

A PPLICATION OF VALUE MANAGEMENT TO ENHANCE CONSTRUCTION OF RESIDENTIAL HOUSING FOR FEDERAL CIVIL SERVANTS IN NIGERIA

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ABSTRACT

Value management techniques have been successfully applied to all types of construction projects from buildings to offshore oil and gas platforms, and for all types of clients from private industry to governmental organizations worldwide. One of the Sustainable Development Goals objectives is increasing access to new technologies to support sustainable development; this has led to the application of value management to residential housing to ensure sustainable development of affordable housing. In Nigeria, access to affordable housing has largely remained an unfulfilled dream to the vast majority most especially, the middle and the lower class of the society. The gap between the need for housing and the capacity to acquire the desired housing type has led to a demand crisis for affordable housing in Nigeria. In this paper, the concept and benefits of the application of Value Management was explored to enhance affordability of sustainable residential housing for civil servants in Nigeria. The quantitative

Introduction:

Accommodation is one of the basic need of man and has no doubt a widespread impact on the health, welfare and productivity of a being (Akintunde, 2008; Akinyode and Tareef, 2014). Adapted and affordable housing arrangement has over the years been the necessity of most countries, especially the developing ones, given that it is one of the three most notable basic necessity of mankind –others been food and clothing. Accommodation (Shelter) is basically one of the requirements of man. It is classified second after food in the hierarchy of human's needs but as emphasized by Ebie (2009) it is the first and most expressive of all rights.

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approach employed was to understand the perception on the benefit of the application of value management on residential project in Niger state. This was done by the use of well structured questionnaire.

Keywords: *Affordable housing; construction; sustainability; sustainable residential housing; value management.*

As such, the supply of housing along with the fact that dwelling involves more than mere shelter since it encompasses all social services and utilities that make a society or neighbourhood a livable environment, is now a right.

Precedent Nigerian government have made invested efforts in housing delivery through various policies and scheme either as a provider in the 70's and 80's, and as facilitator and enabler in recent time (Aminu and Rukazat, 2013). Public-Private Partnership in housing delivery was commended as a method of addressing this problem. An investigation carried out on thirteen government agencies in some selected zones Nigerian shows that although the agencies aim is to focus on the availability of access to land and the regulatory structure for housing growth. A great multitude of Nigerians have not benefited from Public-Private Partnership scheme (Eziyi, 2010). More exertion is required to deal with this uncertainty.

The quality and quantity of useful dwelling units in any country is also a well acknowledged indices of a country's level of growth and quality of life. Nations, therefore, pay special attention to the availability of affordable housing, for its residents. Statistics signify that investment in shelter accounts for 15 –35% of total investment worldwide compared to only 0.4% investment in Nigeria. Furthermore, shelter represents 15 – 40% of monthly expenditure of families globally. The present government in effect keyed in to the earlier “visions” that is vision 2010 and then inaugurated the vision 20:2020. The vision is designed to place Nigeria among the largest economy in the world by the year 2020. This means that in Africa, Nigeria must rise from our current 3rd position with a GDP of \$294.8b to surpass Egypt with a GDP of \$432.9b and South Africa (\$467.6b), within the same period (www.nigerianstat.gov.ng). There has been tremendous growth in the nations GDP over the last five years. The nation's GDP grew in the third quarter of 2017 by 1.4%. This growth is 3.74% rate higher in the third

quarter of 2016. Presently, Nigeria is single as the most developed countries in Africa. Services is the largest distinctive part of the economy accounts for 50% of total GDP. Information and telecommunication which together attribute for 10% of the total output is one of the fastest growing segments in services. Agriculture, former biggest sector now accounts for 23%, Industry and Construction accounts for 16% of GDP (www.tradingeconomics.com).

