Do Marketing Expenses Moderate the Relationship Between Working Capital Management and Profitability?

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Abstract

This study examines the impact of working capital management (specifically working capital financing policy, working capital investing policy (WCIP), and marketing expenses (MKTEXP)) on the profitability of listed manufacturing companies (LMCs) in Tanzania using 84 observations from the 14 financial statements of the six LMCs from 2005 to 2018. A panel data regression analysis was conducted utilizing these variables, revealing a significant collective influence on profitability. However, only the constant term and working capital financing policy (WCFP) have a strong statistically significant relationship with profitability. The marketing expenses used as another predictor variable improves the collective relationship between the policies and profitability but as a moderating variable diminishes the relationship between explanatory variables and LMCs' profitability. Considering the findings, this research recommends that, the companies should adopt a comprehensive approach to decision-making that takes into account the interplay between working capital financing and investing policies, alongside marketing strategies to improve profitability.

Key words: WCM; working capital management; WCFP; working capital financing policy; working capital investing policy; marketing expenses; profitability; DuPont; URT; United Republic of Tanzania.

Introduction

Tanzania's manufacturing industry has been growing with an annual rate of 4% and a GDP contribution of 8% in recent years and is a critical component of its economy as indicated by (Ministry of Industry and Trade [Tanzania Commercial Guide], 2020).

However, manufacturing firms in Tanzania face challenges related to WCM, which affects their profitability and growth prospects. For instance, Tanzania Oxygen made loss of 894.5 million between2001 and 2010 (TOL Gases financial statements, 2005-2018), Tanzania Tea parkers made an average loss of 364.7 million and 1.01 billion respectively each year between 2009 and 2017 (TATEPA financial statements, 2005-2018). WCM involves striking a balance between maintaining liquidity and optimizing profitability, and improper management can lead to a shortage of working capital or an excessive amount of it being tied up in operational needs (Deloitte, n.d.). Additionally, while prior studies have analyzed the role of working capital financing and investing policies on firm profitability in other countries (Akinniyi, & Faboyede, 2013; Hota, & Barik, 2020; Rehman, et al., 2017), limited research has been done in the Tanzanian context that looks at the moderating role of marketing expenses on this relationship.

Statement of the Problem

In Tanzania's manufacturing industry, WCM is crucial for improving firms' profitability, liquidity, and overall performance. However, the industry faces significant operational challenges such as fluctuating demand, volatile input costs, and limited access to financing (Komba, & Mwakalasya, 2018; Mushi, et al., 2020; Mwakalasya, & Mwakalasya, 2019). The reviewed literature lacks the study on the impact of working capital financing and investing policies on the profitability measured by DuPont, alongside the moderating role of marketing expenses on this relationship globally and in the Tanzanian manufacturing industry's context. Some scholars employing marketing expenses as explanatory variable revealed it as the agent to increase product

awareness by building and maintaining customer relationship (Totok,2018) and a stabilizer of company product prices in the market and increase market share (Rehman, Shaikh and Sattar, 2015) but no one used it as a moderating variable. Without this knowledge, listed manufacturing firms in Tanzania may struggle to properly manage their working capital and make strategic decisions related to financing and investing policies, leading to financial difficulties and missed growth opportunities (Magoma, et al., 2022). This study seeks to fill this gap by examining the relationship between WCFP and profitability of Tanzanian LMCs, assessing the impact of WCIP on the profitability of Tanzanian LMCs and investigating the moderating role of MKTEXP on the relationship between working capital financing and investing policies and profitability of Tanzanian LMCs.

The Concept of Profitability

Profitability

Profitability is the ability for a business firm to create profit from its activities. Akinleye, and Ogunleye, (2019) and Kung'u, (2015) explain profitability as the ability of a company to make revenue and, Utia, et al. (2018) definition, profitability measures the worth of a firm and its status to achieve the firm's overall goal of maximizing profit. Utia, et al. (2018) showed that profitability is not only limited to finance but also the way the firm puts together all resources to attain its desired goal. According to Utia and his fellow scholars, profitability is a measure of a company's wealth which is vital to achieving the company's determination of wealth maximization for its proprietors. Likewise, profit is an excess of earnings over related expenses for activity over a while. Terms with similar meanings include 'income', 'earnings', and

'margin'. Keynes, (1936) observed profit as a machine that stimulates a business. Each business must earn the necessary profits to continue and grow over a long period (Coufal, 2020). It is the guide to economic progress, improved state revenue, and an increasing standard of life. Therefore, profit is the genuine object, but it ought not to be over-stressed. In this study profitability is measured by DuPont.

DuPont Analysis

DuPont analysis, also known as DuPont model or DuPont equation, is a profitability ratio that breaks down the return on equity (ROE) into three component ratios: net profit margin, total asset turnover and financial leverage. It was developed by the DuPont Corporation in the 1920s as a way to measure the efficiency of its operations and has since become a widely used tool for analyzing a company's financial health (Sheela, & Karthikeyan, 2012). The DuPont analysis is a model that is explained by three profitability components which are net profit margin (PM), assets turnover (AT), and financial leverage measured by equity multiplier (EM) (McGowan & Stambaugh, 2012; Teodor & Maria, 2014).

