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Research Paper

Determining Resource Factors in Housing Delivery by Housing Corporations in South-East Zone of Nigeria

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ABSTRACT
This study examined the factors militating against the performance of housing corporations, using Anambra and Enugu States Housing corporations as a case study, for the purpose of developing appropriate decision models that will impact positively on housing delivery by these agencies. Using field survey research design in generating and collecting necessary data for analysis, the study identified and ranked the resource factors in order of preponderance in housing delivery. Each of these operational factors for housing delivery was subjected to critical analysis for the purpose of understanding the major problems and challenges militating against effective housing delivery in the study area with respect to land, cost of labour, cost of building materials, plant/equipment and infrastructure. The research findings showed that land, funding, skill labour, construction materials and infrastructure were identified in order of importance as the major determinant factors in public housing delivery by housing corporations in Anambra and Enugu State.
KEY WORDS: Housing, Resource, Infrastructure, Labour, Land, Cost.

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I. INTRODUCTION

Issues on housing and housing delivery have been and continue to be a recurring decimal among professionals especially among the building professionals. As man advanced from the primitive to the modern, he also envolved varying degrees of housing technology to match his level and stage of development and civilization. In Eastern Nigeria, before the advent of colonialism, the issue of housing was not as serious as it is today. It was easy for a man to assemble local building materials of matched mud, raffia mats, grass mats, sticks and raffia fronds to erect a house. Land was readily available. In those days, one does not stay long in his father's house after marriage.

Appraising the situation with reference to the housing of Nigerians, Okereke (2002) lamented that after 41 years of shaking off the shackles of colonialism, Nigeria has fared badly in the provision of housing for its teeming population. He went on to say that despite orchestrated attempt at ameliorating the housing problem through various housing programmes, the production level is still very low.

It should be recalled that the United Nations General Assembly Resolution 37/221 of December 12, 1982 called on all member nations to develop renewed political commitment and effective action within and among nations to help the poor and disadvantaged improve their shelter and neighbourhood. It may be necessary here to emphasize that the United Nations organization is apprehensive of the plight of the poor and disadvantaged in a world that has imbibed the urban culture. This raises the issue of the modalities that have to be put in place to build housing units that can be affordable for the poor in general and urban poor in particular.

If one goes down the history lane, one finds that public housing, now called estates is as old as the Nigeria of British creation. In the major urban centreswhere British interests concentrated, there was Government Reserved Areas (GRA) with monotonous repetitive architectural design of housing structures designed to shelter the elite. The middle class and the low income class (the poor) settle down with housing architectural designs labeled staff quarters, senior and junior. These housing units are so identical in design to

the extent that aesthetic value or houses as landmarks is lost. Shell camp houses in Owerri and China Town houses in Enugu are relics of the scenario being painted here.

It is grafting to note that governments at the federal and state levels have realized the problem of housing in Nigeria. At least between 1979 and 1999, there have been three National Housing programmes namely: Federal Government Housing Scheme (1979 – 1983) in which the construction of 400,000 housing units in four years was the target; the National site and Services Housing Scheme (1986 – 1991) and the National Housing Programme launched in 1995, all aimed at addressing the problem of materials by providing contractors with the necessary inputs. There is also the National Prototype Housing Scheme in some selected states (1991 – 1993). In addition various state governments have also embarked upon their own housing programmes notably among these are Lagos, Kogi, Enugu, Anambra, Imo etc.

It is on record that all governments in Nigeria are aware of the issue of housing shortage in the country more especially so in the urban centres. Consequently, there is now a ministry of housing and Urban Development at the Federal level. The ministry, under the National Housing Policy, identified a prototype housing agency charged with the responsibility of increasing Nigeria's housing stock. To achieve this, four parastatals were established. They are Federal Housing Authority, Federal Mortgage Bank, Federal Mortgage Finance Limited and Urban Development Bank.

As a matter of fact, it is glaring that the growth of residential housing units in Nigeria has failed to keep abreast with the increase in population, thus the provision of adequate and affordable shelter has constituted to be one of the most acute problems that this nation has to contend with especially in its urban centres. Attempt by both the Federal and State governments, through various forms of housing policies to provide shelter to Nigerians, are indicative of the governments awareness of the housing issue. In the search for a solution at the grassroots platform Housing Corporations were created at State levels.

In Nigeria, housing units in rural areas are not built by corporations as each individual builds his own house on his family land. The situation is quite different in the urban areas where land is an expensive commodity because of excessive demand.

