

EFFECT OF BASIC MOTIVATIONAL FACTORS ON CONSTRUCTION WORKFORCE PRODUCTIVITY IN PAKISTAN

Raza Ali Khan

(Associate Professor, Department of Civil Engineering, NED University of Engg. & Technology)

rakhan@neduet.edu.pk

Muhammad Umer

(Lecturer, Department of Urban & Infrastructure Engineering, NED University of Engg. & Technology)

emumer@neduet.edu.pk

Saqib Mansoor Khan

(MS Student, Department of Civil Engineering, NED University of Engg. & Technology)

saqibmansoorkhan@hotmail.com

Abstract

Human resource management is of strategic importance when it comes to industries that are labor intensive like construction industry. The effective management of human resource is the key towards achieving the higher construction workforce productivity thus accomplishing the construction projects within their predefined limits. The bond between motivation and productivity is widely accepted and of high significance as well. The relationship between motivation and productivity can be summarized as that productivity is directly linked to motivation, and motivation is, in turn, dependent on productivity. Suitable motivation of labor can be hypothesized as a key contributor to maximizing workers' productivity Kazaz et al (2008). Workers need motivation just as equipments need fuel and operators. Motivation is a process which activates productivity. In order to effectively manage the human resources and to make sure that workforce is productive enough; it is necessary to understand those factors which have edge over others for motivating the construction workforce. In this study, the potential of organizational and economic factors will be studied for motivating employees. Data will be collected by the questionnaire. Relative importance index technique will be used to analyze the data. Results showed that economic factors have an edge over organizational factors when it comes to motivate the construction workforce.

Key words: Human Resource Management, Construction Workforce, Motivation, Productivity

1. Introduction

There were several studies which explored the relationship between motivational factors and construction workforce productivity around the globe but there was a scarcity of this work in the local environment of Pakistan. The construction industry plays an important role in the development of the economy of the country. Construction industry is an area influenced by many different factors such as labor, material, equipment and construction methods etc. Among these factors, human resources come first without which, other resources would not be utilized or transformed into productive use. Any improvement in labor productivity would contribute a great deal to the improvement of the overall productivity as identified by Hashim (1995). The motivation concept is generally defined as a composition of powers and mechanisms which help to direct human behavior in a desired manner, or with a more specific context it is described as the all convincing and encouraging actions which help workers fulfill their tasks willingly and to come closer to project objectives. Motivation of the labor force is of paramount importance because the quality of human performance at the workplace depends largely upon motivation. That is, higher motivation brings higher productivity which is suggested by Kazaz et al (2008). According to most researchers there is a positive relationship between motivation and productivity. This means that when motivation increases, a rise in productivity is also expected. This reflects the belief that an increased motivation level causes an increase in productivity. Achieving the results demands that an adequate quality of inputs is provided in this first place and improved construction workforce productivity means a better input and this it will help contractors to be more competent and profitable whilst executing their jobs.

2. Literature Review

In developing countries, a great portion of the construction labor also comes from agricultural sector, and they work seasonally in a project. The productivity of this type of workers whose abilities and socio-cultural backgrounds vary in a wide spectrum is naturally affected by many factors. Poor productivity of craftsmen was quoted as one of the most daunting human resource problem in developing countries. Olomolaiye et al (1987) and Kaming et al (1997). According to Thieblot (2002), the reason for this situation is that the industry has rarely been able to have what would be considered normal labour relations and policies. Furthermore, managers may not always consider the factors that can affect the productivity of manpower. The productivity risk factor has also a strong impact on the project duration. Namely, poor labour productivity probably causes time overruns in construction projects Kazaz and Ulubeyli (2004). The smallest action that is positive or negative can have an effect on workers' attitude and motivation. The motivation, especially monetary rather than moral, has proven its influence on the productivity of workers, and the methods of motivating personnel to promote productivity have been demonstrated by Khan (1993) through applications of different human relations theories of motivation. Research on the relationship between motivation and productivity in the construction industry has been conducted over the last 40 years. There are three most commonly used theories in this research area.

