ISSN No:-2456-2165

Effect of Logistics Practices on Operational Performance of Sugar Manufacturing Industry in Ethiopia: A Case Study of Arjo Didesa Sugar Factory, Ethiopia

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Abstract:- The main objective of this study was to investigate the effect of logistics practice on operational performance of the Arjo Didesa Sugar Factory. Therefore, explanatory research design with both qualitative and quantitative approach was used in order to explain the effect of logistics practices on operational performance. The sample of 219 respondents from Arjo Didesa sugar factory working in factory operation and supply and facility management was taken for the study and data were collected from 186 respondents. A stratified random sampling was applied; in which the target population is stratified and then, sample was randomly selected from each stratum. Purposive sampling was used for the interview of the managers of respective department. Both primary and secondary sources of data were used for study. The questionnaire with closed ended questions and semi-structured interview were used to gather data. Mean is employed in order to summarize and describe quantitative information. From inferential statistics, multiple linear regression were used to analyze the effect of logistics practices on the operational performance and to determine the relationship between variables, correlation analysis was also used. The findings of the study revealed that transportation and inventory management have high significant positive effect on operational performance even though procurement practice, information flow and warehousing have positive significant effect on operational performance. In order to improve operational performance of the factory, researchers recommend to Arjo Didesa sugar factory to upgrade investment on infrastructure for transportation of raw materials within factory. Researchers also initiated to provide recommendation on using principle of economic order quantity that enable effective inventory management.

Keywords:- *Logistics, Logistics Practices, Operational Performance, Sugar Factory.*

I. INTRODUCTION

1.1. Background of the Study

Logistics is the process of planning, implementing and controlling the efficient, cost effective flow and storage of raw materials, in-process inventory, finished goods and related information from point of origin to point of consumption for the purpose of conforming to customer requirements (Donald, 2003). Logistics encompasses all of the information and material flows throughout an organization. It includes everything from the movement of a product or a service that needs to be rendered, through to the management of incoming raw materials, production, the storing of finished goods, its delivery to the customer (Wisner, Tan & Leong, 2012).

According t(Ghiani, Laporte, Musmanno, 2004), Logistics is one of the most important activities in modern societies. A few figures can be used to illustrate this assertion. It has been estimated that the cost incurred for logistics practices by USA organizations in 1997 was 862 billion dollars, corresponding to approximately 11% of the USA Gross Domestic Product (GDP). This cost is higher than the combined annual USA government expenditure in social security, health services and defense. These figures are similar to those observed for the other North America Free Trade Agreement (NAFTA) countries and for the European Union (EU) countries. Thus, logistics practices represent a significant part of a company's operations.

Africa continent is not performing well in logistics compared to other continents as the report confirmed that the top four countries were from Europe, the fifth one was from Asia however, the bottom five were all from Africa. Especially in Sub-Saharan African countries, the infrastructures were poorly managed and maintenance was lacking. Consequently, inefficient transport and communication formed a major obstacle in achieving efficiently organized flows of goods and services. As cited by (W. Mwangi & T. Nyambura , 2015).

Ethiopian logistics system is also characterized by poor logistics management system, low level of development of logistics infrastructure and inadequate fleets of freight vehicles in number and age, damage and quality deterioration of goods while handling, transporting and in storage. Additionally, land lock of the country resulted in poor linkage of producers (farmers) to the consumers(market) and non-competitiveness of Ethiopian goods on global market (Fekadu, 2013).

Logistics practices have great effect on operational performance of the factory, For instance; the advent of information technology (IT) revolutionizes logistics operation and Poor logistics performance reflects the firm's information capability which affects operational performance (Shang, K.-C., & Marlow, P. B. , 2007).

More over procurement practices also integrates operations of company and it helps tosynchronize production with new orders, purchasing with demand, scheduling and shipping with customer requirements (Kiare, 2015). The inventory management also affects the operational performance, as too much inventory consumes physical space, creates a capital tied-up for the company (Nyabwanga, & Ojera., 2012). On the other hand, too little inventory often disrupts business operations (Dimitrios, 2008).Lastly, operation of transportation determines the efficiency of moving products (W. Mwangi & T. Nyambura , 2015). In addition warehousing is an integral part of the company operations in that an inadequate goods acceptance and receipt, storage and retrieval or picking affect operational performance of manufacturing firms (Emmett, 2005). However, in Arjo Didesa Sugar Factory, knowledge gap has been there as to whether these logistics practices can affect operational Performance.