In Eastern Nigeria, where land is owned by individual families or communally, to access land for housing development is fraught with conflicts such that government found it cumbersome to dispossess families and individuals of their parcels of land in other to establish housing estates. This explains the rationale for the land use Decree (Act) of 1978 which is currently generating a lot of controversy to the extent that some people are calling for its repeal. This notwithstanding, State governments have developed strategies for acquiring urban lands to set up housing corporations.

The most common view among Nigerians is that many Housing Corporations in the country have not performed creditably well in housing delivery. This poor performance seems to be traceable to lack of appropriate strategies for the management of resources available to them in terms of finance, infrastructure, labour and land. Shortcomings in proper management of resources may be blamed for low corporate performance, manifesting in low housing productivity.

Fadahunsi (2002) observed that there is a paucity of statistical data to examine the performance of various housing corporations in Nigeria. This lack of statistical data and other debilitating factors against the growth of taking stock in Nigeria requires a concerted effort to tackle the problem of housing stock inadequacy in Nigeria.

1.2 STATEMENT OF THE PROBLEM

The Housing Corporations acquire land, put in place the necessary infrastructure before building the houses. It is when the complete any building that prospective buyers step forward to acquire/purchase them. Housing delivery by housing corporations is characterized by non-affordable and inadequate housing units in contrast to the privately sponsored housing by individuals and corporate bodies.

The operations of Housing Corporations seem to lack a functional framework for performance. The mechanism for determining the prices of house types based on a proper study of real estate economic is also lacking. This scenario is the major cause in the arbitrariness in the fixing of prices of house types by Housing Corporations in most states of Nigeria.

What is clearly missing is proper coverage and articulation to identify inadequacies with respect to land acquisition, cost of labour, cost of building materials, plant/equipment and infrastructure. Consequently, there is need to access the variables associated with housing delivery by housing corporations and to establish the preponderance of the resource factors in housing delivery.

1.3 AIM

The aim of this study is to examine the resource factors affecting Housing delivery by Housing corporation and to rank the factors, according to degree of importance of the resource variables.

1.4 OBJECTIVES

1. To identify the factors that affect housing delivery by Housing corporation in Nigeria.
2. To rank the factors that affect housing delivery by Housing Corporation in Nigeria.
3. To develop multi-factorial regression model for prediction of the annual performance of a housing corporation with available resources.

1.5 SCOPE

This study involves a critical analysis of the current, corporate housing activities of the Housing Corporations in Enugu State and Anambra state. This study is conducted in the urban centres of Enugu and Nsukka in Enugu State and Awka and Onitsha in Anambra State, which are the main hubs of the housing activities of both Housing Corporations by evolving an appropriate resource management model for the infrastructural personnel, facilities and land resources available to them.

II. LITERATURE REVIEW

2.1 INFRASTRUCTURAL FACILITIES AS RESOURCE FACTOR IN HOUSING DELIVERY

The factors in housing delivery, especially, in relation to housing corporations are the input factors of infrastructural facilities, land resources, finance, skilled manpower, building materials, and architectural design and construction technology.

According to Fox (1994), Public infrastructure is defined here as those services derived from the set of public works traditionally supported by the public sector to enhance private sector production and to all household consumption. Defined in this manner, infrastructure includes services such as roads, mass transportation, water systems, sewer systems, solid waste management drainage and floor protection electric installations and telecommunications.

2.2 LAND AS RESOURCE FACTOR IN HOUSING DELIVERY

According to the National Housing policy (1991), land is the basis for all development and a major source of wealth for all Government and the people. Its inaccessibility therefore constitutes a great obstacle to development in both the public and the private sector of the economy.

Hence, the issue of inaccessibility affects the availability of land and the ease of acquisition of land especially, for residential development and housing delivery by housing corporations in Nigeria. Major challenges in land as a factor in housing delivery by most housing corporations in Nigeria include the following:

1) The Land Use Decree 1978 (Norland Use Act). The National Housing Policy (1991) elaborated further, that land use Decree is intended to facilitate availability of urban and rural land for development.

2) Lack of Integrated Land Management Strategy: According to Bernstein (1994), notwithstanding the facilities of government interventions in urban land markets, some degree of government control must be exerted over land use and development. Without effective policies and regulations, it is unlikely that private actors in the land market will take into account the costs that their decisions concerning the use, density, design, location and timing of development may impose on sensitive land and cultural resources.

2.3 FINANCE AS RESOURCE FACTOR IN HOUSING DELIVERY

According to Sanusi (2003), the major housing finance arrangements in Nigeria are namely, State/Municipal Government Financing, Federal Mortgage Finance Limited (FMFL), Primary Mortgage Institutions (PMIS), National Housing Fund (NHF) Insurance Companies Funds, specialized institutions and credit policies.

