

# IMPACT OF INVENTORY MANAGEMENT ON THE PROFITABILITY OF MANUFACTURING COMPANIES IN RWANDA, A CASE OF SULFO RWANDA INDUSTRIES 2013-2016

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**Abstract:** The purpose of this study is to assess the impact of inventory management to the profitability of manufacturing companies in Rwanda with reference to Sulfo Rwanda industry. As a problem many companies perform poorly due to lack of effective inventory management. The specific objectives of the study were to identify how just in time technique affect profitability of Sulfo Rwanda industry, to find out how ABC Analysis techniques contribute to the profitability of Sulfo Rwanda Industry, and to assess how Economic Order Quantity affect profitability of Sulfo Rwanda Industry. The study used descriptive research design in the study and correlation research design with a sample of 35 out of the 115 employees in Sulfo Rwanda industry. The study applied purposive sampling technique.

For the first objective, table 4.2.2.1 shows that due to the practice of just in time technique the industry gained profit with mean of 3.29, 3.34, 3.00 which means the neutrality of respondents and 4.00, 4.09, 3.74, 3.77, 3.43 which means that the fact appears more.

For the second objective, table 4.2.2.2, shows that due to ABC technique the profitability level increased with mean of 2.51 which means the fact appears less of respondents and 3.49, 3.80, 3.69, 3.71, 3.63 which means that the fact appears more.

For the third objective, table 4.2.2.3, demonstrates that due with the practice of EOQ firm profitability increased with mean of 3.46, 4.03, 4.11, 3.91, 3.83, 3.71 and 3.69 which means that the facts appear more.

As conclusion the correlation was 0.903 (90.3%) is located in the interval  $0.9 \leq P < 1$  categorized as positive and very high correlation. The industry was recommended to expend its storeroom; the room can be short in the following period because it is shown that Sulfo Rwanda is currently improving its services for many customers. So the storeroom will have little capacity to store maximization level of inventory.

**Keywords:** manufacturing companies, inventory management. Sulfo Rwanda industry.

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## 1. GENERAL INTRODUCTION

In recent years, Inventory Management has attracted a great deal of attention from people both in academia and industries. A lot of resources have been devoted into research in the inventory management practices of organizations. It represents one of the most important assets that most businesses possess, because the turnover of inventory represents one of the primary sources of revenue generation and subsequent earnings for the company. In the manufacturing companies, nearly 60% to 70% of the total funds employed are tied up in current assets, of which inventory is the most significant component (Carter, 2010). Thus, it should be managed in order to avail the inventories at right time in right quantity. Inventory can be also viewed as an idle resource which has an economic value. So, better management of the inventories would release capital productively.

SULFO is a pioneer in the introduction of ISO Management systems in the country. All its facilities are certified for ISO 9001:2008 Quality Management System. In addition, the product 'NIL' Packaged Drinking Water is the very first product of its type to be certified for ISO 22000:2005 Food Safety Management System. The company is continually striving to update its management systems in accordance with the best international practices. It has big showroom and sales depot in the center of Kigali for sales and distribution of its products. Being situated in a land locked country, adequate inventory holding of materials and goods are essential to ensure uninterrupted supply to the market. Sulfo Rwanda handles about 600 varieties of raw materials imported from various parts of the world and these are stocked in its go-downs located in various parts of Kigali. The rationale for this research is to assess how much the inventory management contributes to the profitability of manufacturing companies in Rwanda, precisely in Sulfo Rwanda industry.

## 2. RESEARCH METHODOLOGY

### 2.1 RESEARCH DESIGN:

During this study, the researcher applies descriptive and correlation studies as research design; both quantitative and qualitative prospective study designs will be used to assess the impact of inventory management to the profitability of manufacturing companies in Rwanda with reference to Sulfo Rwanda industry as a case study. It is descriptive because the researcher uses a case study (Sulfo Rwanda industry) and it is correlation because Spearman correlation will be used to determine the relationship between inventory management and profitability of manufacturing companies in Rwanda with reference to Sulfo Rwanda industry.

### 2.2 STUDY POPULATION

The target population of this study were employees from three department at Sulfo Rwanda industry such as finance, production and procurement department. Means the total number of target population was 115 employees from Sulfo Rwanda industry.

### 2.3 SAMPLE SIZE:

The selection of respondents is based on estimation theory of confidence interval methods as used by Alain Bouchard that when the population is less than 1,000,000 individuals, the researcher uses a sample of 96 individuals, and then the sample size was calculated using the following formula.

$$nc = \frac{n}{\frac{N+n}{N}}, \text{ and the standard error of } 10\%$$

Where nc = corrected sample

N= population size

n = 96 individual with standard error of 10%

$$nc = \frac{n}{\frac{1+n}{N}} \quad nc = \frac{n}{\frac{N+n}{N}}; \quad nc = \frac{nN}{N+n} = \frac{115 \times 96}{115+96} = \frac{11040}{211} = 52 \text{ respondents}$$

### 2.4 VALIDITY AND RELIABILITY OF RESEARCH:

The validity of the instrument measured by using the content valid index that is the total number of valid items/ total number of items.

$$CVI = \frac{\text{Total number of relevant items in the instrument}}{\text{Total number of items in the instrument}} = \frac{35 \text{ questionnaires responded}}{52 \text{ respondents}} = 0.67$$

The questionnaire was valid since the calculated C.V.I was greater than 0.60 (Sounders, 2012).

Reliability measures the degree of consistency and precision of the instrument under some circumstances. The same research respondents using the same instrument should generate the same results under identical conditions (Amin, 2009). Data obtained will be entered into the Statistical Package for Social Science (SPSS) and determined the reliability Cronbach's Alpha Coefficient. The questionnaire was considered as reliable since calculated alpha was greater than 0.70 (Amin, 2009).