Likewise, it as a researchable gap and required to investigate logistics practice of ADSF with desire to assess how these practices affect operational performance, to show advantage of having efficient logistics management on operational performance of the factory, this initiated the researcher to conduct research on effect of logistics practice on operational performance of the Arjo Didesa Sugar factory to investigate how these practices influence the operational performance of the factory.

1.2. Problem Statement

Sugar is an important commodity and there are numerous challenges and opportunities that exist in Africa as a whole for sugar industry. Most Sub -Saharan Africa countries still heavily rely in the agricultural sector as a source of economic livelihood for most of its population. Hence, in an effort to improve the sector, various interventions have been adopted (Miller, 2008).

According to (Ethiopia investment agency, 2016), the current annual domestic supply of sugar in Ethiopia is between 6 to 6.5 Million Quintals of which 3.25 to 4 Million Quintals of sugar are produced domestically while the rest is imported to fill the gap. And, to do away with above trend, the Government has put the sugar industry sub sector as one among other mega manufacturing industry sectors which have got great attention in the GTP.

Accordingly, the Government is currently carrying out huge sugar development projects to eliminate the gap between demand and supply of sugar domestically. However the entrance of Arjo Didesa, Kessem and Tendaho sugar factories into operation could not narrow the unmatched domestic demand and supply relations of the sugar product (Ashenaf, 2016).This is because of the operational performance of sugar factories in Ethiopia is low and they have many factors of disadvantage from farming, harvest and transportation management,warehousing, inventory management,information flow and procurement practice (Kedir, 2013).In addition, Arjo Didesa sugar factory is one of the least in operational performance among sugar factories in Ethiopia (Annual report, 2016).Therefore this study aimed to investigate the effect of logistics practice on operational performance in the line with performance flexibility and lead time.

1.3. Research Questions

The following research questions were addressed in the study;

- How transportation management affect operational performance of Arjo Didesa sugar factory?
- What is effect of information flow on operational performance of Arjo Didesa sugar factory?
- How inventory management affect operational performance of Arjo Didesa sugar factory?
- What is the effect of procurement practice on operational performance of Arjo Didesa sugar factory?
- What is the effect of warehousing on operational performance of Arjo Didesa sugar factory?

Objectives of the study

- To investigate the effect of transportation management on operational performance of Arjo Didesa sugar factory.
- To assess the effect of information flow on operational performance
- To analyze how inventory management affect operational performance of Arjo Didesa sugar factory
- To investigate the effect of procurement practice on operational performance
- To assess the effect of warehousing on operational performance

II. REVIEW OF RELATED LITERATURE

The literature review part addressed theoretical framework, empirical review and conceptual framework related to the topic of the study.The Resource-Based View theory explicitly looks for the internal sources of sustained competitive advantage and aims to explain why firms in the same industry might differ in performance. (Peteraf, M., & Barney, J., 2003).In game theory, horizontal cooperation in logistics was proved efficient to reduce global cost and improve the performance level of the firm (Cruijssen. F., Cools. M., & Dollaert. W., 2007).Theory of Constraints views organizations as systems consisting of resources, which are linked by the processes they perform. Within that system,

