

# The Impact of Materials Management on Profitability of Manufacturing Companies in Ethiopia: The Case of Walia Steel Industry PLC

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## ABSTRACT

Recently, in the dramatically growing digital world, the management of materials plays a critical role in the profitability of manufacturing companies. This study focuses on the impact of materials management on profitability of manufacturing companies in Ethiopia with a particular reference to Walia Steel Industry PLC. The main objective of the study is to detect the problems of materials management that can result in achieving organizational profitability if corrected properly. Relevant data was gathered through self-administered structured questionnaires and open-ended questions and analysis was made based on primary data generated via five point Likert scale using SPSS version 23. A cross-sectional data model was used in the study. The study adopted both explanatory and descriptive research designs in integration with commonly used mixed research methods. Validity and reliability of the study was also tested using SPSS V-23. The findings revealed that there was positive and significant association between effective materials management dimensions and firm's profitability which was supported by interdepartmental collaboration among materials related departments such as inventory, procurement and storage managements. The main problems faced in materials management of the selected steel industry includes the shortage of raw materials due to foreign currency problem and COVID-19 pandemic, shortage of skilled personnel, unsteady power supply, weak materials management practices due to weak interdepartmental coordination of the firm. The role and benefits of materials management dimensions should be examined and outlined for further investigation. Recommendations were made for the focal firm to make the materials management system to be computerized, to arrange training programs, to hire skilled personnel and to arrange employee's motivation system. Recommendations also made for the government to provide adequate infrastructures such as available domestic raw materials, steady power supply, and sufficient water supply and so on to assist manufacturing firms.

**Keywords--** Materials Management, Procurement Management, Inventory Management, Storage Management, Interdepartmental Collaboration, Organizational Profitability

## I. INTRODUCTION

These days, in the highly competitive and technologically advanced world, materials are the lifeblood and heart of any manufacturing companies and as a result no manufacturing firms can operate without them. They must be made available at the right price, at the right quantity, in the right quality, in the right place and at the right time in order to coordinate and schedule the production activity in an integrative way for an industrial undertaking. A manufacturing firm will remain unstable if materials are under stocked, overstocked or in any way poorly managed. The main objective of materials management is to make sure that production materials are always available at their point of use when required (Taiwo, Claudius and James, 2012).

The history of this youngest management function, materials management was initially started in the US of America in manufacturing industries due to the scarcity of materials during World War I and widely spread during World War II which was included as an important function of management. This concept was welcomed by a number of major companies, specifically the manufacturing companies and construction firms as a new effective approach for dealing with materials problems. For instance in early 1939 by the management of Goodyear Company and a little decade later by General Electric (GE) to coordinate the complex movement of materials to, through and out of the factory (Chandra & Retish, 2007).

Materials management is the system for planning and overseeing all of the efforts that are mandatory to ensure that the precise quality and quantity of materials are correctly specified in a timely order, gotten at a reasonable price and most importantly, always available at the point of use when needed which made the manufacturing firms responsible for the coordination of planning, sourcing, purchasing, moving, warehousing and controlling the production activities in an integrative way for the firms in an optimum manner and at a minimum predetermined level of costs to enhance their performance and to maximize their profitability. Poor materials management

can bring about an increase in costs during production and reduction in profitability (Bonjako, 2000 and Arnold, Chapman & Clive, 2008,).

Materials management has a great role for the achievement of organizational goals through providing quality goods and services and optimizing profitability and competitiveness by implementing effective and efficient materials management systems. Effective and efficient materials management functions contribute to the improvement of firms' performance that leads to a significant reduction in materials costs and helps to enhance organizational profitability and competitiveness (Edoze, 2010).

Arnold et al. (2008) defines materials management as a special area of management which concerns itself with the management of materials resources. What firms are attempting to do in managing materials is to reduce and control the cost relating to this important resource, which normally accounts for about fifty per cent on average of the cost of production. So, materials management creates a competitive advantage by delivering quality products/services on time and offering lower costs by cutting its own cost as well as cutting cost of purchased items, that account for over fifty per cent of the sales revenue which notifies superior value.

