Chapter 1
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Relationship between Working Capital Management and Profitability

Gwatako Tago [a++] and Ntui Ponsian [b++*]

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ABSTRACT

Business is crucial for a country's capital formation and plays a vital role in a growing economy. So, effective management is essential. Fund managers face the challenge of procuring and deploying funds for maximum returns. The purpose of this study is to find out the effect of working capital management on company profitability. In light of this objective, the study adopted quantitative approaches to test the research hypotheses. A sample of three (3) manufacturing companies listed on the Dar es Salaam Stock Exchange (DSE) was used for a period of ten years (2002-2012) with a total of 30 observations. Annual financial statements (statement of comprehensive income and statement of financial position) for the period of ten years from 2002 to 2012 were used to collect data for this study. The data was analyzed on a quantitative basis using Pearson's correlation and Regression analysis (Ordinary Least Square). The main findings from the study are; Firstly, there exists a positive relationship between the cash conversion cycle and profitability of the firm. This means if the cash conversion cycle increases it will lead to an increase in the profitability of the firm, and managers can create a positive value for the shareholders by increasing the cash conversion cycle to a reasonable level. Secondly, there is a negative relationship between liquidity and profitability showing that as liquidity decreases, the profitability also increases. Thirdly, there exists a highly significant negative relationship between average collection period and profitability indicating that a decrease in the number of days a firm receives payment from sales affects the profitability of the firm positively. Fourthly, there is a highly significant positive relationship between the average payment period and profitability. This implies that the longer a firm takes to pay its creditors, the more profitable it is. Fifthly, there exists a highly significant negative relationship between inventory turnover

[a] *Accounting and Finance, Tanzania Institute of Accountancy (TIA), Tanzania.*
[b] *Accounting and Finance, St. Augustine University of Tanzania (SAUT), Tanzania.*
[++] *Lecturer;*
**Corresponding author: E-mail: ponsianproti@yahoo.com;*

in days and profitability hinting that firms which maintain sufficiently low inventory levels reduce the cost of storing the inventory which results in higher profitability. The management of working capital is one of the most important financial decisions of a firm. A sufficient level of working capital should be present for the smooth running of a company regardless of the nature of the business. Future research should investigate the generalization of the findings beyond the companies listed on the Dar es Salaam Stock Exchange.

Keywords: Working capital; profitability; manufacturing companies; Dar es Salaam stock exchange; Tanzania.

1. INTRODUCTION

Business plays a vital role in the capital formation of a country and people consider it as the lifeblood of a growing economy. Therefore, it is very important to manage business effectively and efficiently. One of the major issues encountered by fund managers today is not just the procurement of funds but also their meaningful deployment to generate maximum returns. Working capital management is a financial strategy that involves optimizing the use of working capital to meet day-to-day operating expenses while helping ensure the company invests its resources in productive ways [1,1a]. Working Capital Management (WCM) is an important corporate financial decision since it directly affects the profitability of the firm. It can be a competitive advantage for firms as it has an effect on profitability and liquidity [2,3]. Working capital management efficiency is vital, especially for manufacturing firms, where a major part of assets is composed of current assets especially inventory and trade receivables, Arunkmar and Ramanan [4].

Efficient working capital management represents an important tool for optimizing a firm's liquidity and exploiting its value-creating potential [5]. It mainly represents the current assets of a firm which is the portion of financial resources of the business that change from one type to another during the day-to-day execution of business Deloof [6]. Current assets mainly comprise cash, prepaid expenses, short-term investments, accounts receivable and inventory. Net working capital can be measured by deducting the current liabilities of a firm from its current assets. If the value of current assets is less than that of current liabilities, net working capital would have a negative value showing a deficit working capital. When a business entity makes decisions regarding its current assets and current liabilities it can be termed working capital management [6a]. The management of working capital can be defined as an accounting approach that emphasizes maintaining proper levels of both current assets and current liabilities. Working capital management provides enough cash to meet the short-term obligations of a firm, Raheman and Nasr [7].

Profitability can be termed as the rate of return on investment. If there is an unjustifiable over-investment in current assets, this would negatively affect the rate of return on investment, Raheman and Nasr [7]. The basic purpose of managing working capital is controlling of current financial resources of a firm in

such a way that a balance is created between the profitability of the firm and the risk associated with that profitability, Lazaridis and Tryfonidis [8].

Every business requires working capital for its survival. Working capital is a vital part of business investment which is essential for continuous business operations. It is required by a firm to maintain its liquidity, solvency and profitability, Lazaridis and Tryfonidis [8]. Working Capital management explicitly impacts both the profitability and level of desired liquidity of a business. Hence, it may have both a negative and positive impact on a firm's profitability, which in turn, has a negative and positive impact on the shareholders' wealth, Raheman & Nasr [7] [6a]. If a firm invests heavily in working capital i.e. more than its needs, the profits which can be generated by investing these resources in fixed or long-term assets diminish. Moreover, the firm has to endure the cost of storing inventory for longer periods as well as the cost of handling excessive inventory, Arnold [9].

