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Effect of Working Capital Management on Financial Performance of Manufacturing Companies in Rwanda. Case Study of Inyange Industries Ltd, Rwanda

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ABSTRACT

The study is about the effect of working capital management on financial performance of manufacturing companies in Rwanda. Case study of Inyange Industries Ltd. The general objective of the study is to assess the effect of working capital management on financial performance of manufacturing companies in Rwanda and the study guided with three specific objectives which are to evaluate how Inyange Industries Ltd financial performance is impacted by cash management, to examine the impact of inventory management on financial performance of Inyange industries Ltd and to assess how the financial performance of Inyange Industries Ltd is affected by account payable management. The study is guided with, the operating cycle theory, the pecking order theory and liquidity preference theory. The study used 10 years of observation, The study adopted descriptive design and correlation research design and the data analyzed using descriptive statistics, correlation analysis and regression analysis. The data was obtained from secondary, through audited financial report of Inyange industries Ltd from 2014 up to 2023. In data analysis SPSS was used. The research findings reveal that working capital management significantly influences the financial performance of Inyange Industries Ltd. The study provides the findings as follow. First, regarding cash management, the unstandardized coefficient for cash management was positive (1.070). But the high p-value (0.039) suggests that cash management, in this context, does meaningfully contribute to the company's financial performance; The unstandardized coefficient of (1.394) with a p-value of (0.024) indicates that inventory management has significance positive effect on financial performance. The account payable management demonstrate a positive relationship with financial performance; the unstandardized coefficient of (1.676) with p-value (0.017). The study concludes that working capital management effect significantly Inyange Industries Ltd financial performance with cash, inventory and account payable management affect positively. It recommends that Inyange industries Ltd, should implement stricter cash budgeting, optimize receivable collection and reduce idle cash. For government of Rwanda should ensure that financial institutions offer affordable credit to manufacturing firms to avoid liquidity issues. Other manufacturing firms should ensure they do not damage supplier relationship or incur penalties which could negatively effect operations. Should also focus on enhancing cash management strategies through effective cash flow forecasting.

Key words: Working Capital Management, Financial Performance and Manufacturing Companies

GENERAL INTRODUCTION

Background of the study

Working capital management, or WCM, has a big impact on the financial performance of industrial enterprises all over the world. The process of managing a business's short-term assets and obligations to optimize profitability while maintaining enough liquidity to meet operational demands is known as working capital management. Good working capital management guarantees that companies may continue to operate smoothly without experiencing cash flow issues or taking on excessive debt. Historically, working capital's significance in affecting a company's overall success has changed along with world economies (Olweny, 2014).

Managing raw materials and production processes was the primary emphasis of businesses in the early phases of industrialization, especially in the 19th and early 20th centuries. Companies were more focused on long-term investments and capital expenditures, often neglecting the significance of managing their short-term financial resources, such as inventory, receivables, and payables. However, it became more evident as global trade and rivalry increased that a company's liquidity and profitability may be directly impacted by efficient working capital management. Working capital management acquired popularity by the late 20th century as financial management techniques advanced, and both practitioners and academics acknowledged its vital role in the long-term viability and expansion of businesses (Aivaziana, 2005).

Working capital management's effect on financial performance has been extensively studied globally. Researchers have found that poor working capital management can result in liquidity problems, which can increase a firm's risk of insolvency and hamper its ability to generate revenue. Conversely, excellent working capital management can boost profitability and give businesses a competitive edge, particularly when done using strategies like just-in-time inventory systems, ideal credit policies, and good supplier relations management. The introduction of advanced technologies, real-time financial reporting, and integrated supply chain management systems in the late 20th century helped manufacturing firms worldwide manage their working capital more efficiently, leading to better financial performance. Many large multinational corporations such as General Electric, Toyota, and Siemens, with operations across several regions, have made significant improvements in their financial performance by optimizing their working capital (Angm, 2013).

The financial performance of industrial firms in Africa has been significantly and difficultly impacted by working capital management. The African manufacturing sector, particularly in countries such as Nigeria, South Africa, and Kenya, has faced systemic hurdles such as limited access to financing, inadequate infrastructure, and economic instability. Despite these difficulties, working capital management has become more and more crucial over the years since it helps businesses stay afloat and run daily operations. For example, successful management of short-term liabilities, such supplier payments and short-term loans, becomes essential in nations with weak financial institutions. In addition, the management of inventory becomes a delicate balancing act, as some African economies experience sporadic supply chain disruptions due to political instability, lack of reliable transportation, and other infrastructure challenges (Mutungi, 2010).

Profitability and efficient working capital management are directly correlated, according to numerous studies on African companies. To address short-term funding challenges, Nigerian companies have used improved supplier-credit rules, while South African manufacturing companies have achieved significant increases in cash flow and profitability by implementing just-in-time inventory procedures. These practices highlight the adaptability of African firms in responding to their specific market conditions and the regional financial landscape. However, it is also evident that many African companies still struggle with optimizing their working capital due to high-interest rates, inflationary pressures, and currency volatility (Olweny, 2014).

At the regional level, the effects of working capital management are similarly significant. East Africa, Southern Africa, and West Africa have their unique challenges and advantages, but manufacturing companies in these regions are increasingly recognizing the importance of cash flow management. Through regional blocs and trade agreements like the Economic Community of West African States (ECOWAS) and the East African Community (EAC), local economies are becoming increasingly interconnected, many regional actors are attempting to create more formalized working capital management systems. To stay competitive in cross-border trade, these regional trade alliances have pushed manufacturers to enhance their financial procedures, such as better working capital management (Padachi, 2006).

