

How to Improve Labour Productivity in Multi Storied Building Construction

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Abstract - India is rapidly surging ahead in industrialization and these results in vast employment opportunities, reasonable salary structure and a good size of disposable income to people. The Government’s thrust on infrastructure development and also their cherished plan of “House for All” result in “like never before sort of “construction activities briskly taking place all over the country. The movement of people from rural areas to urban areas for job opportunities, prohibitive rental cost in the city, the attitude of people to own an apartment first immediately after marriage and the availability of long terms institutional finance for purchase of housing units (for younger generations, the EMI is much lesser than rent) are the main reasons for large scale residential construction activities taking place in the city and suburbs.

Keywords: Labour Productivity, Supply Chain Management, Equipment Planning, Site Management.

I. INTRODUCTION

The Construction Industry, after independence, was seeing only a slow pedalled progress. India is identified as an agricultural economy. The First Five Year Plan laid great importance on agriculture. From the Second Five Year Plan onwards, the need for simultaneous industrial development also was felt and planning activities were pressed on this as well. After the Industrial Policy of 1991, a momentum has set in and we have been witnessing consistent progress in industrial development. This necessitated infrastructure development all around which gave an impetus to Construction Industry. The focus on road development and port development enhanced the growth further.

This remarkable growth attracted foreign investment in India. Multi National Companies were eyeing in on India which ensured a sound and safe platform to their venture. India has been in spectacular economic growth in the past two decades. Agriculturists who were on seasonal employment found construction industry as a viable alternative for livelihood. Mass move on has been taking place from rural to urban areas. From the point of view of the builder, labour is

cheaply available. On the other hand, the need for dwelling units is also being acutely felt. Both these contribute to widespread construction activities taking place, especially in city and outskirts of same.

While the builders are busy constructing commercial complexes and residential units, they are actually in a fix now with heavy financial crunch. The constrictions in availability of institutional finance are accentuating the situation further. In order to be profitable in the field, their emphasis is on labour productivity.

This article delineates on the factors improving labour productivity and the issues impacting the same.

II. RESEARCH METHODOLOGY

Visit to two Sites as indicated. Observation Method, Individual Discussion with Site Engineers and Group Discussions with Operating Personnel were followed.

TABLE I
Contours and Details of the visit

Contours	Details
No. of sites visited	2
No. of floors	3 and 5
Use of Machineries	Normal in the first and significant in the second site
Migrated Labour	In the first site
Female personnel	In reasonable number at the first site
Statutory compliance	Observed in both
Lift & Covered Car Parking	At Both sites
Gym, Function Hall and Swimming Pool	At the second site only

III. RESULTS AND DISCUSSIONS

a) Increasing concern on Labour Productivity

Construction Industry is largely labour oriented. Small builders rely totally on labour personnel as use of equipments

is biting their purse. The rental cost of construction machineries is also quite high and the small builders can hardly afford the same. The established and large builders deploy more of construction machineries and more of labour as well, given the nature of the project. While small builders manage with their own finance, large builders rely upon institutional finance which is known for its terms and conditions and rigid structure. They brave the risk of private money lending in the open market at sky high interest rates. Since the fund availability is instant, they prefer to go in for the same. The present scenario is that there seems to be reluctance in disbursement of institutional finance to Developers due to cash crunch at their own end and the ever raising demand from developers for funds.

In this regard, it is worthwhile noting that “Post the banking system’s freeze on real estate funding due to rising nonperforming assets, NBFCS and HFCS were the sole source of funds for the cash strapped developers. Now, however, NBFCS themselves are struggling and their loan disbursements to developers have slowed down significantly” [1].

The Builders are really in a fix and in a peculiar mix of spiraling materials prices, threatening interest rates from money lenders and raising overhead costs. They now concentrate on taking the Best of Productivity from Labour. They are prepared to invest on, on site labour training, improved site facilities and more softened HR practices. They maintain regular and personal interaction with Labour Contractors (which was only a “once in an year” practice earlier - at the time of contract renewal). From the onslaught of mounting pressures from others, they find it a blessing to have a comfortable breath in this.