The democratic administration, which began in 1999, brought a revived vigour and opportunities in the housing sector. More financing options opened for local and international investors coupled with the influx of overseas construction firms, who are flocking in to benefit from this enormous opportunities existing in this sector. This has resulted in various state governments present executing one housing projector the other either directly through theirstate housing corporations or in partnership with the private sector. For example, the Federal Mortgage Bank of Nigeria (FMBN) has invested about =N=1.423 billion Naira on 402 housing units in Niger state. The housing unit are FMBN/Sutas Estate in Zuba with 92 units, FMBN/Jedo ministerial Pilot housing scheme Estate in Suleja with 102 units, FMBN/Niima Shelter limited with 75 units and the FMBN/Sea mountain Estate in Minna with 133units (leadershipngr, July 19,2017).

Inspiteofall these attempts, it is regrettable to note that the federal civil servants are yet to be provided for because the available houses are not affordable. As a result there is severe reliance on rental housing which in itself is grossly insufficient both in qualitative and quantitative terms leading to enormous rents. Currently, the average worker spends as much as 40% – 50% of his allowance on rental. As a result very little is therefore saved at the end of the month. This results in the inability of the low-income earners in particular to benefit from the various housing scheme. It is compelling to identify initiatives that can exclude the extra cost of construction (hidden- costs that do not contribute to value) for the future visibility of affordable residential housing units. To eliminate the extra cost element caused by this aspect of inefficacy, a cost reduction system must target to improving the quality of the decisions made throughout the life cycle of construction projects. In order to deal with these problems, it is important to focus on the value of the project throughout the project life cycle. This is possible through value management as indicated by the definition of Institute of Civil Engineers (1996):"Value Management addresses

the value process during concept, definition, implementation and operation phases of a project.

Whilst there have been many studies on housing needs, demands and supply, housing delivery, housing policies and programmes in Nigeria, less attention has been given to affordability of housing (Akintunde, 2008; Ebie, 2009; Amao and Ilesanmi, 2013; Aminu and Ruhizal, 2013; Akinyode and Tareef, 2014). Recent literature tend to focus on effective housing policy and sustainable development and challenges to housing development and delivery (Omoniyi and Jiboye, 2011; Celestine and Fidelis, 2013). The use of value management to enhance affordability of residential housing in Nigeria has not been studied in any detail.

AFFORDABLE AND SUSTAINABLE HOUSING

Housing, literally is defined as buildings or other shelters in which people stay, a living, and to countries an important element in social and economic structure. Housing represents one of the most basic human desires. To most groups housing means shelter however to others it means extra because it serves as one of the nice indicators of a person's standard of dwelling and her place in the society (Nubi, 2008). It's far a concern for the attainment of living preferred and it is important to both rural and urban areas. These attribute make demand for housing to recognize no certain as population boom and urbanization are booming very swiftly and the gap between housing want and supply becomes widen. Cultural elements together with choice and values or social reputé, taste and financial resources, additionally have an impact on a house physical characteristics.

Nigeria is perhaps the fastest urbanizing country in the African continent. One of the maximum crucial challenges facing the country is the supply of low cost housing. As more Nigerians make towns and cities their homes, the resulting social, economic, environmental and political challenges need to be urgently addressed (Raji, 2008).

Low priced housing is housing that is reasonably good enough in standard and location for a lower or middle-income families and does not cost so much that this family is unlikely to meet other simple dwelling expenses on a sustainable basis (National Summit on Housing Affordability, 2006). Stone (2005) notes that affordability is not a function of housing per se, rather, it is a relationship between housing and people that relies upon answering three questions: Low price to whom? On what standard of affordability? For how long?

Sparks (2007) defines green low cost housing as “housing that is better designed and constructed, more long lasting, not significantly more expensive, less expensive to operate, healthier, more environmentally sound, and less volatile” (Sparks 2007 in Arman et al., 2009). Global Green USA (2007) also talks about green low cost housing and adds that such housing “forges a sturdy link between social justice and environmental sustainability, and connects the wellbeing of the people with the wellbeing of the surroundings, thus building on the core social and monetary values of low priced housing”.

