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Effect of Tradesmen Demographic Information on Labour Output of Plastering and Rendering Operations in the Nigerian Construction Industry

Adegboyega, A. A.[1], Onyeagam, O.P.[2], Eze, E.C.[3] and Adamu, A.[2]

[1]Department of Quantity Surveying, Waziri Umaru Federal Polytechnic, Birnin Kebbi, Nigeria.

[2] Department of Quantity Surveying, Federal Polytechnic Nasarawa, Nigeria.

[3] Department of Quantity Surveying, Federal University of Technology, Minna, Nigeria.

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ABSTRACT

The overall performance of construction firm is affected by productivity of its employees. This study employed work study approach to empirically establish the relationships between tradesmen demographic information and labour output on plastering and rendering operations. The data gathered were analysed using descriptive and inferential statistics. It was found that tradesmen age, their mode of employment, educational qualification, years of experience, quality of surfaces, shape of structure, and period of the day; have influence on the level of productivity of masons. It was concluded that the demographic characteristics of construction operatives/tradesmen affect labour output for plastering and rendering operations.

1.0 Introduction

The construction industry of any country is the propelling force behind economic growth and development directly or indirectly. The activities of the industry are catalytic to economic sustenance and stimulate infrastructural growth. Aibinu and Jagboro (2002), argued that even though construction industry contributes less to national economy compared to manufacturing and other services industries, it is still occupies a vital niche in the nation's economy. Construction contributes significantly to the GDP, capital formation and employment generation (Saka and Lowe, 2010). Similarly, Fagbenle et la.(2011) posited that the industry constitutes the most single sector of capital formulation in any national economy. The industry is the barometer for the performance of the economy in most developing countries (Kazazand Ulubeyli, 2004). Construction industry is labour intensive in Nigeria; and it is the highest employer of the nations' workforce (Aina, 2016). In spite of the enormous role the industry plays in Nigeria, it is still facing number of problems regarding the low productivity, poor safety and insufficient quality.

Workers' productivity on construction sites has been shown to be very poor and this has been the trend for a long time (Fagbenle et al., 2011). Productivity is one of the most important factor that affect overall performance of any small or medium or large construction industry. There are number of factors that directly affect the productivity of labour, thus it is important for any organization to study and identify those factors and take an appropriate action for improving the labour productivity. At the micro level, if we improved productivity, ultimately it reduces or decreases the unit cost of project and gives overall best performance of project. There are number of activities involved in the construction industry. Thus the effective use and proper management regarding labour is very important in construction operations without which those activities may not be possible (Adnan et al., 2007).

The estimation of unit rates of construction work items dependent on the quality of productivity data used. According accuracy of the project cost estimate depends largely on the degree of accuracy of cost information obtained on the key components of an estimate (i.e. labour, plant, material and overhead and profit). On one hand, the estimation of the cost of materials, plant and overhead and profit is relatively straight forward and hardly a source of contention (Ashworth, 1999). This is because they are easily obtainable through market survey research. On the other hand, labour component is estimated on the basis of the labour outputs collected on each work trade (Ayeni, 1999). However, the source, accuracy and application of these outputs for the preparation of cost estimates for construction projects in Nigeria have been challenged by researchers (Udegbe, 2007; Muhammad, 2009).

In Nigeria, for example, most of the output constants used by estimators are either derived from experience or are remnants of British colonial heritage (Onyeagam, 2014 and Adegboyega, 2014). Hence, non-uniform outputs are widely used across the industry. In addition, results of a study revealed a very sharp variation between output constants established for block work and concrete work as compared with British-based outputs that are still being used for teaching in institutions offering Quantity Surveying in Nigeria. Similarly, Udegbe (2007) established labour outputs for plastering/rendering and painting and also reported sharp variations compared to the British-based constants in wide usage.

Tele:

E-mail address: adegboyegaadesoji@gmail.com.

Attempts at productivity measurement have focused on the individual, the firm, selected industrial sectors, and even entire economies. The intensity of debate over appropriate measurement methods appears to increase with the complexity of the economic organization under analysis. There are however, a number of different productivity measures that are commonly used. Choosing between them usually depends on the purpose of the productivity measurement and the availability of data. Yates and Swagata (1993) have argued that the productivity of workers is influenced by factors which vary according to geographical locations.

