

Unit-Wise Ranking of Inventory Control Techniques Used in Small Scale Cement Enterprises: A Small Scale Entrepreneurial Perspective

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Abstract

The present research divulges the different inventory control techniques used small scale cements enterprises operated by small scale entrepreneurs through the assistance of primary data collected from eight small scale cement enterprises operating in SIDCO & SICOP, under DIC (District Industries Center) in District Udhampur of Jammu & Kashmir State. The various inventory control techniques identified and requested for in the research were: "Always Better Control (ABC)", "Economic Order Quantity (EOQ)", "Material Requirement Planning (MRP)", and "Just-in-Time (JIT)". The results of the ranking table quoted that "Economic Order Quantity (EOQ)" was awarded first rank by almost all the units representing overall mean score of 1.71, "Always Better Control (ABC)" was denoted by rank two repressing overall mean value as 2.00, "Material Requirement Planning (MRP)" was quoted rank three as depicted by its mean ranking (2.25), and "Just-in-time (JIT)" was accorded rank four (3.71) by almost all the small scale cements entrepreneurs/owners.

Keywords: Inventory, Enterprise, Entrepreneur, Cement industry, Techniques, Small Scale Enterprises

Introduction

Inventory control had acquired the attention of the contemporary entrepreneurs, marketers, and other eminent researchers. Control of inventory plays vital role in smooth running of the enterprises as it conveys demand & supply equilibrium, price stability, market enhancements, availability of the product all the times, proper demand ascertainment, good market propositions, and other important entrepreneurial & marketing issues. Unbalanced inventory control is the result of insufficient procedures/ inventory control techniques, some items under stock or

out of stock & some overstocked resulting in excessive investment in stock thereby affecting the flexibility of the business or firm. This unbalances inventory directly hits the profits of the business and sooner the business starts falling deprived of profits as its profit figure deteriorates. On the contrary, inventory control efficiency displays the difference for the given level of flexibility that in lieu affects the level of investment required in inventories. If there is excessive investment in the inventories it ultimately increases costs & reduces profits vexing the inventory control flexibility and investment levels that are required in inventories. Therefore, proper inventory control is desired by the entrepreneurs and they are assisted by various measures of inventory control techniques such as Always Better Control (ABC), Economic Order Quantity (EOQ), Material Requirement Planning (MRP), and Just-in-Time (JIT) etc.

Always Better Control (ABC)

Always Better Control (ABC) technique of inventory control represents that most important, though small amount/portion of items in the production process, representing exorbitant money value should be under the tight control & strict supervision of the most experienced personnel. Such types of items are represented with the alphabet "A". On the other hand, larger portion of items in the production process may represent small money value denoting "C" which may be under simple physical control even by less experienced personnel. So the alphabets "A", "B" or "C" represent the items depending upon their money value with supervision & control. The example below can bring more clarity:

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The “A” group represents 5% to 10% of the total items in the production process which ultimately accounts for 70% to 75% of the money value.

The “B” group represents 15% to 20% of the items accounting for 15% to 20% of the total money value.

The “C” group represents the remaining number of the items that accounts for 5% to 10% of the money value.

The “A” group items should be under strict control, items in “B” group should not be given much attention and “C” group items may be under loose control.

Economic Order Quantity (EOQ)

A firm if desires and places few orders can maintain excessive or larger stocks but, for this, the firm has to pay exorbitant carrying costs. On the other hand, unnecessary placement of orders can lead to unnecessary ordering costs. Therefore, by calculating EOQ, the business identifies number of units to order that results in the lowest of carrying as well as ordering costs. So, Economic Order Quantity refers to the order size that lowers the ordering and the carrying costs for inventory item(s).

Material Requirement Planning (MRP)

Material Requirements Planning (MRP) is an inventory control system used in production planning. An MRP generally takes into preview the required number of components or parts in order to develop or build a product. The basic functions of MRP system are: ensuring that all the material necessary for production is available without any shortfall, waste reduction due to maintenance of the lowest possible materials and product levels in stock and finally, this MRP system assists in planning manufacturing processes, delivery schedules, and purchasing of materials. The only stressful part in MRP system is that the data fed into the system must be correct; otherwise, somber production and stock blunder may take place.

Just-in-Time (JIT)

Just-in-time manufacturing (colloquially referred to as JIT production systems) approach establishes the orders that should be manufactures with the preview that the exact/right quantity is produced at the exact/right

time that is required. Just-in-time production requires intricate planning in terms of procurement policies and the manufacturing process if its implementation is to be a success.