At the broadest level, work motivation is a psychological process that influences how personal effort and resources are allocated to actions pertaining to work, including the direction, intensity, and persistence of these actions. Motivation refers to the individual forces that account for the direction, level, and persistence of a person's effort expended at work. Direction refers to an individual's choice when presented with a number of possible alternatives. Level refers to the amount of effort a person puts forth. Persistence refers to the length of time a person sticks with a given action which is elaborated by John R. Schermerhorn, et al (2001). The basic requirements of a construction worker motivation program should be:

- A competent administrator to organize, plan, control and carry out the program
- Activities that are fully understood and acceptable to all participants

- Financial commitment by the owners and a willingness to recognize workers. The Business Roundtable (1989).

Construction labor can be motivated. This is important because dwindling productivity is a major problem confronting construction today. Productivity has decreased every year for the past decade, in part because of increasing design complexity, more rigorous federal and state regulations, and socio-economic changes affecting the work force. The organization should not be so rigid as to prohibit communication that may skip intermediate links in the chain. Supervisors must be allowed, through personal contact, to help create attitudes among the construction workers that will make them want to become members of a construction team and not just nameless numbers. The Business Roundtable (1989)

Effective first-level supervision by foremen is generally considered to be prerequisite to efficient performance by any work group. They control, influence or have the greatest impact on most of the ingredients of productivity. When the potential for productivity improvement is examined, the need for more highly motivated, cost conscious and responsible foremen crops up repeatedly. The Business Roundtable (1989).

Many items contribute to falling productivity, i.e., ineffective management and supervision that leaves material unavailable when it is needed, incompetence in staff personnel, delays in transmitting engineering information, communication breakdowns, rework, the unavailability of tools and equipment, lack of recognition and little participation in decision making by foremen and their crews. The Business Roundtable (1989)

A study that was conducted in the Pakistani construction industry by Ali Khan, Raza et al. (2011) explored the effectiveness of different worker motivational techniques on construction project safety, productivity and quality performance. The study was aimed at:

1. Identification of worker motivational techniques that forms the basis for improved construction project safety, productivity and quality performance.
2. Proposal of a set of techniques for validation and implementation to achieve optimum performance in the stated areas.

The study found the top ten motivational techniques which are mostly practiced in the Pakistani construction sector and can also be used for achieving improved performance on the above stated areas. Those motivational techniques are as follows:

1. A letter of praise from a customer shared directly with the employee who delivered the service.
2. Provide training to employees. Offer them opportunities to improve themselves.
3. Involve employees in decisions that directly affect them.
4. Special Wage increase should be given to employees who do their jobs well.
5. Provide better job descriptions so that employees will know exactly what is expected of them.
6. Individual incentive bonuses based upon values that need to be reinforced.
7. Having good equipment to work with. Good working conditions.
8. Being trustworthy and respectable.
9. Job security
10. Feedback should be constructive and timely.

2.1 Problem

Lack of awareness regarding the factors that are more crucial than others for motivating the employees is a problem. Accompanied with this point is the importance of these factors in motivating the employees in order to improve the construction workforce study is also a matter of concern. Unavailability of the data which represent understanding regarding the economic and the

organizational factors for motivating construction workforce in the construction industry of Pakistan is a specific problem as far as this research study is concerned.

2.2 Solution

It was required to carefully develop the questionnaire which covered all the possible factors under the economic and organizational heads for motivating the employees in order to have a more productive construction workforce. This questionnaire was then distributed in the local construction industry to gather the relevant primary data. After the acquiring the responses, they were analyzed and conclusion with critical discussions were drawn.

3. Research Gap

Pakistan is a developing country, where construction workforce is available at very cheap rate. And this fact has affected the level of efforts which must be done by the upper management in order to meet the expectations of the workforce to keep them motivated in order to achieve good productivity rates. The top level management of organizations that are operating in the Pakistani construction industry is reluctant to acquire knowledge of those factors which keep the workforce motivated. There can be many factors which can motivate employees but in this research study only economic and organizational factors are studied.

3.1 Objectives of the Study

The study is undertaken keeping the following objectives in sight.

