The Influence of Motivation on Labour Productivity on Building Construction Projects in South Africa

Ugulu Rex Asibuodu[1] Makhotso Moabi[2] Mahlatse Ramushu[3] Morongoa Sebola[4] and Allen Stephen[5]
1, 2,3,4,5, School of Construction Economics and Management, University of the Witwatersrand, Johannesburg, South Africa
Corresponding author: 809805@students.wits.ac.za or rexugulu@gmail.com

Abstract
Inadequate motivation of labourers in construction is one of the most daunting human resource problems in developing countries. The aim of this paper is to investigate and establish the possible motivation factors that influence construction labourer's productivity levels in building construction projects within South Africa. The research instrument includes open and close-ended questionnaires to obtain information on motivating factors influencing labour productivity in building construction projects in South Africa. The questionnaire was distributed among construction labourers working in the construction firms and were analysed, using a likert scale of (5) point weights range from extremely severe (5) to not severe (1) to measure the opinion of labourers on the top motivation factors affecting labour productivity in Building Construction Project. The findings revealed that the top factors that mostly motivate the labourers to be more productive are: Transport Provision, Site amenities, Lunch Breaks, Days off, Financial Incentives and Skills enhancement. The research investigates the contribution of a set of parameters influencing motivation of labour productivity, positively and negatively in building construction projects in South Africa. For labourers, this is of practical significant for optimisation of building construction projects. The structured method presented to identify significance rankings of the key performance indicators of motivation on labour productivity in building construction projects; this may be of interest to construction managers and researchers alike.

Keywords: Motivation, Factors, Labour Productivity, Construction, Relative Important Index (RII)

1 INTRODUCTION

Labour productivity is a critical requirement to the economic growth of all countries and in South Africa, a country beset by socioeconomic problems" [1]. This industry however, faces some serious challenges in its endeavour to deliver infrastructure projects effectively [2]. Evidence of the challenges which are commonly faced by the South African construction industry is given in research done by the South African Property Owners Association (2014), which states that the numerous problems faced by construction contractors (which present themselves in the form of projects running beyond their scheduled construction periods, exceeding their set budgets, being produced with multiple defects and resulting in cost overruns as well as neglected incomplete projects which all have a subsequent effect on the economy) when delivering construction projects, are the results of poor work quality and low productivity. In accordance with the publications of multiple authors reviewed in this study, the construction industry has revealed trends of stagnation over the past few years and is lagging behind other industries such as manufacturing [3], with regards to its dominating rates of productivity. It has ranked a less than impressive growth rate of 0.0% and 0.1% between the years 2010 and 2014.

The lack of motivation amongst employees affects productivity and a number of symptoms resulting in low morale, low or declining productivity, poor workplace atmosphere, high employee turnover, increasing number of grievances, conflicts, higher incidence of absenteeism and tardiness, increasing number of defective products, rework, higher number of accidents or a higher level of waste materials and scrap, [4]. This paper therefore seeks to establish the influence of motivation on construction labourer productivity (CLP) on large building construction projects in South Africa, and ultimately on its economy.

2 Review of Related Literature

The South African construction industry, with particular reference to its building fragment, is highly labour intensive. This is despite the constant introduction of innovative modern technology to equipment, materials and methods of design in construction [5] that have been developed over the years. Thus, the core of every building project is the labour force that is involved in its undertakings and the overall implication of this is that the success of every construction project depends to a great extent on the physical and psychological well-being of its construction labourers. If a building construction labourer lacks motivation to carry out his/her duties, this affects his/her rate and quality of productivity. Contractor performance, as characterised by poor work quality and low productivity are

common in the industry [2]. Subsequent project cost overruns and time delays are found to be a growing problem in large infrastructure developments in South Africa.