Literature Review

Inventory plays vital role in the history of business thereby depicting the various prominent views of the inventory techniques which holds that firms should concentrate more on minimisation of inventory levels which further was linked up with the lean or agile supply chain resulting in “corporate anorexia” (Radnor & Boaden, 2004). The modern business world suggests that the greater levels of inventory had proven to provide the same service levels due to increased globalisation (Waters, 2002). The impact of such business intentions matures into good amount of safety stock, with the total amount of this stock increasing resulting in the square root relationship to the lead-time. An increasing dissimilarity in the supply lead-time could increase the potential amount of safety stock. Transpiration factor/network also assists the long distance movements exploring the benefits of cost economies by delivering larger quantities that paves way for increasing cycle stocks. Increased inventory levels (Lowson, 2002) are encompassed with true costs of inventory (Christopher, 2005) such as storage, damage, obsolescence, deterioration, rust, rioted, insurance & management costs, besides cost of capital. An erroneous appraisal of inventory costs may lead to too much inventory holdings (Lee & Billington, 1992). Other point of view is that inventory is required to be reduced as much as possible (Womack, Jones, & Roos, 1990). van Hoek *et al.* (2001) demonstrated that proper inventory can make companies to respond rapidly to exploit changes in market demand. Christopher and Towill (2001) mention the need for inventory reduction such as minimise functional components inventory which in turn assists in deploying lean and agile thinking. The holding of “strategic inventory” at decoupling points can act as a buffer, untying lean production activities to impulsive market places (Christopher & Towill, 2001; Vonderembse, Uppal, Huan, & Dismukes, 2006). Proper inventory techniques results in satisfying customers’ orders thus, enabling lean or agile principles to be applied in the manufacturing schedule. The actual condition of proper inventory lies on the fact that the production and movement of goods is generally forecast-driven up to the decoupling point and then driven by actual demand orders downstream from

the decoupling point (Christopher, 2000; Harrison & van Hoek, 2005), as in such cases production cannot be based on actual customer orders. The present research highlights the inventory control techniques used in eight prominent small scale cements enterprises under SIDCO and SICOP operating in District Udhampur of J&K State.

Objective of the Study

To highlight the main inventory control techniques used in eight small scale cement enterprises by the small scale entrepreneurs.

The Research Framework

Design

The study used survey for collecting response from the small scale entrepreneurs. The first-hand information was gathered from the eight small scale entrepreneurs operating the registered cement enterprises. The primary data so collected from the eight small scale enterprises were operating under DIC (District Industries Centre) mainly categorised into two familiar parts namely: SIDCO & SICOP, in the District Udhampur of J&K State, India. The eight small scale cement enterprises were named as: M/s Associated Cements, Zenith Cement Industry, Shivalik Cements, M/s Continental Cement Industry, Wullar Cements, M/s Shri Nath Industry, Uma Cement Industry, and Kashmir Cement Industry.

The Research Instrument

The research instrument used for gathering response stands at the centre of research. The research instrument, on the contrary, known as data collection form, for the present research was self-developed and was checked by eminent professors, academicians, scholars, and various other renowned experts for checking the internal consistency & validity on the one hand and for its possible alterations, modifications, & genuine advices on the other hand. The name used for data collection form in the present research was "questionnaire" because the response was collected by handing over the questionnaire to the respective small scale entrepreneurs and then collecting it afterwards when it was filled in by these entrepreneurs. All the suitable assistance for filling up the questionnaire was provided to the respondents in order to make the things more clear

to them. The research questionnaire in the present study comprised of general information or the profile of the respondents and some statements of inventory control techniques. Statements in the questionnaire were in ranking form, open ended and five -point Likert scale.

Collection of Data

All in all there are 49 firms operating under SIDCO and SICOP in District Udhampur in which there are total eight cement small scale enterprises which were chosen for the present research. These small scale enterprises owned by small scale entrepreneurs were visited to gather the required response. Though all the eight enterprises were visited and all of them gave the response representing the true response rate of cent percent. The way the data in the present research were collected generally represents the census method, as only one category i.e. cements enterprises, were chosen for the research purpose. Besides primary data, secondary data were also put emphasis upon by collecting and going through it. The secondary information was obtained from various evidences such as physical books, insightful empirical research papers published in eminent referred journals.

Statistical Analysis

The findings and results of the research were well assisted by various statistical tools such as mean, standard deviation. Ranking tables stood as the most important factor for analysing the results in order to uphold the veracity of research. The data so collected were further analysed with the help of SPSS (Version 16.00) for purification, checking validity and reliability.