Spearman Coefficient correlation has significance when it is equal or greater than 0.01. According to the research, the correlation was 0.907 (90.7%) is located in the interval  $0.9 \leq P < 1$  categorized as positive and very high correlation.

**2.5 DATA ANALYSIS:**

**Statistical treatment of data:**

In this study, Statistical Package for the Social Sciences (SPSS) was used in processing and analysis of data which informed the presentation of findings, analysis and interpretation. The presentation focuses on the research questions. The kind of statistical treatment depends upon the nature of the problem, especially the specific and the nature of data gathered. In this study, Spearman Test was used to analyze the relationship between inventory management and profitability of Sulfo Rwanda industry.

**Description of Spearman correlation:**

Spearman correlation coefficient measures the extent to which, as one variable increases, the other variable tends to increase, without requiring that increase to be represented by a linear relationship. If, as the one variable increases, the other decreases, the rank correlation coefficients will be negative. The table 3.2 below shows the intervals of correlation between two variables.

**Interpretation of Spearman correlation coefficient**

1	$\rho = 1$	perfect correlation
2	$0.9 \leq \rho < 1$	Strong correlation (very high )
3	$0.7 \leq \rho < 0.9$	High correlation
4	$0.5 \leq \rho < 0.7$	Moderate correlation
5	$\rho < 0.5$	Weak(low) correlation
6	$\rho = 0$	Absence of correlation

*Source: Morgan & Berrett (2006)*

**Mean and standard deviation:**

Basically, a small standard deviation means that the values in a statistical data set are close to the mean of the data set, on average, and a large standard deviation means that the values in the data set are farther away from the mean, on average.

**Interpretation of the mean and standard deviation**

$1.00 \leq \mu < 1.80$ : Very low mean i.e, the fact does not appear.
$1.80 \leq \mu < 2.60$ : Low mean i.e, the fact appears less
$2.60 \leq \mu < 3.40$ : Neutrality of respondents
$3.40 \leq \mu < 4.20$ : High mean i.e, the fact appears more
$4.20 \leq \mu < 5.00$ :Very high mean i.e, strong evidence of the existence of the fact
$\sigma \leq 0.5$ : Homogeneity of responses
$\sigma > 0.5$ : Heterogeneity of responses

*Source: Aggesti & Franklin (2009)*

**3. SUMMARY OF MAJOR FINDINGS**

The research carried out on the impact of inventory management to the profitability of manufacturing companies in Rwanda with reference to Sulfo Rwanda industries. After the analysis and interpretation of the collected data, the research revealed the following major findings:

**Concerning the first objective**, regarding for identifying how just in time technique affect profitability of Sulfo Rwanda industry; the study revealed that:

Shows that due to ordered and produced quantities meet requirements in SULFO RWANDA, production is always of high quality, the price is in accordance with purchase power of customer, the products are mostly delivered to consumers' places, all inventories are timely available in industry, raw materials are always arrive in the factory on time required in industry, products are completed just in time to be shipped to customers, flow of goods is controlled regularly with mean of 3.29, 3.34, 3.00 which means the neutrality of respondents and 4.00, 4.09, 3.74, 3.77, 3.43 which means that the fact appears more.

**For the second objective**, which was to find out how ABC Analysis techniques contribute to the profitability of Sulfo Rwanda Industry; the study found that:

Shows due to products of high value occupy low volume in inventor in SULFO RWANDA, product of low value face large volume in inventory, products of moderate value occupy modulate volume in inventory, products of high value are daily controlled, products of moderate value are significant controlled, products of low value are semi accuracy cheeked with mean of 2.51 which means the fact appears less of respondents and 3.49, 3.80, 3.69, 3.71, 3.63 which means that the fact appears more.

**For the third objective**, which was to assess how Economic Order Quantity affect profitability of Sulfo Rwanda Industry; the study shows that:

Demonstrates due to raw materials are highly required in industry, the ordering costs of inventory in the industry are high, the costs of keeping inventory in industry are reasonable, large inventory incurs much cost in industry, holding costs of inventory in industry are quite great, stock control practice has minimized costs, the industry orders quantity that minimizes total costs with mean of 3.46, 4.03, 4.11, 3.91, 3.83, 3.71 and 3.69 which means that the facts appear more.

#### 4. CONCLUSION

Sulfo Rwanda as a manufacturing firm and profit making organization greatly depends on the accuracy, reliability, efficiency and effectiveness of inventory management in achieving its organizational goals. Therefore the attainment of goals will greatly depended on techniques used to manage its inventory such as JIT technique, ABC analysis and Economic Order Quantity (EOQ). Proper control cannot be carried out without effective use of inventory management systems and techniques. Improper control of inventory leads to the high inventory costs such as cost of stock out, deterioration, or obsolescence of goods due to the delays in storage, production disruption due to lack of inadequate raw-materials and failure to meet customer demand. Inventory management is very important in the improvement of customer relations, reduction in manufacturing costs; reduction in inventory carrying cost, reduction in inventory total cost will lead to strengthening of firm profitability.

Hence as a result the overall financial performance will be improved as the primary objective of inventory management is to minimize the total costs of investment and to avoid idle stock which does not generate cash. And the study concluded that there is positive and strong relationship between inventory management and profitability of Sulfo Rwanda industry as shown by spearman correlation. This was shown by value equal 90.3% tasted at 0.01 level of significant.

With the minor problems like deterioration of products, wastage, theft and products expiring in stock, and reduction in costs and with maintaining sufficient level of inventory, Sulfo Rwanda's inventory management has contributed to improve its profitability.

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