A study conducted by Adedokum, Ibironke [6] reports on the state of the Nigerian construction industry at present as a developing country. It states that the construction industry in Nigeria is the most conspicuous contributor to capital formation and is also, like that of South Africa, highly labour intensive. The construction industry offers opportunities to both unskilled and semi-skilled persons on construction sites to carry out the activities and is the highest employing industry in Nigeria. This has led to trending poor worker productivity in the past few years as the people hired are not trained and skilled enough to perform the tasks at hand, leading to their lack of motivation in performing their jobs and subsequent project overtime [6]. The Nigerian construction industry is experiencing a poor productivity level because projects are evolving in all aspects and are therefore more complex, have new methods and materials and there are a range of different procurement options that are used. Motivating workers is an important factor in Nigeria especially for the long term survival of construction firms as this is a way to ensure that there is a high productivity level and it also enhances job performance [7, 8].

The construction sector in Kuwait is the second largest sector after the oil sector. Like many other countries in the developmental stage, the most significant challenge faced by Kuwait's construction industry is that of low productivity [9, 10], in agreement, stated that the following as factors that have a substantial effect on labour productivity: Complex project design, absence of incentive schemes, payment delays, material shortage on sites, changes or variations during the execution stage among others. Iran is a developing country that believes in having a well-organized human resource development programme as a critical strategy to avoid the circumstances of low productivity levels such as cost overruns, time delays and low quality levels [4].

Australia's built environment is economically and socially the country's most important factor, according to Rose and Manley [11], there is little empirical evidence to prove that the use of financial incentives on construction projects is as effective as the public seems to have assumed. There is still miniature construction specific information on how to implement financial incentives to project managers [11]. Financial incentives are monetary benefits offered to employees and consumers, to make them do something they normally would not do, as a means of motivation, it is aim to increase the efficiency and effectiveness of projects by stimulating their motivation to work harder and smarter in pursuit of such goals", [11], these goals are those set by the client. Rose and Manley [11], noted that construction contracts use three types of financial incentives, namely: Share of savings; Schedule of incentives; and Performance bonuses.

The common problems that affect the effectiveness of financial incentives in the Australian construction industry are that there is a misalignment of the objectives, the complexity of the construction product supply chain (which is a conflicting challenge) as well and the extreme fragmentation of construction projects which causes communication problems. This led to Rose and Manley [11] conclusion that, financial incentives are less important to motivation and performance compared to relationship enhancement initiatives meaning they believed in the use of incentives as a method of improving project performance by simulating the motivation to work harder and smarter. In contrast, contractual incentives are increasingly being utilized by many other developing countries, including the United Kingdom (UK). Empirical evidence in the UK has proven that the use of the incentive mechanism has a significant impact on the project performance of construction projects [12]. The different types of incentives identified by Meng and Gallagher [12] are as follows: Cost incentive for persons who saved on cost; Time incentive for people who completed earlier than the set time; Quality incentive for lack of defects in the completed works; and Safety incentive for people who abided strictly to the safety rules and regulations.

The use of more than one incentive is referred to as 'multiple incentives', and although this form of incentivising has proven to be complicated it has also proven to be very effective in improving the overall project performance compared to the use of a single incentive. This is because the possibility of being granted multiple incentives motivates people to do things that they would not normally have done [12]. Meng and Gallagher [12], stated that the usage of incentives in the UK has had the following outcomes:

- Alignment of the clients expectations and the contractors objectives
- Good professional relationships between the client and all other parties involved in the project

2.1 Developing vs. Developed Countries

There are benefits that surround the usage of motivational schemes, including their ability to enhance professional relationships. There is also apparent consensus between both developed and developing countries, that the construction industry is a labour intensive industry that needs to have its rate of productivity which relates to construction workers improved.