As stated by Chandra and Retish, (2007), the definition of materials management accepted by International Federation of Purchasing and Materials Management is: "Materials Management is a total concept having its definite organization to plan and control all types of materials, its supply, and its flow from raw stage to finished stage so as to deliver the product to customer as per its requirements in time." This involves materials planning, purchasing, receiving, storing, inventory control, scheduling, production, physical distribution and marketing. It also controls the materials handling and its circulation. The materials manager has to manage all these functions with proper authority and responsibility in the material management department.

Unfortunately, there is a dearth of studies but few exists yet on the impact of materials management on the performance and profitability of manufacturing companies partially as inventory management, procurement management, storage (warehousing) management and supply chain management for a developing economy in Sub-Saharan African Countries like Ethiopia. Therefore, the need to conduct research in this area comes from the need for the implementation of effective and efficient materials management systems to enhance profitability and competitiveness of manufacturing firms.

Based on this background, this current study provides an empirical evidence that examines the impact of materials management practices on profitability of manufacturing sectors in Ethiopia with a particular focus

on Walia Steel Industry PLC and then recommend what should be done in the area of materials management to enhance profitability and competitiveness in terms of the practices of materials inventory, materials procurement, materials storage and interdepartmental collaboration of the manufacturing companies.

## II. THEORETICAL FRAMEWORK OF MATERIALS MANAGEMENT

This theoretical framework summaries the link between materials management practices and organizational performance resulting in profitability of the company. Hence, it will provide a structured means for the study that will identify the significant association between the independent and dependent variables.

In this study, a relevant cross-sectional data model has been selected to meet the research objectives. Primary data was used during the collection of information regarding the impact that materials management practices have on profitability of the manufacturing companies with a particular focus of a selected steel industry in Ethiopia. Multiple regression analysis was used to examine the relationship between materials management dimensions and organizational profitability of the respective steel industry.

### 2.1 Natures of Materials Management

Nowadays, materials management, which is seen as a system for assuring the availability of the products desired by customers at the best obtainable cost of manufacture is not anybody's total responsibility. Truly enough quality and cost of manufacture are production management's responsibilities, but materials management must see timely delivery of materials of proper quality and quantity at the work site. Pricing is a sales function, but materials management must be in a position to advise sales regarding the laid-down costs at various destinations. Depending on the customer demand, a flow of materials is initiated. Raw materials move from vendor to plant warehouse and hence to the manufacturing process. Thereafter, the finished goods move either to the plant warehouse or to customers directly. Management of this whole flow of materials more often is called Materials Management. Implicitly, therefore, materials management is a social technology which demands professional expertise and advanced technology of its own (Datta, 2004).

### 2.2 Meaning and Scope of Materials Management

Kokila and Ram (2018) explains that material management is a term used to contain controlling the kind, amount, location, movement and timing of various commodities used in production by several manufacturing companies. Arnold et al., (2008) defines materials management as a special area of management which

concerns itself with the management of materials resources. According to Banjoko, (2000), materials management is a tool to optimize organizational performance and effectiveness in meeting customer service requirements at the same time adding to enhance organizational profitability through minimizing costs and making the best use of available resources. Ondiek, (2009) defines materials management as the function accountable for the coordination of planning, purchasing, obtaining, moving, storing and controlling materials in an optimum way so as to provide a predetermined service to the customer at a minimum cost. Monday et al. (2012) saw materials management as a process of planning, procuring, storing, moving and controlling materials to use facilities, personnel, resources and capital effectively. Materials management is an essential business activity, which tends to service and maintain a stable flow of materials or goods (components, raw materials, semi-finished components, etc.) that are necessarily required for manufacturing, logistics or other operations of a company (Anton, 2017). Hence, these definitions provide the scope of materials management which includes materials requirements planning, decision on purchasing, procurement of materials, inventory management, staffing, storing and warehouse management, production and distribution of finished goods at minimum cost at due date with the required quantity and quality (Ogbadu, 2009 and Monday et al. 2012).