Data Analysis and Interpretation

Table 1 depicts the unit-wise mean ranking of Inventory control techniques used in small scale cement industry. The research focused on the proficient eight small scale cement enterprises connoting cement industry. These eight small scale firms are functioning in the District Udhampur under DIC (District Industries Centre) constituting SIDCO and SICOP, of J&K State. The various inventory control techniques used in these small scale cements enterprises were jotted down in the present research so as to make it one pointed, well-oriented, knowledgeable and informative disseminative. The various inventory

control techniques acknowledged in the existing literature were: “Always Better Control (ABC)”, “Economic Order Quantity (EOQ)”, “Material Requirement Planning (MRP)”, and “Just-in-Time (JIT)”. As palpable from ranks so arrived at, “Economic Order Quantity (EOQ)” was awarded first rank by almost all the units representing mean score 1.71, “Always Better Control (ABC)” was denoted by rank two repressing mean value as 2.00. “Material Requirement Planning (MRP)” was quoted rank three as depicted by its mean ranking (2.25), and “Just-in-time (JIT)” was accorded rank four (3.71) by almost all the cements SSI entrepreneurs/owners.

The ranking categorisation is done as follows:

1) M/s Associated Cements

The first unit which ranks the various inventory control techniques was M/s Associated Cements. The unit-wise mean ranking of various inventory control techniques used in this small scale cement firm was that this firm allotted rank one to “Economic Order Quantity (EOQ)” as it was the main inventory control technique adopted by this small firm. The variable “Just-in-Time (JIT)” acquired rank second as this firm was somewhat efficient in producing product within short span of time. The third rank was delegated to “Always Better Control (ABC)” which was subsequently followed by “Material Requirement Planning (MRP)” and was assigned rank four by this firm. So, it was clear that M/s Associated cements highly concentrates on the Economic Order Quantity (EOQ) inventory control technique mainly for smooth running of its business.

Fig 1: Diagrammatical Representation of the Variables Enlisting the Various Inventory Control Techniques

Inventory Control Techniques			
Always Better Control (ABC)	Economic Order Quantity (EOQ)	Material Requirement Planning (MRP)	Just in Time (JIT)

2) Zenith Cement Industry

Second crucial small scale cement firm engrossed in cements industry was Zenith Cement Industry. The unit-wise mean ranking of various inventory control techniques used in Zenith Cement firm was that it advocated rank one to “Material Requirement Planning (MRP)” as it was the most important inventory control technique used by this firm. The variable “Economic Order Quantity (EOQ)” expelled with second rank as this unit was producing as per the demand status of the market. The third rank was acknowledged to “Always Better Control (ABC)” which was subsequently followed by “Just-in-Time (JIT)” with rank four. So, the ranking made is very clear that Zenith cements industry mostly advances with Material Requirement Planning (MRP) inventory control technique as revealed by its respective mean value which is represented in Table 1.

3) Shivalik Cements

The third efficient cement firm which seeks the ascendance of ranks accorded to various inventory control techniques in Shivalik Cements was that it relegated first rank to “Always Better Control (ABC)” as it seems to be their main inventory control technique. The variable scoring second highest rank was “Economic Order Quantity (EOQ)” by this cement unit. “Material Requirement Planning (MRP)” was accorded rank three and “Just-in-Time (JIT)” was accorded rank four. Shivalik Cements mainly uses Always Better Control (ABC) technique of inventory control and management as represented in Table 1.

4) M/s Continental Cement Industry

M/s Continental Cement Industry was the fourth important cement firm that fostered a significant facet of the overall cement industry. The mean ranking of various inventory control techniques used in this small scale cement firm was that this firm addressed rank one to “Material Requirement Planning (MRP)” as it seems to be the main variable that mainly was used by this cement firm. The variable “Economic Order Quantity (EOQ)” divulged second rank among all the four variables and it stressed that this unit also is quite efficient for holding large orders. “Always Better Control (ABC)” scored rank three and “Just-in-Time (JIT)” rank four. So, M/s Continental

Table 1: Unit-wise Ranking of Inventory Control Techniques Used in Cement Enterprises

Cement Units /Techniques	Always Better Control (ABC)	Economic Order Quantity (EOQ)	Material Requirement Planning (MRP)	Just-in-Time (JIT)
M/s Associated Cements	3	1	4	2
Zenith Cement Industry	3	2	1	4
Shivalik Cements	1	2	3	4
M/s Continental Cement Industry	3	2	1	4
Wullar Cements	-	-	1	-
M/s Shri Nath Industry	1	2	3	4
Uma Cement Industry	1	2	3	4
Kashmir Cement Industry	3	1	2	4
Mean & Rank	2.00 (ii)	1.71 (i)	2.25 (iii)	3.71 (iv)

Note: Where 1 denotes “highest rank” and 4 denotes “lowest rank”

Cement Industry acknowledged all the techniques are assisting in nature but the most efficient is Material Requirement Planning (MRP) as depicted by their mean values and is embodied in Table 1.

