

Evaluation of Inventory Management Practice (The Case of Anbessa City Bus Service Enterprise, Addis Ababa)

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Abstract

The main purpose of this study was to evaluate inventory management practice in the case of Anbessa City Bus Service Enterprise (ACBSE), Addis Ababa. The study employed explanatory research design with mixed research approach. A sample 94 employees are selected by using purposive sampling method from the population of 143 employees of the enterprise concerning to inventory management. For this study mainly primary data were collected by using structured questionnaire, besides that secondary data were also gathered from the documents of the bureau. The collected data were analyzed by using descriptive statistics and regression model by using SPSS version 24. The major findings of the study were internal control and information technology have positive impact and long bureaucratic process and inventory holding cost have negative impact on the effectiveness of inventory management practice of the bureau. The researcher concluded that poor inventory planning, improper counting of inventory, lack of proper use of technology and long bureaucratic processes were hampering the inventory management practice of the enterprise. Hence the researcher recommended that proper use of existing technology, use of new technologies in inventory management and employees needs to train for the effective implementation technology. Further researcher recommended that proper planning and coordination among the departments and use of technology to avoid stock outs, delays in procuring inventory items, strong internal controls and easing bureaucratic process for effective implementation of the inventory management practice.

Keywords: Inventory management, ACBSE, internal control, information technology.

INTRODUCTION

Inventory management is defined as a scientific art of guaranteeing that enough inventory stock is held by an organization to meet demand (Coleman, 2000) [1]. It is a set of policies that controls and monitors inventory levels and determine what level should be preserved, how large orders should be made and when stock should be replenished to support the operation of the business (Miller, 2010) [2].

Coyle et al. (2003) [3] stated that, inventory is the existence of any stock or resources at right quantity and quality used in an organization. Coyle defines inventory as raw materials, work-in-progress, finished goods and supplies required for creation of a company's goods and services. It is also the number of units and/or value of the stock of goods a company holds. The basic reason why stock is held is to avoid stock out and its resulting problems. The extent of the stock is influenced by operational needs of the organization, time required to obtain deliveries of stock, availability of capital, cost of inventory, cost of storage and the need for detailed records in the form of stock issues which

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should be kept using store records. Having considered the accessibility of technology, storage facility available, rate of consumption of materials, lead time, margin of safety, and the stock level can then be set for each material [4].

The American Production and Inventory Control Society (APICS) define inventory management as the branch of business management concerned with planning and controlling inventories (Toomey, 2000). Lyson and Gillignham (2003) argue that inventory management involves controlling of stock or inventory levels with the physical distribution function to balance the need for minimizing stock holding and handling costs. Consistently, inventory management is aimed at ensuring that the company is supplied with the right inventories (quantities of inventory) at the right time, in the right places and ensuring optimization of the benefits of holding inventory in the organizations. Inventories are the stock of products a company holds to further its production and sales (Pandy, 2005) they appear in the form of raw materials, work in progress, finished products and supplies maintained by firms to smoothly conduct their business [5].

The problem of inventory has continued to receive much attention in most businesses. Inventory levels of raw materials, semi-finished and finished goods need to be effectively managed to control the cost of inventory (Kotler, 2002) [6]. It is common to find the balance sheet of an average company having inventory running to 60% of its current assets as capital tied down (Pandey, 2005) [7]. It is for this reason that the management of Population Services International Ethiopia (PSI/Et) through its warehouse manual (2010) have instituted procedures and techniques for the purpose of proper inventory control.

According to Gudum (2002), [8] the uncertainty and variability of the timing and content of information flow and goods flow leads to insecure planning, increased costs, stock outs and delays. Therefore, there is the need to take measures especially on inventory to deal with uncertainty and dynamism on the operational level of business. However, for this to be effective, there is the need for strategies applied at the tactical and strategic levels of organizations which will direct their supply chain strategy to achieve competitive strategy and excellence.

Therefore, management of the inventory effectively is most important part of the management because, it improves product quality, improves competitive ability, reduces inventory carrying costs and helps to maintain & handle the needs of the customers. Generally, effective inventory management leads to high success of every company.

STATEMENT OF THE PROBLEM

Anbessa city bus service enterprise is a transport service rendering company having a wide bus network procuring different inventory items needs for the enterprise to smooth up its operations. But the company needs to balance between the quantity of inventory items needed and the amount of investment in the inventory. Huge amount funds are funds blocked if unnecessary materials and spares are purchased and it leads to the high inventory holding costs which result with capital tied up and obsolescence of materials. Based on the goal of inventory management practice, Anbessa City Bus Service Enterprise is expected to benefit from uninterrupted flow of materials so that the enterprise function without interpretations in providing service to the public. In addition, inventory planning and controlling function is more helpful to keep optimum inventory balance in stock so as to not interrupt operation as well as not to affect the finance of the organization by tiding up cash. In this paper the researcher has tried to evaluate the inventory management practices in the Anbessa city bus service enterprise. The researcher believes that in an organization that is investing huge amount of money to carry out its daily activity for executing its operations, efficient and effective inventory management have a great impact on the overall performance of the ACBSE.

According to Demelash (2007) ACBSE, which is the study area of this research, oversees inefficiency to fulfill demand for transport of its customers and the customers are not satisfied by

service of the Enterprise because its buses are not available timely. The frequency of the buses is not sufficient to growing demands of the customers. According to employees and managers of the enterprise there is a problem to supply their buses in full capacity. The reasons for this poor performance of the enterprise are shortage of consumables and spare parts to maintain its buses and supplying them to serve to customers.

Anbessa City Bus Service Enterprise is one public transport in Ethiopia providing service throughout the city with its bus network. Accordingly, Anbessa City Bus Service Enterprise annual reports point out that it purchased in hundred million Birrs per year different spare parts and currently it has around 660 million Birr cost spare parts in the stock (ACBSE Annual Report, 2019/2020) purchases many of inventory items for their branches though out the city in order provide better transport service to the customers. (Anbessa city bus service enterprise 2020 Report)

In addition, there is a frequent delay in procuring needed materials and inventory items by the enterprise and in addition to that their distribution delays in the inventory items to the branches which cause problems in service delivery to the customers, these problems mainly affect the service of the enterprise to the customers.

Currently, ACBSE has a large quantity of consumables, spare parts and other inventory items. Materials for these investments are purchased and shipped to warehouse. In order to have high-level of return on investment the delivered items should be handled properly. Even though the company has large amount of inventory items that are not transacted for more than three years. In addition, numerous obsolete items are found in the warehouse that affects the return on investment (ROI) of the company.

