Impact Assessment of Incentive Schemes for the Sustainable Development of Nigerian Construction Industry

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Abstract: The concept of construction productivity and the needs for incentive schemes towards improving the performance of Artisan has long been established. The choice of particular scheme either financial or non financial and to what level it contributes to the productivity of employees remain at stake. Therefore, this study set to evaluate the level of awareness, impact and contribution of the schemes with more emphasis to the non financial incentive schemes. A questionnaire survey involving management and artisans of the three tiers of NCI (Nigerian Construction Industry): large, medium and small within Kaduna and Abuja Nigeria was conducted. Three hundred (300) responses from the management and artisans were used for analysis, inferences and conclusions. The survey result revealed that non-financial incentive schemes are mostly employed in the large and medium scale construction firms. Though, preference by medium and small scale firms was based on those that do not require fund to implement and maintain. It was concluded that, construction firms operating in Nigeria ought to strive more towards implementing non-financial incentive in their organization since artisans are willing to improve their output.

Key words: Artisans, incentive scheme, motivation, productivity, construction.

1. Introduction

Nigerian construction industry accounts for over six percent of the GNP (Gross Net Product), employing not less than forty percent of the labour force. The construction industry therefore promises the greatest payback from an improvement in productivity. As billions of Naira is invested annually in construction activity, therefore an improvement in productivity within the industry will result in huge financial savings that will produce cheaper and more affordable housing with shorter construction periods and economic development [1, 2]. As Construction activities are index of the economic and social progress of any country, Nigeria has been experiencing a remarkable growth in the number, size and complexity of large scale infrastructure project with a rich heritage and

traditional craftsmanship. Motivation is the energizing force that induces or compels and maintain behavior, thus it is one of the major problems confronting management of construction companies in getting their Artisan perform assigned tasks to meet or surpass predetermined targets [3, 4].

The Nigerian construction industry is labour intensive, and it is the highest employer of the nation's workforce. The industry also accounts for over fifty percent of the country's gross capital formation. Unfortunately most empirical studies have shown that, the output of the Nigerian construction industry is quite low when compared with many developed countries. Construction workers productivity in Nigeria has been shown to be very low and this has been the trend for over a decade [5, 6]. Lack of motivation of workers as highlighted by Ref. [7] has the effect such that on average, workers spend approximately half of their working day including breaks on productive work,

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while the remaining time is not spent directly on production but rather on waiting, receiving instructions or idling.

It has also been observed that most project managers and site supervisors do not understand how to identify the operative's goal and link them with organizational reward in order to motivate the operatives, as a result operatives get frustrated and productivity suffers [3]. Though, Wahab [8] was of the view that the factors affecting the productivity in Nigerian construction industry are many and varied, namely, shortage of building materials, poor method of construction, inclement weather during construction works, absenteeism on a prolong scale and lastly failure of contractors to recognize the importance of plants, tools and workers training as means of increasing their productivity. Refs. [7, 9, 10] tend to indicate that, an unsatisfactory work environment can have adverse effects on workers motivation. Motivation is linked to productivity, a worker that is inadequately motivated becomes apathetic or even resentful of his work. Unmotivated workers tend to make only minimal effort with a commensurate lowering of potential overall output and quality of work. Since workers are directly responsible for carrying out construction work, suitable motivation is necessary in order to maximize their production [11].

Perhaps, it is generally accepted that programmes combining elements of both financial and psychological incentives are those that produce the most consistently satisfactory results. The relative weight of either component within a specific programme will depend on company goals, existing employee attitudes, and managerial capabilities at the time of a program's implementation [12].

Ref. [3] highlighted that, every operative is capable of being motivated to achieve his best, since he has certain needs and interest. It is therefore the task of construction managers to determine what are the most valued needs of their operatives through research that are capable of making the operatives to react according

to organizational needs, (increased productivity). Human needs and interest changes with time, it is therefore necessary for continues research work to ascertain these new needs and interest for motivation of operatives within the building industry [13].

Ref. [14] makes a comparative assessment and discovered that, MNCs (multinational construction contractors) outperformed the ICCs (Indigenous Construction Contractors) in virtually all types of incentives (financial, semi-financial and non-financial). Therefore, in order for ICCs to improve on productivities of their workers there is the need for them to emulate the MNCs practices.

Ref. [15] reported that Skinner in 1953 advocated that monetary (financial) or non-monetary (non-financial) incentives, for example praise, recognition, promotion etc after a desired behavior increase the probability of the repetition of the desired behavior. However, punishment (disciplinary measures, fines etc.) after an undesired behavior decreases the probability of the repetition of the undesired behaviors. Past studies has also shown that, between third to half of workers time is being spent only on construction work activities, while the remaining is on the other activities [16].

