Determining Stock Level Factors that Contributes Towards Inventory Control and Economy

Vipul Chalotra*, Mamta Sharma**

Abstract

The present research reveals the factors that assist in determining the stock level which contributes towards the inventory control and economy in the 44 small scale firms functioning/operating in District Udhampur of J&K State. The primary data for the research purpose were collected from 44 small scale firms registered under DIC (District Industries Center) Udhampur in Jammu & Kashmir State. The main factors that contributed towards stock level determination found were: "Requirement of funds", "Consumption rate", "Delivery lead time", and "Price fluctuations". The results were analysed with the help of ranking table and linear regression analysis. The results of ranking table revealed that the variable "Requirement of funds" came up with highest rank amongst all the four variables as it seems to be the main variable that mainly contributes towards the exact stock level determination. Further, the result of Linear Regression analysis portrayed that requirement of funds leads to stock level determinations as the results were found significant.

Keyword: Stock, SSI's (Small Scale Industries), Factors, Inventory

Introduction

Inventory control has been nowadays a key issue in the contemporary business field since inventory control is required to be done as it brings in economies in one way or other. Usually the top management in consultation with the materials management is made responsible for setting the norms or limits related to inventory management or control. It had been generally seen that the top management is usually responsible for setting up the monetary limits in inventories investment. The top management usually sets monitory limits for investments and the materials department is made responsible to properly allocate the available resources in different items of production and to maximize smooth business operations as inventory is the key to business survival. In this manner, the ability of organisations increases to produce goods much faster in numerous design distinctions and with high quality (Letinkaya & Lee, 2000). Since mid-1980s, inventory management, production planning, and scheduling have become of strategic benefit if both top management and materials management decide to limit the monetary ratio to production (Larrson, 1995). Presently, many firms have resorted to coordinating with other firms in their supply chains in order to benefit from inventory cycle and to enjoy economies of scale (Agha, 2010). Colling (1990) mentions that in the United States of America besides other Western countries, the proper management of raw materials inventories is a key production area that puts much emphasis for productivity improvement, where improvement in productivity can be achieved by decreasing the direct manufacturing labour expenses cost per unit of output. Even some of the Japanese firms focused their attention on quality and inventory management with the assistance of shop keeping, where the businesses write down inventory procurement or they put emphasis on at how many units consumed at the day's end and then forecasted their future inventory needs (Miller, 2010). This concept expects the top management to set the

* Assistant Professor, Department of Commerce, University of Jammu, Udhampur Campus, Jammu & Kashmir, India. Email: vipulchalotra@gmail.com

** Assistant Professor, Department of Commerce, University of Jammu, Udhampur Campus, Jammu & Kashmir, India.

inventory norms or limits after in-depth consultation with the materials department. Therefore, numerous factors are required to be taken into consideration in the stock levels determination for the purpose of control and economy. Some of them are: requirement of funds, consumption rate, delivery lead time fluctuations in prices etc. which are even taken as basis for present research purpose.

Literature Review

Inventory management concept basically is an ability to assure that optimal inventory/stock is apprehended by an organisation to meet its demand (Coleman, 2000; Jay & Barry, 2006). Inventory mainly is the availability of any stock used in an organisation (raw-material, work-in-progress, finished goods). A proper inventory system entails some refined set of practices and policies that monitors, evaluates, and controls inventory levels. It assists in proper inventories level determination, delivery lead times, when orders should be made and by what time sock is going to be replenished. Inventory control reveals the accurate regulation of the supply, storage and accessibility of inventory items to assure proper supply of materials whenever and wherever required (Miller, 2010). So all the activities concerned with the procurement, manufacturing, storage, ordering, sales, carrying, disposals etc. result into inventory control. What to order, how to order, and when to order so that the required stock is available on time and at the optimum cost ensure the flow of materials from their initial purchase unit to the right place i.e. service point with the assistance of distribution (Benedict & Margeridis, 1999). Effective inventory management and economy portrays holding inventories at the least cost and ensuring uninterrupted supplies for on-going operations (Smaros, Lehtonen, Appelquist & Holmstrom, 2003). Supplying cost of inventory, holding cost, and cost resulting from sufficient inventories are the main costs which are incurred and are required to be controlled (Peterson & Silver, 1998; Zipkin, 2000), thereby, giving importance to inventory control which synchronizes the purchasing, manufacturing and distribution activities to meet the marketing desires and needs (Miller, 2010),. Effective inventory management promotes customer's services, logistics, manufacturing activities, sales, market reputation (Tersine, 1994; Potilen & Goldsby, 2003; Kotler, 2002), Inventory management assists in maintaining effectual balance between different activities like: replenishment lead time, asset management, inventory price forecasting, inventory carrying costs, inventory valuation, physical inventory, available physical space for holding inventory, quality management, returns, replenishment and defective goods handing & management, and demand forecasting (Ghosh & Kumar, 2003; Rosenblatt, 1977). The basic objective of firms is to maintain optimum level of inventory/stock at least possible cost. Morris (1995) included that inventory management is to keep the most economical amount of one kind of asset i.e. inventory/stock in order to provide an increase in the total value of all assets of the organisation. Ogbo (2011) identifies that the major objective of inventory control is to inform the materials managers how much of a good/item to re-order, when to reorder the good/item, how frequently orders should be placed and what the appropriate safety stock is, for minimizing stock-outs. Thus, the overall goal on inventory is to have the optimal or the required stock. Further, Ghosh and Kumar (2003) defined inventory as a stock of goods that is upheld by a business in expectation of some future demand. This definition was also supported by Agha (2010) who stressed that inventory management has an impact on all business functions, particularly operations, marketing, accounting, and finance. So proper inventory control is encompassed with numerous benefits and economies. The present research highlights the determination of stock level factors that assists in contributing towards inventory control and economy in 44 small scale firms operating in District Udhampur in Jammu & Kashmir State.

