

Determinants of Working Capital Management: A Case of Listed Manufacturing Companies in Tanzania

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Abstract: The study examines on the determinants of working capital management. The study came about following a necessity of managing working capital for efficient running of firm's day-to-day operations. By taking samples of 10 manufacturing firms listed in Dar es Salaam stock exchange period of 2012-2023. It is found that there are positive and significant effects of firm size, profitability and cash conversion cycle on working capital, while leverage and capital expenditure revealed to be positive and insignificant determinant of working capital management. Moreover, firm growth and cash flows found to be negative and significant determinant of working capital. It is from those results of analysis, this study recommends the financial managers to efficiently focus much on managing firm size, profitability and gross domestic product while less effort being subjected to firm leverage and capital expenditures to sales management.

Keywords: working capital management; firm size; firm growth; cash conversion cycle; leverage; operating cash flow; profitability and capital expenditures

1. Introduction

Working capital management is a managerial practice which has been attracting attention of most of discussions in financial management. Under working capital management, the firm aimed at attaining surplus working capital [1]. Working capital management entails on the management of current liabilities against current assets the firm own [2]. Working capital management involves the use of current assets in recovering or settling current liabilities [3]. Effective working capital management helps in sustaining short and long term plans.

Effective working management revealed to be determined by using profitability [4]; firm growth [5]; leverage [4]; capital expenditure [4]; operating cash flow [5]; cash conversion cycle [5]; and firm size [5].

Firm size is determined in terms of net asset value [6]. Moreover, firm size entails on the amount of assets the firm own. It is with great possession of internal assets in which a firm is financed by internal source which is now the assets the firm own [7]. Thus, adequate holding and efficient use of assets, the firm owns is used to settle for liabilities it owes [7].

The firm growth implies on marginalized sales, profit and capital of the company earn [8]. It is with growth of the firm in which profit earned is used to finance both short term and long term plans. Thus and it is obvious that large companies are subjected to less funding than smaller companies [9]. This is because of less asymmetric information flow regarding funding and also less funding than smaller companies. This is because less asymmetric information regarding funding and also less funding of firm operations is due to less cost used

in acquiring external debt financing.

Cash conversion cycle is the cash sophistication time of current-liquid assets [9]. Longer cash conversion cycle lead into deficit working capital [10]. In Opposite, the shorter the cash conversion cycle shows the extent to which the firm is liquid [10]. Therefore, the shorter the cash conversion cycle implies liquidity of the firm to be able to finance current liabilities /or short term plans. This is because long cash conversion cycle means the firm faces the problem of insolvency. This either narrows the ample for firm finance daily operations.

Firm leveraging is financing capability of the firm [11]. It is from financing of firm operations using current assets what generate income. Moreover, allocation or use of current assets is important in meeting fixed expenses such as administration costs, selling and distribution expenses [12]. It is from efficient allocation of current assets in settling these expenses where the firm earns operating profit in return [13]. The obtained operating profit is used to settle the current liabilities which fall due [14].

Cash flows, reported by [15] to be important determinant of effective working capital management. Cash inflows from operations may be used in funding the firm operations. Operating cash inflows is the profit before deducting taxes and interest [16]. But to obtain net cash flows from operations, depreciation, intangible asset amortization, decrease in current assets and increase in current liabilities [17]. It is from a finance obtained from operation which is used to settle short term obligations. Operating cash flows are used to finance day to day firm operations in which the income generated in turn creates firms' liquidity.

Profitability revealed to sustain surplus working capital [18]. Profitability is the results of execution of net profit, gross profit, profit before and after interest and tax due to excel of assets, equity and capital employed. The profit obtained from execution of current assets, total assets, equity, capital employed is used to fund short term plans [19] and settling for current liabilities. Examples of profitability ratios which indicate firm profitability include return on assets and return on capital employed.

Capital expenditures imply investment on fixed or producer assets [20]. Capital expenditures spent on fixed assets are revealed on sales extracted [21]. Capital expenditures are recognized in terms of return on investments [22]. Capital expenditures imply an efficient allocation of fixed capital on projects. Investments on projects are motivated to earn profit in more than 1 financial year. Thus, capital expenditures produce returns which are time and risks discounted [23]. Investments on capital goods accumulate for incremental cash flows fasten in a 2nd, 3rd, 4th, 5th and so on financial years. This is either a long term profit earned subjected to changes or thus returns from investment is used to finance long term plans.

[24] in Thailand examined the role of working capital in service sector. This is study exposed two results; first is that net liquidity balance and corporate investments are positively and significantly related and second is that corporate investments and working capital are negatively related. Further, [24] found that in Thailand service firms are efficiently running their working capital and producing high levels of liquidity to fulfill the requirements of investments.