Working capital management has become increasingly important in Rwanda's manufacturing sector in recent years, especially as the nation has attempted to increase industrialization and recover from the genocide. Rwanda's manufacturing sector, though relatively small compared to some African nations, has been a focal point of the country’s development plans. Over the past two decades, Rwanda has made impressive strides in improving the business environment, particularly in areas like ease of doing business, infrastructure, and financial services. Rwandan manufacturing firms are starting to adopt contemporary working capital management techniques, emphasizing cash flow improvement, supplier and customer relationship management, and inventory control. Improving working capital management has become a crucial component in assessing a company's competitiveness as Rwanda's economy grows and draws in both domestic and foreign investment (Papadogonas, 2017).

One notable example is the agro processing industry in Rwanda, where manufacturers are integrating efficient working capital management practices to optimize inventory and manage cash flow better. Companies in Rwanda’s textile and food processing industries are leveraging new technologies for forecasting demand and managing supplier payments, all of which contribute to a more fluid working capital cycle. Furthermore, Rwandan banks, such as the Development Bank of Rwanda (BRD), have been increasingly supportive in offering financing solutions tailored to businesses seeking to improve their working capital management. Despite these advancements, challenges such as reliance on imported raw materials, currency exchange rate fluctuations, and limited access to long-term financing still pose significant barriers to the financial performance of many Rwandan manufacturers (Onodje, 2014).

Working capital management has evolved historically, reflecting its increasing significance for manufacturing enterprises' financial performance, both globally and in local markets like Rwanda. Despite regional differences in approaches and challenges, efficient working capital management is a universal indicator of financial health. For manufacturing companies worldwide, including those in Africa and Rwanda, optimizing working capital remains a fundamental strategy to enhance profitability, ensure liquidity, and sustain growth in an increasingly competitive environment. Given the foregoing, a researcher would like to look into how working capital management and the financial success of Rwandan manufacturing companies are related. Inyange Industries Ltd used as a case study for the study from 2014 to 2023.

Problem Statement

The effective management of working capital components such as case management, inventory management, and accounts payable management is crucial for enhancing the financial performance of manufacturing companies like Inyange Industries Ltd. Case management, in the context of working capital, involves controlling and forecasting cash flows to ensure that the company maintains adequate liquidity to meet its obligations. Poor cash flow, as highlighted in the problem statement, often arises from delayed receivables or inefficient cash handling. By improving case management, Inyange Industries can anticipate shortfalls and avoid liquidity crises. Inventory management directly ties into this by influencing the amount of capital locked in unsold goods; excessive inventory leads to high storage costs and reduced cash availability. Implementing systems like Just-in-Time (JIT) helps maintain optimal inventory levels, freeing up cash and improving operational efficiency. Accounts payable management is equally important, as poor handling either through early payments or failure to negotiate favorable terms—can strain cash reserves. By extending payment terms strategically and using automated payable systems, Inyange Industries can better align outflows with cash inflows, supporting healthier cash cycles. Together, these variables form a comprehensive framework to examine how working capital management practices influence financial performance, which is the core of the research problem. This linkage justifies a deeper analysis of Inyange Industries Ltd's practices from 2014 to 2023 to assess the real-world impact on financial outcomes.

Objective of the Study

The presentation that follows breaks down the study's objectives into two groups: general and specific.

General objective

The general objective is to assess the effect of working capital management on financial performance of manufacturing companies in Rwanda.

Specific objective

The study was directed by the following particular goals:

To evaluate how Inyange Industries Ltd financial performance is impacted by cash management.

To examine the impact of inventory management on the financial performance of Inyange industries

To assess how the financial performance of Inyange Industries Ltd is affected by account payable management

Research hypothesis

The following hypothesis served as the basis for the investigation.

H01. The financial performance of Inyange Industries Ltd and cash management do not significantly correlate.

H0 2. Inventory management and the financial performance of Inyange industries Ltd do not significantly correlate.

H0 3. Inyange Industries Ltd financial performance and account payable management do not significantly correlate.

LITERATURE REVIEW

Theoretical review

A crucial part of research is the theoretical review, which describes the concepts and frameworks that guide the goals and methods of the study. To create a foundation for comprehending how the variables in question interact and influence one another, it synthesizes the body of previous literature. The following theories are used to investigate how working capital management affects manufacturing companies' financial performance.

Operating Cycle Theory

While the Operating Cycle Theory provides a useful framework for understanding the flow of working capital within manufacturing companies like Inyange Industries Ltd., it presents notable gaps and limitations when applied to the Rwandan manufacturing context. First, the theory assumes a stable and predictable business environment, which may not reflect the realities faced by Rwandan manufacturers who often deal with volatile supply chains, inconsistent demand, and macroeconomic uncertainties such as inflation or currency fluctuations. These external factors can significantly distort the operating cycle, making theoretical models less applicable in practice. Additionally, the theory largely focuses on internal operations inventory turnover, receivables collection, and payables management without incorporating strategic financial considerations such as cost of capital, financing constraints, or access to credit, which are particularly critical in emerging economies. It also does not account for the unique challenges faced by firms like Inyange Industries Ltd., such as infrastructure limitations or regulatory delays, which can prolong operational phases and disrupt working capital flow. Moreover, the theory does not fully integrate modern technological tools, such as ERP systems and AI-based forecasting, which can enhance working capital efficiency but are not widely addressed in traditional models. These gaps suggest that while the Operating Cycle Theory offers a foundational understanding, it must be adapted and expanded to address the specific financial and operational challenges within the Rwandan manufacturing sector to be truly effective in evaluating financial performance.