2.4 POLITICAL WILL (BUDGETARY ALLOCATION)AS A RESOURCE FACTOR IN HOUSING DELIVERY

Drucker and Maciariello (2008) states that next to double-entry book-keeping and the copying machine, budgets are the most commonly used management tool. Practically every business, large or small has a budget of some sort; budgets are the only management tool that originated in governmental. Budgets are expressed in monetary terms, but monetary terms should be seen as symbolic expression, a kind of shorthand – for the actual efforts needed and should be based on "real values", that is on people and materials needed, on work needed, on capacity needed. Budget, in other words, should always be used as a tool to think through the relationship between results and available means.

2.5 MANAGEMENT DECISION MODELS AS INPUT FACTOR IN HOUSING DELIVERY

Stress scenarios in Housing Delivery have generated impacts on risk management and prediction models that should be considered by Housing Corporations and allied financial institutions in their management processes. In this regard, some experts have proposed elucidations based on contextual analysis of stress scenarios, risk management and prediction models as emanations of the field of management.

Science Modeling Loffler (2011) applied standard time series models to US housing prices. Forecasts made in 2005 or earlier would have produced stress scenarios that are worse than the subsequent actual change in housing prices. The probability of these scenarios is in the range that financial institution should consider in their risk management.

2.6 SKILLED MANPOWER (HUMAN RESOURCE) AS RESOURCE FACTOR IN HOUSING DELIVERY

According to Boxall and Purcell (2003), the notion of human resource management (HRM) refers to all those activities associated with the management of employment relationships in the firm. The term "employee relations" used as equivalent term, as well as the term "Labour Management". While there have been debates over the meaning of HRM (Human Resource Manager) the term came into vogue in the 1980s, it has become the most popular term in the English-speaking world referring to the activities of management in the employment relationship.

2.7 BUILDING MATERIALS AS RESOURCE FACTOR IN HOUSING DELIVERY

According to the National Housing Policy (1991) building materials and components constitute between 50 and 60 percent of the total cost of construction. Consequently this sub-sector cannot be left to develop haphazardly. To stem the current indiscriminate importation of building materials, local capabilities and resources need to be developed. The upward trend in the costs of basic building materials began after the civil war and other major increases coincided with the Udoji award and the mis-management of the economy during the last civilian administration. During these periods, sharp rises were recorded for all categories of building materials in more specific terms, the major causes of high construction cost can be identified as follows:

1. High demand for building materials arising from post civil war reconstruction, creation of states and the oil boom.
2. Adoption of high space standards, costly specifications and over design.
3. Massive importation of building materials
4. Over priced contract costs
5. Inefficient distribution system aggravated by middlemen and high transport costs.
6. Insufficient building materials.
7. Absence of programming of award of building projects and inadequate pre-planning by developers leading to excessive variations and attendant price increases.
8. Massive intervention of governments in direct housing construction.
9. Use of incompetent and inexperienced contractors and consultants.

2.8 EFFECTIVE MANAGEMENT OF HOUSING CORPORATIONS AS A FACTOR IN HOUSING DELIVERY

According to Okewole (2001), a review of the current operations of housing corporations and property developments all over the country indicate five primary activities namely site and services schemes, mortgage operations, property development (housing estates, shopping complexes etc). estate management and servings.

To execute these five main activities, most housing corporations and property development have such operational units as estate, finance, works and administration. Each of the four departments is headed by a Director who is ultimately responsible to a General Manager.

Okewole (2011) elaborates further: the administrative structure is divided into three levels which are named the Chief Executive, Middle and Grass Root levels. In the opinion of Abubakar (2011), policy implementation covers specific aspects of:

- Building organizational capacity
- Drawing up a good budget and a clearly defined programme
- Drawing up a good budget and a clearly defined programme
- Creating a conducive working culture and
- Developing a reliable information and reporting system.

Betel (1985), the states that regardless of where the managers perform their functions it include the following:

- Planning
- Organizing
- Staffing
- Activating
- Controlling

2.9 FACTORS OR MARKETING IN HOUSING CORPORATIONS

City consultants (2011) enunciate the following design considerations as parameter in the design of house types for housing developments namely quality, capacity, comfort connection with the outside, exteriors.

The factors in housing delivery especially in relation to housing corporations are to the input factors of infrastructural facilities, land resources, finance, skill manpower, building materials, architectural design and construction technology.

Infrastructure includes services such as roads, mass transportation, water systems, sewer systems, solid waste management, drainage and electric installations and telecommunications. A tendency exists to focus on the facility because of the capital intensive production techniques of infrastructure can be evaluated or defined in two dimensions. One is in terms of the services drawn from the physical facilities. The other is the physical facility itself. The political leaders always emphasize the physical plant for political gain. Thus decision-making about what to provide requires emphasis on the demand for services, not on the physical hardware and other inputs.