Almost, all big builders pay notable attention in improving labour welfare measures at the site in order to have the maximum productivity. They find it easier as well, as they have direct control over this as compared to other aspects which are totally beyond their reach.

b) What is Labour Productivity?

In a sentence, it can be said as “the measureable output for the given input”. While, as a thumb rule, we can have formulas for production, process, manufacture and materials for fixing productivity, it is not so for labour productivity. The Labour Productivity, which largely depends on itself, hinges upon various other input factors such as process of work, quality of materials, work system procedure, site conditions, HR relationship and capital supply for the work progress.

c) Quality of Labour

Both the sites presented a diverging dimension. The first site was with labour of normal quality and in large number. In that, a good amount of migrated labour too was there. It was observed that the work was going rather slow mainly due to poor work ambience. They, although doing the same work, were in the cluster of groups with different mind set up amongst themselves. Mutual distrust was seen.

Work instructions were not properly issued and language barrier too had its role in it. The Site In Charge, a Diploma Holder, was arrogant in nature and there was frequent brawling with the personnel. Abandoning of work took place many times. The Site Engineer had to do patch up work to get the work going. The workers were paid full wages for the week (including the abandonment of work). This has only added the burden to the builder in all aspects. In terms of quantifying the output for the labour cost, it was dismally low.

The main factors attributable for the poor labour productivity are (a) language issue (b) arrogance of the site in charge and mutual distrust. This is an easily manoeuvrable issue.

The language problem should be ironed out first. Recruitment of a Site In charge with more than two languages (mother tongue (which is Tamil), English and fair level of Hindi) would easily find excellent solution to the impasse. With Workers especially, language constraint should not be there. This will only mar the work. Language is the basic thing for establishing mutual confidence and trust. Once the language barrier is overcome, it will automatically ease the functioning style and drive away the ego from the Site in Charge. The site personnel were ready to put in even extra hours to finish the work. The productivity of labour, if labour alone was to be taken into account, was really good. The other issues overshadowed their quality and performance and dragged down the productivity. Certainly, the site personnel should not be blamed at all for the lower productivity. It was a clear case of Human Resources issue. With a tactful HR handling, the productivity of labour could have been taken to the original level and even got excelled. Handling the workers is a unique issue. The Site Engineer or the Project Manager should be an adept in dealing with workforce at the site. He should be a person of vision, commitment and consideration. In this regard, it is worthwhile noting that “work toward a reconciliation that will not leave any scars as lasting reminders of the battle. Avoid any emphasis on who was at fault but point out why the problem got started and how it can be avoided in the future” [2].

d) The sight at the other site

This site was with more of machineries besides more of labour as well. The builder had entered into Labour Contract which they have been using for quite some time. The Contractor undertakes the responsibility of positioning the personnel of different skills as per the requirement of the builder. The contract, being on yearly basis, is comfortable to both ends to make any amendments in the terms and conditions of the contract to mutual benefit. The work was going exactly as per the schedule which is worked out on a weekly basis. All the personnel have been given the work assignment individually and with collective responsibility. In other words, both the individuals as also the supervisor or Site in Charge are accountable for the work being entrusted to them. The condition of the site was very well maintained. Safety regulations were properly ensured. All the workers were to compulsorily wear helmet (which was markedly absent in the first site). On a private chat with the Site Engineer, he made an off the record remark that they too faced the labour productivity problem. Here again, the problem is not attributable to the workers but to the Suppliers.

Considering the vast activities and also as a measure of precaution, the builder is in the habit of keeping two suppliers in the list and was having supplies accordingly. Never did the site suffer the problem of non availability of materials. This really helped them go ahead with their work schedule and complete the activities as scheduled. They too had the problem. This was due to delayed delivery of materials by one of the suppliers. The item was not any special item and is only a product of standard production line. The delivery took place at the fag end of the day – transporter's devil. By the time unloading was completed from the truck, the day's working hours was over. The workers were persuaded to stay back, with an assurance of double wages, in order to start the work. While a major chunk declined, a portion of them had agreed. It resulted in a double distress. One day work was lost (by the people who refused to stay back) and for the others, double payment was to be given. Ultimately, both the losses were to be absorbed only by the Builder.