The Pecking Order Theory

While the Pecking Order Theory offers valuable insights into financing preferences and the role of internal funds in business operations, it presents several limitations when applied to the study of working capital management and financial performance in Rwandan manufacturing companies like Inyange Industries Ltd. One key limitation is its assumption that internal financing is always available and sufficient for operational needs. In practice, especially within emerging economies like Rwanda, internal cash flows may be unpredictable due to market volatility, inconsistent customer payments, or infrastructural challenges that disrupt production and sales cycles. Moreover, the theory does not account for the institutional and financial market constraints that many Rwandan manufacturers face, such as limited access to affordable credit or underdeveloped capital markets, which can restrict their financing options irrespective of internal cash flow strength. The theory also tends to overlook the strategic use of external financing even when internal funds are available as a tool for growth, innovation, or risk management. In the case of Inyange Industries Ltd., external funding might be necessary to expand operations or adopt new technologies, despite healthy internal cash flows. Additionally, the Pecking Order Theory places limited emphasis on the qualitative aspects of financing decisions, such as the cost-benefit analysis of funding options or managerial preferences shaped by risk tolerance, long-term vision, or ownership structure. Therefore, while the theory provides a useful framework for understanding financing behavior, its practical application in assessing the effect of working capital management on financial performance in the Rwandan manufacturing sector requires a more nuanced approach that considers context-specific challenges and strategic decision-making.

Liquidity preference theory

While the Liquidity Preference Theory offers valuable insights into the importance of maintaining sufficient liquid assets for financial stability, its application in the context of working capital management especially within Rwandan manufacturing firms like Inyange Industries Ltd reveals several limitations. One major gap is the theory's strong emphasis on holding liquid assets as a safeguard, which may inadvertently encourage overly conservative financial behavior. In environments with constrained capital, such as Rwanda's manufacturing sector, excessive liquidity holding can result in underinvestment in growth opportunities, innovation, or production capacity thereby limiting long-term financial performance. The theory also assumes that liquidity is readily accessible, yet in Rwanda, access to cash or short-term financing can be limited due to underdeveloped financial markets, high interest rates, or rigid lending conditions. Furthermore, Liquidity Preference Theory primarily views liquidity from the investor's or financier's perspective, often ignoring the operational complexities of cash flow management within manufacturing, such as seasonal demand, supply chain delays, or customer payment behaviors. It also does not adequately address how firms should determine the "optimal" liquidity level, leaving managers without clear guidelines on balancing liquidity with profitability. In the case of Inyange Industries Ltd, relying solely on liquidity preservation without strategic reinvestment could reduce competitiveness and limit the firm's ability to respond to dynamic market demands. Therefore, while the theory supports the importance of liquidity in risk mitigation, its application needs to be tailored to the specific economic and operational realities of the Rwandan manufacturing context to truly enhance financial performance.

Liquidity Preference Theory, developed by Keynes, emphasizes the preference for holding liquid assets (such as cash) over illiquid investments, particularly in uncertain environments. For manufacturing companies in Rwanda, this theory highlights the importance of managing liquidity to ensure the firm can meet short-term obligations while avoiding over-investment in cash, which could limit growth opportunities. Effective working capital management, which balances cash reserves with optimal levels of inventory, receivables, and payables, is crucial for improving financial performance. In Rwanda's manufacturing sector, where access to financing can be limited and market conditions volatile, maintaining sufficient liquidity helps companies avoid financial distress while maximizing profitability through efficient use of working capital.

Empirical review

Empirical research of the relationship between working capital management (WCM) and the financial performance of manufacturing organizations found that WCM is highly associated with improved financial outcomes. Numerous studies have been conducted across different regions and industries, revealing consistent findings that good working capital management can positively impact profitability, liquidity, and overall financial performance.

Cash management and financial performance

Empirical research indicates that firms, including those in the industrial sector, can improve their financial performance by implementing effective cash management. Both ensuring that a company has enough cash on hand to settle its debts and maximizing cash holdings to avoid having too much money sitting around that may be invested or used for other purposes are components of cash management. A 2003 study by Deloof found that improved profitability and liquidity are closely correlated with effective cash management since businesses that manage their cash flow well can prevent financial difficulties and lower the cost of outside funding.

Similarly, studies by Raheman and Nasr (2007) found that firms that efficiently manage cash resources tend to have lower borrowing costs, improving their financial performance by minimizing interest payments and enhancing profitability.

Furthermore, studies conducted in developing economies, such as that by Mudzamiri (2013) on African manufacturing companies, have found that cash management significantly impacts both profitability and operational efficiency. Poor cash flow management can cause businesses to struggle to satisfy short-term obligations, which can lead to expensive short-term debt and negatively impact their financial performance. Conversely, firms can decrease their reliance on borrowing, boost liquidity, and invest in expansion prospects by implementing sound cash management techniques, which include precise cash flow forecasts, prompt receivables collections, and efficient control over cash disbursements.