Hypothesis Formulation

The following was the main hypothesis of the study:

Hyp1: Requirement of funds leads to stock level determinations.

Obj1: The objective is to analyse whether requirement of funds really assists in determining stock levels.

Research Design and Methodology

The research methodology adopted for the study is as follows:

Sampling and Data Collection

The present study is conducted on small scale manufacturing units operating in District Udhampur

in Jammu & Kashmir region having dearth of research regarding the subject matter. The first hand information was collected from 44 small scale manufacturing units registered under District Industries Centre (DIC), Udhampur of J&K State, out of the total 49 registered units under DIC. There were five non-functional units. The 44 small manufacturing units were further categorised into similar ten lines of operations which is mentioned as: cement (8), pesticide (3), steel (3), battery/ lead/alloy (5), menthol (2), guns (2), conduit pipes (2), gates/ grills/ varnish (5), maize/atta/dal mills (3), and miscellaneous (11). The miscellaneous (not falling in any category) category embraced 12 small scale units namely M/s Supertech Industry**,** M/s Luxmi Electronics Works**,** Shaj Nath Vanaspati Ltd.**,** M/s Aditiya Cables, Poles and Transformers**,** Shankar Lime Industry**,** M/s Unique Carbon Industries**,** M/s B.S Traders**,** M/s Vijay Candles**,** Everest Health Care Products**,** M/s J.K Petro Chemicals**,** M/s Ajay Ice Factory**.** The data from these 44 small scale units were collected with the assistance of census method.

Research Instrument

Research instrument means the survey instrument used to collect data from the respective respondents. The research instrument was self developed after rigorous review of literature and consulting eminent academicians, industrialists, surveyors, research scholars. The research instrument comprised of general information and some statements of stock level determinations. The data collection form which is named as questionnaire comprised of ranking questions, dichotomous questions and five -point Likert scale, where 1 stands for strongly disagree and 5 for strongly agree. Here in this study, ranking tables and linear regression were used in order to make the study elaborative and for drawing meaningful inferences.

Data Collection

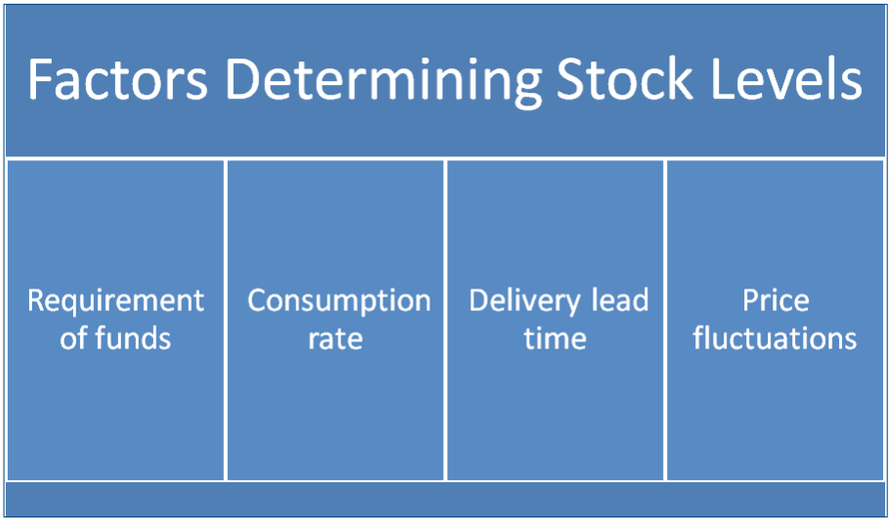
Data collection acts as the backbone of the research. The primary data for this empirical study were collected from the managers of the small scale manufacturing units who stood as respective respondents (managers). These respondents were approached duly to gather respective response. Their time feasibility was given due care at the time of collecting response. All ethical considerations were followed while collecting response from respective respondents. The data were collected through census method. The secondary source of data was also taken into consideration and reliable information was collected by different sources: internet, books and empirical papers from referred journals. In the present study only and only Ranking tables were used for eliciting consequential inferences.