Site personnel are frequently confronted with problems, such as, extensive rework, waiting for tools and materials, constantly moving from one work area to another, confusing work, lack of identity with the project and lack of recognition for performance [17]. These were described as great de-motivators and unless concerted effort is made to remove them or lessen their effects, the productivity of construction workers will continue to suffer. Based on the foregoing, there is a need to identify and evaluate the methods used in getting the Artisans to maintained desired behavior towards sustainable development of NCI.

Economic incentives project is that incentives schemes that only reward past results of good OSH (organizational health and safety) management (such as accident numbers in experience rating), but should

also reward specific prevention efforts that aim to reduce future accidents and ill-health [18]. Incentive scheme is any system of remuneration in which, the amount earned is dependent on the results obtained, thereby offering the employees an incentive to achieve better results. There are two types of incentives scheme, financial (profit sharing, hourly plus rate, bonus schemes etc, and non-financial schemes (Working conditions, promotion, Security, safety, high class work etc) [19].

However, semi-financial Incentive is a kind of incentive lies between the two extreme and it has the characteristics of both financial and non-financial incentives. These sorts of benefits are generally offered to salaried staff whose jobs are difficult to measure in crude productive term. They may involve benefits such as health scheme, saving scheme, housing, site welfare provision and Pension scheme [14].

The National Working Rules of the United Kingdom states the objectives of incentive schemes in the building industry as, to increase the efficiency by reducing cost of building, to increase individual and collective production, and to provide the opportunity for the employee to increase earnings. Hence, Ref. [20] highlighted that, it is not always necessary to give extra payment (financial incentive) in order to motivate employees to improve their output. He stated that employees in all industries could be motivated through the introduction of non-financial incentives schemes in their organization.

Output measures how much was produced while; Productivity measures how much we produce per unit input. Higher productivity leads to lower costs, shorter construction periods, and better value for money and higher return on investment. The construction process is largely a human management business, a complex, dynamic and uncertain that requires highly motivated workers. The issue of employee motivation is important as it establishes a substantial foundation for higher productivity [21].

High productivity is regarded as a goal that ensures

long-term survival of firms. Firms could benefits because higher productivity leads to more competitive edge, more satisfied customers, higher turnover and increased profits. Achieving greater efficiency and productivity is important not only to the contractor but also to the industry and the nation, since in a highly competitive world only the efficient survives.

However, European Community strategy on OSH (occupational safety and health) recognises that there is a need to use economic incentives to motivate enterprises to apply good practice in their prevention work. Results of an incentive scheme introduced in the German butchery sector in 2002 led to a 28% fall in reportable accidents over the following six years compared to a 16% fall in the sector as a whole. In total numbers this means there were about 1,000 fewer accidents per year in incentivised companies [18].

The genesis of this study was driven by observation in the disparity of outputs between the large and medium size foreign construction firms and that of the medium and small scale indigenous construction firms. This disparity in productivity could be as result of non implementation of incentive schemes by the indigenous construction companies Therefore, there is need to strive towards achieving optimum productivity in the Nigerian construction industry, however it cannot be attainable until problems such as, in adequate tools and equipments, lack of training and development of operatives, poor working conditions, lack of motivation etc are addressed.

However, non-financial incentives scheme are more varied and flexible to apply than financial incentives. Some of the non-financial schemes could also be implemented by construction firms at a relatively low cost or no cost at all. Hence, this study then sought for the best possible ways to motivate workers in the building industry towards improving their productivity and the performance of the construction industry in general. It also link the issue of fallen standard in the quality and output of especially the small and medium scale construction firms in Nigeria to non

implementation of incentive schemes in those firms.

2. Research Methods

The objective of this paper is to assess the impact of incentive schemes on the productivity of Artisans, with a view to identifying ways by which construction operatives are motivated. It also explores ways by which new non-financial incentives schemes can be introduced. However, secondary information was obtained through reviewing relevant literatures while primary information was collected through the use of two sets of structured questionnaires through interviewing selected artisans and their management. The two sets were prepared based on Likert methods of scaling respondent opinion on relevant information/issues within the three categories of construction companies operating in Abuja and Kaduna Nigeria. It captured issues related to the incentives scheme and their level of implementations. Roles played by management and craftsmen in the operation of both financial and non- financial incentive schemes in their construction firms and the level of Satisfaction of both the management and craftsmen with the current output of construction operatives were also assessed.

