thailand investigated the relationship between cash conversion cycle and profitability that exists in the agriculture and food industries. The study analysed data of 34 listed firms in agriculture and food industry in the Stock Exchange of Thailand from 2009 - 2013. Pearson's correlation and the regression analysis approach were used to evaluate the relationship between cash conversion cycle and profitability. The results suggest that cash conversion cycle (CCC) has a significant

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inverse relationship with profitability in the agriculture and food firms in Thailand. Also, production cycle and debt ratio outcome suggest significant negative relationship with return on assets (ROA) while payment cycle and size have a positive relationship with return on equity (ROE). No significant relationship was observed between cash collection cycle and profitability.

Cash and Cash Equivalent and Financial Performance

Sulaman et al. (2016) conducted a study on determinants of corporate cash holdings of non-financial companies among different company sizes and different industries in Pakistan. The study-analyzed samples of 50 Public Limited firms listed at Karachi Stock Exchange over the period of 2012-2014. The study used descriptive statistics, correlation and multiple regression mechanisms and discovered that firm size, board size, net working capital and investment significantly affect the corporate cash holdings, while debt structure, leverage and return on asset exerts negative and non-significant relationship with cash holdings.

Amahalu and Ezechukwu (2017) examined the extent at which cash holding affects financial performance of listed insurance firms in Nigeria. Pearson's correlation and multiple regression analyses were used in testing the formulated hypotheses with the aid of STATA 13 statistical software. Findings revealed that cash holding (proxy by cash to total book value of assets and cash) has a positive and significant effect on financial performance (proxied by Return on Asset, Return on Equity and Tobin's Q) at 5% significant level. Also, Limam and Mohammed (2018) conducted a similar study entitled the influence of the operating cash flow on the profitability of listed Nigeria firms. The data analysis was carried out using panel regression mechanism. Results disclosed insignificant impact of operating cash flow on Return on Assets (ROA) but a direct and significant influence of the operating cash flow on the Return on Equity (ROE).

Current Ratio and Financial Performance

Priya et al. (2013) empirically studied the impact of cash management on profitability of listed manufacturing companies in Sri Lanka from the period, 2008 - 2012. Particularly, the study focused on effect of Inventory sales ratio (ISR) and current ratio (CR) on Return on Assets (ROA) of the listed companies. The result revealed that liquidity management significantly correlated with profitability. Also, Foo (2015) examined the relationship between the financial health, by adopting Altman Z-Score, and corporate performance, as quantified by the Return on Equity (ROE), of listed manufacturing companies. A linear regression analysis was conducted between these variables to determine the magnitude and direction of their relationships. The trends of Z-Scores over a fourteen-year period were analysed from 2000 to 2013 (inclusive) and yielded a statistically positive correlation between ROE and the Z-Score for both markets. Singapore and Hong Kong both registered moderate-to-high mean and median Z-Scores. However, Hong Kong was found to be comparatively more salubrious. This finding further fortifies the economic stature of these two markets as Asian tigers

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Patjoshi (2016) examined the effect of liquidity management and financial performance of selected steel companies in India from the period of 5years (2010-11 to 2014-15). Data analysis passed through descriptive statistics, correlation, regression and different financial ratio analysis. The experiential examination using both the correlation and regression analysis revealed that liquidity ratios measured by current ratio, liquid ratio, inventory turnover ratio, current assets turnover ratio and current liabilities to total assets have significant relationship with profitability measured by operating profit margin, net profit margin, return on total assets and return on investment. In another study by Akinleye and Oluwadare (2022) which was carried out in Nigeria, and covering the period from 2010-2019, it was also affirmed that liquidity in term of quick ratio has positive and significant effect on profitability; while, current ratio has negative and non-significant effect on profitability. This result provided evidence to recommend that the firms can improve their performance by increasing the level of liquidity and maintaining their optimal debt structure level.

Furthermore, using fixed-effects model of the panel data regression estimation procedures, Akomeah and Frimpong (2019) examined the effect of working capital management on the profitability of listed manufacturing firms in Ghana. The study covered 10 years period (2005-2014) and used samples of seven (7) manufacturing companies listed on the Ghana Stock Exchange. Among the findings was that liquidity indicator (current ratio) exert significant positive impact on the profitability. Sundayet al. (2020) examined effect of leverage and liquidity on financial performance of Nigerian firms using data of seventeen consumer goods firms listed on the Nigerian Stock Exchange during the financial years, 2012 to 2017. Employing the pooled least squares multiple regression estimation technique, similar findings emerged that liquidity proxies- current ratio and quick asset ratio exert significant effect on performance of the companies.

Cash Adequacy Ratio and Financial Performance

Zhou et al. (2012) examined the relationship between free cash flow and financial performance evidence from the listed Real Estate Companies in China. They used principal component analysis and regression analysis on the data from 2006 – 2011 of all listed real estate companies in China. The study revealed that the free cash flow of a company is negatively and linearly correlated to its financial performance. That is to say, too much free cash flow will lead the financial performance to decline. In the same vein, the study of Hamidi (2014) sought to clarify the importance of using cash flow ratios attributable to certain elements in the financial statements (operating cash flows attributable to net income, operating cash flows attributable to sales, operating cash flows attributable to total assets, operating cash flows attributable to short-term liabilities and cash flows attributable to equity) and to show their effect as independent variables on the value of the company measured by (market value to book value ratio) as a dependent variable, in commercial banks listed on the Iraq Stock Exchange during the period 2008-2012. The results showed that there is a significant effect of operating cash flows attributable to sales, net income and total assets on the value of the company, while the

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operating cash flows attributable to short-term liabilities and equity had no significant effect on the value of the company.