Since the problem is quite serious, the study evaluated the inventory management practices in case of Anbessa city bus service enterprise with the following research question.

1. How the internal control system influences on the management of inventory in Anbessa city bus service enterprise?
2. What is the impact of long bureaucratic procurement procedures on procuring the need material by the Anbessa city bus service enterprise?
3. What are the consequences of high inventory costs on the inventory management system of the Anbessa city bus service enterprise?
4. How the Information technology (IT) was affects the Inventory Management practice of the Anbessa city bus service enterprise?

OBJECTIVES OF THE STUDY

General Objective

The general objective of the study is to evaluate the inventory management practice in case of Anbessa city bus service enterprise.

Specific Objectives

1. To analyze internal control practice influence on the management of inventory in Anbessa city bus service enterprise?
2. To determine the impact of long bureaucratic procurement procedures on procuring the need material by the Anbessa city bus service enterprise
3. To examine out the consequences of high inventory costs on the inventory management system of the Anbessa city bus service enterprise.
4. To evaluate the effect of Information technology (IT) on the Inventory Management Practice of the Anbessa city bus service enterprise?

SIGNIFICANCE OF THE STUDY

The study's outcomes are useful for Anbessa city bus service enterprise's management to evaluate and improve the inventory management practice of the company. Similarly, for other organizations

which hold inventory items can benefit from the outcome. In addition, it will serve as feedback for those who are interested to conduct further study on related topics.

SCOPE OF THE STUDY

The scope of the study is limited to analyze the inventory management practices of Anbessa city bus service enterprise in terms of internal control system, long bureaucratic process, and high inventory cost and information technology. The study covers the store of Anbessa city bus service enterprise located in Addis Ababa. The study does not cover other current assets of the company. The study is focused on those inventory items that have been shipped and are stored at Anbessa city bus service enterprise in Addis Ababa.

LIMITATIONS OF THE STUDY

The researcher faced difficulties in data collection in this COVID-19 or corona virus pandemic time. Despite non-availability of respondents, the researcher managed to collect primary data from most of the respondents. Finance and time constraints are also obstacles to perform the study in detail be the time is COVID-19 time., The researcher faced difficulty in collecting secondary data and accessing literatures from library, any way the researcher overcome this difficulty by collecting vast literatures by using other different sources.

LITERATURE REVIEW AND RESEARCH GAP

Inventory is one of the main parts of the major business's assets that is ready to use or will be ready for sale. It can be the raw materials, work in progress, and finished goods. Inventory turnover represents one of the primary sources that enable businesses to produce revenue and continuous earnings to the company's stakeholders. Inventory is an asset and owned by a business that has an advantage of being sold to a customer or used as spare part for service rendering organizations. (Ackah & Ghansah, 2016) [9].

Inventory systems contain detailed records of the products, quantities and stock locations of the company's assets. The primary purpose of an inventory system is to keep an accurate record of stockroom supplies. The reasons to maintain accurate inventory records include financial accounting, customer order fulfillment, stock replenishment and maintaining the ability to locate specific an item. (Fred Hot, 2017) [10]. Inventory management is described as a knowledge-based art of ensuring enough inventory stock which is held by an organization to meet demand (Coleman, 2000)

INFORMATION TECHNOLOGY AND INVENTORY MANAGEMENT

Many practitioners perceive the Inventory management concept primarily as a phenomenon driven by the developments in the information and communication technology area (Hakansson et al., 2004). Information technology is a crucial enabler of effective and efficient Inventory management (Simchi-Levi et al., 2004) [11]. These statements indicate that IT evolution has been and will keep on acting as the major driving force for Inventory management. Enterprise Resource Planning (ERP) is a system that attempts to do planning according to supply and demand information taken across the entire network (Toomey, 2000). ERP traditionally covers manufacturing, human resources, and financials but now has become the backbone of most IT infrastructures (Simchi-Levi et al., 2009) [11].

Companies give more attention to purchasing when the costs of purchased items increase. Reengineering the supply chain strategy concerns not only coordination of the various activities in the supply chain but also deciding what to produce in-house and what to outsource (Simchi-Levi et al., 2009) [11]. According to Susan & Michael (2000), [12] the primary objectives of purchasing are to buy materials at the lowest responsive and responsible cost and to ensure faithfulness to purchasing terms and conditions. Maintaining stability of supply and uniformity of quality are also important objectives that go hand in hand with searching for new products and vendors and developing alternative supply sources. Other methods to improving inventory performance require using different procurement methods, depending on such factors as the types of material or services purchased and whether the purchase is small bid, one time, or repetitive.

BUREAUCRATIC PROCUREMENT PROCEDURES

Procurement comprises the whole process of acquiring property and/or services. It begins when an agency has identified a need and decided on its procurement requirement. Procurement continues through the processes of risk assessment, seeking and evaluating alternative solutions, contract award, delivery of and payment for the property and/or services and, where relevant, the ongoing management of a contract and consideration of options related to the contract. Procurement also extends to the ultimate disposal of property at the end of its useful life (Waters, 2004) [13].

INTERNAL CONTROL ON INVENTORY

Inventory is a major asset that should be the sources of returns on capital investment. The marginal profit on sales got from return on inventory investment accordingly, this would not occur without inventory. Accounting experts stated that to accept corporate profit-and-loss, without measuring the true cost and a benefit of inventory is difficult. Because lack of measurement clarity makes it complex to evaluate the trade-offs between service levels, operational activeness, and inventory maximum or minimum level, while the cumulative of inventory levels have decreased, the inventory carrying cost is greater than their basic requirement (Bowersox, 2002) [14]. Inventory control is the management activities that try to maintain sustainable stocks at their estimated levels. It is practiced by planning necessary stock sizes at usual intervals, by taking two stocks then counting and valuing it at the same interval comparing the two sets of feedback margining of variances (Sharma, 2006) [15].

INVENTORY CARRYING COSTS

Stock and Lambert (2001) [16] described inventory costs is shown in Figures 1 and 2.

