

## EMPIRICAL ANALYSIS OF THE POTENTIALS IN BLOCK MOULDING INDUSTRIES AS A PANACEA FOR REDUCING UNEMPLOYMENT IN NIGERIA

IYAJI, SAMUEL OMAHANNA<sup>1</sup>

EGWUDA, JOHN OMOJO<sup>2</sup>

&

KOLAWOLE, O. BASIRU<sup>3</sup>

<sup>1&3</sup>DEPARTMENT OF ARCHITECTURAL TECHNOLOGY,  
FEDERAL POLYTECHNIC, IDAH, KOGI STATE, NIGERIA

<sup>2</sup>DEPARTMENT OF BUILDING TECHNOLOGY,  
FEDERAL POLYTECHNIC, IDAH, KOGI STATE, NIGERIA

### ABSTRACT

*The paper appraised unemployment reduction through concrete block moulding industries. It focused on the manual moulding as an initial low-cost business that has the possibility of motivating the teeming youths into it as the amount of money required to start the business is not much. It also determined the steps that could be taken to reduce unemployment by proffering the guiding posts to sustainable manual block moulding. The methodology employed is the use of field surveys, site visits, interactions with the stakeholders of block moulding business and relevant professionals in the building industry. Secondary data were also used. The results were examined using discreet statistics and presented in tables. The result revealed that block molding business could reduce unemployment. The involvement of professionals in the business can improve the quality of their products. The paper concluded that with vision, determination and willingness of the prospective business youths, and the concerted effort of government in providing the enabling business environment, block moulding Industries can reduce unemployment to a very large extent.*

**Keywords:** concrete block, manual moulding, unemployment, job creation.

### Introduction

The problem of unemployment has been a daunting issue in terms of solution, and the scourge of it is about the most dehumanizing plaque belittling human dignity all over the world. As someone puts it, "If one is not employed, few person wishes to be his friend. Sometimes the unemployed uses mouths to call for attention but most run away". In the midst of this could there be possible hope for the teeming Nigerian youths being released yearly into the already bloated job market. Unemployment has continued to be on the increase due to improper thought on the alternative source of employment which this research paper intends to unveil. Studies have showed the

necessity of skill development as a means of fighting against unemployment and as the foundation for economic growth. Opaluwa & Opaluwa (2015) observed that “skill development in recent years has attracted a lot of attention from the Nigerian government. Policy makers have come to the realization that for Nigeria to attain a level of high economic growth there is a need for highly skilled workers. It therefore is important for a considerable investment in skill development at various levels”. Also from another quarter on the need to reduce unemployment specifically among the youths in Nigeria, Alaezi & Imam (2015) opined that “entrepreneurship remain the viable option to create jobs, reduce unemployment, poverty and empower the youth, to develop their businesses, pursue their dreams and contribute to the overall productive capacity and national economic growth and development”. Also as unemployment does not respect a man in spite of being certificated, he should dare to do anything legitimate for a living no matter how demeaning. Kumuyi (2015) also corroborates this, “God detests idleness. He expects everyone to live a productive life, to have gainful employment, and stop depending on others for substance and existence”.

Concrete block molding business is a virgin area of job creation as far as professionals, certificated and most enlightened people are concerned because of the inbuilt thought that it is not a white collar job avenue, and the fact that the initial labor needed to float the business is so demanding. Yet it is an area through which many with vision have had their life’s breakthroughs, as they have been able to build houses of their own and did some other great feats without tears.

Professionally and certificate wise, many of the stake holders in the business are non-professionals in the related fields such as Architecture, Building, Planning and surveying, and are not even certificated so much although they are excelling in the business.

Another area of concern in the research is the government ineptitude as far as professionalizing the business is concerned. Of recent, the Standard organization of Nigeria cried out on the fact that up to 95% of the concrete blocks produced in Nigeria are not up to standard. This error could be corrected by government if proactive action is taken about their interest in the business, and also actually doing something practically to lure our teeming youths into the business for their initial and subsequent sustenance.

Concrete block molding business naturally has both direct and indirect employment creation avenues for willing and determined persons who intend to remove the garment of unemployment. The direct avenue is in the area of moulding blocks and selling same to the public. The indirect has to do with people producing the moulding machines, sand tippers, those involve in the curing or seasoning, other engineering hands involve in the manufacture of moulds etc. Other areas is the motivational effect on the low income housing developers as a lot could be saved through direct moulding instead of buying blocks from the market.

