

Factors Affecting Labour Productivity in the Brick Industry-A Case Study

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Abstract--The brick kilns that supply bricks to the country's booming construction sector - used for buildings at present nearly 100000 brick kilns provide employment to 10 million workers. Annually 150-200 billion bricks are produced. To improve the productivity, more focus is required on why the labour productivity is less in brick industry. For the same reason study is carried out at Jalgaon District, of state Maharashtra. For this study, two different kilns are considered. For data collection questionnaire is prepared based on the survey done. To analyse the data collected, Delphi Method is used. During the work it was observed that some factors affect the productivity of the labours. The data was collected in two rounds. The time interval between those two rounds is 45 days. This study deals with the results obtained after the data analysis and shows how the productivity is fluctuate in brick industry.

Key words: Labour, Brick industry.

INTRODUCTION

The Indian construction industry contributes to about 10 % of the Gross Domestic Product (GDP), registering an annual growth of about 9 %. The brick manufacturing sector in India is mostly located in the rural area and the labours working there are mostly illiterate. As brick is one of the basic material required for the construction sector. The growth of this sector is having tremendous opportunity to grow. India is the second largest country having 11% share in the world brick production after china (54%). The Real Estate segment contributes around 24% to the construction GDP of India while Infrastructure segment contributes around 76%. According to the eleventh five year plan nearly 15% people are having Housing Shortage. So this required a huge amount of bricks as a raw material for construction.

Workers in the brick industry are subjected to extreme working conditions and poor remuneration. Currently in India, brick manufacturing is a labour-intensive sector, with crude techniques causing considerable worker drudgery. They are also exposed to high concentrations of Respirable Suspended Particulate Matter (RSPM), during monitoring and regulating the fire, as the furnace chamber is covered with ash (ash acts as insulator). As well as during the manual mixing of fly ash and clay and due to the

open dumping and storage of fly ash. Transportation of green and red bricks is done by a head load of 9 to 12 kgs causing health problems, especially in women. Even though the brick workers are exposed to these occupational hazards, coverage under any sort of insurance or medical facilities is virtually unheard of.

In the brick sector, labour is brought in through a contractor (from distant places). Since they are not on the payrolls of the kiln owner, they are not covered under the current labour laws, e.g. Minimum Wages Act. The work force is paid on basis of quantum of work and against completion of certain tasks such as molding of 1000 bricks, transportation of 1000 green bricks etc. The seasonal nature of brick production generates employment for a limited period of six - seven months in a year. Majority of the workforce has no option, but to engage as labours for the rest of the year.

The nature of the work requires skilled labour especially for moulding and firing. There is large scale migration towards the major brick production clusters every season due to this. These tasks are traditionally handed down from father to son in the communities. The last few years have seen a labour shortage as the newer generation does not want to be associated with the brick sector any longer. A phenomenon observed in certain clusters due to this shortage is the hoodwinking of entrepreneurs by labour by promising their services to multiple owners, taking advances and not turning up. Labour rates have also gone up driving down margins for kiln owners.

The different activities performed by the labours in the manufacturing the bricks are:-1) Digging Clay 2)Crushing Clay 3)Wetting Clay 4) Mixing Clay 5)Loading Wheelbarrow,6) Pushing Wheelbarrow 7)Shaping Raw Bricks 8)Arranging Bricks to Dry 9)Loading bricks on to the truck 10)Loading Bricks on to the Cycle. The Delphi Method is used because, for data collection the questionnaire contains the work related points and it is convenient for the labours to mark for the appropriate rank for both the rounds.

BACKGROUND OF THE METHOD

The Delphi method is a set of procedure for formulating a group judgment for subject matter where precise information is lacking. In general the process consist of obtaining individual answers to pre formulated questions either by questionnaire or other formal communication technique interating the questionnaire one or more times where the information feedback between the rounds can be carefully handled. The Delphi method is developed by Olaf Helmer, Nicholas Rescher, Norman Dalkey, and others at Research And Development Corporation in US Arm Forces. The Delphi method was designed to encourage a true debate, independent of personalities. Secrecy was required in the sense that no one knew who else was participating. Further, to eliminate the force of public speaking These aspects: secrecy and feedback, represent the two irreducible elements of the Delphi method. Some modern applications of Delphi are quantitative simulation models & In-depth interviews. Delphi is a powerful

technique when used to seek answers to appropriate questions. But a weakness of the Delphi method is the time that it takes. A single round can easily require three weeks; a three-round Delphi is at least a three- to four-month affair, including preparation and analysis time. Delphi may be characterized as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem.