Consequently, Eyisi and Okpe (2014) investigated the effect of operating cash flows attributed to total assets and operating cash flows attributable to total liabilities on the performance of (35) companies listed on the Nigeria Stock Exchange during the period (2009-2013). The results of the study showed that there is a significant effect of both operating cash flows attributable to total assets and operating cash flows attributable to total liabilities on the financial performance measured by earnings per share.

The study of Soewignyo and Soewignyo (2017) aimed at investigating the effect of a set of financial ratios, namely: the ratio of operating cash flows attributable to total liabilities, and the ratio of operating cash flows attributable to current liabilities on the company's performance measured by (earnings per share, returns on assets and returns on equity) for the sample of (40) companies listed on the Indonesia Stock Exchange during the period (2010-2016). The study showed that there is a significant effect of both the operating cash flows attributable to the total liabilities and the operating cash flows attributable to the current liabilities on the profitability of the company in all its indicators (earnings per share, return on assets and return on equity).

Soet (2018) focused on effect of financing cash flow management on financial performance of mutual funds in Kenya. The objective of the paper was to look into relationship between financing cash flow management and financial performance of mutual funds in Kenya. The study employed causal research design. Secondary panel data from the audited financial statements of 22 mutual funds was retrieved from financial reports for the period 2011-2016. Descriptive statistics namely; mean, median, minimum, maximum and standard deviation were generated using E-views software. The results indicated that financing cash flow management had significant and negative effect on return on assets and return on equity.

Financial leverage and Financial Performance

Chadha and Sharma (2015) examined the impact of financial leverage on firm financial performance, in the case of 422 Indian manufacturing companies quoted on Bombay Stock Exchange (BSE). Secondary data for the period of study which was the 10 years from 2004-2013 was used to analyze the leverage effect on Return on Asset, Return on Equity and Tobin’s Q as three separate proxies of the firms’ financial performances. It was found that financial leverage has no significant impact on two financial performance parameters of the firms namely return on asset and Tobin’s Q.

Abubakar (2016) conducted a study on the impact of leverage on firms’ performance by studying 66 non-financial firms quoted on the Nigerian Stock Exchange over the 10-year period, 2005- 2014. Short-term debt ratio (STDR), long-term debt ratio (LTDR), total-debt ratio (TDR) and total-debt equity ratio (TDER) were used as proxy for financial leverage, while Return on Equity (ROE) was used to measure financial performance. Results from the Panel data techniques which were analyzed using the of Pooled Ordinary Least

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Squares (POLS), Fixed Effects Panel Data Model (FEM) and Random Effects Panel Data Model (REM) revealed that increase in the equity portion of total debt-equity ratio (TDER) has a significant and positive effect on return on equity (ROE), while STDR, LTDR and TDR have no significant effect on the financial performance (ROE), during the period of study. The study therefore recommended that non-financial firms should increase the equity portion of their capital structure to enhance firms' financial performance.

Dutta et al. (2018) examined the impact of financial leverage on the firm's value for a sample of 31 companies listed in New York stock exchange for six different sectors for ten years. The study concluded the existence of a big negative relationship between the degree of financial leverage and the firm's value after the control of the changing size of the firm.

Based on the empirical reviews above, the following null (Ho) hypotheses were formulated for this study:

i. Cash conversion cycle has no significant effect on the financial performance and firm value of selected publicly listed manufacturing firms in Nigeria?

ii. Cash and cash equivalent has no significant influence on the financial performance and firm value of selected publicly listed manufacturing firms in Nigeria?

iii. Current ratio has no significant effect on the financial performance and firm value of selected publicly listed manufacturing firms in Nigeria?

iv. Cash flow adequacy ratio has no significant influence on the financial performance and firm value of selected publicly listed manufacturing firms in Nigeria?

v. Financial leverage has no significant influence on the financial performance and firm value of selected publicly listed manufacturing firms in Nigeria?

3. METHODOLOGY

The study adopted ex-postfacto research design being that the data used for the study is historical and also classified as secondary data. The study concentrated on all the manufacturing firms listed on the Nigerian Stock Exchange and operating in Nigeria. Data on financial performance of manufacturing firms, modern and traditional liquidity measuring metrics and control variables were extracted from the audited annual report and accounts of the sampled firms for the twelve-year period (2008 to 2019). Hence, it is secondary sourced data. Specifically, the data were accessed from NSE Fact books and Databases, African Financials, and NSE Zonal Offices.