### **Aim and Objectives of the Study**

The paper is aimed at motivating unemployed youths in the possibility of being self-reliant and self-employed; thus, successfully beat the plaque of unemployment. However, other the objectives of the paper are:

- i. Reducing unemployment by a certain percentage, among the teeming youths.

- ii. Motivating related technological professionals in Architecture, Building, Surveying, and Planning to key into this area of job creation.

### Scope and Limitation

The scope of the paper is limited to manual concrete block moulding as the amount of money needed to start the business is not so much. Other forms of moulding and marketing were not covered.

### Theoretical Analysis

Concrete block is as invaluable as a means of job creation, and one of the major components of housing development that people of diverse professional orientations have made constructive comments about it. Olapeju and Amuluapo (2004), define concrete block as “blocks made from a mixture of hard, durable and clean sand, cement and water.” They further explained “on hardening the block obtains sufficient strength to be used as walling unit.” Concrete blocks are also known as dense blocks and normally have densities of between 1820 to 2080 kg/m<sup>3</sup>

They are three types of concrete blocks as noted in Seely (1995), “the British Standard recognizes three types of concrete blocks namely – Solid, Hollow, and Cellular”. Apart from this, there are also block sizes such as 450mm X 225mm X 225mm, 450mmX150mm X 225mm and 450mm X 100 mm X 225mm. Also other people made comments on the versatility of concrete blocks Adams (1980). “The variety of commercially available concrete blocks is extensively from dense through to light weight, offering a range of load bearing strength, sound and thermal insulation properties”.. This means that if concrete blocks are properly moulded and cured to standard their uses could be innumerable.

### Definitions of terms

The following defined terms are often associated with concrete block moulding in Nigeria:

**Fine aggregate (Sand):** The material is naturally produced by the disintegration of rock to get natural sand. According to Seely (1995), “this consists of natural sand that mainly passed through a 5mm British Standard sieve with a good proportion of the larger particles”.

**Coarse aggregate (gravel) :**This is primarily natural gravel or crushed gravel or stone that is mainly retained on a 5mm British Standard sieve .

**Cement:** Cement refers to in this study shall be the ordinary Portland cement produced in accordance to NIS 444-1- 2003/2007. The most popular Portland cement in the market today includes Dangote cement.

**Water:** Water used should be the type fit for drinking and free from deleterious materials. The type of water should not affect the material composition, and the strength or density of the moulded block.

**Load bearing wall:** The wall built of concrete block act as a support to transmit the weight of the building to the foundation system.

**Moulds:** Moulds are made of metal, which are used for casting the blocks either manually or mechanically.

**Moulding:** This is the casting of the concrete blocks into the required shape with rigid metal mould of different sizes.

**Sand Crete block:** Another term for concrete block. It is a block produced by extrusion from a mix of specific fine aggregate, cement and water.

**Crushing strength:** The maximum load a test piece of concrete block can sustain in compression.

**Batching:** The process of mixing the composite materials (cement, sand and water) by weight or volume to produce a concrete block of the required strength.

**Masonry unit:** A concrete block, brick or fixing unit

**Block:** A masonry unit which when used in its normal aspect exceeds the length or width or height specified for bricks.

**Solid block:** A block which contains cavities other than those inherent in the material.

**Hollow block:** A block which one or more formed holes or cavities pass through the block.

**Work size:** The size of a block specified for the manufacture, through which its actual size should conform within specified permissible deviation.

**Compressive Strength:** The average value of the crushing strength of five blocks per batch tested in accordance with NIS 584= 2007- method of testing concrete blocks. The unit of compressive strength of moulded block is Newton / Millimeter square ( $N/MM^2$ )

### Properties of Concrete Blocks

The following are some of the properties of concrete blocks as a walling unit:

- i. **Density and Strength:** Concrete block should be strong enough and up to the standard density and strength compliant with the British Standard in order to efficiently or sufficiently perform as a building wall unit. This is corroborated by the stance of Yusufu and Hamza (2005) on the compressive strength of six inches block. "The compressive strength of 6 inches block at age of 7days is  $2.55N/MM^2$ , while at age 28 days, it is  $3.86 N/ MM^2$ ". However in the course of the research, it was found out that the density and strength of concrete block could be practically determined on site by the following parameters:
  - **The number or turns of mixes:** There are mixes of between four to six meant to achieve uniformity in mixture. If the molder could patiently mix up to six times, such would attain the required density and strength after curing.
  - **Cement and sand ratio:** A ratio of **1 to 6** produces standard blocks. The ratio is normally measured either by volume or weight.
  - **Level of curing:** Concrete block is normally cured with water and should be done up to three times in a day for three days.