Research conducted in Rwanda by Bizimana et al. (2016) also emphasized the significance of cash management in enhancing manufacturing companies' financial performance. The study found that manufacturing companies with a systematic approach to managing cash flow saw better operational outcomes, such as faster production cycles and more timely payments to suppliers, which improved overall financial stability and growth potential. In contrast, companies with poor cash management faced liquidity challenges that often led to missed business opportunities and a reliance on costly financing options. Improved financial performance and efficient cash management are positively correlated, according to empirical research. Companies that manage cash efficiently can ensure liquidity, reduce the costs of borrowing, and invest in opportunities that enhance profitability.

Inventory management and financial performance

Empirical studies have consistently shown that effective inventory management is necessary to improve the financial performance of manufacturing companies. Maintaining ideal stock levels lowers holding costs, avoids stockouts, and boosts production efficiency. This is made possible by effective inventory management.

Research by Deloof (2003) and Raheman & Nasr (2007) indicates that manufacturing companies with better inventory control practices tend to experience improved profitability and operational efficiency. According to these researches, controlling inventory turnover, cutting back on surplus stock, and putting just-in-time (JIT) inventory systems into place all help to maximize cash flow and minimize expenses, both of which improve financial performance.

Similar findings about the connection between inventory management and financial success have been made in African contexts, such as Mudzamiri's (2013) study. Inventory obsolescence and higher carrying costs were observed in manufacturing firms that engaged in poor inventory management techniques, such as overstocking or lengthy inventory cycles, according to the study. These inefficiencies reduced profit margins and hindered liquidity. Conversely, companies with well-managed inventory systems were able to reduce these costs, leading to better profitability and cash flow management.

In Rwanda, Bizimana et al. (2016) found that manufacturing companies that focused on optimizing inventory levels and improving turnover rates had better financial outcomes. By minimizing the capital businesses can increase their profitability, lower liquidity risks, and improve their overall financial performance by lowering the expenses associated with keeping inventory, increasing turnover rates, and guaranteeing timely material availability. These results highlight how crucial strategic inventory management is to keeping a competitive edge in the manufacturing industry. Tied up in excess inventory, companies could reduce the need for external financing, improve working capital efficiency, and increase profitability. This aligns with the findings of studies by Lazaridis and Tryfonidis (2006), who emphasized that firms with efficient inventory management systems tend to have a better ability to convert inventory into sales and generate higher returns on their assets. Empirical studies demonstrate that effective inventory management directly affects the financial performance of manufacturing companies.

Account payable management and financial performance

Empirical studies conducted worldwide, particularly in Rwanda and Africa, have shown a substantial association between accounts payable administration and financial performance. In the larger framework, research has demonstrated that efficient accounts payable (AP) management is essential for maximizing cash flow, preserving liquidity, and raising profitability. According to worldwide research, businesses can enhance their cash position, lower interest costs, and reinvest in business operations by strategically managing their payables, such as by negotiating advantageous terms with suppliers or utilizing early payment discounts. This improves financial results. In Africa, where businesses often face liquidity constraints and access to credit is limited, efficient AP management is particularly vital. Studies have demonstrated that companies in countries like South Africa, Nigeria, and Kenya, which adopt strong AP practices, tend to experience improved profitability, reduced financial risk, and better supplier relationships (Raheman & Nasr, 2007).

Specifically, in Rwanda, where the manufacturing sector is growing but often faces challenges like high transaction costs, limited access to financing, and economic volatility, managing accounts payable effectively has been shown to be crucial for sustaining operational efficiency and improving financial performance. Research conducted on Rwandan manufacturing firms reveals that those with better AP management practices, such as timely payments and careful monitoring of liabilities, report improved liquidity, lower financing costs, and enhanced profitability. Therefore, empirical evidence supports the idea that efficient accounts payable management is a key driver of financial success in companies worldwide, including across Africa and specifically in Rwanda (Raheman & Nasr, 2007).

Financial performance

One arbitrary measure of a business's ability to make money from its main activities is its financial performance. According to Shardeo (2015), this term is also used as a broad indicator of a company's overall financial health during a specific time period. It can be used to compare industries or sectors overall or to compare similar businesses within the same industry. Performance measurement, according to Ademola (2014), is the process of obtaining, evaluating, and/or sharing data about how well a person, group, organization, system, or component is performing. Using the following financial methods, the study assessed Inyange industries Ltd financial performance from 2014 to 2023.

Profitability ratio

Return on asset (ROA) is calculated as (Net income/Total asset)×100.
Return on Equity (ROE) is calculated as (Net Income/Shareholder Equity)×100.
Net Profit Margin (NPM) is calculated as (Net profit/Revenue)×100

RESEARCH METHODOLOGY

Research Design

In order to evaluate the relationships between working capital management and financial performance of manufacturing companies in Rwanda, this study concentrated on Inyange industries Ltd and adopted a descriptive and correlational research design.

Population and sampling

The present study focused on quantitative research design, therefore it was not necessary to determine the research population. The data was collected from published and audited financial report of Inyange industries Ltd for a period of ten (10) years; therefore there is no need to determine the research population.

The firm year's observation describes the sample's size, selection criteria, and methodology. One firm and ten (10) years of observation were used in the study. Finding the number of participants or observations needed in a sample to produce trustworthy and statistically significant results is known as sample size determination. As a sample size, secondary data related to audited financial reports from Inyange Industries Ltd, a single firm manufacturer, over a ten-years period (2014–2023). A study focuses on the tasks completed by employees in various departments of Inyange industries Ltd, who are all expected to know more about working capital management and its impact on financial performance, in order to gather the necessary data regarding working capital management, and their effects on financial performance.