### 2.3 The Objectives and Role of Materials Management

Taiwo et al., (2012) and Florence, (2018) argue that, the objective of management of materials is to optimize organizational effectiveness and performance in attaining customer service requirements for its sustainability and additionally at the same time to enhance profitability of the company via minimizing costs and making the best use of available resources to attain competitive advantage in globally fast growing technologically advanced manufacturing industries. As Lenders (1992) stated, the objective of materials management is to solve materials problems from a total organizational perspective through controlling the effectiveness and performance of different materials functions, providing a communication network and controlling the system of materials flow. According to Arnold et al. (2008), the objective of materials management is the acquisition of materials and services of the right quality in the right quantity, at the right price from the actual source at the right time.

The major role of materials manager is to ensure the free flow of materials in manufacturing industries which could be achieved through proper production planning, procurement, storage control and distribution (Wenjie, 2014).

### 2.4 Importance of Materials Management

Effective and efficient materials management is critical to the performance of several manufacturing firms. Healthier and scientific materials management can not only bring about significant cost savings but also result in improved production capacity of plants, saving of labor time, reduction in inventory costs, reduction in storage space, reduction in materials damage, smooth flow of production, easier production control and monitoring and reduced employee tiredness. Hence, the importance of management of materials lies in the fact that any significant involvement made by the managers of materials in minimizing materials cost and enhancing productivity will help to improve organizational profitability and the rate of return on investment (Henry, 2015).

### 2.5 Key Functional Areas of Materials Management

Barker (1989) identified five key functional areas that management of materials cuts across which include purchasing, production and inventory control, quality control, storage and warehousing, and physical distribution (as cited by James, 2012, p-27). Whyback and William (1986) expanded the areas to include predicting demand and amount of materials requirements, good supplies and customer relationships, homegrown source of supply for foreign materials, developing skills of employees in management of materials, improved interdepartmental efficiency and Research and Development (R & D) in management of materials.. This indicates that it is very essential to have a materials management department in any organization to help the management in the production activities.

### 2.6 Profitability of Manufacturing Firms

Firm's profitability is a controllable factor to the extent that managers can control through maintaining revenue control via pricing on one side and costs on the other side. Taiwo et al. (2012) articulated that profit can be obtained by deducting the manufacturing cost from the selling price (profit=selling price-production cost). The organizational profitability can be measured through profitability indicators, such as profit after tax, return on investment, earnings per share, tax paid and dividend paid.

$$\text{Profit after Tax} = \text{Profit before Tax} - \text{Tax Paid}$$

$$\text{Return on Investment} = \frac{\text{Profit}}{\text{Capital Employed}} \times 100\%$$

$$\text{Earnings per Share} = \frac{\text{NetIncome}}{\text{AverageOutstandingShares}}$$

$$\text{Dividend Paid} = \text{Dividend per Share} \times \text{Total Number of Shares}$$

### 2.7 Achieving Organizational Profitability through Materials Management Dimensions

Effective and efficient management of materials contributes a major role to achieve organizational profitability through effective materials procurement, acquisition, inventory control, materials handling and movement of materials.

#### Procurement Management

On the average, manufacturing firms spend about fifty per cent of their sales in the purchase of raw materials, components, and supplies. This gives the purchasing function incredible potential to increase profits. Purchasing is responsible for establishing the flow of materials into the firm, following up with the supplier, and accelerating delivery. Missed deliveries can create disorder for manufacturing and sales, but purchasing can reduce problems for both areas, further adding to the profit (Chandra & Retish, 2007). According to Datta (2004), the procurement process can be located at the heart of the management of materials inventory optimization which influences the materials storage management effectiveness throughout the firm.

#### Inventory Management

Morgan (2009) defines inventory management system as a set of policies that controls and monitors inventory level and determines what level should be maintained, how large orders should be made and when stock should be replenished so as to support the operation of the business. According to Baker (2009), inventory management is responsible for planning and controlling inventory from the raw material stage to the finished goods stages provided to customers. Hence, maximum customer service, low-cost plant operation and minimum inventory investment are the core objectives that firms are wishing to maximize organizational profit. Tekalign (2020) argued that effective and efficient inventory management practices will always provide a competitive advantage to business, regardless of its nature. Therefore, inventory management helps businesses become successful and it plays a decisive share of any business success (Simon, 2018).