This is an administration issue. Active follow up and monitoring would have averted this avoidable delay. From the point of view of the Transporter, what matters is the date of delivery whereas to the Builder, what merits is the time of delivery. The combined labour productivity for the week was strained by this. The Builder was extremely thoughtful in having two suppliers in his list (to avoid any possible delays that may occur) and in spite of balanced off take, delay took place assaulting the work schedule and curtailing labour productivity. Had the Project Manager or Site Engineer been

more careful, they could have certainly got the items delivered in the morning itself – with the excellent network facilities available today, tracing the items en route is not a task at all. This proves that the people at the lower rung are always committed and whereas those at the higher level lag behind.

The blame should be made on the Site Engineer and Project Manager who are both individually and collectively responsible for this – though technically the transporter could be booked for the delay.

Having excellent workforce alone will not ensure productivity. The materials to be fed in to the work should also be available for the start of work, or else, it will only lead to low or no productivity but with penalty of payment, to the builder. It is pertinent here to note that "Equipment surrounds the Performer, tools are used in daily work. Without appropriate and available equipment and tools, performers cannot work completely" [3].

e) Keep an Eye on the Quality of Site workers

Almost, all the major builders have Labour Contract. They have very limited number of personnel in their permanent payroll. The main reason is that they do not want to have the bother of having so many people in their payroll as their business itself is not permanent and depending on the projects they undertake.

While they have the chances of undertaking so many projects at a time, at most of the times, they are scouting for the sites to start the work and are till then virtually jobless. When this is the order of their business, no builder would like to have so many people at his end for wasteful wages. As such, they only prefer to have hired personnel as and when they are needed and in the number that is required, given the size of the project. This also gives them another important benefit. They have the option of indicating not only the number of personnel required but also the quality requirements of the same. The qualification, work experience and other criteria are specified to the labour contractor and supply of personnel is done exactly in relation to the requirement of the builder. The construction activities being labour oriented, laborious and arduous, a wise builder would always insist on availability of young men at the site as they would willingly do any assignment cheerfully.

Some of the important benefits of acquiring youngsters for work at the site are:

- They, being young, are always willing to take any additional work load without grumbling

- Their agility enables them to catch up with any taxing circumstances quickly and perfectly
- No gossiping or unwanted and unproductive issues with them
- Handling youngsters is easier compared to the old ones
- Under demanding circumstances, they willingly come forward to stay back and complete the work (though they are paid for the same)
- They exhibit and maintain cheerful work surrounding
- They respect elders and are always willing to learn from them
- They do not have ego as opposed to elders
- It was noticed with the migrated youngsters that they were willing to stay at the site continuously even for three to four months without going to their native place, even once. Perhaps, such was their commitment level.

In this context, it is apt to note that “young workers appreciate some facets of the work place. Young workers bring some special strengths to the work place. They are quick learners, adaptable and creative and independent thinkers”.

f) Will Supply Chain Management (SCM) improve labour productivity?

The answer is only partially Yes. The continuous stream of materials to the site will definitely ensure labour productivity at the “up” always – if material alone is the sole consideration. Nevertheless, in the interest of the sustained progress in construction, for the sake of timely completion, the builder should, better be, in Rate Contract with the Suppliers.

This specifies the annual offtake of materials from the given supplier for the year under review. The prices are frozen for the contract period. Any escalation is to be absorbed by the supplier only. This concept is gaining momentum now as both the supplier and also the builder are assured of business and supplies. The supplier is in a better position to plan his procurement activities from his vendors and sub suppliers to get fully braced up for honouring the commitment to the builder. The same way, the builder too stands to gain by way of assured and uninterrupted delivery throughout the contractual period. He is also in a comfortable position to plan his financial commitments to the supplier. The present scenario is that even small builders evince interest in having Supply Chain Management.

