

## **VULNERABILITY OF MOTIVATION SCHEMES IN ENHANCING SITE WORKERS PRODUCTIVITY FOR CONSTRUCTION INDUSTRY'S SUSTAINABILITY IN NIGERIA**

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### **Abstract**

The construction industry provides appreciable employment for the unskilled and semi-skilled labour considering the nature of most activities carried out on construction sites. However, the productivity of this categories of labour have trended poor overtime. This study therefore assessed the financial and non financial motivational schemes; in light of their preference to construction site workers so as to assure on their vulnerability in enhancing productivity. The data collected through the administration of questionnaires to construction site operatives were analysed using the relative importance index (RII). The research instrument was also legitimized with content validity index (CVI) for items  $\geq 0.80$  and cronbach alpha value, as a measure of internal consistency,  $\geq 0.70$ . Allowances, wages stock option and bonuses are the financial motivators while delegation, independence and autonomy, facilities for transportation are the non financial motivations that are important to site workers on construction sites. Giving praises, encouragement to make contributions, free medical care, availability of relaxation centres and first aid provision are the motivation schemes that site operatives believed to enhance their productivity. This paper concludes that both financial and non financial motivational schemes are important to enhancing the productivity of operatives on construction sites. The vulnerable motivational schemes to the enhancement of productivity, as revealed in this study is recommended to the construction and subcontracting firms, foremen, clerk of works, site supervisors, site engineers and all other stakeholders in ensuring a maximum output for a unit input from site operatives.

**Keywords:** *Construction Industry, Motivation, Nigeria, Productivity, Site Operative*

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### **1.0 Introduction**

Ashiru [1] opines that construction industry is responsible for the provision of capital projects which comprises the building and civil engineering sub-sector. The construction industry stands out as the most conspicuous contributor to capital formation in Nigeria [2]. In the pre-independence decade it accounted for about 40% of the total capital formation and in the immediate post independence decade its contribution was a little above 50% [3]. It is therefore no exaggeration to assert that the development of the construction industry is the base for all industrial activities in the country [1]. Government, according to [4] being the largest client, still invests in capital projects as a way of revamping the depressed economy. The largest share of investment capital in all the developing countries finds its way into construction. Unfortunately, the Nigerian construction industry is least developed in terms of mechanization, productivity and the benefits derived from industrial progress. The construction industry in Nigeria is labour intensive; and it is the highest employer of the nation's work force. The industry accounts for over 50% of the country's gross fixed capital formation. Unfortunately most empirical studies have revealed that output of the industry is quite low when compared with many developed countries [5]. Workers' productivity on construction sites has been shown to be very poor and this has been the trend for a long time [6, 7].

## **2.0 Literature Review**

Ashiru [1] opines that construction projects are more complex than ever before, there are new constructional methods, materials, components [4] and different procurement options [8] thereby compounding the risky and complex nature of the industry [9]. Despite all these, thousands of tasks have to be performed precisely if a project is to run smoothly, on time and within the budget allocated [10]. The completion of a construction project requires the judicious scheduling and allocation of available resources. Manpower, equipment and materials are the most important project resources that require close management attention. Labour (manpower) is usually the resources most affected by changes in project structure such as extension of time or compression of time frame which may require the offering of incentives for overtime [11].

### **2.1 Motivation schemes in construction industry**

Construction industry according to [12] possesses a strong and particular structure all over the world as compared with manufacturing industry. Variations in the construction labour productivity can naturally make a great impact on national economy and productivity, since the sector also augments production capacity of its dependent sub-sectors that are many [13].

However, construction workforce especially in developing countries is not seen as an important input, although project labour generally make up the most variable and the largest percentage of total project costs [14]. Due to this high cost of labour, labour cost control is a very important function for profitability in the industry. Despite the fact that these costs change with the type of projects in a broad range, site workers according to [15] typically account for up to 40% of the direct capital cost in large construction projects. The labour cost components of electrical and mechanical works according to [15] also represent 40% -60% of their final cost.