There are many economic and social determinants of affordability (including costs of running a home and associated cost of maintenance), the most widely used measure in Australia (use by, for example, Australian Government, 2008; Beer et al., 2007; Berry et al., 2004; Disney, 2007; Gurran et al., 2008; Yates et al., 2007; Yates et al., 2008) is the ‘30/40 split’ which indicates that housing costs have to no longer exceed 30% of household income for the bottom 40% of income groups. Knowing average incomes, its far then possible to calculate a low cost house in terms of purchase price and rent and such figures also determine eligibility for certain low cost housing schemes

Arman et al. (2009) reviewed a spread of definitions of affordability, low cost housing, sustainability and sustainable housing and arrived at a conceptual definition of inexpensive and sustainable housing, housing, that meets the needs and demands of the present generation without compromising the capability of future generations to meet their housing desires and demands. Inexpensive and sustainable housing has strong and inter-related economic, social and environmental components (Arman et al., 2009). They counseled that great unique standards may be required to ensure that affordability and sustainability in housing are sincerely realised. To this end, Arman et al (2009) arrived at ten ‘traits’ of cheap and sustainable housing. These broad traits sought to mirror literature on affordability (traits 1-4) economic sustainability (traits 5), social sustainability (traits 6) and environmental sustainability (traits 7).

Features of Sustainable Affordable dwelling.

	Dwelling Features	Source
1	Adequate in standard and location and does not st so much	National Summit on Housing Affordability, (2006)
2	A product where the rent or mortgage repayments do not exceed 30% of household incomes for the bottom 40% of income groups.	Beer et al, 2007;Gurran et al, 2008., Yates et al., 2008

3	A product that is of a suitable size and quality for its occupants.	Stone(2005)
4	A product that does not increase the incidence of housing stress over the lifecycle of the house.	Sparks (2007) in Arman et al., (2009)
5	Meets the need and demands of the present generation without compromising the ability of future generations on affordability and sustainability.	Arman et al (2009)
6	A product that is socially acceptable and does not increase social exclusion or polarization.	Global Green USA (2007)
7	A product that encompasses the following environmental features; Energy efficiency; Passive solar design; sun shading; water conservation, appropriate waste management during construction, occupation and deconstruction.	Arman et al. (2009)

Source: author summary from Literature review

BENEFITS OF VALUE MANAGEMENT

Over the past few years, the economy has modified hastily and increasing competition has positioned an significance call on increased efficiency, effectiveness and value for money (Rangelova and Traykova, 2014). Value Management addresses these three aspects sucessfully and directly. The Institute of Value Management (2008) and The department of Housing and Works (2005) additionally observed that apart from acting as a cost reduction tool, the most glaring benefits arising out of the application of Value Management encompass: higher business decisions by providing decision makers a legitimate basis for their desire; enhanced competitiveness via facilitating technical and organizational innovation; a common value culture, thus enhancing every member's understanding of the organization's dreams; improved products and services that is up to date to external customers by clearly understanding, and giving due priority to their real desires; improved internal communication as well as common knowledge of the main success factors for the organization; simultaneously enhanced communication and efficiency through developing

multidisciplinary and multitask teamwork; decisions which can be supported by the stakeholders; time savings through focus of attempt; aid to the briefing and approvals process; enhancement of danger control measures; improved quality; improved sustainability; and promotion of modern service delivery techniques. These benefits according to Oke and Ogunsemi, (2011) are available and up to date to providers and consumers in all sectors of the society.

Following the Society of American Value Engineers (2008) definition of Value Management being a systematic, multi-disciplinary attempt directed towards analysing the functions of projects for the purpose of achieving the best value at the lowest overall life cycle cost. The premise is that some unnecessary costs are inevitable in any building design; Value Management sets out to identify and eliminate these unnecessary costs, resulting in cost savings. Value Management should not be confused for cost control. Value Management focuses on value in relation to the function while cost control focus on cost of construction.