According to the National Housing Policy (1991), land is the basis for all development and a major source of wealth for all government and the people. Its inaccessibility therefore constitutes a great obstacle to development in both the public and the private sector of the economy. Hence the issue of inaccessibility affects the availability of land and the case of acquisition of land, especially for residential development and housing delivery by housing corporations in Nigeria. Major challenges in land as a factor in housing delivery by most Housing Corporations in Nigeria include the land use Decree of 1978 (now Land use act) and lack of integrated Land Management Strategy.

According to Sanusi (2003), the major are namely, state/municipal Government Financing, Federal Mortgage Bank of Nigeria (FMBN), Federal Mortgage Finance Limited (FMFL), Primary Mortgage Institutions (PMIS), National Housing Fund (NHF), Insurance Companies Funds specialized institutions and credit policies. Under the above-named scheme, Nigerian workers in both the public and private sectors are to make mandatory contributions. The Financial sector was, however, liberalized in 1993. With the deregulation, the preferred status accorded to the housing and construction sector was discontinued. This resulted to most Building project Financiers obtaining their fund through personal savings and profit from their businesses.

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vi) Insufficient building materials
vii) Absence of programming of award of building projects and inadequate pre-planning by developers leading to excessive variations and attendant price increases.
viii) Massive intervention of governments in direct housing construction.
ix) Use of incompetent and inexperienced contractors and consultants

Skilled manpower (Human Resource) as resource factor in Housing Delivery cannot be over emphasized. That managers are generally created as a critical employee group is hardly surprising. The point that Human Resources Management is concerned with the management of all employee groups needs to be made strongly because some academic approaches in the field of employment relations tend to look at "Management-Worker" relations and in some extreme cases only at 'Management-Union' relations). These aspects are extremely important but, not their own, they do not define the universe of employment relations in the firm. The construction project manager is to set up his own control channels that will enable all other consultants (engineers, architects, buildings and quantity surveyors) to carryout their respective roles towards the achievement of specified quality standard at first attempt.

III. METHODOLOGY

Questionnaire was designed to capture the relevant characteristics of residential properties built by the Housing Corporations in the study area and also the capture those resource factors in Housing delivery by Housing Corporations in South-East Zone of Nigeria. The distribution of the questionnaire was carried out

based on expert judgement and the data obtained from the Housing Corporations, ministries of Land, Survey, Housing and Urban Development of the respective states as well as from professionals from the built-environment. The data obtained contained information on some of the characteristics like infrastructure, land, fund, skill manpower building materials and equipment.

The whole database from the two states under study contained housing stock constructed between 2000 and 2012. These data collected were both from the field survey design as well as from the ex post factor research design which constituted the primary and secondary data of the study.

3.1 PERCENTAGES

Percentages were obtained by multiplying ratios by 100. Thus, in data analysis, percentages are employed to emphasize on the values of ratios between two entities. With percentages, numbers are simplified by transforming decimals into standard forms with base equal to 100 for ease in relative comparisons. Thus, in the comparison of factors, the higher the percentage value, the higher or more comparatively more significant the importance attached to it.

3.2 Mean Score

The mean is a value typical or representative of a set of data. In its numerical value, it is used to assign to each of a statement that describes a situation, item, phenomenon, or treatment being investigated in order to measure the intensity or degree or agreement by the respondent to the statement, for instance, in addressing the opinion from a group respondent on the importance of the resource factors which degree of preponderance is weighted a maximum of 6 and a minimum of 1, the mean score is the aggregate of all the scores: 1,2,3,4,5 and 6 divided by 6, that is expressed mathematically:

$$Ms = \frac{n!}{n} = \frac{1+2+3+4+5+6}{6} = \frac{21}{6} = 3.5$$

By extension, if N respondents ranked the degree or importance of the resource factors among themselves, with the respective degree weighted between 1 to 6, by assigning a_i for i^{th} group with X population, the mean score index for the N respondents could be estimated using the expression.

$$Ms = \sum_{i}^{N} = 1 \frac{aiXi}{N}$$

Where a_i is the weighting of i^{th} group of respondents with x_i population.

This study exploited this relationship in ranking the degree of importance or preponderance of the identified resource factors from the responses of respondents in the study area.

3.3 Coefficient of Correlation

The relationship between two or more variables can be estimated by finding the value of the coefficient of correlation r using the expression Okereke (2004):

$$r = \frac{n\sum (n-1)(y-y)^2 > 0}{(x-x)^2 (y-2)^2} \quad \ldots 2$$

Where x and y are independent and dependent variables respectively; x and y are the respective mean scores of the variables.

