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Role of Logistics in Construction Sector

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Abstract
The Contribution of Construction Sector to National Income is quite substantial and next only to agriculture, this is the sector which offers the largest employment opportunities, irrespective of the qualification of people.
Preference of people to move away from Agriculture to urban areas for avocation and also the disposal of cultivable fields to Real Estate Agencies result in a situation where these lands are converted into plots for construction activities.
Another thing to be borne in mind is that the income level of people is also on the increase compared to the past.
The easy availability of finance induces people to own an apartment for themselves.
All the above give a big thrust to construction sector and in variably, at all the outskirts of the city, construction activities are going on in full swing.

Keywords: material management, work schedule, purchase programming, vendor selection, workforce co-ordination, internal logistics, external logistics, decision making

Introduction

Scope of Research

Personal visits to construction sites and information from secondary data.

Table 1

Description	Information
No. of sites visited	6
No. of people contacted	40
Builder himself	1
Builder's representatives (Engineer/Site In charge)	5
Others	34

What is the need for Logistics in construction projects?

Any activity is planned for timely execution. This is more pronounced in Construction Sector. This has a special significance that co-ordination with various personnel and at different ends is to be effectively carried out.
A small slip in one end may cause a big blow to so many groups leading to idle time. This is not only a cost penalty but also eroding the precious time for the project completion.
When there is a delay in receipt of materials, especially the critical items like Sand, Bricks etc. the work will simply come to a halt. Normally, Workers will assemble at the site from 8.30 am onwards to start the actual work by 9.00 am. The delay in receipt of materials will force them for idle hours. When the personnel come to the site for work, they should be paid wages for the day irrespective of the fact whether they are given work or not. The delay in receipt of materials is not their fault and hence, they should not be penalized.

Attitude of Customers

The fast changing attitude of customer is that they should be given the apartment as promised and they do not want to wait Even for a week.
From the past when the customers were at the mercy of builders, the situation is the other way now. Customers have a say in the matter and their demands are also on the increase. In fact, the RERA is also more favorable to purchasers only.
For all the delays and the consequential mounting expenses, it is the builder who will have to ultimately absorb all the same himself.
Hence, builders have to be more careful in their plan and action.

Role of planning in Construction Projects

The normal tendency of builders is that their planning is more concentrated on capital only. Though this is right, they pay scant attention in other activities, particularly in material handling and that's where the slip occurs.
They suffer wasteful wages to workmen and also incur the displeasure of customers for the delay.
It is to be noted that the effective utilization of the capital only matters over the interest cost of same. Even established builders slip in this.

Delivery should be on time and every time

For a successful Builder, the motto should "Delivery is Always on Time (of course, a delay of about a week is quite acceptable to both sides) and Every Time". This is possible only when there is effective co-ordination of the whole unit from the builder to the worker. While this is at the work spot, the co-ordination, which is more essential is with various other people involved in the construction such as Vendor, Sub Contractor, and Transporter.
The impact of external people have an overriding bearing on the construction projects and these people are the ones who are other than the builder and his operating staff. The builder will have a say in the matter in regard to his operating crew, but what is important is how he handles the other people. This

is where advance action on logistics is always an indispensable one.

What is Construction Logistics?

Logistics is not just confined to fleet of vehicles alone. What constitutes the vehicles only matters? That is nothing but Materials.

Timely availability of materials only matters. Advance action of bulk ordering is inflicting the builder as his cash flow is constrained. Delayed delivery is starving the work. The builder is the sufferer either way.

Hence, Right Quality of materials, at the Right Time from the Right Source is a Must. [1]

Planning for things in advance, to avert any possible problem that may creep in, is the main task of logistics support group.

The Logistics operation concerns not only materials but also workforce.

A builder who does construction in two three places, enjoys the comfort of shifting workmen from one site to another, depending on their need for work.

Hence, we can make a simple definition for Construction Logistics as "the management of men and materials for effective achievement of the construction goal". This means that it is not just the planning for materials alone, but also proper allocation and utilization of workforce.

Who are involved in Construction Logistics?

The general perception is that only the Builder and the important officials who are entrusted with the responsibility of decision making are involved in construction logistics. In fact, we must have a larger view and should also include the Engineers, Site in Charge and also the whole lot of workmen in the site.

It does not stop with this. In the field of construction, especially, our work is decided not only by us but also more largely by others. Delayed arrival of sand load will only make the workers indulge in waiting with wages. Brick is another important thing, leave alone concretet.

The Suppliers (at least the critical suppliers of bricks, sand and concrete) and Essential people involved in site management are to be always in the Action Loop.

Even if a small gap occurs in this critical chain, it may lead to avoidable delays.

