

**RISK MANAGEMENT IN PUBLIC PRIVATE PARTNERSHIP HOUSING PROJECTS:
A CASE STUDY APPROACH**

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ABSTRACT:

In recent years governments in many countries have adopted public private partnership (PPP) as a tool for effective housing delivery. However, the sustainability of housing provision through this initiative is been threatened by inadequate consideration and management of risks by project managers. This study considers management of risks in public private partnership (PPP) housing projects using the case study approach. The study was conducted in Abuja, Nigeria and three housing estates were selected as the study areas. Interview protocol was designed for the purpose of obtaining information which was recorded, transcribed and analysed using content analysis. The re-occurring risk factors were lack of political will from the government, unavailability of development funds and high cost of housing. The study recommends the need for strong political support from the government towards PPP housing projects, strengthening the financial market to ensure availability of long term funds to developers and housing consumers to enable them participate actively in the housing market.

Keywords: Risk, Management, Public Private Partnership, Housing, Nigeria

BACKGROUND TO THE STUDY

Paucity of funds and ever increasing demand for housing have made governments in many countries of the world to embrace Public Private Partnership (PPP) as an alternative tool for sustainable housing provision to their citizens. The initial assumptions were that synergy between the major stakeholders in housing will guarantee sufficiency of development funds, increased efficiency in the use of resources and reduction in cost by minimizing wastage which could lead to production of housing that are affordable to the target groups. However, the initiative has not provided the desired results due to unpredictable events that affect the success of these projects which can be classified as risks. Like any other contractual arrangement, PPP arrangement is prone to risks, and PPP projects are perceived to have more inherent risks due to the involvement of many stakeholders with varied interests in addition to the economic, political, social and cultural conditions. Researchers have identified inadequate risk assessment and management as one of the major reasons for failure of PPP in the provision of sustainable housing (Mouraviev, 2012; Shrestha, 2011). Risk in the context of this study refers to any event which presents both threats and opportunities of realizing project objectives; whereas risk management deals with maximising the result of positive events and minimising the consequences of adverse or negative events. Risk management is therefore seen as a formal and orderly process of systematically identifying, analysing and responding to risks through the lifecycle of a project so as to obtain the optimum degree of risk elimination, mitigation and/or control (Wang, Dulaimi, & Aguria, 2004).

Risk management is therefore a necessity in order to ensure sustainable development and delivery of housing through PPP. However, most project managers are ill prepared when it comes to identifying or adequately addressing potential risks in construction projects (El-Sayegh, 2007). This possibly explains the failure of PPP as a development tool to meet the need of the populace by providing the desired quantity and quality of housing on continuous basis in most developing countries despite several attempts by stakeholders. The need to improve the performance of these collaborative arrangements has generated a lot of studies on the application of risk management principles in PPP projects such as housing and infrastructure. Different researchers have adopted different approaches to these studies. In Nigeria Ojo (2006) used quantitative approach to appraised development practice and measures of risk adjustment in commercial property development; Awodele, Ogunlana and Motawa (2011) examined the critical risk factors affecting privately financed markets in Lagos; Tolani (2013) studied the risk allocation preferences in PPP using 46 risks factors pertaining to PPP projects. All these studies carried out questionnaire surveys to achieve their objectives which provide a lateral view to PPP associated risks. In addition, Housing PPP projects in Nigeria were not specifically addressed in these studies. This paper adopted the case study approach to appraise risk management practices in PPP housing projects towards sustainable housing development and delivery in Abuja. The objectives of the study are to: examine the roles of stakeholders in the selected PPP housing projects, identify the risks encountered within and evaluate the measures adopted in addressing the risks encountered in the selected cases.

Housing project is capital intensive and inherently risky like any other construction project. Partnerships for housing delivery is more risky due to the number of partners, vulnerability to political and economic forces, difficulty of changing or influencing the market mix or product characteristics during the development cycle and problem to reach cash break-even point (Omoniyi, 1995). In addition, PPPs are most often financed with borrowed funds in order to ensure sustainable flow of development finance; there is always a cost attached to debt and unless the anticipated cash flows of the project are expected

to provide a return on investment, there is the tendency of financial risk which has to be borne either by the customers or the government through subsidies. PPP for housing projects are more politically or socially challenging to introduce and implement because housing is seen in most developing worlds as a social item; unless adequate measures are put in place to ensure proper implementation, such projects are usually marred by conflicting political interest especially when housing consumers are not involved from the conceptualization stage and the project outcome does not meet their needs.

Moreover, parties to the PPP arrangements are in themselves sources of risks. Due to the long-term nature of these projects and the associated complexities, it is difficult to identify all possible contingencies during project development; issues may arise that were not anticipated in the documents or by the parties at the time of the contract. These give rise to additional risks that were not identified ab-initio. In some cases, some of the projects may fail or may be terminated prior to the projected term of the project giving rise to more risks. The implication is that, these risks may have a negative impact on the environment as well as finances of the contractors. In order to ensure sustainability in development and delivery of housing through partnerships, risks consideration and treatment must be made an integral component of such arrangements.