Developed countries are more economically sophisticated, have a lower occurrence of crime and because they are more technologically efficient than developing countries, they have construction projects of greater complexity and size. Empirical studies have revealed that the productivity output of the developing industries is quite low when compared with many developed countries [6]. All the countries in both categories of developed and developing agree that motivation is a way to increase the project performance level of construction projects. Most are moving away from adopting financial incentives as a means of motivation, excluding those countries that have not empirically examined its effects or have not further studied its effectiveness. Some developing countries are yet to implement or enforce motivation as a method of improving the labour productivity issues they are faced with.

3 RESEARCH METHODOLOGY

The research adopted a quantitative method, with the use of open and close-ended questionnaires to obtain information on motivating factors influencing labour productivity in building construction projects in South Africa. The questionnaires were analysed by using a liket scale of (5) point weights range from extremely (5) severe to not severe (1) to measure the opinion on the motivation factors affecting labour productivity in Building Construction Project in South Africa. 30 questionnaires were administered randomly to selected labourers in different construction sites, 21 was received representing 70% response rate and the remaining 9 questionnaires representing 30% were not filled out in entirety. 100% of the labourer respondents were male with 90% being black and the other 10% being coloured. 52% of the labourers respondents were between the ages of 21-30, 33% for 31-40, 10% for 41-50 and 5% of the respondents are between 50 and above ages. The participants of the research include: Foreman and construction labours working and/or who have recently worked in large construction building projects located in the South Africa, Johannesburg over the past five years. Views and opinions were based on the reasonable knowledge in the construction industry of the respondents.

3.1 Result and Discussion of Findings

Table 1.0 illustrate that the labourers agreed that getting sense of belonging with 88.6%, days off with 92.2%, and transport provision 100%, Financial incentives 90.04%, site amenities 100% such as: change room, meal rooms, toilets and sanitations, washing and showers and completing project on time" are the most important motivation factors, These factors are ranked 1st positions in other of their severity influence on construction labour productivity. The result of transport and site amenities having a high RII than that of financial incentive and days off with 90.40% and 92.2% respectively, coincide with Adedokum, Ibironke [6] who identified financial and non-financial motivation schemes and concluded that non-financial motivation schemes are more effective in enhancing productivity. Literature reviewed on studies conducted on construction productivity in developed countries concludes that the use of financial incentives are not the most effective means of motivating labourers to be productive due to the resultant disadvantages associated with their use. Adedokum, Ibironke [6] mentioned that overall the use of any motivation scheme needs to be constantly monitored to ensure that no conflicts arise on site. In line with Monese and Thwala [13] identifying job enrichment and training as motivation schemes that are part of the productivity improvement techniques, "skills enhancement, salaries paid on schedule, job enlargement and meeting objectives" as motivating factors which site management should consider.

Table 1.2 represents the negative factors influencing labour productivity. These factors have been computed from the severity index of labourers' responses as presented in Table 1.2. The calculation of the RII for each of the factors for each category was calculated by taking the average of the factors in each group. The ranking of each group factors was then established by quantifying the average value of the RII for all the factors classified within. Therefore, the higher the average value, the extremely severe the effect of the group factors. The labourers agreed as follows: dissatisfaction of labourers with their jobs with 91%, types of activities entailed in the project 88%, weather conditions 87%, and noise levels 86%, shortage of required materials 82%, and drawings alterations during execution 82% and misuse of time schedule having 78%. This is consistence with the findings of the study conducted by Enshassi, Mohamed [14] based on "factors affecting labour

productivity in building projects in the Gaza strip.