It is therefore a critical issue to know and understand the effects of working capital management and its influence on a firm's profitability. Indeed, a lot of research [10,8,11,12,13,7,36,1a] has been conducted in different countries to show the effects of working capital components on a firm's profitability. However, since Tanzania differs from developed and other developing countries in terms of capital markets, economy and infrastructural development, this limited evidence in the context of Tanzania along with the importance of working capital management calls for research on the effects of working capital management on company's profitability. So, the aim of this study is to find out the *effects of working capital management on company profitability focusing on listed companies on the Dar es Salaam Stock Exchange (DSE).*

1.1 Motivation to Study

Working capital management is of particular importance to profitability growth. This is because, without proper management of working capital, it is difficult for the firm to run its operations smoothly. That is why Brigham and Houston [14] conclude that about 60 percent of a typical financial manager's time is devoted to working capital management [6a]. Hence, the crucial part of managing working capital is maintaining the required liquidity in day-to-day operations to ensure the firm's smooth running and to meet its obligations, Eljelly [15]. Further, working capital management has been a major issue, especially in developed countries and as a result, in order to explain the relationship between working capital management and profitability research has been carried out in different parts of the world, especially in developed countries.

Researchers in the field of working capital include; Teruel and Solan [16] who suggest that managers can create value by reducing their firm's number of days of accounts receivables and inventories. Similarly reducing the cash conversion cycle also enhances the firm's profitability [6a]. Another study is by Deloof [6] whereby it took into account all firms within geographical areas. However, despite the importance of working capital management, this issue failed to attract

the attention of researchers in Tanzania. Studies by [6,8,11,12,13,7,36] used all the firms in a geographical area but this research has a view of only public manufacturing companies listed on the Dar es Salaam Stock Exchange (DSE). This is because most research has been conducted outside Tanzania and in reality, there is a big difference in overseas companies in terms of capital invested, size of companies and capital markets compared to the Tanzanian companies. In addition, this research will use only the manufacturing sector, unlike previous studies like Falope and Ajilore [6] which included together purely manufacturing firms and service rendering firms (e.g. hospitals, aviation firms, trading companies) without considering the fact that working capital management requirements and practices differ across broad categories of firms. This study attempts to fix this weakness by focusing only on manufacturing firms listed on the DSE.

2. LITERATURE REVIEW

2.1 Relationship between Average Collection Period and Profitability

Research shows that working capital management has two primary objectives, including increasing a firm's profitability and sustenance of adequate liquidity that is useful in addressing short-term obligations while falling [32]. Since profitability is determined by the shareholder's interest in maximizing profit, one should assess whether returns will be favorable prior to investment of working capital. Kademi et al. [1a] argue that a firm must develop working capital policies of not only inventory and trade receivables but also cash as well as short-term investments to limit inefficiency and illiquidity.

The average collection period refers to the average length of time required to convert the firm's receivables into cash following a sale. It is calculated by dividing accounts receivable by the average credit sales per day. This ratio measures the length of time it takes to convert the average sales into cash. This measurement defines the relationship between accounts receivable and cash flow. A longer average collection period requires a higher investment in accounts receivable. A higher investment in accounts receivable means less cash is available to cover cash outflows, such as paying bills [6a].

Mekonnen [17] shows that there is a statistically significant negative relationship between profitability and average collection period. This result suggests that firms can improve their profitability by reducing the number of day's accounts receivable outstanding. Also, this can be interpreted as the less time it takes for customers to pay their bills, the more cash is available to replenish inventory hence the higher the sales realized leading to high profitability of the firm.

The negative relationship between the average collection period and profitability suggests that an increase in the number of day's accounts receivable by 1 day is associated with a decline in profitability. Through this, managers can improve

profitability by reducing the credit granted to their customers, Lazaridis and Tryfonidis [8].

According to Tahir and Baloch [28], the effort put into managing working capital promotes return on not only assets but also equity. Research on firms identified by the Pakistan Stock Exchange, which are involved in manufacturing chemicals and pharmaceuticals also links the profitability of a corporation with working capital management. Debts impact profitability negatively, which helps understand why financial managers are discouraged from borrowing excessively [29].

Working capital that is managed efficiently using capital structure, as well as asset management, often yields higher profitability since it optimizes the utilization of assets together with financial strategies during economic challenges and competitive environments [30]. Working capital management also impacts non-financial firms such as those provided in NEPSE. The current ratio as well as the debt ratio have negative implications, whereas the current assets ratio impacts profitability positively.