This further questions the appropriateness of employing British-based labour constants in Nigeria. It also questions the accuracy of estimates developed based on the British-based labour constants. Recognizing this, some researchers have carried out studies on the empirical determination of labour output constants for some trades in Nigeria (Muhammad, 2009; Akeredolu, 2014; Abba, 2010; Sani, 2011; Ibrahim, 2011; Onyeagham, 2014; Aina, 2016). These studies only addressed a handful of trades in few states in Nigeria. It is very clear that the materials, plants, overheads and profits ingredients of a unit rate of construction work can be calculated on the basis of quantitative estimations, the accuracy of the labour constants commonly used for estimating labour costs still remain unclear and uncertain,. Similarly, the dynamics of the tradesmen variables that affect the productivity of construction workers in Nigeria are not well understood.

With this knowledge, this research work employ work study approach to empirically establish the relationships between tradesmen demographic information and labour output on plastering operations, with a view to improving labour productivity. The specific objectives of this study are to assess tradesmen (masons) demographic information, and to determine the effect of these demographic variables on tradesmen productivity for plastering and rendering. The study considered plastering and rendering operations for the BESMM 3 items; Wall with width greater than 300mm and 12mm thick plain, from Natural ground level to 1.5m high (Gang Size:- 1 Mason:1 Labourer).

2.0 Tradesmen in the construction industry

The structure of labour force in the construction industry are categorised into skilled and unskilled workers (Griggs *et al.*, 2016; Ali 2016). Liepmann (2013) posited that the labour force under the skilled workers are of varying abilities ranging from apprentices to trades foremen or supervisors. A beginner who is willing and interested in learning one trade or the other in construction industry is known as an apprentice. Husseini (2008) stated ways through which skilled workers could be trained, these are; schools, vocational training centres, workshops and on sites. Skilled worker is a segment of the work force with a high skill level that creates significant economic value through the work they perform (Bheemaiah and Smith, 2015; Ali, 2016). Skilled workers are highly experienced and exhibit high level of expertise in performing complicated tasks that require specific skill sets, education, training and experience, and those requiring abstract thinking. According to Uchitelle (2009), skilled workers include bar bender, tiler, plant operator, electrician, painter, carpenter, plumber, mechanics ,mason, welder and steel fixer). Skilled workers does not require a college degree, but certain form of professionalism and training is needed (Sweet and Meiksins, 2016).

According to Ali (2016), Skilled workers not only work with their hands to build, fix, or install something, there is also a significant amount of brainpower required to do most jobs. Skilled workers are persons that have served an apprenticeship, practice the trade learned activity, and by reason of their knowledge and vocational capacity are given tasks which are particularly difficult and need lot of experience that involves different trades of specialisation (Vollenhoven, 2016). The present trend of technology, skilled workers are required to be computer literate as many machines used in construction operations are now computerized; they also, requires sound mathematical and reading skills in order to calculate, measure and read blueprints accurately (Griffith and Macartney, 2014). Also, this era of robotics and lasers technologies have made it mandatory for skilled workers to be computer literate to ease certain construction tasks and trades (Scarbrough and Corbett, 2013).

Wahab (2011) defined unskilled workers as those category of workers that require special skills and it is defined as any way of making a living with little or no degree of security of income and employment and they require little or no training to make them perform. Goswami *et al*., 2016) further stated that unskilled workers are able-bodied men and women that perform manual activities, and their major asset therefore lies in their strength and healthy body which requires no special training.

2.1. Plasterers (masons) as skilled workers.

In Nigeria construction industry, the recognized skilled workers includes; masons, steel fixers, electricians, carpenters, plumbers and welders. Uchitelle (2009) further stated that, common skilled workers include electricians, plumbers, painters, carpenters and bricklayers, bar benders, tile fixers, plant operators, welders, mechanics, and steel fixers. It is stated that the most frequently used skilled workers in the construction industry are; carpenters, bricklayers, bar bender, plumbers and painters (Oseghale et al., 2015). Therefore, this study focused on the productivity of masons on plastering and rendering works.

Plasterers (sometimes known as masons) are skilled workers responsible for apply plaster (mortar) and other cementitious pastes on wall surfaces (internally or externally). Plastering is one of the oldest and required construction trade which is responsible for applying stucco and plaster to building components for protection, insulation, aesthetic, support and to provide smooth background on walls both internally and externally (O'Kelly and Dean, 2007). Plastered surfaces sometimes receive subsequent finishes such as tiles, paint, wallpaper, aluminum panels, among others.

Labour Productivity

The term ‘labour productivity’ is best understood by looking at the two different words separately and critically as thus;

Labour

Jhingan (1999) however, described labour as a term referring to all physical and mental work undertaken for monetary rewards. In this way, factory workers, doctors, advocates, ministers, officers, teachers are all included in labour.