One hundred and eighty questionnaires were distributed to each category of respondents using the stratified random sampling method as adopted by Ref. [22] within the study areas. This is because, companies within each stratum have similar attributes while firms between different strata have dissimilar attributes in accordance with the population of construction companies in Nigeria. Descriptive and inferential statistics were used to analyze data collected from the survey. Microsoft excel was also used to analyze respondent's opinions. In nutshell, the following tools are also used for data analysis and interpretation of result.

RI (Relative importance index) was calculated for each variable based on responses from each category of Construction Company. It is was calculated using the formulae, $RI = \frac{4n_5 + 3n_4 + 2n_3 + 1n_2 + 0n_1}{4N}$

where,

n_1 = number of respondents for not employed, n_4 = number of respondents for quite employed;

n_2 = number of respondents for rarely employed, n_5 = number of respondents for mostly employed. n_3 = number of respondents for averagely employed, N = total number of respondents.

where,

$RI < 0.60$ — Indicates low frequency in use;

$0.60 \leq RI < 0.80$ — Indicates high frequency in use;

$RI \geq 0.80$ — It indicates a very high frequency in use.

Paired samples statistics was used to test whether there is a significance difference between premium placed by management and artisans on the identified non-financial incentive schemes being implemented in NCI. Criterion: Reject the P-sample test result if $p\text{-value} < 0.05$.

3. Result Discussions

A total of 162 completed questionnaires of artisans were received 12 were wrongly filled, leaving a total of 150 for analysis, while 157 completed questionnaires of management were also received 2 were rejected because they were completed by inappropriate personnel. However for equal representations with that of the craftsmen 150 questionnaires were considered for analysis making 83% of the questionnaires administrated.

3.1 Type of Incentive scheme in the Nigerian Construction Industry

Result show that the nature of employment of craftsmen within the three categories of construction firms surveyed is predominantly about 60% temporary and casual. It also indicates that there are more permanent construction operatives within the large and medium construction firms than in small scale construction companies. However, the premium placed by both the management and operatives on the widely employed scheme is as shown in Table 1.

Table 1 shows that the implementation of non-financial incentive schemes is the preferred method of motivating construction operatives by management of all firms with a relative index of (RI = 0.71) as against financial incentives with an average relative index of (RI = 0.62). It also indicate that, the Artisans in the three categories of firms surveyed confirmed the ranking of management that non-financial incentives are more widely employed in the Nigerian construction industry over financial incentives with a mean relative index (RI = 0.61). Artisan responses also indicate that there is low employment of all forms of incentives schemes within the small scale construction firms.

3.2 Premium Placed on Incentive Schemes

Effort was made to identify the various non-financial

incentive schemes being implemented in the Nigerian Construction Industry and to determine the premium placed on each of them. In all, seventeen (17) variables of non-financial incentives were identified as prominent and the RI (relative importance index) of the premium by both the management and craftsmen within the large, medium and small scale construction firms are shown in Table 2.

It is generally observed that, the relative index of premium placed on the non-financial incentives requiring huge capital for implementation decreases sharply from the large firms to the small scale firms. Though, management of all firms recognized the importance of non-financial incentives towards improving workers productivity. However, Paired samples statistics was used to test whether there is a significance difference between premium placed by

Table 1 Relative importance index placed on the usage of incentive schemes.

Incentive schemes	Management response				Artisan response			
	Large	Medium	Small	Average	Large	Medium	Small	Average
Financial	0.66	0.58	0.63	0.62	0.65	0.55	0.32	0.51
Non-finl.	0.83	0.74	0.54	0.71	0.70	0.71	0.40	0.61

Table 2 Premium placed on identified non-financial incentive schemes.

Identified schemes	Management based on firms				Artisan based on firms			
	Large	Medium	Small	Average	Large	Medium	Small	Average
Provision of working tools/equipment	0.86	0.68	0.54	0.70	0.78	0.69	0.27	0.58
Employee training and development	0.86	0.69	0.42	0.67	0.55	0.59	0.32	0.49
Recognition/praise for work done	0.86	0.91	0.90	0.89	0.74	0.61	0.62	0.66
Encouragement to make suggestion about work	0.58	0.76	0.74	0.68	0.49	0.42	0.63	0.48
Free medical treatment for workers	0.54	0.40	0.38	0.44	0.63	0.61	0.38	0.54
Subsidized insurance for accident on site	0.54	0.54	0.31	0.47	0.61	0.68	0.25	0.51
Transport to and from site	0.83	0.72	0.19	0.58	0.79	0.56	0.40	0.58
Provision of protective work devices	0.63	0.62	0.29	0.51	0.61	0.53	0.40	0.51
Safety plans and provision of first aid	0.78	0.72	0.31	0.60	0.69	0.66	0.23	0.53
Supervision based on leadership by example	0.81	0.81	0.70	0.77	0.64	0.69	0.52	0.62
Finish and go	0.41	0.48	0.84	0.57	0.56	0.70	0.70	0.65
Provision of recreation centers	0.71	0.71	0.49	0.64	0.66	0.57	0.33	0.52
End of year party and award night	0.66	0.51	0.33	0.53	0.73	0.70	0.49	0.64
Love and belongingness	0.79	0.83	0.79	0.80	0.59	0.59	0.72	0.63
Job Security	0.52	0.59	0.42	0.51	0.66	0.62	0.29	0.53
Staff Residential Accommodation	0.71	0.58	0.38	0.56	0.69	0.58	0.42	0.56
Promotion when due	0.76	0.65	0.42	0.61	0.62	0.59	0.35	0.52