#### Storage Management

Cross (2019) argued that materials storage includes a careful management of the stock and maintaining a perfect control over them. Warehouse controlling and warehouse organizing are also key management functions which are linked closely with materials warehouses (Asmelash, 2017). Profits can be

achieved if managers effectively and successfully handle issues relating to stores location, layout and equipment examination, safety of stores, production issues, stock records and disposal of obsolete materials. Store keeping is the activity of receiving or distributing supplies (Fessha, 2004).

#### Interdepartmental Collaboration

Interdepartmental collaboration plays a vital role in an organizations success, and organizations need to fill the gaps between what the customers expect and what they deliver. Taiwo et al. (2012) discloses that an appropriate organizational structure can be determined as a result of a proper and effective interdepartmental communication system facilitated by the human resource management which is the responsible one for the implementation of effective interdepartmental communication system of an organization in order to achieve better outcomes. A well-designed and effective interdepartmental collaboration is essential for adapting organizational and managerial tasks, and also sharing the necessary information inside and outside of the organization.

## III. RESEARCH QUESTIONS AND HYPOTHESES

The study attempts to answer the following research questions.

- What is the impact of materials management on organizational profitability? In line with the above research question the following hypothesis is proposed.

**Hypothesis:** There is significant relationship between materials management and organizational profitability

## IV. RESEARCH METHODOLOGY

### 4.1 Research Design

To get first-hand, detailed and factual information descriptive survey design was used. An explanatory research design was also used to investigate the causal relationship between variables to be addressed in the research questions. Since relevant data was collected at one point in time that is important to consider the practices of materials management in the selected firm, a cross-sectional data model was used in this study.



#### 4.2 Sample Size and Sampling Techniques

The study selected only 3 top managers and all the 7 heads of all departments purposively by using non-probability sampling techniques and a total of 115

employees from all departments through simple random sampling technique using probability sampling method based on a simplified sample size determination formula provided by Yamane (1967):

$$n = \frac{N}{1 + N(e^2)} = \frac{161}{1 + 161(0.05)^2} = \frac{161}{1 + 0.4} = \frac{161}{1.04} = 115$$

Where, n = number of sample size

N= total population

e<sup>2</sup> = the level of precision (sampling error)

Entirely, the researcher selected a total of 10+115 = 125 respondents who gave responses based on the questionnaires and open-end questions that were distributed to them.

#### 4.3 Data Collection Instrument

The study used structured self-administered five point Likert scale questionnaires distributed personally to the respondents to collect primary data and measure the perceived practice of materials management practices in case of Walia Steel Industry PLC. The survey tool involves closed-ended questions to collect quantitative data where each questions were structured in five-point Likert scale that provided the respondents an opportunity to give their varied views on diverse aspects of materials management practices and organizational profitability. Two open-ended questions were also used to collect qualitative data. Three types of questionnaires were prepared (English version, Amharic and Afan Oromo

(native languages) version). The Amharic and Afan Oromo version of the questionnaires were fundamentally prepared to help those respondents who can't read, understand and respond in English version. The quantitative data were entered into a computer and analyzed with the use of Statistical Package for Social Sciences (SPSS) version 23, ranging from strongly disagree (1) to strongly agree (5).

#### 4.4 Mathematical Model Specification

To analyze the impact of materials management on organizational profitability, mathematically the model is expressed in regression equation as:

Organizational Profitability = f(Materials Management Impact Indicators or Dimensions)Gujarati and Porter (2009) formulate the relationships between dependent variable(s) and independent variable(s) to analyze using multiple linear regressions analysis techniques based on the behavior of the variables used. Therefore,

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e_i$$

$$\text{Organizational Profitability} = f(\text{PM, IM, MS, IDC})$$

$$\text{OP} = \beta_0 + \beta_1 \text{PM} + \beta_2 \text{IM} + \beta_3 \text{SM} + \beta_4 \text{IDC} + e$$

Where:

- OP = Organizational Profitability
- PM = Procurement Management
- IM = Inventory Management
- SM = Storage Management
- IDC = Interdepartmental Collaboration
- $\beta_0$  is the intercept of regression
- $\beta_1, \beta_2, \beta_3,$  and  $\beta_4$  are coefficients of regression
- $e_i$  is the stochastic error term capturing other explanatory variables not explicitly included in the model

The variance in OP (dependent variable) was regressed against the explanatory variables (independent variables) in order to determine the extent of influence of these factors and their impact on organizational profitability.

