

# Implementation of Barcode Technique for Logistic Management and Its Comparison with Traditional Logistic Management

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**Abstract**—Logistic 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 materials requirements planning, purchasing, inventory planning, storage, inventory control, materials supply, transportation and materials handling are the activities of material management. Construction material constituents more than 55 % of the total cost of any typical construction project so that effective and proper logistic management can be proved very cost effective. The finding from the paper shows that Combination of barcode technology with computer and application software improves performance, productivity and profitability of the firm or company in construction sector. This paper describes the main results of survey carried out in different construction companies for their current material management process and application of new barcode system for material management on a chosen site.

**Keywords:** – Logistic management, Barcode, construction

## I. INTRODUCTION

### A. Logistic Management

Logistic management is concerned with the planning, identification, procuring, storage, receiving and distribution of materials. The purpose of material management is to assure that the right materials are in the right place, in the right quantities when needed. Problems related to managing the flow of materials can be found in every organization. The efficient management of materials plays a key role in the successful completion of a project.

The control of materials is a very important and vital subject for every company and should be handled effectively for the successful completion of a project. Materials account for a big part of products and project costs. The cost represented by materials fluctuates and may comprise between 20-50% of the total project cost and sometimes more. Some studies concluded that materials account for around 50-60% of the project cost (Stukhart, 2007 and Bernold and Treseler, 1991)

## II. METHODOLOGY

### A. Barcode Technology

Basically barcode technology is an automatic identification technology. Bar code is a predefined format of dark bars and white spaces .It is structured to contain a specific piece of information which allows real-time data to be collected accurately and rapidly.

It consists of a series of parallel, adjacent bars and spaces. More precisely, it is simply a series of stripes on a very light background that can be scanned and read directly

into a computer. They are interpreted virtually instantaneously and unerringly by a bar code reading system. The elements (bars and spaces) in a bar code symbol must be of a consistent, proportional thickness and thinness. The widest element could be as thick as a pencil or as thin as a business card, as long as the corresponding thin bars and spaces in the bar code remain proportionally thin. To read information contained in a Barcode symbol, a scanning device, such as a light pen is moved across the symbol from one side to the other. As a scanning device is moved across the symbol, the Barcode width pattern of bars and spaces is analyzed by the Barcode decoder, and the original data is recovered.

The typical tasks associated with a material management system are:

- Procurement and purchasing
- Expediting
- Materials planning
- Materials handling
- Distribution
- Cost control
- Inventory management / Receiving
- Warehousing
- Transportation

Some construction firms were surveyed in which small scale, medium scale and large scale classification is done as per their investment in project and data is collected regarding their current material management process.

In survey it is found that large scale companies used software's like SAP, ERP for the logistic management and medium scale or small scale companies prefer manual material management process.

After above survey one site was selected.it consisted of two building one of the building had material management by traditional muster maintained by store keeper. For other building barcode technique was used.Materials like doors, windows, paints, and plumbing materials were labeled and logistics management is doneIn this project there were 2 buildings

In these process following steps was followed:

1. Details of each item are entered in simple computer software system when it received on site.
2. Inward entry of that material is done and
3. Barcode label is stick on the material
4. Material is kept in store in at entered location.
5. When it is needed on site it is just to be scan by barcode scanner then automatically stock is updated and inventory report can be printed

Table 1: Table for Analysis Of Surveyed Construction Firms

Type of firm	Type –A (Project investment more than 3000cr)	Type –B (Project investment more than 1000cr.)	Type –C (project investment less than 1000 Cr)
Current method used for material management	ERP Software	SAP Software	Traditional material muster system
Problem occurring in current material management	There no any problem.	There no any problem.	More paper work, Manual error Etc.
Using barcode technique?	No	No	No
Conclusion	Initial cost is high and there is requirement of skilled and technical man force for this system and it is advisable to use when project cost is very high.	Initial cost is high and there is requirement of skilled and technical man force For this system and it is advisable to use when project cost is high.	There is no initial investment and this system requires Less manpower and it has less cost. This system can be effectively used for small and medium scale project where investment is not very high.

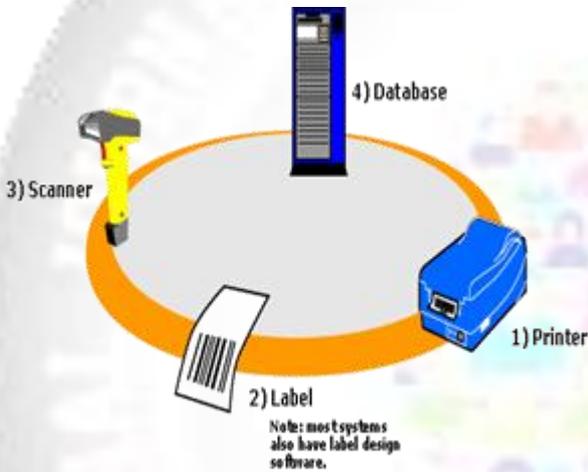


Fig. 1:

### III. RESULT

Benefits of using barcode technique in construction

- Represent unique identity of a product.
- Accuracy of data input (error free).
- Aid effective management of resources and inventories.
- Labor savings by avoiding manual system.
- Real time data collection.
- Rapid access to total production costs.
- More accurate dispatch.
- Work can get easy.

Barriers of barcode technique in construction

- Materials like sand, crush sand, bricks cannot manage by using bar code.
- Need to train workers.
- High initial cost.

### IV. DISCUSSION

For the application for barcode system two persons are required out of which one should be skilled person and initial cost of system is these may be cause for higher cost. When we compare the material management by traditional method and by barcode application, barcode application saves approximately 1200 Rs per flat and hence

when we calculate for the whole project these cost comes up to be approximately 2,00,000 which is a very large amount.

### V. CONCLUSION

Logistic management is very important branch for any construction company. Generally material management is carried out manually in construction companies. But to achieve a profit there is need to change process of material management. By using barcode technique exact consumption of material, stocked material, and location of material can get by a single click. It reduces manual errors and it is easy to communicate. In Pune, there no any construction company is adopted barcode technique for material management.

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### REFERENCES

- [1] Sohrab donyavi and roger Flanagan "The impact of effective material Management on construction site Performance for small and medium sized Construction enterprises" Vol. 1, pp. 11-19.2010
- [2] Elijah E.O., "Profitability through effective management of material", school of Engineering, UK. Vol. 1, 2010.
- [3] N. B. Kasim, Peniel Ang Soon Ern, "Awareness of ICT Implementation for Materials Management in Construction Projects", Int. J. of Computer and Communication Technology, Vol. 2, No. 1, 2010, pp. 1-10.
- [4] Chandani, Kansara, " Identification of materialWastage in residential buildings", NICMAR journal of Construction Management, Vol 13, No.1, January 2007
- [5] Khyomesh V. Patel, Prof. Chetna M. Vyas, "Construction materials Management on Project Sites",

National Conference on Recent Trends in Engineering  
& Technology, 13-14 May 2011

- [6] Vaid K. N. , “ Waste control of building materials in construction of mass housing projects” , NICMAR journal of Construction Management, Vol 2, No.3 , 1997