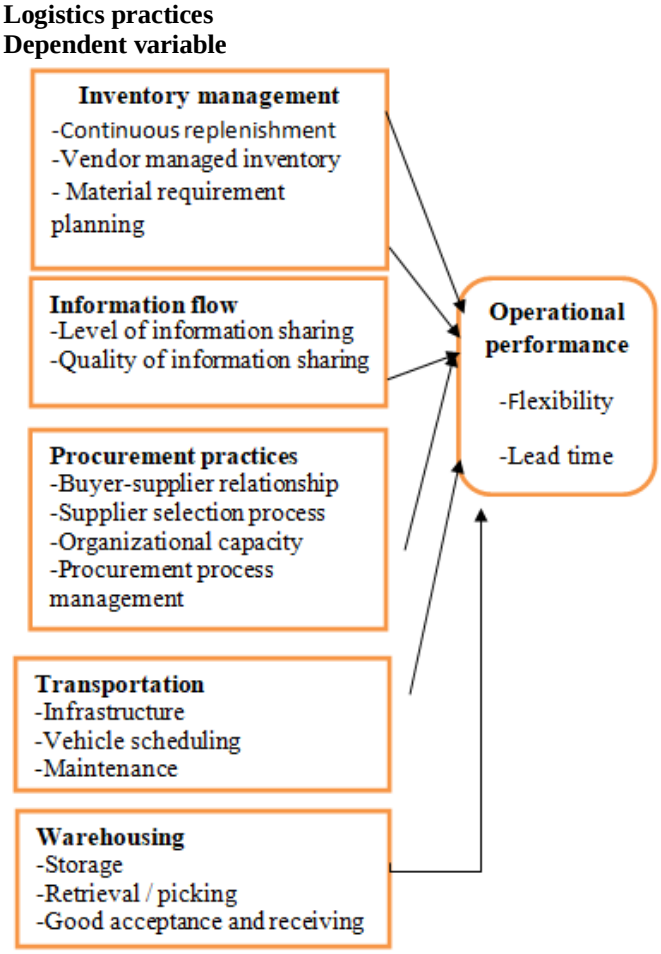
ISSN No:-2456-2165

a constraint is defined as anything that limits the system from achieving higher performance relative to its purpose (Moore, 1998). Therefore, this study considers logistics practices as constraints that hinder the factory from achieving higher performance.

The study result of (Mokogi; Mairura; & Ombui, 2015) Shows that procurement practices have effect on operational performance. For instance, the findings of this study revealed that poor management of procurement processes including planning, budgeting, length of time involved, use of quotations and subcontracting directly led to inefficiencies which led to missed targets and eventual poor performance.According Nsikan Efiok John, John Joseph Etim and Tommy Uduak Ime, 2015, findings revealed significant differences between effective management of inventory and optimal operating performance. For instance, while firms that scientific inventory management approaches reported efficiency in capacity utilization, increased service level, and reduced lead time, others with unscientific strategies had minimal utilization of material resources.According to (Lipaj, D., & Davidaviciene, V., 2013), the impacts of information flow are categorized into two groups: tangible and intangible. The tangible impact include; improved performance, reduced operational costs, increased profits, improved resource utilization, reduced general administrative costs, reduction in waste whereas the intangible impacts include; enhanced teamwork, standardization, improved cost structure, improved information visibility, improved management decision making process, improved morale, people development, greater flexibility, integration, internal improvement.The study by (Mwangangi, 2016) established that firm performance was significantly influenced by transport management.The study finding of (Mukolwe, 2015) indicate that automation of warehousing enhances accuracy, reduces wastages and enhances speed of operations thereby improving warehouse efficiency. It also ensures guarantee in quality.

2.1. Conceptual Framework

There are around eleven logistics practices that affect firm's operational performance even though some authors bring it into five or seven practices by merging activities performed in the same destination and immediately before reaching the destination. The researchers selected five logistics practices such as transportation, information flow, inventory management, warehousing and procurement for this study because employees and respective managers of departments were vital in providing data. Therefore in this study, researchers assessed effect of these logistics practices on operational performance in line with operational flexibility and lead time.



III. METHODS AND MATERIALS

This study employed explanatory design with both quantitative and qualitative research approach. The target populations for this study are 482 employees of Arjo Didesa Sugar Factory working in Factory operation and Supply and Facility management department because these departments are more concerned with topic of the study. The sampling frame was the lists of 482 employees working in factory operation and supply and facility management department which is resulted from taking all employees from factory operation department and excluding fixed property preservation and security team as members of this team may be considered to have lesser knowledge about topic of the study.

The sample size of the study was determined from target population as shown in the table below.