The long duration of converting assets to cash reduces profitability, impairing with return on assets invested by shareholders in Nigeria [31]. Similarly, an increase in debt collection duration reduces profitability due to the reduction of availability of cash for tapping unanticipated opportunities. Adejuwon and Rasheed [32] concur with Musa et al [31] by indicating that the average collection duration or period affects the firms' return on assets positively. For instance, the days of inventory turnover affected most Nigerian firms' return on equity. In this context, the average payment duration impacted the firms' return on investment significantly [32]. Equally, CCC impacted the selected companies' return on sales significantly. A conclusion that was drawn from Adejuwon and Rasheed's [32] study is that the management of working capital had considerable implications on the performance of firms involved in manufacturing foods and beverages in Nigeria.

Deari and Palomba [33] also observed from their study that companies with shorter CCC recorded better performance due to quick repayment of suppliers and reduction in working capital investments. Contrary to Deari and Palomba (33), Umar and Al-Faryan [34] established that the CCC together with the accounts receivable period (ARP) caused a significant reduction in profitability. Equally, they established that the inventory conversion period (ICP) lowers the return on assets (ROA) considerably although it impacted the inventory conversion period (ICP) positively. Umar and Al-Faryan's [34] inferred that the profitability of firms was significantly increased by the accounts payable period (APP).

The study by Deloof [6], states that managers can increase corporate profitability by reducing the average collection period. The longer the number of day's accounts receivable outstanding, the greater the chance that the firm may lose its profitability. If firms don't manage debtors, they gradually lose control due to

reduced cash flow and could experience an increased rate of bad debts. So the longer someone owes the firm's money, the greater the chance the firm never gets paid. As a result, profit may only be called real profit after the receivables are turned into cash [6a]. Therefore, the management of account receivables is inevitable and largely influenced by the credit policy and collection procedure. A credit policy specifies requirements to value the worthiness of customers and a collection procedure provides guidelines to collect unpaid invoices that will reduce delays in outstanding receivables, Brigham and Houston (2003). So, there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers (receivables collection period) and profitability.

Other authors with the same results of a negative relationship between profitability and average collection period include [10,8,11,12,13,7,4,18,34].

This leads us to propose the following general hypothesis:

> *H_1: There is a negative relationship between the average collection period and profitability.*

2.2 Relationship between Inventory Turnover in Days and Profitability

Inventory turnover in days refers to the average time required to convert materials into finished goods. It is calculated as ($Inventory$/($Cost$ of $goods\ sold$) × 365). The inventory turnover ratio, which represents the efficiency of inventory management, is expected to be high for firms with greater profitability [6a]. A low inventory turnover ratio could indicate either poor sales or an excess amount of inventory, Ruichao [19]. Mansoor and Muhammad [12] showed that managers can improve firms' profitability by shortening the inventory collection period.

Dong [18] focuses on the variables that include profitability, the conversion cycle and its related elements and the relationship that exists between them. The research finds that the relationships among these variables are strongly negative. This denotes that a decrease in profitability occurs due to an increase in the cash conversion cycle. It is also found that if the number of days of account receivables and inventories is diminished then the profitability increases [6a].

Kouaib and Bu Haya [35], who researched Saudi Manufacturers, established that the conversion duration of inventory into sales had negative implications on the performance of companies. A delayed sale of inventory triggered a reduction in profits. Kouaib and Bu Haya [35] also learned that the performance of a company exhibits significant association with cash collection duration from customers, referred to as accounts receivable collection time/period. Accounts receivable collection time/duration that is short enhances collection, which is central to increasing the profitability as well as the performance of a business. Kouaib and Bu Haya [35] also learned that the duration taken to pay creditors is negatively linked with the performance of a company. A short payment duration or period

suggests that a company or organization is addressing its bills together with obligations in time.

Although most empirical research suggests a negative relation between inventory turnover in days and profitability [19,8,11,12,7,18,35], and find contradictory findings on the relationship between inventory turnover in days and profitability. Gill, Biger and Mathur [20] and Mathuva [10] suggest a positive relationship between inventory turnover in days and profitability. Maintaining sufficiently high inventory levels reduces costs of possible interruptions in the production process and loss of doing business due to scarcity of products [10] while investing too much in inventories unnecessarily blocks the funds in working capital that could be invested in revenue-generating activities. Since inventory determines the level of activities in a company, managing it strategically contributes to profitability [14]. The key to managing the inventory of a business is to know how quickly a firm's overall stock is moving, and how long each item of stock sits on shelves before being sold [6a]. Managing inventory is a juggling act. Excessive stocks can place a heavy burden on the cash resources of a business. Insufficient stocks can result in lost sales, delays for customers, etc. The key issue for a business is to identify the fast and slow stock movers with the objectives of establishing optimum stock levels for each category and, thereby, minimizing the cash tied up in stocks. The stock sitting on shelves for long periods of time ties up money which may reduce the profitability of firms.