The present situation of the industry makes productivity improvement imperative to the construction sector. Industry is better characterized by traditional or manual methods and hard labour condition, besides a low productivity. Labour intensive technology, on the other hand, requires much more diligence and insight than equipment. Intensive construction processes, and thus labour resource becomes a more important input in the production phase. Moreover, production-related inactivity obvious in a labour-intensive project and the solutions of the inactivity are not easily found, it means that it is easy for a contractor to be lulled into a false sense of accomplishment, when the crews are all working. Residential and commercial construction is labour-intensive as compared to industrial and heavy construction tending to be capital-intensive. In the same way, renovation or retrofitting work, by its own nature, according to [16] requires a higher labour capital ratio than the new construction.

### **2.2 Motivation as a tool for improving construction labour productivity**

Motivation according to [17] has been defined as the characteristic of an individual willing to expend effort towards a particular set of behaviours. It imparts incentives that require a response on part of someone else to achieve a defined goal. In business, motivation is not synonymous with salaries; money is a means for accommodating the economic needs of workers [18]. Motivation according to [19] means an inner wholesome desire to exert effort without the external stimulus of money. Also, Motivating according to [20] is the ability of indoctrinating the personnel with a unity of purpose and maintaining a continuing, harmonious relationship among all people. It is a force which encourages and promotes a willingness of every employee to cooperate with every member of the team [21]. To maintain it is to create and perpetuate the climate which brings harmony and equilibrium into the entire work group for the benefit of all who are involved [21].

Motivation according to [22] is the work managers perform to inspire, encourage and impel people to take action and its efforts must be directed towards improving company operations [23].

To be effective, however, they must also be designed to show benefits to the employee. In fact, motivation can best be accomplished when workers are able to merge their personal ambitions with those of the company. Motivation is defined by [24] as a driver to organization's performance, conditioned by the effort's ability to satisfy some individual need" Motivation as a set of independent and dependant relationships that explains the direction, amplitude and persistence of an individual's behaviour holding constant the effects of aptitude, skills, understanding of a task and the constraints operating in the work environment [21].

The relationship between the employer and employee must be one of understanding in order for the employee to identify himself with his work and with the business he is working for. Lack of motivation in return affects productivity [25]. A number of symptoms according to [26] may point to low morale: declining productivity; high employee turnover; increasing number of grievances; higher incidence of absenteeism and tardiness; increasing number of defective products; higher number of accidents or a higher level of waste materials and scrap. A motivated employee according to [27] is a loyal employee and to be loyal implies that the employee supports the actions and objectives of the firm. The appearance of the job as a whole has, in fact a bearing on the willingness and quality of an employee's performance.

Individuals tend to develop certain motivational drives on the cultural environment in which they live and these drives affect the way people view their jobs. Marti, Gil and Barrasa [28] asserts that achievement, affiliation, competence and power are four types of motivational drives that are found in individuals that are self-motivated and this may be the case for many construction workers. Motivation plays a part in enhancing construction labour productivity and forms the basis for identification of the work environment factors. Prawitz, Garman, Sorhaindo, O'Neill, Kim and Drentea [29] advocated the use of financial incentive programmes to improve construction labour productivity, reinforcing [30] theory of driving forces that led to productivity improvements. Autonomy and comradeship are also found to be important aspects that add to the way construction workers are self-motivated about their work. However, much work in linking motivation and productivity relied on Herzberg's sample involving mainly white-collar professionals [31]. Bowen, Cattell, Distiller and Edwards [32] discovered that productive job creates high job satisfaction while non-productive job (one which fall behind schedule) produce dissatisfaction at all levels of the management/worker chain. The relationship is believed to be due to the very nature of construction, thus different from the one found in an office or factory setting which states that high job satisfaction leads to greater productivity. In construction, a worker, through his own efforts produces a highly visible, physical structure in which great satisfaction comes from completion.