- To study the effect of organizational factors (motivational) on construction workforce productivity in Pakistan.
- To study the effect of economic factors (motivational) on construction workforce productivity in Pakistan.

3.2 Research Questions

To achieve the objectives the following research questions are set for this study.

- What are the effects of organizational motivational factors on construction workforce productivity in Pakistan?
- What are the effects of economic motivational factors on construction workforce productivity in Pakistan?
- To identify such factors (among all) those have more potential to affect the construction workforce productivity in Pakistani construction industry.

4. Research Methodology

The focus of this research is to determine the effect of organizational and economic motivational factors on the construction workforce productivity in Pakistan. For this purpose a questionnaire has been developed with the help of the literature review. The questionnaire was composed of two parts. In the first part, the experience in years, skill level (skilled, semi skilled, or unskilled) and nature of most commonly undertaken projects was asked from the respondents. As the audience ranges from supervisor to unskilled labor, therefore face to face interviews were taken from the targeted audience. In the second part, respondents were asked to rate the effect and significance of all factors on a Likert Scale of 1 to 5, where 1 represented “no effect” and “not significant” respectively and 5 represented “very high effect” and “extremely significant” respectively. It is important to understand that effect represented the change which can be achieved in the behavior of workforce as a result or consequence

of an action (i.e. applying that specific factor to modify motivation). Whereas significance is the value of that specific factor if they were given chance to apply those factors to increase motivation among workforce followed by improvement in construction productivity. Both organizational and economic factors were subdivided into twelve (12) factors. At the end of the questionnaire an open ended question was also asked which was aimed to determine the comments of the respondents. A total of ten (10) project sites were selected and responses were collected from thirty (30) respondents from those sites. After the collection of the data it was analyzed with the help of Relative Importance Index (RII) technique for effectiveness of each motivational factor.

$$RII = \frac{\sum \mu}{A \times N} \quad (1)$$

Where, μ is weighting given to each factor by respondents;

A is the highest weight available to rate the factor (i.e. 5 in this research study)

N is the total number of respondents (40 in this research study)

Mean Influence Level (MIL) technique for analyzing significance is used. The mean influence level for each motivational factor was calculated using the following formula.

$$MIL_j = \sum_{k=1}^5 \frac{R_k \times NR_{jk}}{TR_j} \quad (2)$$

Where,

MIL_j = Mean Influence Level of Aspect j, R_k = Rating point (from 1 to 5)

NR_{jk} = Number of responses for rating point k opted for aspect j

TR_j = Total number of responses for aspect j

5. Discussion and Analysis

Construction sector and construction activities are considered to be one of the major sources of economic growth, development and economic activities. Construction and engineering services industry play an important role in the economic growth and social development of the country. It can be regarded as a mechanism of generating the employment and offering job opportunities to millions of unskilled, semi-skilled and skilled work force. It also plays a key role in generating income in both formal and informal sector. It supplements the foreign exchange earnings derived from trade in construction material and engineering services. In the succeeding section an analysis of the collected data is being presented with respect to two considered heads: Organizational Motivational Factors (O.M.F) and Economic Motivational Factors (E.M.F).

5.1 Discussion and Analysis of Economic Factors

Among the two motivational factor groups affecting construction workforce productivity, economic factors were found as the most important group with a mean index of 0.771 and significance value of 3.87 (very significant), as can be seen in Table 1 and Table 2 respectively. Twelve factors were investigated in this group. With respect to RII “Bonus on Eid” (RII=0.945) secured the first, “Amount of pay/wages” (RII=0.94) second and both “On Time Payment” and “Pick and Drop Facility” (RII=0.935) secured the third rank as per the results of relative importance index technique, as shown in the Table 1

Table 1: RII Results obtained for Economic factors for motivation

Economic factors	RII	Rank
Bonus on Eid	0.945	1
Amount of pay/wages	0.94	2

On-time payment	0.935	3
Pick and Drop Facility	0.935	3
Incentive payments and financial rewards	0.89	4
Financial incentive (like profit sharing, commission increment. Profit related pay, fringe benefits etc.)	0.875	5
Free training for enhancement of skills (Optional)	0.805	6
Free lunch	0.74	7
Union membership	0.58	8
Working in social insurance	0.54	9
Discontinuity of work (due to discontinuity in financing or due to lack of proper management, prevailing political circumstances etc.)	0.54	9
Bonus on extraordinary performance	0.535	10
Means Relative importance index= <u>0.771</u>		

