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Labour Productivity Assessment of Dredging Operations in Some Selected Companies in Lagos State, Nigeria

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A B S T R A C T

Key words:

labour productivity, dredging, productivity, downtime, unskilled labour, safety gadget.

This study aims at assessing the labour productivity of dredging companies in Lagos state, Nigeria. The ideal measure of labour input is the total number of hours worked, broken down by type of labour input. Number of persons employed or number of jobs can generate biased measures of productivity if hours per person change or if there are multiple job holdings. Data were collected using a well-structured questionnaire, administered to ten (10) dredging sites among the managers and operating employees in the study area. A total of 60 respondents were sampled for the study. The personal information provided by the respondents had no significant influence on the labour input. The responses provided by the respondents via the questionnaire were organized and analyzed descriptively using the software package, Statistical Package for Social Sciences (SPSS). It was found that the labour input had no significant influence on productivity, rather the differences in level of productivity was related to the type of technology used. Production was found to be low in companies that make use of the Chinese technology dredgers even though the technology involves more operators than the Conventional type dredgers. It will be recommended that the companies increase their number of shifts so as to increase their productivity and increase their number of hired labour involved in operations from the residents of the neighbouring communities.

1. Introduction

Realising the urgency in diversifying and broadening the economic base on the State, the Tinubu administration took a bold and courageous initiative by creating a Mineral Resources Office in March 2011. The office was saddled with the responsibility of making Lagos State a mineral producing and processing state (solid, liquid and gaseous) within the shortest possible time and with the most cost effective way. The office was to embark on collation of available data on mineral resources in the State, commission studies to determine the availability of mineral in terms of location, quantum and commercial viability. It was also to create a private sector / Investor friendly environment in order to attract active participation in the exploration and exploitation of minerals in the State, advise the State Government on joint venture arrangement or equity participation regarding upstream or downstream development, as well as assess the environment impact of mining activities, in addition to establishing

an administrative register of mining companies in the State (Association of Lagos State Origin, 2016). Nigeria's solid minerals are now receiving quite some popularity as the wealth yet to be harnessed. The Ministry of Solid Minerals Development (MSMD) says that Nigeria is blessed with 34 minerals including many kinds of sand, tantalite, zinc, silver and gold. In fact, Mining Communications, an international mining magazine, dubbed Nigeria an exciting new mining destination (Acorn Media Services, 2016). Solid mineral exploration and mining industry is an integral part of the State economy. The department of Solid minerals has the responsibility of regulating, coordinating and monitoring of all sand mining activities in Lagos State with a view to ensuring safe environment and sustainable mining of the resources using global best practices. Adebayo, et al., (2005). The ministry implements the Lagos State Dealing Law and sensitizes stakeholders (sand miners) on the position of the State as regards the mineral and mining sector of the State. This includes mineral exploration guidelines, fees payable to the State, compliance/enforcement of stipulated rules and standard. Mason (1996), (Lagos State Mineral Resource Office),

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Lagos State is widely regarded as the smallest state in Nigeria but based on the census of 2006; the state has the second highest population of any state in the country (National Population Commission, 2006). In the Cadastral system of the Ministry of Mines and Steel Development, Lagos State (MMSD.com) is divided into four major axes i.e the Ajah-Epe Axis, Ikorodu Axis, Badagry Axis and the Apapa-Alimosho Axis. Ohimain, et al., (2004). This study aims at accessing the labour productivity of dredging companies in Lagos state, Nigeria. The specific objectives were to determine: The level of labour productivity in dredging operations; Access constraints to effective labour productivity in dredging operations and; Access the various operation of labour in dredging operations.

Productivity is essentially the efficiency in which a company or economy can transform resources into goods, potentially creating more from less. Productivity can effectively raise living standards through decreasing the required monetary investment in everyday necessities (and luxuries), making consumers wealthier and business more profitable and in turn enabling higher government tax revenues. Economists looking to measure this productivity within a given system generally leverage production functions to determine how different factors of production (i.e. inputs) affect the overall output.