The DuPont analysis provides a comprehensive view of a company's profitability by showing how efficiently the company is using its assets to generate profits and how much leverage is being used to finance those assets. Other profitability measures such as gross profit margin, operating profit margin, and net income are also used to measure profitability but they focus on different aspects of the income statement and do not provide a complete picture of a company's profitability like the DuPont analysis. According to a study by Das, et al. (2014), DuPont analysis is a better predictor of future profitability compared to other profitability measures such as gross profit margin, net profit margin, and return on assets. Another study by Aggarwal, and Priyadarshni, (2017) found that the use of DuPont analysis can help investors identify undervalued companies that have high potential for growth. In conclusion, the DuPont analysis provides a more comprehensive and insightful understanding of a company's profitability compared to other measures. Therefore, in this study DuPont is used to measure profitability of the LMCs in Tanzania.

The Study's Theoretical Background and Literature Review

The Theoretical Review

The Traditional Theory
The theory was introduced by Smith, (1973) and it advocates that companies should maintain a moderate level of working capital to avoid liquidity problems while not overinvesting as it increases the cost of capital. This policy assumes a relatively constant cost of capital while operating in a stable environment. However, it has its own limitations. It assumes a stable environment, making it potentially unsuitable for companies that operate in a volatile economy. Furthermore, it can lead to ineffective use of resources, as the moderate level of working capital suggested by the theory may not be the optimal level for every firm (Bierman, & Smidt, 2009). Regardless of its drawbacks, this theory is used in this study to inform WCIP. The theory compliments with hedging theory to extensively explain the impact of working capital policies on company profitability.

The Hedging Theory
The theory was first proposed by Black, and Scholes, (1973) who developed the first

formal model of financial derivatives and later on extended by Merton, (1976), who introduced the concept of "hedging" to describe the use of financial derivatives to reduce risk exposure. The theory suggests that companies should use a combination of short-term and long-term financing to manage risk. This policy assumes that companies must manage risk exposure by using different financing methods. Nevertheless, it may result in increased financing costs and may not be appropriate for companies with low exposure to risk (Bierman, & Smidt, 2009). This implies that companies should be alert at what time they should use the short time financing approach and what time to use long term financing approach to enhance their financial performance.

Regardless of their criticisms, these theories were used by Kieschnick, and Rotenberg, (2016) in their studies on working capital management company profitability and therefore this study is also guided by these two theories. Hedging theory guides the WCFP, which is one of the two independent variables of working capital management, by suggesting that companies should use a combination of financing strategies to mitigate the risks associated with working capital fluctuations. In other words, hedging theory suggests that companies should use a mix of financing sources, such as long-term debt and equity, to reduce the cost of capital and minimize liquidity risk (Bierman, & Smidt, 2009). The traditional theory in this study guides the WCIP

Literature Review

The effect of working capital financing policy on profitability

Working capital financing policies refer to the methods that companies use to finance their operational needs related to accounts receivable, inventory, and accounts payable. The main sources of working capital financing are trade credit, bank loans, and short-term borrowing. Proper management of working capital financing policies can help firms maintain optimal levels of liquidity, profitability, and growth. Past studies have examined the effect of working capital financing policies on firm profitability in different countries and industry sectors. For instance, Akinniyi, and Faboyede, (2013) investigated the impact of working capital management on Nigerian firms' profitability and found that using long-term financing sources can increase profitability. Rehman, et al. (2017) explored the relationship between working capital management and the performance of Pakistani manufacturing firms and concluded that using short-term financing sources improves profitability. Similarly, Hota and Barik, (2020) studied the impact of working capital financing policies on the profitability of Indian firms and found that the use of short-term debt is positively related to profitability. This implies that the proper use of the short-term financing policy is the most cost-effective method that can be used in Pakistan to improve company profitability.

Altaf, and Ahmad, (2019) study used two step generalized moments techniques to study working capital financing, company performance and the constraints of finance. The researchers used Tobin Q and ROA as dependent variables with the control variables of growth, assets tangibility and firm age and the findings indicated WCFP having an inverted U-shaped correlation with company performance. Altaf and Ahmad findings imply that there is an optimum level that should be observed at which profitability is increased. The study offers insights into the relationship

between working capital financing and firm performance, but it is not specific to manufacturing companies, and the findings are based on data from India, which may not necessarily apply to Tanzania.

Panda, and Nanda, (2018) provide understandings into the non-linear relationship between WCFP and profitability in Indian manufacturing companies. The scholars used genderized model of moments (GMM) and the results show that the more the use of working capital financing policies, the more the increase of corporate profitability. However, the study does not investigate the moderating effect of other variables, such as marketing expenses, and the findings may not necessarily apply to Tanzania.

Pirashanthini et al. (2012) scrutinized the relationship between working capital policies and profitability with samples of twenty manufacturing companies listed under Colombo stock exchange (CSE) in Sri Lanka for a period of 2008-2012. The study uses the correlation and regression models to investigate the relationship among variables and the impact of working capital approaches on returns of firms. The study reports no relationship between the profitability measures of firms and working capital investment and financing policies. The study also finds working capital investment and financing policies have no impact on profitability measures of ROA and ROE. While the research carries more intuition on the study of working capital management on profitability, it does not explore the moderating role of other variables like marketing expenses in the relationship between working capital management and company profitability.