ISSN No:-2456-2165

Name of selected departments	Number of employees	Selected sample size
Factory operation	410	186
Supply chain and Facility management	72	33
Total	**482**	**219**

Researcher used the following formula of Yamane, 1967 to determine the sample size from total population.
n = N/1+ N (e) 2

Where N = Target population
e = tolerance at desired level of confidence, at 95% level (0.05)

n = sample size
= 482/1+ (482) (0.05)2
= 482/2.20
=218.594~219

According (John, A, Robert, & David, 2007) to determine how many items are selected from each stratum, researcher employed method of proportional allocation under which the sizes of the samples from the different strata are kept proportional to the sizes of the strata by dividing the total population of the size "N" into K strata of size N1, N2, N3…NK and take sample from each stratum randomly with the following sample size proportional allocation formula.

Ni= Ni/N*n
Where Ni= total population of single strata
I=1, 2, 3…K
n = n1+ n2+n3…nk
n = total size of strata
N = total population

For Factory operation department, n1 = 410/482 *219 = 186.286~186.For supply and Facility management department, n2 = 72/482*219 =32.7136~ 33.Therefore the researcher took 186 from Factory operation department out of 410, 33 from supply and facility management department out of 72 for questionnaires to have total of 219 respondents. The sample size for this study was determined by adopting stratified random sampling where the population is grouped into stratus, because the researcher select respondents from concerning department for topic of the research.

This study basically depend on primary data in which the researcher prepared the questionnaires that were distributed to employees of Arjo Didesa Sugar Factory working in Factory operation and supply and facility management department. The secondary data was used only for supporting the finding obtained from analysis of primary data.

The researchers employed self-administered questionnaires with closed ended questions to collect primary data. As much as possible, a 5-point likert scale was used to investigate effect of logistics practice on the operational performance of Arjo Didesa Sugar Factory.

Statistical Package for Social Science (SPSS) Version 20) was used to analyze all research questions.Descriptive and Inferential statistics was used analyze the data; mean and percentage were used from descriptive statistics,whereas inferential statistics (multiple linear regressions and correlation) was taken from this tool.

The model built around two sets of variables, specifically dependent variable (operational performance) and independent variables (inventory management, transportation, information flow, warehousing, and procurement practice). The regression model is formulated with five independent variables and one dependent variable as shown below. $Y= \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4+ \beta 5X5+£$ Where Y= dependent variable= operational performance, β=coefficient, X1=transportation, X2 = information flow, X3= inventory management, X4=procurement practices, X5=warehousing£ =error. ANOVA statistical model was used to check significance of the analytical model and a multiple linear regression analysis were done to find out the relationship between logistics practice and operational performance. A pilot study was conducted to refine the methodology and test instrument such as a questionnaire before administering the final phase. Cronbach alpha coefficient was used to analyze the reliability or internal consistency of items. The reliability statistics revealed that Procurement practice has (0.729), Inventory management (0.682), Information flow (0.69), Transportation management (0.754),Warehousing (0.69) and Operational performance (0.738) which indicate that the instruments are reliable and acceptable for further data analysis. In order to ensure the content validity, discussion with experts in area was made. Regarding the right to privacy of the respondents, all respondents were joined with their full consent, maintained confidentiality of the identity of each participant and also the researcher reported the findings in complete honesty.

IV. RESULT AND DISCUSSION

In this Part, the analysis and interpretation was presented which is carried out based on the data collected through questionnaire from respondents and interview made with managers of respective departments. From the total 219 questionnaire distributed to employees of Arjo Didesa sugar factory working in factory operation and supply and facility management department, only 186 questionnaires were returned and used for analysis that shows response rate of 84.9 percent.The study used descriptive statistics to present the frequency and the percentages of the gathered data on the effect of logistics practices on operational performance of Arjo Didesa Sugar Factory

4.1. Reliability Tests.

To ensure the measurement and assessment of the real situation in the Arjo Didesa Sugar Factory, the researcher conducted pilot survey on the questionnaire by taking 30 employees. Having the respondents comment and suggestion, the researcher has made all the necessary improvements (adjustments) on both questionnaires structurally as well as content wise. Thus this study tested for reliability based on the Cronbach's alpha values for the all items used in the questionnaire. The reliability results for measurement construct presented in table below shows that the Cronbach's alpha for all items is 0.908 with total of 39 items and individual variables reliability test for procurement (.729), inventory management (.682), information flow (.690), transportation management(.754),warehousing (.690) and operational performance (.738) and all above 0.67 for items under each variables. So for its permitted next level analysis.