### **2.3 Incentives**

In order to keep construction workers motivated their needs must be addressed as project goals are reached. Satisfying workers' needs according to [33] can be viewed as distributing incentives when certain objectives are achieved. Employees have needs that they want met and employers have goals that they reach and they can work together as a team to satisfy the wants of both the employees and their employers. Workers who are motivated to help reach the goal of the employer and do so should be recognized with an incentive/reward [34]. When considering what type of incentives to use there are two types to be aware of, extrinsic and intrinsic. Extrinsic rewards according to [22, 35] are external rewards that occur apart from work, such as money and other material things. On the other hand, intrinsic rewards according to [36, 37] are internal rewards that a person feels when performing a job, so that there is a direct and immediate connection between work and reward.

The power of incentives is immense and pervasive, which is all the more reason they require careful management [38]. Goldman, Thompson and Daily [39] have summarized a list of these advantages and disadvantages associated with financial incentives. Many construction companies have already considered that there can be advantages and disadvantages of developing

an incentive program. A study by [40] showed that those companies that keep their program simple with the main objective of the program in mind (to benefit the project in reference to cost, schedule, customer service, environment and quality) are also deemed success of any incentive program.

Incentives are usually defined as tangible rewards that are given to those who perform at a given level. Such rewards may be available to workers, supervisors, or top managers. Whether the incentive is linked directly to such items as safety, quality, the reward follows successful performance [41]. Many companies feel that pocket money is a good motivator. Others contend that small rewards such as toasters and blenders do not motivate. Many companies therefore offer profit sharing plans; or companies have abandoned monetary rewards and instead offer lavish trips to such places as Europe and some Caribbean islands.

Because of the expense, these programs require careful monitoring. Some companies merely reward good producers with an extra day off with pay. Other concerns reward top performers with better working conditions. Since incentive programs aim to increase workers' performance levels, the measure used to decide if a reward has been earned should be carefully set [42]. The performance level must be attainable or workers won't try to reach the goal. That fact underscores the usefulness of having workers themselves contribute their ideas about what constitutes a reasonable level of performance. An incentive scheme may also fail if the measure of success ignores quality or safety [43]. An obvious problem exists when an incentive is applied to work that is machine paced. Incentives according to [44] should be clearly linked to performance, but not all incentives can be clearly tied to objective criteria. Some incentive rewards are issued on the basis of a subjective assessment by a superior on the merit of particular workers. Moreover, an incentive scheme is set up to motivate employees to perform better.

### **3.0 Methodology**

This study adopted the use of data which were collected through administration of questionnaires to the site operatives. Two operatives were randomly selected from five trades in 10 different busy sites of Lagos state. A total number of 75 structured Questionnaires were distributed, 49 received, were valid for analysis thus representing 65% of population. The responses to questions were presented in tables and analyzed using the percentile method. Responses to multiple choice type questions that required weighting were analyzed using the relative index for ranking and the values ranked in descending order.

### **3.1 Research rigour**

Researches can be classified into positivist or the interpretative paradigm or philosophy and if a research reflects the principles of positivism, then it has taken the stance that there is a reality out there waiting to be discovered and this reality could be measured and assessed objectively [45]. This research has adopted the positivism paradigm by assessing and measuring the vulnerability of motivation schemes in enhancing sustainable productivity in the Nigerian construction industry. Rigour; which ensures that scientific results stems from standard and accurate means in research [46] needs to be established [47]. Tobin and Begley [48] relate rigour to legitimising research process; where validity and reliability are the tests of rigour in positivist (quantitative) research [46]. Wong, Ong and Kuek [45] added a third criterion (sensitivity) to validity and reliability as means of ensuring good measuring instrument. Sensitivity is the ability of research instrument to capture the variability in responses and 5-point likert scale was advocated because it allows for optimum choice of response [45]; and thus adopted in this research work.

Validity concerns with the extent to which a measure reflects the social phenomena being observed [49]. Face and content validity are used to evaluate the degree to which elements of the research instrument are relevant to and representative of the targeted construct in this research.