Thakur, and Muktadir-Al-Mukit, (2017) investigated the impact of WCFP on the profitability of 80 Dhaka Stock Exchange (DSE) LMCs in Bangladesh for a sample period of 2009-2014. The study employs fixed effect panel data regression technique and finds a negative impact of WCFP on firm profitability measured by ROA. The study recommends a conservative approach to WCFP by relying more on long-term financing alternatives rather than short-term ones. Thakur and fellows' findings imply that if the companies are to maintain high level of liquid assets, avoid excessive reliance on loans, keep borrowing levels low, they must cleverly utilize the stable and long-term sources to fund long term assets. This will ensure company's low risk of insolvency and help in meeting unforeseen business downturn. However, this can also hinder growth by keeping high level of liquidity instead of investing into high returns. As a result of the literature reviewed the following hypothesis is developed:

H0: There is no significant relationship between WCFP and profitability of the listed Tanzanian manufacturing firms.
H1: There is a significant relationship between WCFP and profitability in the listed Tanzanian manufacturing firms.

The effect of working capital investing policies on profitability

Working capital investing policies refer to the methods firms use to invest their excess cash in short-term instruments such as marketable securities, short-term deposits, and treasury bills. Proper management of working capital investing policies can help firms earn higher returns on their excess cash, thereby improving their profitability. Shah, et al. (2014) studied the impact of working capital investing policies on Indian manufacturing firms' profitability and found that investing a larger proportion of excess cash in marketable securities has a

positive impact on profitability. Similarly, Yadav, and Sehrawat, (2019) investigated the effect of working capital management on Indian manufacturing firms' profitability and concluded that investing in marketable securities has a positive impact on profitability. Recently, Caggiano, et al. (2022) studied the impact of working capital management policies on the profitability of listed Italian small and medium enterprises and found that a longer operating cycle duration has a positive effect on excess cash holdings

Prior studies have examined the relationship between working capital management and profitability in different countries and time periods, but few studies have focused on Tanzania's manufacturing industry. Furthermore, there is a research gap on the impact of different working capital management policies on profitability in the industry that focused on the moderating role of marketing expenses. Therefore, this study aims to fill this gap by examining the effect of working capital financing and investing policies on the profitability of LMCs in Tanzania.

Several studies have revealed negative relationship between working capital policies and company profitability. For instance, the study by Javid, and Zita, (2014) provide useful insights into the importance of working capital policies on company profitability. The study findings revealed an inverse correlation between working capital policies and company profitability. However, the study focused on cement companies in Pakistan, which may not be directly applicable to manufacturing companies in Tanzania. Furthermore, the study does not investigate the moderating effect of marketing expenses on the relationship between working capital management and profitability.

Raheman, et al. (2010) focused on the impact of working capital management on firm performance in Pakistan for the period 1998-2007. The study employs balanced panel data of 204 manufacturing firms listed on the Karachi Stock Exchange to analyze the effect of cash conversion cycle, net trade cycle, and inventory turnover in days on firm performance. The study finds that manufacturing firms in Pakistan face challenges with their collection and payment policies, and financial leverage, sales growth, and firm size significantly affect profitability. The study recommends that manufacturing firms in Pakistan concentrate on improving their collection and payment policies and formulate effective policies for individual components of working capital, with a focus on efficient management and financing of working capital to increase their operating profitability. The study further suggests that manufacturing firms in Pakistan should hire specialized finance professionals to advise on working capital management.

More studies were done on the influence of working capital policies and company profitability. For instance, the study by Arnaldi et al. (2021) investigated the impact of working capital management policies on manufacturing firms in the Czech Republic. Using dynamic panel data quantitative methodology, and findings revealed the individual working capital variables having a negative correlation with company profitability. Nevertheless, while it offers valuable insights, the findings may not directly apply to Tanzania and the variables used in the study may not fully capture the Tanzanian context. The study also does not investigate the moderating effect of marketing expenses, which is a key variable in the proposed study.

Vahid, et al. (2014) investigates the impact of aggressive and conservative working capital management policies on the profitability and value of 28 Iranian companies listed on Tehran Stock Exchange for a period of five years from 2005 to 2009. The study findings indicated conservative investment policy and aggressive financing policy having negative impact on a firm's profitability and value. The study also finds that firm size and growth have a positive impact on the firm's profitability and value, while firm leverage has a negative impact. Though, the study did not investigate the moderating effect of marketing expenses on the relationship between working capital management and profitability

Nyabuti, and Alala, (2014) explores the relationship between working capital management policy and financial performance of firms quoted at NSE. The study includes ten companies listed at the NSE for five years from 2008 to 2012 and uses secondary data obtained from the published financial statements available at NSE and CMA libraries. The study concludes that there is a relationship between working capital management policy and financial performance of companies quoted at NSE. The study also finds that the degree of aggressiveness of investment policies (AIP) and financing policies (AFP) influences return on assets (ROA) of selected firms by 17.2%.

Mwangi, (2016) investigated the relationship between working capital management and financial performance of manufacturing firms listed at NSE. The study examined inventory turnover days, cash conversion period, and net payment period using regression models. The study found that inventory turnover days have a negative relationship with return on equity (ROE), while cash conversion period and

net payment period show a significant negative relation with ROE. These findings suggest that firms' financial performance can be increased through proper inventory management systems and engaging in relationships with suppliers who allow for long credit periods and customers who accept short payment periods.