The final important consideration in assessing productivity potential is the production-possibility frontier (PPF), which outlines the maximum production quantity of two goods in the scope of our current technological capacity and supply. According to Paul (2005), productivity is commonly defined as a ratio between the output volume and the volume of inputs (Krugman, 1994). In other words, it measures how efficiently production inputs, such as labour and capital, are being used in an economy to produce a given level of output. Productivity is considered a key source of economic growth and competitiveness and, as such, is basic statistical information for many international comparisons and country performance

assessments.

$$Productivity = \frac{Output}{Input} \quad (1)$$

2. Research Methodology

2.1 The Study Area

The study was carried out in Lagos state which is located in the south - west geopolitical zone of Nigeria. The smallest in area of Nigeria's 36 states, Lagos state is arguably the most economically important state of the country, the nation's largest urban area. The actual population total is disputed between the official Nigerian census 2006, and a much higher figure claimed by the Lagos State Government. On the North and East it is bounded by Ogun State. In the west it shares boundary with the Republic of Benin. Behind its southern borders lies the Atlantic Ocean. Twenty two percent of its 3,577km square kilometres area are lagoons and creeks. (Wikipedia, 2014)

2.2 Sources of Data

Primary data were collected using a well-structured questionnaire, administered at the dredging sites among the managers and operating employees in the study area. A total of 60 respondents made up of operating employees and managers of each dredging company were sampled for the study. Data were also collected on the socio - economic characteristics of the respondents which are age, gender, marital status, tribe, religion and employment status. Further data were obtained on the level of productivity of each company; this section was responded to mainly by the managers of the companies as they were the ones who provided precise and valid information. The questionnaire was designed also to make an attempt to access some of the constraints that may hinder the productivity of each company and access the level of contribution of the companies' management to enhance productivity.



Plate 2.1: Satellite imagery showing Lagos State

Source: nigerianfinder.com (2015)

Table 2.1 Location of Companies in the Study Area

Sample site	Town	Coordinates
Lag-1	Ikorodu	6°36'N 3°30'E
Lag-2	Ajah	6°28'N 3°34'E
Lag-3	Ikorodu	6°36'N 3°30'E
Lag-4	Ikorodu	6°36'N 3°30'E
Lag-5	Badagry	6°25'N 2°53'E
Lag-6	Ikorodu	6°36'N 3°30'E
Lag-7	Badagry	6°25'N 2°53'E
Lag-8	Badagry	6°25'N 2°53'E
Lag-9	Ikorodu	6°36'N 3°30'E
Lag-10	Ajah	6°28'N 3°34'E

2.3 Techniques of Data Analysis

The responses provided by the respondents via the questionnaire were organized and analyzed using frequency distribution tables, pie charts and bar charts as well as inferential statistics such as Chi Square. The data were carefully inputted into the software package to avoid any misleading results. The advantages of using SPSS as a statistical package included a choice of using pull-down menus or a proprietary 4GL "command syntax language" to quickly perform basic statistical analysis.

3. Results and Discussion

3.1 Personal Information of Dredging Workers

Table 3.1 shows the level of education of the workers in the companies. It was found that a very small proportion of them have acquired tertiary education with a total percentage of 15%. Those who have acquired only primary education were 41.7% while 43.3% of them acquired secondary education.

Table 3.2 shows the techniques used by the dredging companies. It was found that 50% of the companies make use of the conventional type of dredging while 30% make use of the Chinese technology. A proportion of 20% were found to make use of both techniques.

Table 3.3 and 3.4 show the uses of the dredged materials. It was found that sand was exploited in all of the companies while mud/silt was disposed.

Table 3.5 shows that all the companies provide their workers with the necessary safety gadgets.

3.2 Frequency of Downtimes

Majority of the companies have experienced no downtime in the last six months making a total percentage of 68.3%. A proportion of 31.7% have had between 1 and 5 downtimes in the last six months. None of the companies experienced more than 5 downtimes in the past six months.

Table 3.1: Level of Education of the Workers

Education	Freq.	%
Primary	25	41.7
Secondary	26	43.3
Tertiary	9	15.0

Source: Author's Field Report, 2016

Table 3.2: Technique Used in Dredging Operations

Technique	Freq.	%
Conventional (CSD)	30	50
Chinese	18	30
Conventional and Chinese	12	20

Source: Author's Field Report, 2016

Table 3.3 Uses of the Dredged Sand

	Freq.	%
Exploited	60	100.0
Disposed	0	0.0

Source: Author's Field Report, 2016

Table 3.4 Uses of the Dredged Mud/Silt

	Freq.	%
Exploited	0	0.0
Disposed	60	100.0

Source: Author's Field Report, 2016

Table 3.5 Provision of Safety Gadgets

Response	Freq.	%
Provided	60	100.0
Not Provided	0	0.0

Source: Author's Field Report, 2016

3.3 Delay in Salary Payment

It was found that a very significant percentage of the workers receive their salary without any delay making up a percentage of 98.3%. Only 1.7% claimed to have a delay in their salary payment

3.4 Operations of Labour

A large proportion of the companies have between 5 and 10 skilled labour on duty making up a total percentage of 50%. A proportion of 40% have over 10 skilled labour involved in the dredging operations while only 10% have less than 5 skilled labour involved in the operations.