The value of r can range in magnitude from -1 to +1 depending on the following conditions:

i) r = -1 (negative) when the relationship between the two variables is linearly imperfect, or inversely proportional, that is, when any increase in one variable results in a corresponding decrease of the other and vice versa;

ii) r = 0 (zero) when between x and y there does not exit any form of relationship, that is, each is completely independent of the other;

iii) r = +1 (positive) when there is a perfect linear relationship existing between the variables, that is, any increase in one variable results in a corresponding increaae in the other and vice versa.

3.4 Analysis of Variance (ANOVA) and Registration Analysis (RA)

Analysis of Variance (ANOVA) and Regression Analysis (RA) are two highly used methods in mathematical statistics in determining if there exists any relationship among variables. Because of their importance in scientific research, much has been published in the form of historic, and theoretical exposes and procedures about them (Kothari, 2004; Okereke, 2004; Eze et al, 2005; Ebhotemhen, 2001). Apart from providing the basis for assessing the relationship among variables, they also provide the locus for taking far-reaching decision or drawing up of statistical inferences about certain phenomena.

Any variable X may be regarded as an accidental function of many factors with their respective characteristics. While some of these factors have minimal influence on Y, others have minimal values on the parameters of their functions. The study of the influence of the various factors Y is of great significance in theory of probability and many mathematical statistics (Okereke, 2004).

In actual fact, this is a typical case of statistical testing of hypothesis usually known as null and written as follows:

H_o: $\mu 1 = \mu 2 = \ldots = \mu k = \mu$ …3

Therefore, ANOVA represents a method for the statistical testing of hypotheses.

ANOVA is usually carried out in many ways depending on the number of variables involved in the study, their characteristics and whether the number of (n) observations (measurements) of each sample is equal or not. A mono-factorial ANOVA is concerned with the study of the influence of one factor A which has k levels of treatment with respective values A_1, A_2, ...,A_k. In order for ANOVA to be used in data analysis, the variable x must fit into the following assumptions:

i) its distribution is normal;
ii) its variance is constant, that is, $\sigma 2$ = constant;
iii) Its sample variables are independently obtained.

On the other hand, the word "Regression" according to Okereke (2004) was introduced by Sir Francis Galton in connection with the inheritance of stature.

The ordinary dictionary definition of "regression" is backward movement of reversion". The point made by Galton was the line showing how height of offsprings tends to increase height of parents and had a slope less than 1. Thus, on the whole, the height of offsprings differed less from the norm than did their parents, and this he described as a regression to mediocrity.

In a variety of research problems, the explanation to the question of the existence or otherwise of a linear relationship between variables is not enough. Often times, there is need to evolve an equation or model y containing one or more variables xi (i = 1, 2, …, n) which could be dependent or independent. Such equation or model is called regression. The equation of a line of regression y on x will be in the form:

$\varphi(x) = \alpha + \beta x$ …4

Where α is the intercept; β - the slope of the straight line and φ (x) the true value of the response at a specified value x.

Generally, the observed (measured) value of the dependent variable y will vary from the actual value $\varphi(\chi)$ with an error ε …5

Regression can be classified according to the number of variables involved. In a situation where the relationship to be investigated is between one variable called dependent and the other-the independent, the regression is known as simple regression. If however, the relationship is between one dependent variable and more than one independent variables, it is called multiple regression. In any case, there is always one dependent variable while the other variable(s) represent(s) the independent variable(s). It is possible to predict the value of the dependent variable when the value of the independent variable is known (Ebhotemhen, 2001; Eze et al, 2005).

In this study, multiple regression is used to investigate the relationship between the resource factors (land, funding, labour, materials, plants and infrastructure) as independent variables and the production capacity (number of house types deliverable by the HCs in a year) as the dependent variable. The relationship between the independent variables represented with x_i and dependent variables represented with u is expressed mathematically as:

$y = a + b_1x_1 + b_2x_2 + b_3 x_3 + \ldots b_ix_i$ …6

or, written simply as:

$y = bo + \sum bixi$ …7

where

y is the dependent variable;
x_i - the independent variables;

Equations (6) and (7) are expressions for multiple linear regressions which coefficients of regression can be calculated with the following expression:

$bi = \frac{\sum xiy}{\sum xi2}$ $(i = 0, 1, 2, 3, \ldots, k)$ …8

For the analysis, it will be assumed that x and y are variables both having normal distribution. The relationship between the two variables can be studied by verifying the hypothesis of the significance of the coefficient of correlation ρxy between them. Generally speaking, the non-correlationship of the two variables does not mean that they are independent of each other. On the assumption that the two variables have normal distribution however, their non-correlationship indicates that they are also independent.