Some of the large scale builders practise JIT in their business with suppliers. They are unwilling to maintain stocks at their end which also compel on payment as per terms (the payment terms differ from one week to four weeks depending

on order terms – under JIT or under normal course) of delivery entered in to with the supplier. Many builders have more than two suppliers for the given material so that they can face any exigency without stress. It is to be emphasised again that the site personnel are totally committed in their assigned activity and undisturbed availability of materials will certainly contribute to their high productivity. Supply Chain Management will certainly add to the labour productivity. The measureable output is determined only by the inputs. This is the main and major input in determining the labour productivity.

g) More of Machineries and less of Labour is always Safer

Considering the large scale activities of construction taking place, with more attention in luxury homes, all the builders are in the process of pressing in construction machineries at the site. Construction Industry is normally a labour intensive one. The demand being on the higher side for flats in multi storied buildings, there has been a significant improvement in this sector that large scale builders, in the construction of several floors, bring in extensive use of machineries. The situation necessitates this, of course. It is always advisable to use more of machineries as far as possible. This also leads to enhancing the labour productivity. The labour efforts coupled with machineries bring in remarkable results.

Care should be taken to ensure that there should be perfect mix of men and machine in the way that is required so that the work is wonderfully completed. Site personnel waiting for arrival of machineries or machines kept idle for want of required labour, will only result in poor labour productivity.

The big builders have entered into contract with construction machinery suppliers. It is to be noted that the cost of such machineries being prohibitive, not many builders own these but would only prefer to have the same on rental basis. Another thing to be noted is that these machineries are always in great demand (more number of people are yet to enter into this rental business) and sufficient advance booking is required for the same. The stand of machinery suppliers is that if the machines are cancelled against the booking made, advance given by the builders would be forfeited. Similarly, after renting the machines at the site, if they were not used for want of, whatever be the reasons, the builder has to pay the full rental charges to the machinery suppliers. Even established builders are finding it difficult to cope with the terms and conditions of the machinery suppliers, though, they had to yield in to them.

This also calls for necessary training to the site personnel to work with machines without getting into accidents and in

the way they are to be operated. It is the considered opinion of the established builders that while extensive use of machines is only profitable, it is all the more necessary that both the operating staff and the working people at the site are to be sufficiently given the training on the same.

More than contributing to or otherwise of labour productivity, in the event of any untoward incidents taking place with machineries, it is too dangerous and will cost the heaven to the builder. The safety aspects at the site should be perfectly complied with.

In this regard, it is quite relevant to note that “equipment helps to produce an output at an accelerated speed in a limited time. Equipment saves manpower which is gradually becoming costlier and more demanding. Equipment adds a sense of urgency and improves productivity, quality and safety.

h) Prefabricated Products

There is a considerable improvement in the use of prefabricated products in the construction field now. This is more prominently seen in the construction of multi storied buildings. Traditionally, majority of the things were made at the site itself depending on the need. This has moved forward to procurement of only essential items such as Cement and Bricks and of course steel rods. Concrete and Carpentry were always done at the site. In the recent years, builders slowly moved away from site mixed concrete to ready mixed concrete. Even small builders adopt this practice. Numbers of manufacturers are in the market who ensure timely supplies at the site. Prefabricated beams are easily available in the market now. Since they are manufactured at the factory passing through all quality standards and undergoing rigorous production process, the strength is far superior to that of site made ones. They show excellent looks similar to that of marble.

In large scale constructions, making these at the site is not only laborious but also a time consuming one. Space constraint is yet another thing. Carpentry at the site is fast waning. Almost all the builders outsource the doors and windows and do just fixing at the apartments. The fact is that the demand for carpenters is on the higher side now as a majority of them have switched over to other professions. Wooden windows are replaced by Aluminum ones due to cost benefits. Fixing activities are also easier and bother free. In fact some builders, in order to show their superiority over others, make a “Glib Ad” that carpentry is full of wood only. Another important point to be noted is that carpentry is a tiresome work and the people get fatigue very fast. Measuring the productivity of Carpenters is really a difficult one.