Thus, in light of the above theoretical grounds, the following research hypothesis is developed:

> *H_2: There is a negative relationship between inventory turnover in days and profitability.*

2.3 Relationship between Average Payment Period and Profitability

The average payment period can be defined as the average length of time between the purchase of materials and labor and the payment of cash for them. It is calculated as; $(Payables/(Purchase) \times 365)$. Account payables play a critical role in managing working capital because delaying bill payments is one of the tools for management to have access to an inexpensive source of financing [6a]. However, the opportunity cost of keeping high account payables may hurt the business if an early payment discount is offered, Ruichao [19]. Payment periods tend to be longer for countries with insufficient and smaller capital markets like Tanzania where there are only 20 listed companies which include 13 domestic companies and 7 foreign companies, Porta et al's study as cited in Ruichao [19].

The working capital management rule states that firms should strive to lag their payments to creditors as much as possible, taking care not to spoil their business relationship. Through this, Mathuva [10] in the study "The Influence of Working Capital Management Components on Corporate Profitability: a Survey on Kenyan Listed Firms" shows that the average payment period has a positive relationship with profitability. The positive relationship suggests that an increase

in the number of day's accounts payable by 1 day is associated with an increase in profitability [6a].

Delaying payment of accounts payable to suppliers allows firms to access the quality of branch products and could be an inexpensive and flexible source of financing. On the other hand, delaying such payables can be expensive if a firm is offered a discount for the early payment. So, there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability, Naimulbari [13].

Pattiasina et al [36] conducted research on the financial data for PT. W Standard Indonesia, which was collected between 2019 and 2022, and established that capital turnover together with cash turnover have positive implications on a firm's profitability. Another key observation from this study is that profitability is also shaped by the accounts payable period. The findings by Pattiasina et al, [36] are consistent with Shuayb et al [37], which showed that Nigerian manufacturing firms recorded increased profitability courtesy of managing their accounts payable period efficiently. Equally, Shuayb et al [37] learned from their WCM in Nigeria Public Listed Manufacturing Companies research that accounts payable that is management efficiently contributes to increased profitability in most manufacturing companies in Nigeria. Accordingly, the working capital turnover has significant implications on the firm's profitability. Equally, cash turnover impacts the profitability of a firm considerably as well as Account Payable Period correlates positively with profitability. In this context, a drop in the collection of sales results in the reduction of profit. Similarly, a study that was conducted on Asian companies particularly the Pakistan Manufacturing Firms showed that inventory together with accounts receivable turnover has a positive effect on the companies' profitability [28].

Although studies by [19,10,13,20,37] show a positive relationship between accounts payment period and profitability other research by [21,17,6,7,22-24] suggests a negative relationship between average payment period and the firm profitability. Garcia-Teruel and Martinez-Solano [25] failed to provide the relationship that exists between the average payment period and profitability.

In view of the earlier explanations we hypothesize as follows:

> *H_3: There is a positive relationship between the average payment period and profitability.*

2.4 Relationship between Cash Conversion Cycle and Profitability

The cash conversion cycle equals the length of time between the firm's actual cash expenditures to pay for productive resources (materials and labor) and its own cash receipts from the sale of products (that is, the length of time between paying for labor and materials and collecting on receivables). The cash conversion cycle thus equals the average length of time a shilling is tied up in current assets [6a]. It is calculated as; (Average Collection Period + Inventory

turnover in days - Average Payment Period) Brigham and Houston [14]. The cash conversion cycle can be shortened in three ways: One, by reducing the inventory conversion period by processing and selling goods more quickly. Two by reducing the receivables period by speeding up collections from sales and three by lengthening payables or deferral period by slowing down the firm's own payments.

Ibrahim et al. [29] claim is supported by Siddalingeshwara [38] who established that WCM has considerable implications on the profitability of manufacturing companies based in India. According to Siddalingeshwara [38], working capital is strongly linked with profitability. The fact that the management of working capital impacts profitability demonstrates the usefulness of firms embracing a short conversion cycle to boost their benefits and enhance their competitiveness in the market. According to Dhanalakshmi [39], shorter CCC results in higher benefits. Equally, research conducted in Kenya showed that the management practices for working capital affect the profitability of companies enlisted on the country's Nairobi Securities Exchange. They affect not only cash handling and current liabilities but also inventory and management of debtors. Improvement of the management of cash holding, liabilities, and inventory as well as debtors leads to increased profitability, as illustrated by firms listed in the NSE.