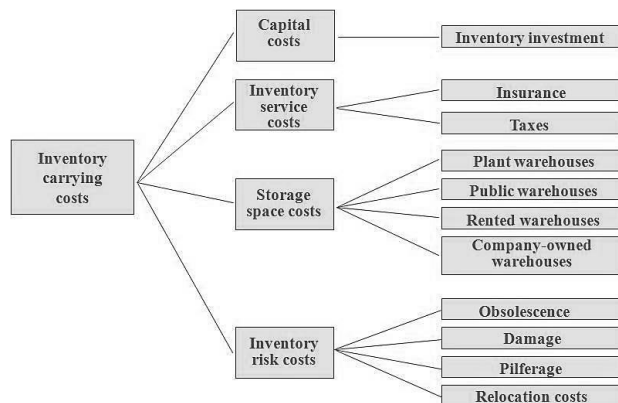


Figure 1. Inventory carrying costs.

Source: Goldsby et al., 2005 [17]

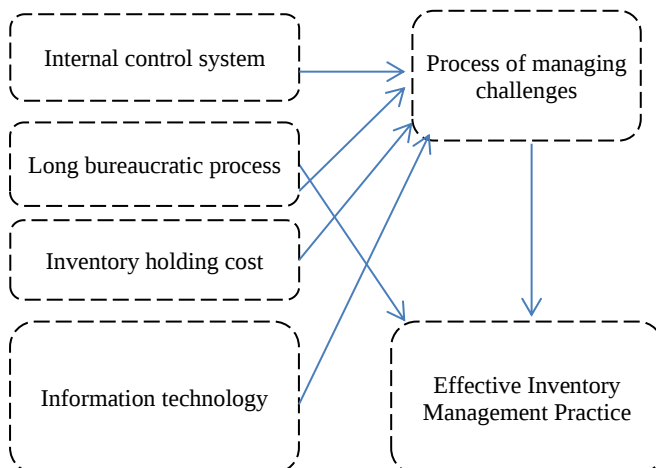


Figure 2. Conceptual framework developed by researcher.

RESEARCH METHODOLOGY

The study was used explorative research design. The explorative design is used because the study was gathered quantitative and qualitative data that analyze the cause-and-effect relationship between the study variables and inventory management practice in the study area. The researcher was used mixed approach that is both qualitative and quantitative approach. Data for this study was collected from both primary and secondary sources. A structured questionnaire was applied to collect primary data using open and closed ended questionnaires. Secondary sources include documents, related books, journals, study findings, previous and current reports, working papers, and web sites and other relevant published and unpublished documents relevant to the issue of the study as a review (Table 1).

Table 1. Target population of the study.

No.	Departments/Section	Target Population (A)	Ratio (C=A/B)	Sample to be Selected (C*94)	Staff	Management
1	Inventory Management	22	0.15	14	12	2
2	Procurement	43	0.30	28	23	5
3	Warehouse	72	0.50	48	41	7
4	Finance	6	0.04	4	3	1
Target Population & Sample to be taken		143 (B)	1	94	79	15

Source: HR department Report of Anbessa city bus service enterprise (2020)

SAMPLE SIZE

In this research sample size was determined using sample size calculation formula from Kothari [18]. The sample size of the study was 94 employees who are selected to fill questionnaires. Total employees N is 134.

Population (N) = 143

Probability (Z) = 1.65

Margin of Error e = 0.05

Proposition of population having the characteristics = 0.5

Confidence level = 90%

Sample Size= $[z^2 * p (1-p)]/e^2/1 + [z^2 * p (1-p)]/e^2 * N]$

Source, C.R. Kothari, (2006) [18]

$$= [1.652 * 0.5 (1-0.5)]/0.025/1 + [1.652 * 0.5 (1-0.5)]/0.025 * 143]$$

$$= [2.7225 * 0.25]/0.0025/1 + [2.7225 * 0.25]/1.90385]$$

$$= 272.25/2.9038$$

$$= 93.75 \text{ (final answer)} \approx 94$$

METHODS OF DATA ANALYSIS AND MODEL SPECIFICATION

Data was analyzed by using Statistical Package for Social Sciences (SPSS) software 20. Descriptive statistic mainly frequency counts, percentage, table, charts, measure of central tendency (mean), measure of dispersions (Standard deviations) used to summarize data. Multiple Liner regression model were used for data analysis.

Independent Variables

- (X1) Information Technology (IT)
- (X2) Bureaucratic Procurement
- (X3) Internal Control Over Inventory
- (X4) High Inventory Carrying costs

Dependent Variable

- (Y) Effectiveness of Inventory Management

A multiple linear regression model is used to link the independent variables to the dependent variable as follows.

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

Where Y is the dependent variable-Effectiveness of inventory management

Notation

- β_0 is intercept, where the regression line crosses the Y axis.
- β_1 is the partial slope for X1 on Y, and b_1 indicates the change in Y for one-unit change in X1, controlling for X2, X3 & X4.
- β_2 is the partial slope for X2 on Y, and b_2 indicates the change in Y for one-unit change in X2, controlling for X1, X3 & X4
- β_3 is the partial slope for X3 on Y, and b_3 indicates the change in Y for one-unit change in X3, controlling for X1, X2 & X4
- β_4 is the partial slope for X4 on Y, b_4 indicates the change in Y for one-unit change in X4, controlling for X1, X2 & X3
- ε = stochastic term or error term, since no model fits perfectly, an error term ε is included to account for differences between the value predicted by the model those observed in the data set.

DATA ANALYSIS AND INTERPRETATION

Descriptive Statistics for Information technology influence on inventory management

As indicated in Table 2, the impact of Information Technology on inventory management of Anbessa city bus service enterprise has high influence at 57.7% (Mean 3.88) in reducing human error, 52.2% (Mean 3.76) improve the planning operation of Anbessa city bus service enterprise's inventory management, 46.7% (Mean 3.82) reduction in transaction cost due to paperless operation, 45.6% (Mean 3.81) improve the ability of the company to better manage the inventory levels, 44.4% (Mean 3.72) simplify the identification of inventory items during storage, recovery, pickup, inspection & dispatch, 37.8% (Mean 3.927) reduction in inventory cost and 37.7% (Mean 3.77) and faster transactions-real time document transfer in the supply chain.

Table 2. Descriptive statistics of information technology.