Certainly, the productivity is remarkable compared to site made and outsourced. The advantages of prefabricated products can be succinctly expressed as under.

- Benefits of cost
- Quality standards are excellent
- Can be obtained exactly as per the requirement
- Wastage is fully eliminated
- Site condition is greatly maintained
- Labour productivity is substantially high
- Space is freely used for other activities. Space management is remarkable.
- Planning of other activities is easy as supply is ensured at short notice. Prefabricated products are gaining currency in construction field now.

In this context, it is ideal to note that “most concrete supply companies have a wealth of experience about how their materials perform in a variety of applications. This experience, accompanied with reliable test data on the relationship between strength and water cementitious materials ratio is the most dependable method for selecting mix proportions” [6].

i) Have Weekly Meetings

In large construction sites, the Project Managers would organise Weekly Meetings through the Site Engineer/Site In Charge. The responsibility for conducting such meetings is fixed with the Site Engineer who gets it done by the Site In Charge. In this way, both these people are made accountable for arranging the meetings.

While site personnel are prepared to put in any amount of work and are also willing to stay back to complete the “day’s work” cheerfully, it is only the responsibility of the Site Engineer to have it thoroughly channelized to accomplish the task. It was understood that one of the important reasons determining labour productivity is “crystal clear communication”.

A miscommunication or ambiguous communication will only lead to complications at the end of the work. Any rework is a waste and will erode the labour productivity. Besides, it is throwing additional cash burden on the builder. It was further noticed that labourers were not showing the same enthusiasm which was given for the first time, while redoing the work. A sort of exasperation was observed whenever they were asked to redo a given work. Goes without saying that their productivity would go dismally poor, under such circumstances. In clear terms, site workers need (a) thorough work instructions (b) guidance and advice, whenever needed to be given by the Site Engineer (c) rework should be avoided (d) they should not be kept waiting for materials or

machineries. They also need frequent meetings with their Superiors to vent out their feelings and work ideas (in many cases, the Site Engineers are repugnant to these).

It should be the topmost commitment of the Project Manager to have Weekly Meetings and if not, at least once in a fortnight with all the representatives of the site personnel, builder, financier and all other stake holders. The meeting should be brief, to the point and result in solutions (rather than fault finding) in the interest of all the stake holders. Conducting a meeting successfully calls for work knowledge, HR skills, compassion, consideration and genuine interest.

In this regard, it is quite relevant to note that “in a good meeting, you can solve problems, spread information, make parties come together and develop new ideas. A poor meeting is a waste of time, boring for those present and only makes things worse” [7].

IV. CONCLUSION

Labour is an indispensable one in construction sites. Small sites have more of labour and big sites have more of both labour and machineries. In terms of stepping up labour productivity, machineries do play a vital role. Stop of work for even a day will lead to chain of delays in the overall completion of the project. Site personnel are always committed to their work. Language is an issue, particularly with migrated labour. Many problems at the site can easily be solved with commitment and consideration by Site Engineers/Project Managers.

V. RECOMMENDATIONS

Treat the site personnel with consideration. Never do anything affecting their self respect. Labourers are always committed to their work and more committed in their self esteem. Anything wounding their feelings will even lead to stoppage of work. They do not mind to quit the site too. As they are always in great demand, Site Engineers should show tactful handling in dealing with them.

Critical materials should always be in buffer stock (even though JIT is there). These are, but not limited to, Sand, Brick and Cement. Ready Mixed Concrete is ideal for large scale constructions. Supply Chain Management is a Must.

The Vendors should be made to comply with the requirements of the Builder. As far as possible, better give double wages and get the work finished the same day itself, rather than leaving it half way through, to be completed the next day.

It is better to have rate contract with machinery suppliers as well. Closer interaction with all working personnel is necessary as are weekly meetings.

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Citation of this article:

S.Radhakrishnan, Dr.K.G.Selvan, "How to improve Labour Productivity in Multi Storied Building Construction", *International Research Journal of Innovations in Engineering and Technology (IRJIET)*, Volume 2, Issue 10, pp 7-13, December 2018.