Thus, from this definition it implies that any physical or mental work which is not undertaken for getting income but simply to attain pleasure or happiness is not considered as labour

Productivity

Many definitions have been given to productivity, with belief that every good definition of productivity should contain three major elements, output, resources commitment and time.

Productivity is the measure of how well resources are brought together in organizations and utilized for accomplishing a set of results. It involves reaching the highest level of performance with the least expenditure of resources.

Productivity is referred to as the effective use of factors of production to produce goods and services. Productivity is generally defined as the ability to make something happen within a time frame. It could be a product that is made, grown or manufactured and you now have an output or positive result that you can touch, feel or see. In the wider context of work or motion study in management, productivity is a system technique of utilizing and analyzing ways of performing task, time studies and creating standards. This can be represented in building construction as follows (Yagba and Ayandele, 1999).

Therefore, productivity generally is defined as the ratio of outputs to inputs (Adnan, 2007), and is given by any of the followings below:

$$\text{Productivity} = \text{Output}/\text{Input} = \frac{\text{Units}}{\text{Work hours}} = \frac{\text{Total output}}{\text{Total work hours}}$$

Since productivity is the output resulting from a given resource input at a given time, then the followings are the productivity measures:

i. Partial measures $= \frac{\text{Output}}{\text{Labour}} = \frac{\text{Output}}{\text{Machine}} = \frac{\text{Output}}{\text{Energy}}$

ii. Multifactor measures $= \frac{\text{Output}}{\text{Lab. + Mach.}} + \frac{\text{Output}}{\text{Lab + Capt.+ energy}}$

iii. Total measures $= \frac{\text{Goods or services produced}}{\text{All inputs used to produce them}}$

Thus, evolves the following productivity sources; Labour productivity, Machine productivity, Capital productivity, and Energy productivity.

Therefore, from the foregoing definitions of both terms i.e 'labour' and 'productivity', labour productivity simply put can be defined as the value of gross output per work referred to as man hour or work hour (Yates and Guhathakurta, 1993).

Yates and Swagata (1993) further added that labour productivity could also refer to the careful attempts to measure the physical output of labour, taking into account other factors that affect productivity. However, for conceptual or analytical simplification, the term labour productivity is commonly used to refer to the volume of goods and services produced per worker within some specified units of year, month, week, day or hour (Oloko, 1983). Oloko (1983) further added that "the fact that labour productivity is a unit resulting from the interdependent contribution of labour and other factors of production is not made explicit.

3.0. Research Methodology

The quantitative research design adopted due to the nature of the study focused on the study of labour output of construction operatives with their assistants working at their natural pace. Descriptive and inferential statistics was employed in analyzing the data collected for the purpose of describing and interpreting the conditions regarding the labour output of workers on site. The study was carried out in Kebbi and Sokoto State of Nigeria, and data were collected only from on-going construction projects within the geographical location of the study. Kebbi and Sokoto States were chosen because as developing states, many public and private construction projects are being commissioned by successive governments, and investors.

The study population involves the survey of 100 construction sites with various operatives on site. Since the population is small, the entire population was considered as suggested by (Lawal and Adeyeye, 2006). The construction sites constituted mostly of building projects such as residential, institutional, and commercial buildings for both public and private owners. Fifty (50) sites were from Kebbi State and the remaining fifty (50) from Sokoto State with a total of sixty (60) gang numbers considered on the sites in both States.

Purposive sampling technique was employed in selecting all the construction sites. This technique was used on basis of availability i.e. those willing to give access to their sites and construction workers to be observed. The sample characteristics were fully captured as the true representation of the study population (construction sites). The operations or activities in progress were fully observed and studied accordingly. These activities included those indicated on Plastering /Rendering operations according to BESMM 3.

According to Lawal and Adeyeye (2005), the common instruments available for data collection include research questionnaires, interview sheets, study sheets, audio player, among others. For the purpose of this study, a well-structured "Time study sheet" was used for data gathering, and the time study sheet was divided into two sections. Section A consists of a structured closed ended questionnaire designed to capture all relevant background information relating to the operative and work in progress. This background information was designed to accommodate the factors of productivity that affect labour output on site in the study and to clearly see and determine how such factors influence the output of the respective operatives under observation. The seven (7) out of the different influencing productivity factors as observed by (Adnan et al., 2002; Ameh and Odusami, 2002) were considered. These variables are; age, mode of employment, qualification, experience, quality of surface, shape of structure and the period of the day. Section B constitutes the work measurement aspect of the data collection process. It recorded the starting, finishing, break-time covering for morning and afternoon sessions and the actual time expended in the delivery of work in the two sessions. Total output/unit time observed was also collated at the different periods of the study.