Information technology (IT) on the effectiveness of Anbessa city bus service enterprise's Inventory Management		Rating						Mean
		Very High	High	Moderate	Low	Very Low	Sum	
Reduction in inventory cost	Freq	28	34	22	6	0	90	3.93
	%	31.10%	37.80%	24.40%	6.70%	0.00%	100.00%	
Reduction in transaction cost due to paperless operation.	Freq	16	42	26	6	0	90	3.82
	%	17.80%	46.70%	28.80%	6.70%	0.00%	100.00%	
Improve the planning operation of Anbessa city bus service enterprise's Inventory management	Freq	17	47	10	16	0	90	3.76
	%	18.90%	52.20%	11.10%	17.80%	0.00%	100.00%	
Reduce Human Error.	Freq	14	52	18	6	0	90	3.88
	%	15.60%	57.70%	20.00%	6.70%	0.00%	100.00%	
Simplify the identification of inventory items during storage, recovery, pickup, inspection & dispatch	Freq	23	40	20	7	0	90	3.72
	%	25.60%	44.40%	22.20%	7.80%	0.00%	100.00%	
Improve the ability of the company to better manage the inventory levels.	Freq	19	41	24	6	0	90	3.81
	%	21.10%	45.60%	26.60%	6.70%	0.00%	100.00%	
Faster transactions-real time document transfer in the supply chain.	Freq	23	34	27	1	5	90	3.77
	%	25.60%	37.70%	30.00%	1.10%	5.60%	100.00%	

(Source: own survey results from SPSS output, 2020)

FINDINGS OF LONG BUREAUCRATIC PROCUREMENT PROCEDURES

According to the respondents as indicated in Table 3, the impact of Bureaucratic Procurement Procedures on the effectiveness of inventory management of Anbessa city bus service enterprise. 51.1% (Mean 2.12), 42.2% (Mean 2.46), 44.0% (Mean 2.02) and 50% (Mean 2.18) of the respondents disagree that there is no a stock out problem/shortage of item in the organization, the company easily get the telecom equipment and spare parts from local market, the company inventory management doesn't experience long bureaucratic related purchase difficulties and foreign purchased inventory items have not got a problem of defect respectively. 45.5% of the respondents with mean value 1.81 strongly disagreed that, the company didn't face foreign currency shortage to purchase materials. The determination of inventory order size by forecasting the future need was partially agreed by 34.4% (Mean 3.37). Finally, 43.3% of the respondents with mean value 3.37 agreed that, the supplier delivers the inventory items according to user division's request.

Table 3. Descriptive statistics of long bureaucratic procurement procedure.

Procurement procedure to the effectiveness of inventory management		Rating						Mean
		Strongly Agree	Agree	Partially Agree	Disagree	Strongly Disagree	Sum	
There is no a stock out problem/shortage of item in the organization.	Freq	0	1	26	46	17	90	2.12
	%	0.00%	1.10%	28.90%	51.10%	18.90%	100.00%	
The company determine inventory order size by forecasting the future need	Freq	8	30	31	14	7	90	3.20
	%	8.90%	33.30%	34.40%	15.60%	7.80%	100.00%	
The Company easily get the telecom equipment and spare parts from local market	Freq	7	9	19	38	17	90	2.46
	%	7.80%	10.00%	21.10%	42.20%	18.90%	100.00%	
The company inventory management doesn't experience long bureaucratic related purchase difficulties	Freq	0	6	15	44	25	90	2.02
	%	0.00%	6.70%	16.70%	48.90%	27.70%	100.00%	
Foreign purchased inventory items have not got a problem of defect	Freq	2	15	19	45	19	100	2.18
	%	2.20%	5.60%	21.10%	50.00%	21.10%	100.00%	
The supplier delivers the inventory items according to user division's request	Freq	10	39	16	24	1	90	3.37
	%	11.10%	43.30%	17.80%	26.70%	1.10%	100.00%	
The company didn't face foreign currency shortage to purchase materials.	Freq	0	6	6	37	41	90	1.81
	%	0.00%	6.70%	6.70%	41.10%	45.50%	100.00%	

(Source: own survey results from SPSS output, 2020)

FINDINGS OF INTERNAL CONTROL OVER INVENTORY

Table 4 show the details of review of the respondents on the impact of Internal Control on the effectiveness of inventory management of Anbessa city bus service enterprise. 48.9% with mean value 3.16 and 3.71 agree that, adequate provision/facility is made for obsolete and inactive items in inventories and the company management monitors and approves the write-offs of obsolete and inactive inventories respectively. Also, 43.33% with mean value 3.82 and 3.51 agree that, Receiving, issuing, accounting and storing responsibilities are properly segregated and management reviews the reconciliation of physical inventory counts to the inventory records of ERP respectively. 38.9% of the respondents with mean value 3.39 agreed that, Anbessa city bus service enterprise's policies and procedures are clearly stated and communicated. Finally, 31.0% (Mean 3.46) of the respondents disagree that the company has stock audit system to manage and control its inventory.

Table 4. Descriptive statistics of internal control over inventory.

Internal control on the effectiveness of inventory management		Rating					Sum	Mean
		Strongly Agree	Agree	Partially Agree	Disagree	Strongly Disagree		
The company has stock audit system to manage and control its inventory	Freq	23	23	16	28	0	90	3.46
	%	25.60%	25.60%	17.80%	31.00%	0.00%	100.00%	
Policies and procedures are clearly stated and communicated	Freq	12	35	22	18	3	90	3.39
	%	13.30%	38.90%	24.40%	20.10%	3.30%	100.00%	
Receiving, issuing, accounting and storing responsibilities are properly segregated.	Freq	23	39	19	7	2	90	3.82
	%	25.60%	43.30%	21.10%	7.80%	2.20%	100.00%	
Management takes appropriate action/steps to safeguard the items against risk of loss	Freq	10	30	20	23	7	90	3.14
	%	11.10%	33.30%	22.20%	25.60%	7.80%	100.00%	
Adequate provision/Facility is made for obsolete and inactive items in inventories.	Freq	4	44	15	16	11	90	3.16
	%	4.40%	48.90%	16.70%	17.80%	12.20%	100.00%	
Management monitors and approves the write-offs of obsolete and inactive inventories.	Freq	16	44	18	12	0	90	3.71
	%	17.80%	48.90%	20.00%	13.30%	0.00%	100.00%	
Management reviews the reconciliation of physical inventory counts to the inventory records of ERP	Freq	15	39	18	13	5	90	3.51
	%	16.70%	43.30%	20.00%	14.40%	5.60%	100.00%	

(Source: own survey results from SPSS output, 2020)

FINDINGS OF INVENTORY CARRYING COSTS

According to the respondents as indicated in Table 5, the impact of inventory carrying cost on the effectiveness of inventory Management of Anbessa city bus service enterprise has a very high influence at 53.3% (Mean 4.43) Capital or Buying Cost. 57.8% (Mean 3.76), 54.4% (Mean 3.98), 43.3% (Mean 3.79), 42.2% (Mean 4.07), 37.8% (Mean 3.91) and 33.2% (Mean 3.54) of the respondents agree that the company has high inventory carrying cost on insurance, taxes, damage, obsolescence, storage space/warehouse costs/and relocation costs respectively.