4.2. Demographic data presentation and analysis

As shown in demographic data analysis table below majority of respondents are male (127) (68.3). This implies the gender distribution of ADSF is dominated by male employees. Result regarding age of respondents, the majority of respondents are aged between "25-30". (49.5).this shows the ADSF occupied by young employees. The respondents were also asked to indicate teams under the department they had assigned, the result implies sugar production team covers 57% of respondents. The result associated with educational background of respondents, majority of respondents are Diploma and Degree holders. The output in table below shows that 66.7% of respondents had work experience of 1-3 years.

The results of respondents associated with their educational background show that 49.5percent of the respondents have Diploma, 41.9% of the respondents are degree holders and the rest 5.4% and 3.2% are 12 complete and master and above respectively.

As indicated by respondents data 66.7% of the respondents indicated that they had work experience of 1 to 3 years while 5.9% of the respondents said they had experience of more than 3 years also 27.4% of the respondents replied that they have worked for less than 1 year. The implication of the result is that most of the respondents are young professionals which dominated the factory (1-3 years) and they are more cooperative and easily understand the questionnaire which is required to complete by them to provide information.

Variables	Descriptions	Frequency	%
Sex of respondents	Male	127	68.3
	Female	59	31.7
	Total	186	100.0
Age of respondents	19-24	37	19.9
	25-30	92	49.5
	31-35	39	19.9
	36-40	11	5.9
	41 and above	7	3.8
	Total	186	100.0
Educational status	12 complete	10	5.4
	Diploma	92	49.5
	Degree	78	41.9
	Masters +	6	3.2
	Total	186	100.0
Job title of respondents	Procurement team staff	6	3.2
	Facility management team	23	12.4
	Material planning and inventory management team	4	2.2
	Technique team	11	5.9
	Sugar production team	106	57
	Power generation	36	19.4
	Total	186	100.0
Work experience of respondents	Less than one year	51	27.4
	1-3 years	124	66.7
	> 3 years	11	5.9
	Total	186	100.0

Table1. Demographic profile of respondents

4.3. Descriptive Statistical Analysis

The mean of respondents in each dimensions of logistics practice suggest that the average amount that in each dimension respondents agree, strongly agree, neutral, disagree and strongly disagree in their responses.The mean statistical values of the items were based on the 5 point Likert scale and illustrated through the following assumptions: if the mean (M) score is up to 2.99 it implies that the respondents‟ disagree with the statement, if the mean score is between 3-3.99 it indicates that the respondents‟ prefer to stay Neutral, and finally if the mean score is 4 and above it implies that the respondents‟ agree with the statement.

The factory is conducting several procurement practices in order to facilitate their operation such as maintaining strong buyer-supplier relations with its suppliers, regular sharing of critical supply chain information with its suppliers, Proper supplier prequalification process and filling skill gap of the procurement staff, but inadequate management of procurement practice influence operational performance as mean score value of all items under procurement practices is 2.99 which shows their disagreement regarding adequate management of procurement practices in the factory. Based on data collected from ADSF, ineffective control of supply and demand of inventory, inefficient continual stock replenishment and lack of regular reduction of production machine significantly influences the operational performance of the factory resulting production stoppage which leads to high factory down time. Moreover, there are also ineffective Material requirements scheduling and lack of integration of supply chain in vendor managed inventory which are the reflections of poor inventory management as the mean score value of items raised under inventory management are: 2.54, 2.35, 2.42, 2.25, 2.37 and 2.24 respectively.

As depicted in the result of descriptive analysis, respondents show their disagreement regarding the issue of using logistics information system which means applying computer based information system that support management of vehicle scheduling, inventory replenishment, etc., adequacy of Level of internal information sharing and Sharing of accurate information to all departments, having enough inter junction radio that used to inform unexpected situation at factory operation through internally connected network within factory, investment on information Communication technology and making available up-to-date data to every departments which is shown in mean score value of item is up to 2.99.

