



**UNIVERSITY OF RWANDA  
COLLEGE OF BUSINESS AND ECONOMICS  
SCHOOL OF BUSINESS**

**THE EFFECT OF INVENTORY MANAGEMENT PRACTICES ON  
FINANCIAL PERFORMANCE OF BREWING FIRMS IN RWANDA**

**A CASE OF BRALIRWA Ltd 2014-2023.**

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## DECLARATION

This thesis is my original work and has not been presented for a degree in any other University or for any other award.

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I confirm that the candidate under my supervision carried out the work reported in this thesis.

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## TABLE OF CONTENTS

<b>DECLARATION</b> .....	<b>ii</b>
<b>TABLE OF CONTENTS</b> .....	<b>iii</b>
<b>LIST OF TABLES</b> .....	<b>vi</b>
<b>ABSTRACT</b> .....	<b>vii</b>
<b>CHAPTER ONE</b> .....	<b>1</b>
<b>GENERAL INTRODUCTION</b> .....	<b>1</b>
1.0. Introduction .....	1
1.1. Background of the study .....	1
1.2. Statement of the problem .....	3
1.3. Objectives of the study.....	4
1.3.1 General Objective.....	4
1.3.2. Specific objectives.....	4
1.5. Significant of the study .....	4
1.5.1 Researcher .....	4
1.5.2. Brewery companies in Rwanda.....	5
1.5.3 Academicians .....	5
1.6. The scope of the study.....	5
1.6.1 Content .....	5
1.6.2 Geographical scope .....	5
1.6.3 Time scope .....	5
1.9. Organisation of the study .....	5
<b>CHAPTER TWO</b> .....	<b>7</b>
<b>LITERATURE REVIEW</b> .....	<b>7</b>
2.0. Introduction .....	7
2.1 Theoretical review.....	7
2.1.1. Theoretical review on inventory management practices.....	7

2.1.1.1. First in, first out (FIFO) practice .....	7
2.1.1.2 Last in, first out (LIFO) practice .....	8
2.1.1.3. Fixed-order-quantity model practice .....	9
2.1.1.4. Fixed-order-interval model practice .....	9
2.1.1.5. Re-order Level practice .....	9
2.1.1.6. Just in Time (JIT) practice .....	10
2.1.1.7. Replenishment practice .....	10
2.1.2. Theoretical review on financial performance.....	11
2.1.2.1. Indicators of performance .....	11
2.1.3. Inventory management practices and financial Performance .....	13
2.2. Empirical literature.....	14
2.3. Critical literature and research gap identification .....	15
2.4. Conceptual Framework .....	16
<b>CHAPTER THREE .....</b>	<b>17</b>
<b>RESEARCH METHODOLOGY .....</b>	<b>17</b>
3.2. Research design.....	17
3.3. Population of the study.....	17
3.4. Sample size determination .....	18
3.5. Measurement and scaling .....	18
3.5.1. Source of data.....	18
3.5.1.1. Primary data .....	18
3.5.1.2. Secondary data .....	19
3.5.2. Categories of data.....	19
3.5.2.1 Normal data .....	19
3.5.2.2 Ordinary data.....	19
3.5.2.2. Ratio data.....	19
3.6. Data collection instruments .....	19

3.6.1. Questionnaire .....	19
3.6.3. Documentary review .....	20
3.7. Data quality control.....	20
3.7.1. Validity and reliability .....	20
3.7. Data processing .....	20
3.7.3. Tabulation.....	20
3.8.1. Data analysis .....	21
<b>CHAPTER FOUR.....</b>	<b>22</b>
<b>DATA ANALYSIS PRESENTATION AND INTERPRETATION OF FINDINGS .....</b>	<b>22</b>
4.0. Introduction .....	22
4.2. Presentation of primary data inherent to inventory management practices .....	22
4.3.3. Profitability ratios.....	27
4.5. Discussion of findings .....	34
<b>CHAPTER FIVE .....</b>	<b>38</b>
<b>SUMMARY OF FINDINGS CONCLUSION AND RECOMMENDATIONS .....</b>	<b>38</b>
5.0. Introduction .....	38
5.1. Summary of the major findings.....	38
5.1.1. Findings regarding the first objective.....	38
5.1.2. Findings regarding the financial performance of Bralirwa Ltd.....	38
5.2. Conclusion.....	40
5.3. Recommendations .....	41
<b>QUESTIONNAIRE ADDRESSED TO THE EMPLOYEES OF BRALIRWA LTD KIAGALI-RWANDA .....</b>	<b>45</b>

## **LIST OF TABLES**

Table 1. Factors leading to stock out in BRALIRWA Ltd .....	22
Table 4. 2: Applicability of inventory management practices .....	23
Table 4.3:Re-order level .....	24
Table 4.4: Efficiency of inventory management practices .....	25
Table 5: Mean of ratios over the period under study.....	29
Table 4.6: Relationship between inventory management and performance .....	30
Table 4.7: Correlation between the variables of the study.....	31
Table 4.8: Regression coefficients .....	33
Table 4.9. Regression coefficients .....	34
Table 4.10. Regression coefficients between IMP and net profit .....	36

## **LIST OF FIGURES**

Figure 1 Liquidity ratios of BRALIRWA Ltd 2014-2023.....	26
Figure 2 :Net profit and gross profit ratio .....	27
Figure 3:. ROA and ROE.....	28

## **ABSTRACT**

This study sought to identify inventory management practices applied by BRALIRWA Ltd, to analyze the financial performance of BRALIRWA Ltd from 2014 to 2024 and to find out the relationship between inventory management practices and the financial performance of BRALIRWA Ltd. The study adopts a mixed method approach, combining desk research, interviews and quantitative analysis based on primary and secondary data to meet the research objectives. A regression model has been applied to analyze the effect of inventory management practices on financial performance. The findings show that the overall model is statistically significant ( $F = 82.37$ ,  $p\text{-value} = 0.000$ ). However, among various inventory management tools used by Bralirwa, the material resources planning is the mostly statistically significant ( $p\text{-value} = 0.000$ ). Therefore, while a large brewery company may have various inventory management practices, these tools affect to different degrees its financial performance. Considering that they can streamline a firm performance, inventory management practices should be given due consideration by manufacturing companies.

**Key words:** Inventory Management Practices, financial performance

# **CHAPTER ONE**

## **GENERAL INTRODUCTION**

### **1.0. Introduction**

The first chapter of the study contains a general introduction that includes the study's background, problem statement, objectives of the study with their respective research questions, significance of the study, scope of the study, conceptual framework, operating definitions of key concepts, and the study's structure.

### **1.1. Background of the study**

In an era of intense rivalry driven by advancement, heightened consumer consciousness, and technical advancements, enterprises seeking large-scale success must constantly promote the availability of their services, since consumers may readily redirect their patronage elsewhere. As a result, efficient inventory management has become a crucial operational weapon for product and manufacturing enterprises seeking to endure competitive challenges (Sharma, 2016).

One of the primary purposes of inventory management is to provide the appropriate amount and quality of raw materials. Inventory management methods are focused with managing stock levels of a certain group of products with the goal of lowering inventory handling and ordering costs while remaining compatible with other relevant management aims and objectives. They represent things that were originally gathered for sale, are undergoing manufacturing, or are resources that are still not being utilized (Wangari , 2015).

According to Silver, Pyke, and Peterson (2004), good inventory management procedures implemented by manufacturing enterprises in the United States of America and other Western countries improved productivity. This was accomplished by lowering the quantity of direct manufacturing labor required per unit of production. Despite this, the fraction of unit expenses attributed to labor has progressively dropped in recent years. This suggests that raw material inventory management holds significant promise for increasing productivity. Furthermore, Chet et al. (2005) discovered that the level of concentration on inventories among American enterprises reached the financial markets, where there were regulations that rewarded corporations that regulated inventories and punished those that did not.

Just in time, vendor managed inventory, collaborative planning, forecasting and replenishment, automated replenishment, agile system, and material requirement planning are prominent inventory management strategies in Nigerian manufacturing enterprises. However, empirical data and experience have demonstrated that there is a lack of awareness and comprehension of these techniques, their method of operation, and their practical applicability in the Nigerian manufacturing business (Salami and Alao, 2010).

Etim and John (2014) established that inventory management practices can improve a firm's operational performance by increasing capital utilization efficiency, increasing service level, and decreasing lead-time, and that companies that carry out models for inventory management can deal with shortages of materials, inventory outs, and portion accumulation.

According to Brealy (2007), there are prerequisites for manufacturing, and stocks can be costly to hold since they tie up capital. As a result, inventory management necessitates a choice of those costs and advantages. The expense of stock keeping encompasses not only the cost of missing an opportunity, but also storage and insurance costs, as well as the risk of spoiling or expiration. All of these carrying expenses push businesses to keep current assets to a minimal. Inventory mishandling will result in a negative impact on an organization's operations by preventing financial resources from being diverted to more lucrative industries and/or operations.

Several research on the management of inventories and organizational performance have indicated three major methodologies used in inventory management. The first is Just-in-Time (JIT), which is a processing philosophy focused on targeted waste removal and continual efficiency enhancement. JIT is the process of producing what the client wants, when it requires it, and in the quantity required using the least amount of people, materials, and machinery. The basic aspects of JIT involve holding just the right amount of stock when required; improving quality to zero defects; lowering waiting periods via decreased set-up times, queue lengths, and lot sizes; and accomplishing these objectives at the lowest possible cost (Eckert, 2007).

Therefore, this study intends to examine inventory management practices implemented in processing firm with a specific reference of BRALIRWA by identifying which inventory strategies with respective techniques that are implemented and their effects on financial performance of the firm.

Several studies were conducted across the world on inventory management and organizational performance as presented. They investigated the concept of performance in different perspectives including operational performance, effectiveness and financial performance. However, the common denominator extracted from all theories is that effective inventory management practices contribute to all perspectives of organizational performance. As shown in empirical literature, there is no study conducted on inventory management practices and financial performance of brewing firms operating in Rwanda that makes a research gap to be bridged by this study.

## **1.2. Statement of the problem**

In the financing framework, that defines the majority of businesses and companies, inventories have the most crucial position (Ndunge, 2013). Any manufacturing company that practices effective stock control avoids low-quality output, dissatisfied repeat clients, financial loss, and ethical dilemma.

Approaches for managing stock, however, have a number of issues. Recent years have seen a number of challenges for businesses, mainly in managing inventory and material management, which has negatively affected the operations of production businesses. instances of material overstocking that later goes bad or is out of date, understocking, not keeping inventory, employee supply theft, and supply shipment delays inside organizations are just a few instances (Coyle & Bardi, 2003)

BRALIRWA Ltd are core-brewing firm operating in Rwanda. As its raw materials for processing consumable products are agro-based industry, its manufactured products are susceptible to obsolescence, as they cannot last for long. The obsolescence challenge is proved by persistent discount applied to its products before expiration dates. It implies that sometimes Products are sold at forced discount that undermine and decline its financial performance. Based on the aforementioned challenges facing BRALIRWA Ltd and the researcher is prompted to examine the inventory management practices and their effect on its financial performance.