Table 1.0 RII of factors that have positive influence on CLP

Factors that have a positive influence on construction labour productivity	5	4	3	2	1	Total Response	Severity Index		Rank
Motivation Factors	Extremely Severe	Very severe	severe	Somehow severe	Not severe				
Sense of belonging	11	8	2	0	0	21	4.43	88.6	1
Completing the project	9	11	0	1	0	21	4.33	88.6	2
Meeting project schedules	10	9	1	0	1	21	4.29	85.8	3
Empowerment	7	12	1	1	0	21	4.19	83.8	4
Owner using authority	6	12	0	2	1	21	3.95	79.0	5
Site Management Factors									
Days off	15	4	2	0	0	21	4.61	92.2	1
Financial Incentives	12	8	1	0	0	21	4.52	90.4	2
Skills enhancement	13	6	2	0	0	21	4.52	90.4	2
Salaries paid on time	14	5	1	1	0	21	4.52	90.4	2
Job enlargement	10	11	0	0	0	21	4.48	89.6	5
Meeting objectives	13	6	1	1	0	21	4.47	89.4	8
Constant supervision	13	6	1	0	1	21	4.43	88.6	9
Learning curves	9	10	2	0	0	21	4.33	86.6	11
Employee promotions	10	8	2	1	0	21	4.29	85.8	12
Site Amenities	10	9	0	2	0	21	4.29	85.8	12
Job rotation	11	7	1	0	2	21	4.19	83.8	14
Good communication with management	13	4	0	0	4	21	4.05	81.0	15
Needs that motivates labour productivity									
Transport Provision	21	0	0	0	0	21	5.00	100	1
Site amenities	21	0	0	0	0	21	5.00	100	1
Lunch Breaks	20	1	0	0	0	21	4.95	99.0	3
On time payments	20	1	0	0	0	21	4.95	99.0	3
Pension fund	20	1	0	0	0	21	4.95	99.0	3
Recognition	19	2	0	0	0	21	4.90	98.0	6
Job Security	18	3	0	0	0	21	4.86	97.2	7
Lunch Provision	17	3	1	0	0	21	4.76	95.2	8
Protection	18	1	2	0	0	21	4.76	95.2	8
Medical Aid	17	1	3	0	0	21	4.67	93.4	10

Table 1.2 RII of factors that negative influence CLP

Factors that have a Negative influence on construction labour productivity	5	4	3	2	1	Total Responses	Severity Index		Rank
Time Related Factors	Ex-treme-ly Severe	Very se-vere	sever	Somehow severe	Not se-vere				
Misuse of time schedule	8	6	5	1	1	21	3.90	78	1
No proper programme	8	2	4	6	1	21	3.48	70	2
Working 7 days a week	6	4	5	5	1	21	3.43	69	3
Working overtime	6	5	2	6	2	21	3.33	67	4
Manpower Factors									
Dissatisfaction of la-bourers with their jobs	13	7	1	0	0	21	4.57	91	1
Misunderstanding amongst labourers	15	2	0	4	0	21	4.33	87	2
Less productivity of older labourers	12	6	1	1	1	21	4.29	86	3
Labourers experiencing personal problems	13	2	3	3	0	21	4.19	84	4
Labourers' lack of expe-rience	12	4	2	3	0	21	4.19	84	4
Absenteeism of labour-ers	12	4	2	2	1	21	4.14	83	6
Labourers' disloyalty	13	3	1	3	1	21	4.14	83	6
Materials Related Factors									
Shortage of required materials	12	4	0	5	0	21	4.10	82	1
Storage location of ma-terials is unsuitable	8	6	2	4	1	21	3.76	75.24	2
Complex construction technology used	10	3	1	7	0	21	3.76	75.23	3
Supervision Factors									
Drawings alterations during execution	8	10	1	1	1	21	4.10	82	1
Reworks	8	5	2	6	0	21	3.71	74	2
Supervisor's absentee-ism	7	5	1	8	0	21	3.52	70	3
Inspection delays	6	8	0	4	3	21	3.48	70	4
Project Factors									
Types of activities en-tailed in the project	12	7	1	0	1	21	4.38	88	1
Construction methods used	11	7	2	1	0	21	4.33	87	2