The descriptive analysis of the study also indicates that the respondents disagreed on adequate infrastructure for transportation of raw material inventory with in factory, scale of transportation infrastructure investment is sufficient, adequate Vehicle scheduling for transportation in the factory, adequate vehicle inspection schedule and sustainable appropriate preventive vehicle maintenance which is shown in mean score value of their responses (2.17, 2.32, 2.17, 2.32 and 2.37 respectively).

The descriptive analysis of the study pinpoints respondent’s disagreement on the issue of adequate goods acceptance process in factory, Suitable loading gates and in-house labels in warehouse, adequate automatic storage systems in factory, storage of inventory at right place, applying retrieval strategies such as first in-first out, last in-first out, quantity adaption, time phased, minimized aisle swaps, etc and having the fixed retrieval schedule for which the mean sore value of responses lies up to (2.99,2.42, 2.20, 2.52, 2.32, 2.17 and 2.54 respectively).

4.4. Correlation Analysis

According to (Burns & Burns, 2008) correlation Values between 0 and 0.3 (0 and -0.3) indicate a weak positive (negative) linear relationship via a shaky linear rule, Values between 0.3 and 0.7 (0.3 and -0.7) indicate moderate positive (negative) linear relationship and values between 0.7 and 1.0 (-0.7 and -1.0) indicate a strong positive (negative) linear relationship via a firm linear rule as cited (Tiya, 2016). Therefore, these rules are used to interpret the correlation results. In this regard, the relationship between the procurement practice and inventory, management, procurement practice and information flow, procurement practice and transportation, the procurement practice and operational performance and procurement practice and warehousing has moderate and strong positive relationship with correlation value of 0.608,0.425, 0.367,0.677 and 0.763 respectively. The relationship between inventory management and information flow, inventory management and transportation, inventory management and warehousing and inventory management and operational performance has moderate, moderate and strong, strong positive relationship with correlation value of 0.452, 0.515, 0.736, and 0.755 respectively. The relationship between information flow and transportation, Information flow and warehousing and information flow and operational performance has moderate positive relationship with correlation value of 0,621, 0.450 and 0.658 respectively. The relationship between transportation and warehousing, transportation and operational performance has moderate and strong positive relationship with correlation value of 0.628 and 0.764 respectively. There is also strong positive relationship between warehousing and operational performance. The correlation value is 0.792.

Table 2: Correlation Analysis

Coefficients						
Model		Un standardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
	(Constant)	.230	.084		2.754	.006
	Procurement practices	.151	.042	.184	3.607	.000
	Inventory management	.244	.042	.271	5.850	.000
	Information flow	.161	.040	.166	4.001	.000
	Transportation	.268	.036	.358	7.481	.000
	Warehousing	.128	.054	.153	2.364	.019
a. Dependent Variable: Operational performance						

4.5. Regression Analysis

The objective of the regression in this study was to find such an equation that could be used to find the effect of predictors on dependent variable. From **Table 3,** we can observe that the extent to which each independent variables influence the dependent variables. The specified regression equation takes the following form:

$Y=0.230+0.151X_1+0.244X_2+0.161X_3+0.268X_4+0.128X_5+0.21934$:
Where Y= operational performance, X_1=Procurement practice, X_2= Inventory management, X_3= Information flow, X_4=Transportation, X_5=Warehousing and £=error.

The regression equation above shows that, by taking all factors into account constant at zero, the operational performance will have a value of 0.230. And the findings presented also show that taking all other independent variables at zero, a unit increase in procurement practice would lead to a 0.151unit increase in the operational performance, a unit increase in inventory management would lead to a 0.244 unit increase in the operational performance, a unit increase in information flow would lead to a 0.161unit increase in the operational performance, a unit increase in transportation would lead to a 0.268 unit increase in operational performance and a unit increase in warehousing would lead to a 0.128unit increase in operational performance. On other hand, operational performance explained by other uncontrollable aspects by 0.21934.

Regression model summary

Model Summary				
Model	R	R-square	Adjusted R-Square	Standard error of the estimate
1	.912[a]	.831	.827	.21934

Table 3. Model Summary

Table 3. Cofficients of independent Variables

As shown in table above, 83.1% of the variation in the operational performance was explained by the set of mentioned logistics practices. To see the success of our model in the real world adjusted R-squared is more preferred than R-squared (Burns, 2007). Therefore, adjusted R-squared which is depicted in ANOVA statistics shows that variation explained by the regression of dependent variable on the combined effect of all the predictor variables is 82.7%.