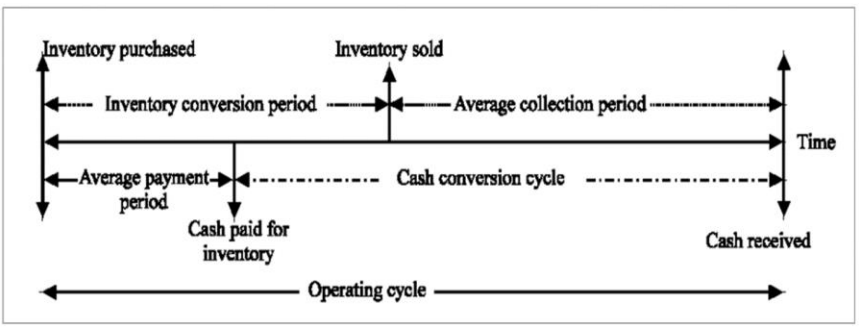

Fig. 1. The Components of Working Capital Management [35]

According to Özkan and Aygün [40], the reduction of the current ratio together with the debt ratio as well as the increase of the current assets ratio in relation to total assets result in increasing profitability. The gathered evidence suggests that the management of CCC gives a clear view of a firm's financial status [6a]. Management of CCC is a critical sign of a firm's financial fitness, considering that lenders or investors look first at the availability of working capital when provided with a balance sheet. The gathered evidence showed that firms that manage their current assets, liabilities, and obligations effectively often find it easy to determine their chances of survival. Similarly, research shows that small firms also benefit from the management of working capital [1a]. Although these firms can reduce their input in fixed assets through leasing equipment or plants, the requirement to invest in cash receivables together with inventories increases

their operation cost. Accordingly, Kademi et al. [1a] established that the management of CCC rarely results in growth of companies involved in the manufacturing of food and beverages.

Naimulbari [13] in the study "The impact of working capital management on profitability" of the pharmaceuticals sector in Bangladesh" shows that there is a negative relationship between the cash conversion cycle and profitability. As the cash conversion cycle has a negative relationship with profitability, this cycle should be short as much as possible without hurting the operations. This would improve profits, because the longer the cash conversion cycle, the greater the need for external financing, and that financing has a cost [6a].

The study by Dong [18], reports that the firms' profitability and liquidity are affected by working capital management. From the research, it is found that the relationship between CCC and profitability is strongly negative. This denotes that a decrease in profitability occurs due to an increase in the cash conversion cycle. Despite many authors postulating a negative relationship between the cash conversion cycle and profitability, [12,17,21,22,23,24,27,33,39], there are studies that indicate a positive relationship between the cash conversion cycle and profitability [20], (Lyroudi & Lazaridis, 2000) [6a].

This leads us to the following hypothesis:

> *H_4: There is a negative relationship between cash conversion cycle and profitability.*

2.5 Relationship between Liquidity and Profitability

Liquidity refers to the amount of cash a company can put its hands on quickly to settle its debts (and possibly to meet other unforeseen demands for cash payments too). For the purpose of this research, the current ratio (CAR) is used as a measure of liquidity and calculated by dividing current assets by current liabilities. Finance managers have to make various types of financial decisions like investment decisions, finance decisions, liquidity decisions and dividend decisions, at different times [6a]. In every area of financial management, finance managers are always faced with the dilemma of liquidity and profitability, hence have to strike a balance between the two, Eljelly [15].

Most of the time, the liquidity goals of a firm are to have adequate cash to pay its bills, to make large unexpected purchases and finally, the firm has an adequate cash reserve to meet emergencies at all times. Whereas, profitability goal on the other hand requires that, the funds of a firm be used so as to yield higher returns. Therefore, when one increases, the other decreases, Brigham and Houston [14] [6a].

Apparently, liquidity and profitability goals conflict in most of the decisions the finance managers make. Higher inventories are kept in anticipation of the increase in prices of raw materials; hence, the profitability goal is approached but the liquidity position of a firm is endangered. In reality, none of the managers

choose any of these two extremes instead they want to have a balance between profitability and liquidity which fulfils their need for liquidity and gives a required level of profitability, Arnold [9].

Mekonnen [17] finds that there is a significant negative relationship between liquidity and profitability. Similarly, Eljelly [15] empirically examines the relationship between profitability and liquidity, as measured by the current ratio and cash gap (cash conversion cycle) on a sample of 929 joint stock companies in Saudi Arabia, and finds a significant negative relationship between the firm's profitability and its liquidity level.

Raheman and Nasr [7] in their study about the effect of different variables of working capital management including average collection period, inventory turnover in days, average payment period, cash conversion cycle, and current ratio on the net operating profitability of Pakistani firms, selected a sample of 94 Pakistani firms listed on Karachi Stock Exchange for a period of six years from 1999 - 2004 and found a strong negative relationship between liquidity (as measured by current ratio) and profitability of the firm [6a].

In contrast, other studies [13, 26] show a positive correlation between gross operating profitability and the current ratio. This shows that as the firm's current ratio increases, the gross operating profitability also increases. In view of this explanation, therefore hypothesize:

H_5: There is a negative relationship between liquidity and profitability.

3. METHODOLOGY

3.1 Research Design

This is a multiple case study research where 30 observations from the three manufacturing companies listed on DSE qualified to have ten years of financial information used for the study. The quantitative research approach was employed to arrive at the conclusions where correlation analysis was used to identify the nature of the relationship of the variables and also regression analysis specifically Ordinary Least Squares (OLS) was used to find out the relationship and extent of the effect of working capital management variables on profitability.