Although various studies have been conducted on inventory management practices in manufacturing firms and brewery companies, the findings are not conclusive and there is no study conducted on inventory management practices and financial performance of brewing firms operating in Rwanda Moreover, numerous studies revealed dissimilarities inherent to inventory management practices implemented in processing companies. Thus, it is from these

dissimilarities of inventory management practices implemented by processing and manufacturing companies and shortage of similar studies conducted in Rwanda that the researcher is urged to conduct this study.

### **1.3. Objectives of the study**

This study comprises both general and specific objectives.

#### **1.3.1 General Objective**

The general objective of this study is to assess the inventory management practices and financial performance of processing industries with a specific reference to brewing firms in Rwanda.

#### **1.3.2. Specific objectives**

- i. To identify inventory management practices applied by BRALIRWA Ltd
- ii. To analyze the financial performance of BRALIRWA Ltd from 2014 to 2024
- iii. To find out the relationship between inventory management practices and the financial performance of BRALIRWA Ltd

#### **iv. 1.4. Research questions.**

Respectively to the specific objectives, this study was guided by the following research questions.

- i. What are the inventory management practices applied by Bralirwa ?
- ii. What are the inventory management practices mostly affecting the financial performance in Bralirwa
- iii. To which extent the identified inventory management practices affect the financial performance of Blarirwa?

### **1.5. Significant of the study**

This research is significant to the researcher, Academicians, and the case study.

#### **1.5.1 Researcher**

As a student in doing master level, this study will enable the author to get skills in conducting research at the same time to fulfill the academic requirements in order to be awarded a masters' degree.

### **1.5.2. Brewery companies in Rwanda**

The study is benefiting brewing companies such as BRALIRWA Ltd by providing information that will aid with comprehending the administration of inventory methods, their mode of implementation, and their practical significance in the company. The senior management of Rwanda's processing sectors depends on the study's results to build effective inventory management methods aimed at improving financial performance. The study's conclusions gives a framework for processing organizations' senior management to make smart and intelligent selections about handling inventory procedures.

### **1.5.3 Academicians**

The study is important for future students since it provides secondary data. Future academics and academicians would benefit from this study since it will serve as a foundation for additional research in the subject of inventory management and organizational performance, particularly in the processing sector. They may come upon knowledge that is pertinent to their inventory management studies. The study would identify topics for additional research, which would be extremely beneficial to these researchers.

## **1.6. The scope of the study**

### **1.6.1 Content**

This study is restricted on inventory management practices and organizational financial performance of a brewing firm in Rwanda.

### **1.6.2 Geographical scope**

In space, the study is limited to brewing firms operating in Rwanda, at Rubavu District in Rwanda, as it is where the headquarters operate.

### **1.6.3 Time scope**

In time, the current study relates to the period of ten years from 2014 to 2023.

## **1.9. Organisation of the study**

The research is divided into five chapters: A comprehensive overview is given in the initial section, which covers the background of the study, its problem statement, the goals and questions of the inquiry, the scope of the study, its significance, and its structure. An overview of the

related literature is provided in the second chapter, along with links to a range of data sources, such as reports, textbooks, and the internet. The research design, data collection methods, data analysis instruments, and research methodology are all included in the third chapter of the study. The research findings are analyzed and interpreted in the fourth chapter with respect to the research themes of the study. The results of the study and suggestions for more research are reviewed in chapter five.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0. Introduction**

The second chapter of this paper is a review of the literature on inventory management strategies and the financial performance of processing firms. The researcher offers a theoretical assessment of inventory management strategies and financial results. The research from empirical studies that was used to identify gaps was also be provided.

#### **2.1 Theoretical review**

##### **2.1.1. Theoretical review on inventory management practices**

According to Zappone (2014), handling all types of resources in a firm may be considered as an inventories challenge. To optimize production and long-term storage of hundreds of thousands of items while reducing costs, large organizations employ a variety of stock management strategies and computations. Depending on their needs for customer service and cost reduction, Small firms can simultaneously manage business manufacturing and storage processes using concepts from several inventory control systems..

Each stock control strategy used by a company aims to satisfy customer demands while reducing expenses and raising revenues. An excessive amount of inventory increases the danger of damage, spoilage, and loss, takes up physical space, and increases the financial burdens (Zappone,2014) as stated by the writer, excessive inventory is usually a cure-all for awkward and ineffective CEOs, inaccurate estimates, haphazard planning, and disregard for protocol and processes. Insufficient supplies frequently impede production processes and raise the risk of subpar interaction with clients.. If an item is not immediately accessible, devoted clients may get disappointed and choose to purchase elsewhere. Companies with exceptionally large stock levels are quite far more probable to have poor financial performance. .

##### **2.1.1.1. First in, first out (FIFO) practice**

First in, first out (FIFO) is a method of managing inventories where the oldest stock is used first and the most current inventory created or received is kept in reserve until it is completely consumed or sent. Using the most recent stock initially is the aim of FIFO, which aims to save expenses associated with outdated inventory. Many companies employ this stocktaking strategy, which circulates stock as well. In order to reduce products stock-outs, some companies integrate

FIFO into additional approaches to inventory administration and systems of storage within the framework of the economic quantity model (Green & Inman, 2005).

#### **2.1.1.2 Last in, first out (LIFO) practice**

The practice of marketing or shipping items made or kept later first and those made or purchased earlier is known as "last in, first out." For non-perishable commodities or those with a low rate of revenue, as a technique for managing inventories is commonly utilized. For determining the amount of material the amount of cash on the hand at the conclusion of a particular period in addition to the price of items sold during that time, the reverse of FIFO, or LIFO, is useful. Since the latest in, first out method assumes that the inventory that was acquired particularly before it is sold, businesses that use it can receive a tax advantage. FIFO rises when inflation rises, as does the cost of products sold and the percentage of remaining inventory. A lower tax liability is the outcome of the increased price of the items sold due to the lower net revenue resulting from LIFO (Cooper and Ellram ,1993).

### **2.1.1.3. Fixed-order-quantity model practice.**

The costs associated with keeping goods in retailers are known as carrying costs. These include: rent for the storage area; wages for employees and pay in the storekeeping division; losses from deterioration and theft; insurance costs; and stationery used in the stores. The price of placing an order for the acquisition of materials is known as the ordering cost. These include the salaries and pay of the staff members working in the buying department as well as the department's stationery, postal costs, phone bills, etc. When submitting orders for material purchases, the entire amount to be paid is considered. As was previously said, purchasing a big amount at once has a lower ordering cost but a higher carrying cost.

### **2.1.1.4. Fixed-order-interval model practice**

Purchases that need to be handled at particular times (each week, two times per month, etc.) are placed using the fixed-order-interval (FOI) paradigm: Orders are scheduled in advance. The challenge at each order point, then, is how much to order. Retailers frequently employ fixed-interval ordering systems. When demand varies, order size tends to change from cycle to cycle. On the other hand, using an EOQ technique, the cycle duration varies (becoming longer if demand is below average and shorter if the demand is above average), but the order size usually stays the same through cycle to cycle.

### **2.1.1.5. Re-order Level practice**

This is the level of material at which a purchase request for new supply must be initiated. This is usually the midpoint between the highest and minimum values. Before the actual stockpiles reach the minimal level, new orders must be placed. The threshold is established such that, till the order emerges and supplies are provided, the quantity of supplies shown as the disparity from the required minimum and maximum re-order level is sufficient to meet the production specifications. The following criteria are considered while determining the Re-order level: Resource consumption rate; Lead-time is the amount of time it takes to get a fresh purchase. Quantity of reorders; Minimum level; The re-order level may be computed by adding the time necessary to obtain new purchase delivery to the minimum level of inventory.

**The lead-time:** This holds true for managing inventory as well. Usually, the shipping delay plus the purchase delay add up to this delayed. This lead-time is typically calculated in days. Depending on the business, lead-time might have several different meanings. This article examines lead-time from the perspective of control of inventory, i.e. as one of the major aspects

to consider for the optimization of inventory. This perspective is often most beneficial to consumers and distributors.

#### **2.1.1.6. Just in Time (JIT) practice**

JIT is a technique that allows businesses to create items in the quantities needed and only when they are needed. JIT implementation in a corporation will result in cost savings in the manufacturing system. In reality, a JIT manufacturing system is extremely successful at minimizing non-value-added operations and, as a result, non-value-added expenses. Purchases and the transportation of materials and items between locations are two instances of non-value-added chores. Although these activities use resources, they offer little value to the item being generated (Dalci & Tanis, 2006).

**JIT practice and financial performance:** JIT, according to Dalci and Tanis (2006), strives to reduce work-in-process and completed goods inventory, reduce lead-time, and improve product quality. The Pull technique is utilized, in which things are created only as needed in each production stage. Machine operators in the pull system are not producing according to a timetable or material availability. Production does not commence until the end user requires the commodities. When extra materials or supplies are required for production, a message is promptly sent to the subsequent production area requesting the quantity of resources that are actually required. The closer you come to operating in a just-in-time (JIT) mode, the fewer capital that is stashed away in beginning materials and final-product stocks, and greater the reactive you become to consumers. The less you spend on inventory storage and transit, the less obsolescence you must account for, and the more you can manage your logistics and transportation operations. Finally, all of this adds up to real money saved for your organization (Kamakia, 2015).

#### **2.1.1.7. Replenishment practice**

According to Hennel (2016), producers are unlikely to be equipped to forecast the future with 100% precision, but they must strive for, as near to perfection as feasible if they are to maintain the appropriate quantity of inventory and production rates at all times. Manufacturers may exploit all of their operational data using planning tools and statistical forecasting engines to more effectively handle deviations, sluggish commodities, marketing for category structures, and demand fluctuations. Replenishment, often known as reordering, is the process of replenishing what has been depleted. According to Chandrika (2015), (inventory) replenishment is an operation that consists of replenishing the stock in order to avoid stock-out. A backorder sent to a supplier often initiates replenishment.

**Replenishment practice and performance:** The goal of restocking is to sustain effective addition and itemized fulfillment rates with the objective to retain inventories moving along the supply chain as efficiently as possible. This procedure aids in avoiding expensive excessive stock of inventories. Sehgal (2008) According to Mr. Di, the procedure calls for specifying a purchase amount as well as the period for restocking. The supply and demand specifications come next, which help decide if it is necessary to make an order for refills at the point of assessment.

### **2.1.2. Theoretical review on financial performance**

Financial performance, according to Foster (1996), is a qualitative evaluation of how well a company can employ assets from its major way of operation to earn revenues. This term is often used as a general indicator of a company's overall financial health during a certain time period when comparing similar businesses in the same sector.