Prior to actual field survey, a pilot survey was carried out to test the suitability and appropriateness of the tool to meet the study objectives as suggested by Fellows and Liu (2008). A sample of Ten (10) constructions sites, 5 each from Kebbi and Sokoto States was studied, using the timesheet. Based on the outcome of the pilot survey, ambiguous items and variables that would negatively affect the study were removed.

Field observation was carried out personally by the authors and by the help of trained research assistants where there is restriction and on special sites. The assistants were well oriented and trained on the research and data collection procedures before they proceeded to collect the measurements.

3.1 Procedures for collecting data

In order to attain the objectives of this study the following steps were taken:

- The operatives to be observed were initially taken unaware by taking note of the particular spot or point at which the work was started and the starting and finishing time was taken.

- A physical measurement of the work output executed is then carried out using simple tools such as tapes. The observed output and finishing time are recorded.
- The actual time taken was calculated by taking the difference between the starting and the finishing time and thus the observed time was recorded.
- The observed time is then taken as the basic time which is then transferred to the collation sheet where adjustments are made in the form of contingency allowances for delays and relaxation periods. This is then calculated as a standard time which is considered as the total time taken by an operative to deliver a given output.
- The output/unit time is then converted to an hour job and virtually to a day.

Both the descriptive and inferential analysis was carried out using SPSS version 21. Independent sample test (T-test), One-way analysis of Variance (ANOVA), Least Significant Difference (LSD) a type of Post Hoc were used to analyze the relationship and differences between tradesmen background information and labour output. T-test statistic was used to compare the mean of two samples, ANOVA was used to compare the mean of three or more variables, and LSD for in depth probing into the exact variable that has the significance.

4.0. Results and Discussion

4.1. Tradesmen Background Information that Influence Productivity

The result of the analysis of the background information of the Tradesmen observed is displayed on Table 4.1. It showed that 11.67% of them are below 19 years of age, 48.33% are within the 19-36years, and 40% are above 36 years old. With most of the tradesmen falling within the age bracket that is well above 19 years, it implies that the workers are mature, strong and can carry out plastering operations on walls or ceiling surfaces. This also means that they are of the productive age and can proceed normally with their work as stated by Ameh and Odusami (2002). The most productive workers are those within the age group of 19-36years.

In terms of gender, all the masons and their labourers sampled are male, implying that there are no female among them. This shows 100% male, which indicates that plastering works are for the masculine and not feminine. In addition, the discriminatory nature of some task in the construction market could be responsible for this too. However, based on the location of the study, which is northern Nigeria; culture and religious backgrounds may have played a role.

The mode of employment for the operatives' shows that 36.67% were engaged by contract, 50% by negotiation, and 13.33% are on daily pay arrangement. Also considered were the labourers on apprenticeship training. Generally, depending on the mode of employment, productivity in plastering and rendering is high when the operatives or the team is given the plastering works on negotiated basis. They know what to get and they would achieved that faster with an acceptable quality of work. This finding,supports (Ameh and Odunsami, 2002) assertion that workers productivity is assured depending on the mode of employment arrangement.

The educational qualification of the tradesmen was also considered because most directive of the supervisors are given in English language, with very little given in the local dialect of the people. Also, education adds to the quality of operatives and this could influence output as highlighted by (Ameh and Odunsami, 2002), who stated that high labour output could be attributed to the quality of operatives discharging the task. From Table 4.1, 28.33% of the workers had primary certificates, 26.67% had SSCE, 3.33% had NABTEB, 21.67% had ND in one discipline or the other and 20% had others qualification like Quranic education. Therefore, the sample observed have quality workers since every one of them had one form of educational qualification or the other.

In terms of years of experience in construction work, 11.67% of the observed workers had 2-5 years of experience; 36.67% had 6-10 years of experience, and 51.67% had high record of experience of above 11 years. Thus, this reveals that the workers observed were from a sample of experienced tradesmen.

Quality (or nature) of surface also affect productivity. Quality of surface in terms of block laying and boring of holes on the wall for the erection of scaffold has effect on the output of the workers. The output of labour is highest when plastering/rendering is being done on a fair surface. Three (3) quality of surface were considered for the survey they are: Good, Fair and Poor. From table 4.1 55% of workers observed worked on fair quality surfaces and 31.67% of workers worked on good quality surface while 13.33% worked on poor quality surface. This indicates that high percentage of the workers under study worked on fair surface. Thus, no reasons for reduced productivity.