Face validity for the research instrument used in this research was carried out according to [50]. Sushil and Verma [50] state that face validity is assessed by having expert researchers to review the contents of the test to see if the items seem appropriate, therefore, two randomly selected experts each in the field of Human Resource Management and Construction Management carried out the face validity test of the questionnaire and; was adjudged face valid. Content validity index (CVI); which quantifies the extent of agreement between experts [51] was used in evaluating the content validity of the questionnaire for this research and was carried out in accordance to [52]. Parsian, and Dunning [52] require that experts in the area of study be asked to rate the relevance of the items in the questionnaire draft to the study concept using Likert scale. This was carried out on a 3-point Likert scale (1=not relevant, 2=somewhat relevant, 3=relevant) by four experts in the area of study and the mean aggregate CVIs for all constructs presented on Table 1 as follows:

**Table 1:** Content Validity Index (CVI) test

<b>Contents</b>	<b>Mean Content Validity Index (CVI)</b>
Financial motivational schemes	0.81
Non-financial motivational scheme	0.89
Vulnerability of motivational schemes	0.80

For financial motivation schemes, the four experts agreed on the ‘allowance’ while three out of four agreed on wages, stock option and bonuses. Where there’s a total agreement, the CVI is 1 (4/4) and where one of the experts differ, the CVI is 0.75 (3/4). The mean aggregate of the experts rating is 0.81. The item ‘option’ in the financial motivation schemes was not judged by the experts. In similar manner, experts had total agreement in the rating of items delegation, independence and autonomy, flexible hour and opportunities to contribute for non-financial motivation schemes. Three out of the experts agreed on the other items in the rating of the non-financial motivation schemes and the mean aggregate of experts rating is 0.89. The items representing the vulnerability of the motivation schemes in enhancing productivity have a mean aggregate expert rating of 0.80. Polit, and Beck [53] state that a CVI of .80 or better indicates good content validity, therefore, the questionnaire used in this research is content valid.

In further validating the questionnaire, the test of internal consistency was carried out using Cronbach’s alpha. Cronbach’s alpha is often considered a measure of item homogeneity where large alpha values indicate that the items are tapping a common domain [54]. The internal consistency of the measured attributes in this study as perceived among the respondents within the Likert scale (0 to 5) was explained by the reliability coefficient that is based on the average correlation among the attributes and the total number of attributes in the sample. Using the statistical Package for Social Sciences (SPSS), the Cronbach’s alpha ( $\alpha$ ) was computed and presented on Table 2 below:

**Table 2:** Test of Reliability

<b>Scale of measure</b>	<b><math>\alpha</math>-value</b>
Financial motivational schemes	0.73
Non-financial motivational scheme	0.79
Vulnerability of motivational schemes	0.70

In order to examine the internal consistency of the scale, the Cronbach’s alpha ( $\alpha$ ) test was performed on the attributes under each factor and on all the attributes. Sushil, and N. Verma [50] reiterate that if a test has a strong internal consistency, it should show only moderate correlation among items (.70 to 0.90). Too low values means unreliability and too high values revealing some items are redundant and should be removed from the test. Hence, for this study value of  $\alpha$  as 0.7 was used as cut-off value as adopted by [55]. The Table 2 above presents Cronbach’s alpha ( $\alpha$ )

values which are 0.73, 0.79 and 0.70 for financial motivational schemes, non-financial motivational schemes and the vulnerability of motivational schemes respectively. The Cronbach's alpha ( $\alpha$ ) values indicate that the research instrument is reliable.

#### **4.0 Results and Discussions**

This section presents the analysis results of the collected data. The findings of the analysis are presented in tables and discussed under the various headings captured below.

**Table 3: Years of Experience of Respondents (Site Operatives)**

<b>Years of Experience</b>	<b>Frequency</b>	<b>Percentage</b>
Less than 5yrs	2	4
5-10yrs	4	8
11-15yrs	14	29
16-20yrs	8	16
Above 20 years	22	43
<b>Total</b>	<b>49</b>	<b>100</b>

From the Table 3 shown above, respondents with more than 20 years of experience representing 43% responded to the questionnaire while those representing 29% and 16% have range of years of experience between 11- 20 years and thus meaning that reasonably high percentage of respondents have requisite experience in their respective companies and are qualified to respond to the questions.