#### 4.5 Data Analysis and Presentation Method

Descriptive analysis was carried out and regression analysis (inferential statistics) was employed using SPSS version 23 to test the hypothesis and

correlation analysis was done to establish the nature and degree of relationships between dependent variable (organizational profitability) and independent variables (procurement management, inventory management, storage management and interdepartmental collaboration). The main classical linear regression model assumptions such as heteroscedasticity, auto-correlations, multi-collinearity, normality and linearity assumptions was

tested and the model satisfy the classical linear regression model assumptions.

Before administering the main phase of the study, a pilot test was conducted to test the internal consistency of the items as recommended by Connelly (2008). The Cronbach’s Alpha Reliability Coefficient of 0.929 for the pilot test indicated that the sets of items of the questionnaires have very good internal consistency which is best reliable and meet the acceptable level that implied the validity of the instrument. The Cronbach’s Alpha value for the main work of the overall study after the implementation of pilot test is 0.975, which indicated and approves a highly good internal consistency of items. And also the validity of the items was tested by using Pearson Correlation Coefficients and satisfies the validity criterion

at Sig. 2-tailed (0.000) at a significance level of 0.05 at a df(2, 114) greater than the critical value of 0.195.

## V. RESULT

Descriptive and inferential statistics including correlation and multiple regressions were provided to have clear insight to measure the degree of variances in the relationship between the independent variables (procurement management, inventory management, storage management and interdepartmental collaboration) and the dependent variable (organizational profitability).

### 5.1 Descriptive Statistics and Interpretation

This section discusses the survey results with regarding to materials management practices and organizational profitability.

### 5.2 Overall Mean of Materials Management Indicators

	N	Mean	Std. Deviation
Procurement Management	116	3.34	0.677
Inventory Management	116	3.58	0.661
Storage Management	116	3.47	0.721
Interdepartmental Collaboration	116	4.26	0.656
Organizational Profitability	116	4.11	0.632
Valid N (List wise)	116		

Source: Own Survey Results and Computation, 2021

As indicated in Table above the statistical description of the impacts of materials management indicators on organizational profitability were discussed and expressed with their mean scores and standard deviation values. Accordingly, the procurement management, the inventory management, storage management and interdepartmental collaboration categories have total mean scores of 3.34(SD = 0.677), 3.58 (SD = 0.661), 3.47 (SD = 0.721) and 4.26 (SD =

0.656) respectively. The total mean score of organizational profitability category depending on the impact of materials management was 4.11 (SD = 0.632). Based on this analysis result, effective interdepartmental collaboration plays a significant role in firm’s profitability followed by effective inventory management, then followed by effective storage (warehouse) management and lastly by procurement management practices.

### Correlation Analysis

		PM	IM	SM	IDC	OP
PM	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	116				
IM	Pearson Correlation	.717**	1			
	Sig. (2-tailed)	.000				
	N	116	116			
SM	Pearson Correlation	.709**	.723**	1		
	Sig. (2-tailed)	.000	.000			
	N	116	116	116		
IDC	Pearson Correlation	.689**	.729**	.683**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	116	116	116	116	
OP	Pearson Correlation	.828**	.856**	.836**	.778**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	116	116	116	116	116

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

N = 116

Source: Own Survey Results and Computation, 2021

The above table demonstrated the correlation matrix between materials management impact indicators and organizational profitability of Walia Steel Industry PLC. Among these materials management impact indicators on profitability of the manufacturing company, there is a positive and very strongest relationship between inventory management, storage management, procurement

management, interdepartmental collaboration and organizational profitability with a correlation coefficient of 0.856, 0.836, 0.828 and 0.778 respectively controlling for other impacting variables.

**5.3 Overall Materials Management Practices and Organizational Profitability Correlation**

		Effective Materials Management	Organizational Profitability
Effective Materials Management	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	116	
Organizational Profitability	Pearson Correlation	.891**	1
	Sig. (2-tailed)	.000	
	N	116	116

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

N = 116

Source: Own Survey Results and Computation, 2021

The table above demonstrated the overall relationship between effective materials management and the organizational profitability of Walia Steel Industry PLC. Effective materials management was correlated very strongly with organizational profitability of Walia Steel Industry with a higher value of correlation coefficient of 0.891.