Data Analysis and Results Interpretation

Table 1 lays out the mean ranking of factors determining stock levels that contribute towards inventory control and economy in the small scale operational units functioning in District Udhampur of J&K State. In District Udhampur, under DIC (District Industries Centre) segregated into two main categories namely SIDCO & SICOP, there are 44 small manufacturing firms operating which had been mainly classified into ten lines of operations i.e. the small scale manufacturing units having analogous types of businesses are categorised into homogeneous headings namely cement (8), pesticide (3), steel (3), battery/ lead/ alloy (5), menthol (2), guns (2), conduit pipes (2), gates/ grills/ varnish (5), maize/ atta/ dal mills (3), and miscellaneous (11). The factors that assist in determining stock levels that contribute towards the inventory control and economy among the ten groups of functional SSIs are “Requirement of funds”, “Consumption rate”, “Delivery lead time”, and “Price fluctuations”. Overall, the variable “Requirement of funds” is assigned rank one by almost all managers of small manufacturing firms. “Consumption rate” attained rank second. Third rank is acquired by “Delivery lead time” showing that the factor could assist in determination of optimum stock levels and rank four fetched by “Price fluctuations”. Overall mean response to the factors in descending order are 2.05 (Requirement of funds), 2.77 (Consumption rate), 3.26 (Delivery lead time), and 3.71 (Price fluctuations) respectively. Since, the variables are appealing and justifiable on the ground that they really acts as determining the stock level maintenance which is even present need of the hour for every business. Fig. 1 represents the various factors that assist in determining stock levels:

The ranking of the factors so involved in the small scale manufacturing units is done as follows:

Fig. 1: Factors Determining Stock Levels



Cements

The cement industry is encompassed with eight small scale manufacturing units catering the needs of the District Udhampur and entire geographical market. The main 7 units registered under DIC (District Industries Centre) and operating were: M/s Associated Cements, Zenith Cement Industry, Shivalik Cements, M/s Continental Cement Industry, Wullar Cements, M/s Shri Nath Industry, and Uma Cement Industry being the small scale firms. As far as mean ranking related to the factors determining stock levels that contribute towards inventory control and economy in these small scale firms is concerned: the cements category of small scale firms accorded rank one to "Requirement of funds" as it acted as the basic or the main factor of these small scale firms to maintain the exact stock levels. "Consumption rate" was accorded rank two by almost all the small scale units as consumption also ensures the main factor that determines the stock level. "Price fluctuations" was given rank three by these small scale cements firms and "Delivery lead time" was deployed rank four. Thus the ranking made by these firms ensured that "Requirement of funds" is the prominent factor in order to maintain proper stock level and enjoying economies.

Battery/Lead/Alloy

The second category of the industry is given the name Battery/ Lead/ Alloy because of the similar or allied products produced by this category. The total number of units under this category was five. The names of the same were: Radha Industries, Pilot Batteries, Durga Batteries, Suraksha Batteries, and Avtar Batteries. The mean ranking endorsed by these firms was: "Requirement of funds" was given rank one by all the small scale firms operating as it stood as the main factor that assists in stock maintenance. "Delivery lead time" was served rank two amongst all the stringent variables. The variable "Consumption rate" was accredited rank three as it was that factor that only determines the exact stock level. Accordingly, "Price fluctuations" aroused with rank four as represented in Table 1.