The reasons of the ranking order as mentioned in the Table 1 can be many. Pakistan is a developing country and a large population lives below poverty line. Money is not the sole motivator, but in the light of the Maslow's Hierarchy of Needs provided by Abraham Maslow (1943). Before going to the next level of hierarchy, preceding level must be satisfied then and then only the required results can be obtained. Figure given below is representing the RII values in descending order.

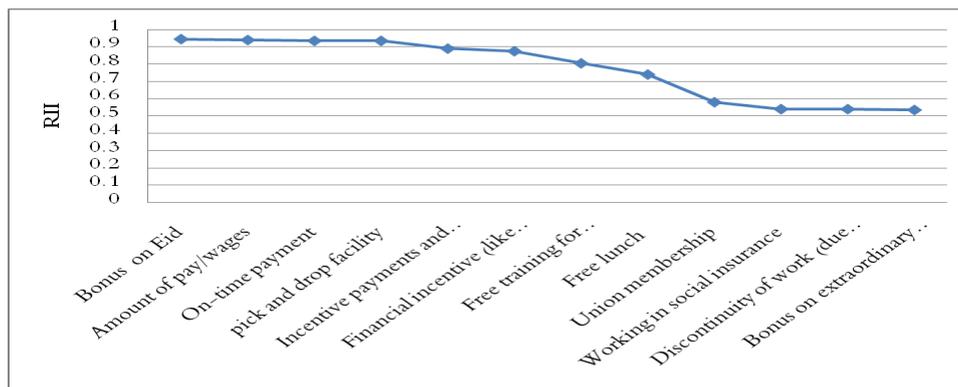


Figure 5: RII Trend of Economic Factors

Rising inflation is making the large section of the population deprived of many basic facilities. As mentioned in Table 1 that "Pick and Drop Facility" and "On Time Payment" shared the third rank. The rising prices of fuel, the high cost of public transport is compelling the general public to think of this factor extremely motivational and to such a level that it has gained rank position higher than "Incentive Payments" and "Financial Rewards" and many others. Another reason might be the fact that the practices of adopting motivational factors that revolve around monetary options like incentive payments and financial rewards, financial incentives (like profit sharing, commission increment, profit related pay, fringe benefits etc), free training for enhancement of skill and bonus on extra ordinary performance, are not commonly experienced by the top management of construction organizations that were surveyed.

Table 2: MIL Results obtained for Economic factors for motivation

Economic factors	MIL	Significance
Free lunch	4.90	ES
Amount of pay/wages	4.85	ES
Bonus on Eid	4.75	ES
On-time payment	4.75	ES

Incentive payments and financial rewards	4.72	ES
Bonus on extraordinary performance	4.37	ES
Financial incentive (like profit sharing, commission increment. Profit related pay, fringe benefits etc.)	4.42	ES
Working in social insurance	3.45	VS
Pick and Drop facility	3.02	VS
Discontinuity of work (due to discontinuity in financing or due to lack of proper management, prevailing political circumstances etc.)	2.72	S
Union membership	2.25	S
Free training for enhancement of skills (Optional)	2.22	S
Mean Influential value (average)= 3.87 (Very Significant)		

