

# An Effective Case Study and Importance of Lead Periods in Construction Industry

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## Abstract:

In construction Industry, It has been widely observed that many activities has been delayed due to unavailability of material on time. It generally happens due to improper planning of time required for the goods to reach on site location. In this research paper we have conducted survey with Real estate concerned Engineers, Purchase managers and Suppliers and tried to figure out the various days required for particular construction materials to collected. some measure issues. To overcome this situation a general and regular used construction material are reach on site. After giving the indent or requisition from site team there are number of challenges to be faced to Purchase department. Material Availability, Quantity, Rate, Quality, Negotiations, Transport, Time required to deliver product are listed and minimum lead period data has been collected.

*Keywords* —Lead Period, Inventory, Supply chain management, Time Management, Material delay

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## I. INTRODUCTION

For any manufacturing organization Lead time is an essential concept. It is the amount of time between the start and completion of a process or the time between ordering something and receiving. It is a common term in supply chain management and project management,

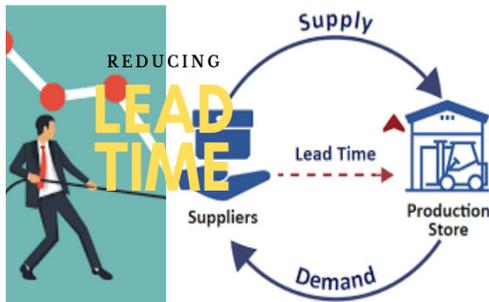
In short, lead time is the period of time spent by the production system, in order to transform inputs into finished products, ready for delivery. This process involves a number of crucial steps in a business, such as procurement management, supplier management, and supply chain management. Lead time plays an important role in the success of a business. because of this reason companies pay

duly attention to the lead time in the manufacturing process, supply chain process, etc. the manager compares the lead time with the standard lead time of a process and take corrective actions if there is the difference between standard lead time and current lead time. Lead time impacts the performance of businesses, especially the manufacturing processes and inventory management makes the biggest portion of the lead time. The lead time starts as soon as an organization receives an order then the manufacturing of product and transportation of product from the manufacturing house to the doorstep of the customers makes up the total lead time. An organization that takes the lowest lead time in delivering the product after the order is placed with the organization is considered efficient. Reduced production time increases the productivity of the

organization and helps in generating more revenue. However, lower lead time can result in expensive production as a company has to either adopt automation methods which lower the production time or it has to continue its production process day and night.

These results in the increased cost of production and it will directly impact the price of the product. therefore, companies that deliver products in less time usually charge more than the other companies. Therefore, a fast production process helps in providing satisfaction to customers and to generate more and more profit. Another factor that impacts the lead time is inventory management. Inventory means keeping the stock of goods and things that a company wants to resell. Effective inventory management makes the right prediction of the demand for the product in the future and keeps them ready for the peak period. In addition to the production process and inventory management, one more factor which impacts the lead time is supply chain management. Supply chain management deals with movement and storage of raw materials and goods required for the production process and the movement of finished goods from the production site to in the hands of the customer.

Problems in the supply chain management cause delay in the production process because of the delay in the delivery of raw material required for the production process or worse when the final product manufactured on time could be delivered on time because of the delay in the delivery.



### Importance of lead time

1. Lower lead time helps in satisfying customers, as customers want products of good quality to be delivered as soon as possible. Because of this reason customer prefer to order from vendors that deliver food at the lowest time.
2. Lead time plays an important role in keeping the inventory. if a company has the estimation of manufacturing lead time then accordingly, they can place an order for more material and there will be low chances of shortage or excess of material in the inventory.
3. Lead time is used as a USP to attract customers. As more and more customers prefer good quality products as soon as possible.
4. Lead time gives the estimation to a company how many products will be prepared and delivered at a particular time. By increasing the speed, they can improve their revenue generation.
5. Lead time helpful in reducing the wastage of inventory. As manager will order the inventory as required at a particular point of time rather than keeping the excess material in storage.

### How to reduce Lead time

1. Keeping the right idea of stock required for the manufacturing process.
2. Use good machinery and equipment for the production process.
3. Reduce the supplier lead time by supplying from a local supplier.
4. Use faster shipping methods.
5. Sell good quality products, this will help you in reducing return lead time.