Research Instruments

The information was obtained through secondary sources as called secondary data. This study utilized information that has been gathered and documented by others. Reviewing specific documentary sources in order to address the research problem was a component of secondary data collection. The study uses secondary data from various project reports, online research, and expressly released and audited financial reports of the company to examine how working capital management affects Inyange Industries Ltd financial performance from 2014 to 2023. The University of Kigali provided the researcher with an introductory letter, which was used to introduce me to the respondents and request their consent to access financial data created and kept by the Inyange industries. A researcher began data gathering as soon as they have permission, integrate and combine the results into this report, and submit it to the University of Kigali.

Data Processing and Analysis Methods

The editing and coding procedure was carefully thought out to make sure that every response was logically and coherently recorded in order to provide consistent information that would help with the understanding of phenomena and cross-check the data collected. A descriptive analysis and interpretation were performed on the collected financial data. Through editing, the researcher was able to review the data, identify any mistakes or omissions, and, if feasible, fix them. In order to guarantee the completeness, accuracy, uniformity, and comprehensiveness of the data gathered, it was checked, inspected, corrected, and modified. The data that was gathered was presented using tabular presentations.

Further, the study utilized the statistical program of social sciences (SPSS), quantitative data was evaluated. The two main inferential statistics was used to test the study are correlation and regression analysis. While correlation analysis showed how strongly dependent and independent variables are related, regression analysis shows the nature of this relationship. The data was analyzed using both descriptive and inferential statistics, including Pearson's correlation. The impact of working capital management on manufacturing businesses' financial performance was examined using descriptive statistics including mean, minimum, maximum and standard deviation. An inferential statistical technique called regression analysis was used to look at quantitative data. Among the processes involved include regression analysis, data preparation and collecting, hypothesis development, and outcome interpretation.

FINDINGS & DISCUSSION

The results' analysis, presentation, and interpretation are all covered in this chapter. The study's primary focus was on how working capital management affected Inyange Industries Ltd financial performance. Part of data analysis involves interpreting data and text. Additional data analysis includes preparing the data for analysis, conducting different analyses, exploring the data in greater detail, presenting the data, and determining the data's wider importance.

Descriptive statistics

Working capital management's impact on manufacturing enterprises' financial performance is the study variable whose descriptive statistic is shown in the table below.

Table 1: Descriptive statistics

	N	Min.	Max.	Mean	Std. Dev.
working capital management	10	1	3	1.60	.516
Financial performance	10	1	3	2.00	.816
Inventory management	10	1	3	1.40	.516
Cash management	10	1	3	1.50	.527
Account payable management	10	1	3	1.60	.516
Return on equity	10	1	3	1.80	.789
Return on Asset	10	1	3	1.80	.789
Net profit margin	10	1	3	1.80	.789
Valid N (listwise)	10				

The descriptive statistics table provides useful insights into the financial performance and working capital management (WCM) of Inyange Industries Ltd., revealing patterns and variances in key variables that can shed light on the company’s overall financial health and operational efficiency. Based on the data, the mean values and standard deviations for key variables such as working capital management, cash management, accounts payable management, and financial performance indicators show moderate variability.

Working capital management, with a mean of 1.60 and a standard deviation of 0.516, appears to be reasonably optimized within the company. The fact that the range falls between 1 (low) and 3 (high) suggests that the company's WCM practices are neither overly efficient nor extremely inefficient but exhibit a moderate degree of variation. This variability in working capital management practices might point to fluctuations in the company's approach to managing its short-term assets and liabilities. In particular, cash management with a mean of 1.50 and a standard deviation of 0.527 falls slightly below the mean for WCM but indicates that cash management practices are somewhat balanced, with moderate fluctuations across the sample. These moderate variations suggest that the company may have room to improve in terms of managing cash more efficiently, a critical component of WCM that could enhance liquidity and profitability.

Similarly, accounts payable management has a mean of 1.60 and a standard deviation of 0.516, which is slightly better than cash and inventory management practices, suggesting that the company's ability to manage its short-term liabilities may be more efficient compared to its cash or inventory management. This aligns with the findings of Lazaridis and Tryfonidis (2006), which emphasize that poor working capital management, such as low inventory turnover or delayed collections, can lead to weaker liquidity positions, negatively affecting a company's operations and long-term financial stability. In this case, Inyange appears to exhibit some efficiency in managing its payables, but there remains variability, which could indicate room for improvement in areas such as faster receivables collection or more effective inventory management.

On the financial performance side, Return on Equity (ROE), Return on Assets (ROA), and Net Profit Margin (NPM) all have a narrow distribution, with a mean of 1.80 and a standard deviation of 0.789. This indicates that the company's financial performance is more diverse compared to its WCM practices. The relatively high standard deviations for these financial performance indicators suggest that Inyange's profitability, efficiency in using assets, and ability to generate returns for shareholders are subject to more fluctuations, possibly influenced by various external or internal factors beyond WCM. This observation aligns with the research of Mudzamiri (2013) and Bizimana (2016), who found that manufacturing companies in Africa, particularly those in emerging economies, often experience financial difficulties due to poor working capital management, leading to cash flow problems that hinder their ability to reinvest and grow. In the case of Inyange, the diversity in financial performance could be indicative of similar challenges, where fluctuations in WCM practices, such as inventory management or cash flow issues, might be contributing to inconsistent profitability.