#### **2.1.2.1. Indicators of performance**

Monitoring a wide range of 'accomplishment measures' in your organization is critical to ensuring that suitable and timely choices and strategies can be made. Managers ought to put a high priority on getting regular reports on revenue, profit margins, and cash flow, as these are the three essential components of every business. Knowing the financial situation of the company becomes much more critical as it grows, especially if the business strategy expands significantly. Inaccurate and delayed data regarding the current financial status might lead to a company collapse and serious consequences for the public (Farris, 2010).

##### **i) Turnover**

Turnover is frequently used interchangeably with revenue (or, in certain situations, sales), particularly in European and South African use. Services or goods sold by a corporation within a specific period or time. Turnover is another word for the rate at which stuff is sold. (Farris, 2010).

**Stock turnover ratios:** It shows the speed at which the stock sells. From the liquidity's perspective, an elevated ratio is advantageous, whereas a low ratio would suggest that the stock is not moving quickly. It is computed by divided the mean price of stocks by the cost of each product sold. (Farris, 2010).

**Debtors' turnover ratio:** The ratio shows how quickly debts are paid off. A high ratio shows that the period between the sale of credits and the receipt of cash is shorter. A small proportion

suggests a slow rate of debit collection. Divided annual borrowers compute it by net sales of credit. (Farris, 2010).

**Creditors' turnover ratios:** This is the ratio, which indicates how creditors willingly want to be paid. A low percentage indicates that providers have generous credit terms, whereas a high ratio indicates that accounts are being cleared quickly. It is calculated by dividing the credits purchased with the average creditors. (Farris, 2010).

**Assets turnover ratio:** It indicates how efficiency the capital of the business is being used. It also speaks about the efficiency of management. It is calculated by dividing the net sales with capital employed. The higher the ratio, better profitability. Poor sales compared to the amount of capital utilized or excessive capital utilization within the company are referred to as poor capital turnover ratios. (Farris, 2010).

**Working capital turnover ratio:** It indicates whether the capital have been employed efficiently for making sales. If a business can increase sales while using comparatively little working capital, this is a sign of operational effectiveness. It is calculated by splitting the gross working capital by net sales. Improved net working capital turnover ratios translate into reduced working capital investments and increased profitability. A high working capital turnover ratio indicates that the funds available is being used more effectively (Farris Paul, 2010)

**Current asset turnover ratio:** This ratio reveals how often an active asset has been properly used to generate sales. In the instance of a corporation, it may accomplish a larger volume of sales while using a relatively modest quantity of current assets to pay back current creditors; this is a sign of operational efficiency. It is computed by dividing net sales by current assets. The greater the current asset turnover ratio, the lower the current asset investment and the better the profitability. A high CAT/TR suggests improved asset usage (Farris, 2010).

**Fixed asset turnover ratios:** The ratio demonstrates how effectively and successfully the business's capital assets have been employed; it is determined over divided net sales by net fixed assets. It denotes the effect of capital to revenue. The higher ratio, better it is increase in ratios shows better use of fixed assets and a decrease shows less efficiency in use of fixed assets. (Farris Paul,2010)

## ii) **Gross profit ratio**

A firm should have an acceptable gross profit to provide enough covering of the firm's operational expenditures and a sufficient return to the business's owners, which is represented in net profit. This ratio is calculated as follows: 
$$\text{Gross Profit Ratio} = \frac{\text{Gross profit}}{\text{Net sales}} \times 100$$

## iii) **Net profit ratio**

A company with a high net profit ratio would be able to weather difficult economic times when sales prices are dropping, manufacturing costs are rising, and consumer demand is decreasing. It would also guarantee a sufficient return to the owners. This ratio, which is computed as the total profit made by the company, is:

$$\text{Net profit ratio} = \frac{\text{Net profit after tax}}{\text{Net sales}} \times 100$$

## iv) **Return on Assets**

In this case, the link between profit and assets is used to determine productivity. The above equation is used to calculate this ratio. 
$$\text{Return on assets (ROA)} = \frac{\text{net profit after tax}}{\text{Average total assets}} \times 100$$

## v) **Return on equity (ROE)**

By comparing the earnings that are available to equity shareholders with the book value of their shares of stock, it looks at profitability from the standpoint of equity investors.

$$\text{Return on Equity (ROE)} = \frac{\text{Net profit after tax}}{\text{Equity share holders' funds}} \times 100$$

It affects stock share prices in the market. It shows how shareholders' money has been spent by businesses and assesses whether or not the business has been able to satisfy the owners

### **2.1.3. Inventory management practices and financial Performance**

Singhal (2005) investigated the extended impact of surplus stock on company profitability. He discovered proof suggesting the stock markets somewhat predicts excessive stock problems and that firms do not recover fast from excess inventories' negative consequences. He went on to say that excess inventory has a negative financial and quantitative impact. Agus and Noor (2006) the association between stock control strategies and revenue growth was investigated. The research assessed managers' opinions of the management of inventory and supply chain procedures, as well as the industry's degree of performance. According to the findings, inventory management

strategies have substantial relationships with revenue and return on sales (ROS), both of which significantly contribute to corporate achievement.

Augustine and Trenkel (2013) investigated the impact of effective inventory control on business output. The study reveals a relationship between material control and productivity and implies that there is a highly favorable correlation between excellent inventory management and cost reduction in organizations. He did, however mention that management should continuously monitor and control the inventory system in order to preserve production uniformity and efficiency within the organization.

Eckert (2007) investigated inventory management and its function in increasing customer satisfaction. He discovered a link between consumer happiness and supplier connections. Koumanakos (2008) investigated the impact of managing stocks on company efficiency. According to the data, the higher a firm's level of inventory kept, the lower the rate of return. Despite all of this research, little effort has been taken to determine the impact of methods for inventory control on the bottom line of a company. This section has shown that inventory management practices make up a key and core aspect in manufacturing process as it contributes to the operational performance of firms that ultimately contribute to the financial performance of the firm. From the contents presented in this section, the fact that there are no accurate practices in several manufacturing firms as they rely on different types of raw materials it makes a knowledge gap that stimulates the researcher to undertake this study.

## **2.2. Empirical literature**

Anichebe and Agu (2013) examined how handling inventories affected some Enugu corporations' effectiveness as organizations. Six hundred fifty-eight individuals took part in the research. Using the Taro Yamane formula for sample size determination from a limited population, a sample size of 248 was determined. Data was gathered with a questionnaire, oral interviews, observations, books, journals, and the internet. The information was presented in tables and evaluated using basic percentages. The Pearson product moments correlation coefficient and linear regression were used to assess the predictions. The results indicate a strong correlation between effective inventory administration and company efficiency. The work efficiency of a business is significantly impacted by handling inventory. Corporate success and superior management of stocks are closely related. According to the report, inventory management is essential to the success and expansion of the business.

Koin and Cheruiyot (2014) investigated the impact of inventory management on organizational performance. In this study, a technique known as descriptive research was adopted. There are 459 employees in the study population, and care was made to ensure that a sufficient sample size of this group was accessible to inform the researcher about the predetermined research objectives. The target population yielded a sample of 56 employees. Together with the several linked divisions in the chain, the business's logistics unit provided data via surveys. The results indicate that, while order administration and managing warehouses have a little influence, relationships with suppliers and systems for inventory management have a large impact on supply chain performance in the industrial sector. This investigation will show that the recommended approach is both feasible and effective. Decision makers will have access to reliable techniques for balancing procurement performance with inventory management because of this research.

Ogbo, et al (2014) carried out research to determine how Seven Up Bottling Company Nile Mile Enugu's performance was affected by an efficient inventory management system. The sample size for this study consists of 83 responders. Descriptive statistics and nonparametric tests (chi-square, or  $X^2$ ) were used to develop and test four research questions and four hypotheses at a significance level of 10% (or 0.10). According to the report, attaining corporate performance requires a flexible strategy to inventory management.

Kamau and Assumpta (2008) studied how handling inventory affects a business's capacity to compete, concentrating on Safaricom Ltd Kenya. 103 managers from the company's Nairobi headquarters made up the target respondents. Fisher's Formula was used to compute a sample. The study obtained primary data with a questionnaire that included both open-ended and closed-ended items and was delivered using a drop-and-pick approach. According to the report, inventory loss, inventory investment, and inventory turnover all have an impact on Safaricom Ltd's competitiveness. The study suggests that inventory management methods are critical to an organization's competitiveness.

### **2.3. Critical literature and research gap identification**

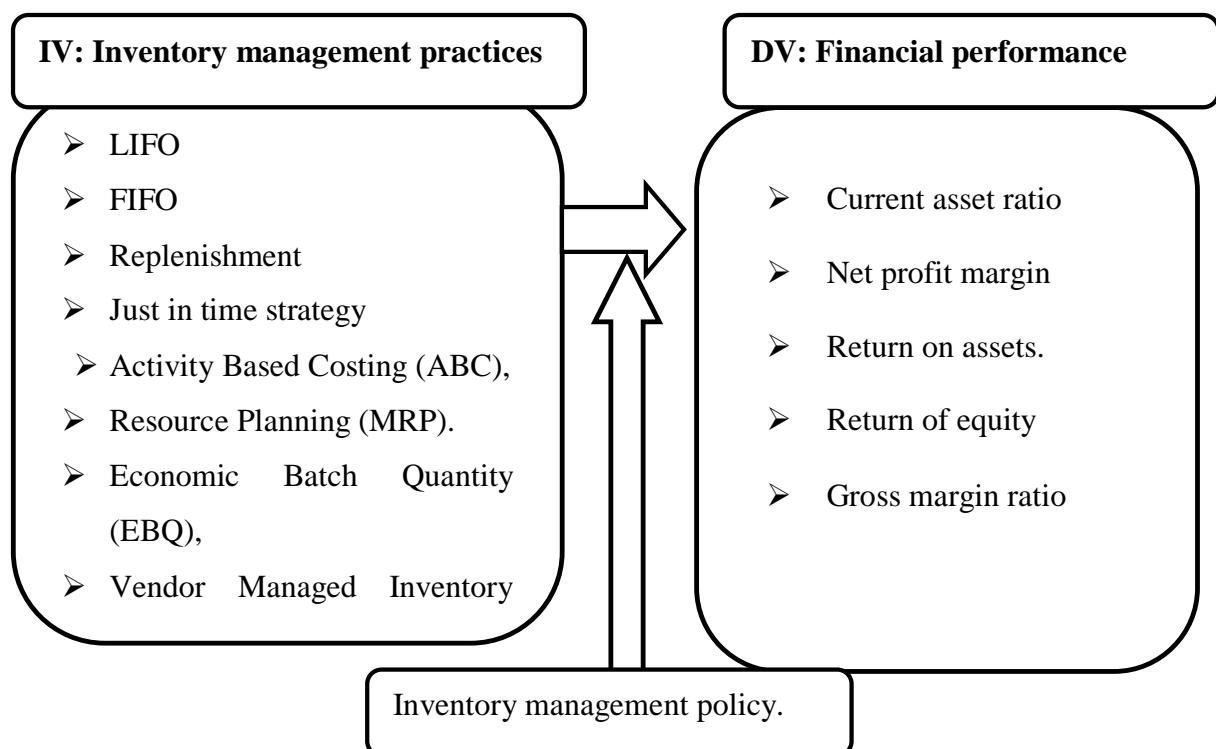
Several studies were conducted across the world on inventory management and organizational performance as presented. They investigated the concept of performance in different perspectives including operational performance, effectiveness and financial performance.