ANOVA Analysis

ANOVA Analysis						
Model		**Sum of square**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	42.672	5	8.534	177.39	0.000[b]
	Residual	8.660	180	.048		
	Total	51.331	185			
Dependent Variable: Operational performance						

Table 4. ANOVA analysis

According to (Creswell, 2005), in order to fit the model and the data the 'sig' result should be less than 0.05. Therefore, the research results that the overall significance of the model in the above ANOVA table 4, shows that model is fit at significant of 0.000. As depicted in above ANOVA table, model is fit at significant of 0.000.So that the researchers concluded that the model could fit the data.

V. SUMMARY AND CONCLUSION RECOMMENDATIONS

A researchers were distributed 219 questionnaires to employees of Arjo Didesa sugar factory working in Factory operation and Supply and Facility management department. From the distributed questionnaires, 186(84.99%) were collected and all were used in the data analysis.The analysis result depicts that the mean score values for logistics practices dimensions are below the average mean value (only between 2.17 and 2.78) which indicates the logistics practice of Arjo Didesa sugar factory is inadequate.

The study also found a positive correlation among the five logistics practices: procurement practice, inventory management, information flow, transportation and warehousing.

Additionally, the regression value shows that operational performance is explained by0.268 and 0.244, when there is a unit change in transportation management and inventory management respectively.

For clarity purpose, the conclusions are based on the research objectives of the study and Ethiopia Sugar Corporation, Arjo Didesa sugar factory are the one who researchers provided recommendations based on the findings of the study.

The study reveals that transportation management and inventory management very significantly influenced operational performance of Arjo Didesa sugar factory even though the other three logistics practices influence operational performance of the factory. As a result, a researcher concludes that logistics practices significantly affect factory's operational performance.

By relying on the study findings, researcher initiated to provide the following recommendations for responsible body:The human resource training and development programs of Arjo Didesa sugar factory are recommended to make assessment on the need and skill gap of the procurement staff and build the capacity of staffs and increase skills regarding supplier selection process, prequalification of suppliers and management of procurement process of the sugar factory in order to have adequate management of the procurement practice.

The researchers recommends that it is better if the Arjo Didesa sugar factory apply principle of economic order quantity that enable factory effectively control supply and demand of inventory, effective continual stock replenishment and effective material requirement scheduling because by applying principle of EOQ which let factory easily to know re-order point for continual stock replenishment, ordering optimum quantity according to material requirement scheduling which result in reduction of idle time of production machines for better inventory management which have great positive significant influence on operational performance of factory.

The study further recommends that it is worthwhile if the factory upgrade infrastructure for information technology in order to make it easy and sufficient for every department to use economic order quantity principle of inventory management, effective management of procurement process and smooth information flow through sharing accurate and up to date data to all departments within the factory. It is advisable if the factory improve infrastructure of transportation for raw material inventory within factory, vehicle scheduling for transportation, vehicle inspection schedule and preventive vehicle maintenance as these issues of transportation management are significantly influence the operational performance of the factory.

Researchers initiated to provide heartfelt recommendation to Ethiopia Sugar Corporation to consider the capacity of Arjo Didesa sugar factory while sending raw sugar collected from other sugar factories for refinery process as factory has no enough storage place as the result more than 20,000 quintals of sugar exposed to spoilage. It is worthwhile for the factory to give a critical emphasis on goods acceptance process, having suitable loading gates and in-house labels in warehouse, adequate automatic storage systems especially for storing raw material inventory and semi-finished goods, storing inventory at right place and arranging fixed retrieval schedule in order to have adequate warehousing which contributes positive significant influence on operational performance.

The study provide insight for formulation of policies and regulations by the government that can help to improve performance of sugar factories so as to upgrade supply of sugar product to meet highest domestic demand as well as earning higher currency through exporting to overseas market as this would be achieved through improving operational performance of the sugar factories in the country. Finally, similar study areas are recommended to other researchers.

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