In Malaysian [25] examined the determinants of working capital management of management of Malaysian firms for the period of six years. The study used cash conversion cycle as major measure of the working capital management from which it was found out that firm size, debt ratio and growth of the company, economic growth and inflation all have positive influence on working capital management. Findings in Malaysia conclude that during inflationary period firms reduce the amount of working capital and inflation rate is inversely related.

The background reviews shown on the influence of cash conversion cycle and liquidity condition on performance of the firm but the current study has investigated the influencing factors of effective working capital management. Effective working capital management details on sustaining surplus working capital for steady financing of business operations and plans. Moreover, the current study used different target population (manufacturing firms) and area of research i.e., Tanzania.

2. Literature Review

2.1. Theoretical Literature Review

The study adopted Liquidity Theory founded by [26]. Liquidity theory postulates on creating surplus

working capital. Surplus working capital occur when net current asset is positive resulted from the greater current assets over the underlying current liabilities. Attaining this condition, the management needs to be strategic. Being strategic, the financial management unit of the firm requires being adapted to factors influencing surplus working capital [27]. Working capital management is a crucial aspect to be maintained for sustainable financing of the firm operations [28]. Effective working management has revealed to be a tool appropriate for firm survival and attainment of competitive edge.

Surplus working capital revealed to be a function of firm size, firm growth and cash conversion cycle. Thus, the liquidity theory failed to stipulate on how sustainable liquidity condition is to be attained. Steady liquidity condition of a firm is influenced by both short term and long term strategies called determinants, the theoretical gap uncovered by the current study. Thus, sustainable liquidity of the firm is a function of perpetual ingredients of both short and long plans. Thereto, to be attained to solvency (liquidity) condition a firm needs to be assured with adequate firm size, firm growth, short conversion cycle, promote leverage finances, operating cash flows, profitability and capital expenditures.

2.2. Empirical Literature Review

In Greece [29] used cash conversion cycle as a sign of firm liquidity. [29] furthermore, find out relationship between cash conversion cycle with current and quick ratios and also examined the implications of conversion cycle in terms of firm size, profitability and debt ratios. They also determined significant and positive relationship between cash conversion cycle and traditional liquidity measures of profitability as well as with result on assets and net profit margin. Besides all these they studied that current and quick ratios have negative relationship to debt-to-equity ratio and positive one with time interest earned ratio. This study specified that cash conversion cycle has no linear relationship with the leverage ratios. All these results based on the sample of food industry exist in Greek and methods of correlation and regression analysis of financial data were used in their study.

[30] studied to examine the relationship between working capital management and firms' performance from a sample of 1009 non-financial companies registered in Belgian America. Results of the study showed negative relationship between gross profits and the average period of receivables, inventories, payables. According to [30] managers can generate the value for stockholders by reducing the time periods of inventories and receivables to minimum level. Further, [30] concluded that value of the firms maximizing function only at a specific level of working capital.

[31] in Pakistan stated a range of factors that explained working capital requirements of manufacturing firms listed in Karachi Stock Exchange (KSE) in the study. Sample size of the study was of 204 manufacturing firms listed in KSE- Pakistan covering duration from 1998-2006. Moreover, [31] determined significant relation between working capital management and internal factors of firms i. e. operating cycle of a firm, return on assets, leverage and tobin's Q ratio. Finally, [31] suggested that manufacturing firms listed in Pakistan enhance their profitability by investing in short term assets.

The theoretical and empirical studies above have shown on the factors influencing working capital management but not effective working capital management what the current study has stipulated on. The effective working capital management creates surplus working capital for sustainable financing of the firm operations both short and long term ones. It is from this ought in which seven factors have been discussed i. e. firm size, firm growth, cash conversion cycle, leverage, operating cash flow, profitability and capital expenditures. This is a contextual difference which hold similar results as that on the differences over the targeted population, area of survey and methodology while other studies have mostly used questionnaires in collection of primary data, the current study has used secondary data sources. The time line for this study was from 2012 to 2023 involving 10 manufacturing firms listed in Dar Es Salaam Stock Exchange.

3. Methodology

3.1. Sample and Data

The study sample included 10 exchange market listed firms employed in the manufacturing sectors using annual data from 2012 to 2023 with 210 observations in total. Data was extracted from annual reports of the listed manufacturing firms in Dar es Salaam stock exchange (DSE). The annual data for 2015, 2020 were not available in the DSE website. The selection of the sample was based on the availability of the data, their importance and contribution towards the economy improvement of the country.

Deductive methodology with explanatory with an explanatory research design was used in this study. The objective of this approach is to establish a causal connection between the variables. The deductive method involves analyzing the individual matters in forming aggregates.