However, the common denominator extracted from all theories is that effective inventory management practices contribute to all perspectives of organizational performance. As shown in empirical literature, there is no study conducted on inventory management practices and financial performance of brewing firms operating in Rwanda that makes a research gap to be bridged by this study moreover, all the studies revealed dissimilarities inherent to inventory management practices implemented in processing companies. Thus, it is from these dissimilarities of inventory management practices implemented by processing and manufacturing companies and shortage of similar studies conducted in Rwanda that the researcher is urged to conduct this study.

#### 2.4. Conceptual Framework

This part provides information about sub variables of independent variables and dependent variables. Independent variables are strategies of inventory management that are just in time, push strategy and pull strategy with their corresponding techniques. The dependent variable is organizational performance that embodies profitability, liquidity, financial and efficiency ratios

**Figure 2.1. Conceptual framework**



**Source:** The researcher compilation, 2023

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1. Introduction**

Methodology explains in detail the sampling methods, methods and techniques used to collect data related to the research topic, to determine the sample size, instruments to be used and their validation, methods used to process, analyze and interpret the collected data as well as the limitations encountered by the researcher when carrying out the study.

#### **3.2. Research design.**

The research design for this study is the survey research design to assess the relationship between inventory management practices and the financial performance-brewing firms the study is both qualitative and quantitative in nature, use documentary, questionnaires, and guided interview as instruments of data collection. It is also correlative design since it is going to find out the relationship between variables under study. The study analyzed inventory management practices applied in the firm. The questionnaire was found as the most effective means to get aware the inventory management practices applied in the firm under study. Because the independent variable is financial performance, it was analyzed by retios approaches. To assess the effects of inventory management practices applied on the financial performance the researcher applied the questions that assess the level of financial performance of the firm. By linking the findings from financial statements and those from the views of the respondents who accurately comprehend the form's performance, the researcher managed to measure the relationship between the two variables.

#### **3.3. Population of the study**

According to the report of the firm extended on website, the BRALIRWA Ltd host 460 employees. To deduct the sample size, the researcher considered the ones who can comprehend the concept of inventory management and the financial performance. The following table shows the number of employees who can comprehend the aspect of inventory management and the financial performance. The researcher preferred to collect primary data from the employees who can comprehend effectively the concepts under study that are inventory management practices and the financial performance of BRALIRWA Ltd. Thus, the researcher targeted the ones who muster the two variables of the study.

Department	Number of employees
Administration (Directors)	6
Production	12
Operations	10
Inventory raw materials	14
Inventory finished goods	12
Logistics	6
Finance	8
Cashier	12
<b>Total</b>	<b>78</b>

Source: Primary data,2024

### 3.4. Sample size determination

Purposive sampling applied to select the employees of BRALIRWA Ltd a who can comprehend the contents under study determine the sample size, the researcher select the respondents of BRALIRWA Ltd and from the target population of 78 permanent employees the formula of Slevin (1967) as follows:

$$n = \frac{N}{1 + N(e^2)}$$

$$n = \frac{78}{1 + 78(0.05)^2} \quad n = \frac{78}{1 + 0.195}, \quad n = \frac{78}{1.195} = 65 \text{ respondents}$$

Therefore, the sample size of this study was 65 employees who acted as the respondents of this study.

### 3.5. Measurement and scaling

In order to accomplish this study, two types of data were collected, primary data and secondary data.

#### 3.5.1. Source of data

##### 3.5.1.1. Primary data

Primary data comes straight from the sample size under study. Thus, it is a relative straightforward type of data that the investigator may get. During this study, primary data were collected from the staff of BRALIRWA Ltd through the questionnaire and interview guide.

### **3.5.1.2. Secondary data**

On the course of this study, secondary data were collected from financial statements of BRALIRWA Ltd in the last ten years.

### **3.5.2. Categories of data**

#### **3.5.2.1 Normal data**

As nominal data refers to a group of non-parametric variables, the researcher used nominal data to analyze the profile of the respondents that participated in the study as they refer to discrete data. It incorporates gender, age and experience of the respondents (employees of BRALIRWA Ltd)

#### **3.5.2.2 Ordinary data**

Ordinal data reflect quantities that have a natural ordering. Through the analysis of replies taken from likert-scale questions, the author was able to determine the opinions of the respondents on the relationship between inventory control and the financial results of the manufacturing firm.

#### **3.5.2.2. Ratio data**

The researcher applied ratio data to analyze the financial performance of BRALIRWA Ltd as it requires liquidity, advantage, turnover and profitability ratios.

### **3.6. Data collection instruments**

Below are methods that were used by the researcher to process and analyze data relating to this study.

#### **3.6.1. Questionnaire**

On the course of this research, the Likert-type questionnaire was designed for the study question that addressed the research questions posed for the study to the employees in BRALIRWA Ltd

#### **3.6.2. Semi-structured interview**

Interviews have been conducted with employees handling directly or indirectly inventory management in the investigated industry.

### 3.6.3. Documentary review

For the achievement of the research objectives, secondary data collection was collected from income statements and balance sheets published during the period covered by the study.

### 3.7. Data quality control

The two most important aspects of any effective research are reliability and validity. A researcher has to analyze the study's quality, which is based on two factors: reliability and validity. Experts agree that for research to be regarded genuine, the measuring process must be dependable.

#### 3.7.1. Validity and reliability

Prior to distributing the questionnaire to respondents, a pilot test was conducted with 10 respondents from a comparable processing Industry brewing organization. This assisted the researcher in making improvements to the questionnaire.

Cronbach's Alpha	N of Items
.916	22

By applying SPSS, the researcher measured the reliability of the instrument by using the Alpha coefficient. As shown in the output of the table, the instrument of data collection applied (questionnaire) were reliable as the corresponding coefficient is 91.6%

### 3.7. Data processing

On the course of this study, editing was performed to verify that the data are correct and compatible with other facts obtained, that they are as thorough as feasible, and that they are effectively organized to ease coding and tabulation. Subsequently, unprocessed data was converted into symbols, typically numbers that could be tallied and recorded. The change is not automated; rather, the developer must use discernment.

#### 3.7.3. Tabulation

Each response was given a code once mistakes were removed. Following this phase, statistical tables displaying the frequency distribution of responses to questions posed to respondents were created.

### 3.8.1. Data analysis

To examine the main information gathered from the surveys, the author employed SPSS software. Utilizing a model that shows rates and % frequency, the data was interpreted using those frequencies. The researcher used descriptive statistics like mean and standard deviation because the study was descriptive in nature. Using multiple regression models and Pearson correlation, the link between managing inventory and financial performance has been examined.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \epsilon$$

Where:

- $\beta_0$  is constant.
- $\beta_1$  to  $\beta_7$  are coefficients.
- $Y$  = Financial performance (ROA, ROE, Net profit)
- $X_1$ =LIFO,  $X_2$ =FIFO,  $X_3$ =Replenishment,  $X_4$ =Activity based costing,  $X_5$ = Source planning,  $X_6$ = Economic batch quantity,  $X_6$ = Vendor managed inventory,  $X_7$ =Material resource planning.

NB: The detailed financial performance, keep it in chapter 4 in data analysis. The regression model is presented here as a general model)

### 3.9. Ethical consideration

The following was the data gathering procedure: The researcher requested the appointment of BRALIRWA Ltd workers prior to the administration of the surveys. Describe the extent to which the results would be kept private. Declare that a participant's participation is optional and that they are free; explain the purpose of the study to them.

## CHAPTER FOUR

### DATA ANALYSIS PRESENTATION AND INTERPRETATION OF FINDINGS

#### 4.0. Introduction

This chapter represents the analysis and interpretation of findings of the research. It gives a deep analysis of inventory management practices applied by BRALIRWA Ltd and its impacts on financial performance. Statistical package for Social Sciences (SPSS) with descriptive statistic was used to analyze and interpret data relevant to inventory management practices and ratios analysis was used to analyze the financial performance based on the financial statement of the case study.

#### 4.2. Presentation of primary data inherent to inventory management practices

This section refers to presentation, analysis and interpretation of primary data collected on the course of this study. To identify inventory management practices exhibited in BALIRWA Ltd, and to assess their effectiveness towards the performance of the industry, the researcher used a questionnaire. Thus, inherent views are presented in the following tables.

**Table 1. Factors leading to stock out in BRALIRWA Ltd**

	N	Min	Max	Mean	Std. Dev
Inefficient suppliers	65	1.00	5.00	3.3538	.86699
Delay in funds release	65	1.00	5.00	3.4538	.75150
Inefficient inventory control	65	1.00	3.00	3.8154	.72656
Technical problem	65	1.00	5.00	2.2000	.91858
Valid N (listwise)	65				

**Source:** Primary data, 2024

Table 4.1. Shows the views of the respondents on the factors that contribute to the stock out in a processing industry. As depicted in the table, four perspectives were proposed by the researcher. It is found out that all the proposed factors contribute to the stock out as asserted by the

respondents, employees of BRALIRWA Ltd. As shown, inefficient suppliers leads to stock out mean=3.3538 std=0.86699,delay in funds release termed as cash flow mean=3.4538 std=0.751150,inefficient inventory control mean=3.8154 standard deviation=.72656 and technical problem mean=2.2 with standard deviation =0.9858.Under consideration of their severity as alleged by the respondents ,the first is delay in funds release (cash flow),the second is inefficient supplier, the third is inefficiency inventory control and the last is technical problem that reflects absence,or any result from organizational poor management.

**Table 4. 2: Applicability of inventory management practices**

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std. Deviation</b>
Use of FIFO practice	65	3.00	5.00	3.8462	.75203
Use of LIFO practice	65	1.00	3.00	1.5846	.90472
Use of ABC practices	65	1.00	4.00	1.9692	.88395
Application of replenishment	65	1.00	5.00	3.4683	.78544
We implement Just in Time practice in inventory management	65	1.00	3.00	1.6154	.65413
Valid N (listwise)	65				

**Source:** Primary data, 2020

Table 4.2 depicts the views of the respondents on the applicability of inventory management practices. As shown in the table, practice known as first in first out(FIFO) is expressed by mean=3.8462,standard deviation 0.75203 which implies that the practice is very applied in BRALIRWA LTD, last in last out (LIFO) is expressed by low mean=1.5846 with great standard deviation=0.90472 which implies that BRALIRWA Ltd discourage the applicability of LIFO practices. As the mean extracted from the respondents indicates, BRALIRWA Ltd does not apply the ABC practice, which is based on the idea that a small percentage of the items may typically represent the bulk of money value of the total inventory used in the production process, while a relatively large number of items may from a small part of the money value of stores .The application of replenishment is very done in BRALIRWA Ltd as the respondents asserted it at a great mean=3.4683 with negligible standard deviation=0.78544 which implies that industry

consider a certain amount of inventory and finished that get replenished regularly to be consistent.