As it evident from the table 2, from a total of twelve (12) factors, seven secured the position within the extremely significant range. From those seven and also from the total of twelve (12) factors, free lunch, amount of pay/wages and bonus on Eid accompany with on time payment secured the first three rank positions respectively. The reason behind the free lunch getting the higher rank can be different for different persons. During the process of collecting data for questionnaire, the reason found for rating free lunch the highest significance rating available was found different for different people. Few believe that it make them focused that at the specific scheduled time they will be having lunch without spending a single rupee. Some of participants also shared their thought that they used to prefer those sites which used to provide free lunch or if there is any free lunch facility available for workforce near the site. As in both cases they need not to worry about this daily wage issue. Providing free lunch lets the construction light hearted in the context of investing huge sum of money into the very basic need of survival. Besides free lunch other six factors which are extremely significant as per the result of this study are all factors which directly relate to the money in cash form. Although few are not practiced in Pakistani Construction industry but their significance is high and results can be surprisingly good if practice is made to apply them for improving productivity in the light of this study. Working in social insurance and pick and drop facility are the very significant factors for motivating construction workforce with MIL 3.45 and 3.025 respectively. Union membership and free training for enhancement of skill managed to gain the rating of “significance”. As these two factors are not commonly practiced in the construction industry of Pakistan, the construction workforce is unaware of the importance of these two factors in terms of motivation.

5.2 Discussion and Analysis of Organizational Factors

With a mean index of 0.67 and significance value of 2.937 (significant) organizational factors came after economic factors after analyzing the data obtained with the help of questionnaire as can be seen in Table 3 and Table 4 respectively. Twelve factors were investigated in this group. With respect to RII Occupational education and training (RII=0.94) secured the first, Systematic flow of work (RII=0.855) second and both Camping conditions and Material management (RII=0.735) secured the third as per the results of relative importance index technique, as shown in the Table 3.

Table 3: RII Results obtained for Organizational factors for motivation

Organizational Factors	RII	Rank
Occupational education and training (mandatory)	0.94	1
Systematic flow of work	0.855	2
Camping conditions	0.735	3
Material management	0.735	3
Quality of site management	0.725	4
Firm reputation	0.68	5

Relaxation allowances, facilities at site	0.64	6
Site location	0.59	7
Site Environment	0.575	8
Supervision	0.57	9
Crew size and efficiency	0.535	10
Head office culture	0.46	11
Mean Relative importance index= 0.67		

Unfortunately, in Pakistan like any other developing country, trend of occupational education and training to construction workforce is below satisfactory level. As the results show that respondents feel that if the concerned authorities will use this factor as a motivational tool then it is sure enough that the authorities are progressing in the right direction. Systematic flow of work secured the second rank, showing its effectiveness if apply in actual. The reason of getting higher rank might be the absence of this factor on construction sites. The systematic flow of work motivates the workforce in many terms. They feel that things are going according to the schedule and as per planning and will result in timely completion of the project as their benefits are also associated with this factor. Following figure is showing the RII for Organizational factors in descending order.

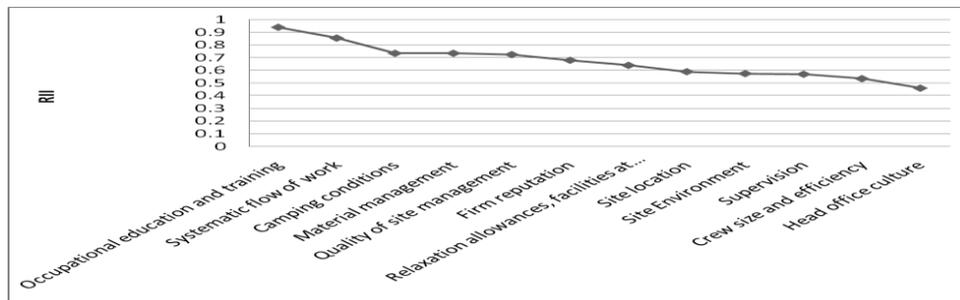


Figure 6: RII Trend for Organizational Factors

It is a point of concern that camping conditions are not gaining that required level of importance from the concerned personnel which is needed. Good camping conditions motivate employees that their organization is concerned about their basic rights and have respect for them. Material management secured third rank with camping condition. This shows that proper material management will ensure the systematic flow of work which already has acquired the second rank among twelve (12) factors. Quality of site management, reputation of firm, relaxation allowances facilities at site are the factors which make the workforce feel privileged. The presences of these factors motivate them to work effectively and efficiently. Site location, site environment, supervision, crew size and efficiency and head office culture in the light of this study also motivates workforce but less as compared to the higher ranked factors. Therefore it is important for the concerned authorities/personnel that they must choose the factors efficiently when it comes to motivating the construction workforce.