Kasozi, (2017) examined the trends in working capital management and its impact on the financial performance of listed manufacturing firms on the Johannesburg Securities Exchange (JSE). The study used a panel data methodology with different regression estimators to analyze the relationship based on an unbalanced panel of 69 manufacturing firms listed during the period 2007-2016. The findings reveal that the average collection period and the average payment period have a negative and statistically significant relationship with profitability, indicating that firms that efficiently manage their accounts receivable and pay their creditors on time perform better. Additionally, a positive statistically significant relationship between the number of days in inventory and profitability is supported, suggesting that firms that stock up and maintain their inventory levels suffer less from stock-outs and avoid challenges of securing financing when needed. It is inconclusive whether a shorter or longer cash conversion cycle enhances firm profitability, as findings to support this premise were weak. The study contributes to existing literature by presenting recent findings on this topic.

The reviewed studies provide valuable recommendations for firms to improve their working capital policies and management, with a focus on efficient management and financing of working capital to increase operating profitability. However, the studies are limited by the

sample size and context, and further research is needed to generalize the findings to other contexts. As a result of the reviewed literature the following hypothesis is developed:

H0: There is no significant impact of WCIP on the profitability of Tanzanian listed manufacturing firms.

H1: There is a significant impact of WCIP on the profitability of Tanzanian listed manufacturing firms.

The moderating role of Marketing expenses.

Marketing expenses refer to the money a firm spends on promoting its products or services. Effective marketing can help firms create brand awareness, increase sales, and build customer loyalty. The use of marketing expenses as an independent variable on the relationship between working capital management and profitability has recently gained attention in research literature.

Lyu, and Wang, (2023) explored the impact of marketing expenses on the operational performance of pharmaceutical companies and the result indicated marketing expenses positively related to company profitability. However, marketing expenses was not used as a moderating variable. Prior literature has established the importance of proper management of working capital financing and investing policies on firm profitability (Arnaldi et al., 2021; Caggiano et al., 2022; Javid and Zita., 2014; Nyabuti and Alala., 2016; Shah et al., 2014). In conclusion, the prior literature used marketing expenses as an independent variable but this study uses the marketing expenses as a moderating variable. Therefore, this study will fill this gap by investigating the impact of working capital financing and investing policies on firm profitability in the Tanzanian manufacturing industry, while also

examining the moderating role of marketing expenses in this relationship

As a result of the reviewed literature, the following hypothesis is developed:

H0: Marketing expenses do not significantly moderate the relationship between working capital management financing and investment policies and profitability of Tanzanian listed manufacturing firms.

H1: Marketing expenses significantly moderate the relationship between working capital management financing and investment policies and firm profitability of Tanzanian listed manufacturing firms.

Research Gap

There are limited scholarly researches on the relationship between working capital financing and investing policies and firm profitability in the Tanzanian manufacturing industry context. While studies in other countries have examined this relationship, the Tanzanian context is unique, and its manufacturing sector requires specific attention due to its contribution to the country's economic growth and development. The reviewed studies provided some insights into how working capital management policies affect firms' profitability and served as a reference for future research. However, none of them included marketing expenses as a moderating variable or Du Pont as a dependent variable, which presents an opportunity for further research. In contrast to the approach taken by Kisyeri, and Kira, (2022), who investigated the influence of working capital management on company profitability using cash holding ratio, average collection period, number of days inventory, and average payment period as independent variables and marketing expenses as one of the two moderating variables, this study focuses on the influence of working capital financing

and investing policies as independent variables.

By including marketing expenses as a moderating variable and Du Pont as a dependent variable, this study explores how working capital management policies interact with MKTEXP to affect the different components of Du Pont.

Effective marketing strategies and higher marketing expenses can play a crucial role in creating awareness and attracting customers, and increasing sales. MKTEXP may lead to increased acquisition, and retention of customers and brand royalty, resulting in financial performance captured by DuPont.
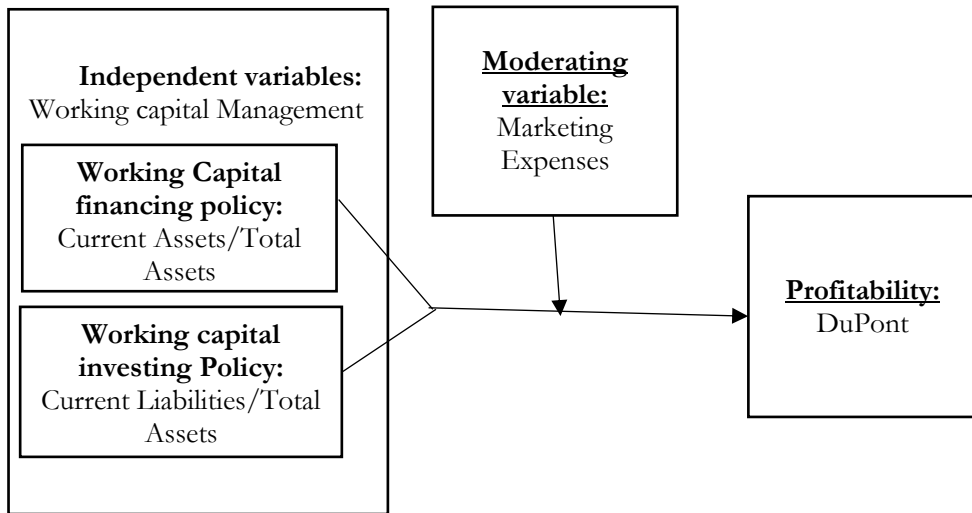

Figure 1: Conceptual framework (Author, 2023) based on literature review

Conceptual Framework

According to the conceptual framework in figure 1, WCFP informed by current assets over total assets and WCIP informed by current liabilities over total assets, first have direct relationship with profitability measured by DuPont then to see how it improves or reduces with the effect of MKTEXP as a moderator. The conceptual impression is that MKTEXP moderation will improve the relationship between the independent and dependent variables.