Table 2: Contributed working capital management on financial performance of Inyange Industries Ltd.

		Frequency	Percent
Valid	Return on Asset increased	3	30.0
	Return on equity increased	5	50.0
	Net Profit marginal increased	2	20.0
	Total	10	100.0

The table illustrating the changes in various financial performance metrics at Inyange Industries Ltd over the period from 2014 to 2023 reveals a generally positive financial trend, with notable improvements in key performance indicators such as Return on Asset (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). Specifically, 30% of the observations indicated an increase in ROA, 50% reported a rise in ROE, and 20% noted an increase in NPM. The data shows that the company experienced positive growth in either ROE or ROA, suggesting a favorable trend in the overall financial performance of the company. These findings are supported by the cumulative percent of 100%, which signifies that at least one key financial metric demonstrated positive change, contributing to an optimistic financial outlook for Inyange Industries Ltd during this period.

The increase in Return on Equity (ROE) and Return on Asset (ROA) for a significant proportion of respondents (50% and 30%, respectively) indicates that the company was able to generate higher returns relative to the shareholders' equity and total assets. Both ROE and ROA are essential indicators of financial performance, as they demonstrate how efficiently a company is utilizing its equity and assets to generate profits. The increase in these metrics may suggest that Inyange Industries Ltd was able to leverage its resources more effectively during this period, perhaps through improved asset management or more profitable investments, aligning with the general notion of financial growth.

However, despite the positive movements in ROE and ROA, the Net Profit Margin (NPM) showed more limited growth, with only 20% of observations indicating an increase. The relatively smaller proportion of growth in NPM implies that while Inyange Industries Ltd was able to improve its profitability in terms of returns on equity and assets, the overall profitability, as measured by NPM, did not see a corresponding rise. This might indicate that while the company was able to enhance its efficiency and return on resources, it may have faced challenges in controlling operational costs, or in other areas such as pricing strategy or market competition. The NPM metric reflects how effectively a company turns revenue into profit, so a relatively stagnant or modest improvement in this area could point to cost pressures, inefficiencies in managing operating expenses, or external market challenges.

In this context, the findings are consistent with the studies by Lazaridis and Tryfonidis (2006), which emphasize the importance of efficient working capital management for maintaining liquidity and ensuring smooth operations. Poor working capital management, such as low inventory turnover or delayed collections, can harm liquidity and create challenges in meeting short-term obligations, potentially affecting long-term financial stability. For Inyange Industries Ltd, despite improvements in ROE and ROA, the relatively slow progress in NPM might suggest that the company's working capital management strategies, particularly in inventory or receivables, could be impacting its overall profitability. If inventory turnover or accounts receivable management is not optimized, it can lead to cash flow issues, even if the company is able to generate good returns on its equity and assets.

Furthermore, Mudzamiri (2013) highlighted the detrimental effects of poor working capital management on profitability and growth, particularly in emerging markets where access to foreign investment may be limited. This study supports the idea that inefficient working capital management can impede growth prospects and profitability, especially when external funding options are constrained. The challenge for Inyange might be similar—improving its working capital management could further boost profitability by ensuring better liquidity and reducing reliance on costly short-term debt.

Table 3: *Correlation analysis*

		Financial performance	Inventory management	Cash management	Account payable management
Financial performance	Pearson Correlation	1	.723**	.905**	.792
	Sig. (2-tailed)		.001	.000	.060
	N	10	10	10	10
Inventory management	Pearson Correlation	.723**	1	.000	.583
	Sig. (2-tailed)	.001		1.000	.077
	N	10	10	10	10

Cash management	Pearson Correlation	.905**	.000	1	.408
	Sig. (2-tailed)	.000	1.000		.242
	N	10	10	10	10
Account payable management	Pearson Correlation	.792	.583	.408	1
	Sig. (2-tailed)	.060	.077	.242	
	N	10	10	10	10
** Correlation is significant at the 0.01 level (2-tailed).					

The research findings, which analyze the relationship between the three elements of working capital management (inventory management, cash management, and account payable management) and the financial performance of Inyange Industries Ltd, provide valuable insights into the significance of each component in contributing to the company's financial health.

The positive correlation of 0.723 between inventory management and financial performance, with a significance level of 0.001, suggests that effective management of inventory plays a crucial role in enhancing the company's financial performance. This finding aligns with the work of Lazaridis and Tryfonidis (2006), which indicates that poor inventory management, particularly low inventory turnover, can result in liquidity issues and disrupt operations, leading to long-term financial instability. For Inyange Industries Ltd, efficient inventory management likely ensures that the company maintains optimal stock levels, avoiding both excess inventory (which ties up capital) and stockouts (which can lead to missed sales). As such, the company’s ability to manage its inventory efficiently is directly linked to its overall profitability and financial performance.

The correlation between cash management and financial performance, at 0.905 with a significance value of 0.000, indicates an even stronger relationship between effective cash management and overall financial performance. This result further supports the idea that good working capital management can lead to improved liquidity, which is essential for meeting short-term obligations and investing in growth opportunities. The literature by Mudzamiri (2013) and Bizimana (2016) highlights that efficient cash management is particularly critical for companies in emerging economies like Rwanda, where access to external financing is often limited. In the case of Inyange, a well-managed cash flow likely enables the company to operate smoothly, invest in new projects, and avoid the costs associated with short-term borrowing.

