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A Review on Critical Factors Affecting Labour Productivity in Construction Industry

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ABSTRACT: Overall work efficiency is at the cutting edge of concern confronting experts in the development business. Labour productivity helps the construction industries to be competitive, to achieve the goals and to meet stakeholder's expectation. Productivity plays a major role in construction industry in which labour power is the only productive resource and the industry is mainly dependent upon manual effort and performance. The resource inputs such as men, material, machinery, money and time produce outputs in the form of work. The achievement of any project depends upon the performance and availability of these resources and improves higher cost saving with minimal investment. The main objective of this paper is to review and grouping the factors affecting labour productivity and technique and methods to evaluate them. Study on productivity of labour is most important in developing country like India, where maximum number of the building constructions are in manual basis. On the review basis it was observed that supervision, skill of labour, tools and equipment and financial motivation were the most significant and important factors affecting labour productivity. During analysis of productivity of labour, factor analysis plays a vital role in identifying the independent and group factors which can be used to improve the factors affecting.

KEYWORDS: Construction, Manpower, Material, Machine, Productivity.

I. INTRODUCTION

Productivity of labour in the construction industries have become most frequent discussed issue in general management. The construction is one of the major activity within any economy, it influences, and is influenced by, the Nation's Gross Domestic Product (GDP) (Cox et al, 1998, Cited in Madi, 2003). Labour productivity is simply defined as the amount of goods and services that a labour produce in a particular unit of time. Many of labour in construction do not concern about their productivity because they get wages on time but some of the labour become unproductive because of salary problems such as delay in payment, cut down of overtime work payment and given low salary. Some workers become less productive because of their attitudes and behaviour such as come late on work and go back too early. This is due to lack of supervision, they are not afraid to bring these bad attitudes and behaviour to work. Labour and Construction productivity are two most important words that determine the profit and loss of the construction industries and whether they are worthwhile or not. Labour productivity is a sub domain of the overall construction productivity at the same time construction productivity is highly dependent on labour productivity. There are many factors that directly affect the labour productivity, thus it important for ant industry to study and identify those factors.

II. OBJECTIVE

The problem of labour productivity in the construction industry, is a worldwide phenomenon. A construction project is considered as successful, if it is completed on time, under the budget and to specification or quality standard. However, in the recent past it is seen that most projects get delayed due to certain different factors, leading to less productivity and time overruns. Thus, the principle objective of this study include the following:

To find the main factors associated with productivity loss in the construction industries.

And to give the ranking to these factors by AHP and GARRETT'S RANKING TECHNIQUE.

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III. LITERATURE REVIEW

Henry MwanakiAlinaitwe(2007)-

In this paper a report made on a project managers of building projects in Uganda, where an increase in productivity is being sought. Respondents were required to rate using their experience how 36 factors that affects productivity with respect to time, cost and quality. The survey was carried out by a questionnaire and responses received over a period of 3 months. The ten most frequent problems affecting labour productivity were identified as incompetent supervisors; lack of skills from the workers; rework; lack of tools/equipment; poor construction methods; poor communication; inaccurate drawings; stoppages because of work being rejected by consultants; political insecurity; tools/equipment breakdown; and harsh weather conditions. Although lack of materials is ranked highest with regard to average rating on loss of time, it was not ranked among the top ten using the importance index that takes into account time, cost as well as work quality. The policy makers and researchers should focus on the identified major factors in order to improve productivity.

Joseph M. G.(March-2015)-

The success of any project depends upon the performance and availability of these resources and improves higher cost savings with minimal investment. In developing countries like India, proper labour management for productivity is one of the key factor to achieve higher efficiency in development process. Respondents were required for rating the factors that affect labour productivity with respect to importance and severity of the problems. In this research, control process involves accounting the actual productivity of labours and includes comparison of the causes to find measures to improve productivity.

Shashank K(May- 2014)-

The theoretical model of this study proposed eight independent groups affecting the variation of Labour Productivity in the construction projects namely Manpower group, Managerial group, Environmental group, Motivation group, Material/Equipment, Schedule group, Safety group and quality group. The results of reliability analysis and factor analysis showed that three independent factors and one independent group were rejected due to low corrected item-total coefficient and loading score. The results of multiple regression analysis showed that, six independent groups, which have a positive effect on labour productivity variation, and one group, which has no effect on labour productivity variation. Multiple linear regression analysis indicates that the model can explain 82.2% of the variance in labour productivity. Among six independent groups, motivation group has the highest impact on labour productivity variation. The six independent groups were ranked based on the impact strength on labour productivity variation.

- 1) Motivation group
- 2) Manpower group
- 3) Material/Equipment group
- 4) Safety group
- 5) Managerial group
- 6) Quality group

Shabir Hussain Khahro(November-2016)-

Productivity remains an interesting subject and a leading theme to proper uses of resources in construction sector. It has been watched that low profitability of development labourers most significant reasons for time and cost overwhelm in development ventures. Work efficiency is primarily fundamental for everything except particularly to develop nations like Pakistan, where the greater part of the building exercises are executed physically. Thus, remedial actions to low labour production are not possible until the factors with particular reference to building construction sector will not be identified. Hence, this paper highlights the factors affecting labour productivity in construction sector of Pakistan. Questionnaire survey has been done from the stakeholders in private building sector projects. The data has been analyzed using Relative Importance Index (RII) method. In the final phase, most significant factors affecting labour productivity are identified as the remedial measures can be taken accordingly to improve labour productivity.