**Table 4: Importance of financial motivation schemes to construction site workers**

<b>Schemes</b>	<b>R. I.</b>	<b>Rank</b>
Allowances	0.776	1
Wages	0.696	2
Stock option	0.68	3
Bonuses	0.676	4
Others	0.608	5

Tables 4 reveals that allowances under financial scheme ranked 1st with relative index of 0.776, this is in line with the statement of [56] that such monetary rewards may psychologically appease the employees when they are asked to work longer hours and finally [57] that giving such allowances create in employees a feeling that they are being cared by their firms and thus, may be willing to work harder.

**Table 5: Importance of non-financial motivation schemes to construction site workers**

<b>Schemes</b>	<b>R. I.</b>	<b>Rank</b>
Delegation	0.704	1
Independence and autonomy	0.704	1
Facilities for transportation	0.688	3
Others	0.660	4
Training and development	0.632	5
Flexible hour	0.608	6
Opportunity to contribute	0.556	7
Recreational programmes	0.584	8

Tables 5 reveals that independence and autonomy and delegation under non financial scheme also ranked 1st on the list and this as well is in consonance with [58] that from industrial sociology, we know that blue-collar workers put emphasis on independence and autonomy and by expressing independence and autonomy in various ways, workers differentiate themselves from one another; they become individualised and individuated as e.g. skilful, trustworthy or productive. The least as shown on the table is recreational programmes that ranked 8<sup>th</sup> under non financial incentive schemes with relative index of 0.584.

**Table 6:** Vulnerability of motivation schemes in enhancing productivity of site workers

<b>Schemes</b>	<b>R.I</b>	<b>Rank</b>
Giving of praises for work or responsibility well discharged	0.872	1
Encouragement to make contributions	0.728	2
Provision of free medical care for the operatives	0.700	3
Availability of relaxation centre for operatives to relax after work	0.700	3
Provision of first aid as a measure of safety	0.696	5
Organizing end of the year party for operatives to interact with top officers	0.696	5
Job security	0.684	7
Provision of protective devices	0.684	7
Avoidances of delay after day's work	0.676	9
Giving of awards for meritorious services	0.636	10
Provision of working implements and tools	0.628	11
Availability of transport facilities	0.620	12
Provision of insurance scheme against unforeseen circumstances	0.600	13
Availability of training opportunities and development of employees	0.600	13

Table 6 shows that giving of praises for work or responsibility well discharged contributes immensely towards increasing productivity while availability of training opportunities and provision of insurance schemes against unforeseen circumstances with relative index of 0.600, have least effect in boosting productivity on construction sites.

Various motivation schemes are highlighted and allowances was ranked to be the most prominent in all the sites visited as part of the financial motivation schemes while the most predominant under non financial schemes was to allow employees to be independent and giving them the autonomy to perform, as in table 4. Motivation schemes that is most vulnerable to enhancing productivity in the industry and of all listed, the most susceptible is giving of praises to work or responsibility well discharged which is in table 6.

## **5.0 Conclusions**

With reference to data collected from the field and duly analysed, it can be concluded that productivity in construction industry can largely be enhanced by paying adequate attention to the motivation schemes available and that giving of praises for work or responsibility well discharged can boost the morale of operatives on site. It should also be noted that combination of two or more of the motivation schemes such as encouragement to make contributions and availability of relaxation centre for operatives to relax after work can as well yield same result of maximising the output of the workers such that high degree of productivity can be attained.

From the foregoing, it can be recommended that the construction and subcontracting firms, foremen, clerk of works, site supervisors, site engineers and all other stakeholders should motivate their workers by giving them praises for work or responsibility well discharged and also, allowing them to make contributions, provisions of free medical care and making available relaxation centres after work, make them work to their maximum capacity (maximum output) for a unit input from site operatives towards the construction industry's sustainability in Nigeria.

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