

Case Study on Inventory Management System Followed by Major Builders in Chennai Region and Proposing Recommendations to Improve the System

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ABSTRACT: Inventory management is related to planning, procuring, storing and providing the appropriate material of right quality, right quantity at right place in right time so as to co-ordinate and schedule the production activity in an integrative way for an industrial undertaking. Inventory Management is simply the process by which an organization is supplied with the goods and services that it needs to achieve its objectives of buying, storage and movement of materials. The main objective of the study is to identifying the factors that affect the inventory management, the facts and opinions of inventory management and control at the construction industry will be analysed and to create an effective utilization of inventory at construction site, to overcome the difficulties by giving the possible recommendations. The first part is conducting questionnaire survey in various construction companies. In second part, analysing those result by using statistical package for social science SPSS.

KEYWORDS: Inventory management, stock of materials, identifying factors.

I. INTRODUCTION

Inventory management is a science primarily about specifying the shape and percentage of stocked goods. It is required at different locations within a facility or within many locations of a supply network to precede the regular and planned course of production and stock of materials. Inventory management is a process for planning, executing and controlling the field and office activities in construction. It is the system for planning and controlling all of the efforts necessary to ensure that the correct quality and quantity of materials are properly specified in a timely manner, obtained at a reasonable cost and most importantly, available at the point of use when required. Poor materials management can result in increased costs during construction. Efficient management of materials can result in substantial savings in project costs. Materials may deteriorate during storage or get stolen unless special care is taken. Delays and extra expenses may be incurred if materials required for particular activities are unavailable. Effective construction materials management process is a key to success of a construction project.

II. OBJECTIVES OF STUDY

This paper has an objective to act as a foundation for future studies and its results will become worthwhile information in efforts to improve the inventory management practices in the construction industry.

1. To study the inventory management for construction field.
2. To identify the factors that affect the inventory management
3. To create an effective utilization of inventory at construction site

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4. Overcome the difficulties by give possible recommendations

III. METHODOLOGY

The flowchart shown in fig 1 shows the methodology followed in this study.

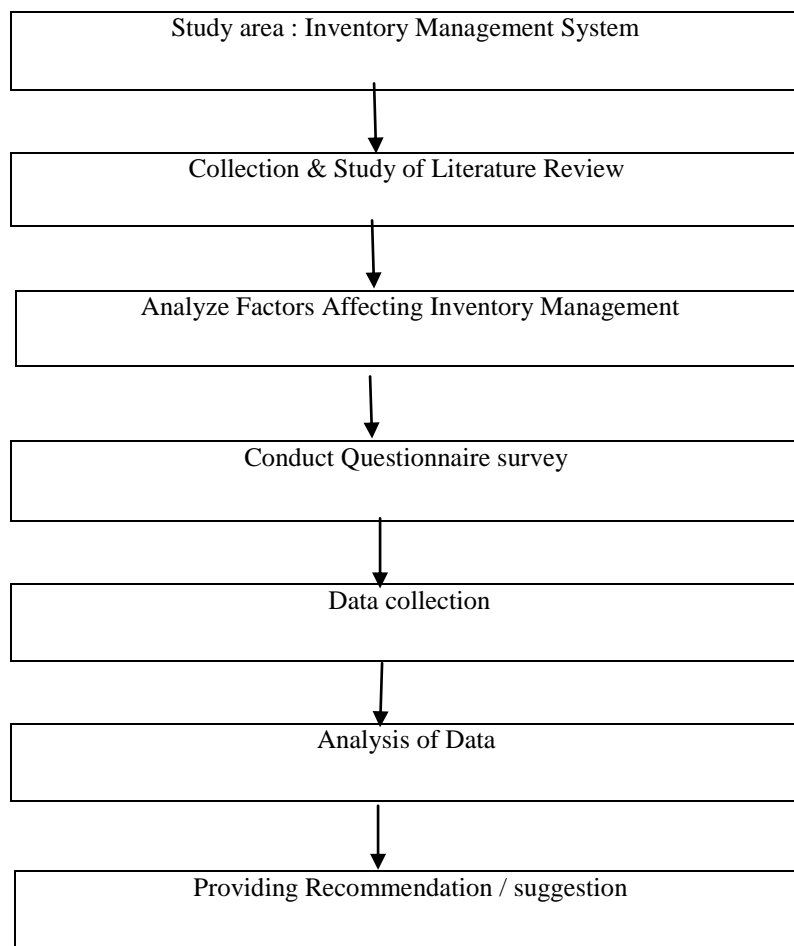


Fig 1 Flowchart for project methodology

Research methodology can be defined as systematic and purposive investigation of facts with an objective determining the effective relationship among such facts and research between two or more phenomena. The questionnaire survey method is administered to collect data. The methodology followed in study includes the identification of factor constraining the construction inventory system from the relevant literature. Questionnaires are prepared based on the factors, which are further administered to the targeted population. The reliability of collected data is assessed by statistical analysis using SPSS 16. The factors constraining inventory for improving Inventory management are provide based on the results of the statistical analysis.