**ANALYSIS**

Recommended lead period in DAYS USED for construction material

**METHODOLOGY**

The most basic **lead time formula** is: **Lead time (LT)** = Order Delivery Date – Order Request Date. But in the context of inventory management, this formula also accounts for a reordering delay. **Lead time (LT)** = Supply Delay (SD) + Reordering Delay (RD)

To efficiently calculate your average lead time, you can also use a different formula to determine the supply delay, determine the reorder delay and sum up these two metrics to achieve your lead time numbers.

Many different types of lead time can be calculated based on a variety of metrics. For instance, while customer lead time refers to the amount of time between order confirmation and fulfilment, material lead time corresponds to the amount it takes from placing an order to receiving it. Production lead time is often known as the time between building and shipping a product. In contrast, cumulative lead time considers the time it would take to order the entire materials needed to manufacture and deliver the purchased product. This can also be defined as the sum of material and factory lead time.

To efficiently calculate your average lead time, you need to determine the supply delay, determine the reorder delay, and sum up these two metrics to achieve your lead time numbers.

Sr.No	Material	Lead Period in Days
1	Aggregate	7 Days
2	Plumbing - CP	60 Days
3	Plumbing - GI	15 Days
4	Plumbing - CI	25 Days
5	Plumbing - Sanitary	25 Days
6	Plumbing - PVC	25 Days
7	Plumbing -PPRC	25 Days
8	Electric Pipes and Fittings	15 Days
9	Electric Switches	25 Days
10	Electric DB	45 Days
11	Electric LT/ HT	30 Days
12	Electric Cables / Wires	25 Days
13	Paints	30 Days
14	Granite / Marble	20 Days
15	Rough Shahabad	20 Days
16	Chemicals / Plasticizers	15 Days
17	Centring Material	15 Days
18	Autoclaved Aerated Blocks	25 Days
19	Cement OPC 43g ,PPC, PSC	15 Days
20	TMT Steel	15 Days
21	Structural Steel	15 Days
22	MS Binding wire	10 Days
23	Door / Shutters	60 Days
24	Lubricants	15 Days
25	DG set	45 Days
26	Hardware Material	15 Days
27	Door Frames - Wooden	25 Days

28	Door Frames - RCC	30 Days
29	RCC Product - Pipes, chambers	25 Days
30	Safety Ware	15 Days
31	Glass	15 Days
32	Exstrusion	21 Days
33	Coating on Exstrusion	21 Days
34	Tiles-Walls	25 Days
35	Tiles-Flooring	25 Days
36	Pumps	10 Days
37	WTP	90 Days
38	STP	90 Days
39	Bio Gas Plant	90 Days
40	Machinery Equipment's	25 Days
41	Security Cabin	25 Days
42	Plumbing -DI	30 Days
43	Machinery	30 Days
44	Door Fittings	30 Days
45	Children's Play Equipment's	45 Days
46	Electric - Tube Light /Decorative Lights	15 Days
47	Electric - Poles	30 Days
48	Plywood / Veneer	15 Days
49	Flyash	10 Days
50	Bison Board	15 Days
51	Wooden Flooring	60 Days
52	Mosaic Tiles	30 Days
53	Paver Blocks	25 Days
54	Sinks	25 Days
55	Lipping Patti	10 Days
56	Video Door Phone	30 Days
57	Inverter / UPS	30 Days
58	Solar	90 Days
59	Roofing Tiles - Clay	15 Days

60	GI Sheet	21 Days
61	Gypsum	25 Days
62	RMU	30 Days
63	Fabrication	15 Days
64	CP Fittings	45 Days
65	Kitchen Trolleys	45 Days

Note- The above mentioned lead periods are made considering for Residential projects, geographically Maharashtra, India. It may vary country to country as per the geographic and availability of materials.

**Following factors helps us to reduce Lead Period.**

**1. Domestic Searching – Local Vendors**

- 1) Using a supplier based stateside can automatically reduce your lead time by two weeks or more — that's about how long it takes for parts to ship from many foreign countries. Adding to potential delays is the language barrier that often can complicate communications.

**2. To Increase Order Ratio**

Generally, to save money we typically placed one large bulk order, but it means longer lead times, we may discover that's really not the case when you factor in potential lost sales or increased labor for inventory management. A total cost analysis should be determined if there truly is a savings — we may discover it's a wash. If that's the case, consider ordering smaller quantities more frequently to help reduce lead times and carrying costs.

**3. Provide Sales Forecasts**

Letting our supplier know the expected reorder can help them anticipate your needs and speed up the fulfillment process. They can set your usual order aside and have it ready to ship when you say "go."