Pesticides/Insecticides

The third main category encompassing small scale manufacturing units is Pesticides/ Insecticides. The three main well known market positioned firms operating under this category were: M/s Dhanuva Agritech Ltd., Safex Chemicals Ltd., and M/s Modern Insecticides. The mean ranking rendered by these small scale industries managers in respect of the variables determining stock levels is that these small scale firms allotted rank one to "Consumption rate" as it portrayed that the consumption rate only determines the level of funds and other requirements. Rank two was achieved by the factor "Requirement of funds" as it is the main factor that ploughs the consumption level or the rate of consumption. Rank three was ensued by "Delivery lead time" as delivery lead time

makes the sellers to take into consideration the stock level to be held in by the business. The last/fourth rank is denoted to "Price fluctuations" which states that the prices fluctuations could be or could not be the main reason for maintaining the intact stock levels. So, the ranking pattern of this segment clarified that the consumption rate is the main factor which makes revolves all the other factors.

Conduit Pipes

This category was comprised of only two small scale competitive units which were M/s Pee Kay Products and Rukhmani plastics. As far as mean ranking related to the factors determining stock levels that contribute towards inventory control and economy in these small scale firms is concerned, the variable "Requirement of funds" attained rank one amongst all the prominent factors in this group. "Consumption rate" commended with rank two and was focused upon by conduit pipes. "Price fluctuations" was handed over rank three. "Delivery lead time" was concurred with rank four. The mean rankings of the variables ensured that these small scale operating units highlights on requirement of funds as the main factor that determines the exact stock level to be maintained.

Menthol

M/s Harikripa Perfumes Pvt. Ltd. and M/s Mahadurga Industries were the two small scale units operating under the industrial category Menthol. "Requirement of funds" was found to be the main factor determining stock level and consequently was accorded rank one by both the units operating under this industrial category. "Price fluctuations" emanated with rank two following "Consumption rate" which was given rank three by these small scale firms. The last rank was accorded to "Delivery lead time".

Guns

There were only two strong competitors named M/s Gulab Gun Factory and M/s Hunter Gun factory found operating under this industrial group. These competitors assigned rank one to "Requirement of funds" and "Consumption rate" was given rank two by both the small scale units. "Price fluctuations" was considered to be appointed for rank three by both the units. The factor "Delivery lead time" determining the stock level factor was assigned rank four. The ranking is displayed in Table 1.

Steel

Three small scale units named M/s Maha Luxmi Steel Fabricators, M/s Faqir Chand Sanak Raj, and M/s Gupta Furniture were found the main competing units operating under this industrial category. As far as mean ranking related to the factors determining stock levels that contribute towards inventory control and economy in these small scale firms is concerned, the variable "Requirement of funds" was assigned rank one as it was found to be their main variable that assists in determining the stock levels that is the main contributor towards inventory control and economy, "Consumption rate" ranked two, "Price fluctuations" ranked three, and "Delivery lead time" ranked four.

Gates/Grills/Varnish/Paint

This group was found to be the advanced group and is the main group of the research. M/s Balaji Industries, M/s Wazir Engineering Works, ISRO Products, Shakti Engineering Works, and M/s Everest Paints were found operating under this category. As far as mean ranking related to the factors determining stock levels that contribute towards inventory control and economy in these small scale firms is concerned, rank one was agreed to "Consumption rate" by this group of small firms. "Delivery lead time" was given rank two by these units, "Requirement of funds" was fixed with rank three, and "Price fluctuations" was aligned rank four.

Atta/Maize/Dal mills

Shalimar Floor Mills, M/s Udhampur Dal Mills, and M/s Sharda Enterprises were the three strong competitors operating under the prescribed category. So far as mean ranking related to the factors determining stock levels that contribute towards inventory control and economy in these small scale firms is concerned: "Requirement of funds" was relegated rank one by all the three strong competitors operating under the category. "Price fluctuations" was designated rank two by these small industrial units. "Consumption rate" was given rank three. "Delivery lead time" was consigned rank four. It implies that atta/

maize/ dal mills small scale firms mainly concentrated on the requirement of funds for determining stock levels contributing towards economy as depicted in Table 1.

Others (Miscellaneous)

There were 12 small scale competitive units operating under this miscellaneous category. The names of the units that were operating under this group were M/s Supertech Industry, M/s Luxmi Electronics Works, Shaj Nath Vanaspati Ltd., M/s Aditiya Cables, M/s Unique Carbon Industries, M/s B.S Traders, Poles and Transformers, M/s Vijay Candles, Everest Health Care Products, Shankar Lime Industry, M/s J.K Petro Chemicals, and M/s Ajay Ice Factory. So far as mean ranking related to the factors determining stock levels that contribute towards inventory control and economy in these small scale firms is concerned, "Consumption rate" was accorded rank one by most of the units and "Requirement of funds" was given rank two by almost all the units operating, "Price fluctuations" was appropriated rank three, and "Delivery lead time" was consigned rank four representing the actual figure of variables that enlists small scale firms stock determination levels.