The sites from which the observations were carried out, 86.67% of the sites had straight wall on which works are carried out and 13.33% irregular shaped wall on which workers undertook their operations. This shows that of the sixty (60) observations carried out, regular shaped walls had highly reliable data than the irregular shaped walls for the research

Table 1. Background characteristics of Tradesmen / Operatives.

Category	Classification	Frequency	%
Age	Below 19 years	7	11.67%
	19 - 36 years	29	48.33%
	Above 36	24	40.00%
	TOTAL	**60**	**100.00%**
Gender	Male	60	100.00%
	Female	0	0.00%
	TOTAL	**60**	**100.00%**
Mode of Employment	Contract	22	36.67%
	Negotiated	30	50.00%
	Daily pay	8	13.33%
	TOTAL	**60**	**100.00%**
Academic Qualification	Primary certificate	17	28.33%
	SSCE	16	26.67%
	NABTEB	2	3.33%
	ND	13	21.67%
	Others	12	20.00%
	TOTAL	**60**	**100.00%**
Years of experience	2 -5 years	7	11.67%
	6 - 10 years	22	36.67%
	Above 11	31	51.67%
	TOTAL	**60**	**100.00%**
Quality of Surface	Poor	8	13.33%
	Fair	33	55.00%
	Good	19	31.67%
	TOTAL	**60**	**100.00%**
Shape of Structure	Regular	52	86.67%
	Irregular	8	13.33%
	TOTAL	**60**	**100.00%**

4.2. Relationship between Tradesmen demographic information and Productivity

The results of the impact of Tradesmen demographic information on Productivity of plastering and rendering for walls with width greater than 300mm and 12mm thick plain, from natural ground level to 1.5m high (Gang size:1 mason: 1 labourer) is shown in the following Tables.

Result in Table 2 shows that there is a significance differences between ages below 19 years, 19-35 years and between 36 years and above. This is evident in p-value of 0.000, which is lower than the 0.05 alpha level of tolerance. Their mean total outputs were 18.577, 20.392 and 19.588 by ages below 19, 19-35 and ages 36 and above respectively. Therefore, the formulated hypothesis which states that there is no significant difference in the total output on account of age is hereby rejected.

Table 2. Relationship between Age and Tradesmen Total Output

Variables	Mean ± SEM	p-value	Std Dev.
Below 19 years	18.577 ±0.046		0.121
19-36 years	20.392 ± 0.063*	0.000	0.338
36 years and above	19.588 ± 0.078*	0.000	0.384
19-36 years	20.392 ± 0.063		0.338
36 years and above	19.588 ± 0.078*	0.000	0.384

*P-value < 0.05

For the mode of employment, the analysis revealed significant difference in the mean total output level of the operatives. This is because the calculated p-value is lower than the 0.05 alpha level of significance. The Post Hoc multiple comparison statistics further confirms that contract total output is significantly higher than negotiated and daily pay workers (Table 3). Therefore, the hypothesis, which states that there is no significance difference in worker's mean total output and mode of employment is hereby rejected.

Table 3. Relationship between Mode of employment and Tradesmen Total Output

Variables	Mean ± SEM	p-value	Std Dev.
Contract workers	19.595 ± 0.053		0.250
Negotiated	20.396 ± 0.061*	0.000	0.333
DailyPay	18.568 ± 0.041*	0.000	0.115
Negotiated	20.396 ± 0.061		0.333
Daily pay	18.568 ± 0.041*	0.000	0.115

* P-value < 0.05

Result in Table 4 revealed a significance difference in the mean total output level of the operatives on the basis of their educational qualification. This is because the calculated p-value of 0.000 is lower than the 0.05 alpha level of significance.

Table 4. Relationship between Educational Qualification and Tradesmen Total Output

Variables	Mean ± SEM	p-value	Std Dev.
Pri. Schl Cert.	19.110 ± 0.125		0.514
SSCE	20.155 ± 0.047*	0.000	0.186
NABTEB	20.160 ± 0.040*	0.000	0.057
ND	20.673 ± 0.087*	0.000	0.315
Others (QE)	19.592 ±0.111*	0.001	0.384
SSCE	20.155 ± 0.047		0.186
NABTEB	20.160 ± 0.040	0.986	0.057
ND	20.673 ± 0.087*	0.000	0.315
Others (QE)	19.592 ±0.111*	0.000	0.384
NABTEB	20.160 ± 0.040		0.057
ND	20.673 ± 0.087	0.074	0.315
Others (QE)	19.592 ±0.111*	0.050	0.384
ND	20.673 ± 0.087		0.315
Others (QE)	19.592 ±0.111*	0.000	0.384

* P-value < 0.05

The Post Hoc multiple comparison statistics further confirms that total output is significantly higher among ND holders than primary and secondary school qualification holders. Therefore, the hypothesis state that there is no significant difference in workers' mean total output on the basis of educational qualification was not accepted.