**Table 4.3:Re-order level**

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std. Deviation</b>
In BRALIRWA re-order of processed products is done when stock is over	65	1.00	3.00	1.6154	.75413
In BRALIRWA re-order of raw materials is done when stock is over	65	1.00	3.00	1.5154	.65497
Industries,re-order of finished goods is done at any given level of inventory	65	1.00	3.00	1.6154	.65413
finished goods is done at any given level of inventory	65	2.00	5.00	3.5231	.61511
Valid N (listwise)	65				

Table 4.3.Shows the views of the respondents on when BRALIRWA Ltd reorders new amount of inventory for both raw materials and finished products. As shown in the table, the fact pertaining that industry reorders raw materials and finished goods when the stock is over was not admitted by the respondents as it is expressed by low mean=1.6154,standard deviation=.75413,they also alleged that the industry doesn't re-order when the stock of raw material is over with low mean=1.5154 standard deviation=.65497 and they strongly asserted that BRALIRWA Ltd reorders other amount of raw materials and processed products at any given level of inventory without waiting the exhaustion of the inventory. This implies effective inventory practices, which rely on keeping amount of both raw materials and finished goods.

**Table 4.4: Efficiency of inventory management practices**

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std. Deviation</b>
The demand prediction identifies the inventory required to counteract variations in the business's consumption.	65	1.00	4.00	2.0308	.63662
Because forecasting increases our efficiency, our company can provide its customers more value.	65	1.00	4.00	2.0000	.70711
Predicting generates a repository of information that our company's decision-makers may use to build strategies to accomplish goals by improving efficiency.	65	1.00	4.00	3.2077	.50096
Predicting shows how our surroundings is changing to boost productivity in our company.	65	1.00	4.00	2.9692	.60950
BRALIRWA Ltd uses inventory replenishment in operation to enhance our performance	65	1.00	4.00	3.7692	.62480
BRALIRWA Ltd maintains efficient order to improve organizational performance	65	1.00	5.00	3.1538	.59242
Valid N (listwise)	65				

**Source:** Primary data, 2020

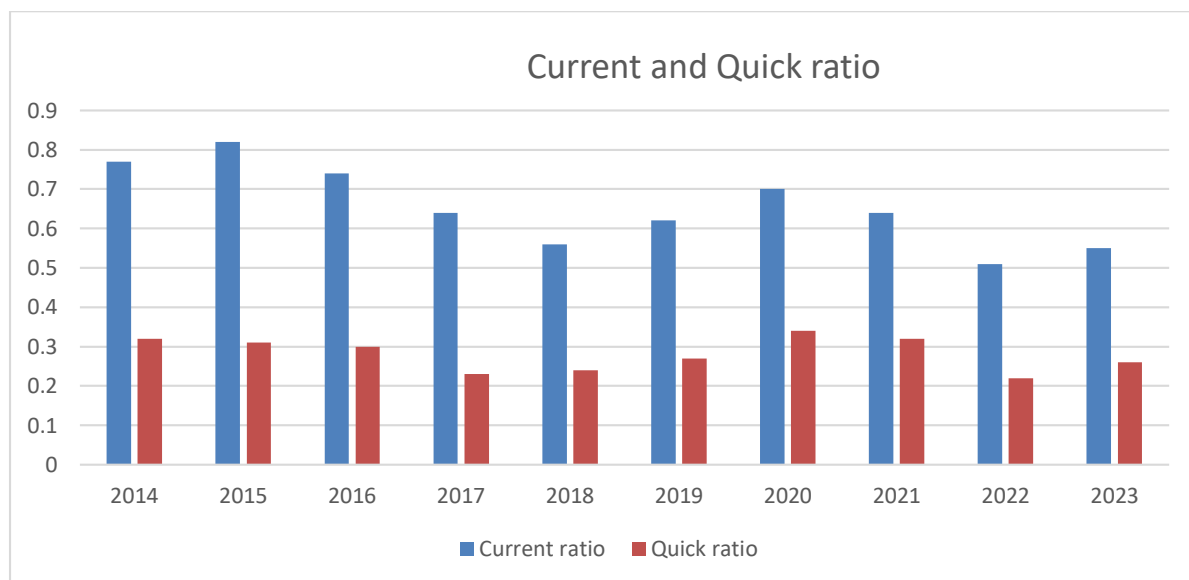
Table 4.4 shows the views of the respondents on the efficient of inventory management practices based of forecasting the amount of demand. As shown in the table, the respondents asserted that The demand prediction identifies the inventory required to counteract variations in the business's consumption mean=2.0308 standard deviation=.63662,they asserted that Because forecasting increases our efficiency, our company can provide its customers more value by increasing our efficiency=2,creates data bank that helps decision makers in our firm to create plans to meet targets through improve performance mean=3.2077 and demonstrates the changes in environment to improve performance in our firm mean=2.9692.They strongly asserted that BRALIRWA Ltd uses inventory replenishment in operation to enhance our performance mean=3.7692 standard deviation=.62480 and they stated that BRALIRWA Ltd maintains efficient order to improve organizational performance mean=3.1538 standard

deviation=.59242.From the findings presented in the table, the researcher found out that inventory management practices exhibited by BRALIRWA Ltd provide facts that enable the company to forecast demand which enhance the operational performance.

### 4.3. Analysis of financial performance through ratio evaluation.

Decision-makers utilize ratios that they compute from the company's financial statements to assess the financial situation of the firm. For better understanding, the financial performance different ratios were calculated and categorized as Liquidity ratios, advantage ratio and profitability ratio. Thus, quick ratio, return on assets,return on equity, net profit and gross profit ratios were applied to assess the financial performance.

Figure 1 :Current ratio and quick ratio of BRALIRWA Ltd 2014-2023



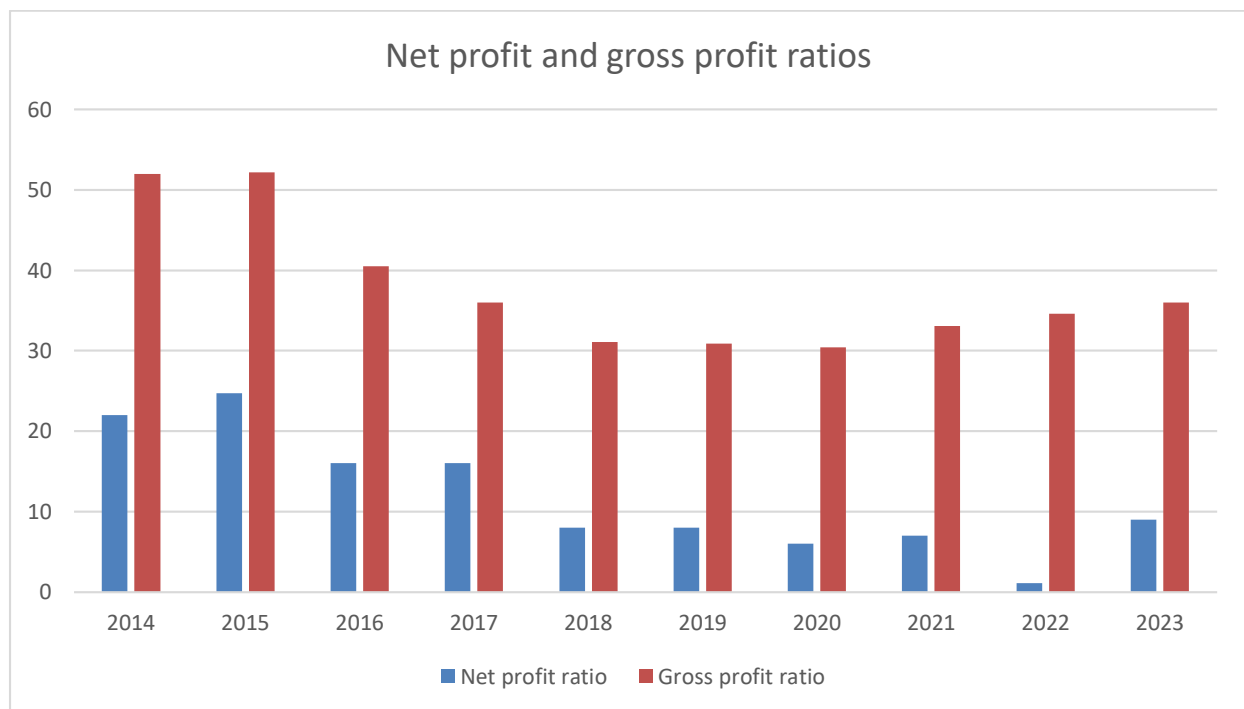
Source: Financial reports from BRALIRWA Ltd 2014-2023

The graph represents the liquidity of BRALIRWA Ltd from 2014 to 2023. Regarding the current ratio, BRALIRWA Ltd experience a positive current ratio over ten years that carries between 0.5 to 0.8. The analysis discloses that the company experienced moderate liquidity (not sufficient at all) due to the fact that the rule of thumb suggest a liquidity of 1:1 and throughout the period the ratio is slightly less than 1 and it decreased progressively from 2014 to 2023: In nut shell, the ratio proves a sufficient performance of the company. Regarding the quick acid ratio, the fact files from the table indicate that out of the inventory, BRALIRWA Ltd was able to meet obligations over last ten years, which is the indicator of fluent liquidity as indicator of performance could finance 100% its daily transaction during these respective financial years.

### 4.3.3. Profitability ratios

Productivity is measured in a variety of ways. When taken as a whole, these metrics provide the analyst the ability to assess the company's profit in relation to a specific sales target, asset level, or owner investment. A company could not draw in outside investment if it wasn't profitable. Because revenues are so important in the marketplace, owners, creditors, and management are all focused on increasing profits.