Table 4: MIL Results obtained for Organizational factors for motivation

Organizational Factors	MIL	Significance
Camping conditions	4.57	ES
Systematic flow of work	3.82	VS
Relaxation allowances, facilities at site	3.50	VS
Quality of site management	3.10	VS
Site Environment	3.00	S
Head office culture	2.85	S
Occupational education and training (mandatory)	2.80	S
Material management	2.72	S
Supervision	2.70	S

Firm reputation	2.25	S
Site location	2.22	S
Crew size and efficiency	2.12	S
Mean Influential Value (average)= 2.973 (Significant)		

Table 4 is representing the significance of each factor. Camping conditions is the only factor among organizational factors which is extremely significant after analyzing the factors by mean influence level technique. Again, unfortunately a larger number of construction workers are not satisfied with the prevailing camping conditions at construction sites. Absence of basic facilities like proper washrooms, change rooms, good quality of potable water, canteen facilities, safety measures, first aid facilities etc demotivate the workforce and ultimately results in poor or below satisfactory level of construction productivity. Systematic flow of work, relaxation allowances, facilities at site and quality of site management are very significant factor. Their significance must be considered when applying them in field. Occupational education and training which secured the highest rank as per RII value, managed to secure the 7th rank as per MIL technique. Reason is quite evident that absence of the factors above it really bother the workforce therefore they want those factors to be considered before this factor while using them as motivational tool at site for construction workforce.

5.3 Top 10 Motivational Factors

Top ten motivational factors obtained from this study as per RII and MIL are represented in Sections 5.3.1 and 5.3.2 respectively.

5.3.1 Top 10 Motivational Factors as per Relative Importance Index (RII)

Table 5 is representing the top ten motivational factors that should be considered during the selection of the factors which can act as motivational tools for construction workforce. First column is representing the rank among ten. Second column represents motivational factors, third column is representing descending RII values and finally last column representing that either the factor is economic or organizational in nature (O.M.F = Organizational Motivational Factor and E.M.F = Economic Motivational Factor).

Table 5: Top ten Motivational Factors Obtained from this Study as per RII

S.No.	Motivational Factor	RII	O.M.F / E.M.F
1	Bonus on Eid	0.945	E.M.F
2	Occupational education and training (Mandatory)	0.94	O.M.F and E.M.F
3	On-time payment, pick and drop facility	0.935	E.M.F
4	Incentive payments and financial rewards	0.89	E.M.F
5	Financial incentives	0.875	E.M.F
6	Systematic flow of work	0.855	O.M.F
7	Free training for enhancement of skills (Optional)	0.805	E.M.F
8	Free lunch	0.74	E.M.F
9	Camping conditions, material management	0.735	O.M.F
10	Quality of site management	0.725	O.M.F

5.3.2 Top Ten Motivational Factors as per Mean Influence Level (MIL)

Table 6 is representing the top ten motivational factors that should be considered during the selection of the factors which can act as motivational tools for construction workforce. First column is representing the rank among ten. Second column represents motivational factors, third column is

representing descending MIL values, the fourth column represents the significance level (ES= Extremely Significant and VS= Very Significant) and finally last column representing that either the factor is economic or organizational in nature (O.M.F = Organizational Motivational Factor and E.M.F = Economic Motivational Factor)

Table 6: Top ten Motivational Factors Obtained from this Study as per MIL

S.No.	Motivational Factor	MIL	Significance	O.M.F / E.M.F
1	Free lunch	4.9	ES	E.M.F
2	Amount of pay/wages	4.85	ES	E.M.F
3	Bonus on Eid	4.75	ES	E.M.F
4	On-time payment	4.75	ES	E.M.F
5	Incentive payments and financial rewards	4.72	ES	E.M.F
6	Camping conditions	4.57	ES	O.M.F
7	Bonus on extraordinary performance	4.37	ES	E.M.F
8	Financial incentive	4.42	ES	E.M.F
9	Working in social insurance	3.45	VS	E.M.F
10	Relaxation allowances, facilities at site	3.50	VS	O.M.F

