Performance Measurements of Inventory Management Application in Construction Field in India

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INTRODUCTION

The word inventory alludes to the goods or materials that are used by a company for the goal of production and sale. It also additionally incorporates the things, which are used as supportive materials to encourage the overall production. Almost 60% of the money is dispensed for the inventory in a company. Inventory constitutes one of the essential things of current resources, which allows smooth operation of production and sale activity of a company. Inventory management is that part of current resources management, which is concerned with keeping up ideal investment in inventory and applying powerful control framework so as to limit the overall inventory cost.

Materials Management identified with to planning, acquiring, storing and giving the proper material of right quality, right amount at an opportune place in right time in order to co-ordinate and planning the production operation in a collaborative way for an organizational undertaking. Inventory Management is an easy process by which a company is provided with the goods and services that help to achieve its goals of purchasing, storage, and development of materials. Inventory is viewed as causing costs, or waste, rather than of increasing and storing cost, as opposed to conventional accounting. Just in time (JIT) is a technique used in production that endeavors to enhance a business' return on investment by limiting in-process inventory and related conveying costs.

LITERATURE REVIEW

N. Kasim [10] has primarily selected ICT Implementation for Materials Management in Construction domain: Case Studies. The outcome from the case studies uncovers that the usage of ICT in the materials management activities for construction domain in Malaysia is at the beginning period. Microsoft Excel and handheld gadgets are observed to be the basic ICT tools mainly use in the materials management activities. The primary obstruction is found to be the cost association at the underlying stage or whole implementation of ICT in the materials management processes.

A. Roozbeh Nia, et.al had completed an examined account of Vendor Managed Inventory framework in Supply Chain: The EOQ system with Shortage. This examination considers the retailer–supplier association through a vendor managed inventory (VMI) application and create an analytical model to investigate the impact of important supply chain values on the expense savings realized from collaborative activities. A framework was developed for a two-level supply chain including of a solitary supplier and a solitary retailer and analyzes the inventory management study before and after execution of VMI. Few numerical examples are also provided to prove this claim.

G. Gallego, et.al [2] had created a Periodic-Review Inventory Framework with three continuous delivery modes and conjecture updates. This study focused on periodic-review inventory application that has three back to back delivery (fast, medium, and slow) and demand conjecture updates. Toward the start of every period, the inventory level and demand details are updated and decisions on the amount of order using every three delivery phases are made. It is demonstrated that there is a base-stock policy for quick and medium phases which is ideal. Besides, the ideal policy for the slow mode is not being a base-stock policy in general.

G. Aydin Keskin et.al [4] had discovered a many criteria ABC examination with FCM clustering. The number of stock keeping units (SKUs) controlled by the company can without much of a stretch reach many. An inventory management policy for every single SKU is not practical to design. ABC analysis is one of the traditionally used methods to classify SKUs. In the conventional method, the SKUs are positioned with respect to the decreasing order of the yearly dollar utilization, which is the product of unit cost and yearly demand. the some of the SKUs that have the astounding yearly dollar utilization are in group A and should be considered generally; the SKUs with the slightest yearly dollar utilization are in group C and ought to be considered minimum; the rest of the SKUs are in group B. In this paper, the author proposed fuzzy c-means (FCM) clustering to a multicriteria ABC study problem to assist managers with making a better choice under fuzzy conditions. Gotten outcomes demonstrate that the FCM is a very simple and an effectively adaptable technique to inventory management.

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DETERMINATION OF REORDER LEVEL

Reorder level is that level of inventory at which the company should place a request to fill the inventory again. The concept lead time alludes to the time generally taken in getting the delivery of inventory after the request has been placed. The re-order level can be calculated by the following formula:

Re-order level=average usage* lead time

The equation for deciding the re-order level when safety stock is kept up will be as follows:

Re-order level = lead time * average usage + safety stock

RESEARCH METHODOLOGY

Research methodology can be characterized as a precise and purposive examination of facts with an aim of determining the powerful relationship between such facts and research between different phenomena. The questionnaire survey technique was directed to gather data.