Figure 2 :Net profit and gross profit ratio



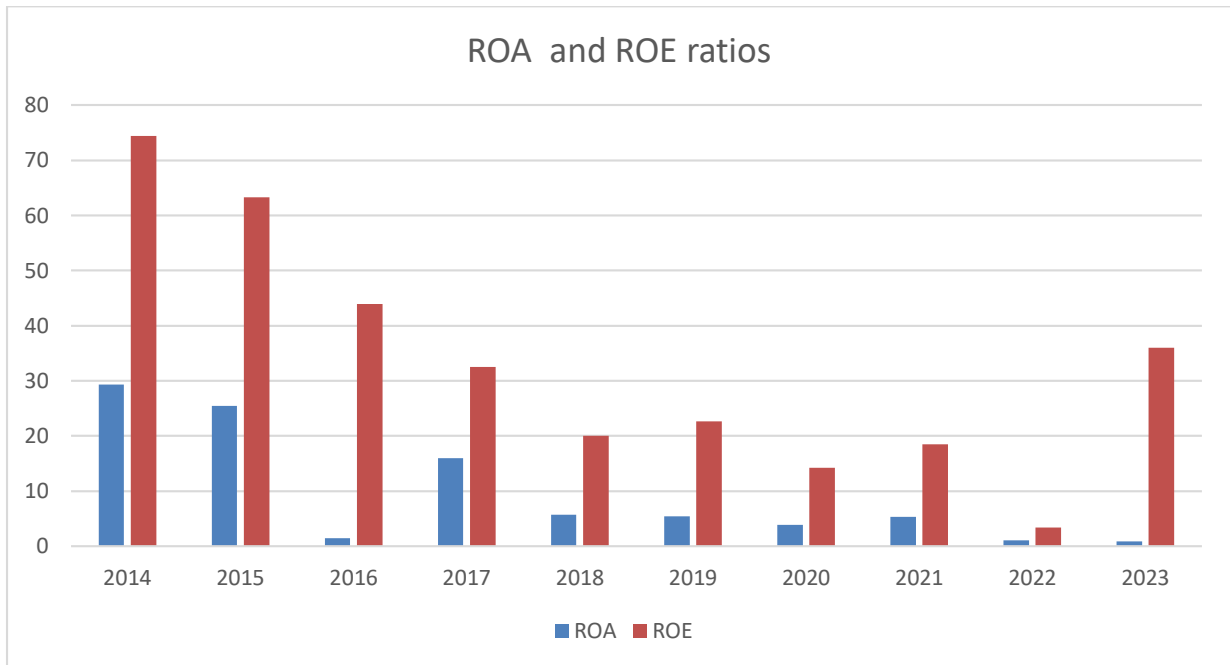
Source: Financial reports from BRALIRWA Ltd 2014-2023

The graph above represents the net profit ratio and gross profit ratio of BRALIRWA Ltd in the last ten years from 2014 to 2023. The net profit ratio within the period under study is positive which indicates effective performance. The fact that BRALIRWA Ltd experienced a slight decline of the ratio from 2014 to 2023, it indicates a moderate performance and inconsistent in minimizing expenses as the revenue kept the same decreasing ratio.

The gross profit ratio also was positive throughout the period and varied between 30% and 55%, which indicated that the company accumulated sufficient sales in the period. The ratio declined from 55% in 2011 to 30.4% in 2020 and rose from 30.4% to 36% in 2022. As the net profit ratio declined from 2020 to 2023 while the gross margin ratio boosted it implies that BRALIRWA Ltd didn't suffer from low revenue but much more administrative costs and other expenses from

2020 to 2023. Briefly, both net profit and gross profit indicate a sufficient and effective performance of the company.

**Figure 3: ROA ratio and ROE ratio**



**Source: Secondary data, BRALIRWA 2014-2023**

The graph above represents the ROA and ROE ratio of BRALIRWA Ltd. As shown in the table, the company exerted positive ROA and ROE over last ten years. The extent to which the assets were utilized to generate the profit slightly declined from 2014 to 2023 due to the progressive decline of the net profit justified by an increase of expenses. Regarding the equity, the facts file indicate that the equity was used well than assets at the ratio is little greater. Based on data represented, the researcher found out that the ratio inherent to investment proves efficient financial performance.

#### **4.3.4. Descriptive statistics regarding the financial performance**

This subsection presents the descriptive statistics related to the variables that were used to measure the financial performance of Bralirwa Ltd. The researcher emphasizes on the quantitative data that indicate the level of performance in the last ten years.

**Table 5: Mean of ratios over the period under study.**

	<b>Liquidity</b>	<b>Quick ratio</b>	<b>ROA</b>	<b>ROE</b>
Mean	11.8	37.5	9.63	31.6
Standard Error	2.412	2.59	3.27	7.04
Median	8.5	35	5.65	22.5
Standard Deviation	7.62	8.19	10.36	22.28
Sample Variance	58.17	67.16	107.52	496.71
Kurtosis	-0.62	0.29	0.01	0.049
Skewness	0.567	1.26	1.22	0.972
Range	24	22	28	70
Minimum	1	30	1	4
Maximum	25	52	29	74
Sum	118	375	96.3	316
Count	10	10	10	10
Largest (1)	25	52	29	74
Smallest (1)	1	30	1	4
Confidence Level (95.0%)	5.45	5.86	7.417	15.94

Source: Secondary data, 2024

The data from the table depict the descriptive statistics of financial performance of BRALIRWA Ltd. The mean inherent to the liquidity is 11.8, quick ratio is 37.5%, ROA 9.63 and ROE 31.6. On the basis of the findings presented in the table, the researcher asserts that BRALIRWA Ltd experiences a moderate efficient performance as liquidity is above one and it managed to use both Assets and equity at more than 30%. However, the company was not consistent in its performance as it exerted a great variation years by years proved by a great range of Liquidity ratio(24), Quick ratio(22), ROA (28) and ROE(70). The great gap of range was due to asymmetric increase or decrease of expenses as the total sales maintained the same increasing ratio within the last ten years.

#### **4.4. Inventory management and the financial performance of Bralirwa Ltd**

After analysis of inventory management practices applied by BRALIRWA Ltd and the financial performance of BRALIRWA Ltd, the researcher then measured the extent to which the inventory management practices contribute to the performance of BRALIRWA Ltd. Therefore, both correlation coefficient and regression analysis were used as depicted in the following tables.

**Table 4.6: Relationship between inventory management and performance**

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std. Deviation</b>
Effective implementation of inventory management practices increases the profit	65	2.00	3.00	3.5538	.70779
There is a strong relationship between inventory management practices and financial performance of BRALIRWA Ltd	65	2.00	2.00	4.2077	.47304
Valid N (listwise)	65				

**Source:** Primary data, 2024

Table 4.6 shows the views of the respondents on the relationship between inventory management practices applied by BRALIRWA Ltd and its financial performance. As shown in the table, the employees asserted that effective implementation of inventory management practices increases the profit mean=3.5538 with std=.70779, they asserted a strong relationship between inventory management practices and financial performance with a great mean=4.2077. On the basis on the fact that the industry experienced efficient and effective financial performance; the study disclosed effective inventory management practices that prevent obsolescence of finished goods and inventory, the researcher ensured that effective inventory management practices exhibited by BRALIRWA Ltd contributed to its observed financial performance over last three years.

**Table 4.7: Correlation between the variables of the study**

		Correlations											
		FIFO	LIFO	Replen	ABC	RP	EBQ	VMI	MRP	ROA	ROE	Net profit	NIM
FIFO	Pearson co	1	.413**	.533**	.698**	.719**	.548**	.227	.636**	.660**	.775**	.638**	.616**
	Sig. (2-tailed)		.001	.000	.000	.000	.000	.069	.000	.000	.000	.000	.000
	N	65	65	65	65	65	65	65	65	65	65	65	65
LIFO	Pearson co	.413**	1	.550**	.821**	.680**	.850**	.753**	.455**	.848**	.719**	.792**	.883**
	Sig. (2-tailed)	.001		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	65	65	65	65	65	65	65	65	65	65	65	65
Replen	Pearson Co	.533**	.850**	1	.876**	.861**	.535**	.602**	.523**	.950**	.875**	.917**	.939**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	65	65	65	65	65	65	65	65	65	65	65	65
ABC	Pearson Co	.698**	.821**	.476**	1	.880**	.610**	.551**	.496**	.919**	.873**	.876**	.893**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000
	N	65	65	65	65	65	65	65	65	65	65	65	65
SP	Pearson Co	.719**	.680**	.461**	.880**	1	.534**	.481**	.535**	.894**	.922**	.869**	.852**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000
	N	65	65	65	65	65	65	65	65	65	65	65	65
EBQ	Pearson Co	.548**	.850**	.535**	.910**	.834**	1	.501**	.613**	.914**	.824**	.917**	.911**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000
	N	65	65	65	65	65	65	65	65	65	65	65	65
VMI	Pearson Co	.227	.753**	.502**	.551**	.481**	.501**	1	.488**	.611**	.551**	.535**	.618**
	Sig. (2-tailed)	.069	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000
	N	65	65	65	65	65	65	65	65	65	65	65	65
MRP	Pearson Co	.636**	.755**	.523**	.896**	.935**	.513**	.488**	1	.909**	.910**	.942**	.909**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
	N	65	65	65	65	65	65	65	65	65	65	65	65
ROA	Pearson Co	.660**	.848**	.950**	.919**	.894**	.814**	.611**	.909**	1	.929**	.908**	.955**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000
	N	65	65	65	65	65	65	65	65	65	65	65	65
ROE	Pearson co	.775**	.719**	.875**	.873**	.922**	.724**	.551**	.910**	.929**	1	.901**	.932**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000
	N	65	65	65	65	65	65	65	65	65	65	65	65
Net profit	Pearson Co	.638**	.792**	.917**	.876**	.869**	.917**	.535**	.942**	.908**	.901**	1	.935**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000
	N	65	65	65	65	65	65	65	65	65	65	65	65
NIM	Pearson Correlation	.616**	.883**	.939**	.893**	.852**	.911**	.618**	.909**	.955**	.932**	.935**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
	N	65	65	65	65	65	65	65	65	65	65	65	65

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source :**Primary data,2024

The table above represents the correlation (Pearson) between the sub variables of inventory management practices and the sub variable of financial performance that are ROE, ROA, Net profit and interest ,margin. As displayed in the table, all inventory management practices are statistically correlated to the measures of financial performance with P-value of .000<0.005. Based on the findings, the researcher found out that inventory management practices is correlated to the financial performance.

The results show that inventory management practices are correlated to the measures of financial performance. All inventory management practices considered by this study display a great correlation towards greater than 50% towards all financial performance measures notably ROE, ROA, Net profit and interest margin.

Regarding the aspect of collinearity among the variable of the study, the author analyzed the results by assessing whether they are valid to predict the financial performance. Normally, collinearity statistics assign a score to each independent variable in order to quantify the link between several independent variables. Very small values suggest that an independent variable is redundant since the "tolerance" measures the percentage of variance in an independent that cannot be explained by the other independent variables. The fact that tolerance score is smaller than 0.5 on all sub variables of inventory management practice, it indicates low level of collinearity implying that all variables are valid to predict financial performance.