- Amount of water added to the cement/sand being mixed should be adequate. The ratio of cement to sand of **0.4 to 0.6** is used for higher strength of concrete block. too much water could weaken concrete block ( Wikipedia)
- **Number of days a moulded block is left to cure:** The number of days and level of exposure to weather especially rains and sun shine after the initial three days of curing.
- Efficient compaction before ejecting or extruding the moulded block.
- The skill or expertise of the block molder

Above is especially very important considerations for manually molded concrete blocks, but for machine molded ones the density and strength is often guaranteed since the vibration and ejection are normally automated. Other properties are as follow:

- ii. **Durability:** Concrete blocks are manufactured to be dense and should be resistant to freeze/ thaw condition under the damp proof course. Where it is to be exposed to continual moisture it should be properly plastered with rich mortar to avoid weakening.
- iii. **Fix ability:** concrete blocks are manufactured to be fix able to varying wall corners. If the density is beyond standard, it becomes difficult to cut to fit the required corners.
- iv. **Thermal insulation:** For concrete blocks to meet thermal insulation requirements the hollow should be partially or fully filled or they should be designed cavities of standard size which should also be filled. The reason is that concrete block allows heat emission naturally.

#### **Performance requirements of concrete blocks**

Well moulded concrete blocks should be able to have the following performance requirements:

- i. Adequate insulation against sound and excess heat percolation into room interiors.
- ii. Fire resistant to certain extent.
- iii. Should be water proof hence have to be properly rendered with rich mortar.
- iv. Masonry walls made from concrete blocks should be able to provide adequate protection against rainfall, sun rays, wind etc. without failing.
- v. It should be able to bear designed overhead load without giving way.

#### **Various sizes of concrete blocks produced in Nigeria**

Various sizes of concrete blocks are made or produced in Nigeria. According to Ezeji (1984), “the sizes of blocks produced in Nigeria depend on the design requirements of the building. However, most local people mould their blocks without any regard to the load bearing capacity of the wall but the production is based on trial and error and previous experience”. The researcher found out the same in his field surveys as most of the block moulding business sites visited were not so much concerned about whether their blocks would be able to sustain the expected load bearing requirement of the wall or not. They were mostly concerned about the commercial advantages. However since one of the objective of this paper is to motivate our teeming unemployed youths to delve into this virgin area of job creation, they are encourage to take clues from the conditions for achieving standard density and strength for manually moulded blocks as stated previously (some of them are, the number of blocks produced per bag, the sharpness of the local sand, level of compaction, level of curing etc.)

For some local production the following sizes of concrete blocks are available:

- i. 450mm X 100mm X 225mm
- ii. 450mm X 125mm X 225mm
- iii. 450mm X 150mm X 225mm

For commercial productions, the following are mostly popular:

- i. 450mm X 225mm X 225mm
- ii. 450mm X 150mm X 225mm
- iii. 450mm X 113mm X 225mm
- iv. Above could either be in hollow or solid form. The third type 450mm X 113mm X 225mm, is not very popular for use in most low cost buildings but for high storeyed buildings for subsequent floors above the first floor to reduce designed weight on the foundation system. Also the following table corroborates the stance on the various sizes of concrete blocks available today:

**Table 1: Sizes of sandcrete or concrete blocks**

Sizes	Dimensions
	Length X Breadth X Height ( L X B X H )
1. ( 4 inches solid)	450 X 225 X 100
2. ( 4 1/2 inches solid)	450 X 225 X 113
3. ( 6 inches solid)	450 X 225 X 150
4. ( 9 inches solid)	450 X 225 X 225

Source: S.C.O.A., EZEJI (1984)

Out of the sizes in the table above, the most popular in use or in the market as also stated above are the last two (450 mm X 150 mm X 225 mm and 450 mm X 225 mm X 225 mm. Others are produced upon special request.

