

PROCEEDING 19

EFFECT OF MOTIVATION STRATEGIES ON LABOUR OUTPUT OF SMALL AND MEDIUM CONSTRUCTION CONTRACTORS IN NIGERIA

Uzoma, Clementina Nneji*, Shittu, Abdullateef Adewale and Oke, Abdulganju Adebayo

Department of Quantity Surveying, Federal University of Technology, Minna, Niger State, Nigeria

The design of motivational strategies and their subsequent effect on productivity have not received intense research attention, a situation that appears to encourage stagnation in the workers' productivity. In addressing this problem, this study examined the effect of motivational strategies adopted by small and medium construction companies (construction SMEs) on the productivity of their workforce using a quantitative research design. A convenience sample of 48 SMEs was drawn from a population of 84 firms registered with the Federation of Construction Industry (FOCI). Questionnaires and checklists were employed for data collection, which was then analyzed using Percentages, Correlation analysis and Independent Sample T – Test. The findings from the analyses revealed that a significant relationship exists between financial motivation and the output of bricklayers and blocklayers; non-financial motivation and output of tilers. It was also found that differences in the monetary values of financial and non-financial motivation applied to craftsmen were not significant. It was recommended that SMEs in the construction industry could focus on the use of financial motivation strategies, since these have been found to positively influence output in two trades.

Keywords: Construction SMEs, Contractors, Effect, Labour output, Motivation strategies.

INTRODUCTION

Construction investment accounts for over 60% of the Gross Fixed Capital Formation (GFCF) in Nigeria, which is why the industry is described as the barometer for economic performance in most developing countries (Kazaz and Ulubeyli, 2004; Chikara, 2006). Due to its critical importance to the profitability of most construction projects, productivity is one of the most frequently used performance indicators to assess the success of a construction project. The importance of motivated employees cannot be highlighted enough in an organizational context, since labour costs comprise 30 to 50% of the overall project cost (Jarkas and Bitar, 2012). Anything done to the employees could either make or mar the quality of their work, the speed of progress, the economy of the country and the social well-being of the workers. It follows from the foregoing therefore that workers should be well motivated for high performance and for the production of good quality products. However, despite this significant role the construction industry plays in the Nigerian national economy, the performance has not been impressive. Poor labour productivity is a major contributor to the frequent delays on many projects; consequently these projects suffer a serious cost overrun (Alberta, 2011). Slowing economic growth and increased competition compel construction companies to look for ways of improving performance while keeping costs down. Motivation has been suggested as a likely solution in this regard (Odesola and Idoro, 2014). Little information was however found on the effect of financial and non-financial incentives on the productivity of construction operatives in 6 selected trades (bricklaying, blocklaying, concreting, plastering, painting and tiling).

clemuzoma@gmail.com

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This was the problem that necessitated this study, which attempted to answer the following questions:

- i. What are the motivational strategies employed by construction SMEs to improve labour productivity of their work force?
- ii. What relationship exist between construction SMEs motivational strategies and labour productivity?
- iii. How can the monetary value of different motivational strategies be compared?

LITERATURE REVIEW

The Concept of Productivity in the Construction Industry

Productivity measures how efficiently resources are employed; it is defined as the ratio of a specific measure of output to a specific measure of input per unit of labour. Shan, Zhai, Goodrum, Haas and Caldas (2015) and Williams (1997) defined human capital (labour) as the accumulated knowledge, skill and experience of the labour force. As individual workers acquire more human capital, their productivity and hence their income grows. Most economists would agree with the importance of productivity to an individual enterprise, an industry, or an economy. Unfortunately, no such agreement exists when it comes to defining precisely what 'productivity' actually is and which of the numerous alternative approaches to productivity measurement is suitable for a given task.

The term 'productivity' is generally used to denote a relationship between output and the associated inputs used in the production process. Consequently, construction productivity can be regarded as a measure of outputs which are obtained by a combination of inputs. In view of this, Raichra (1991) and Shah and Admane (2016) used at least two measures of construction productivity: (1) total factor productivity, where outputs and all inputs are considered; and (2) partial factor productivity, often referred to as single factor productivity, where outputs and single or selected inputs are considered. Since construction is a labor-intensive industry, it can be argued that manpower is the dominant productive resource, thus construction productivity is mainly dependent on human effort and performance (Jarkas, 2010).