Continuous co-ordination and follow up with these sources are a must. It is not just to know when the items will arrive. It is only for proper planning of the site in receiving the materials, and keeping ready the work force to get on to the job without time waste. This is essential to get the work going at the speed planned and also to reap the economies of operation.

In large scale construction companies, they have a full fledge "Supply Chain Management System" (SCMS) which keeps the suppliers informed of what is needed and when. The responsibility is transferred to the supplier to ensure timely delivery of the ordered items at the site.

With the computerization, even small sites have the perfect co-ordination with suppliers and subcontractors. In all the six sites visited, the Site in Charge was having Laptop and was continuously monitoring the situation with suppliers and contractors. The workforce was alerted in advance to receive the materials immediately upon arrival at the site and to start the work straightaway.

Even marginal delays in arrival of items, were informed to all the people then and there through mobile. It was such a perfect synchronization of efforts through laptop and cell phone. [2]

Project Engineer/Site in Charge

In one site, the builder himself assumed all the roles and in the other 5 sites, Project Engineer/Site in Charge were there. All these people were provided with laptop and cellphone. They were briefed of their roles and responsibilities. The suppliers and sub-contractors were informed of this.

They were quite at ease in maintaining contacts with each other. The builders were relieved of the frequent follow ups with every one and they devoted their time in capital flow for the smooth functioning.

A smart Project Engineer must be fully aware and be committed to the role he is expected to play at the site and with the others.

He should plan site activities such as the maintenance of the site itself, ensuring continuous supply of power at the work place. This is necessary, as nowadays, almost all the activities are depending upon power supply. If power supply is cut off for a day, the whole work is gone for the day.

Plan internal and external logistics. External logistics can be said as the co-ordination with various suppliers and transporters for receiving right materials at the right time with the right quality as ordered. Internal logistics is more important. The crew should be always kept ready with military alert so that no time lag occurs at all. Many transporters levy demurrage if their vehicle is kept waiting at the site for delay in offload.

What is the big use of applying pressure on external logistics when the items are not immediately pressed into service, upon arrival? Internal logistics is more important and deserves greater attention.

We have the contractual coverage of levying damages on suppliers and transport contractors for avoidable delays taking place whereas, for any delays occurring at the work site, the builder only is to take up all the losses himself. It is necessary that internal logistics is more important over external logistics. [3]

How Internal Logistics assumes Greater Importance?

As we know, construction sector is one where capital flow should be more and continuous. Any delay in money supply will bring the whole project to a jolt. Realisation of money is also slow in construction industry.

Gestation period is long in construction and longer is the period in concluding contract agreement with the prospective buyers. With the arrival of more builders in the field, many struggle to stand up to the pressures, especially, financial burdens.

They have comfort and control over external logistics. They are covered with contractual obligations for the same. The difficult one is internal logistics. The co-ordination with the work force and the sub-contractors of labor is still to be to the required level.

Constant bickering takes place amongst the site personnel themselves leading to either go slow or abandoning the work site.

The Engineers find it difficult to get things executed by elderly masons and their crew – partially due to knowledge

clash and largely ego clash. More than Supply Chain Management, it is Human Resource Management that is only needed at the site.

The very peculiar situation in construction industry is that if workmen show resentment, it boils up to the level of mass leaving, abandoning the site. The work virtually comes to a halt, as construction is still a worker dominated industry.

As such, Internal Logistics should be given greater attention and closer co-ordination for amicable climate and accelerated execution.

Logistics for Storage

Nowadays, all the people follow the system of JIT (Just in Time) technology at the operating sites. Similarly, all the suppliers have also got fully complied with the supply strategies. The peculiar situation is that when all the items come at the time they were needed, the storage facility becomes a big question mark.

No proper Warehousing facility was found in all the sites visited. Though their operations may be in a medium measure, proper facilities must be there for the hassle free performance. A mild shower on cement will make the whole lot useless for construction.

Drying of sand is very essential for construction. Any compromise on this will lead to consequential problems later.

Internal Logistics on Warehousing is a Must.

Work Competency

Work competency is one more thing of internal logistics. We can demand fine quality materials from suppliers. With the advanced technology in material and production process, the quality of materials is not a constraint at all – though, of course, one should be wary of the supplier.

What matters is the application point of view. Majority of construction workforce is uneducated and people of brown than of brain. The Engineer and Site in Charge have greater responsibilities in teaching them on their role of work and guiding them for proper performance.

Undue time spent in the mix of sand, cement and water will lead to quality of the mix a suspect. It is the responsibility of the Project Engineer to give proper 'understandable instructions' to the workmen on their role of work. A miscommunication will prove costly to the builder.