Table 5. Descriptive statistics of inventory carrying costs.

Inventory Carrying Cost on the effectiveness of inventory Management		Rating					Sum	Mean
		Very High	High	Moderate	Low	Very Low		
Capital Costs (Buying Cost)	Freq	48	33	9	0	0	90	4.43
	%	53.30%	36.70%	10.00%	0.00%	0.00%	100.00%	
Insurance	Freq	15	52	13	6	4	90	3.76
	%	16.70%	57.80%	14.40%	6.70%	4.40%	100.00%	
Taxes	Freq	22	49	14	5	0	90	3.98
	%	24.40%	54.40%	15.60%	5.60%	0.00%	100.00%	
Storage Space/warehouse costs/	Freq	31	34	16	4	5	90	3.91
	%	34.40%	37.80%	17.80%	4.40%	5.60%	100.00%	
Obsolescence	Freq	36	38	7	4	5	90	4.07
	%	40.00%	42.20%	7.80%	4.40%	5.60%	100.00%	
Damage	Freq	25	39	15	4	7	90	3.79
	%	27.80%	43.30%	16.70%	4.40%	7.80%	100.00%	
Relocation costs	Freq	23	30	16	15	6	90	3.54
	%	25.60%	33.20%	17.80%	16.70%	6.70%	100.00%	

(Source: own survey results from SPSS output, 2020)

FINDINGS OF EXISTING CHALLENGES OF INVENTORY MANAGEMENT

Results in Table 6 presents the responses on the challenges faced by Anbessa city bus service enterprise in managing its inventory. Findings indicate that inventory management at Anbessa city bus service enterprise is committed to the following challenges: Lack of training 69 (76.67%), Lack of trained personnel 38 (42.22%), Use of outdated storage facilities 82 (91.11%), Inadequate inventory management information system 42 (46.67%), Improper record keeping in the process of managing its inventory 43 (47.78%), Too much of some products in the warehouse which leads to excess inventory which ties up working capital, 86 (95.58%), Delays in delivery of items leading to insufficient inventories 74 (82.23%), and Poor supply and demand planning 55 (61.12%).

Table 6. Descriptive statistics of existing challenges in inventory management.

Existing challenges in implementing inventory management system in Anbessa city bus service enterprise		Rating						Mean
		Strongly Agree	Agree	Partially Agree	Dis-agree	Strongly Disagree	Sum	
Lack of Training	Freq	18	36	15	21	0	90	3.57
	%	20.00%	40.00%	16.67%	23.33%	0.00%	100.00%	
Lack of Trained personnel	Freq	17	21	18	34	0	90	3.23
	%	18.89%	23.33%	20.00%	37.78%	0.00%	100.00%	
Use of outdated storage facilities	Freq	33	30	19	8	0	90	3.98
	%	36.67%	33.33%	21.11%	8.89%	0.00%	100.00%	
Inadequate inventory management information system.	Freq	8	34	20	27	1	90	3.23
	%	8.89%	37.78%	22.22%	30.00%	1.11%	100.00%	
Improper record keeping in the process of managing its inventory.	Freq	23	20	18	29	0	90	3.41
	%	25.56%	22.22%	20.00%	32.22%	0.00%	100.00%	
Too much of some products in the warehouse which leads to excess inventory which ties up working capital	Freq	31	36	19	16	0	102	3.98
	%	34.44%	40.00%	14.45%	11.11%	0.00%	100.00%	
Delays in delivery of items leading to insufficient inventories	Freq	23	32	19	16	0	90	3.69
	%	25.56%	35.56%	21.10%	17.78%	0.00%	100.00%	
Poor supply and demand planning	Freq	23	32	19	16	0	90	3.4
	%	25.56%	35.56%	21.10%	17.78%	0.00%	100.00%	

(Source: Own Survey results from SPSS output, 2020)

ASSESSMENT OF MULTIPLE LINEAR REGRESSION ASSUMPTIONS

Assessment of Multicollinearity

Multicollinearity is a statistical problem which occurs when the explanatory variables (independent variables) are much correlated with each other (Hair, et al., 1998) [19]. It means when the strong correlation among predictors exists when tolerance value below 0.10, and Variance Inflation Factor (VIF) greater than 10 in the correlation matrix (Tables 7 and 8). Tolerance in this case defined as a statistical tool which used to indicate the variability of the specified independent variables from other independent variables in the model. Based on Table 9, the tolerance levels for all variables were greater than 0.10 and the Variance Inflation Factor (VIF) value for all variables were less than 10. No multicollinearity exists between the explanatory variables.

Table 7. Collinearity statistics coefficients.

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.217	.493		6.527	.000		
	Information Technology (IT)	.201	.095	.185	2.117	.037	.884	1.132
	Long Bureaucratic Procurement Procedure	-.278	.092	-.254	-3.018	.003	.952	1.050
	Internal Control Over Inventory	.265	.079	.298	3.368	.001	.864	1.158
	High Inventory Carrying cost	-.425	.083	-.426	-5.146	.000	.984	1.016

a. Dependent Variable: Overall Effectiveness of Inventory Management
(Source: Own Survey results from SPSS output, 2020)

Table 8. Pearson correlation matrix.

		Values of co-efficient of co-relation				
		Overall Effectiveness of Inventory Management	Information Technology (IT)	Long Bureaucratic Procurement Procedure	Internal Control Over Inventory	High Inventory Carrying cost
Overall Effectiveness of Inventory Management	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	90				
Information Technology (IT)	Pearson Correlation	.314**	1			
	Sig. (2-tailed)	.003				
	N	90	90			
Long Bureaucratic Procurement Procedure	Pearson Correlation	-.265*	-.049	1		
	Sig. (2-tailed)	.011	.647			
	N	90	90	90		
Internal Control Over Inventory	Pearson Correlation	.331**	.325**	.155	1	
	Sig. (2-tailed)	.001	.002	.146		
	N	90	90	90	90	
High Inventory Carrying cost	Pearson Correlation	-.472**	-.045	.113	-.030	1
	Sig. (2-tailed)	.000	.670	.289	.782	
	N	90	90	90	90	90

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

* Correlation is significant at the 0.05 level (2-tailed).