3.2 Data Collection

Annual financial statements (statement of comprehensive income and statement of financial position) were used to collect data on the firms incorporated in this study; these reports were from a reliable source which is the Dar es Salaam Stock Exchange (DSE) reports for the period of ten years from 2002 to 2012 [6a].

The target population of this research was 6 manufacturing companies listed on the DSE in Tanzania according to the Dar es Salaam Stock Exchange website as of 25/11 /2014. There were 20 listed companies but other companies were not in the manufacturing sector. This study took a sample of 3 manufacturing

companies which qualify for giving us information needed for research for the period of ten years making (up 50%) of the population for the study.

3.3 Variables and Measurement

In this study, the choice of explanatory variables was based on alternative theories related to working capital management and profitability and additional variables that were used in previous studies. The variables used in this study are based on the line as applied in previous research regarding the relationship between working capital management and profitability. These variables are categorized as follows [6a]:

Dependent Variable: *Gross Operating profitability* (GOP); GOP is a measure of the Profitability of the firm. It is defined as Sales minus Cost of Goods Sold and divided by total assets minus financial assets.

Independent Variables: *Average Collection Period* (ACP); ACP is used as a proxy for the collection policy. It is calculated as; ($Receivables/(Sales)$ × 365), *Inventory turnover in days* (ITD); Inventory conversion period is used as a proxy for the inventory policy. It is calculated as; ($Inventory/(Cost$ of $goods\ sold)$ × 365), *Average Payment Period* (APP); APP has been used as a proxy for the payment policy. It is calculated as; ($ayables/$ ($Purchase$) × 365) and *Cash Conversion Cycle* (CCC); Cash Conversion Cycle is used as a comprehensive measure for working capital management. It is calculated as; (Average Collection Period + Inventory turnover in days - Average Payment Period).

3.4 Model Specification

Ordinary Least Squares (OLS) regression model is used:

$$GOP = \beta_0+\beta_1 (ACP_{it}) +\beta_2 (APP_{it})+\beta_3(ITD_{it})+\beta_4 (CCC_{it})+ \beta_5(CAR_{it}) + \varepsilon.$$

where: β_0 = Intercept of the equation and β_1, β_2, … . . β_8 = Coefficients and ε = Error term.

Pearson correlation is used to measure the degree of association between different variables under consideration and regression analysis is used to estimate the extent and direction of relationships between profitability and working capital variables [6a].

4. FINDINGS

4.1 Descriptive Statistics

Table 1 presents a summary of descriptive statistics of the dependent and independent variables for three manufacturing companies listed on the DSE for a period of 10 years from 2002 to 2012 making a total of 30 study observations.

Table 1. Descriptive statistics

ACP		ITD	APP	CCC	CAR	FIS	LEV	SAG	GOP
N	30	30	30	30	30	30	30	30	30
Mean	20.87	112.57	73.60	59.93	2.15	15.85	0.34	0.19	0.60
Std. Dev	7.44	16.78	29.06	28.33	1.08	3.22	0.11	0.20	0.14
Min	10.72	79.29	50	-23.98	0.57	11.45	0.21	-0.33	0.35
Max	39.64	150.52	184.11	100.97	3.91	19.98	0.56	0.82	0.92

Table 1 shows that the average value of gross operating profitability is 60% of total sales, and the standard deviation is 14% [6a]. This means that the value of profitability can deviate from the mean to both sides by 14%. The maximum and minimum values of gross operating profitability are 92% and 35% respectively. Information from descriptive statistics also indicates that the mean of the cash conversion cycle that is used as a comprehensive measurement of managing working capital is 60 days and the standard deviation is 28 days. The maximum and minimum values of the cash conversion cycle are 101 days and -24 days respectively.

Firms receive payment against sales after an average of 21 days and the standard deviation is 7 days. The minimum time taken by a company to collect cash from receivables is 11 days while the maximum time for this purpose is 40 days. It takes an average of 113 days to sell inventory with a standard deviation of 17 days. The maximum time taken by a company to sell inventory is 151 days, which is not a very large time period to convert inventory into sales for manufacturing firms. Firms wait an average of 74 days to pay their purchases with a standard deviation of 29 days. The minimum time taken by a company to pay its purchases is 50 days and the maximum time taken for this purpose is 184 days [6a].

The size of the firm and its relationship with profitability as measured by the natural logarithm of sales is used as a control variable. The mean value of the log of sales is 15.85 while the standard deviation is 3.22. The maximum value of the log of sales for a company in a year is 19.98 and the minimum is 11.45. In the same way, to check the liquidity of the companies, a traditional measure of liquidity is used. The average current ratio for manufacturing firms listed on DSE is 2.15 with a standard deviation of 1.08. The highest current ratio for a company in a particular year is 3.91 times and in the same way the minimum ratio for a company in a year is 0.57. The average leverage is 0.34 with a standard deviation of 0.11. The maximum and minimum leverage are 0.56 and 0.21 respectively.