WORKING WITH DELPHI METHOD

Here in the Delphi method, two rounds are considered. The questionnaire is filled from 20 labours which include 10 male & 10 female. This study focused on nine factors which affects the labour productivity in brick Industry viz. labour force skills, workplace, employee motivation, technology uptake and innovativeness, incentives, labour welfare, absenteeism, personal and psychological factors.

back to us. In the analysis the factors which have a high impact value has been chosen and its frequency has been listed. The factors greater than 50% are considered for further study. Based on the analysis some recommendations are provided to the contractor & the labours for implementation which affect the productivity.

Round 2:

After 45 days again data was collected and analyze (Fig.3 to fig.19).

COMPARISON OF THE RESULT OBTAINED:



Fig 1 Conceptual Model to find the factors affecting Productivity in construction industry

Round 1:

For round one, the questionnaire is distributed to 20 labours. After distribution of the questionnaire the details of the points mentioned in the questionnaire was explained to the labours. After it they filled the questionnaire and revert

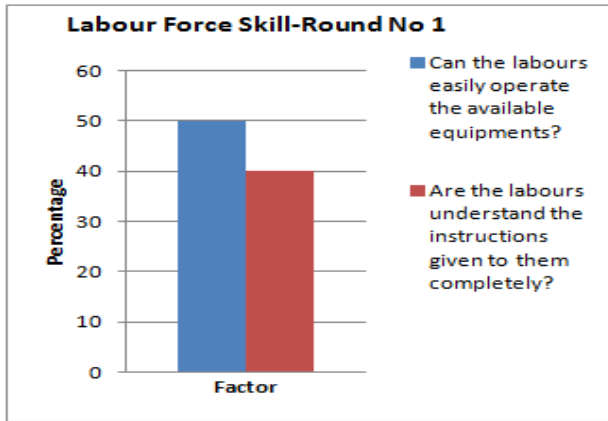


Fig 2. labour force skill

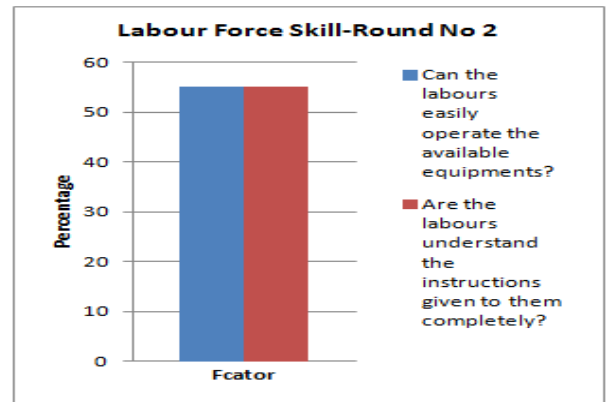


Fig 3 labour force skill

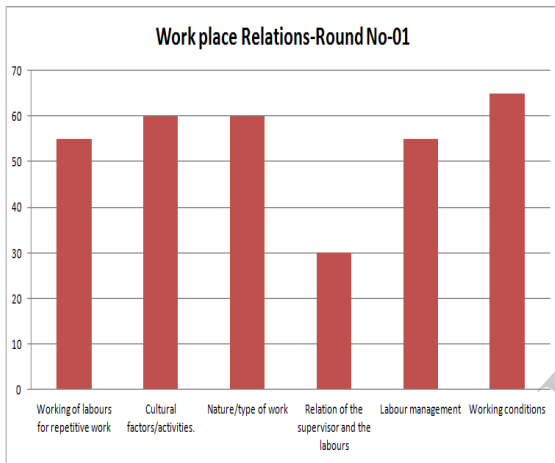


Fig 4. of Work Place Relations

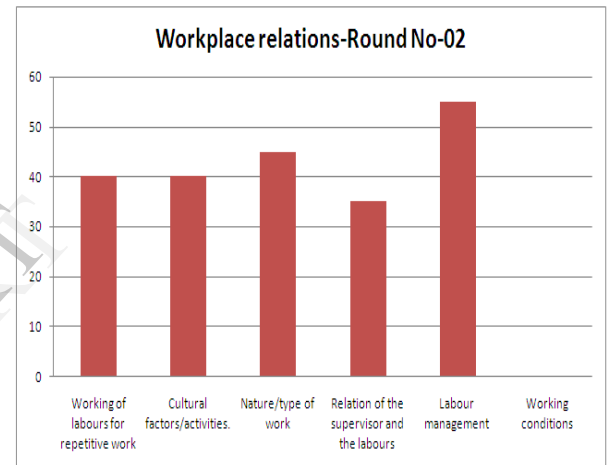


Fig 5 Work Place Relations

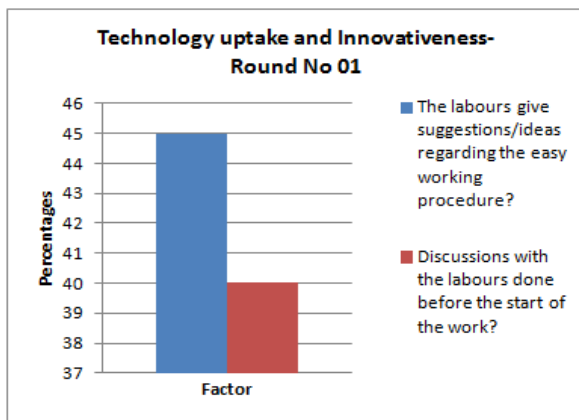


Fig 6. Technology Uptake and Innovativeness

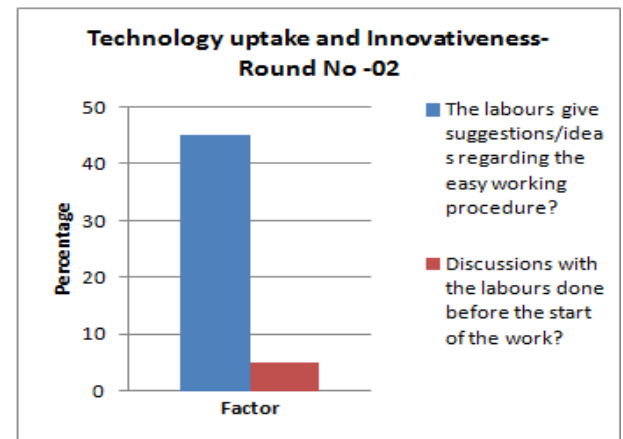


Fig 7. Technology Uptake and Innovativeness

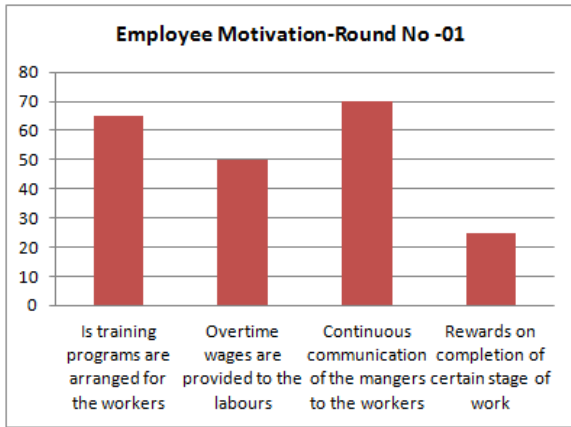


Fig 8. Employee Motivation

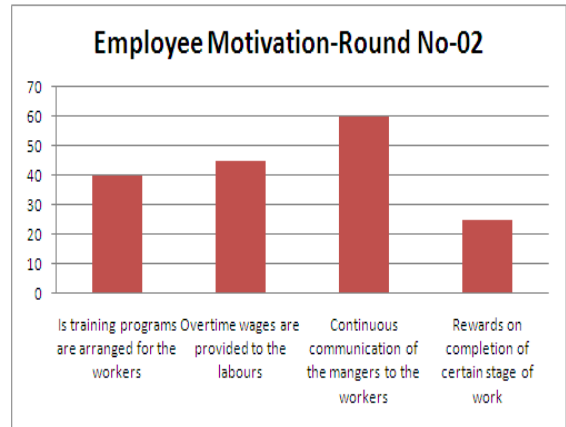


Fig 9. Employee Motivation

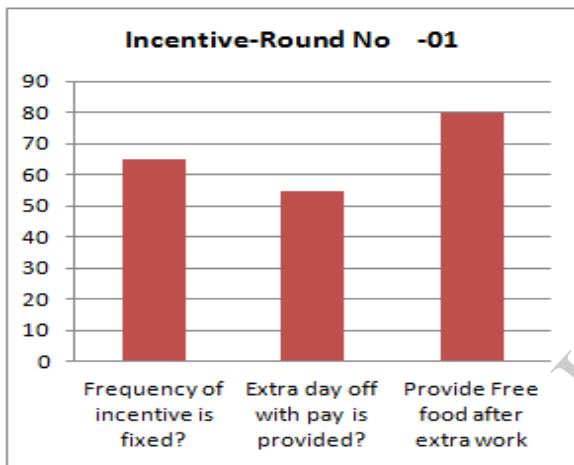


Fig 10. Incentives

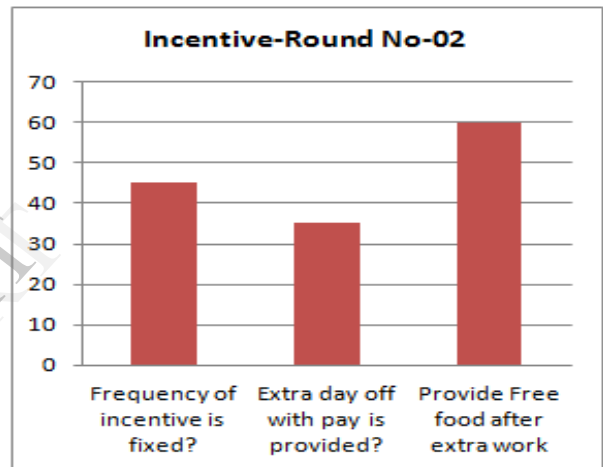


Fig 11. Incentives

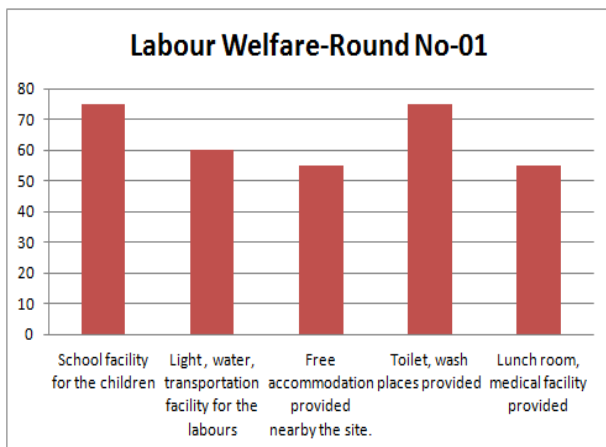


Fig 12. Labour Welfare

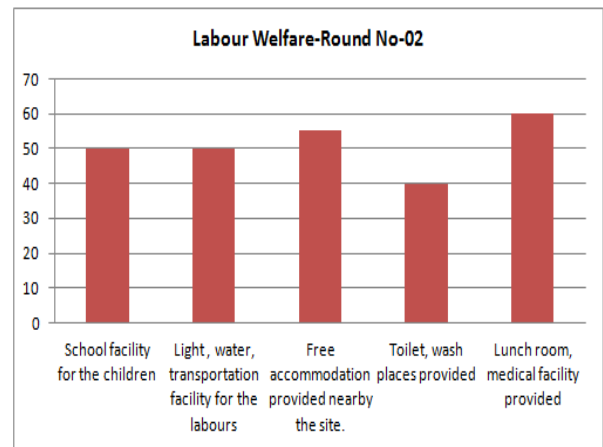


Fig 13. Labour Welfare

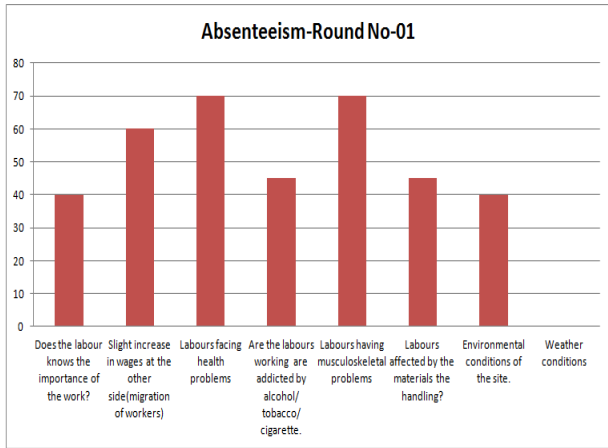


Fig 14. Absenteeism

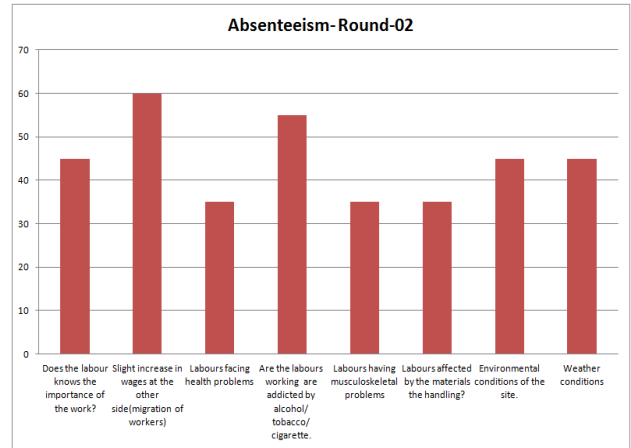


Fig 15 Absenteeism

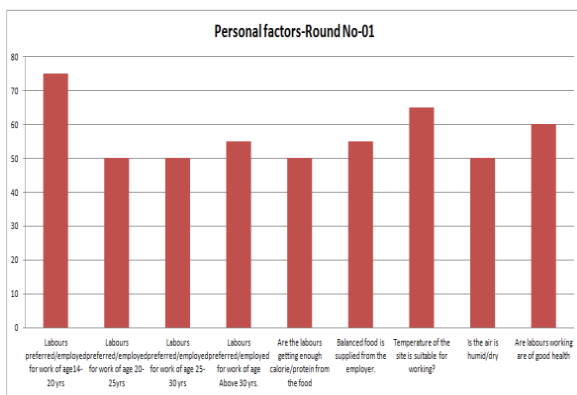


Fig 16 Personal Factor

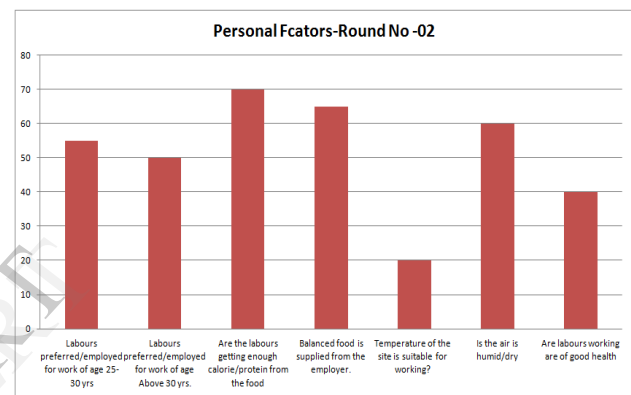


Fig 17 . Personal Factor

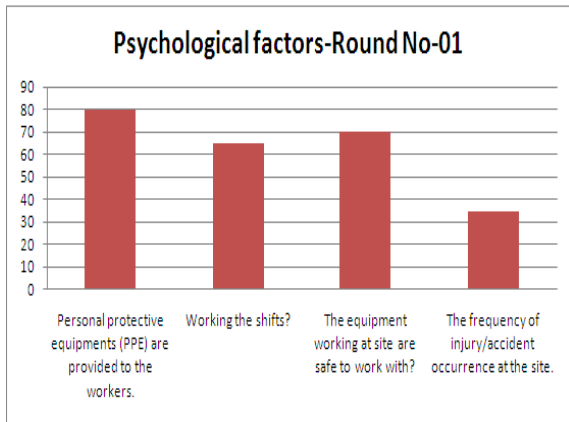


Fig 18 . Psychological factors

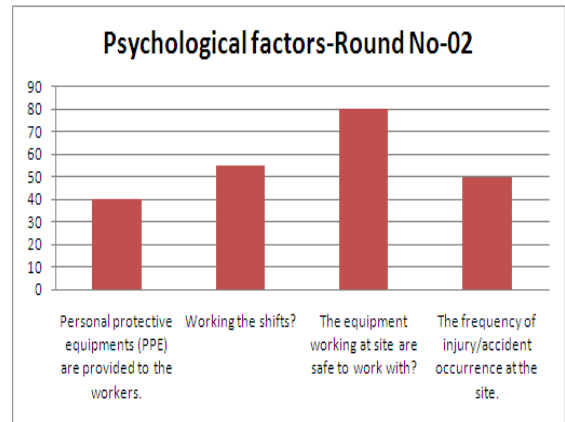


