

An Assessment of Factors Influencing Foremen Productivity on Construction Sites in Abuja Metropolis, Nigeria.

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ABSTRACT

Decline in productivity has been reported to have detrimental effect on the economy of any nation because it creates inflationary pressure and social conflict amongst the populace. Therefore, to achieve effectiveness in productivity various factors need to be addressed, such factors are usually in various dimensions of human endeavours. Hence, this study seeks to investigate the factors influencing the productivity of foremen on construction sites in Abuja Metropolis Nigeria. The quantitative approach was adopted in this research. The target population were the foremen involved in construction works within Abuja metropolis. The results were analysed using Statistical Package for Social Sciences (SPSS) while the Relative Importance Index was used to rank the factors based on significance. The results show that the major factors affecting foremen performance in Abuja Metropolis are recognition to success, skill competency of the foremen, incentives and rewards, good and friendly working relationships between supervisor and colleagues, fatigue at work and working in hazardous areas. The study also shows that factors like over staffing a particular task and increase in working hours has little to no effect on the performance of foremen in the Nigerian Construction industry.

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1.0 Introduction

Productivity is defined as a ratio between an output value and an input value used to produce the output [1]. Output consists of products or services and input consists of materials, labour, capital, energy, etc. There is nothing as dangerous to an economy as a decrease in productivities because it creates inflationary pressure, social conflict, and mutual suspicion [2]. Productivity improvement in construction is best understood when the construction process is visualized as a complete system. The system is made up of the construction project to which material; personnel, equipment, management, and money are inputs. They are consumed by the system in the process of producing the construction unit [1, 2].

The productivity of an operation is measured and compared to the values in the estimate or budget [3]. If the actual productivity does not compare favourably with the estimated values, the input categories affecting productivity in the system- namely material timeliness, labour effectiveness, and management practices need to be examined [1-3]. To improve productivity effectiveness, various factors can be addressed, including motivation, job safety, environ-

mental factors, and physical limitations [4]. Also, management practices which include scheduling, planning, data collection, job analysis, and control needs to be addressed [5].

Developing some form of indices is by far the most common procedure for assessing productivity changes [6]. Although partial productivity ratios are also widely used in the construction industry, however, they tend to be too narrow to give a comprehensive picture of the productivity improvement at the business unit level [5]. In many cases, productivity is measured and indicated as labor productivity [7]. This fact implies that industries characterized as labor intensive such as the construction industry may not be treated equally in relation to low-labor intensive industries [7]. Generally, productivity can be viewed as an act of getting positive outcome after inputs of efforts.

Foremen have been regarded in construction industry as very essential because of their efforts in combining resources in order to produce the various construction products [8]. Studies in the Nigerian construction industry have however shown that foremen

effort to performance vary widely within the industry and their performance management has remained one of the most contributing factors to construction productivity [9]. The need to study the factors that affect performance of foremen as the heads of the trade's men in the Nigerian construction industry can be attributed to the problems and complex issues on construction projects which in the long run directly affect the general performance on the construction site [3, 10].

[11] established 10 most significant factors affecting construction productivity in Thailand and they include lack of materials, incomplete drawings, incompetent supervisors, lack of tools and equipment, absenteeism, poor communication, instruction time, poor site layout, inspection delay and rework. A study by [4] in the Gaza Strip identified the five most important factors that impact negatively on labour productivity as material shortages, lack of experience of labour, lack of labor surveillance, and alteration of drawings/specification during execution. In Nigeria, [12] identified low wages, lack of materials and unfriendly working atmosphere as having key impact on productivity of craftsmen involved in in-situ concrete operation in single storey building projects in Nigeria. The quest to proffer remedy to the foremen performance challenge in the developing countries such as Nigeria propelled concerted effort needed to be geared towards this sector for increased construction productivity. Considering the complex and fragmented nature of the construction project and the role foremen play in bridging this gap to ensure proper delivery of projects [13].

[2] identified a number of factors which can affect the performance of foremen to include, motivation, leadership styles, remuneration, benefits, training, the internal environment, mentoring, and initial recruitment policies, among others. A deliberate understanding of these factors can help clients, contractors and consultants manage the foremen on construction project and bring out the best in them.

According to [14] among the human resources system in any organization, performance evaluation and the ratings of employees' performance especially the foremen, is considered very important because it represents critical decisions that highly influence a variety of subsequent human resources actions and outcomes. Studies by [12, 14] have shown that most organizations in the competitive labour market have failed to achieve their targets successfully because employees such as foremen do not perform at the utmost standard. This is due to the inability of the working environment or companies' norms to encourage employees to work harder [13].