(Source: Own Survey results from SPSS output, 2020)

Assessment of Auto Correlation

If there are patterns in the residuals from a model, then they can be considered as auto correlated. The Durbin-Watson (DW) is a test for first order auto correlation (Brooks, 2008) [20]. The Durbin-Watson statistic ranges in value from 0 to 4. A value near 2 indicates non-autocorrelation; a value toward 0 indicates positive autocorrelation; a value toward 4 indicates negative autocorrelation. Based on Table 9 the Durbin-Watson (DW) statistics value of this study is near 2 that is 1.404. Therefore, there is no evidence of autocorrelation among error terms in this study.

Table 9. Durbin watson test model summary ^b.

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.652 ^a	.426	.399	.515	1.404

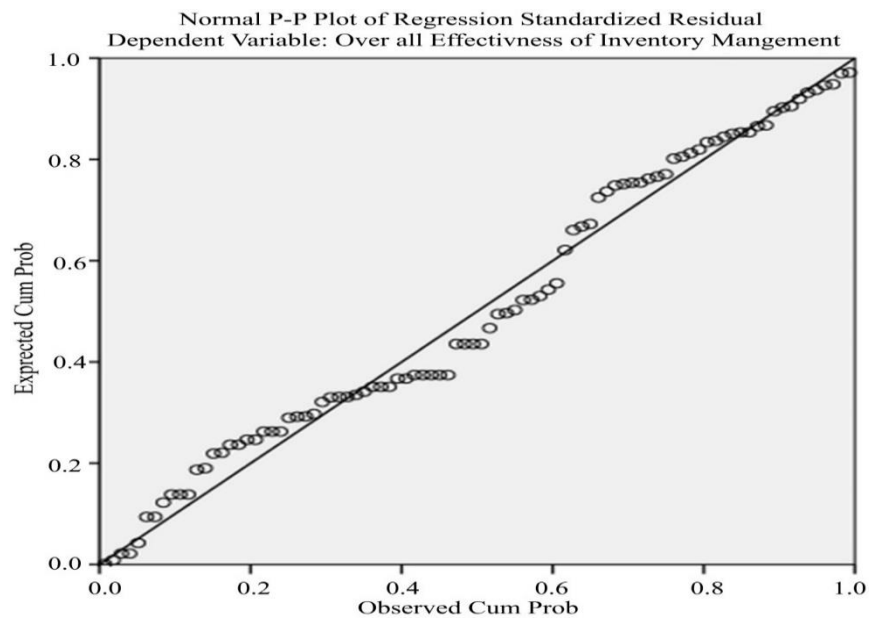
a. Predictors: (Constant), High Inventory Carrying cost, Internal Control Over Inventory, Long Bureaucratic Procurement Procedure, Information Technology (IT)

b. Dependent Variable: Overall Effectiveness of Inventory Management

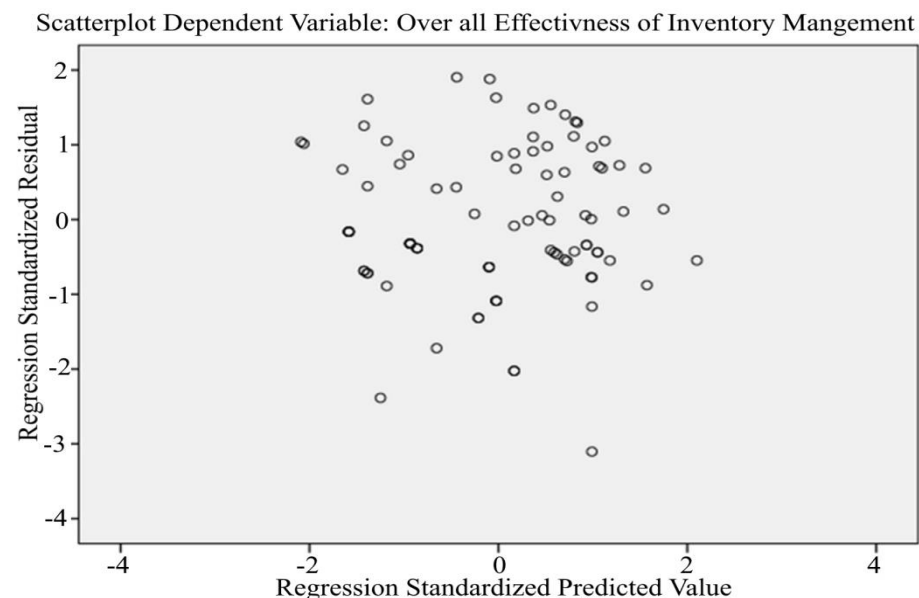
(Source: Own Survey results from SPSS output, 2020)

Assessment of Normality and Heteroskedasticity

The following Figures 3 and 4 showing the normality and Heteroskedasticity of data which are the basic assumption of multiple linear regression shows that data was normally distributed.

**Figure 3.** Normal P-P Plot of Regression Standardize Residual

(Source: Own Survey results from SPSS output, 2020)

**Figure 4.** Heteroscedasticity Scatter Plot.

(Source: Own Survey results from SPSS output, 2020)

REGRESSION RESULTS FOR EFFECTIVENESS OF INVENTORY MANAGEMENT

Multiple linear regression analysis is a general statistical technique used to analyze the relationship between a single dependent variable and several independent variables (William 2009). Regression analysis was undertaken with respect to effectiveness of inventory management of Anbessa city bus service enterprise as the dependent variable and the four independent variables: Information technology (IT), long bureaucratic procurement procedure, internal control over inventory and high inventory carrying cost

Model Summary (Coefficient of Determination (R Square))

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable.

Table 9 displays the value of $R = 0,652$ and the coefficient of determination (R square) of 42.6%. This suggests the concept that Effectiveness of Inventory Management (Y) is influenced by 42.6% by Information Technology IT (X1), Long bureaucratic procurement procedure(X2), Internal control over inventory (X3) and High inventory carrying costs(X4). Therefore, further research should be conducted to investigate the other factors (57.4%) that have impact on the Effectiveness of inventory management.