Population of the study is 126 manufacturing companies listed on the Nigeria Stock Exchange and which are going concerns up to 2019 / 2020 accounting year. Also, these firms were confirmed to possess uninterrupted audited annual reports and accounts for at least 6 out of the 12 year period ended 31st December 2019. Firms with data errors in their annual financial statements will be eliminated in that values of non – current assets, current assets, liabilities, and capital should be positive. The sample selection technique

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employed was judgmental sampling technique. The reason was to avoid unwanted inclusion into the study.

Specification of Model

Structural equation model was adopted in line with the work of Padachi (2006) and Al-Debie (2011), but with little modificationsin respect to the study variables. The models are explicitly specified thus:

$$ROA_{it} = \beta_0 + \sum_{j=1}^{5} B_j CM_{j,it} + f_i + \varepsilon_{it} \quad (1)$$

$$EVA_{it} = \delta_0 + \sum_{j=1}^{5} \delta_j CM_{j,it} + f_i + v_{it} \quad (2)$$

$$FV_{it} = \gamma_0 + \sum_{j=1}^{5} \gamma_j CM_{j,it} + f_i + \mu_{it} \quad (3)$$

$$FV_{it} = \alpha_0 + \alpha_1 ROA_{it} + f_i + \pi_{it} \quad (4)$$

$$FV_{,it} = \varphi_0 + \varphi_1 EVA_{it} + f_i + \omega_{it} \quad (5)$$

Where ROA and EVA are vectors of firm's performance for firm i at time t; CM are vectors of cash management while FV is the firm value. β, δ, γ, α and φ are parametric coefficients, f_i is the heterogeneity factor common to the firms while ω, π, μ, v and ε are error terms. Equation 1 to 5 cannot be estimated individually but rather simultaneously because they formed a complex structure. Estimating them individually will lead to bias in the parameters. Therefore, the study will use a recursive structural equation model to estimate the equations.

Techniques for Data Analysis

The study employed Structural Equation Model to achieve the research target. Relevant preliminary and diagnostic tests such as normality tests (Kolmogorov-Smirnov and Shapiro-Wilk tests will be used to test) and other model evaluation tests: Goodness of Fit Index (GFI), Root Mean Square Error of Approximation (RMSEA), Tucker Lewis Index (TLI) for incremental fit index, and Comparative Fit Index (CFI) were conducted.

Structural Equation Model (SEM)

The fundamental statistical technique employed in this study is the Structural Equation Model (SEM). The objective of Structural Equation Model (SEM) is to offer parsimoniously the relationships between constructs or variables. The technique thus evaluates the general fit of a theoretical or conceptual framework, giving the researcher the prospect for additional theoretical development. The structural equation model takes hypothesis-testing method to the structural theory's multivariate analysis. The objective is to find out if an assumed theoretical or conceptual model is reliable with the collected data to replicate the underlying theory. Simply put, SEM encompasses the estimation of two

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models; a structural/path model and a measurement model. The structural model associates the unobserved variables over a sequence of recursive and non-recursive relationships, the measurement model associates a set of observed variables to a usually smaller set of unobserved variables.

Structural Equation Model works on several assumptions. This assumptions include local independent observations, linearity (Hair et al., 2006), normality and continuous data.

Table 3.1: Model Fit Indices and Levels of Acceptance for this Study

Name of Goodness-of-Fit Measure	Level of acceptance
Absolute Fit Measures	
Chi-square (**χ2**) of estimate model	p>0.05
χ2/df	<5.0
Root mean square error of approximation (RMSEA)	<0.08
Goodness-of-fit Index (GFI)	0.90 or greater
Incremental Fit Measures	
Tucker Lewis Index (TLI)	0.90 or greater
Parsimonious Fit Measures	
Comparative Fit Index (CFI)	0.90 or greater
Incremental Fit Index (IFI)	0.90 or greater

Operational Measures of Variables

These consist of the dependent variables, the independent variables and the control variables studied.

Dependent Variables

The study used Return on Assets (ROA) and Economic Value Added (EVA) as the dependent variable of the study.

i) Profitability of Firms (ROA) = [Net income + Interest Expense * (1 – Tax Rate)]
(Total Assets – Equity Interests)

ii) Economic Value Added (EVA) = EBIT * (1 – Tax Rate) – (Net Debt + Equity) * WACC

The WACC denotes weighted average cost of capital.

Independent (Test) Variables

i) Cash Conversion Cycle: It measures the time it takes a firm to convert money invested in inventory and other input resources into cash. Another name for CCC is cash – to – cash cycle. Its computation has three main steps: days inventory outstanding, days sales outstanding and days payables outstanding. Mathematically, it is calculated as depicted below.

Cash Conversion Cycle = Days Inventory Outstanding + Days Sales Outstanding – Days Payables Outstanding

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$$\text{CCC} = \frac{Inventory \times 365}{Cost\ of\ Sales} + \frac{Accounts\ Receivable \times 365}{Credit\ Sales} - \frac{Accounts\ Payable \times 365}{Cost\ of\ Sales}$$

Credit sales are estimated using the total sales figure.

ii) CASH: It is made up of cash on hand, cash at bank (demand deposit) and cash equivalents (money market holdings: treasury bills, marketable securities, commercial papers). Cash equivalents mature within three months. It is computed by adding up cash and cash equivalents.