**4.4.2. Regression analysis between inventory management practices and financial performance of BRALIRWA Ltd from 2014 to 2023**

The researcher selected core/key indicators of the independent variable and assessed their correlation to project performance. In order to scope the content to small and accurate data, the researcher assessed the effects of inventory management practices on ROA, ROE and Net Profit only. Therefore, the following regression equation was applied to find the relationship between inventory management practices and the financial performance of BRALIRWA Ltd. Therefore, LIFI,, FIFO,Replenishment,,Activity based costing, Economic batch quantity, Vendor managed inventory and Material resource planning were considered as the predictors .

**4.4.2.1. Inventory Management practices and ROA**

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \epsilon$$

Where:

$$Y = ROA$$

$\beta_0$  is constant

- $\beta_1$  to  $\beta_7$  are coefficients.
- $X_1$ =LIFI , $X_2$ =FIFO, $X_3$ =Replenshement, $X_4$ =Activity based costing, , $X_5$ = Economic batch quantity, $x_6$ = Vendor managed inventory, $X_7$ =Material resource planning.

<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.960 <sup>a</sup>	.922	.910	.23034

a. Predictors: (Constant), Material resource planning, Vendor managed inventory, Economic batch quantity, FIFO, Replenshment, LIFO, Activity based costing.

Source: Primary data, 2024

Table show the model summary of the regression analysis that assess the effects of sub variables of independent variable towards the performance of Bralirwa Ltd from 2014 to 2023. The results from the table show that R column presents the value of Rather multiple correlation coefficient. It indicates that LIFO, FIFO and replenishment practices can influence the level of performance at 0.922, corresponding to 92.2%, which indicates a significant level of prediction.

**Table 4.8: Regression coefficients**

		Coefficients <sup>a</sup>				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	.455	.192		2.369	.021
	FIFO	.011	.113	.009	.094	.925
	LIFO	.032	.064	.052	.495	.623
	Replenishment	.267	.141	.255	1.891	.064
	Activity based costing	.180	.094	.215	1.906	.062
	Economic batch quantity	-.144	.076	-.224	-1.888	.064
	Vendor managed inventory	.022	.034	.044	.658	.513
	Material resource planning	.456	.108	.567	4.207	.000

**a. Dependent Variable: Return on Assets**

S: Primary data, 2024

Table shows that the independent variables that are taken into account (LIFO, FIFO and replenishment, activity-based costing, source planning, economic batch quantity and vendor managed inventory) to predict dependent variable, all contribute at different levels as explained by their P-value and the coefficients. It is indicated that Material Resources Planning (MRP) boosts financial performance at the greatest level as its coefficient is the highest (.456) compared to other variables taken into account, the second practice that contributes to the financial performance is Replenishment that indicates a coefficient of .226, other inventory management practices affect the performance of the firm at the low level, LIFO=.032, Source planning=.085, Vendor managed inventory=.022, while Economic batch quantity displays a negative effect corresponding to -.144. Based on the results from this multiple regression, the researcher found out that inventory management practices contribute to the ROA of Bralirwa Ltd. Therefore, based on the results, the level of performance =  $.117 + (0.268 * \text{FIFO}) + (.137 * \text{LIFO}) + (.226 * \text{Replenishment}) + (.022 * \text{vendor managed inventory}) - (.144 * \text{economic batch quantity})$

#### 4.2.2.2. Effects of inventory management practices on return on Equity

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \epsilon_k$$

Where:

$$Y = \text{ROE}$$

$\beta_0$  is constant

- $\beta_1$  to  $\beta_7$  are coefficients.
- $X_1$ =LIFI, $X_2$ =FIFO, $X_3$ =Replenshement, $X_4$ =Activity based costing,  $X_5$ = Economic batch quantity, $x_6$ = Vendor managed inventory, $X_7$ =Material resource planning.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.792 <sup>a</sup>	.813	.801	.2061

a. Predictors: (Constant), Material resource planning, Vendor managed inventory, Economic batch quantity, FIFO, Replenishment, LIFO, Activity based costing.

Source: Primary data, 2024

Table show the model summary of the regression analysis that assess the effects of sub variables of independent variable towards the performance of Bralirwa Ltd from 2014 to 2023. The results from the table show that R column presents the value of Rather multiple correlation coefficient. It indicates that LIFO, FIFO and replenishment practices can influence the level of ROE at 0.792, corresponding to 79.2%, which indicates how BRALIRWA utilizes the assets to get a profit

**Table 4.9. Regression coefficients**

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.303	.192		2.359	.022
	FIFO	.031	.113	.009	.093	.925
	LIFO	.043	.064	.052	.395	.523
	Replenishment	.377	.134	.255	2.892	.053
	Activity based costing	.290	.081	.225	2.905	.052
	Economic batch quantity	-.138	.066	-.223	-2.888	.053
	Vendor managed inventory	-.001	.052	.033	.558	.523
	Material resource planning	.456	.108	.557	3.207	.000

a. Dependent Variable: Return on Equity

S: Primary data,2024

Table shows that the independent variables that are taken into account (LIFO, FIFO and replenishment, activity based costing, source planning, economic batch quantity, vendor managed inventory, and material resources planning) to predict dependent variable that is return on equity, all contribute at different level as explained by their P-value and the coefficients. It is indicated that material resources planning boosts financial performance at greatest level as its coefficient is the highest (.456) compared to other variables taken into account, the second practice that contributes to the financial performance is Replenishment that indicates a coefficient of .377, other inventory management practices affect the performance of the firm at the low level, LIFO=.031, while Vendor managed inventory(-.002) and economic batch quantity displays a negative effect corresponding to (-.138). Based on the results from this multiple regression, the researcher found out inventory management practices contribute to the return on equity. Therefore, based on the results, the Return on Equity=.117+(0.268\*FIFO)+(.137\*LIFO) + (.226\*Replenishment)+(-.001\*vendor managed inventory)-(138\*economic batch quantity)

#### 4.2.2.3. Effects of inventory Management practices on Net profit

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \epsilon$$

Where:

**Y = Net profit**

$\beta_0$  :Constant

- $\beta_1$  to  $\beta_7$  are coefficients.
- $X_1$ =LIFO, $X_2$ =FIFO, $X_3$ =Replenishment, $X_4$ =Activity based costing,  $X_5$ = Economic batch quantity, $X_6$ = Vendor managed inventory, $X_7$ =Material resource planning.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.698 <sup>a</sup>	.752	.719	.3183

a. Predictors: (Constant), Material resource planning, Vendor managed inventory, Economic batch quantity, FIFO, Replenishment, LIFO, Activity based costing.

Source: Primary data, 2024

Table show the model summary of the regression analysis that assess the effects of sub variables of independent variable towards the Net profit of Bralirwa Ltd from 2014 to 2023. The results from the table show that R column presents the value of Rather multiple correlation coefficient. It indicates that LIFO, FIFO and replenishment practices can influence the level of ROE at 0.698, corresponding to 69.8%, which indicates how BRALIRWA relies inventory management practices to get the net profit

**Table 4.10. Regression coefficients between IMP and net profit**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
2	(Constant)	.217	.292		2.359	.022
	FIFO	.032	.223	.009	.093	.925
	LIFO	-.002	-.023	-.002	-.095	.023
	Replenishment	.366	.233	.255	2.692	.053
	Activity based costing	.009	.062	.025	0.905	.052
	Economic batch quantity	-.236	.055	-.223	-2.666	.053
	Vendor managed inventory	-.011	-.052	.033	.556	.523
	Material resource planning	.355	.206	.556	3.206	.000

a. Dependent Variable: Net profit

Source: Primary data, 2024

Table shows that the independents variable that are taken into account (LIFO, FIFO and replenishment, activity based costing, source planning, economic batch quantity, vendor managed inventory, and material resources planning) to predict dependent variable that is the net profit, all contribute at different level as explained by their P-value and the coefficients. It is indicated that material resources planning boosts the net profit at greatest level as its coefficient is the highest (.355) compared to other variables taken into account, the second practice that contributes to the increase of net profit is Replenishment that indicates a coefficient of .366, other inventory management practices affect the performance of the firm at the low level and FIFO=.031, while Vendor managed inventory(-.011), LIFO (-.002) economic batch quantity (.236), displays a negative effect corresponding to (-.226). Based on the results from this multiple regression, the researcher found out inventory management practices contribute to the net profit. Therefore, based on the results, the net profit =  $.217 + (0.32 * \text{FIFO}) + (-.002 * \text{LIFO}) + (.336 * \text{Replenishment}) + (-.011 * \text{vendor managed inventory}) - (236 * \text{economic batch quantity})$

#### **4.5. Discussion of findings**

The findings presented above show that inventory management is an important driver of performance in processing industry. To investigate whether BRALIRWA Ltd. applies them or not. The results disclose that the institution does not apply all practices; instead, BRALIRWA Ltd. applies some of them. They asserted that they apply first in first out practice and replenishment practice on the basis on lead-time. They alleged that order quantity is variable witch discourage the fixed order quantity as they rely on computer simulation software with Monte Carlo simulation to determine amount of units to be purchase based on the current financial situation. In nutshell, they asserted that inventory management practices are effectively applied in BRALIRWA Ltd that helps them to achieve their effective and efficient performance.

Furthermore, the respondents asserted that they carry out a regular review of inventory by monitoring the movement of products and services into and out of company inventory. The responsibility of inventory planners is to guarantee that warehouses maintain an adequate stock level to meet client demands and maintain efficient production flow. Inventory planners make ensuring that manufacturing companies have the proper stock on hand at the right time, satisfy customer requests on schedule, and minimize storage costs because every product has expenses associated with its creation or keeping, such as storage fees. Better planning and forecasting of BRALIRWA Ltd.'s raw material and stock demands is made possible by inventory management. In order to ensure performance via effective and efficient performance inside the company, it makes it easier to manage stock levels optimally and foresee predictable modifications in these levels. Performance will increase when BRALIRWA Ltd is able to manufacture all the goods that clients want. When a company has the entire necessary inventory on hand, it is easier to satisfy customer demands. This is made possible by stock reviews, which also help a company reach production objectives more effectively. The review process helps identify all the criteria needed to accomplish the objectives, which makes it easier to meet the production target.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS CONCLUSION AND RECOMMENDATIONS**

#### **5.0. Introduction**

The primary study discoveries that allowed the scholar to accomplish the study's goals and provide an answer to the research questions are summarized in this chapter. A broad conclusion and pertinent recommendations were drawn in light of the main findings.

#### **5.1. Summary of the major findings**

This section of the study represents the summary of major findings regarding three objectives that guided this study.

##### **5.1.1. Findings regarding the first objective**

The factors that lead to stock out are inefficient suppliers leads to stock out mean=3.3538, delay in funds release termed as cash flow mean=3.4538 ,inefficient inventory control mean=3.8154 technical problem mean=2.2.Regarding inventory management practices, practice known as first in first out(FIFO) is expressed by mean=3.8462,standard deviation 0.75203 which implies that the practice if very applied in BRALIRWA LTd,last in last out (LIFO) is expressed by low mean=1.5846 with great standard deviation=0.90472 which implies that BRALIRWA Ltd discourage the applicability of LIFO practices. The application of replenishment is very done in BRALIRWA Ltd as the respondents asserted it at a great mean=3.4683.