Analysis of Variance ANOVA^b

If P is < 0.05 the multiple regression model can be used to predict the performance of Y. ANOVA Table 10 shows a probability level of significance value of 0.000. Table 10 show that, the probability (0.000) is much smaller than p-value 0.05, then the multiple regression model can be used to predict the effectiveness of inventory management. Or in other words Information Technology IT (X1), Long bureaucratic procurement procedure (X2), Internal control over inventory (X3) and High inventory carrying costs (X4) have simultaneous significant effect on the effectiveness of inventory management (Y)

Table 10. Analysis of variance (ANOVA).

ANOVA ^a						
	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	16.728	4	4.182	15.747	.000 ^b
	Residual	22.573	85	.266		
	Total	39.302	89			

a. Dependent Variable: Overall Effectiveness of Inventory Management

b. Predictors: (Constant), Inventory Carrying cost, Internal Control, Procurement, Information Technology (IT)
(Source: Own Survey results from SPSS output, 2020)

Coefficient of Determination

The independent variable with the level of significance (sig.) value less than 5% can make a significant contribution to the predicted value of the dependent variable. Whereas a variable beyond this level of significance (sig.) cannot make a significant contribution to the predicted value of the dependent variable (Brooks, 2008; Hair, et al., 1998). The statistical significance of the independent variable over the dependent variable at 5% level of significance having a P-value less than 5%; four independent variables (information technology, bureaucratic procurement procedure, Internal control over inventory and inventory carrying costs) were significantly contributed for the dependent variable (effectiveness of inventory management).

At 5% level of significance and 95% level of confidence, information technology had a 0.037 level of significance; bureaucratic procurement showed a 0.03 level of significant; internal control showed a 0.001 level of significant and inventory carrying cost had a 0.00.

Table 11. Coefficient of determination.

		Coefficients ^a			<i>t</i>	<i>Sig.</i>
<i>Model</i>		Unstandardized Coefficients		Standardized Coefficients		
		<i>B</i>	<i>Std. Error</i>	<i>Beta</i>		
1	(Constant)	3.217	.493		6.527	.000
	Information Technology (IT)	.201	.095	.185	2.117	.037
	Procurement	-.278	.092	-.254	-3.018	.003
	Internal Control	.265	.079	.298	3.368	.001
	Inventory Carrying cost	-.425	.083	-.426	-5.146	.000

a. Dependent Variable: Overall Effectiveness of Inventory Management
(Source: Own Survey results from SPSS output, 2020)

Since the sig/P value is, < 0.05 we conclude that all β values are significant. From chapter 3, the estimated regression model was $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$. As per the multiple regression coefficients in Table 11 above, the fitted regression model would be:-

$$Y = 3.217 + 0.201X_1 - 0.288X_2 + 0.265X_3 - 0.425X_4 + \varepsilon$$

Where:- β_0 is Constant

Y is Effective inventory management,

X_1 is Information Technology,

X_2 is Bureaucratic Procurement,

X_3 is Internal Control and

X_4 Inventory Carrying Cost.

ε = stochastic term or error term

$\beta_1, \beta_2, \beta_3, \& \beta_4$ = Regression coefficient

According to the regression equation established, taking all factors into account (information technology, bureaucratic procurement, internal control, and inventory carrying cost) constant at zero, effective inventory management will be 3.217. The data findings analyzed also show that taking all other independent variables at zero, a unit increase or improvement in information technology will lead to a 20.1% improvement in the effectiveness of inventory management; a unit decrease in bureaucratic procurement procedure will lead to a 27.8% increase in the effectiveness of inventory management, a unit increase in inventory internal control will lead to a 26.5% increase in Effective inventory management. A unit decrease in Inventory carrying Costs will lead to a 42.5% increase or improvement in effective inventory management of Anbessa city bus service enterprise. This concludes that bureaucratic procurement procedure and Inventory carrying costs have negative contribution, information technology and internal control over inventory have positive contribution to the effectiveness of inventory management.

INTERPRETATION AND DISCUSSION

This study had four objectives. To find the effect of Information technology on the effectiveness of inventory management, to evaluate the effect of bureaucratic procurement procedure to the effectiveness of inventory management, to appraise the effect of internal control to the effectiveness of inventory management, to assess the effect of inventory cost to the effectiveness of inventory management and to find out the major challenges in implementing inventory management practice in Anbessa city bus service enterprise. The four variables were found an effect on the effectiveness of inventory management practices at Anbessa city bus service enterprise.

INTERNAL CONTROL OVER INVENTORY

The first objective was “to appraise the effect of internal control to the effectiveness of inventory Management”. It can be concluded that aspects of existing internal control practice had influence on the effectiveness of inventory management of the organization. There was specific time in which the stock taking exercise was set to take place, reviewing of stock records and reports. The discrepancy between the physical stock balance and actual balance reflected in stock control record to be attributing factor for frequent stock out of some crucial items and poor planning. The regression analysis of the study shows that internal control over inventory has a positive impact on the effectiveness of inventory management of the company.

BUREAUCRATIC PROCUREMENT PROCEDURE

The second objective sought “to evaluate the effect of bureaucratic procurement procedure to the effectiveness of inventory management.” The study found that long bureaucratic procurement procedures are being experienced in Anbessa city bus service enterprise making the purchase of goods difficult. Having cumbersome procurement procedures was the cause of long bureaucratic delays. The study revealed that long bureaucratic procurement procedure affects inventory management of the organization. The study also revealed that: delays in procurement of goods, frequent stock-outs, and foreign currency shortage were some of the effects of long bureaucratic procedure which have a negative effect on effectiveness of inventory management.

INVENTORY CARRYING COST

The third objective sought to “assess the effect of inventory caring cost to the effectiveness of inventory management”. The study found that there is high carrying cost in Anbessa city bus service enterprise. The research revealed that money was being tied up on some of those over stocked inventories. Hence capital cost is the single biggest factor of inventory carrying cost; it is opportunity cost the organization. Thus, excess product created additional inventory carrying cost. Besides the study found that there was stock out of some crucial items that causes interruption of operation. The study revealed that there are damage and obsolescence products which eventually increases carrying cost and affects inventory control of the organization. The study also shows that high carrying cost affected inventory management of the organization negatively.

INFORMATION TECHNOLOGY (IT)

The fourth objective was ‘To find the effect of Information technology on the effectiveness of inventory Management’. Analysis of data produced indicate that IT adoption on the activities of inventory management enhances the integration of Finance, procurement, warehouse and inventory management sections’ activity by minimizing manual operation. The study discovered that faster transaction, reduction of human error and paperwork were some benefits contributed by IT. As per the regression analysis of the study, Information technology positively affects the effectiveness of inventory management of the company.