Methodology

This study used an explanatory study design to investigate the influence of working

capital policies on the profitability of LMCs in DSE, Tanzania. Explanatory research pursues to establish a causal relationship between variables (Saunders, 2009). In this study, the quantitative research approach is espoused as elucidated by Creswell, (2014). This is a method where a researcher employs a tactical way of investigation that comprises gathering quantitative data to best examined and understand the research delinquent empirically. This approach is used when a study is directed by hypothesis with a causal effect association. This study has used the same approach in testing the relationship between working capital

financing and investing policies and LMCs' profitability (Creswell, 2014; Creswell, 2009).

Population of the study

The population of this research were all six LMCs in Dar es Salaam Stock Exchange from the year 2005 to 2018.

The Linear regression model for this study.

The panel linear regression model considering the variables in this study is as follows:

When MKTEXP is considered as another explanatory variable, the model for the panel regression would be:

$$Y_{it} = \beta_0 + \beta_1(WCFP)_{it} + \beta_2(WCIP)_{it} + \beta_3(MKTEXP)_{it} + E_{it}........(1)$$

When MKTEXP is considered as moderating variable, the panel regression model would be:

$$Y_{it} = \beta_0 + \beta_1(WCFP\_WCIP)_{it} + \beta_2(MKTEXP)_{it} + \beta_3(WCFP\_WCIP * MKTEXP)_{it} + E_{it} ......(2)$$

where, Y_{it} represents the response variable, DuPont analysis which is the result of Net profit margin X Asset turnover X Equity multiplier, where,

$$Net\ profit\ margin = \frac{Net\ Income}{Revenue}$$

$$Asset\ turnover = \frac{Revenue}{Total\ Assets}$$

$$Equity\ multiplier = \frac{Total\ assets}{Total\ shareholder'equity}$$

WCFP represents working capital financing policy, WCIP represents working capital investing policy and i represents the companies and t represent the time. $(WCFP\_WCIP)_{it}$ represents the interaction term for the two independent variables (working capital financing policy and working capital investing policy) multiplied together. $(MKTEXP)_{it}$ represents the moderating variable. β0, β1, β2, β3 are the regression coefficients corresponding to the intercept, the main effect of $(WCFP\_WCIP)_{it}$, the main effect of MKTEXP, and $(WCFP\_WCIP * MKTEXP)_{it}$ represents the interaction effect between WCFP_WCIP and MKTEXP, respectively. ε represents the error term, capturing unexplained variation in the model. In this panel linear regression model, the aim would be to analyze the impact of working capital financing policy $(WCFP)_{it}$ and working capital investing policy $(WCIP)_{it}$ on DuPont analysis, while considering the potential moderating effect of marketing expenses MKTEXP within panel data. E represents the error term that captures all factors affecting Y_{it} that are not included in the model. It accounts for discrepancies between the observed values and the values predicted by the linear relationship established by the independent variables. The model would provide insights into how these variables relate to and influence overall profitability and financial performance measured by DuPont analysis.

**Table 1: Variables operationalization and measurement**

CATEGORY	VARIABLE	OPERATIONALIZATION	MEASUREMENT
Dependent variable	Profitability	DuPont (A measure of company's profitability (Sheela &Karthikeyan, 2012) using net profit margin, assets turnover and equity multiplier.	$Net\ Profit\ Margin$ $= \dfrac{Net\ Income}{Revenue}$
Independent Variables	Working capital financing policy	WCFP: Measures the proportion of a company's total assets that are financed by current liabilities (Farhan et al, 2021).	$WCFP$ $= \dfrac{Current\ Liabilities}{Total\ Assets} * 100$
	Working capital investing policy	WCIP: Measures the proportion of a company's total assets that are made up of currents assets in percentage (Hassani & Tavosi, 2014; Islam & Mili, 2012)	$WCIP$ $= \dfrac{Current\ Assets}{Total\ Assets} * 100$
Moderating variable	Marketing expenses	MKTEXP: Measures the portion of a company's total operating expenses that is allocated to marketing (Totok,2018)	$MKTEXP$ $= \dfrac{Marketing\ expenses}{Total\ operating\ expense}$ $* 100$

Source: (Author, 2024) based on literature review

Assumptions of the linear regression model

Normality

In figure 2, we assessed the normality assumption by employing the Normal P.P plot which displays the expected cumulative probabilities against the observed cumulative probabilities, and a diagonal straight line between them. The data points form roughly straight pattern and appear to follow the diagonal line. This result suggests that the residuals are normally distributed, and the assumption of normality is met. We conclude that our linear regression model satisfies the assumption of normality, and the results can be interpreted with confidence.

Figure 2: Normal P.P plot.