5) Wullar Cements

The fifth main firm which was functioning as a small enterprise under cements enterprises was found to be Wullar Cements. The mean ranking of various inventory control techniques used in this unit was that this unit allocated rank one and only one rank among all the four variables to “Material Requirement Planning (MRP)” as it’s entrepreneur portrayed that the firm uses only this technique of inventory control and doesn’t follows any other techniques as listed in Table 1. This unit was found to be deprived of the other entire three inventory control techniques; it could be out of stringent financial policies or less acceptability of the product in the market etc.

6) M/s Shri Nath Industry

M/s Shri Nath Industry stood as another important small scale enterprise in the cements enterprises. The mean ranking of various inventory control techniques used of this unit were like this: rank one accorded to “Always Better Control (ABC)”,

rank two allocated to “Economic Order Quantity (EOQ)”, rank three distributed to “Material Requirement Planning (MRP)”, and

rank four advocated to “Just-in-Time (JIT)”.

So, Always Better Control (ABC) was abundantly used as inventory control technique by this small scale enterprise.

7) Uma Cement Industry

The seventh small scale cement enterprise operating under SIDCO in District Udhampur is Uma Cement Industry. This small scale unit adopts all the different available techniques for apt inventory control and its management. This small scale enterprise exhibited the ranking of various inventory control techniques as applied by it and enlisted that “Always Better Control (ABC)” is the mostly used technique adopted for inventory control as it grabbed rank one among all the four techniques. “Economic Order Quantity (EOQ)” scored rank second in this small scale cement enterprise. After this, this small scale enterprise subsequently follows the “Material Requirement Planning (MRP)” inventory control technique which is quoted with rank three. The final technique for inventory control used by this small scale enterprise is “Just-in-Time (JIT)” which scored rank four. All the rankings of the unit are displayed in Table 1.

8) Kashmir Cement Industry

The eighth and last significant unit enrolled in the small scale cements enterprises was the Kashmir Cement Industry. This unit assigned rank one to “Economic Order Quantity (EOQ)” and emanated that that this

enterprise mainly uses EOQ inventory control technique. The inventory control technique “Material Requirement Planning (MRP)” scored second rank which states that this unit focuses on MRP stringently. Third rank was allotted to “Always Better Control (ABC)” which ensures somewhat less importance towards this technique by this small scale enterprise. Rank four was distributed to the technique named “Just-in-Time (JIT)”. The rankings are clearly portrayed in Table 1.

Conclusion

Inventory clearly shows that it portrays an important in the business functioning as we have seen that any imbalance in the inventory levels can enrich the inventory costs in terms of carrying costs, ordering costs, storage costs, damage costs etc. Proper inventory management is upgraded need of the businesses as the entrepreneurs are really worried for the apt amount of inventory to be produced and sold. For optimising the inventory levels some of the inventory techniques are adhered from the existing literature and had been applied in the present research. The present research divulges the different inventory control techniques used in small scale cements enterprises operated by small scale entrepreneurs. The various inventory control techniques identified and requested for in the research were: “Always Better Control (ABC)”, “Economic Order Quantity (EOQ)”, “Material Requirement Planning (MRP)”, and “Just-in-Time (JIT)”. The results of the ranking table quoted that “Economic Order Quantity (EOQ)” is awarded first rank by almost all the units representing overall mean score of 1.71, “Always Better Control (ABC)” was denoted by rank two repressing overall mean value as 2.00. “Material Requirement Planning (MRP)” was quoted rank three as depicted by its mean ranking (2.25), and “Just-in-time (JIT)” was accorded rank four (3.71) by almost all the small scale cements entrepreneurs/owners. The study suffers from some limitations also: firstly the study is conducted in one industrial area i.e. in Udhampur, so the results drawn cannot be applied in all parts of other areas having dissimilar environment. Secondly, the entrepreneurs were assisted while filling up the questionnaires but an element of subjectivity cannot be ruled out. Future research could

be conducted with the same topic on large and medium scale industries and results could vary. The study is helpful to small and large scale entrepreneurs operating in other parts of the world and is knowledge oriented as to those who are not using inventory control techniques can come up with its application and can enjoy the benefits of apt inventory management and control.

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