Labour Productivity

Construction labour productivity has been the subject of numerous studies (Durdyyev, 2014; Rivas et al., 2011; Dai et al., 2009; Abdul Kadir et al., 2005). Productivity improvement begins with identification of impact factors (Enshassi et al., 2007) such as, material shortage, low level of project leadership skills, escalation of material prices, unavailability of highly experienced workforce and poor quality of equipment. These can then be tackled in order to improve scheduling, eliminate wasteful costs and enhance predictability of productivity levels during buildup of construction costs (Rivas et al., 2011). Bekr (2016) opined that construction productivity can be defined in many ways, and is usually equated with labour productivity, which can be expressed as units of work placed or produced per man-hour, or inversely, man-hours per unit.

Factors Affecting Productivity

A comprehensive but by no means exhaustive summary of some of the recent research works in the field of productivity is provided in Table 1. Researchers have unearthed various factors at different periods of time in different locations. For example, Fagbenle, Ogunde, and Owolabi, (2011) discovered that lack of materials, incomplete drawings, incompetent supervisors, lack of tools and equipment, absenteeism, poor communication, instruction time, poor site layout, inspection delay and rework were the ten most significant problems affecting construction productivity in Nigeria.

Table 1. Some recent research works on factors affecting productivity in construction projects

S/No.	Author(s)	Research highlights
1	Agarwal, Agrawal, and Pandey, (2016)	Applied AHP process to identify ten management related factors that affect labour productivity.
2	Fagbenle, Makinde, Atolabi, and Fagbenle, (2016)	Inadequate Lack of Tools and Equipment, Rework, Material Shortage, Inclement Weather, Interference as the top five clogs impeding craftsmen productivity in Nigeria.
3	Atomen, Chuka, Emeka, and Samuel, (2015)	Most important issues contributing to labor productivity are the involvement of non-professionals and material shortages at construction sites.
4	El-Gohary and Azz, (2013)	Classified 30 productivity factors under three primary categories.
5	Mahamid and Al-Ghonamy, (2013)	identified five important groups of factors negatively affecting labour productivity in public construction projects.
6	Jarkas and Brijar (2012)	identified 45 factors, which have significant impact on construction labor productivity in Kuwait.

7	Durdjev and Mhachis, (2011)	Identified 56 variables that affect construction productivity, categorized into internal and external groups.
8	Fagbeni, Ogund, and Owolebi (2011)	Identified ten most significant problems affecting construction productivity in Nigeria.
9	Jang, Kim, Kim, and Kim (2011)	Identified and grouped 25 variables into 4 factor-groups.
10	Soekman, Pribadi, Soemardi, and Wirahadikusumah, (2011)	Identified 117 variables affecting construction labor productivity, created 15 groups of factors with similar characteristics.

Source: Researcher's Compilation (2017)

Motivation in the Construction Industry

Motivation is the art of inducing behaviour in a particular manner in order to achieve a task (Adele, 2015). Motivated behaviour has three basic characteristics: (i) It is sustained for a long time until satisfied; (ii) It is goal-directed with a specific objective, and (iii) It results from a need felt by the worker. Several theories have been propounded to help to understand the human being and how to handle him to get goals achieved such as Content theories and Process Theories of Motivation. The Content Theories of Motivation attempt to identify the specific needs that can be leveraged to actually motivate workers (Mullin, 2005). Well-known examples of content theories of motivation include the following: (i) Maslow's Hierarchy of Needs, (ii) Herzberg's Motivation-Hygiene Theory, (iii) McGregor's Theory of X and Y, and (iv) David McClelland's Achievement Motivation Theory. Process Theories of motivation on the other hand are concerned with how people perceive their working environment, including the ways in which they interpret and understand behaviour; they are thus extrinsic theories (Mullins, 2005). The well-known process theories are: (i) Expectancy theory, (ii) Goal theory, (iii) Equity theory, and (iv) Reinforcement theory.

Motivation can be classified into two categories. These are non-financial and financial incentives schemes. Non-financial motivation is intangible; it includes advancement, the work itself, responsibility, and recognition, relations with co-workers, company policy and working institutions. According to Cole (1997), incentive schemes include extra payments or increase in salaries, fringe benefits covering such items as, car, sickness benefits, free education for managers' children, and free holidays. There are several types of non-financial incentives that may be applied to motivate workers, including Job Security, Provision of personal protective equipment, Opportunity to observe national holidays, Free transportation, and Opportunity to learn new skills or techniques.