management and artisans on the identified non-financial incentive schemes being implemented in NCI. The result was accepted since $P\text{-value} = 0.046 < 0.05$, hence there were no basis for generalizing the perception of management and artisans. Therefore, each group response ought to be studied independently, this is in conformity with the premium placed on the influence of new non-financial incentive schemes on productivity.

3.3 Role Played by Management and Craftsmen on Incentive Schemes

In order to determine the role played by both the management and operatives in the introduction of incentive schemes in their organizations, level of involvement of personnel on non-financial incentive schemes were assessed. Relative index placed by both the management and craftsmen show that the principal initiator for the introduction of non-financial incentive schemes in all categories of construction firms is the management with an average RI = 0.66 as against the ranking by artisans with an average RI = 0.25. Hence, artisan has any role played in the implementation or decision making.

3.4 Effect of Financial and Non-financial Incentives Schemes on Productivity

Responses were obtained on the level of satisfaction of the management of the three categories of

construction firms with the current output of their operatives and the willingness of the operatives to make improvement on their current output. Management of the three categories of construction firms surveyed are not satisfied with the current output of their operatives, and the dissatisfaction tend to increase from the large construction firms (63%) to the small scale firms (84%). Though, operatives of all the three categories of firms surveyed are willing to improve upon their output when desired motivation is ensured. Willingness tend to increase from the large construction firms (60%) to the small scale firms (69%). This is a good indication, as the management of the small scale construction firms expressed the highest dissatisfaction with the output of their operatives. However, influence of both financial and non-financial incentive schemes on the productivity of construction operatives is as shown in Table 3.

Non-financial incentive schemes played greater role on the productivity of artisans than financial incentive schemes from the perception of management while an artisan does not really consider much difference between the two schemes. This makes it imperative to sought the impact of some new non-financial incentive schemes in the Nigerian construction industry based on the five variables of non-financial incentives identified. The results obtained and the relative index placed is shown in Table 4.

Management of construction firms believed that

Table 3 Premium place on effect of incentive schemes on the productivity.

Incentive scheme	Management response based on firms				Artisan response based on firms			
	Large	Medium	Small	Average	Large	Medium	Small	Average
Financial	0.62	0.59	0.59	0.60	0.77	0.75	0.80	0.77
Non-financial	0.71	0.72	0.61	0.68	0.79	0.78	0.79	0.79

Table 4 Influence of new non-financial incentives schemes on productivity.

Incentive scheme	Management response by firms				Artisan response by firms			
	Large	Medium	Small	Average	Large	Medium	Small	Average
Long service award	0.59	0.67	0.61	0.63	0.63	0.64	0.43	0.57
Scholarship award	0.71	0.66	0.60	0.66	0.67	0.64	0.67	0.66
Allocation of shares	0.64	0.59	0.47	0.57	0.63	0.66	0.26	0.52
Free lunch break	0.61	0.68	0.60	0.63	0.81	0.79	0.78	0.79
Counselling services	0.66	0.61	0.55	0.61	0.64	0.64	0.47	0.58

scholarship award for deserving personell's children will have greater impact on worker's productivity when compared with counselling services and allocation of company's shares. While operatives ranked free lunch during break and scholarship award for deserving personnel children high.

4. Conclusions

A wide range of non-financial incentive schemes are being implemented most especially by the large and medium scale construction companies. The use decreases from large to small scale firms despite that some are not well establish. Medium and small scale construction firms give more interest in non-financial incentive schemes that do not require huge initial funding for implementation. However, management of all categories of construction firms is responsible for initiating, Introducing and implementing of non-financial incentive schemes in their organization. Therefore, construction firms operating in Nigeria ought to strive more towards implementing non-financial incentive in their organization since artisans are willing to improve their output. There is also need for the establishment of construction industry development council that could assist the medium and small scale indigenous construction firms to develop and compete favorably with the large foreign construction companies operating in Nigeria.

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