Also where the management does not invest much into the welfare and motivation of their workers, problems are bound to arise which may lead to poor construction output, low commitment to work, low morale and poor job satisfaction these may also lead into

low productivity of the services render [10]. Furthermore, lack of job satisfaction among foremen in a construction organization, could lead to poor production and work performance [11]. Performance factors such as the pay, the job itself, promotion opportunities, support from supervisors and relationship with co-workers also affect employee's satisfaction [10, 11]. Also, [14] posits that a dissatisfied employee is most likely to show poor performance at work which indirectly affects the productivity of the organization. Therefore, to compete in the global construction market and achieve organizational goals, the organization should do more for its employee, such as the foremen these could lead to higher job performance [11-14]. Therefore, the study seeks to bridge the gap in knowledge of the factors that affect foremen's performance in the Nigerian construction industry and hence extend the frontiers of foremen's performance and role in the Nigerian construction industry.

2.0 Research Methodology

2.1 Sampling technique

The random sampling techniques was adopted in this study. Since the research deliberately targeted a particular population. The population sample for this research is infinite population. This is because it is not possible to count all the units or foremen as contained in the population.

2.2 Determination of Sample Size

Out of the 100 questionnaires issued in this study 87 were retrieved representing 87% response rate. From Table 1 based on the assertion of [16] and adapted by [14] the result of a survey could be considered significant if the response rate is not lower than 30-40%. Therefore, the percentage of the returned questionnaires is adequate for analysis. The construction sites along Airport road in Abuja were covered between the months of January to April, 2022 and the target population were the foremen because they tend to serve as the middle men between the professionals and the crews. The choice of Abuja Metropolis as a study area for this study is based on the fact that as the capital territory of Nigeria there are a lot of Governmental, private and personal construction activities ongoing as such the city can be said to be an epicenter for construction activities.

2.3 Data analysis Technique

The data collected from the respondents were analysed using the Statistical Package for Social Sciences (SPSS) and Relative Importance Index (RII) was used to rank the factors affecting construction foremen and their level of productivity. The data was

analysed by determining their corresponding frequency and percentage, the following formula were used:

Percentage: Percentile was used to determine the magnitude of the responses of the questionnaire

$$\% = \frac{n}{N} \times 100 \quad (1)$$

where n = number of respondents, and N = total number of respondents

Relative Importance Index (RII): Relative importance index was used in the study to rank the perception of foremen on factor affecting their performance in the construction industry.

$$RII = \frac{\sum fx}{\sum f} \times \frac{1}{k} \quad (2)$$

where $\sum fx$ = is the total weight given to each attribute by the respondents, $\sum f$ = is the total number or respondents in the sample, and k = is the highest weight on the likert scale. Ranking of the items under consideration was based on their RII values. The item with the highest RII value is ranked first (1) the next (2) and so on. In analyzing a Yes and No question, percentage was used as follow with 1 being NO and 2 being YES. The rating of all the factors for degree of significance was based on the value of their respective relative importance indices (RII). The guide for the rating is given in Table 2.

Table 1. Breakdown of Administered Questionnaires

Items	Foremen
Number distributed	100
Number properly filled and returned	87
Percentage response	87%

Source: Field survey (2022)

Table 2. Guide to degree of significance

Degree of significance	Rating.
Very significant	0.76 above
Significant	0.67-0.75
Fairly significant	0.45-0.66
Not significant	Below 0.44

Source: [15]

3.0 Results and Discussion

3.1 Foremen years of experience

From Figure 1, 47% of foremen had highest frequency of years of working experience of (5-10) years, while 30% of the foremen had the second highest number of years of working experience of (10-15) years, 17% of the foremen have the third highest work experience of (0-5) years, and only 6% of the foremen had fifteen

(15) years and above of working experience. This shows that most of the foremen working in the construction companies had few years of work experience.

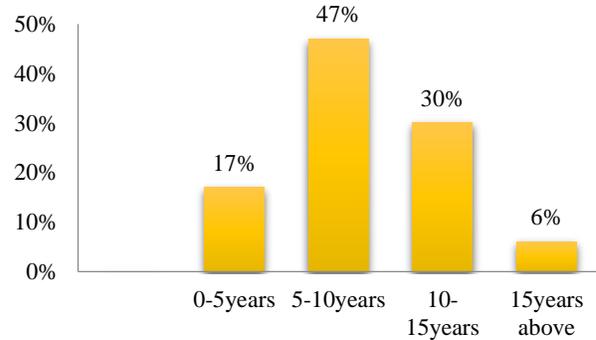


Figure 1: Foremen years of experience. Source: Field survey (2022)

3.1 Foremen years of experience

Figure 2 shows the number of projects executed by the foremen in the last five years. Six to eleven (6-11) number of projects executed in the last five years by the various construction companies have the highest percentage of 45 %, while zero to five (0-5) number of projects executed has the second percentage of 28%, twelve to seventeen (12-17) number of projects executed has the third percentage of 26%, eighteen (18) number of projects executed has the least percentage of 1%. This indicates that in the last five years the various construction companies had limited number of projects executed. It can be inferred from Figure 2 that an average of 6-11 projects were executed by most of the foremen in the last 5 years. This implies that the factors measured and identified in this study were accounted for through experienced on an average of mostly 6-11 projects.