Most of the researches cited in this paper have been carried out in large construction firms. Few or none of the studies have employed Abuja as their study area. Although Karoshi and Lawal (2014) appraised internal factors that affect labour productivity in medium sized construction firms in Nigeria, their study was located in the southern part of Nigeria. To the best of the researcher's knowledge, the effect of motivational strategies on labour output in small and medium sized enterprises in Abuja has not received much research attention. This represents a gap in knowledge, which this paper attempted to fill.

RESEARCH METHODOLOGY

The research design for this study was empirical in nature, being concerned with assessing the perceived effect of motivational strategies on the productivity of construction professionals and project operatives. In doing this, the study covered building construction projects only in Abuja, the Federal Capital Territory of Nigeria. The study also covered a period commencing from the fourth quarter of 2016 to the second quarter of 2017.

The population for this research comprised the construction professionals and operatives i.e. architects, quantity surveyors, builders and artisans of firms registered with Federation of Construction Industry (FOCI, Nigeria). The population of such construction firms was 54, of which 55 firms were adjudged to be Small and Medium-sized Enterprises (SMEs). Using snowballing technique a convenience sample of 48 firms was obtained, from the 55 questionnaires that were prepared.

The instruments for data collection included checklists for recording information and well structured questionnaires that utilized closed-ended type of responses, with respondents indicating their level of agreement on a five-point Likert scale. The analysis of the collected data was carried out using percentile to determine the frequency of use and level of satisfaction of firms with the use of the identified motivational strategies. Correlation analysis was employed to determine the relationship between the motivation strategies and the output of the selected tradesmen (i.e. brick laying, block laying, concreting, plastering, painting and tiling). Independent Sample T-test was used to determine difference existing between the motivational strategies adopted by construction SMEs, based on the small sample size and the fact that only two variables were being tested.

RESULTS AND DISCUSSIONS

Financial and Non-financial Motivational Strategies Applied In Construction SMEs

The top five financial motivational strategies that were applied in SMEs were (i) transportation, (ii) bonuses, (iii) pay allowance, (iv) health insurance and (v) life insurance. These were provided for in the umbrella agreement between employers and employee trade unions in the construction industry, which was known as the NJIC agreement on remuneration (National Joint Industrial Council). It was observed that just over half of the sampled firms applied any of the strategies being examined. In fact the most frequently applied financial strategy (transportation) was applied in only 58% of the firms. Comparatively, the top five non-financial motivational strategies that were applied in SMEs were (i) Emergency Loan (OL), (ii) Provision of personal protective equipment, (iii) Opportunity to observe national holidays, (iv) Job Security and (v) Flexible work hours. These non-financial motivation strategies were applied in only 28 out of the 48 firms sampled.

Motivational Strategies in Construction SMEs and Labour Productivity

Financial motivation strategies were significantly associated with labour output only in the case of bricklayers and blocklayers. In the case of these two trades, a positive and significant correlation was observed, indicating that increase in the number of financial motivation strategies applied will result in an increase in the output of bricklayers and blocklayers. Observed coefficients of determination (R^2) were 52% and 41% respectively. All of the other four trades that were examined (concretors, plasterers, painters and tilers) had negative and non-significant association with number of financial motivation strategies applied. These results were presented in Table 2.

Table 2: Results of Correlation Analysis on Financial Motivation and Labour Productivity

Analysis No.	Trade	r	P	Remark
1	Brick laying	0.74*	0.000	Significant, strong correlation
2	Block laying	0.640	0.001	Significant, strong correlation
3	Concreting	-0.001	0.995	Non-significant, very weak correlation
4	Painting	-0.187	0.382	Non-significant, very weak correlation
5	Plastering	-0.098	0.650	Non-significant, very weak correlation
6	Tiling	-0.120	0.578	Non-significant, very weak correlation

Source: Researcher's Analysis of Data (2017)

Notes: Variables tested were X₁ = Number of financial motivation strategies applied in SME; X₂ = Output achieved by particular labour trade being examined; r = coefficient of correlation; P = probability value.