##### **5.1.2. Findings regarding the financial performance of Bralirwa Ltd**

The study sought to analyze the financial performance of BRALIRWA Ltd from 2011 to 2020.The researcher relied on the aspects of financial performance that are liquidity, advantage and the performance. The relevant findings indicated that:

BRALIRWA Ltd experience a positive current ratio over ten years that caries between 0.5 to 0.8.The analysis discloses that the company experienced moderate liquidity (not sufficient at all) due to the fact that the rule of thumb suggest a liquidity of 1:1 and throughout the period the ratio is slightly less than 1 and it decreased progressively from 2011 to 2020:In nut shell, the ratio proves a sufficient performance of the company. Regarding the quick acid ratio, the fact files from the table indicate that out of the inventory, BRALIRWA Ltd was able to meet obligations over last ten years, which is the indicator of fluent liquidity as indicator of performance.

The financial position of BRALIRWA is faithful since it is corresponding to the normal standard which less or equal to 100. The company has no financial problem or risk, since this ratio is not great than 1 and this means that this financial institution could finance 100% its daily transaction during these respective financial years.

The net profit ratio and gross profit ratio of BRALIRWA Ltd in the last ten years from 2011 to 2020. The net profit ratio within the period under study is positive which indicates effective performance. The gross profit ratio also was positive throughout the period and varied between 30% and 55%, which indicated that the company accumulated sufficient sales in the period.

The company exerted positive ROA and ROE over last ten years. The extent to which the assets were utilized to generate the profit slightly declined from 2011 to 2020 due to the progressive decline of the net profit justified by an increase of expenses. Regarding the equity, the facts file indicate that the equity was used well than assets at the ratio is little greater. Based on data represented, the researcher found out that the ratio inherent to investment proves efficient financial performance.

The correlation matrix of the overall performance aspects show that the liquidity and quick ratio are correlated at 0.888 which indicates that BRALIRWA Ltd does hold much inventory. It implies that the institution sells its products quickly which minimize the amount value of inventory. The correlation between two ratios that measure the performance is also significance. Return on the assets and return on equity ratios are also correlated at 0.864, which indicates high significance. This implies is that assets and equity have been used at the same extent to generate profits of the company.

### **5.1.3. Relationship between inventory management and financial performance**

The respondents (employees) asserted that effective implementation of inventory management practices increases the profit mean=3.5538 with std=.70779, they asserted a strong relationship between inventory management practices and financial performance with a great mean=4.2077. On the basis on the fact that the industry experienced efficient and effective financial performance; the study disclosed effective inventory management practices that prevent obsolescence of finished goods and inventory, the researcher ensured that effective inventory management practices exhibited by BRALIRWA Ltd contributed to its observed financial performance over last three years.

Regarding inventory management practices and ROA, coefficient of MRP is the highest (.456) compared to other variables taken into account, the second practice that contributes to the financial performance is Replenishment that indicates a coefficient of .226, other inventory management practices affect the performance of the firm at the low level, LIFO=.032, Vendor managed inventory=.022, while Economic batch quantity displays a negative effect corresponding to -.144.

Regarding inventory management practices and the net profit, the study revealed that indicated that material resources planning boosts financial performance at greatest level as its coefficient is the highest (.456) compared to other variables taken into account, the second practice that contributes to the financial performance is Replenishment that indicates a coefficient of .377, other inventory management practices affect the performance of the firm at the low level, LIFO=.031, Source planning=.065, while Vendor managed inventory(-.002). and economic batch quantity displays a negative effect corresponding to (-.138)

Regarding the effect of inventory management practices on ROE, it was found that material resources planning boosts financial performance at greatest level as its coefficient is the highest (.456) compared to other variables taken into account, the second practice that contributes to the financial performance is Replenishment that indicates a coefficient of .377, other inventory management practices affect the performance of the firm at the low level, LIFO=.031, Source planning=.065, while Vendor managed inventory(-.002). and economic batch quantity displays a negative effect corresponding to (-.138). Based on the results from this multiple regression, the researcher found out inventory management practices contribute to the return on equity

## **5.2. Conclusion**

The study revealed that BRALIRWA Ltd uses several inventory management practices including the practice known as first in first out (FIFO), the application of replenishment is very done in BRALIRWA Ltd as the respondents asserted it at a great mean=3.4683 and just. This proves that the management of brewing firms rely on inventory management practices in two perspectives' section aiming at managing raw materials whereby they rely on practices like FIFO to prevent raw materials from obsolescence, by preserving them in convenient conditions. The other section is to manage the amount of finished goods to meet the demand of customers whereby replenishment practices, just in time practices are taken into account with effective supply chain management.

The financial performance was found effective as the liquidity, the business liquidity or business solvency of BRALIRWA Ltd was standardized since the current ratio met the standard requirement and this standard ratio could be greater or equal to 1. Turnover ratio of BRALIRWA Ltd 2014 – 2023 show that there has been efficiency utilization of fixed assets over four years which expresses the effective financial performance of BRALIRWA Ltd that result from effective implementation of inventory management practices. Regarding profitability, the gross profit of BRALIRWA within this period the kept on increasing. BRALIRWA Ltd was able to generate the profit and recover the operating expenses, the cost of goods sold, and the borrowing funds. The ROA ratio has increased and is positive which implies a significant amount of profit generated by assets and the return on equity ratio kept on increasing which indicates how efficiency the equity of shareholders was utilized to generate the profit which was assessed positive within three last years concerned by this study.

Thus, effective implementation of inventory management practices increases the profit, they asserted a strong relationship between inventory management practices and financial performance. On the basis on the fact that the industry experienced efficient and effective financial performance; the study disclosed effective inventory management practices that prevent obsolescence of finished goods and inventory, the researcher ensured that effective inventory management practices exhibited by BRALIRWA Ltd contributed to its observed financial performance over last three years. The level of performance= $.117+(0.268*\text{FIFO})+(\.137*\text{LIFO}) + (.226*\text{Replenishment}) +(.022*\text{vendor managed inventory})-(144*\text{economic batch quantity})$

### 5.3. Recommendations

- The analysis discloses that the company experienced moderate liquidity (not sufficient at all) due to the fact that the rule of thumb suggest a liquidity of 1:1 and throughout the period the ratio is slightly less than 1 and it decreased progressively from 2014 to 2023. On the basis of the findings, the researcher suggests BRALIRWA Ltd to boost the ratio of the currents assets to the current liabilities.
- The gross profit ratio declined from 55% in 2014 to 30.4% in 2020 and rose from 30.4% to 36% in 2023. As the net profit ratio declined from 2020 to 2023 while the gross margin ratio boosted it implies that BRALIRWA Ltd didn't suffer from low revenue but much more administrative costs and other expenses from 2020 to 2023. On the basis of the

findings, the researcher suggest BRALIRWA Ltd to maintain the ratio of expenses as the revenue remains consistent.

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**QUESTIONNAIRE ADDRESSED TO THE EMPLOYEES OF  
BRALIRWA LTD KIAGALI-RWANDA**

I am **Annah BATAMURIZA**, a student at University of Rwanda. I am carrying out a research study on “**The effect of inventory Management Practices on the financial performance of**

**brewing firms in Rwanda. Case of BRALIRWA LTD 2013-2023.”** I request my kind respondents to answer the entire questionnaire by exhausting your opinions; the data provided will be kept confidentially and used purely for academic purpose. Thank you very much for your assistance.

Please tick the appropriate box or explain where necessary.

**SECTION A**

**BACKGROUND INFORMATION**

**1) Gender**

a) Male

b) Female

**2) Age**

a) 21 – 28

b) 29 – 36

c) 37 – 44

d) 45 – above

**3) Level of education**

a) Bachelor’s Degree

b) Master’s Degree

c) Operators

**4) Marital status**

a) Married

b) Single

c) Widow

**5.**Position.....

**6.**Experience

a) Less than 1 year

b) Less 2-5 years

c) 6-10 years

d) Above 10years

**Instructions:** please respond to the questions of your choice by using the corresponding letter(s) as guided.

**SA:** Agree with no doubt

**A:** Agree with some doubt

**D:** Disagree with some doubt

**SD:** Strongly disagree with no doubt

**Response code:** SA=1; A=2; N=3, D=4, SD=5

## SECTION TWO: INVENTORY MANAGEMENT PRACTICES

STATEMENTS	SA	A	N	D	SD
<b>Factors leading to stock out</b>					
7. Inefficient suppliers					
8. Delay in funds release					
9. Inefficient inventory control					
10. Technical problem					
11. We use LIFO practice in inventory management					
12. We use FIFO practice in inventory management					
13. We use ABC practice in inventory management					
14. We implement replenishment practice in inventory management					
15. We implement Just in Time practice in inventory management					
<b>II. Inventory Management practices</b>					
<b>Re-order level</b>					
16. In BRALIRWA Ltd re-order of processed products is done when stock is over					
17. In BRALIRWA Ltd re-order of raw materials is done when stock is over					

18.In BRALIRWA Ltd, re-order of finished goods is done at any given level of inventory					
19.In BRALIRWA Ltd, reorder of raw materials is done at any given level of inventory					
20.In BRALIRWA Ltd, re-order of finished goods is done any time					
<b>Inefficiency of inventory practices</b>					
21. Demand forecast states the needed inventory that helps to overcome the fluctuations in demand for our industry					
22.Forecasting enables our firm to provide its customer higher value by increasing our efficiency					
23.Forecasting creates a data bank that helps decision makers in our firm to create plans to meet targets through improve performance					
24.Forecasting demonstrates the changes in environment to improve performance in our firm					
25.Forecasting demonstrates the changes in environment to improve performance in the firm					
26.BRALIRWA Ltd uses inventory replenishment in operation to enhance our performance					
27.BRALIRWA Ltd maintains efficient order to improve organizational performance					

**SECTION THREE: FINANCIAL PERFORMANCE**

28.Effective implementation of inventory management practices increases the profit					
29.There is a strong relationship between inventory management practices and financial performance of BRALIRWA Ltd					

**Thank you for your cooperation!**

**INTERVIEW GUIDE**

1. What are inventory management practices that are implemented by BRALIRWA LTD?

2. Has BRALIRWA Ltd experienced effective financial performance in the last three years?

3. Do inventory management practices contribute to the performance of BRALIRWA Ltd?

**Thank you for your cooperation!**

**Financial reports of Bralirwa Ltd**

<https://www.rse.rw>

[\(www.rse.rw\)](http://www.rse.rw)

## THE EFFECT OF INVENTORY MANAGEMENT PRACTICES ON FINANCIAL PERFORMANCE OF BREWING FIRMS IN RWANDA

### ORIGINALITY REPORT



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