CASH = Cash + Short term deposits

iii) Current Ratio (CR): CR depicts a firm's short-term liquidity and capacity to honor trade creditors and overdrafts covenants. Acceptable current ratios are industry specific ranging between 1.5 and 3 for healthy businesses. The current ratio is computed using: $\text{CR} = \frac{Current\ Assets}{Current\ Liabilities}$

iv) Cash Flow Adequacy Ratio: It ascertains the firm's capacity to honor annual payments of all the long-term annual debt using its cash flow from operations. A performance ratio of the value of 1 indicates the firm can at least liquidate its long term debt as they mature annually.

CFAR = Cash Flow Adequacy Ratio

$$\frac{EBIDTA - Tax\ Paid - Interest\ Paid - Capital\ Expenses}{Average\ Annual\ Debt\ Maturities\ Scheduled\ Over\ Next\ Five\ Years}$$

$$= \frac{Net\ Cash\ Flow\ from\ Operations}{ACurrent\ Liabilities}$$

v) Leverage Ratio: It refers to a company's gearing ratio or equity multiplier computed by dividing its total debt by total equity. It is calculated thus:

Financial Leverage $= \frac{Total\ Debt}{Total\ Equity}$

Control Variables

a) Net Liquidity Balance: This balance, a solvency metric, accentuates a firm's capacity to meet its long-term fixed expenses as they become annualized. Simply put, it involves the addition of cash and cash equivalents and short-term investments; then; subtracting accounts payable from the sum. Mathematically, NLB is denoted:

$\text{NLB} = \frac{(CASH + Short\ Term\ Investments - Accounts\ Payable)}{Total\ Assets}$

b) Quick Ratio (QR): It is also known as Acid Test Ratio, Cash Ratio or Liquid Ratio. It measures a firm's ability to liquidate its current obligations as the need arises via employing cash and cash equivalents and short term marketable securities. To calculate the quick ratio,

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$$QR = \frac{Cash\ in\ Hand + Cash\ at\ Bank + Accounts\ Receivable + Short{-}term\ Investments}{Current\ Liabilities}$$

c) Sales Growth: It connotes the positive difference between sales in the current period ($Sales_t$) compared to a previous corresponding period ($Sales_{t-1}$). This difference is divided by total sales in the preceding period. It is computed thus:

$$SG = \text{Sales Growth} = \frac{Sales_t - Sales_{t-1}}{Sales_{t-1}}$$

d) Natural Logarithm of Total Assets (LnTA): This is used as proxy for firm size. It is most preferred as it is easier for firms to inflate their total sales than their total assets.

Natural Logarithm of Total Assets = LnTA

e) Gross Domestic Product Growth Rate (GDPGR): This measure is used to estimate the effect of countrywide externalities on these sampled firms. In other words, it ascertains the influence of economic conditions on the firms.

Note that such variables as Economic Value Added, Days Inventory Outstanding, Days Sales Outstanding, Days Payables Outstanding, Net Liquidity Balance and CASH are deflated by Total Assets for measurement purposes and to ensure linearity.

All statistical analyses was aided by Statistical Package for Social Sciences (SPSS 23), Analysis of Moment Structures (AMOS 23), and STATA 15.

4. DATA PRESENTATION AND ANALYSIS

The data collected were meaningfully processed, presented and analyzed in this chapter. The model of the study was initially investigated for correlation, normality and presence of unit root using the Panel-Adjusted Augmented Dickey-Fuller test and absence of co-integration using Wester Lund and Edgerton (2007) four panel tests. Absence of unit roots confirms that the data used in the model are stationary.

Descriptive Statistics

Table 4.1 presents the descriptive statistics of the variables used for the study. A total of 598 observations from 2008 to 2020 for 46 quoted manufacturing firms. The variables are log transformed. The summary statistics in Table 4.1 shows that CCC averaged 2.262 and ranged from -0.799 to 5.633, CASH averaged 5.761 ranging from 0 to 9.395,CR averaged 0.077 ranging from -1.477 to 2.266 while CFAR and FL averaged -1.085 and -0.265 respectively. Further, NLB averaged 5.955 and ranged from 0 to 9.887, SGaveraged 6.031 ranging from 0 to 10.292, and Talogaveraged 0.770 ranging from 0 to 1.0178, while ROA, EVA and FV averaged-0.062, -0.568 and 5.252 ranging from -3.324 to 4.475, -2.889 to 1.239, and 0 to 8.935 respectively.

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Table 4.1 Summary Statistics of Variables used.