As indicated on Table 5, the results of the Analysis of Variance (ANOVA) statistics indicated that there is no significant difference in the mean total output on the basis of the workers years of experience. This is because the calculated p-value of 0.000 is lower than the 0.05 alpha level of significance. Consequently, the null hypothesis which states that there is no significant difference among the worker's total output on account of their years of experience is hereby rejected.

Table 5. Relationship between years of experience and Tradesmen Total Output

Variables	Mean ± SEM	p-value	Std Dev.
2-5 years	18.544 ± 0.039		0.102
6-10 years	20.490 ± 0.074*	0.000	0.345
11 years & above	19.707 ± 0.066*	0.000	0.366
6-10 years	20.490 ± 0.074		0.345
11 years & above	19.707 ± 0.066*	0.000	0.366

* P-value < 0.05

As shown on table 6, the result of the Analysis of variance statistics revealed that significant difference exist between worker's mean total output on quality of surface with fair and good. The calculated p- value of 0.000 is lower than the 0.05 alpha level of significance The worker's output with good quality surface had higher mean total output than those with fair quality surface The null hypothesis is hereby rejected.

Table 6. Relationship between quality of surface and Tradesmen Total Output

Variables	Mean ± SEM	p-value	Std Dev.
Poor	18.568 ± 0.041		0.115
Fair	19.788 ± 0.063*	0.000	0.362
Good	20.525 ± 0.075*	0.000	0.329
Fair	19.788 ± 0.063		0.362
Good	20.525 ± 0.075*	0.000	0.329

* P-value < 0.05

Results of the T-test statistics on table 7, revealed that significant difference exist between workers' mean total output on shape of structure of straight and irregular. The calculated p-value of 0.005 is lower than the 0.05 alpha level of significance The worker's output with straight had higher mean total output than those with irregular. The null hypothesis is hereby rejected.

Table 7. Relationship between shape of structure and Tradesmen Total Output

Variables	Mean ± SEM	p-value	Std Dev.
Regular	20.057± 0.069		0.499
Irregular	18.568± 0.041*	0.005	0.115

* P-value < 0.05

Results of the T- test statistics on Table 8, revealed that significant difference exist between mean total outputs of morning and mean total outputs of afternoon. The calculated p- value of 0.016 is lower than the 0.05 alpha level of significance. The worker's mean total output in the morning is greater than that of the afternoon output

Table 8. Relationship between shape of structure and Tradesmen Total Output

Variable	Mean ± SEM	p-value	Std Dev.
Morning	10.789 ± 0.043		0.337
Afternoon	9.070 ± 0.066*	0.016	0.507

* P-value < 0.05

5.0 Conclusion and Recommendation

The study empirically investigated the relationships between tradesmen demographic information and labour output on plastering operations in Kebbi and Sokoto states both of Northern Nigeria. Using work-study, the data collected from the construction sites were analysed. Plastering and rendering operations being carried out at a height of 1.5m from natural ground level were considered as provided for in Building and Engineering Standard Method of Measurement (third edition) for Nigerian.

The study found that tradesmen age, their mode of employment, educational qualification, years of experience, quality of surfaces, shape of structure, and period of the day; have influence on the level of productivity of masons. This was evident in the significant relationships indicated in all the analysis. Thus, the study concluded that the demographic characteristics of construction operatives/tradesmen (e.g. Masons) influences and affects their labour output for plastering and rendering operations.

Based on the findings and conclusion, the study recommends that qualified workers (in terms of education, age, and years of experience) should be engaged for plastering and rendering works. Plastering and rendering works should be given on negotiated basis. The quality of block wall or concrete surfaces should be improved. Also, adequate skills should be employed in managing plastering and rendering works on irregular surfaces to improved productivity. There should be adequate supervision of workmen during afternoon periods to improved workers commitment and productivity. Similar study could be embarked on for plastering and rendering to ceiling surfaces which are above 3.0m height from finished floor level.

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