6. Conclusion

- Economic factors have edge over organizational factors if they are considered to be taken as motivational tools for the improvement of construction workforce productivity.
- The three effective economic factors as per the study are bonus on Eid, Amount of pay/wages and on time payment accompanied with pick and drop facility.
- The three significant economic factors are free lunch, amount of pay/wages and bonus on Eid.
- The three effective organizational factors as per the study are Occupational education and training, Systematic flow of work and camping conditions accompanied with Material management.
- The three significant organizational factors are Camping conditions, Systematic flow of work and Relaxation allowances, facilities at site.
- For overall ranking Table 5 and 6 should be considered.
- During the site visits it was observed that some factors can be used as motivational tools by providing some attention towards labor rights for example providing the good camping condition, adequate sanitation facilities, proper rest rooms and first aid facilities etc.

7. Recommendations

- In order to improve the productivity of construction labor in the context of Pakistani Construction Industry the following factors are recommended so as to exert the greatest magnitude of influence to achieve improved productivity. The factors are arranged in decreasing order of influence.
 1. Free lunch
 2. Amount of pay/wages
 3. Bonus on Eid
 4. On-time payment
 5. Incentive payments and financial rewards
 6. Camping conditions
 7. Bonus on extraordinary performance
 8. Financial incentive
 9. Working in social insurance
 10. Relaxation allowances, facilities at site
- In order to improve the productivity of construction labor in the context of Pakistani Construction Industry the following factors are recommended on the basis of their relative

importance within themselves. The factors are arranged in the decreasing order of relative importance among themselves.

1. Bonus on Eid
 2. Occupational education and training (Mandatory)
 3. On-time payment, pick and drop facility
 4. Incentive payments and financial rewards
 5. Financial incentives
 6. Systematic flow of work
 7. Free training for enhancement of skills (Optional)
 8. Free lunch
 9. Camping conditions, material management
 10. Quality of site management
- Top level management of construction organizations should consider the significance of properly understanding the motivational needs of construction workers in Pakistan.

References

1. Kazaz, Aynur, Manisali, Ekrem, Ulubeyli, Serdar (2008) "Effect of basic motivational factors on construction workforce productivity in Turkey", *Journal of Civil engineering and Management* 14(2): 95–106
2. Hashim Abadallah Al Saleh (1995) "Improving Construction Productivity in Saudi Arabia", *The Fourth Saudi Engineering Conference, November 1995, Volume II*
3. Kaming et al (1997) "Factors influencing craftsmen's productivity in Indonesia", *International Journal of Project Management* 5(1): 21–30.
4. Olomolaiye, P. O. Wahab, K. A. Price, A. D. F. (1987) "Problems influencing craftsmen's productivity in Nigeria". *Journal of Building and Environment* 22(4): 317–323.
5. Thieblot, A. J (2002) "Technology and labor relations in the construction industry", *Journal of Labor Research* 23(4): 559–573.
6. Kazaz, A. Ulubeyli, S (2004) "A different approach to construction labor in Turkey: comparative productivity analysis", *Journal of Building and Environment* 39(1): 93–100.
7. Khan, M. S (1993) "Methods of motivating for increased productivity", *Journal of Management in Engineering* 9(2): 148– 156.
8. Schermerhorn, John R, G. Hunt James, Jr, Osborn. Richard N (2001) "Organizational Behavior, Seventh Edition." *Wiley Publisher, ISBN: 978-0-471-14800-5.*
9. The Business Roundtable, (1989), "Construction Labor Motivation- A Construction Industry Cost Effectiveness Project Report"- Accessed from <http://www.curt.org/pdf/117.pdf>
10. The Abraham Maslow, Father of management provides link to Maslow's hierarchy of Needs, 1943. Retrieved from (<http://www.abraham-maslow.com>)
11. Ali Khan, Raza. Saleem, Farhan. Umer, Muhammad (2011) "Effectiveness of Worker Motivational Techniques on Construction Project Safety, Productivity and Quality Performance", *Sixth International Conference on Construction in the 21st Century (CITC-VI) "Construction Challenges in the New Decade" July 5-7 2011, Kuala Lumpur, Malaysia*