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IV. FACTORS INFLUENCING INVENTORY

There are some factors which influence inventory management system. This factors are identified based on literature review

1. Minimum stock level
Minimum stock is that level of stock which should not be allowed to decrease
2. Re-order level
Re-order is the amount of stock that a company holds so that when the stock falls, the stock must be reordered
3. Lead time
Lead time is the time elapse between the date of placing the inventory order and the date of delivery. The need for knowing the exact lead time helps the seller to keep certain inventories to serve clients while waiting for the supplier's delivery
4. Maximum stock level
Maximum stock is the amount of inventory which should not be exceeded

V. ANALYSIS OF DATA

In order to facilitate the study, after the literature review and the focus interviews, a plan was formulated for collecting field information and creating an evaluation process and numerical values. It was necessary to provide straight forward communication to respondents to ensure a clear understanding of all the applicable definitions, procedures, and guidelines that were used in collecting data. The descriptive statistics analysis and relative important index technique were used for data analysis. For descriptive statistics, analysis was done using statistical package for social science developed by IBM.

Relative Important Index (RII) method helps to determine the relative importance of various factor affecting on Inventory management. The four point scale ranging from 1 (less important) to 4 (extremely important) is adopted and it is transformed to relative importance indices for each other as given in equation 1.

$$RII (\%) = \frac{\sum w}{A \times N} \quad (1)$$

Where 'WA's the weighting or scale given by each respondent on the likert scale. 'A' is the highest weight and 'N' is the total number of sample. The RII was used to rank the difference factors affecting Inventory management. Each individual factor RII perceived by all respondents should be used to assess the general and over all rankings in order to give an overall picture of Inventory Management.

The risk factor were generated based on extensive Journals and literature review.

TABLE 1
VARIOUS VIEWS FOR THE STUDY ON INVENTORY MANAGENENT SYSTEM

1	All store staff are highly skilled	16	Storing of stock
2	Experiences under stock situations	17	Selection of vendor
3	A responsible official authorizes purchase	18	Adequate safety stock level
4	You pay maximum attention to those inventories whose value is highest	19	Re-order point
5	Goods are inspected on receipt	20	Emphasis on software then skilled man power
6	Get damaged goods from it stored	21	Currently active row for a supplier location must have a currently active address
7	Distance from project site to storage yard	22	Long Lead items
8	Inspection in goods arrival	23	Efficient stock control
9	Manual inventory check	24	Training for stock managing staff
10	Use advance tool to maintain inventory	25	Lack of storage space

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	management system		
11	Maintenance of ledger for maintaining stock	26	Proper training practices
12	Involvement of contractor in material management	27	Proper financial support in ordering of materials
13	Over inventory or under inventory both cause financial impact	28	Difficulties in delivery of long lead materials
14	Reliability of company records by regular comparing	29	Need for material management system
15	Tracking system both computerized and manual	30	Better relations with suppliers

The reliability of an instrument is the degree of consistency which measures the attribute; it is supposed to be measuring. The less variation an instrument produces in repeated measurement of an attribute, the higher its reliability, reliability can be equated with the stability, consistency or dependability of measuring tool. The cronbach's coefficient alpha is used to measure the reliability of the questionnaire between each field and the mean of whole fields of the questionnaire. The equation for finding cronbach's alpha (α).

$$\alpha = \frac{rk}{[1+(k-1)r]} \quad (2)$$

where 'K' is the number of variables considered and 'r' is the mean of the inter-item correlations. The normal range of Cronbach's alpha value is between 0.0 and +1.0 and the higher degree of internal consistency. Table 2 gives the general acceptable value of Cronbach's alpha.

TABLE 2 CRONBACH'S ALPHA

ALPHA	REMARKS
$\alpha > 0.9$	Excellent
$\alpha > 0.8$	Good
$\alpha > 0.7$	Acceptable
$\alpha > 0.6$	Questionable
$\alpha > 0.5$	Poor
$\alpha > 0.5$	Unacceptable

Table 2 shows the value for cronbach's alpha for entire questionnaire. In our study, Cronbach's alpha equals to 0.870 for the entire questionnaire which indicates a very good reliability of entire questionnaire. Thereby, it can be said that researcher proved that the questionnaire was valid, reliable and ready.

TABLE 3 CRONBACH'S ALPHA FOR THE QUESTIONNAIRE

RELIABILITY STATICS	
CRONBACH'S ALPHA	N OF ITEMS
.849	30

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VI. RESULT AND DISCUSSION

The factor analysis is carried out through principal components method with varimax rotation and the mean values are calculated. From this all factors are ranked.

FACTORS	MEAN VALUE	RANKING/PRIORITY
Maintaining safety in storing		1
Need for material management system		2
Storing of stock management		3
Currently active row for a supplier location must have a currently active address		4
Efficient stock control		5
Maintenance of ledger for maintaining stock		6
Difficulties in delivery of long lead materials		7
Lack of storage space		8
Long lead items		9
Selection of vendor		10

TABLE 4 SHOWS THAT TANGIBILITY RELATED VARIABLES RATED HIGHEST FOR ACTUAL SERVICES PERCEIVED IN CONSTRUCTION SITES

VII. CONCLUSION

Based on the analysis, the result shows that below points were focused mainly in construction industries

- ✓ Maintaining safety in storing
- ✓ Need for material management system
- ✓ Storing of stock management
- ✓ Currently active row for a supplier location must have a currently active address
- ✓ Efficient stock control
- ✓ Maintenance of ledger for maintaining stock
- ✓ Difficulties in delivery of long lead materials
- ✓ Lack of storage space
- ✓ Long lead items
- ✓ Selection of vendor

Finally, inventory management system is considered to perform a key role in organization, which is responsible to complete the company project in a specific budget within a certain period of time.

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