$VARIABLE$	$OBS.$	$MEAN$	$STD.DEV.$	$MIN.$	$MAX.$
CCC	598	2.262	0.906	-0.799	5.633
$CASH$	598	5.761	1.563	0	9.392
CR	598	0.077	0.392	-1.477	2.266
$CFAR$	598	-1.085	0.839	-4.204	2.362
FL	598	-0.265	1.283	-6.204	3.769
NLB	598	5.955	2.188	0	9.887
QR	598	5.721	2.318	-0.418	9.629
SG	598	6.031	2.634	0	10.292
$Talog$	598	0.770	0.253	0	1.017
ROA	598	-0.062	0.614	-3.324	4.475
EVA	598	-0.568	0.640	-2.889	1.239
FV	598	5.251	1.786	0	8.935

Source: Author's Computation (STATA 15)

Diagnostic Tests

Correlation Matrix

The study presents the correlation matrix in Table 4.2 for the selected variables. The correlation matrix shows a mixed relationship between the variables. To ascertain multicollinearity in the relationships, the regressors are checked for high-level correlation. Regressors with correlation higher than 90 percent are not be included together in the same model. Therefore, the correlation matrix in Table 4.2 establishes that there is no variable with the correlation greater than 0.90. Therefore, there will not be possible multicollinearity problem.

Table 4.2: Correlation Matrix of the selected variables

	CCC	CASH	CR	CFAR	FL	NLB	QR	SG	Talog	ROA	EVA	FV
CCC	1											
CASH	0.201	1										
CR	0.063	0.155	1									
CFAR	-0.229	-0.035	0.208	1								
FL	-0.098	0.343	-0.012	-0.014	1							
NLB	0.660	0.554	0.127	-0.265	0.143	1						
QR	0.568	0.582	0.127	-0.306	0.181	0.849	1					
SG	0.484	0.398	0.010	-0.264	0.129	0.660	0.635	1				
Talog	0.650	0.434	0.050	-0.301	0.100	0.882	0.764	0.683	1			
ROA	-0.290	0.007	0.085	0.031	0.017	-0.001	-0.029	0.122	-0.135	1		
EVA	0.036	-0.029	0.092	-0.032	0.142	-0.041	-0.017	-0.025	-0.024	-0.064	1	
FV	0.948	0.228	0.035	-0.307	-0.085	0.761	0.652	0.602	0.753	-0.163	0.001	1

Source: Author's Computation (STATA 15)

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Test for Stationarity

Null Hypothesis (H_0): All panels contain unit roots.

Table 4.3: Fisher Type Panel Unit Root Test at 5% significance level

Variable	Test Statistic	P-value	Decision	Order of integration at 5% level
CCC	234.033	0.000	Reject H_0	I(0)
CASH	231.499	0.000	Reject H_0	I(0)
CR	215.834	0.000	Reject H_0	I(0)
CFAR	321.616	0.000	Reject H_0	I(0)
FL	189.403	0.000	Reject H_0	I(0)
NLB	321.641	0.000	Reject H_0	I(0)
QR	301.925	0.000	Reject H_0	I(0)
SG	303.270	0.000	Reject H_0	I(0)
Talog	322.201	0.000	Reject H_0	I(0)
ROA	259.673	0.000	Reject H_0	I(0)
EVA	380.620	0.000	Reject H_0	I(0)
FV	385.296	0.000	Reject H_0	I(0)

Source: Author's Computation (STATA 15)

The Panel ADF result in Table 4.3 shows that the variables for the study are integrated of order zero with the p-values of the test statistic being less than 5 percent significance level. The result reveals that all our variables under the condition of finite cross section are stationary in level. The stationarity results support the use of maximum likelihood method used by structural equation models.

Normality Test

Normality test is carried out on the variables based on parametric assumptions. The normality test for each variable is tested through the Kolmogorov-Smirnov (K-S) and Shapiro-Wilk (S-W) tests as well as histograms and Q-Q plots. The null hypothesis for the K-S and S-W test is that the data is from a normally distributed population. Therefore, if the test of significant ($p<0.05$), then the null hypothesis is rejected meaning non-normality of the data. Table 4.4 presents that all the variable of the relationship for both K-S and S-W tests were significant ($p<0.000$). It implies that the measurement items are not normally distributed.

Although the Kolmogorov-Smirnov and Shapiro-Wilktests revealed that the measurement items are not normally distributed, Field (2013) argued that the possibility of observing non-normality is possible in large samples due to a little deviation that could be reported as significant. Hair et al. (2006) contemplates that observation more than 200 as large, therefore the study's total observation of 598 is large enough. Considering the arguments, we can assume normality of the data based on the Q-Q test (see Appendix B).

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Table 4.4: Normality Test with Kolmogorov-Smirnov (K-S) and Shapiro-Wilk (S-W)

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**Df**	**Sig.**	**Statistic**	**df**	**Sig.**
CCC	.199	598	.000	.813	598	.000
CASH	.103	598	.000	.878	598	.000
CR	.131	598	.000	.901	598	.000
CFAR	.098	598	.000	.975	598	.000
FL	.160	598	.000	.886	598	.000
NLB	.249	598	.000	.720	598	.000
QR	.245	598	.000	.738	598	.000
SG	.261	598	.000	.742	598	.000
Talog	.340	598	.000	.554	598	.000
ROA	.176	598	.000	.691	598	.000
EVA	.221	598	.000	.879	598	.000
FV	.345	598	.000	.591	598	.000
a. Lilliefors Significance Correction						

Source: Author's SPSS 23 Result

Structural Equation Model Fit Test

Having established the normality of the variables through vigorous techniques, model fit indices is examined for the full structural model. The fit indices for the relationships are as shown in Table 4.5.