**Hypothesis Test**

Hypothesis testing is a key procedure in an inferential statistics.

**Hypothesis:**

**Ho:** There is no significant relationship between materials management and organizational profitability.

**Ha:** There is significant relationship between materials management and organizational profitability

**Regression Coefficient for Materials Management**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.837	.156		5.261	.000
	Materials Management	.895	.043	.891	20.897	.000

a. Dependent Variable: Organizational Profitability  
 Source: Own Survey Results and Computation, 2021

Depending up on the above computation in the above table, the coefficient of determination value for materials management is positive (0.895) and is highly significant (0.000) which make sure organizational profitability. The p-value of 0.000 is less than the t-statistic values of 20.897 with a standard error value of 0.043. This indicates that, on average, other things remain constant; a unit increase in material management will lead to increases organizational profitability by 0.895. Hence, the null hypothesis is rejected and the alternate hypothesis is

accepted, which means that there is a significant relationship between materials management and organizational profitability in manufacturing industries.

**5.4 Regression Analysis on Overall Impact of Materials Management Practices**

Regression analysis is used to understand the relationship between dependent and independent variables and to predict the value of explained variable based on one or more explanatory variables (Gujarati & Porter, 2009).

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.893 <sup>a</sup>	.798	.791	.28910	1.911
a. Predictors: (Constant), Interdepartmental Collaboration, Storage Management, Procurement Management, Inventory Management					
b. Dependent Variable: Organizational Profitability					

Source: Own Survey Results and Computation, 2021

The model summary indicates, the materials management practices statistically predicted the overall organizational profitability of Walia Steel Industry PLC. From the above table the R value 0.893 indicates the presence of strong correlation between the independent variables and dependent variable. The value of R Square

(R<sup>2</sup>) = 0.798 clarifies that the variations in independent variables (materials management practices) jointly explain 79.8% of the variations on the dependent variable (organizational profitability) while 20.2% could be due to the impact of unexplained factors.

**ANOVA of the Variables**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.661	2	9.165	109.660	.000
	Residual	9.277	114	.084		
	Total	45.938	116			
a. Dependent Variable: Organizational Profitability						
b. Predictors: (Constant), Interdepartmental Collaboration, Storage Management, Procurement Management, Inventory Management						

Source: Own Survey Results and Computation, 2021

The result in the above table displayed that the variance of the variables that was developed by the researcher with F statistic value of F(2, 114) = 109.660 and a probability value of p = 0.000 was statistically significant

at p < 0.05 level of significance. The result implied that the interdepartmental collaboration, storage management, inventory management and procurement management have



statistically significant impact on the profitability of Walia Steel Industry.

**Regression Coefficients of the Variables**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.454	.185		7.466	.000
	Procurement Management	.750	.049	.828	15.761	.000
	Inventory Management	.818	.046	.856	17.643	.000
	Storage Management	.772	.045	.836	16.285	.000
	Interdepartmental Collaboration	.733	.057	.778	13.232	.000

Dependent Variable: Organizational Profitability  
 Source: Own Survey Results and Computation, 2021

The result in the above table verified that, the procurement management ( $t = 15.761, \beta = 0.750, p < 0.05$ ) had a positive and significant impact on the firm's profitability. This implies that the procurement management of the steel industry is well managed. Similarly, result in table above specifies that inventory management ( $t = 17.643, \beta = 0.818, p < 0.05$ ) has a positive and significant effect on the organizational profitability. This indicates that the inventory management system of the firm also handled in a healthy manner.

Result in the table above revealed that storage management ( $t = 16.285, \beta = 0.772, p < 0.05$ ) has a positive and significant impact on the profitability of an organization. This shows that defective materials, scraps

and surplus materials are well managed in the warehouse of the company. Result in the table also verified that an interdepartmental collaboration ( $t = 13.232, \beta = 0.733, p < 0.05$ ) has a positive and significant impact on the organizational profitability of Walia Steel Industry. This displays that there is a healthy communication channel between the departments of the company.