Interestingly, the correlation between account payable management and financial performance, while positive at 0.792, is not statistically significant at the 0.060 level. This suggests that, although managing accounts payable effectively may have some impact on financial performance, the effect is not as pronounced as that of inventory and cash management. It’s important to note that Lazaridis and Tryfonidis (2006) discuss the importance of timely collection of receivables and the efficient management of payables, but these effects may be less directly tied to financial performance than the management of inventory and cash, especially when liquidity and operational efficiency are the more immediate concerns.

Correlations Between the Components of Working Capital Management

The findings also show that inventory management and cash management do not correlate significantly with each other (correlation value of 1.000), suggesting that these two elements function independently within the company’s overall working capital strategy. Additionally, while there is a positive correlation of 0.583 between inventory management and account payable management, this relationship is not statistically significant at 0.77, and the correlation between cash management and account payable management is 0.408, also lacking statistical significance at 0.242. These results imply that, while these components may influence one another to some degree, their relationships are less direct and are not as critical to financial performance as the management of inventory and cash.

In conclusion, the analysis confirms that inventory management and cash management are significantly correlated with financial performance, while account payable management does not show a statistically significant correlation. The positive relationships between inventory and cash management with financial performance align with previous studies that emphasize the importance of efficient working capital management for improving profitability and liquidity, particularly in manufacturing firms operating in emerging markets (Mudzamiri, 2013). However, as noted by Shin and Soenen (1998), overly aggressive working capital management strategies, particularly those that reduce inventory to a minimum, could lead to operational disruptions, customer dissatisfaction, and ultimately reduced sales.

For Inyange Industries Ltd, focusing on optimizing inventory management and cash management practices seems to be the most effective way to improve financial performance. While account payable management may have some effect, its impact appears less critical compared to inventory and cash management. Balancing efficiency in working capital management while ensuring that operational needs are met without compromising customer satisfaction or production efficiency is crucial. This requires a careful, nuanced approach to avoid the pitfalls of overly aggressive working capital reduction strategies.

Regression analysis

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.831a	.690	.535	.557

a. Predictors: (Constant), Account payable management, Cash management, Inventory management

The research findings underscore the significant role of effective working capital management (WCM) in enhancing the financial performance of manufacturing companies, with a specific focus on Inyange Industries Ltd. The model summary reveals that the financial performance of Inyange Industries is strongly positively influenced by key WCM factors such as inventory management, cash management, and account payable management. The R value of 0.831 indicates a substantial correlation between these predictors and financial performance, with the R Square value of 0.690 suggesting that these factors explain about 69% of the variation in the company’s financial performance. This high explanatory power highlights the importance of efficient working capital management in driving financial success. Even with a modest explanatory power of 0.535, the model still accounts for over 53% of the variance, suggesting that the relationships identified are robust even when considering other influencing factors. The standard error of the estimate, 0.557, indicates a high level of precision in the model's predictions, signaling that there is minimal risk of error in the forecasted outcomes. These findings are aligned with broader research in the field, particularly studies examining the relationship between WCM and financial performance in manufacturing enterprises. However, much of the existing research, such as that by Deloof (2003) and Raheman and Nasr (2007), has largely focused on larger markets and overlooked small and medium-sized enterprises (SMEs), particularly in emerging economies like Rwanda. This is a critical gap, as SMEs in such markets may face distinct challenges in applying WCM practices effectively. Additionally, research on WCM in African countries, such as those by Abor and Biekpe (2006) in South Africa and Nazir and Afza (2009) in Pakistan, provides useful insights but often excludes smaller economies like Rwanda. This leaves a knowledge gap

Table 1. *ANOVA*

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.141	3	1.380	4.455	.047b
	Residual	1.859	6	.310		
	Total	6.000	9			

a. Dependent Variable: Financial performance
b. Predictors: (Constant), Account payable management, Cash management, Inventory management

The ANOVA table reveals important findings regarding the overall significance of the regression model used to examine the relationship between working capital management (WCM) and financial performance at Inyange Industries Ltd. The regression sum of squares (4.141) indicates that the independent variables account payable management, cash management, and inventory management collectively explain a notable portion of the variance in financial performance. In contrast, the residual sum of squares (1.859) reflects the variance that the model fails to account for, highlighting areas where other factors may influence the financial performance that are not captured by the current model. The model's statistical significance is marginal, with a p-value of 0.047, which is just below the widely accepted threshold of 0.05, suggesting that the independent variables have a statistically significant relationship with financial performance. Additionally, the F-statistic of 4.455, which represents the ratio of the explained variance to the unexplained variance, further supports the significance of the model. With these results, there is enough evidence to reject the null hypothesis and conclude that working capital management specifically in terms of accounts payable, cash, and inventory management has a significant impact on the financial performance of Inyange Industries.

These findings contribute to the ongoing discourse about the relationship between WCM and financial performance, particularly in the context of emerging markets like Rwanda. Previous studies, including those by Deloof (2003) and Raheman and Nasr (2007), have largely focused on larger markets, with limited attention to small and medium-sized enterprises (SMEs) or emerging economies. This gap is particularly evident in Africa, where studies by Abor and Biekpe (2006) and Nazir and Afza (2009) in South Africa and Pakistan have provided useful insights, but much of the focus has been on larger economies. Countries like Rwanda, with smaller and developing economies, have not received enough research attention, leaving a significant knowledge gap regarding the specific challenges faced by manufacturing firms in these regions. The results from Inyange Industries Ltd, therefore, offer valuable insights into how effective working capital management practices can directly influence the financial success of manufacturing firms in smaller African economies, underscoring the need for further exploration in these contexts.