Noor, Kamruzzaman and Ghaffar (2015) observed that in Malaysia, Value Management has been diagnosed by the authorities as a strategic planning tool and it has been practiced ever since as an appropriate mechanism to deliver sustainable construction project. The application of Value Management during project development phase may be utilized to improve building sustainability. Therefore the appropriate approach of sustainable development as a process will be able to balance and integrate social, economic and environmental sustainable values in construction.

In area of production, Yekinni et. al (2015) found out that there is a conceptual synergy between Value Management and Sustainable product and service design that leads to achieving best value in terms of quality and cost of a product/service. Thus, Value Management can be said to be a reliable tool in providing sustainable products.

In practice, at numerous stages of a Value Management workshop, the Value Management team tries to analyse each characteristic and look for better alternatives. Certain questions are asked and this includes questions like: What an element is? What does it do? What else can it do? What does it cost? What is its value? When these questions are answered, several alternatives are drawn and the best alternative is developed. In doing this, the Value Management crew try to identify unnecessary cost which can be in; use of unnecessary components in the design, use of unnecessary materials which less expensive materials would

have been able to replace and do the job satisfactorily or failure to identify opportunity cost. This being the case, since cost savings is one of the major objectives of sustainable development from the economic point of view (Agenda 21, 1992, as cited in Romiguer, 2011), and Value Management sets out to achieve "value for money", it therefore follows that Value Management is the appropriate mechanism for selling the objective of an economic sustainable development. Hence Value Management plays a vital role in the delivery of economic sustainable construction.

According to research carried out by SAVE, Value Management methodology can increase customer satisfaction and add value to an organization's investment in any business or economic setting (www.value-eng.org). Value Management practitioners apply Value Management methodology to products and services in industries such as the following: corporations and manufacturing, construction, transportation, government, health care and environmental engineering. Similarly from the studies carried out they found out that Value Management methodology easily produces financial savings of 30 % of the estimated cost for manufacturing a product, constructing a project or providing a service. The return on investment that public and private organizations derive from implementing Value Management programs averages 10 to 1. That is, for every dollar invested in a Value Management study, including participants' time and implementation costs, 10 dollars in net saving results.

The following are some of the results of Value Management application by some agencies

Benefits of Value Management highlighted by design consultants included (Come de Leeuw 2001): evidence that the initial design was indeed the best; the owner receives good value for money; an introduction of higher quality products; best up-to-date technology introduced at lowest cost; and a clear focus on project objectives as well as several alternatives for the design being considered.

Benefits of Value Management

BENEFITS	SOURCES
1 Cost reduction tool	Yekinni et al (2015), IVM (2008), Romiguer (2011), SAVE (2008), DHW(2005)
2 It enables better business decisions based on choice	Come de Leeuw (2001), SAVE(2008), IVM (2008)

3	It enhances competitiveness based on technical and organizational innovation	Come de Leeuw (2001), IVM (2008)
4	A common value culture, every member in the team understand organizational goal	Come de Leeuw (2001), IVM (2008)
5	Improved products and service	Yekinni et al (2015), IVM (2008)
6	Improved internal communication	IVM (2008)
7	Strategic Planning tool	Noor, Kamuzzaman and Ghaffer (2015), IVM (2008)
8	Develops multidisciplinary and multitask teamwork	SAVE (2008), IVM(2008)
9	Time saving	IVM (2008)
10	Aid to the briefing and approvals process	Come de Leeuw (2001), IVM (2008)
11	Enhance risk management measure	IVM (2008)
12	Increased quality	Come de Leeuw (2001), IVM (2008), Yekinni et al (2015)
13	Improved sustainability	Noor, Kamuzzaman and Ghaffer (2015), IVM (2008), Romiguer (2011), Yekinni et al (2015)
14	Promote innovative service delivery process	Come de Leeuw (2001)

Source: author summary from Literature review

METHODOLOGY AND DATA COLLECTION

One of the methods of survey employed in this study is the cluster and simple random sampling. This was done by sending out questionnaires to some professionals and stakeholders in the building industry in Niger state and the interview of key actors in the industry.