The unstandaised regression coefficients between the independent variables (materials management dimensions: PM, IM, SM, IDC) and the dependent variable (organizational profitability, OP) are described in the form of regression equation.

Organizational Profitability = f(Materials Management Impact Indicators or Dimensions)

$$OP = f(PM, IM, SM, IDC)$$

$$OP = \beta_0 + \beta_1 PM + \beta_2 IM + \beta_3 SM + \beta_4 IDC + e_i$$

$$OP = 1.454 + 0.750PM + 0.818IM + 0.772SM + 0.733IDC + e_i$$

Based on the regression equation above, on average, other things remain constant; a unit increase in inventory management will increase organizational profitability by 0.818. On average, a unit increase in storage management will increase organizational profitability by 0.772, other things remain constant. And also on average, other things remains constant, a unit increase in procurement management will increase organizational profitability by 0.750 while on average, a unit increase in interdepartmental collaboration will increase organizational profitability by 0.733, other things remain constant. Therefore, from the result attained in above table, on average, a unit increase in overall materials management practices will increase organizational profitability by 0.895, other things remain constant.

The implication of this finding is that the manufacturing industry needs to improve and enhance practices of effective and efficient materials management. This may be a contributing factor to why the profit level of the

manufacturing sector is dependent of its effective implementation of materials management practices.

## VI. DISCUSSIONS AND CONCLUSION

The findings of the data analyzed above based on respondents responses was discussed in order to answer the raised research questions shown that, the impact of materials management dimensions jointly contribute their positive and significant role in the achievement of the company's profitability. From the result obtained, all the materials management impact indicators have positive and significant relationship with the profitability of Walia Steel industry.

The materials management practices explained through effective procurement procedures, inventory systems, storage handling and collaborative work of departments were positively and significantly associated with the profitability of Walia Steel Industry. This result was consistent with the findings of Cross (2019), Florence

and Oyebamiji (2018), Suleiman (2010) and Ogbadu (2009) in their study aimed to the achievement of organizational profitability through effective materials management practices. It is also in line with Taiwo, Claudius and James (2012) finding that there is a positive and significant relationship between efficient materials management and firm's profitability. This indicates that effective management of materials is the most important predictor of organizational profitability.

Therefore, the above findings provided answers to the research questions are connected to how do the manufacturing companies were engaged in attaining organizational profitability through effective implementation of materials management practices. As already specified, most of the time the achievement of organizational profitability of manufacturing companies was the result of inventory management system, storage (warehouse) management practices, procurement management procedures and interdepartmental collaboration implemented by the companies.

This study concludes that management of materials practices are continuous processes in manufacturing companies. There are always the requirements of managing the raw materials, work in process and finished goods/products properly throughout the implementation of systematic techniques of management of materials that leads to better profitability attainment in the organization. The objective of the study is assessing the impacts that materials management practices have on profitability of manufacturing companies in Ethiopia, with a particular reference of Walia Steel Industry PLC. The study uses four dimensions (impact indicators) of materials management as independent (explanatory) variables and organizational profitability as dependent variable.

This study hypothesized the overall impacts of materials management practices and the impacts of materials management dimensions; inventory management system, storage management practices, procurement management procedures and interdepartmental collaboration on profitability of manufacturing companies. In particular, the study focused on testing the hypotheses and answering the research questions of the study given that the observed findings of the study proposed some considerable conclusions that all the null hypotheses were rejected and all the alternative hypotheses were accepted. Hence, the study concludes that effective and efficient management of materials is a genuine instrument through which an organization can achieve significant cost saving, improvement in production efficiency and increase in organizational profitability.

## RECOMMENDATIONS

This study recommends that the focal steel industry's management should implement effective and efficient materials management particularly in the area of inventory management, storage management, procurement management and interdepartmental collaboration in order for the Steel Industry to achieve its vision of to be the leading and most reputable Steel Industry in East Africa. This study might be a good basic stand point for future works on materials management's contribution to the profitability of manufacturing companies. Therefore, the research recommended that further studies must be carried out in the area of the implementation of effective materials management practices to develop an in-depth awareness in manufacturing companies in Ethiopia considering its importance to firm's profitability.

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