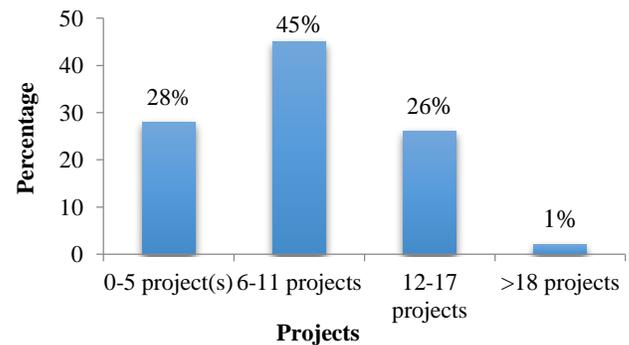


Figure 2. Number of Projects Executed in the Last Five Years. Source: Field survey (2022)

3.3 Types of projects handled by the organization

Table 3 shows the type of projects handled by the foremen's respective organizations, 48 respondents representing 55% of the construction companies surveyed handled both building and road construction, while 47% handled building construction work, and none of the construction companies handled road construction only. This implies that most of the foremen within the study area handled a combination of both building and road construction projects. Therefore, the answers provided by the foremen in this study were based mainly on their experiences in construction of both roads and buildings.

Table 3. Type of projects handled by the organization

Type of project	Frequency	Percentage
Building construction only	39	47%
Road construction only.	0	0
Building and Road construction	48	55%

Source: Field survey (2022)

3.4 Productivity factors

Table 4 shows the generic factors affecting the productivity of foremen on Construction sites in Abuja, Nigeria. The results show the most ranked factor which is very significant as job content and financial rewards with RII of 0.83 to the least ranked over staffing particular task ranking twentieth with RII of 0.44, and is considered not significant since it falls between the ranges of 0.44 and below (Table 2). From the results presented in Table 4, "job content and financial rewards" affects the performance of foremen within the study area more than all other factors. If the foremen are rewarded adequately, commensurate with the job done, performance of their assigned task will be done more effectively and efficiently. Financial rewards and robust job content can also serve as an incentive for greater performance. It would be impossible to expect high performance from a foreman who is under-paid and as a result he will be unable to meet his basic needs. Also, the results obtained, it can be inferred that for effective and efficient performance of foremen on construction project the content of job or work carried out should be properly rewarded so as to permit other forms of motivation to perform at work. The other factors affecting performance as identified in the Table 4 should be managed in the order of their respective significance. This study agrees with the conclusions of [14] who revealed the results on a research of productivity of Artisans, which posits that performance improvement have varying effects on the output of Artisans and that 88% of the total variations were based on remunerations and work development. This agrees with the findings of this study as a way to

pay adequate attention to reward variability of works performed. Furthermore, their study shows that accordingly for improve productivity effective day to day project supervision by the project Engineers and or foremen will go a long way in improving the productivity of Artisans through personnel evaluation and work development this also agrees with the findings of this study as the respondents were of the opinion that if adequate training is given better performance will be realized. Also, this study agrees with the findings of [12] and [14] in their separate works on motivational drivers of Artisans in the Nigerian construction industry which reported that job contentment and financial drive, incentives and rewards are the most motivating factors toward increase productivity of artisans (Carpenters/iron benders in schedule delivery of works) as it also relates to foremen.

3.5 Performance Assessment of foremen towards productivity on construction sites

Table 5 shows the performance of foremen towards productivity on construction sites in Abuja. From the result obtained, 74% response rate of the foremen surveyed agreed that working hours do not affect their performance at work as against 26% who said YES that working hours affect their performance. This implies that most of the foremen working on construction sites surveyed can work efficiently during working hours to achieve maximum result at any time. Generally, the factors above were either YES they agree or NO they did not agree in the performance assessment of foremen. From results obtained, it can be inferred that for effective and efficient performance assessment of foremen in construction companies, priority should be given to the ability of foremen to lead and assign jobs. It is instructive to say that the ability of the foremen to assign jobs and supervise workers adequately serves as the major means of assessing the performance of foremen in construction projects. A foreman who lacks the ability to execute the aforementioned task can be deemed not to be competent in discharging his duties. Since individual construction companies have varying requirements, it will be necessary for the management of the various and or such construction companies to apply a high level of care in assessing performance so as to balance the ability to meet up with the task requirements of work needed for their improved performance/productivity. Findings of this study agrees with the work of [8], on the assessment of the importance of the first line managers (FLM) in construction which posits that even new first line managers claim to have the ability to assign jobs to their subordinates. Again, the work reported that first line managers when placed on rewards and recognitions for outstanding performance improves their productivity. Working hours was found to affect performance however when it comes with welfare packages productivity of the