Size of a project	11	7	0	2	1	21	4.19	84	3
Work disruptions	10	7	2	2	0	21	4.19	84	4
Working in a confined space	10	3	1	6	1	21	3.71	74	5
Safety Factors									
Noise levels	12	7	1	1	0	21	4.3	86	1
Accidents on site	9	8	2	2	0	21	4	80	2
Violation of safety pre-cautions	11	5	2	3	0	21	3.8	76	3
Insufficient lighting	9	7	3	2	0	21	2.6	52	4
External Factors									
Weather conditions	11	6	4	0	0	21	4.33	87	1
Government regulation	12	4	4	0	1	21	4.24	85	2

Table 1.3 illustrate the combine ranking of top 20 motivation factors that positively and negatively influence labour productivity in the building construction industry within South Africa. These factors were ranked in descending order according to their level of importance gathered from the data as follows: Transport provision of workers, site amenities, lunch break, on-time payment, Pension fund, Recognition, Job Security, Lunch Provision, Protection, Unemployment Insurance Fund, Medical Aid, Days off, Financial Incentives, Skills enhancement, Misuse of time schedule, Dissatisfaction of labourers with their jobs, Shortage of required materials among others. Findings from the combined ranking in Table 1.3 are consistent with the findings of related studies conducted at building construction projects in USA, State of Qatar and Gaza Strip [9, 14, 15]

1.3 RII OF Combined Factors Positive and Negative Influencing CLP

Combine Ranking of Categorise Factors	Severity Index		Rank	Remarks/Factor Group
	RII	%		
Transport Provision	5.00	100	1	Need Factors
Site amenities	5.00	100	1	Need Factors
Lunch Breaks	4.95	99	3	Need Factors
Days off	4.61	92	4	Site Management Factors
Dissatisfaction of labourers with jobs	4.57	91	5	Manpower Factors
Financial Incentives	4.52	90	6	Site Management Factors
Skills enhancement	4.52	90	6	Site Management Factors
Sense of belonging	4.43	88	8	Motivation Factors
Completing the project	4.33	88	8	
Construction methods used	4.33	87	10	Project Factors
Weather conditions	4.33	87	10	External Factors
Misunderstanding amongst labourers	4.33	87	10	Manpower Factors
Noise levels	4.3	86	13	Safety Factors
Less productivity of older labourers	4.29	86	14	Manpower Factors
Meeting project schedules	4.29	85	15	Motivation Factors
Government regulation	4.24	85	16	External Factors
Size of a project	4.19	84	17	Project Factors
Shortage of required materials	4.10	82	18	Materials Related Factors
Accidents on site	4	80	19	Safety Factors
Misuse of time schedule	3.90	78	20	Time Related Factors
Violation of safety precautions	3.8	76	21	Safety Factors
Storage location of materials is unsuitable	3.76	75	22	Materials Related Factors
Complex construction technology used	3.76	75	22	Materials Related Factors
Reworks	3.71	74	23	Supervision Factors

4.0 CONCLUSIONS

The low levels of productivity on construction sites in South Africa, as characterised by the efforts of the construction labourers involved in the works, is a problem faced by the construction industry and in turn the country's economy. This study has looked into unearthing how the level of motivation on construction labourers, and the means used to motivate them, influences the rate of their productivity on construction sites.

4.1 Recommendations

As a result of the above findings, it can be argued that low motivation of labourers in Building Construction Industry in South Africa has created a negative impression among the labourers. Thus, the ways forward are:

- Understanding that the role provision of transportation in decision making by management is a crucial element and the ability to assess the impact to construction workers is crucial. Management should provide transport means for workers; this will in return improve their productivity. Additionally, management should provide site amenities such as: change room, meal rooms, toilets and sanitations, washing and showers to enhance the labourer's productivity.

- Construction companies; through their organisational structure should motivate their employees for best result; on time payment of salaries, lunch break, good quality recognition, Skills enhancement, and lasting relationship. In investing in their employees, the companies will grow and attract more clients and improve their productivity. It is therefore necessary to use different motivational techniques to achieve better optimisation.