CONCLUSIONS

The study found out that information technology was useful to a greater extent on managing inventory effectively. If the company improves information technology, it has a positive effect for the improvement of effective inventory management practices of the company. Since the company uses ERP system and has IT experts, the information-technology contribution to inventory management is well organized. There are long bureaucratic procurement procedures being experience in the organization because of intra-divisional communication and planning, decision making processes and having a very elaborate procurement procedure. The long bureaucratic procedures have various negative effects that include delays in procurement of goods, frequent stock-outs/under-stocking, and poor inventory management.

It can be concluded that aspects of existing internal control practice had influence on the effectiveness of inventory management of the organization. There was a specific time in which the

stock taking exercise was set to take place, reviewing of stock records and reports, discrepancies between actual and physical stock balances is evident. The discrepancy between the physical stock balance and actual balance reflected in stock control record to be attributing factor for frequent stock out of some crucial items and poor planning. It can be concluded that the company did not use mathematical model to determine inventory order size and result with high ordering cost. There was high inventory carrying cost in the organization due to over stock, under stock, damage, expired and obsolescence items in the organization. Capital had been tied up on those overstock items, operation and sales were interrupted on those under stocked items and capital cost was declined due to expired, obsolescence and expired items. Thus, high carrying cost in the organization negatively affected the effectiveness of inventory management of the company. It is showed that lack of training is there for employees, outdated storage facilities and obsolete items which result with dissatisfaction of employees was a factor that influenced the effectiveness of inventory management. Most of the officers working in inventory control section do not have the necessary professional qualifications in inventory management. Post-employment training is not common in inventory control sections. Staff skill and experience contributed to ineffectiveness of inventory control due to deficient of stores officer qualifications, lack of training & record procedure violation.

RECOMMENDATIONS

Considering the findings, the following recommendations were made:

The study proposes a review on the appropriate ERP Supply Chain and Financial modules to thoroughly use the system. By doing this, the company can effectively use its resources and reduces unnecessary costs. The study also recommends that, Item standardization should be implemented throughout the company since there is a single item with different item code/name on the ERP system which leads to overstocking and obsolescence of items.

Too much massive rules and dependence on rigid regulations and policies that slow down procurement process should be revised and avoided by using the existing ERP system exhaustively. In addition, modernize the procurement process, which will realize real time procurement thus increasing transparency in procuring goods and services.

The current internal control practices and procedures over inventory need to be revised and restructured while a fully computerized stock record system for all transactions made in the warehouse, for easy identification of materials in the stores and to reduce the misleading practices due to storing new materials with obsolete once. Therefore, an appropriate inventory management system should be employed. This can be done by disposing obsolete materials on time, and proper planning during procurement.

Inventory carrying costs should be kept at a minimum possible level. Over and under stocking of products should be minimized. In addition, utilize the economic order quantity model. The existing ERP Inventory management software should be clearly designed to show historic used data and makes assumptions based on that data with respect of the purchase order of the item.

Staffs should be adequately equipped with appropriate qualifications and proper training, ensure faithfulness of stock record procedures & proper storage facilities to encourage effective inventory management. The organization should ensure that inventory control function is only handled by competent and well-trained supply chain and finance officers.

REFERENCES

1. Coleman, B. (2000). Determining the Correct Service Level Target. *Production and Inventory Management Journal*, 41(1):169-176.
2. Miller, R. (2010). *Inventors Control: Theory and Practice*. New Jersey: Prentice Hall.

3. Coyle, J., Bardi, E., & M., & Langley, C. (2003). The management of Business Logistics: A Supply Chain Perspective. 7th edition. Ohio: South-Western.
4. Demalesh (2007) Inventory management problems and prospectus in public sector of Ethiopia, Academia, New York.
5. Lyons, K, Gillingham, M. (2003). Purchasing and supply chain Management, (6th ed). London: Prentice Hall.
6. Kotler, P. (2002). Marketing Management (11th ed.). Upper Saddle River, NJ: Prentice Hall.
7. Pandey, I.M. (2005). Financial Management. New Delhi: Vikas Publishing House PVT Ltd.
8. Gudum, C.K. (2002), "Managing variability in a supply chain: An inventory control perspective", PhD Thesis, Sam funds literature, Kobenhavn.
9. Ackah, R.A., & Ghansah, E. (2016). Assessing Inventory Management on the Performance of the Production Sector in Ghana, Dama International Journal of Researchers (DIJR), ISSN: 2343-6743, ISI Impact Factor: 0.878 Vol 1, Issue 7, July 2016, Page 17–27.
10. Fred Hot, (2017, September). Biz fluent Magazine: What Is the Purpose of Maintaining an Inventory System? 237, 92–100.
11. Simchi-Levi, D., Kaminsky, P. (2004). Managing the Supply Chain: The Definitive Guide for The Business Professional. New York: McGraw-Hill.
12. Susan T and Michchael T (2000) TCRP Research and Results, Digest Number 40 Toomey, J.W. (2000). Inventory Management: Principles, Concepts and Techniques. Norwell: Kluwer
13. Waters (2004) Introduction to supply chain Management, 2nd Edition, Pal grave Macmillian, Britain Willams R (2009) Sociological Methods and Research, 37 (4) page No, 531–539.
14. Bowersox, J. (2002), Supply Chain Logistics Management, McGraw-Hill/Irwin, an imprint of The McGraw-Hill Companies, Inc.
15. Sharma, J.K (2009). Operations Research: Theory and Applications, 4th ed., India Macmillan Publishers.
16. Stock and Lambert (2001) Strategic Logistics Management, 4th editions, Mc Graw Hill, New York.
17. Goldsby, T., & Martichenko, R. (2005). Lean Six Sigma Logistics: Strategic Development to Operational Success. Boca Raton: J. Ross Publishing, Inc.
18. Kothari, C.R. (2006). Research methodology: methods and techniques. (2nd Ed.). Delhi: New Age International (P) Ltd.
19. Hair (1998) Multivariate Analysis, Mc Graw Hill New York. Hakansson, H., & Persson, G. (2004). Supply Chain Management: The Logic of Supply Chains and Networks. The International Journal of Logistics Management, 15 (1), 11–26.
20. Brooks (2008) Introduction to Econometrics for Finance, Chirs books, Cambridge University Press, New York.