Table 3: Results of Correlation Analysis on Non-financial Motivation and Labour Productivity

Analysis No.	Trade	r	P	Remark
7	Brick laying	-0.102	0.627	Non-significant, very weak correlation
8	Block laying	-0.154	0.474	Non-significant, very weak correlation
9	Concreting	-0.314	0.136	Non-significant, slightly weak correlation
10	Painting	-0.278	0.189	Non-significant, very weak correlation
11	Plastering	-0.134	0.532	Non-significant, very weak correlation
12	Tiling	0.432	0.025	Significant, fairly strong correlation

Source: Researcher's Analysis of Data (2017)

Notes: Variables tested were X₁ = Number of non-financial motivation strategies applied in SME; X₂ = Output achieved by particular labour trade being examined; r = coefficient of correlation; P = probability value.

In the case of non-financial motivation, it was observed that only the output of tilers was significantly associated with the number of non-financial motivation strategies applied in SMEs. A weak coefficient of determination (R^2) of 19% was obtained. The outputs of the other five trades that were examined (bricklayers, blocklayers, concretors, plasterers and painters) had negative and non-significant association with number of non-financial motivation strategies applied. These results were presented in Table 3.

Difference between Monetary Values of Motivational Strategies

No significant differences were discovered in the monetary values of the financial and non-financial motivation applied in SMEs. This was true for all of the six trades that were examined (bricklayers, blocklayers, concretors, plasterers, painters and tilers). The observed calculated value of the T statistic was consistently less than the critical value of 1.65; in addition, the probability that the observed value of the T statistic was entirely due to chance was greater than the acceptable threshold of 0.05. The results of the T-Test is summarised in the Table 4.

Table 4. Results of T-test analysis on

Analysis No.	Labour Trades	Mean Values	T_{cal}	T_{crit}	P_{value}	Remark
1	Brick Layers	$X_1 = 42.1250$; $X_2 = 47.7917$	-0.299	2.01	0.766	NSD
2	Block Layers	$X_1 = 29.1250$; $X_2 = 34.6250$	-0.600	2.01	0.552	NSD
3	Concretors	$X_1 = 29.4375$; $X_2 = 17.4792$	1.645	2.01	0.107	NSD
4	Plasterers	$X_1 = 29.2917$; $X_2 = 33.1250$	-0.671	2.01	0.505	NSD
5	Painters	$X_1 = 91.1667$; $X_2 = 143.5417$	-0.598	2.01	0.553	NSD
6	Tilers	$X_1 = 36.7500$; $X_2 = 32.5000$	0.652	2.01	0.518	NSD

Source: Researcher's Analysis of Data (2017)

Note: Variables tested: X_1 = Monetary values of financial motivation strategies applied in SME; X_2 = Monetary values of non-financial motivation strategies applied in SME; T_{cal} = value of t-statistic computed from data analysis; T_{crit} = critical value at 0.05; NSD = Non-significant difference.

CONCLUSION AND RECOMMENDATIONS

The results of the analysis of data carried out for the study on the effect of motivation strategies on labour output of small and medium construction firms in Nigeria led to the conclusion that the most frequently used financial motivation strategies are: Transportation, Bonuses, Other allowance, Health insurance and Life insurance. On the other hand the most frequently applied non-financial motivation strategies are: Emergency loan, IOU, Provision of Personal Protective Equipments (PPE), Opportunity to observe national holidays, Provision of residential accommodation and Free transport. However, less than 60% of the sampled firms applied these strategies.

It was also concluded that the number of financial motivation strategies applied in SMEs has significant influence on the output of bricklayers and blocklayers. This was however not true of concretors, plasterers, painters and tilers. Conversely, the number of non-financial motivation strategies significantly influenced only the output of tilers. There was no significant difference in the monetary values of financial and non-financial motivation strategies applied in SMEs for all of the six trades considered in this study.

The following recommendations were made based on the findings of this study:

- i. The Nigerian construction industry needs more research into why up to 40% of SMEs in the industry do not apply any labour motivation strategies.
- ii. The types and numbers of motivation strategies that had significant impact on productivity in brick and block laying should be adopted for the concreting, plastering, painting and tiling trades as well.
- iii. SMEs in the construction industry could focus on the use of financial motivation strategies, since these have been found to positively influence output in two trades. In addition, no significant difference was discovered between the monetary values of financial and non-financial motivation strategies applied in SMEs.

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