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MistrySoham, Bhatt Rajiv(april-2014)-

A study was completed in south Gujarat area urban communities on civil temporary workers. Add up to 51 criticisms were broke down through the Analytic chain of importance process(AHP) and Relative Importance Index(RII) procedures. Five most crucial factors in descending order from RII Technique are Delay in payments, Skill Of Labour, Clarity Of Technical Specification, Shortage Of Materials, and Motivation of Labour. According to AHP Technique first 5 crucial factors in descending order are High/Low Temperature, Rain, High Wind, Motivation of Labour, and Physical Fatigue. Contractors shall act on these factors to improve labour productivity in construction projects

HasanHamouda-

Development area assumes a main part in financial development for nations all around the globe. Since development is a work concentrated industry, profitability is viewed as an essential main thrust for monetary advancement. In the Gaza Strip, the economy is seriously tested by the joined impacts of fast populace development and the conclusion arrangement forced on the range since 2007. Inferable from this circumstance, development ventures are described by low net revenue, time and cost overwhelm making work efficiency a key segment of organization's prosperity and intensity. Despite the fact that, work efficiency has been subject of concentrate by numerous specialists, a more profound comprehension is as yet required to enhance work profitability. The principle point of this investigation is to distinguish key elements influencing work efficiency in the Gaza Strip. It likewise goes for defining a work efficiency standard model utilizing the Analytical Hierarchy Process (AHP). By checking on the writing and directing profundity interviews with experienced designers, thirty basic variables identified with work efficiency were distinguished and sorted into six gatherings: psychological, experience, supervision and leadership, physical, time and workload, and external factors. Based on the Analytical Hierarchy Process approach, a questionnaire was designed and delivered to sixty contractors to elicit the view on how labour productivity might be affected. A total of 56 feedbacks were analysed through the AHP.

The outcomes demonstrated that Job satisfaction & security, absence of motivating force plot, skill & encounter, tranquilize utilize, extra minutes and climate changes significantly affect work efficiency in GS. Likewise, the created AHP demonstrate gives a structure that can help supervisors in assessing different components and subsequently successfully enhance work profitability.

Ibrahim Mahamid(December-2013)-

finished an organized poll overview and the elements were positioned by their effect level. 32 factors were distinguished through writing survey. These elements were assembled into five gatherings: labour, managerial, materials and equipments, project, and financial. The examination of the distinguished 32 factors shows that the main ten essential factors contrarily influencing work efficiency in broad daylight development ventures are: lack of labour experience, poor communication and coordination between construction parties, bad relations between labours and management team, payments delay by owner, misuse of time schedule, rework, labour's low wage, financial conditions of contractor, poor site management, and frequent change orders.

S. Sharmila(March-2016)-

The examination looks at the basic components impacting work efficiency in development industry. From the examination nine variables influencing work profitability are distinguished, each components having their own sub factors. Based on the factors the questionnaire is designed and the respondents for distribution of questionnaire are selected. The labours are selected as the target respondents and the total of 111 questionnaires are completed by the respondents. The collected data are analysed using statistical package for social sciences (SPSS) software. From the investigation result the main considerations affecting work profitability are distinguished and the arrangements are given for every one of the effects.

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IV. FACTORS INFLUENCING LABOUR PRODUCTIVITY

Based on literature and related work, following are some factors that critically affect the labour productivity in construction industry,

Man Power Related:

Man power related factors leading to labour productivity are critical in construction project. Often these factors affects the productivity at the construction site, by which all the estimation seems to be delayed beyond the given particular time and affects the project performance. There are many factors that affect the productivity of labour since most of the construction work is still on manual basis and these factors are, lack of labour experience, labour disloyalty, misunderstanding among labour, increase of labour age, labour fatigue, labour personal problem and labour dissatisfaction. These factors play a major role in construction project for increase or decrease of productivity.

Financial Related:

Poor financial condition of owner or contractor may lead to delays in construction leading to uncompleted work or partial fulfilment of work. Cash problem during construction may lead to delayed payments which may force the project participants to withdraw or upheld project leading to overruns. Many a labour now a days do not concern about their productivity as long as they get payment on time but some of the labour become unproductive because of salary problem such as delay in payment by contractor, lack of financial motivational system, lack of incentive schemes and gain small salary (low wages) by overload of work. There are also some other factors related to financial which affect labour productivity such as financial condition of contractor, lack of place for eating and relaxation, lack of first add. Management should analyse these problem and give support to their work by motivate them.

Material and Equipment Related: Material and equipment related factors are commonly seen in any construction project. Usually it is seen that shortage of materials and equipments are causes low productivity on construction site. Old and inefficient tools or equipment, low quality of raw materials are the most common factors that reduces the overall labour productivity. Delay in delivery of tools or equipment , disruption of power and water supply and unsuitability of material storage location are also reduces the labour productivity .

Managerial or Management Related: Managerial or Management should be very effective for a construction site because proper management on a construction site can boost labour productivity. But in the absence of proper management, labour productivity get reduces as delay management or managerial aspects on the site. The important elements effect to labour productivity in management including lack of labour supervision, misunderstanding between labour and superintendents and poor site management. As long as inspection delay, rework, accident as a result of poor site safety programme and frequent change in orders are also affect the whole labour in a construction industry.

External Related: Some natural factors like weather changes, high wind, and natural disaster are grouped under external. These factors have less manual command because natural hazards. These factors some time reduces overall labour productivity and cost overrun also. Worker education and order variation are some other factors related to external factor that are negatively affect the labour productivity on construction site.

V. RESULT AND CONCLUSION

The construction industries have strategic role in all developed and developing countries. In the view of satisfying share of construction industry in the whole economy, the stakeholder attention is focused on improved resource utilisation and productivity, but now a days, due to skilled labour problems, market slowdowns and changing business environment, certain problems are necessary to be considered for success of the project. From the review, it was observed that inefficiency of finance and management of construction resources can result in low productivity.

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