Fig 19 . Psychological factors

and for the second factor, "Are the labours understand the instructions given to them completely?" it was increased to from 40% to 55% respectively (fig 2 &3).

DISCUSSION

1. During both the rounds for Labour force Skill, somewhat improvement in both the factors was seen. For the first factor, "labours can easily operate the available equipments?" The percentage is increased from 50 to 55%

2. Considerable variation is observed for all the factors considered under "workplace relations". As different facilities are provided to the labours under labour Welfare,

all the labours are satisfied for “working condition”.(Fig 4&5)

3.For the factor, “Technology uptake and Innovativeness” the discussion with labours was carried out before start of the work. This reduced percentage affecting the productivity from 40% to 5%. (Fig 6&7).

4.Considerable decrease in the percentage was observed for the factor, “training required to the labours before start of any work”. from 60 to 40%.(Fig 8&9).

5.By providing free food, after extra work, the percentages affecting the productivity was reduced from 80% to 60%. (Fig 10&11).

6.By providing, school facility to the children, the percentage affecting productivity was reduce to 50% from 75%.similarly by providing toilet and wash places, the percentage affecting productivity was reduce to 40% from 75%.(Fig 12&13).

7.Most of the labours working in the brick industry face health problems. Before study 70% of the labours have some musculoskeletal problem. But the same is reduced to 35%. This shows the improvement in the productivity. But the factor “weather conditions” affect the productivity by 45%.(Fig 14&15).

8.Consideration variation was observed for all the sub factors under “personal factors”. The reduction from 65% to 20% was observed for the factor, “Temperature of the site is suitable for working?”. (Fig 16&17).

9.After providing PPE to the labours, results in improving the productivity. The percentage is reduced to 40% from 80%. It was observed that the labours working at that brick kiln are not willing to work in shift. (Fig 18&19).

CONCLUSION

On the basis of first analysis some recommendations are provided to the labours and improvement was observed after 45 days and concluded that :

1.The impact of labour force skill on productivity was 55% averagely. It shows that the labours must be skillful and for that they must be educated.

2.Workplace relations play very important role on modulating the productivity.

3.Technology uptake and innovations is a key factor affecting the productivity.

4.Averagely workplace relation affect the productivity by 54.16% during round 01. But during round no 02 the same was reduced to 35.83%. Thus training helps to change the acute effect into begin. The reduction in the percentage shows improvement.

5.For labour welfare, the percentage factor affecting was 64% which is reduced to 51%.

6.In personal factors, labours preferred to work, of age 14 to 20 years was found as major problems affecting the productivity.

7. The importance of PPE was observed after training. Briefly it was concluded that workers problems can be minimized by training. Due to inter correlations of these factors it is concluded that all the factors considered under this study are coerelated with each other.Reducing one factor helps to reduce other. As the health problem, MSD problems, weather conditions, repetition of work, number of skilled labours, psychological factors are reduced by training. The number of absent workers per day is reduced and it helps to improve the productivity.

IMAGES FROM THE SITE



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