**Table 2.Sizes and uses of blocks manufactured in Nigeria**

Size	Description	Uses
450mm X 225 mm X 100 mm	Solid	Partitions in storeyed buildings. External walls in bungalows
450 mm X 225 mm X 113 mm	Solid or hollow	Partitions in storeyed buildings. External walls in bungalows
450 mm X 225 mm X 125 mm	Solid	External walls in bungalows Partitions in storeyed buildings General walling purposes
450 mm X 225 mm X 150mm	Hollow	For general purposes as external and partition walls in bungalows and storeyed buildings
450 mm X 225 mm X 225mm	Hollow	For foundation walls in bungalows and storeyed buildings. For external walls in storeyed buildings.

Source: S.C.O.A., EZEJI (1984)

### **Materials and tools for making concrete blocks**

**Sand:** Sand for making blocks could be sourced from various places but the most preferable one is from beds of rivers as the sand is naturally washed and void of impurities like silt which might affect the strength of blocks. In some locations like Lokoja in Kogi State, sand gotten from river beds is mostly sharp and very good for commercial production of blocks as more blocks could be gotten per bag and yet dense and strong enough for use if relevant conditions are taken care of. Sometimes up to fifty or more strong and dense blocks can be conveniently gotten per bag.

**Cement:** Most blocks moulders Use Portland cement produced by Dangote cement industry although not quite a rapid hardening type. They would have preferred a rapid hardening type due to the short period it takes to be able to meet customer's demands, but most available and easily gotten cement is the Dangote cement hence both the moulders and the customers accept it despite the moderate long period of hardening, mostly after a period of seven to fourteen days and the blocks are ready for sale.

**Water:** This is a major requirement for concrete block production both for moulding and curing. Ezeji (1984) opined that "A major requirement of water used for the manufacture of concrete blocks is that it should be free from salt and other impurities. To meet this requirement most concrete manufacturers have pipe borne water connected to the factory site ". Apart from this, the alternative is to hire tankers to supply water from rivers to the site. Also sites that are around the riverside locations take advantage of the terrain and that could affect the total cost tremendously. In summary the part played by water is invaluable as it is needed beyond the curing level until the expected density and strength is acquired.

**Wheel barrows:** This is another tool in concrete block moulding business for three major reasons namely:

-For lifting of sand from its dump to the mixing platform.

-For measuring the quantity of sand for a given quantity of cement.

-For lifting cured blocks from site to where it could easily be loaded in a truck especially where factory site is not easily accessible.

**Head pan:** This is used for measuring sand and sometimes for transporting water to use for washing used tools, and lifting scattered cement or poorly made concrete blocks for remoulding.

**Plates:** Very necessary where the production is of a large scale especially where the factory has machine for moulding, but where not the platform is dressed properly to be flat for efficient moulding.

**Shovels:** They are used for transferring sand from its dump to the mixing site or into wheel barrow. Where it is manual moulding type, shovel is used so many ways e.g. for mixing sand before moulding and for actual moulding processes.

**Mould:** It can be manual or machine type and invaluable for the survival of any block moulding business.

**Human resources:** Skilled and unskilled hands are needed to facilitate the moulding and curing processes both for the manual and machine moulding type.

When concrete blocks are produced, they are allowed to air cured between the first one hour to the next twenty four hours; after, which they are water cured between three to seven days. The first three days are very crucial in the curing process as blocks acquire their minimum strength and density within these days during the wetting hence the wetting is to be three times a day for the three days. However this is not a general rule as some people in a bid to having stronger blocks could continue the initial wetting period up to seven days after which the blocks can be left for more days before stacking for more natural curing through the elements of weather like rain, sunshine, and air. It is found out also that the stacking is usually not more than five courses high and left for not less than fourteen days before dispatch.

### **Methodology**

Data for the study was obtained from both primary and secondary sources. The primary sources were made up of oral interactions with the stake holders of the block molding business, factory site visits and observations. The researcher randomly interacted with some selected stake holders of the business with the purpose to assist amongst others to find out the possible job creation avenues in the business, the steps that could be taken to produce dense and strong blocks at moderate costs, and how to ensure sustainability in the business in order to substantiate the claims that block moulding business could be a panacea for reducing unemployment in Nigeria. Series of site visits were carried out and observations of the activities of the existing industries were made. Secondary data were made up of extracts from relevant publications and related books. Data collected from these sources were examined.