Table 4.5: Structural Equation Model Fit Indices

χ2	**DF**	**CMIN/DF**	**GFI**	**IFI**	**TLI**	**CFI**	**RMSEA**
222.233***	46	4.831	0.905	0.918	0.911	0.916	0.071

In general, the fit indices for the intervening effects of cash management techniques on financial performance and firm value of selected publicly listed manufacturing firms in Nigeria in Table 4.5 demonstrate that the structural model is satisfactory with CMIN/DF, GFI, IFI, TLI and CFI equals to 4.831, 0.905, 0.918, 0.911 and 0.916 respectively. The RMSEA was acceptable at 0.071.

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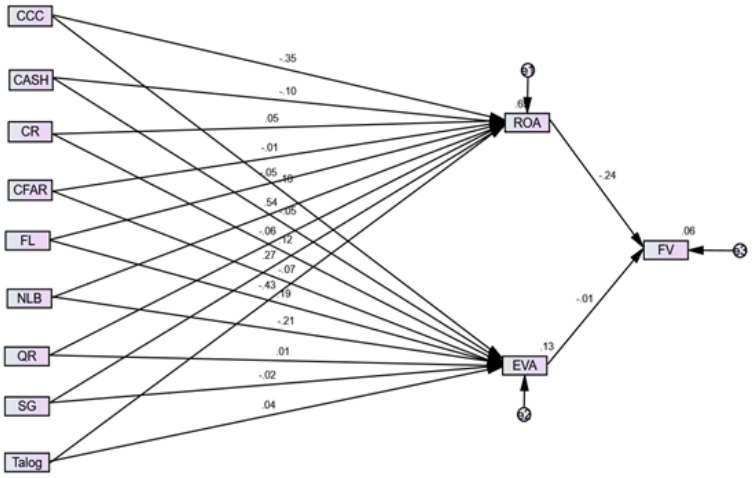
Figure 4.1: The Structural Model for effects of cash management techniques on financial performance and firm value of selected publicly listed manufacturing firms in Nigeria



Source: Author's AMOS 23 Result

Table 4.6: Direct Path Result

Relationship	Standardized Estimates	Standard Error	Critical Ratio	P-Value
CCC → ROA	-0.362	0.023	-15.610	0.000
CASH → ROA	-0.060	0.013	-4.459	0.000
CR → ROA	0.128	0.054	2.380	0.017
CFAR → ROA	-0.011	0.025	-0.429	0.668
FL → ROA	-0.033	0.016	-2.042	0.041
NLB → ROA	0.228	0.010	23.720	0.000
QR → ROA	-0.025	0.095	-2.742	0.006
SG → ROA	0.096	0.008	12.029	0.000
Talog → ROA	-1.572	0.083	-18.934	0.000
CCC → EVA	0.115	0.028	4.088	0.000
CASH → EVA	-0.020	0.013	-1.234	0.217
CR → EVA	0.212	0.065	3.268	0.001
CFAR → EVA	-0.052	0.030	-1.704	0.088
FL → EVA	0.101	0.020	5.102	0.000
NLB → EVA	-0.063	0.012	-5.406	0.000
QR → EVA	0.003	0.011	0.248	0.804
SG → EVA	-0.005	0.010	-0.548	0.583
Talog → EVA	0.103	0.100	1.030	0.303
ROA → FV	-0.477	0.079	-6.017	0.000
EVA → FV	-0.026	0.110	-0.235	0.814

Source: Author's AMOS 23 Result

The SEM result in Table 4.6 is the direct path coefficient between cash management techniques, financial performance and firm value. It is observed from the result that cash

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conversion cycle has a negative and significant influence on return on assets with estimated β (CR) value = −0.362(−15.610) at 5% significant level. It means that one percentage increase in cash conversion ratio will reduce the return on assets of quoted manufacturing companies in Nigeria by 0.362%. The result also reveal that CASH has negative and statistically significant effect on return on assets with estimated β (CR) value = −0.060(−4.459) at 5% significant level. This implies that one percentage increase in CASH will decrease the return on assets of quoted manufacturing companies in Nigeria by 0.060%.For current ratio, the result in Table 4.6 shows that increase in current ratio positively and significantly affect return on assets with estimated β(CR) value = 0.128(2.380) at 5% significant level. It means that one percentage increase in current ratio will increase the return on assets of quoted manufacturing companies in Nigeria by 0.128%. The result table disclose that cash flow adequacy ratio has negative and statistically non-significant effect on return on assets with estimated β(CR) value = −0.011(−0.492) at 5% significant level. Therefore, one percentage increase in cash flow adequacy ratio will decrease the return on assets of quoted manufacturing companies in Nigeria by −0.011%, although, it is not meaningful. Further, the financial leverage influences return on assets negatively and it is statistically significant at 5% with estimated β (CR) value = −0.033(−2.042). It implies that return on assets decrease by 0.033% in the Nigerian quoted manufacturing companies for any percentage increase in financial leverage.