The respondent has been requested to express their view on the variable at 5-point scale, points indicate strongly agree to strongly disagree. Moreover, the questionnaire item drawn from various sources and content legitimacy of the questionnaire has been validated by consulting with specialists and a change has been made in the questionnaire to suit the demand of the research. This research was executed during the period of January 2018 to march 2018. The analyst adopted random sampling data technique to collect data. The numbers of samples collected by the scholar were 138. Based on the review received from the construction company, the desired aim can be achieved by sequencing the stream of work into a typical methodology and the data were examined using SPSS 16.

FACTORS IDENTIFICATION

There are a few factors which impact inventory management system. These factors were identified based on a literature study.

Literature research was conducted to

- To consider factors from previous studies.
- To know how other scholars conducted their research over inventory
- To determined reason for considering factors.

These factors are considered as the variables

- To determine the need for stock/inventory
- To Study the importance of keeping inventory
- To Study the fund allocation for inventory

I.   ANALYSIS OF DATA

The related work gives an idea about the various methods that are used for the inventory management system in the construction field. From the extensive literature study, it is much clearer to details the aim of the current study and leads to successful completion of the project. Specifically, researches were conducted to a small extent to get details about inventory management in the construction field. This causes affect on overall execution of the inventory management. To get an expected result, it is important to ensure the project work clearly. A questionnaire survey was conducted among construction experts to understand their view towards inventory management application in their organization. The collected data is examined to figure out the frequency of response for different factors.

1	Accepting goods before the scheduled date	19	Managing stock in the growth of the company
2	Active suppliers in master supplier file	20	Method of categorizing the items
3	Categories of professionals for managing	21	Need for stock management
4	Change order affects material quantity and quality	22	percentage of the amount invested in stock management
5	Control in stock overflow in a construction site	23	Physical inventory checks
6	Criteria maintained for stock materials	24	The price difference in the receipt & procedure to reconcile
7	Data related to inventory	25	Provisions made for the obsolete and inactive item
8	Distance from the project site to the storage yard	26	Purchase order
9	Effects of material quantity variation in site	27	Receiving materials than ordered
10	Emphasis on software than skilled manpower	28	Reorder point
11	Future of inventory management system	29	Safety stock in planning calculation
12	The growth of the company by managing stock	30	Selection of vendor
13	Importance to stock comparing other works	31	Storing of stock
14	Inspection of goods arrival	32	Training for stock management practices
15	Involvement of contractor in material management	33	Type of cross check

16	Kind of material stock maintained in greater quantity	34	Type of material access available for stock data
17	Maintaining safety in storing	35	Type of stock management system adopted
18	Major benefits of inventory management	36	Long lead items

TABLE 1: VARIOUS VIEWS FOR THE STUDY ON IMS IN CONSTRUCTION INDUSTRIES

II. RESULT AND DISCUSSION

The factor examination is figured out through principal components technique with varimax rotation and the average values are calculated. By using this all factors are ranked. Table 4 shows that tangibility related variables rated highest for actual service perceived in construction fields.

Factors	Mean Value	Ranking/Priority
Involvement of contractor in material management	3.98	1
Need for stock management	3.92	2
Managing stock in the growth of the company	3.82	3
Importance to stock comparing other works	3.80	4
Maintaining safety in storing	3.76	5
Safety stock in planning calculation	3.72	6
Change order affects material quantity and quality	3.63	7
Emphasis on software than skilled manpower	3.62	8
Accepting goods before the scheduled date	3.61	9
Data related to inventory	3.19	10
Selection of vendor	2.97	11
Purchase order	2.76	12
Receiving materials than ordered	2.54	13
percentage of the amount invested in stock management	2.36	14
Control in stock overflow in a construction site	2.33	15
Provisions made for the obsolete and inactive item in inventories	2.28	16
The growth of the company by managing stock	2.25	17
Criteria maintained for stock materials	2.23	18
The price difference in the receipt and procedure to reconcile	2.22	19
Major benefits of the inventory management system in an organization	2.19	20
Reorder point	2.13	21
Categories of professionals are managing your company stock	1.94	22
Future of the inventory management system in your company	1.87	23
Inspection of goods arrival	1.84	24
Active suppliers in master supplier file	1.74	25
Physical inventory checks	1.70	26
Method of categorizing the items	1.68	27
Storing of stock	1.62	28
Effects of material quantity variation in site	1.62	29
Type of material access available for stock data	1.60	30
Kind of material stock maintained in greater quantity	1.59	31
Distance from the project site to the storage yard	1.54	32
Type of cross check	1.30	33
Type of stock management system adopted	1.28	34
Training for stock management practices	1.23	35
Long lead items	1.18	36