Analysis of data was done using both descriptive and inferential statistical methods. Descriptive statistic was carried out to reveal difference in demographic attributes of the respondents. A summary of the benefits of value Management for residential projects was analyzed. Benefits were categorized into Planning and Design Stage and Construction Stage. Respondent's opinions were ranked from the opinion that was very significant on to the one not sure about. Inferential statistic allows the use of samples of mean and standard deviation to make generalization about the population from which the sample were drawn.

RESULT AND DISCUSSION

Table 1.1

Benefits of Value Management. Planning and Design Stage	N	Mean	Standard Deviation
Better business decision based on choice	142	4.63	.554
A common value culture, every member in the team understand organizational goal	142	4.54	.691
Enhanced competitiveness based on technical and organizational innovation	142	4.43	.635
Promote innovative service	142	4.37	.699
Aid to the briefing and approval process	142	4.37	.895
Strategic planning tool	142	4.33	.702
Develops multidisciplinary and multitask teamwork	142	4.33	.731
Time saving	142	4.24	.875

Source: Researcher's fieldwork (2018)

The benefits of Value Management in Planning and Design Stage as shown in table 1.1 revealed that all eight benefits had a mean score above 4.0. This implies that the respondents strongly agreed the benefits are achieved through Value Management. The first benefit is that Value Management enables better business decision based on choice. This had a mean score of 4.63. This implies respondent strongly agreed to the finding of Come de Leeuw (2001) and the Institute of Value Management (2008). Value Management enables a common value culture and enhance competitiveness were the second and third benefits with a mean score of 4.54. This findings is in agreement with Come de Leeuw (2001), Rangelova and Traykoya (2014) and the Institute of Value Management (2008) findings. The least benefit is Time saving with a mean score of 4.24. All respondents agreed to the finding of the institute of Value Management.

Table 1.2

Benefits of Value Management. Construction Stage	N	Mean	Standard Deviation
Cost reduction tool	142	4.42	.862
Improved product and service	142	4.37	.539
Increased quality	142	4.35	.631
Increased sustainability	142	4.30	.732
Improved internal communication	142	4.24	.733
)	142	4.17	.850

Source: Researcher's fieldwork (2018)

The benefits of Value Management in the construction stage are revealed in table (1.2). All six benefits had a mean score above 4.0. The first benefit of Value Management in construction stage is Value Management is a cost reduction tool with a mean of 4.42. This indicates that respondent agreed to the findings of Yekinni et al (2015), Insitute of Value Management (2008), Romiguer (2011) and SAVE (2000) who believes a cost reduction tool for sustainable development is achieved by Value Management mechanism. SAVE(2000) discovered the return on investment that Public and Private organization derive from implementing Value Management programs. The second benefit of Value Management on construction stage is improved product and service with a mean score of 4.37. This supports the findings of Yekinni et al (2015) and Institute of Value Management (2008). Increased quality is the third benefits of Value Management in construction stage with a mean of 4.35. Come de Leeuw(2001) stated that Value management introduces higher quality products while Yekinni et al (2015) is of the opinion that there is a conceptual synergy between forth point, increased sustainability with a mean score of 4.30. This result is inline with the findings of Noor, Kamuzzamam and Ghaffer(2015) and Romiguer(2011). The fifth and sixth benefits are increased internal communication and enhance risk measures. There mean scores are 4.24 and 4.17. This findings support the findings of Institute of Value Management (2008).

CONCLUSION

Research on benefits of Value Management for Residential housing outlines numerous benefits both in the planning and design stage and also the construction stage. These will enable affordable, sustainable, innovative residential housing for civil servant. This research has outline define ways in which Value Management contributes to a successful delivery of economic sustainable construction. There should be communication between all parties in the project, from the professionals down to the end user – civil servant so as to achieve an affordable residential building. Construction professional and stakeholders in the building industry should be sensitized on the benefits of value management and the need to introduce it into the housing delivery system. Value Management should be encouraged.

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