The result also reveal that net liquidity balance has positive and statistically significant effect on return on assets with estimated β (CR) value = 0.228(23.720) at 5% significant level. This implies that one percentage increase in net liquidity balance will increase the return on assets of quoted manufacturing companies in Nigeria by 0.228%. For quick ratio, the result shows that increase in quick ratio negatively and significantly affect return on assets with estimated β(CR) value = −0.025(−2.742) at 5% significant level. It means that one percentage increase in quick ratio will decrease the return on assets of quoted manufacturing companies in Nigeria by 0.025%. The result table disclose that sales growth has positive and statistically significant impact on return on assets with estimated β (CR) value = 0.096(12.029) at 5% significant level. Therefore, one percentage increase in sales growth will increase the return on assets of quoted manufacturing companies in Nigeria by 0.096%. Finally, the natural log of total asset influences return on assets negative and it is statistically significant at 5% with estimated β(CR) value = −1.572(−18.934). It implies that return on assets decrease by 1.572% for any percentage increase in natural log of total asset.

Secondly, it is observed from the result that cash conversion cycle has a positive and significant effect on economic value added with estimated β(CR) value = 0.115(4.088) at 5% significant level. It means that one percentage increase in cash conversion ratio will increase the economic value added of quoted manufacturing companies in Nigeria by 0.115%. The result also reveal that CASH has negative and statistically non-significant impact on economic value added with estimated β(CR) value = −0.020(−1.234) at 5%

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significant level. This implies that one percentage increase in CASH will decrease the economic value added of quoted manufacturing companies in Nigeria by 0.020%, although, it is not meaningful. For current ratio, the result shows that increase in current ratio positively and significantly affect economic value added with estimated β(CR) value = 0.212(2.380) at 5% significant level. It means that one percentage increase in current ratio will increase the economic value added of quoted manufacturing companies in Nigeria by 0.212%. The result table disclose that cash flow adequacy ratio has negative and statistically non-significant effect on return on assets with estimated β (CR) value = -0.052(-1.704) at 5% significant level. Therefore, one percentage increase in cash flow adequacy ratio will decrease the economic value added of quoted manufacturing companies in Nigeria by −0.052%, although, it is not meaningful. Further, the financial leverage influences economic value added positively and it is statistically significant at 5% with estimated β (CR) value = 0.101(5.102). It implies that economic value added increase by 0.101% in the Nigerian quoted manufacturing companies for any percentage increase in financial leverage. The result also reveal that net liquidity balance has negative and statistically significant effect on return on assets with estimated β(CR) value = −0.063(−5.406) at 5% significant level. This implies that one percentage increase in net liquidity balance will decrease the economic value added of quoted manufacturing companies in Nigeria by −0.063%.

For quick ratio, the result shows that increase in quick ratio positively and non-significantly affect economic value added with estimated β(CR) value = 0.003(0.248) at 5% significant level. It means that one percentage increase in quick ratio will increase the economic value added of quoted manufacturing companies in Nigeria by 0.003%, however, it is not meaningful. The result in the table disclosed that sales growth has negative and statistically non-significant impact on economic value added with estimated β(CR) value = −0.005(−0.548) at 5% significant level. Finally, within the variables that directly affect economic value added, the natural log of total asset influences economic value added positively and it is statistically significant at 5% with estimated β(CR) value = 0.103(1.030). It implies that economic value added increase by 0.103% for any percentage increase in natural log of total asset, but it is not meaningful. On the other hand, return on assets has negative and significant impact on firm value with estimated β(CR) value = −0.477(−6.017), while economic value added has a negative and statistically non-significant effect on firm value with estimated β(CR) value = −0.026(−0.235), at 5% significant level. This implies that a percentage increase in return on assets will meaningfully decrease firm value by 0.477%, while a percentage increase in economic value added will decrease firm value by 0.026% but not meaningfully.

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Table 4.7: Indirect Path Result

Relationship	Standardized Estimates	Standard Error	Critical Ratio	P-Value
ROA mediates CCC and FV	0.171	0.031	5.637	0.000
ROA mediates CASH and FV	0.029	0.008	3.667	0.000
ROA mediates CR and FV	-0.062	0.028	-2.206	0.027
ROA mediates CFAR and FV	0.005	0.012	0.439	0.667
ROA mediates FL and FV	0.016	0.008	1.952	0.051
ROA mediates NLB and FV	-0.111	0.019	-5.837	0.000
ROA mediates QR and FV	0.119	0.047	2.524	0.012
ROA mediates SG and FV	-0.043	0.008	-5.394	0.000
ROA mediates Talog and FV	0.748	0.130	5.752	0.000
EVA mediates CCC and FV	-0.003	0.013	-0.236	0.813
EVA mediates CASH and FV	0.001	0.002	0.234	0.814
EVA mediates CR and FV	-0.005	0.023	-0.236	0.811
EVA mediates CFAR and FV	0.0005	0.006	0.234	0.815
EVA mediates FL and FV	-0.003	0.011	-0.236	0.814
EVA mediates NLB and FV	0.002	0.007	0.236	0.813
EVA mediates QR and FV	-0.0001	0.0004	-0.179	0.858
EVA mediates SG and FV	0.0002	0.001	0.214	0.831
EVA mediates Talog and FV	-0.003	0.012	-0.231	0.818