TABLE 2: FACTORS MEAN VALUE AND THEIR RANKING

CONCLUSION

Finally, Inventory management framework is considered to play important role in a company, whose job is to execute the organization's work in a predefined spending plan inside a settled timeframe. It obviously shows that the inventory management application of any construction field will encounter immense worry in their working environment.

Barely standard Inventory management risks related to development organizations in India were being recognized in and are laid out underneath.

• The problem of less storage area.

• Problems due to de-incorporated heterogeneous tasks.

• Lack of training practices.

• Financial help isn't clear in asking for materials.

• Problems happen in the conveyance of long lead things.

Hence, Proper preventive estimates like JIT, Supply chain management framework idea along with lean generation application will be proposed to vanquish impacts in inventory management application to enhance the efficiency in construction projects.

REFERENCES

[1] A. K. Datta, "Materials Management: Procedures, text, and cases, Rev. Ed.", New Delhi: Prentice-Hall, 1992.

[2] Q. Feng, G. Gallego, et al., "Periodic-Review Inventory Model with three consecutive delivery modes and forecast updates": Journal of

Optimization Theory and Applications in – Journal of Optimization Theory Application, vol. 124, no. 1, pp. 137-155, 32 .2005.

[3] C. T. Formoso, L. S. M. ASCE, C. De Cesare, and E. L. Isatto, "Materials waste in building industry: Main causes and prevention", Journal of

Construction Engineering and Management, vol. 128(4), pp. 316-325, 2002.

[4] Gulsen Aydin Keskin and Coskun Ozkan," Multiple criteria ABC analysis with FCM clustering". Journal of Industrial Engineering, Volume,

Article ID 827274, pp. 1- 7, 2013.

[5] Horman, M. and Thomas, H, "Role of Inventory Buffers in Construction Labor Performance". Journal of construction engineering

management. Vol 131(7), pp.834–843. 2005.

[6] N. B. Kasim, C. J. Anumba, and A. R. J. Dainty, "Improving materials management practices on fast-track construction projects", 21st Annual

ARCOM Conference, 7-9 September 2005, SOAS, University of London, vol. 2, pp. 793-802, 2005.

[7] Kalpakam.S "a lost sales inventory system with supply uncertainity" computers mat Application vol.33, no.3, pp.81-93. 1997.

[8] Min-Chun Yu, "Multi-criteria ABC analysis using artificial-intelligence-based classification techniques". Department of Business

Administration, Elsevier journal eswa Vol.177(1): pp 344- 353. 2011.

[9] Musara Mazanai "Impact of just-in-time (JIT) inventory system on efficiency, quality, and flexibility among manufacturing sector, small and

medium enterprise (SMEs) in South Africa" African Journal of Business Management Vol. 6(17), pp. 5786-5791.2012.

[10] Narimah Kasim "ICT Implementation for Materials Management in Construction Projects: Case Studies" KICEM Journal of Construction

Engineering and Project Management Online ISSN.Vol 6.pp 22-33. 2011.

[11] R. Navon and O. Berkovich, "An automated model for materials management and control", Journal of Construction Management and

Economics, vol. 24(6), pp. 635-646, 2005.

[12] V. Prabu and M. Baker, "Materials Management" UK: McGraw-Hill, 1986.

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