**4. Incentivize Suppliers**

A company should offer a specific incentive to its suppliers, such as a bonus, if they continuously deliver the items on time. Similarly, a company may also include a penalty clause in the

supplier contact to ensure they stick to the agreed terms.

#### **5. Convert to Standard Components**

If you truly require a customized solution, make sure you rely on a supplier that specializes in your industry and doesn't have to spend time learning on-the-go. Sometimes, however, you can convert to a standard component. Not only will it save time in engineering and production, it will likely reduce your costs, too. Your supplier should be able to collaborate with your designers to determine if any tweaks can be made to the design to accommodate a standard component without compromising the performance or quality of your finished product.

#### **6. Consolidate Suppliers**

Managing lead times requires more than just managing suppliers. Large amount of time you have to spend coordinating multiple vendors. If trying to keep them all straight and having to handle multiple purchase orders and relationships means you aren't able to get your orders placed in a timely manner, lead times will suffer. While it's common practice to have at least one backup supplier so you aren't completely dependent on one source, it's unlikely you'd need more than two backup suppliers. When possible, consider condensing your supply chain to reduce the time spent handling multiple accounts, and/or implement vendor management software that can help streamline your processes and create efficiencies. You'll likely find that consolidating or changing suppliers can add value in many ways.

#### **7. Consider Kitting Services**

Another internal process that can improve lead times is reducing the time spent gathering parts in your inventory. Consider grouping various components that are frequently used together into batches so your workers can stay more organized and easily pick what they need from inventory for projects. This process is called "kitting" and increases efficiencies because workers don't have to spend time counting individual parts.

#### **8. Communicate**

Staying in touch with your supplier throughout the production process helps make sure those expectations are being met and that any issues along the way can be addressed promptly. Providing key performance indicators will also help motivate your supplier to achieve the levels of service you expect. Few manufacturers simply accept long or delayed lead times as a normal part of doing business and believe there isn't much they can do about it. Not so. Using these tips can help reduce the risk of production schedule interruptions and the resulting lost revenue.

Building a strong partnership with reputable suppliers that are committed to your success as much as their own, however, may be the greatest factor in reducing lead times.

### **CONCLUSION**

Lead time is a crucial metric for any business. It assists the company in predicting sales, making operations efficient, and improves customer satisfaction. However, it would be tough to improve lead times in the absence of a proper inventory management system, efficient production process and right suppliers

In our research we have learn that if any activity is starting at a particular date, we have to simply prepared for the availability of the material required for the particular material as per the lead periods data.

Eg – If someone casting a slab on 15th of Month, he will required cement , steel ,Sand etc before these date, so, he needs to work reversely as per lead period of particular item to ensure that material should be on site before the casting date.

## REFERENCES

- [1] **Pilot Date Collection from- Real Estate offices, in Pune**
1. High Seas Properties Pvt.Ltd - Engineers and Purchase Dept.
  2. Atul Enterprises, Promoters and Builders – Purchas Manager
  3. Revive Homes- CEO (Mr. Rahul Abhynakar)
  4. Good Earth Shelters- CEO. (Mr.Kothadiya)
- [2] Eugene F. Brigham Finance Management Theory and Practice 15th Edition Pg-251-254
- [3] Inventory management: LC Jhamb, Edition 19, 2013
- [4] The Complete guide to Inventory Management PDF: A Complete Guide For 2020.
- [5] Finance management Theory and Practice
- [6] Assaf S.A & AI- Hejji, S.2006. Causes of delay in large construction projects. International journal of Project Management ,24(4) :349-357
- [7] Assaf, S. A., M. Al-Khalil, and M. Al-Hazmi (1995) “Causes of Delay in Large Building Construction Projects”, Journal of Management .In Engineering, Vol. 11, No. 2, pp. 45-50.
- [8] Kaming, P.F., Olomolaiye, P.O., Holt, G.D., and Harris, F.C. (1997) Factors influencing construction time and cost overruns on high rise projects in Indonesia. Journal of Construction Management and Economics, 15(1), 83- 94
- [8] Mezher, T.M. and Tawil, W. (1998) Causes of delays in the construction industry in Lebanon. Engineering, Construction and Architectural Management 5(3), 252-260.
- [9] Al-Momani, A.H. (2000).Construction delay: a quantitative analysis, Journal of ProjectManagement18, 51-59.