Therefore, the null hypothesis is Ho: ρ*xy* = 0, while the alternative Ho: ρ*xy* ≠ 0. A double-tailed test is used in the analysis. As it is well known, the coefficient of correlationship is a measure of linear dependency and the acceptance of the alternative hypothesis is an indication of the existence of linear dependency between the two variables-x and y.

The procedure for hypothesis testing is as follows:

1) Determine the value of the coefficient of correlation *yxy* using the expression:

Y*xy*= (xi – x) (yi – y)

$\sum_{i}^{N}$ =1()

2) Calculate the *t* statistics with the expression:

It is a known fact in statistics that *t* has the student distribution with a degree of freedom df = n – 2.

3) With a level of significance *a* and degree of freedom df = n – 2, the value of *t* (α;d*f*) is read off from statistical table.

4) Decision: If t ≤t(α, *df*), the null hypothesis is accepted, that is, that the variables x and y are independent of each other. On the contrary, the opposite is the case, that is, the alternate hypothesis is accepted, while the null is rejected, meaning that the two variables are dependent of each other.

IV. DATA PRESENATION AND ANALYSIS

4.1 RESOURCE FACTORS IN HOUSING DELIVERY

The study identified six critical resource variables in housing delivery, namely, land, fund, labour, materials, plants/equipment and infrastructure. The degree of importance of each of these resource variables needed for the erection of houses by the Housing Corporations of Enugu and Anambra States is captured in Table 1 and Table 2 respectively.

Table 1 Degree of Importance of Resource Variables (Anambra State)

Resource	Very Important (2)	Important (1)	Undecided (0)	Partially Important (-1)	Not Important atal (-2)	Total	Sum	Index	Ran
Land	144	0	0	0	0	144	288	2.0	1
Fund	135	9	0	0	0	144	279	1.94	2
Skilled labour	60	81	0	3	0	144	198	1.38	3
Equipment	54	51	3	36	0	144	123	0.85	5
Constr. Materials	39	72	33	0	0	144	150	1.04	6
Infrastructure	51	93	0	0	0	144	195	1.35	4

Source of Data: Author's Fieldwork.

4.1: Degree of Importance of Resource Variables (Enugu and Anambra State)

The information in Table 1 contains the indices of importance and the rankings of the resources based on the Likert scale of weighting. It is clear from the Table 1 that land is the most important resource as it ranks first in the two states. Fund ranks second, while skilled labour places third in the order of ranking. Infrastructure is in the fourth position followed by equipment in the fifth position. Construction materials is the last among the six variables considered. It needs to be observed that the general belief is that fund is the most important resource in the building industry, but this ranking is suggestive that this belief may be erroneous.

Table 2 Degree of Importance of Resource Variables (Enugu State)

Resource	Very Important (2)	Important (1)	Undecided (0)	Partially Important (-1)	Not Important atal (-2)	Total	Sum	Index	Ran
Land	129	0	0	0	0	129	258	2.0	1
Fund	117	12	0	0	0	129	246	1.91	2
Skilled labour	45	75	0	9	0	129	156	1.21	5
Equipment	42	60	3	24	0	129	120	0.93	6
Constr. Materials	54	60	9	6	0	129	162	1.26	4
Infrastructure	60	51	12	6	0	129	165	1,28	3

Source of Data: Author's Fieldwork.

The data in Table 2 show the same pattern as those in Table 1 but there are some departures. For instance, while land and fund are ranked first and second respectively as is the case in Anambra State Housing Corporation, infrastructure placed third in importance in Enugu State Housing Corporation. Construction material that ranked last in Anambra State Housing Corporation is ranked fourth in Enugu State Housing Corporation. In the fifth position is skilled labour while equipment is at the rear.

In this study, the focus is on the Housing Corporations of Enugu and Anambra States. This necessitates the quest to obtain the overall indices and rankings of the resources available to the Housing Corporations. This overall rating is captured in Table 3. It is clear from Table 3 that land is the most important resource as it ranks first in the two States.

Table 3: Degree of Importance of Resources (Enugu and Anambra States' Housing Corporations)

	Anambra (144)		Enugu (129)		Overall (273)	
Resource	**Index**	**Rank**	**Index**	**Rank**	**Index**	**Rank**
Land	2.0	1	2.0	1	2.0	1
Fund	1.94	2	1.91	2	1.93	2
Skilled labour	1.38	3	1.21	5	1.30	4
Equipment	0.85	6	0.93	6	0.89	6
Constr. Materials	1.04	5	1.26	4	1.15	5
Infrastructure	1.35	4	1.28	3	1.32	3
Total	**8.56**		**8.59**			

Source of Data: Author's Fieldwork.