Source: Author's AMOS 23 Result

Table 4.7shows the indirect effect of cash management techniques on firm value mediated by return on assets and economic value added, and following Baron and Kenny (1986) indirect effect analysis procedures. The result revealed that not all mediation was supported. First, cash conversion cycle indirectly, positively and significantly affects firm value through return on assets as a mediating variable (β = 0.171; CR-value = 5.637). Therefore, when cash conversation cycle goes up by one percentage, firm value goes up by 0.171% in the presence of return on assets. Second, the standardized indirect (mediated by return on assets) effect of CASH on firm value is positive and significant (β = 0.029; CR-value = 3.667). It means that when CASH goes up by one percent, firm value goes up by 0.029% with return on assets acting as the mediator. Third, the standardized indirect (mediated by return on assets) effect of current ratio on firm value is negative and significant (β = −0.062; CR-value = −2.206). This implies that when current ratio goes up by one percent, firm value reduces by 0.062%with return on assets acting as the mediator.

Fourth, the standardized indirect (mediated by return on assets) effect of cash flow adequacy ratio and financial leverage on firm value is positive and non-significant (β = 0.005, CR-value =0.439; β = 0.016, CR-value =1.952). So, return on assets does not mediate the relationship between cash flow adequacy ratio, financial leverage and firm value. Fifth, net liquidity balance indirectly, negatively and significantly affects firm value through return on assets as a mediating variable (β = −0.111; CR-value = 5.637). Therefore, when net liquidity balance increases by one percent, firm value decreases by 0.111%in the presence of return on assets. Sixth, the standardized indirect (mediated by

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return on assets) effect of quick ratio on firm value is positive and significant (β = 0.119; CR-value = 2.524). It means that a percentage increase in quick ratio, firm value increases by 0.119% with return on assets acting as the mediator. Seventh, the standardized indirect (mediated by return on assets) effect of sales growth on firm value is negative and significant (β = −0.043; CR-value = −5.394). This implies that when sales growth increases by one percent, firm value reduces by 0.043%with return on assets acting as the mediator. Finally, the standardized indirect (mediated by return on assets) effect of natural log of total assets on firm value is positive and significant (β = 0.748, CR-value =5.752). Therefore, percentage increases in natural log of total assets will increases firm value by 0.748%with return on assets as the mediator. However, on the other hand, the standardized indirect (mediated by economic value added) effect of cash conversion cycle, CASH, current ratio, cash flow adequacy ratio, financial leverage, net liquidity balance, quick ratio, sales growth and natural log of total assets on firm value is non-significant. Therefore, return on assets does not mediate the relationship between cash conversion cycle, CASH, current ratio, cash flow adequacy ratio, financial leverage, net liquidity balance, quick ratio, sales growth, natural log of total, and firm value.

5. CONCLUSION AND RECOMMENDATIONS

The effect of cash management techniques on financial performance and firm value of manufacturing firms in Nigeria was investigated for the relevant period (2008 – 2020). The study employed structural equation model estimation and fathomed that manufacturing firms with adequate liquid resources (sound cash flow management) and high liquidity ratios perform better than others do in this era of persistent liquidity squeeze and stricter loan covenants / conditions. However, the manufacturing firms in reality stockpile enough cash to avoid the wrath of trade creditors and debenture holders. Results indicate that some cash management techniques: cash conversion cycle, cash and cash equivalent, cash flow adequacy ratio and financial leverage have positive effect on firm value through the mediation of return on assets. This aligned to Trade-off theory and financial hierarchy (Pecking Order) theory of cash management. The implication is that size of cash balance is relevant (essential provision of an optimal tradeoff between being liquid and being profitable) to these firms. Also, all the variables under study revealed non-significant effect of cash management techniques on firm value through economic value added. This is in contrast to the positions of stakeholder and economic value added theories of fairness. In lieu of the fact that return on assets uses information from income statement and accrual accounting requires subjective elements like deferrals, allocations, and valuation in the determination of net income, solely reliance on result arrived through the mediation of ROA could lead to incorrect decision. Much consideration should be given to EVA, which involves using adjustment items to reflect the true economic value of a firm by freeing the measurement of business performance from the vagaries of accounting conventions and aligns the interests of managers with those of the owners.

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The recommendations are derived from the findings.

i. Firms in the manufacturing sector should minimize the cash conversion cycle length employing the most effective credit collection policies and terms taken cognizance of the reputation of their firm in relation to suppliers / creditors.

ii. Management of the firm should be familiar with the liquidity-profitability trade-off to facilitate maintenance of optimal cash balances using such models as Baumol's model, Miller-Orr model and so on. Efficiency on this will minimize bankruptcy, interest and other costs.

iii. Adequate liquid and other current assets should be maintained by the firms to cover maturing liabilities / loan obligations. Particularly, in this era (post covid financial crisis), it is extremely costly to borrow from outside sources or renegotiate old loan covenants.

iv. The firms studied should maintain adequate cash flow planning and control synced with sound cash budgets adjusted continuously employing feedback loop.

v. Manufacturing firms should opt for an optimal capital structure at least in the short run as it boosts both liquidity and profitability that will cover owner's interest.

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