Importance of Inventory Control for Construction Site With Using ERP

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Abstract- *Inventory can be defined as the items of assests having value and awaiting utilisation. Inventory control is very important in material management system. This paper describes the need and importance of inventory control and use of ERP in material management. ERP is the integrated management of core business processes, often in real time and mediated by software and technology. The successful model of ERP system is to help senior managers to make better decisions when considering their organization.*

Keywords- Material management, Enterprise resource planning, Construction management, Project life cycle, Inventory, Inventory control

I. INTRODUCTION

1. Material management-

Generally material management is concerned with the planning, identification, procuring, storage, receiving and distribution of materials. Material management covers a much wider field and deals with all aspects of material supply, utilisation as well as costs. It is a body of the knowledge which helps the managers to improve the productivity of capital by reducing material costs preventing large amount of capital being locked up for larger periods and improving the capital turnover ratio. Material management is therefore a total concept involving the overall organizational structure. It can also be defined as the procurement of right quantity of materials, at the right quality from the right source, at the right time, for the right price.

2. Enterprise resource planning-

An enterprise resource planning system is a fully integrated business management system covering functional areas of an enterprise like planning, design, logistics, production, finance, accounting and human resources. ERP systems track business resource cash, raw materials, production capacity and the status of commitments like orders, purchase orders and payroll. This system shares the data across the various departments that provide the data. It is very helpful to project managers to make better decisions in project management. It has the effective communications between all management functions in a single common database.

Benefits of ERP-

Following are the benefits of ERP:

1. **Efficiency-** An ERP solution eliminates repetitive processes and greatly reduces the need to manually enter information. The system will also streamline business processes and make it easier and more efficient for companies to collect data, no matter what department they are working in.
2. **Forecasting-** Enterprise resource planning software gives your users and especially managers, the tools they need to create more accurate forecasts. Since the information within ERP is as accurate as possible, businesses can make realistic estimates and more effective forecasts.
3. **Collaboration-** Nobody wants to run a siloed business with each department functioning separate from each other. Collaboration between departments is a crucial and often necessary part of the business. With the data entered into ERP system being centralized and consistent, there is no reason why departments can't work together.
4. **Scalability-** Structured ERP system allow the addition of new users and functions to grow the initially implemented solution over time.

1) Integrated information- instead of having data distributed throughout several separate databases, all information will be housed in a single location. Data is also kept consistent.
2) Cost savings- With one source of accurate, real time information, ERP software reduces administrative and operation costs. It allows manufacturers to proactively manage operations, prevents disruptions and delays and help users make decisions more quickly.
3) Streamlined processes- As manufacturers grow, their operations become more and more complex. ERP increases efficiency and productivity by helping users negative complex processes, preventing data re-entry and improving functions such as production, order completion and delivery.

4) Mobility- With an enterprise resource planning solution such as work wise ERP software you will get access to your centralized database from anywhere you work.
5) Reporting- ERP software helps make reporting easier and more customizable.
6) Productivity- Save time and increase productivity.
7) Regulatory compliance- Powerful ERP solutions will keep track of regulations within the industry and monitor changes in compliance.
8) Flexibility- Modern ERP software systems are robust, flexible, and configurable.
9) Customer service- It is easier to provide high quality customer service using an enterprise solution, especially when you are using one as well-equipped as work wise ERP.
10) Security- Data security is maintained. A new system will improve the accuracy consistency and security of data, all through built-in resources and firewalls.

3. concept of inventory-

Inventory can be defined as the items of assets having value and awaiting utilisation. In other words inventory is a usable but idle resource. If resource is some physical or tangible object such as materials, then it is generally termed as stock. Thus stock and inventory are synonymous terms through inventory has wider implications.

4. objectives of scientific inventory control-

1. **Better service to the customers:** prompt service or execution of orders of the customers by keeping adequate stocks of finished goods.
2. **Effective use of working capital:** the working capital can be made available by reducing the inventories for making new profitable investments.
3. **Reduction in risk of loss due to wastage, obsolescence:** the possibility of loss on account of obsolescence and deterioration should be minimised.
4. **continuity of production:** Adequate supply of materials to meet the production needs all the time.

II. METHODOLOGY

11) Working of modules of ERP for inventory in construction industry-

The process starts from calculating quantities and preparation of estimate of the project with preparing resources, work item specification and rate analysis. Measurement planning is done with LBD measurements formula and direct quantity. Estimation is imported in project. In the project planning bar chart preparation, material quantity planning is carried out.

In the process of project execution work is completed related with inventory. The process such as requisition of material, price request, and comparison, purchase order material inward entries on daily basis , issue slip entries and register of site bills this all process is carried out. After project billing with supplier, subcontractor and client billing, reconciliation reports are made.

Process flow of ERP for material management-

- Estimation.
- Inventory.
- Requisition of material (Indent)
- Price request (Quotation of material)
- Price comparison.
- Purchase order.
- Supplier bill booking. (Register of site bills)
- Material inward & issue slip entries.
- Reconciliation reports.

2. **Reasons for keeping inenvtories-**

1. To overcome demand and lead time uncertainities.
2. To effect economy in procurement.
3. To avoid stock outs.
4. To overcome certain business constraints.
5. To keep pace with changing market conditions.
6. To prevent loss of sales.

Need and importance of inventory control-

- Wherever inventories are maintained, inventory control has to be excercised. Without proper control inventories have a tendancy to grow beyond economic limits.
- Where the profit margin is small, it is eaten up by the excessive inventories and the undertaking may have to be closed down. Hence, inventories if not properly controlled are said to be the graveyard the business.
- Scientific inventory control aims at effective, enormous economies and makes more of the working capital available for productive purpose.
- One of the aims of efficient management is to maximize return on capital and scientific control of inventories helps management to improve the return on capital and thus increase the productivity of the capital.

III. CONCLUSION

The main purpose of the study is to show how the ERP is more convenient for the organization. The paper provides a review of the inventory management in construction projects. It is important to manage all materials and inventory throughout construction activity and processes.

By using of inventory control and ERP we can achieve-

- Assurance of quality of material.
- Quality control.
- Improve project schedule.
- Cost optimization of the project.
- Productivity.

REFERENCES

[1] Lansford C. Bell and George Stukhart; "Attributes of material management systems"; the journal of construction engineering and management, Vol.112, no.1, March, 1986. ASCE, ISSN 0733-9634/86/0001-0014 Paper no.20411

[2] BooYoung Chung, Mirslow J. Skibniewski and Young HoonKwak; "Developing ERP systems success model for the construction industry"; the journal of construction engineering and management,vol.135 no.3. march 1,2009. ASCE ISSN 0733-9364/2009/3-207-216.

[3] BelizOzorhon and EmrahCinar; "critical success factors of enterprise resource planning implementation in construction: case of Turkey"; the journal of construction engineering and management, ASCE, ISSN 0742-597.

[4] Lansford C. Bell and George Stukhart; "costs and benefits of materials management systems"; the journal of construction engineering and management, vol.113 no.2, June 1987. ASCE ISSN 0733-9364/87/0002-0222. Page no. 21532.

[5] OmeerTatari, Daniel Castro-Lacouture, A.M.ASCE and Mirosalw J. Skibniewski; "performance evaluation of construction enterprise resource palnning systems"; the journal of construction and engineering and management, vol.24 no.4. October 1,2008. ASCE ISSN 0742-597.

[6] Joseph Anto S, "An empirical study of enterprise resource planning systems in construction industry"; the journal of construction engineering and management, vol.3. April 2016. IRJET ISSN2395-0072.