first line managers improves greatly this agrees with findings of this study. The ability to select jobs, remunerations, work personnel evaluation and development play vital role in the outstanding output of the Foremen as shown by [8] and [14]. However, their work disagrees with findings of this study that sometimes monies added

due to overtime do not really attract the foremen though due welfare packages coupled with recognition to success makes the foremen to put in their best.

Table 4. Generic factors affecting the productivity of Foremen in the Construction Industry

S/N	Factor affecting Productivity	Frequency of Responses					Σf	Σfx	RII	Rank
		1	2	3	4	5				
1	Job contentment and financial rewards	2	2	15	31	37	87	360	0.83	1 st
2	Quality factors	2	16	21	25	23	87	312	0.82	2 nd
3	Tasks planning	2	10	19	28	28	87	336	0.78	3 rd
4	Hazardous work area	6	6	13	38	24	87	329	0.76	4 th
5	Fatigue	2	9	13	43	20	87	331	0.76	4 th
6	Incentives and rewards	7	6	13	37	24	87	326	0.75	6 th
7	Motivation	3	7	17	20	30	87	318	0.74	7 th
8	Delay of materials supply to site	13	9	15	30	20	87	164	0.70	8 th
9	Tools and equipment shortage	9	6	27	33	12	87	294	0.68	9 th
10	Personal problems	9	15	17	29	17	87	291	0.67	10 th
11	Cost factors	11	13	17	28	18	87	290	0.67	10 th
12	Crew size inefficiency	7	15	33	22	10	87	274	0.63	12 th
13	Weather and season changes	6	22	27	20	12	87	271	0.62	13 th
14	Concurrent operation	7	20	32	20	08	87	263	0.59	14 th
15	Manager's attitude	17	17	21	17	15	87	257	0.59	14 th
16	Rotating of work schedules	17	17	21	17	15	87	257	0.58	16 th
17	Overtime at work	15	24	19	20	09	87	245	0.57	17 th
18	Time factor	26	15	15	15	16	87	241	0.56	18 th
19	Organizational practice and culture	9	15	17	29	17	87	291	0.54	19 th
20	Over staffing particular tasks	13	24	24	13	13	87	322	0.44	20 th

(1=highly unimportant 2=unimportant, 3=fairly important, 4=important, 5=highly important).
Source: Field Survey (2022).

Table 5. Performance assessment of productivity of foremen

S/N	Performance Assessment	Frequency of responses		Σf	Percentage (%) of responses	
		1	2		1	2
1	Working hours affect my performance	64	23	87	74%	26%
2	Adequate job security enhance my performance	61	26	87	71%	29%
3	Recognition and rewards motivates outstanding performance	2	85	87	2%	98%
4	Cordial working relationship improves performance	7	80	87	8%	92%
5	Ability to lead and supervise other subordinate workers improves performance	11	76	87	13%	87%
6	Ability to meet work deadline under pressure improves performance	21	66	87	24%	76%
7	Ability to organise materials, tools and equipment improves performance	6	81	87	7%	93%
8	Ability to estimate materials, equipment and manpower improves performance	21	66	87	24%	75%
9	Capacity of good judgment in settling of disputes among workers improves performance	2	85	87	2%	97%
10	Ability of assigning job and supervising workers motivates performance	0	87	87	0%	100%

(1=NO, 2=YES). Source: Field Survey (2022)

Conclusion

This study on the assessment of factors influencing foremen productivity on construction sites gathered that foremen effort varies widely within the construction industry and their performance management has remained one of the most contributing factors to construction productivity. The study identified problems associated with foremen's performance evaluation criteria on construction projects in Abuja to include inability of foremen to assign jobs and supervise workers adequately on the construction sites as the most significant factors greatly affecting productivity on the construction sites. Therefore, this study concludes that for improve productivity of foremen on construction sites in Abuja, motivation in form of incentives, rewards and recognition to outstanding success, change

in companies' leadership styles, better remuneration, adequate training, conducive internal and working environment, proper mentoring amongst other factors need to be adhered to, implemented and appreciated by companies on the construction sites in the metropolis. The study recommends that construction companies should develop performance measurement system in order to measure the productivity of the foremen involved in different projects so as to have better understanding of grey areas that need improvement for better output. Also, the construction industry must be willing to see motivation beyond just a concept but a major parameter that improves performance among workers towards building a sustainable system.

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