Table 3 Contains the indices and rankings of the resources available to Housing Corporations of Enugu and Anambra States. From the overall indices and rankings, it is clear that land is first with an index of 2.0 followed by fund whose index is 1.93. In the third position is infrastructure with 1.31 as its index. Skilled labour with an index of 1.3 is ranked fourth. Construction materials in in the fifth position with 1.0 as its index while equipment brings up the rear with an index of 0.89. At this juncture, one is not left in doubt about the importance of land in the building industry. One can have the fund but cannot build until he accesses land. It is safe to assume that fund is secondary to land as a resource in Housing Corporations.

3.2 Two-tailed Statistical Analysis

The analysis of the degree of importance of the resources in the building industry is pushed further to investigate if there is any significant difference in level of importance between Enugu and Anambra Housing Corporations. The ensuring analysis using two-tailed t-statistics is shown in Table 4. The resultant analysis indicates that the modulus of the t-statistics -0.491 based on the results from the statistical analysis using the SSP. This value was found to be less than the critical value of 0.291 at 95 percent confidence limit at 5 degrees of freedom. At this level, it is concluded that there is no significant difference in the order of importance of the resources used in the building industries of Enugu and Anambra Housing Corporations.

The result of the analysis of the data in Table 5 is pointing to the position of land as the primary resource in Housing Corporation's activities. The data generated in Tables 1 and 2 were synthesized to produce the data in Table 6.

Table 5 Ranking of Resources (Enugu and Anambra HCs)

Resource	**Very Important (2)**	**Important (1)**	**Undecided (0)**	**Partially Important (-1)**	**Not Important atal (-2)**	**Total**
Land	182(144.7)	0(43.9)	0	0(-6.6)	0	182
Fund	168(139.1)	7(42.2)	0	0(-6.3)	0	175
Skilled labour	70(93.8)	52(28.4)	0	-4(-4.2)	0	118
Equipment	64(64.4)	37(19.5)	0	-20(-2.9)	0	81
Constr. Materials	62(82.6)	44(28.9)	0	-2(3.7)	0	104
Infrastructure	74(95.4)	48(28.9)	0	-2(-4.3)	0	120
Total	**620**	**188**	**0**	**-28**	**0**	**780**

Source of Data: Author's Fieldwork.

STATISTICAL ANALYSIS OF RESEARCH DATA

Introduction

Analysis of variance (ANOVA) was used to test the correlation/relationship amongst the management variables. Tables of data were adopted for the illustration of the correlations and trends with the accompanying descriptions and interpretations. With ANOVA, the formulated hypotheses on the relationship among the variables was determined and inferences drawn on their respective impact on the objective function, that is, the number of housing units the HCs are capable of delivering in a year with available resources. In addition to the ANOVA, a multiple regression model was developed, analysed culminating in a predictive model with which it is impossible to forecast the performance of the HCs, with available resource factors.

3.3.2 Analysis of Variance (ANOVA)

Because of the non-parametric nature of the variables in this study following correlationships were established using statistical techniques of Kruskal Wallis test Uji (2009). The generalized results are as tabulated in Table 6.

Table 6 Results of Kruskal Wallis Statistical Test

Resource	Value	Significance	Remarks
P value	0.0002		
Exact or approximate P value?	Gaussian approximation		
P Value Summary			
Do the median vary sig. (P < 0.05)	Yes		
Number of groups	5		
Kruskal-Wallis Statistics	22.01		

Kruskal-Wallis Test	Value	Significance	Remarks
Dunn's Multiple Comparison Test	Difference in rank sum	Significant? P < 0.05?	Summary
Total Budget vs Infrastructure cost	1.400	No	Ns
Total Budget vs Number of Housing	13.20	Yes	*
Total Budget vs Cost of land	8.200	No	Ns
Infrastructure Cost vs Number of Housing Units	11.80	No	Ns
Infrastructure Cost vs Cost of Land	6.800	No	Ns
Number of Housing Units vs Number of Technical Staff	5.00	No	Ns
Number of Housing units vs Cost of Land	-5.00	No	Ns
Number of Technical Staff vs Cost of Land	-10.00	No	Ns

Source: Author's Analysis,.

Test of Hypotheses

A hypothesis is an idea or proposition that can be tested for association of casualty by deducing logical consequences which can be tested against empirical evidence. Simply put, a hypothesis is a proposition that is empirically testable. The hypotheses in this research work were postulated to shed light on the key areas of research from which data were obtained and analysed, with a view to providing answers to the research problems. The testing of the postulated hypotheses and subsequent graphical presentation of the relationship among the variables is based on the values correlation matrices of the respective variables.