3.2. Model Estimation

The following static panel model was used from which multiple linear regression methods were employed. The model of this research paper may be formulated as follows:

$$WC = \beta_0 + \beta_1 \text{SIZE} + \beta_2 \text{GROWTH} + \beta_3 \text{CCC} + \beta_4 \text{LEV} + \beta_5 \text{CFL} + \beta_6 \text{ROA} + \beta_7 \text{CEX} + \varepsilon$$

Notes: WC: working capital

SIZE: firm size

GROWTH: firm growth

CCC: Cash conversion cycle

LEV: Leverage

CFL: Operation cash flow to sales

ROA: return on assets

CEX: Capital expenditures to sales

$\beta_1, \beta_2 \dots \beta_7$: regression coefficient of each independent variable

ε : term of error

4. Results and Discussion

This study used panel data, which is the mixture of cross section and time series. In order to determine the best regression model in research model the following were included logit regression testing (See Table 1) and symmetric measurement models (See Table 2 and 3). Furthermore, the multiple regression testing concludes that symmetric measures are the best panel data examination model for this research model. The output from the estimation of the symmetric measures included weighted and un-weighted statistics testing for this investigation.

Based on the investigation results on the model regression above, it can be seen that the F examination value is at 12.0274 with the significance of 0.0005, where it is required that significance is to be at $F < 0.05$ so that, it is concluded that these variables simultaneously influence dependent variables. This means if firm size, growth, leverage, operation cash flows, profitability measured in term of return on assets and capital expenditures experience increase at the same time it will have an impact on the increase of working capital and vice versa. With the presence of significance that is below 0.05, the regression model from this research paper can be accepted because the regression coefficient can be accepted.

In addition, from the adjusted R^2 value, it can be seen that the independent variables in the regression model, namely firm size, firm growth, leverage, cash flow, profitability and capital expenditure can explain the dependent variable; working capital at 5 percent, while the rest is explained by other variables outside the model.

Table 1. Regression analysis test results.

Dependent Variable: WC
Method: Panel data
Sample: 2012–2023

Cont.

Dependent Variable: WC				
Periods included: 12				
Cross sections included: 110				
Total observations: 210				
	Coefficient	std error	t-statistic	Prob.
Constant	3.0145	3.1712	0.8086	0.4200
SIZE	0.3204	0.1285	2.7421	0.0518
GROWTH	-2.2310	0.8246	2.6882	0.0085
CCC	758.9201	257.0572	1.0809	0.2847
LEV	0.7421	0.5326	1.0785	0.3672
CFL	-0.0825	0.0276	-3.2657	0.0010
ROA	4.9852	2.3421	2.3625	0.0257
CEX	0.4297	0.3901	1.0609	0.3290

WC=working capital; SIZE=firm size; GROWTH = firm growth; CCC= cash conversion cycle; LEV= leverage; CFL=operation cash flow to sales; ROA= return on asset (profitability); CEX= capital expenditures to sales. Source: Authors' computations.

Meanwhile from the results of t-test examination (partial), probability value that is bigger than 5 percent is discovered, namely leverage and capital expenditure. Meanwhile the independent variables with probability value which is smaller than alpha on the t-test examination result above, namely firm growth and cash flow show insignificant results on the level 1 percent, cash conversion cycle and profitability that show significance level at 5 percent as well as firm size that has significance at 10 percent.

Table 2. Symmetric Weighted Statistics.

R- Squared	0.0532
Adjusted -R-Squares	0.0524
Standard Error of Regression	3.7520
F-Statistics	6.1420
Prob. (F-Statistic)	0.0005
Mean dependent variable	3.5742
Standard deviation of dependent variables	4.4798
Sum Squared residual	7512.431
Durbin-Watson statistics	1.8567

Source: authors' computations.

Table 3. Symmetric Un-weighted Statistics.

R-Squared	0.0306
Sum-squared residual	13316.6701
Mean dependent variable	12.0274
Durbin-Watson statistics	2.1089

Source: authors' computations.

Based on the output results above, it can also be noticed that each of independent variables like firm growth, profitability (returns on assets) and cash flow has negative direction but significantly influence working capital management reflected on cash conversion cycle; mean while each of independent variables, firm size, leverage,

capital expenditure and cash conversion cycle has positive influence, but both leverage and capital expenditures do not have significance influence towards toward working capital management reflected on cash conversion cycle.

5. Conclusion

Working capital management is a financial managerial practice aim at creating surplus working capital. Surplus working capital details on the greater value on firm liquidity for amending current liabilities a firm is obliged to. From the analysis it is revealed that firm size, profitability and cash conversion cycle have a positive and significant effect on working capital management. Meanwhile, firm growth and cash flow have negative and significant effect on working capital management. Both leverage and capital expenditures to sales have positive but insignificant effect on working capital management. It is from this conclusion which shows that financial manager has to be more focused on managing firm size, profitability (ROA) and cash conversion cycle. On the other hand less effort is to be put in managing leverage and capital expenditures.

Funding

Not applicable.

Institutional Review Board Statement

Not applicable.

Informed Consent Statement

Not applicable.

Data Availability Statement

Not applicable.

Conflicts of Interest

The author declares no conflict of interest.

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