Table 3.6 : Association between Employment Status and Companies' Motivational Measures

		When did the company start operations			Chi sq. value	Sig. (P value)
		Freq. (%)	Freq. (%)	Freq. (%)		
		1-5 years	6-10 years	Over 10 years		
Are you provided with safety gadgets?	Yes	24 (100.0)	24(100.0)	12 (100.0)	-	-
	No	0 (0.0)	0 (0.0)	0 (0.0)		
How many downtimes in last six months	None	11 (45.8)	18 (75.0)	0 (0.0)	11.669	0.003
	1-5	13 (54.2)	6 (25.0)	0 (0.0)		
Has your salary payment been delayed	Yes	0 (0.0)	1 (4.2)	0 (0.0)	1.525	0.466
	No	24 (100)	23 (95.8)	12 (100)		
How many skilled labour involved	1-5	0 (0.0)	6 (25.0)	0 (0.0)	17.250	0.002
	5-10	18 (75.0)	6 (25.0)	6 (50.0)		
	Above 10	6 (25.0)	12 (50.0)	6 (50.0)		
How many unskilled labour involved	1-5	18 (75.0)	18 (75.0)	12 (100.0)	3.750	0.153
	5-10	6 (25.0)	6 (25.0)	0 (0.0)		
	Above 10	0 (0.0)	0 (0.0)	0 (0.0)		

Source: Author's Field Report Analysis, 2016

Table 3.7 : Relationship between dredging technique and output per shift

Sample site	Dredging technique used	Output (tonnes per shift)
Lag-1	Conventional type dredgers	825
Lag-2	Chinese technology	900
Lag-3	Conventional and Chinese techniques	600
Lag-4	Conventional type dredgers	1080
Lag-5	Conventional type dredgers	960
Lag-6	Chinese technology	210
Lag-7	Chinese technology	800
Lag-8	Conventional type dredgers	810
Lag-9	Conventional and Chinese techniques	540
Lag-10	Conventional type dredgers	850

Source: Author's Field Report Analysis, 2016

3.5 Unskilled Labour Involved in Operations

It was noted that a large percentage (80%) have less than 5 unskilled labour involved in the dredging operations, while 20% have between 5 and 10 unskilled labour involved in the operations

3.6 Enhancement of Productivity by the Company through Training

It was discovered that 60% of the companies use training to enhance their productivity, 10% use promotion of the workers, 80% through regular wage payment and 40% through remuneration.

Table 3.6 below shows that there is no significant association between the training that the company gives their workers and employment status at 5% ($P=0.136$). Although 53.8% of contracts are staff and 75% of company staffs are trained. Also, there is no significant association between regular wage payment and employment status at 5% ($P=0.321$). There is a significant association between promotion and employment status at 5% ($P=0.603$). The table also shows that there is no significant

association between remuneration and employment status at 5%.

Table 3.7 shows that there is no significant association between the number of years of operation of the company and the number of downtimes that have occurred in the past six months at 5% ($P=0.003$). It also shows that there is no significant association between the delay in salary payment and the number of years of operation of the companies at 5% ($P=0.466$).

Also there is no significant association between the number of skilled and unskilled labour involved and the number of years of operation of the companies at 5% ($P=0.002$ and $P=0.153$ respectively).

4. Conclusions and Recommendations

This study was carried out to access the labour productivity of dredging companies in Lagos state by accessing the labour productivity in dredging operations, the constraints to effective labour productivity in dredging operations and the various operations of labour in dredging. It was also found that 50% of the companies make use of the conventional type of dredging while

30% make use of the Chinese technology, proportion of 20% were found to make use of both techniques and that sand was exploited in all of the companies while mud/silt was disposed. It was also found that majority of the companies do not make use of hired labour and operate on one shift. Production was found to be low in companies that make use of the Chinese technology dredgers even though the technology involves more operators than the Conventional type dredgers. It is recommended that the companies increase their number of shifts so as to increase their productivity and increase their number of hired labour involved in operations perhaps from the residents of the neighbouring communities.

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