H_{o1}: The null and alternative hypothesis for the first hypothesis are given as follows:

H_{o2}: The total infrastructure budget has no significant relationship in determining the number of housing units delivered by a housing corporation.

H_{A2}: The total infrastructure budget has significant relationship in determining the number of housing units delivered by a housing corporation.

The analysisindicates that infrastructure cost predicts the number of housing units. Infrastructure cost showed a significant correlation with number of housing units delivered and the correlation coefficient, rho value is 0.03.

Hypothesis 2: The null and alternative hypotheses for the second hypothesis are given as follows:

H_{o2}: The total number of technical staff has no significant relationship in determining the number of housing units delivered by a housing corporation.

H_{A3}: The total number of technical staff has significant relationship in determining the number of housing units delivered by a housing corporation.

The number of technical staff has no significant correlation with number of housing units delivered. Rho value is 0.005.

Decision: The null hypothesis is accepted and the alternative hypothesis is rejected.

Hypothesis 3: The null and its alternative hypotheses are given as follows:

Ho4: The total number of construction equipment/machinery has no significant relationship in determining the number of housing units delivered by a housing corporation.

H_{A4}: The total number of construction equipment/machinery has significant relationship in determining the number of housing.

Result from field survey shows that 89% of sampled HCs had no construction equipment/machinery of their own. Most jobs involving the use of heavy equipment such as crane and lifting device were outsourced and/or sub-contracted. This situation predicates that number of construction equipment/machinery cannot determine the capacity of HCs to construct a number of housing units in a given period of time.

Decision: The null hypothesis is accepted and the alternative hypothesis rejected.

Hypothesis 4: The null and alternative hypotheses are given as follows:

H_{05}: The total land resource has no significant relationship in determining the number of housing units delivered by Housing Corporation.

H_{A5}: The total land resource has significant relationship in determining the number of housing units delivered by a housing corporation.

Land resource (cost of land) has a weak correlation with number of housing units, RHO value is -0.052.

Decision: The null hypothesis is accepted and the alternative hypothesis is rejected.

V. SUMMARY OF FINDINGS AND CONCLUSION

5.1 SUMMARY OF FINDINGS

The following are the summary of the major findings of this study.

i) Identification and Ranking of Factors in Housing Delivery

The study identified and ranked the major factors in housing delivery by Housing Corporations. The Major factors identified and ranked in order of preponderance are land, funding, skilled labour, construction materials and infrastructure (water, road and electricity, etc). The availability of land is a critical factor in the planning of any residential development or housing estate, before the application of other resource factors such as funding for subsequent building operations.

Other factors in housing delivery that were identified and ranked in order of importance are skilled labour force, infrastructure, construction materials and equipment/plants.

The study established the following:

- Land: The number of housing units deliverable by a Housing Corporation is proportional to the size of land available. That is, the greater the size of land, the more housing units deliverable by a Housing Corporation, and vice versa.
- The impact of construction equipment on the performance of Housing Corporations. The study revealed an insignificant relationship between construction plants/machinery and the performance of Housing Corporations. This may be due to the type and nature of the house types which are generally low rise and do not require the use of heavy plants/machinery. Most residential developments. Requiring the use of equipment were usually outsourced to sub-contractors.
- Finance: The number of housing unit deliverable by a housing corporation is proportional to the available finance. This study identified the major sources of financing;Federal Mortgage Bank of Nigeria(FMBN), Federal Mortgage Finance Limited(FMFL), Primary Mortgage Institutions(PMIS), National Housing Fund(NHF), Insurance companies' Funds, Specialized Institutions and Credit Policies.
- Key decision- making on other matters of importance by housing Corporations: The study revealed that the management committee rather than individual professionals such as architects took major decisions such as budgets and other important issues guiding the operations of housing corporations.

Recommendations

(i) Housing corporations should aspire to operate on commercial basis as much as possible on the principle of management by objective by determining in advance the number and types of housing units to be delivered with available resources within a given time frame.

(ii) The should adopt scientific approach in decision making process by the application of the results of this study in the optimal determination of the number and house types to be delivered with available resources and their constraints. This will guarantee adequate return on investment as well as ensuring that houses are sold at affordable prices as much as possible, while at the same time ensuring profitability.

CONCLUSION

The case studies in this research were on state Housing Corporations (Public service based) and so there is need for research into the application of the new appropriate management models in private institutions in order to increase generaliability of the findings. This transformational effect will enhance the overall service delivery of Housing Corporations not only in the study are but generally in Nigeria. The studies of the operations of Housing Corporations towards the evolution of a functional management framework are not yet a mainstream activity in the housing industry and therefore, the advantages of the potential benefits of management models have not been harnessed.

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