4.2 Correlation Analysis

Table 2 presents the Pearson correlation for the variables that are used in the regression model [6a]. Pearson's correlation analysis is used to find the relationship between working capital management and gross operating profit.

Table 2. Correlation analysis between working capital variables and profitability

ACP		ITD	APP	CCC	CAR	FIS	LEV	SAG
ACP	1							
ITD	0.067	1						
APP	0.373	0.239	1					
CCC	-0.083	0.360	-0.787	1				
CAR	0.251	0.305	0.334	-0.077	1			
FIS	-0.155	0.122	-0.132	0.170	-0.305	1		
LEV	0.031	-0.108	0.341	-0.411	0.240	-0.623	1	
SAG	0.122	-0.096	0.021	-0.024	0.122	-0.004	0.105	1

The table shows how variables relate to one another in the process of making company profitability.

ACP is related positively to ITD, APP and CAR meaning that as ACP increases ITD, APP and CAR also increase. There is a negative relationship between ACP, CCC and FIS which shows that as ACP goes up CCC increases.

ITD has a positive relationship with APP, CCC and CAR meaning that as ITD increases APP, CCC and CAR also increase.

APP has a positive relationship with CAR showing that as APP increases CAR also increases while it relates negatively with CCC.

Finally, there exists a negative relationship between CCC and CAR indicating that CAR is lower when CCC is higher [6a].

4.3 Regression Analysis

The results of the regression analysis are shown in Table 3 [6a]. This shows the extent how working capital variables affect companies' profitability.

Table 3. OLS regression of dependent and independent variables

Variable	Coefficients	Std Error	t- Stat	P-value
Constant	0.714	0.272	2.623	0.016
ACP	-0.040	0.013	-3.108	0.005
ITD	-0.039	0.013	-3.043	0.006
APP	0.042	0.013	3.177	0.004
CCC	0.041	0.013	3.134	0.005
CAR	-0.023	0.025	-0.900	0.378
FIS	-0.017	0.009	-1.862	0.077
LEV	0.011	0.293	0.037	0.971
SAG	-0.285	0.120	-2.374	0.027
R2	0.470			
Adjusted R^2	0.260			
F-value	2.300			

The adjusted R^2 of the model is 26% and the value for the R^2 in the model is 0.47 which endorses that 47% of the variation in the dependent variable is explained by the model. The 53% variation in the dependent variable remains unexplained by the independent variables of the study.

The results of regression indicate that the coefficient of ACP is negative with -0.040 and a p-value of 0.016. This implies that the increase or decrease in ACP will significantly affect the profitability of a firm. APP has a positive coefficient of 0.042 with a p-value (0.004) implying that the increase or decrease in the average payment period, significantly affects the profitability of the firm. The positive relationship between the average payment period and profitability indicates that the more profitable firms wait longer to pay their bills.

The cash conversion cycle is used to measure the efficiency of working capital management. Regression results indicate that there is a positive (0.041) relationship between the cash conversion cycle and operating profitability which implies that the increase or decrease in the cash conversion cycle significantly affects the profitability of the firm. Also inventory turnover in days shows a negative (-0.039) relationship with profitability which indicates that if the inventory turnover in days increases the profitability decreases [6a].

The leverage ratio used as a proxy for leverage has a significant positive relationship with the dependent variable, which means that, when the leverage of the firm increases, profitability also increases. The size of the firm has a negative impact on profitability implying that with the increase in size, profitability declines, sales growth also shows a negative relationship with profitability which indicates that when the sales growth increases, the profitability decreases, and the current ratio has a positive impact on profitability.

5. DISCUSSION

5.1 Relationship between Average Collection Period and Profitability

Regarding the average days of accounts receivables, previous studies [10,8,11,12,13,7,8,31] reported a negative relationship between ACP and the profitability of the firm. Similarly, the researcher finds a negative relationship between ACP and profitability. This suggests that an increase in the number of days a firm receives payment from sales affects the profitability of that firm negatively. The negative relationship between the average collection period and profitability also suggests that a decrease in the number of days accounts receivable by 1 day is associated with an increase in profitability [6a]. The findings can also be interpreted in that an increase in amounts of accounts receivable has opportunity costs and bad debt hence profitability of the firm is affected negatively in the long run. These findings are in line with the working capital management rule that firms should strive to collect their debts from debtors as quickly as possible, taking care not to spoil their business relationship. Therefore, whenever the collection period increases bad debt increases and

hence profitability falls down whenever the collection period decreases bad debts and hence profitability increases.