- In order to deviate from the shortage of materials, management should draw up a detailed schedule of materials required for the project as well as the time the materials will be required and avail this information to the local construction materials suppliers. This schedule should additionally detail the quality of materials required in order to avoid wastage due to unsuitable materials, this will in return increase productivity. Materials storage should be located in a location whereby double handling will be minimised, thus management should design a proper site layout whereby materials storage will be easily accessed, that is it should be located not far from where construction works take place.

REFERENCES

1. **Greve, N.,** *Low labour productivity stifling local economic expansion – Motlanthe, Engineering News, [Online] 14 May. Available:* <http://www.engineeringnews.co.za/article/low-labour-productivity-stifling-local-economic-expansion-motlanthe-2013-05-14> *[Accessed 23 June 2015].* **2013.**
2. **Monese, L.N. and W.D. Thwala,** *Motivation as a tool to improve productivity on the construction site. Available at:* <https://ujdigispace.uj.ac.za/handle/10210/10486> *[Accessed 19 March 2015].* **2014.**
3. **Barg, E.J., et al.,** *Motivating workers in construction, Review Article. 1-11, Faculty of Applied Science, School of Engineering, University of British Columbia. Available:* <http://www.hindawi.com/journals/jcen/2014/703084/> *[Accessed 27 April 2015].* **Journal of Construction Engineering and Management, 2014.**
4. **Tabassi, A.A., M. Ramli, and A.H. Abu Bakar,** *Effects of training and motivation practices on teamwork improvement and task efficiency: The case of construction firms. .* **International Journal of Project Management, 2012. 30: p. 213-224.**
5. **Mansfield, N.R. and N.S. Odeh,** *Issues motivation on construction projects. .* **International Journal of Project Management, 1991. 9(2): p. 93-98.**
6. **Adedokum, O.A., O.T. Ibironke, and O. Olanipekun,** *Vulnerability of motivation schemes in enhancing site workers' productivity for construction industry's sustainability in Nigeria.* **International Journal of Sustainable Construction Engineering & Technology, 2013. 4(1): p. 21-30.**
7. **Ameh, O.J. and E.E. Osegbo,** *Study Of Relationship Between Time Overrun And ProductivityOn Construction Sites.* **International Journal of Construction Supply Chain Management, 2011. 1(1).**
8. **Ameh, O.J. and B.B. Shokumbi,** *Effectiveness of non-financial motivational scheme on construction workers output in Nigeria. Ethiopian* **Journal of Environmental Studies and Management. 6(3), pp.263-272., 2013.**
9. **Jarkas, A.M. and C.G. Bitar,** *Factors Affecting Construction Labor Productivity in Kuwait.* **Journal of Construction Engineering and Management, 138(7), pp.811-820., 2012.**
10. **Jarkas, A.M. and M. Radosavljevic,** *Motivational Factors*

Impacting the Productivity of Construction Master Craftsmen in Kuwait. . **Journal of Management in Engineering, 29(4), pp.446-454., 2013.**

11. **Rose, T. and K. Manley,** *Motivation toward financial incentive goals on construction projects.* **Journal of Business Research, 64 (7), pp.765–773., 2011.**
12. **Meng, X. and B. Gallagher,** *The impact of incentive mechanisms on project performances.* **International Journal of Project Management, 30 (3), pp.352–362., 2012.**
13. **Monese, L.N. and W.D. Thwala,** *Motivators of construction workers in South African sites: A case study* **in** *CIDB 6th Postgraduate Conference on Construction Industry Development*. **2012, CIDB: South Africa. p. 199-212.**
14. **Enshassi, A., et al.,** *Factors affecting labour Productivity in building projects in the Gaza Strip.* **Journal of Civil Engineering and Management,, 2007: p. 13(4).**
15. **Ghoddousi, P. and M.R. Hosseini,** *A survey of the factors affecting the productivity of construction projects in Iran.* . **Technological and Economic Development of Economy, 18(1). Pp.99-116., 2012.**