Table 6: Regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.028	1.195		4.209	.006
	Cash management	1.070	.407	.691	2.629	.039
	Inventory management	1.394	.467	.882	2.985	.024
	Account payable management	1.676	.512	1.060	3.275	.017
a. Dependent Variable: Financial performance						

Hypothesis testing

To test the hypotheses, we can look at the significance values (p-values) of the independent variables presented in the coefficients table.

H01: Inyange Industries Ltd' financial performance and cash management do not significantly correlate.

According to the regression results, cash management has appreciable impact on financial performance, as evidenced by the B coefficient of 1.070 and the p-value of 0.039, which is below the 0.05 limit. As a result, Inyange Industries Ltd financial performance rises by 1.070 units for every unit improvement in cash management. H01 is rejected because the p-value is less than 0.05, suggesting that cash management significantly affects financial performance. A positive coefficient indicates that financial performance is positively impacted by efficient cash management. Effective cash management boosts liquidity and profitability, which positively affects financial performance, according to Raheman and Nasr (2007). Their findings and this one are consistent. The Liquidity Preference Theory supports this, emphasizing how important it is for companies to maintain adequate cash on hand to cover operating expenses and meet obligations, hence enhancing financial stability and performance. Accordingly, cash management is a good indicator of financial performance.

H02: The financial performance of Inyange Industries and inventory management do not significantly correlate.

Financial performance is significantly impacted by inventory management, as indicated by the p-value of 0.024 and the B coefficient of 1.394, which is below the 0.05 significance level. Every unit increase in inventory management is demonstrated to result in a 1.394 unit increase in Inyange Industries Ltd financial performance. We reject H02 due to the positive sign and p-value below 0.05, and we conclude that inventory management has a significant and positive impact on financial performance.

This supports the findings of Kulkanya, N. (2012), who found that inadequate inventory control can lead to increased holding costs and decreased liquidity, both of which negatively affect profitability. Operating Cycle Theory also states that a longer operating cycle, which includes inventory turnover, has a detrimental effect on a company's overall financial success. This means that inventory management is a poor indicator of financial success.

H03: Inyange Industries Ltd' financial performance and accounts payable management do not significantly correlate.

The information indicates that financial performance and accounts payable management are correlated and statistically significant. The B coefficient is 1.676, and the p-value is 0.017, below the 0.05 cutoff. It follows that for every unit increase in accounts payable management, Inyange Industries' financial performance should increase by 1.676 units. H03 is rejected because the p-value is less than 0.05, indicating that accounts payable management significantly affects financial performance.

Ineffective use of credit terms or late supplier payments are examples of poor accounts payable management that can negatively affect financial performance, as indicated by the negative sign. According to Raheman and Nasr (2007), this outcome supports their claim that poor accounts payable administration leads to liquidity issues, which can negatively affect a company's overall financial stability. The Pecking Order Theory recommends that companies prioritize controlling their short-term liabilities, especially accounts payable, in order to guard against financial stress and preserve a healthy financial position. As a result, the way accounts payable are managed negatively predicts financial performance.

CONCLUSION & RECOMMENDATIONS

Conclusion

The results of the study offer important new information about how working capital management affects Inyange Industries Ltd' financial performance. The study found that working capital management, particularly cash management and inventory management had a significant effect on Inyange Industries Ltd financial performance. Accounts payable management and financial performance has positive relationship but not significant. The descriptive statistics and regression analysis highlight the variability in working capital management practices, suggesting that there is potential for further optimization. The results provide a theoretical basis for comprehending how efficient management of working capital components can enhance profitability and are consistent with established ideas such as the Pecking Order Theory, Operating Cycle Theory, and Liquidity Preference Theory. The efficient management of working capital components, especially cash, inventories, and accounts payable, is a key factor in improving Inyange Industries Ltd' financial performance.

Recommendations

Based on the research findings, several recommendations can be made for Inyange Industries, the Government of Rwanda, and other manufacturing firms:

Inyange Industries Ltd:

Better cash flow management significantly improves financial performance. The company should implement stricter cash budgeting, optimize receivable collection and reduce idle cash. The company should adopt Just-in-time (JIT), inventory systems, demand forecasting, and digital inventory tracking to reduce cost and enhance efficiency because inventory management impact financial performance, However, managing account payable payments efficiently can still improve liquidity. The company should negotiate better credit terms and avoid unnecessary delays in supplier payment.

For the Government of Rwanda:

Since the cash management significantly influence financial performance, the government should ensure that financial institutions offer affordable credit to manufacturing firms to avoid liquidity issues. Inventory management impact financial performance, government can support training programs and incentives for manufacturers to implement technology driven inventory management solution, improving overall sector. Ensuring well-regulated supplier payment framework will promote financial stability in manufacturing sector. Policies that reduce payment delays and encourage supplier friendly term can positively impact financial performance.

For Other Manufacturing Firms:

Manufacturing firms should focus on enhancing cash management strategies, through effective cash flow forecasting, reducing idle cash. Inventory optimization such as JIT can help reduce holding costs and improve financial efficiency. Manufacturing firms should ensure they do not damage supplier relationship or incur penalties which could negatively affect financial performance.

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