5.2 Relationship between Inventory Turnover in Days and Profitability

The relationship between ITD and GOP is negative and thus consistent with [19,8,11,12,7,8,35] who found a strong negative relationship between ITD and profitability. However, the findings contradict [20,13,10,28] which shows a positive relationship between ITD and profitability. This implies that when the average time required to convert materials into finished goods and then sell those goods decreases, it leads to an increase in profitability. Manufacturing companies have large inventories composed of raw materials and finished goods and therefore there is a need to sell goods produced quickly so as to make profits. In general, this finding can be interpreted that if the inventory takes more time to sell, it will adversely affect profitability (Profitability decreases) [6a].

5.3 Relationship between Average Payment Period and Profitability

There exists a positive relationship between the average payment period and profitability. This is consistent with [10,13,20,36,37] suggesting that an increase in the number of day's accounts payable by 1 day is associated with an increase in profitability. This result makes economic sense in that the more a firm delays its payments to its creditors, the higher the level of working capital it reserves and uses in order to increase profitability. The results are contrary to those [21,17,6,7,22,23,24] who show that less profitable firms wait longer to pay their bills. The results imply that firms withhold their payment to suppliers so as to take advantage of the cash available for their working capital needs. These findings are in line with the working capital management rule that firms should strive to lag their payments to creditors as much as possible, taking care not to spoil their business relationships.

5.4 Relationship between Cash Conversion Cycle and Profitability

The findings contradict [26,12,17,21,22,23,24,13,38,39,1a] who found a negative relationship between the cash conversion cycle and company profitability but consistent with [20], (Lyroudi & Lazaridis, 2000) who show a positive relationship between cash conversion cycle and company profitability. The findings can be interpreted that when the cash conversion cycle increases the profitability also increases [6a].

The positive relationship between profits and the cash conversion cycle could be explained by the nature of firms and higher profitability due to market dominance. Manufacturing firms maintain more inventories due to high production, to cater to the seasonality effect and avoid the costs of stock outs and price fluctuations. The positive relationship between the firm's cash conversion cycle and profitability can also be explained by the fact that maximizing the investment in

current assets can help in boosting profits. This shows that little liquid cash is maintained in the business for operations.

5.5 Relationship between Liquidity and Profitability

The result of this relationship is in line with [17,15,7,1a] studies which show a negative relationship between liquidity and profitability. This suggests that as the firm's current ratio decreases, the gross operating profitability increases. It indicates that the two objectives of liquidity and profitability have an inverse relationship [6a].

6. CONCLUSION

The management of working capital is one of the most important financial decisions of a firm. A sufficient level of working capital should be present for the smooth running of a company regardless of the nature of the business. The management of a firm can create value for their shareholders by reducing the number of day's accounts receivable; this is because as the ACP decreases, the profitability of the manufacturing firms increases. It is noted that as ACP increases, the level of bad debt also increases which in the long run results in reduced profitability. The management can also create value for their shareholders by reducing their inventories to a reasonable level since the results indicate that profitability increases as the ITD decreases. When the ITD increases, storage costs also increase in order to keep the available inventory. Firms can also take a long time to pay their creditors as long as they do not strain their business relationships with these creditors as indicated by profitability increases with an increase in APP. In addition, firms can also reduce the liquidity level in order to improve the overall firms' performance; this is indicated by a negative relationship between profitability and liquidity [6a].

Firms are capable of gaining sustainable competitive advantage by means of effective and efficient utilization of the resources of the organization through increasing the cash conversion cycle. In so doing, the profitability of the firms is expected to increase. Management of working capital means "management of current assets and current liabilities, and financing these current assets". If these firms properly manage their cash, accounts receivables and inventories, this ultimately increases their profitability.

Future research should investigate the generalization of the findings beyond the companies listed on the Dar es Salaam Stock Exchange. Also, the scope of further research should be extended to more working capital variables and profitability measures' including cash, marketable securities and ROA, ROE respectively and extended in terms of the number of years.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during the writing or editing of manuscripts.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Biography of author(s)

Gwatako Tago (Lecturer)
Accounting and Finance, Tanzania Institute of Accountancy (TIA), Tanzania.

He is an academic and researcher at the Tanzania Institute of Accountancy (TIA), where he also serves as a Lecturer in public finance and taxation, auditing, project management, entrepreneurship, and small business development. He holds a Master's Degree in Business Administration and Management from Uganda Martyrs University (UMU) and a Bachelor of Business Administration from St. Augustine University of Tanzania (SAUT). Currently, he is pursuing a PhD in Business Administration at Kenyatta University (KU) in Kenya. His research and publications cover topics such as finance, business administration, entrepreneurship, project management, and ethics.

Ntui Ponsian (Lecturer)
Accounting and Finance, St. Augustine University of Tanzania (SAUT), Tanzania.

Research and Academic Experience: He has 10 years of experience in academic career training, teaching, researching and coaching.

Research Area: His research areas mainly include accounting, finance, business, strategic planning, and social market economy.

Number of Published papers: He has published 10 papers in reputed journals.

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