### **Results and discussion**

Results from the data collected from the discussions, field visits and observations are presented in tables as shown below:

#### **4.0. Various job creation avenues in concrete block molding business.**

Many determined and visionary hands could be employed in concrete block molding business as follow:

**4.1. The entrepreneur:** He may be a professional or not, certificated or not. He is the one that float the business and ensure its success. The amount of money needed usually to start the business is not much especially the manual moulding type. For him to succeed, he needs vision, determination, and the ability to organize capable work men. The following table shows a breakdown of the normal resources basically needed to start the business.



**Table 3: Estimating amount needed to start block molding business**

Material needed	Quantity	Price per unit (#)	Total amount (#)
Wheel barrow	1	10,000	10,000
shovel	2	1000	2000
Head pans	2	400	800
Iron mould	2	10,000	20,000
Site (could be rented)			
Tank for water	1	25,000	25,000
Cement	20 bags	1850	38,000
Sand	2 tipper load	7000	14,000
<b>Total amount needed to start the business:</b>			<b>#109,800:00</b>

**Table 4: Probable business profit in Lokoja**

Resources needed	Price per QTY(#)	Total cost(#)	Size of block	No produced per bag	Total produced	Cost per block	Amt realized from sale(#)	
Water	2000	2000	-		-	-	-	
3 tipper load of sand	7000	21000	-		-	-	-	
30 bags of cement	1850	55,500	-		-	-	-	
Extra labor( 2)	4000	12,000	-		-	-	-	
Money for curing	1500	6000	-		-	-	-	
Transportation of molded blocks	5	8250	-		-	-	-	
Total No of blocks produced			6 inches	55	1650	100	165,000	
Total cost of production		104, 750						
Estimated profit		#165,000 - # 104, 750 = <b>#60,250:00</b>						

Table 4 above shows that apart from the profit of **#60,250:00**, other people could be employed to earn their living through the business.

**Table 5: Probable business profit in Idah**

Resources needed	Price per QTY(#)	Total cost(#)	Size of block	No produced per bag	Total produced	Cost per block	Amt realized from sale (#)	
Water	2000	2000	-		-	-	-	
3 tipper load of sand	6000	18000	-		-	-	-	
30 bags of cement	1900	57000	-		-	-	-	
Extra labor( 2)	1000 X 2	6,000	-			-	-	
Curing	1000	4000	-		-	-	-	
Transportation of molded blocks	5	8250	-		-	-	-	
Total No of blocks produced			6 inches	40	1200	90	108,000	
Total cost of production		95,250						
Estimated profit		#108,000 - #95,250 = <b>#12,750:00</b>						

Table 5 above shows a profit margin of **#12,750:00**, and shows that it is more profitable to do the business at Lokoja than Idah. Whosoever wishes to do the business profitably may relocate to Lokoja.

**Other employment avenues in block moulding:** Apart from the Entrepreneur engaging in the business other work men could have access to employment assuming he has to supply a total of 3000 blocks. The following hands could be employed to assist to do the work:

- i. Block moulder could earn #30,000:00 @ 10 per 6 inches block
- ii. Mixer to earn # 9000 @ # 1500:00 for 6 days
- iii. Labour for curing: #6000 @ #1000:00 per day for 6days
- iv. Sand tipper: #21000 @ 7000:00 per Load.
- v. Ironbender for making mold: #10, 000: 00

Average earning of a group of three moulders assuming being given a job of moulding two hundred (200) bags of cement

**Table 7: Average monthly earning from moulding 200 bags of cement**

No of bags per day	Require No of bags	No of blocks per bag	Amt earned per molded block	Total[ No of blocks expected
10	-	55	10	550
-	200	55	10	11,000
Total amt earnable from molding 200 bags of cement at <b>Ten Naira</b> per block of six inches				<b>#110,000:00</b>

Table 7, above shows that with determination one could earn his living well to beat the problem of unemployment. The average daily income is about #1200. Today a housing developer would not want to concede only #1000:00 per day for a professional to monitor the construction of his house for him.

### Findings

Consequent upon the discussions with the stake holders in the block moulding industry, the following were the probable reasons why manual block moulding is comparatively cheaper as a means of reducing unemployment in Nigeria.