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Profitability
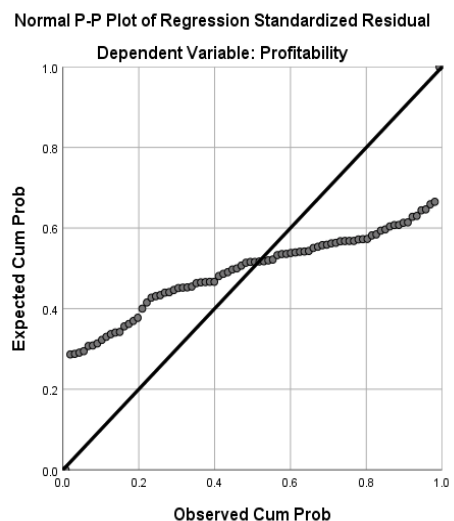
Source: SPSS version 26 output

In Table 2, the Pearson correlation of -0.006 between the two independent variables suggests that there is almost no relationship between them, and they are essentially independent of each other. The negative sign indicates a weak negative association, but the absolute value is close to zero, which implies that the variables are almost uncorrelated.

Table 2: Pearson correlation analysis

		WCFP	WCIP
WCFP	Pearson Correlation	1	**-.006**
	Sig. (2-tailed)		.954
	N	84	84
WCIP	Pearson Correlation	**-.006**	1
	Sig. (2-tailed)	.954	
	N	84	84

Source: SPSS version 26 output

Multicollinearity

Multicollinearity problem arises when an independent variable in regression model exhibits high correlation with other independent variables (Huyen, 2017, Maxwell, et al., 2019). The multicollinearity diagnostic was done by using Variance Inflation Factor (VIF. According to Pallant, (2013), the VIF below 10 is tolerable indicating no multicollinearity issues. In table 3, the VIF values for all independent variables are less than 5, indicating that there is no severe multicollinearity present in the data used for the regression analysis.

Therefore, results support the validity and reliability of the regression model

Table 3: Collinearity statistics

Model		Sig.	Collinearity Statistics	
			Tolerance	VIF
1	(Constant)	.061		
	WCFP	**.012**	.959	1.043
	WCIP	.575	.992	1.008
	MKTEXP	.961	.951	1.051

Source: SPSS version 26 output

Linearity and homoscedasticity

To examine the assumption of linearity in the relationship between the dependent variable and the independent variables, scatter plots were utilized. In figure 3, a straight horizontal line in the scatter plot implies that the residuals have a constant variance across the range of the predicted values, which supports the assumption of homoscedasticity and linearity between independent and dependent variables. Moreover, the randomness and centeredness of the residuals around zero suggest that their distribution is close to normal. Therefore, a straight horizontal line in the scatter plot between the regression standardized residual and regression standardized predicted value is a desirable pattern that confirms the validity and reliability of the linear regression model and assures us that the statistical assumptions are met.

Figure 3: Scatter plot
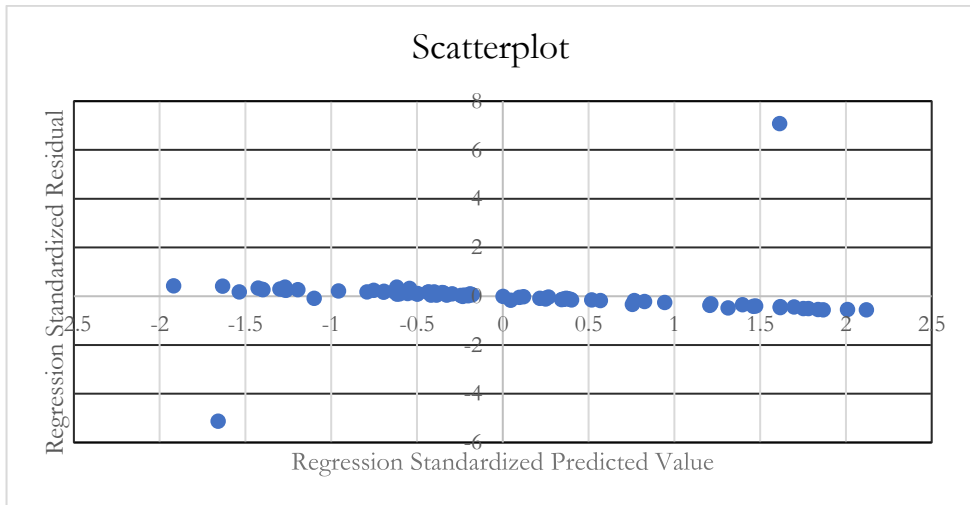
Source: SPSS version 26 output

Independence

In Table 4, the assumption of independence of observations was evaluated using the Durbin-Watson test (Flatt, and Jacobs, 2019). This test detects autocorrelation, which indicates the presence of a relationship between the residuals of the regression model (Flatt, and Jacobs, 2019). The value of Durbin-Watson between 0 and 4 and the value close to 2 indicates no significant autocorrelation. The data analysis revealed Durbin Watson of 2.168 which indicates no significant autocorrelation.

Table 4: Independence assumption

Model	R	R Square	A. R Square	Std. Error of the Estimate	D. Watson
1	.286ª	.082	.059	3.81687	2.168

Source: SPSS version 26 output

Model selection and justification

In this study, both fixed effect and random effect models were considered to analyze the data. Assumptions related to linearity, independence, homoscedasticity, normality, and absence of multicollinearity were carefully examined and met for the regression model. Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) are commonly used measures to compare the goodness-of-fit of statistical models. AIC is based on the principle of maximum likelihood

estimation, while BIC incorporates a penalty for model complexity. Lower values of AIC and BIC indicate a better fit. In this case, the Akaike corrected value is 475.654 for the fixed effect model, while it is 484.649 for the random effect model. Similarly, the Bayesian value is 484.649 for the fixed effect model, whereas it is also 484.649 for the random effect model. Comparing the Akaike corrected values, the fixed effect model has a lower AIC (475.654 < 484.649) indicating a better fit. However, when comparing the Bayesian values, both models have the same BIC (484.649) (Stata Version 15 output). The results of the analysis that there was no significant difference between the fixed effect and random effect models in terms of model fit or the interpretation of the coefficients. Therefore, either model can be applied. For simplicity and interpretability, we chose to present the results from the random effect model in subsequent sections.