Prescribing educational qualifications will not work, especially for the major lot of workmen, in construction field. All that they need to be done is Training.

The people, especially the labour force, need a thorough training in the jobs to be done by them properly and without causing any damages or loss. The training should be done in such a manner as is welcomed by them.

No Power Point Presentation will evoke any response in them. It is the actual work performance that should be shown to them.

Allowing them to do the way they know and the results of that and how they are expected to do and the benefits of same should be thoroughly taught to them. Knowingly or unknowingly, the mistakes committed by the executing workers only lead to major complications later. Hence, the operating people should be always in the vigilance wing and they should be constantly watched and given advice for corrective action immediately. This should be a continuous process. A rigorous adherence to this will only bring perfection in work.

Having thorough work competency of the workforce is the major internal logistics. [4]

Mix of Logistics for the Expected Results

A smart builder will always think of a perfect blend of both Internal and External Logistics. Any flaw in one will lead to delay or result in under performance of the project. It may lead to losses as well. Hence, proper care is to be shown in the mix and also the "maintenance of the mix".

For external logistics

Always fix on reliable suppliers. Quality should be First and Foremost. Price is only of secondary importance. Nowadays, customers are no longer price sensitive but quality insistent.

Second, the supplier history should be known to the builder quite well. A supplier who slips his promises and lets down the work is only a bad supplier, however good the quality of his products is. It is only going to cause cost penalty to the builder.

Delivery is the essence of the contract. Hence, to protect the builder, the contractual agreement must impose a clause of "Liquidated Damages" which will be binding the supplier for timely deliveries, as delay would attract penalties to him.

Have always an alternative source. Undue banking on single source is very risky.

Advisable to have Rate Contact, say, on Annual Basis. Nowadays, almost, all builders show interest in this as both the supplier and also the builder are safe.

Internal Logistics

With external logistics, we have the cushion and coverage whereas in Internal Logistics, we only have problems and perils. If this is understood in right perspective, handling the situation is always under control.

Ware housing facility is essential. Compare to the work to be executed, full fledge warehousing must be ensured. It is better to start the work after this is fully ensured.

Uninterrupted power supply is a must at the site. Power back up should be ensured.

First, Work force should be thoroughly knowledgeable. Competency is only next. Even small errors, in construction activities lead to large failures.

Continuous Training of the workforce should be ensured.

Periodical Maintenance is a must.

Maintain a Cool and Vibrant workforce at the site.

Never have quarrel with workforce. Threat of mass leaving is there. Even today, construction sector is actually a labour dominated one.

Make use of all communication channels for both internal and external logistics. Any information should be made and got then and there. No ambiguity at any end.

Ensure periodical meetings internally so that knowledge flow is maintained. The news of external logistics should also be shared with the operating crew to enable them show "preparedness". [5],

Conclusion

In one site, it was noticed that the work was suspended for two days due to delayed arrival of bricks. (Bricks are highly demanded one, especially in the season). The workers, were however, paid for the two days, for the sake of retaining them.

They were used for some minor works. This is definitely a wasteful expenditure to the builder.

In one site it was observed that there was an altercation between the site in charge and the transporter as vehicle reported in the morning but was released only late in the evening. There was a confusion in allotting the place for offloading. This is a clear example for lack of internal co-ordination.

In one site, the instructions of Engineer were deviated many times and continuous corrective action was necessitated. This again is a wasteful expenditure, had the workers been attentive to the instructions and execution.

One more thing should also be noted from this. The engineer was not, perhaps, experienced enough in properly communicating his requirements to the workforce. Ultimately, the builder is the person bearing all the brunt of this.

Electrical fire broke out in one site, during the busy hours, due to short circuit. Luckily, immediate action was taken which has averted a big problem. The reason is 'scant attention' was paid in the electrical circuits. In fact, the care and caution they show in physical construction, is not given in electrical issues.

Recommendations

In all the sites visited, external logistics is excellent.

Except in one site, all other sites lacked in internal logistics.

The builder must visit the site every day as it would instill a feeling of commitment in the minds of all the work force.

It is necessary to have internal meetings with all the workmen, on a week end basis. This would give them an "alert" on the succeeding week work schedule and would mentally prepare them for the same.

Site maintenance is very important and the materials as and when reach, should be properly received and kept safely at the appropriate place. This calls for proper warehousing at the work site.

The builder should ensure flow of capital in to the working. Availability of finance should be of topmost priority. Financial constrictions would throw the project out of gear. Hence, this should be given top most attention.

Never bank upon a single source for supplies, however committed they are in delivery and quality. Any unlikely situation at their end will lead to consequential impact on the work site. Hence, it is always advisable to have two trusted suppliers and the business can be planned, wisely.

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