Overall, all the small scale firms operating under SIDCO & SICOP represent Requirement of funds as the main factor determining stock level, followed by Consumption rate, subsequently after that Delivery lead time, and at the end by Price fluctuations (Table 1).

Regression Analysis

In order to measure the impact of stock determination on requirement of funds, regression analysis was done. The linear regression model summary table (Table 2) holds the values of R to be .810 which assures 81% association between dependent variable and the independent variable i.e. between stock determination and requirement of funds, R^2 value of .752 denotes that 75% of variation in stock determination could be explained from the independent variable (requirement of funds). Adjusted R^2 value .667 impinges that if anytime another independent variable is added to the existing independent variable the value of R^2 could raise. Further beta value reveals significant relationship of independent variable with dependent variable as depicted by its value. Change in R square is also found to be significant with F-values significant at 5% confidence level. Thus the hypothesis "Requirement of funds leads to stock level determinations" is accepted as represented by its significance level $p < .05$.

Conclusion

The research presents the mean ranking of various factors that assists in determining stock levels which in lieu contributes towards inventory control and economy. The study provides spanking new knowledge and imminent in the accessible literature by taking up ranking table in the context in terms of the factors that determines the stock levels to the existing literature. The variables that were taken into consideration were "Requirement of funds", "Consumption rate", "Delivery lead time", and "Price fluctuations". The present research conducted on 44 small scale manufacturing firms divulged the mean ranks accorded to these four variables by the mangers of these small scale firms. The ranking were related to the factors that determines the stock levels of the firms. Overall, the variable "Requirement of funds" is assigned rank one by almost all managers of small manufacturing firms. "Consumption rate" attained rank second. Third rank is acquired by "Delivery lead time" showing that the factor assures the stock level determination at a particular point of time and rank four fetched by "Price fluctuations". Overall mean response to the factors in descending order are 2.05 (Requirement of funds), 2.77 (Consumption rate), 3.26 (Delivery lead time), and 3.71 (Price fluctuations) respectively. Further the results of linear regression model summary revealed that requirement of funds leads to stock level determinations as exposed by the respective significant values.

Limitations of the Study

The study is conducted in one area i.e. area specific, so the results of this study cannot have universal application as there could be diversity in other areas according to the environment and other factors associated.

The results depend upon the response of the respective respondents. Anyhow all the efforts were applied to make the study free from any sort of biasness but the rule of subjectivity cannot be avoided.

Table 1: Mean Ranking of Factors Determining Stock Levels that Contributes towards Inventory Control and Economy

Manufacturing Units/ Factors	*Requirement of funds*	*Consumption rate*	*Delivery lead time*	*Price Fluctuations*
Cement	1 (I)	2 (II)	3 (IV)	4 (III)
Battery/ Lead/ Alloy	1.5 (I)	2.6 (III)	2.4 (II)	3.5 (IV)
Pesticides/ Insecticides	2 (II)	1 (I)	3 (III)	4 (IV)
Conduit pipes	1.2 (I)	2.8 (II)	3.2 (IV)	2.7 (III)
Menthol	1.3 (I)	3 (III)	4 (IV)	1.7 (II)
Guns	1.2 (I)	2.7 (II)	3.2 (IV)	2.8 (III)
Steel	1 (I)	2 (II)	4 (IV)	3 (III)
Gates/ Grills/ Varnish/ Paint	2.8 (III)	1.3 (I)	2.7 (II)	3.2 (IV)
Atta/ Maize/ Dal mills	2 (I)	2.8 (III)	3 (IV)	2.2 (II)
Others (Miscellaneous)	2.4 (II)	2 (I)	3 (IV)	2.6 (III)
Mean & Rank	**2.05 (I)**	**2.77 (II)**	**3.26 (III)**	**3.71 (IV)**

Note: *Where 1 denotes "highest rank" and 4 denotes "lowest rank"*

Table 2: Regression Model Summary

Model	*R*	R^2	*AdjustedR*^{2}	*Std. Error of Estimate*	*F value ANOVA*	*Sig. level*	*β*	*t*	*Sig. level*
1.	.810	.752	.667	.2154	47.658	.000	.721	11.228	.000

a. Predictors: (Constant), Requirement of funds

b. Dependent Variable: Stock Determination

Future Research

Similar type of research could be conducted in large scale firms. Future research can also be conducted by taking into preview more than four factors that assists in determining stock levels. Moreover, the similar study could be considered for medium and large scale units operating in the other parts of the country.

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