Results and Discussion

Regression Analysis for working capital investment policy, working capital financing policy and Profitability

Table 5 indicated a significant relationship between the independent variables and the dependent variable. The R squared of 0.586 denotes a moderate-strength positive correlation between the WCFP, WCIP, and profitability. It implies that changes in these independent variables explain a proportion of the variation in the dependent variable. Additionally, the R2 coefficient of 0.344 suggests that 34.4% of the total variation in the dependent variable can be accounted for by the WCFP and the WCIP. The regression model, which includes the mentioned predictors, has a significant

overall effect on the dependent variable. The p-value of 0.032 suggests that at least one of the predictors has a significant influence on the dependent variable. The overall model is statistically significant with an F-statistic of 3.595 and a p-value of 0.032, indicating that the model predicts the dependent variable significantly better than the mean.

The standardized coefficients indicate the relative importance of each variable while accounting for their differing scales. The significant p-values of 0.039 and 0.010 for the constant term and WCFP respectively suggest that these variables have a significant impact on the Profitability since their significant values are less than 0.05. The constant term of -2.817 suggests the expected value of the dependent variable "Profitability" when all independent variables are zero. The coefficient for "Working Capital Financial Policy" (0.076) implies that for a one-unit increase in this variable, the "Profitability" is expected to increase by 0.076 units, while holding other variables constant. Due to these results, the alternative hypothesis for WCFP is accepted and the null hypothesis is rejected.

The significant p-value for the constant term and WCFP show that these variables have a significant effect on company profitability, reflecting the importance of proper management of WCFP in maximizing the profitability of the company. The results suggest the emphasis for financial managers to concentrate on the management of the WCFP as the primary factor to influence the DuPont return on equity ratio. We reject the alternative and accept the null hypothesis for WCIP because it does not have a significant effect on the profitability of the firm.

Table 5: Regression results for profitability with model summary without MKTEXP

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R	R-squared	Adjusted .R-squared	F	Sign
1	(Constant)	-2.817	1.346		-2.093	**.039**	.586	.344	.259	3.595	.032
	WCFP	**.076**	.029	.280	2.625	**.010**					
	WCIP	.019	.034	.060	.564	.574					
a. Dependent Variable: Profitability (DuPont analysis)											

Source: SPSS version 26 output. Note:1. R is the correlation coefficient

The regression analysis incorporating Marketing Expenses (MKTEXP) as an explanatory variable reveals critical dynamics in understanding profitability among manufacturing companies in Tanzania. The constant term is -2.789, with a standard error of 1.468 and a p-value of 0.034, indicating that when all predictors are zero, the profitability remains negatively affected. The analysis shows that WCFP has a positive coefficient of 0.076, a standard error of 0.030, a beta of 0.281, and a p-value of 0.010, suggesting that a unit increase in working capital financing policies is associated with a 0.076 unit increase in profitability. This positive relationship emphasizes the critical role of effective financial management.

Conversely, WCIP has a coefficient of 0.019, a standard error of 0.034, a beta of 0.061, and a p-value of 0.575, indicating that changes in working capital investment policies do not significantly impact profitability, suggesting negligible practical relevance. The addition of MKTEXP reveals a negative coefficient of -0.109, a standard error of 2.196, a beta of -0.005, and a p-value of 0.041. This relationship implies that for every unit increase in marketing expenses, profitability decreases by 0.109 units, indicating that marketing investments may not yield the expected financial returns.

Table 6: Regression results for profitability including model summary with MKTEXP

		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sign	R-squared	Adjusted R-squared	F	Sign
1	(Constant)	-2.789	1.468		-1.900	.034	.618	.306	2.505	.027
	WCFP	.076	.030	.281	2.565	.010				
	WCIP	.019	.034	.061	.562	.575				
	MKTEXP	-.109	2.196	-.005	-2.049	.041				

Source: SPSS version 26 output

In Table 7, the overall model exhibited an R value of 0.300, indicating a weak positive correlation between the independent variables and profitability. R² value ranges from 0 to 1, where a higher value indicates a better fit of the model to the data. The modification of R²adjusts for the number of predictors in the model, providing a more accurate measure when comparing models with different numbers of predictors. The R² value of 0.090 reveals that only 9% of the variance in profitability is explained by the model, highlighting potential omitted variables that may significantly influence profitability. Additionally, the Adjusted R² of 0.032 suggests that after accounting for the number of predictors, only 3.2% of the variance in profitability is explained, emphasizing the limited explanatory power of the current model.

The regression analysis yielded several key coefficients. The constant was -2.619, providing a baseline for profitability when all independent variables are zero. Notably, WCFP emerged as a significant predictor of profitability, with an unstandardized coefficient of 0.079, a beta of 0.290, and a p-value of 0.013. This indicates that effective management of WCFP positively influences profitability, reflecting its importance in operational efficiency for manufacturing firms. The coefficient for "WCFP" (0.079) implies that for a one-unit increase in this variable, the "Profitability" is expected to increase by 0.079 units, while holding other variables constant. Due to these results, the alternative hypothesis for WCFP is accepted and the null hypothesis is rejected.