- a. **Amount of money needed to start the business:** The money needed to start the business is not much. With about a hundred thousand naira, the business could start with an initial investment of about twenty bags of cement.
- b. **Few persons needed to form a group:** Three persons could form a group to start the business. One of them will do the mixing while the two others will be compacting and extruding the moulded block. With cooperation, up to ten bags of cement could be moulded in a day.
- c. **Duration of time needed for the training:** With determination within six months to one year the practical training is already accomplished and you could start on your own associating with other trained persons. The amount paid for the training is usually negligible.
- d. **Few materials needed to start:** The basic materials needed are not many and easy to use and maintained. They include amongst others wheel barrow, shovel, head pan, sand, and cement.
- e. **Ease of facilitating the ever increasing population of technological graduates:** Every year great number of technological graduates are released into the already bloated jobmarket without hope of getting government job neither to practice their profession for sustainable living hence manual block moulding can be an easy avenue to key into.

### Sustainability of block moulding business in Nigeria

Success in block moulding business could only be sustained if the economic environment is viable and individuals and corporate organizations are ready to engage in housing developments. This can also be achieved if government is able to bridge the gap in the Nigerian housing deficit. According to the World Bank (2013), "the Nigerian housing deficit is estimated around 16 million units and it requires more than 56 trillion naira to provide the 16 million housing units to bridge the housing deficits at a conservative cost of 3.5 million naira per unit in the country". Above shows that for the business to thrive long in the future depends on the government proactive response to the glaring housing needs. The more houses are designed, constructed and built, the more business outlets for block moulding business.

### Conclusion and Recommendations

The paper concludes that the Nigerian youths with this information on the initial capital to start the business, availability of local materials, they can be motivated to seek this alternative form of employment.

The following steps are recommended to reduce unemployment through manual block moulding in Nigeria:

1. Related professionals in Architecture, Building, Planning, and Surveying should veer into the business as means of reducing professional frustration, and ensuring strong and dense blocks being produced in Nigeria.
2. Government should provide the enabling environment that motivates our youths who are interested in the business by facilitating them with the little money needed to start the business especially the related professionals.
3. They should be establishment of skill acquisition centers to hasten quality practical training of prospective persons.
4. Government should liaise with cement manufacturers to reduce the price of cement as it normally determines the profit margin.
5. Government should prevail over the escalating cost of transport by reducing the cost of fuel as that invariably affects the cost of distribution of the moulded blocks.
6. The EED introduced in the Nigerian polytechnics curriculum should be backed up with proactive actions by making practical training in block moulding mandatory especially in related courses.
7. More research should be conducted into manual moulding in related areas for making local bricks as means of introducing varieties into the business.
8. Government should also provide a leveraging environment for business to thrive in Nigeria particularly good roads, affordable housing and regular power supply.

## References

- Adams E. C (1980), *Fundamentals of Building Science*
- Alaizi, J. O. and Izam, Y.D (2015), Entrepreneurship and business Opportunities for professional builders in FCT, Abuja. *A paper presented in the Annual General Meeting of the Nigerian institute of builders held between 3<sup>rd</sup> to 7<sup>th</sup> August, 2015.*
- Ezeji, S.C.O.A. (1984), *A Building construction book.*
- Kareem, A. B. (2009), Importance of Standards for quality assurance in building and civil engineering works. A paper presented during a one day Stake holders workshop for sandcrete block moulders in Kogi State.
- Kumuyi, W.F. ( 2015), Opportunities Abound- Spiritual principles of creativity and productivity: *A publication of the women mirror.*
- N I S 587-(2007), Nigerian industrial Standards- *A bookleton the Standard for Sandcrete blocks-part I- Non load bearing.*
- Olapeju, Y. O. and Anuoluwapo, S. (2004), Effect of late rite on Sand Crete blocks- *A University student project Work*
- Opaluwa, S.A.; Opaluwa, A.O.S. (2015), Public policy and management: perspectives on the Nigerian skills development sector. *A paper presented in the Annual General Meeting of the Nigerian institute of builders held between 3<sup>rd</sup> to 7<sup>th</sup> August, 2015.*
- Seely I. H. (1995), *Building Technology*, the fifth Edition.
- Yusufu S. and Hamza, A.A. (2005). Comparing the compressive strength of six inches hand moulded Sand crete block.
- Wikipedia (2015) Retrieved from W.W.W Wikipedia. Com., 20<sup>th</sup> July, 2015
- World Bank (2013), Doing business 2013, *Nigerian country profile*