The significant p-value for the constant term and WCFP show that these variables have a significant effect on company profitability, reflecting the importance of proper management of WCFP in maximizing the profitability of the company. The results suggest the emphasis for financial managers to concentrate on the management of the WCFP as the primary factor to influence the DuPont return on equity ratio. We reject the alternative and accept the null hypothesis for WCIP because it does not have a significant effect on the profitability of the firm.

Table 7: The regression results for profitability with model summary and moderation analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sign	R	R Squared	A R Squared	F	Sign
	B	St Error	Beta							
1 (Constant)	-2.619	1.557		-1.681	.097	.300	.090	.032	1.547	.185
WCFP	.079	.031	.290	2.528	.013					
WCIP	.017	.039	.054	.437	.664					
MKTEXP	-.556	2.361	-.028	-.235	.815					
WCFP_WCIP	-.189	.549	-.044	-.345	.731					
WCFP_WCIP*_MKTEXP	-.604	.740	-.095	-.817	.416					

a.   Dependent variable: DuPont Analysis

Source: SPSS version 26 output

Adding marketing expenses as an additional explanatory variable, yielded a negative and significant relationship with profitability indicating that a reduction in investment in marketing will increase profitability. However, in Table 7, the interaction terms WCFP_WCIP and WCFP_WCIP*MKTEXP further indicated that MKTEXP does not serve as a significant moderator in the relationship between WCFP and WCIP with profitability. Both interaction terms had negative coefficients and were statistically insignificant (p-values of 0.731 and 0.416, respectively). This suggests that MKTEXP does not strengthen or enhance the relationships between WCFP, WCIP, and profitability.

Furthermore, the adjusted R^2 value dropped to 0.032, suggesting that the model's explanatory power was limited. The higher p-value of 0.185 indicated that the relationship between the predictors and the outcome variable was not statistically significant.

In fact, it resulted in a weaker model fit and diminished explanatory power. These unexpected results imply that MKTEXP, when considered as a moderating variable, does not significantly impact the relationship between the working capital financing and working capital investing policies and the outcome variable. This highlights the need for further investigation and potentially exploring alternative variables or models to better understand the dynamics between MKTEXP and the predictors of profitability. The figures provided in the model summary emphasize the significant decrease in R^2 and adjusted R^2 when MKTEXP were included as a moderating variable.

Conclusion

The study examined whether working capital financing and investing policies have an influence on profitability of the LMCs in Tanzania and if MKTEXP has any effect on the relationship. The comprehensive analysis of manufacturing companies listed on Tanzania's Dar es Salaam Stock Exchange, as evidenced by Tables 5 sheds light on the influence of working capital financing and investing policies on company profitability. The findings provide insights that are relevant to the hedging theory. Tables 2 to 4 and Figures 2 and 3 present the tests for regression model assumptions indicating that all assumptions for the regression model have been met. Table 6 reveals a significant relationship between company profitability (as measured by DuPont) and the independent variable WCFP. Table 7 also demonstrates that the inclusion of MKTEXP as a moderating variable weakens the overall model's ability to predict company profitability but when it is used as an additional explanatory variable as evidenced in Table 6, the relationship is highly increased.

Furthermore, the results in Table 5 reveal that the WCFP has a statistically significant positive influence on profitability. The regression analysis shows that a one-unit increase in the WCFP leads to a substantial 7.6% increase in profitability. The results demonstrate the significance of the WCFP in influencing profitability. This finding further supports the hedging theory which suggests that companies should use combination of financing sources leading to reduction of costs to minimize liquidity risk. and emphasizes the importance of effectively managing working capital financing. The limited moderating effect of MKTEXP in Table 7 indicates a need for companies to reevaluate their marketing strategies to ensure that investments in marketing yield tangible returns.

Furthermore, the low explanatory power of the model recommends that future research explore additional variables that may better account for the factors influencing profitability in the Tanzanian manufacturing sector.

Implications of the study

The implications for manufacturing companies are twofold. Firstly, companies should adopt a comprehensive approach to decision-making that takes into account the interplay between working capital financing and investing policies, alongside marketing strategies to improve profitability.

Secondly, the positive relationship between WCFP and profitability highlights the necessity for companies to optimize their working capital financing strategies, as an effective approach in this area can lead to improved profitability. Specifically, a unit increase in working capital financing correlates with a 0.076 unit increase in profitability, indicating a positive effect that should be prioritized by management.

Thirdly, the negative coefficient associated with MKTEXP raises critical concerns about the effectiveness of marketing expenditures. The statistically significant negative relationship implies that increasing marketing spending does not necessarily lead to improved profitability, with an associated decrease of 0.109 units for each unit increase in MKTEXP. This result calls for an urgent reassessment of marketing strategies to ensure that investments yield tangible returns. Companies may benefit from more targeted and efficient marketing tactics, tailored to enhance profitability effectively.

Recommendation for future studies

For future studies, it would be valuable to explore the influence of working capital financing and investing policies on profitability across different industries represented on Tanzania's Dar es Salaam Stock Exchange. This could provide insights into the sector-specific dynamics and implications of working capital management. Additionally, examining the long-term effects of these policies on profitability and their sustainability over time would contribute to a more comprehensive understanding of the topic.

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