METHODOLOGY

The paper adopted the case study approach to examine the roles of stakeholders in PPP arrangements, risks encountered and measures for addressing these risks using selected PPP housing projects in Abuja, Nigeria. Abuja is the Capital City of Nigeria, geographically located in the center of the country; it is north of the confluence of the Niger River and Benue River. The Federal Capital Territory (FCT) is bordered by the states of Niger to the West and North, Kaduna to the northeast, Nasarawa to the east and south and Kogi to the southwest. The City lies between latitude 8.25 and 9.20 north of the equator and longitude 6.45 and 7.39 east of Greenwich Meridian. The FCT has a total area 7,315 km² (2,824 sq mi). The 2006 census placed the total Population of Abuja at 1,406,239, estimated to be 2,238,800 by 2011. The population density of FCT is 190/km² (500/sq mi). Plate 1 shows the map of Abuja. The selected cases were Mount Pleasant Estate, Capital Estate and CITEC Villas all in Abuja, Nigeria. Mount Pleasant estate adopted a new technology in housing production using expanded polystyrene system (EPS) which has the potential of presenting peculiar challenges; Capital Estate adopted the contract management system (the contract was won by the Abuja Property Development Company [APDC] which in turn contracted private developers to execute the project which differs from the usual Government-Private contract due to multiple developers and chain of control) and CITEC Villas was to be constructed through the direct approach but was later converted to partnership arrangement (which presents a different scenario from the usual PPP contracts).

The targeted respondents (Table 1) were top management officers in housing departments in public agencies, top officials of private companies responsible for the construction of the selected housing projects and representatives of households within the estates (end users). These categories of respondents were considered the custodians of information relevant to the study. The respondents were selected using the purposeful sampling technique which allows the researcher to select a research population whom judgment would be vital in achieving the purpose of the study.

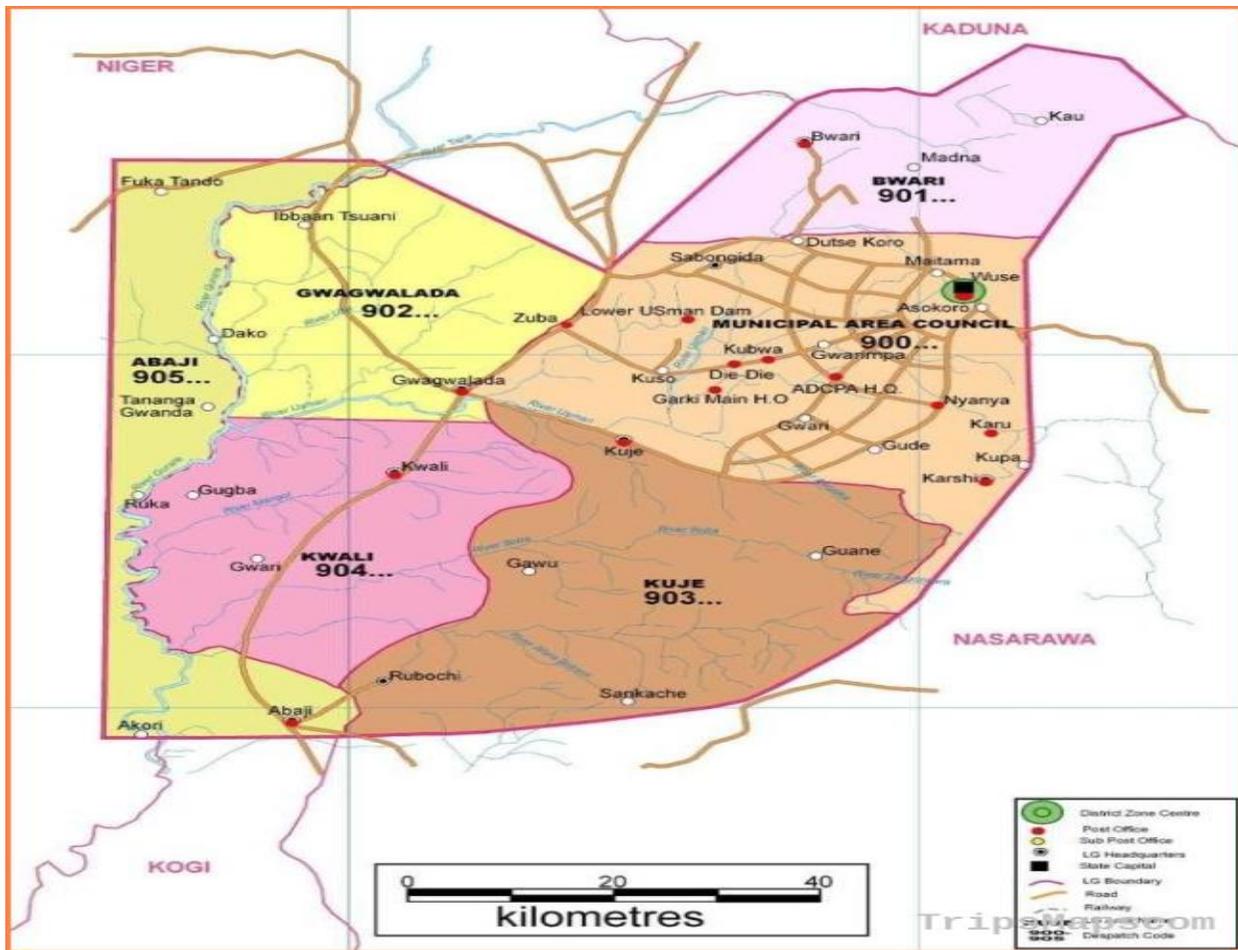


Plate 1: The Map of FCT, Abuja.

Table 1: Interview Respondents in the Selected Study Areas

Designation in Establishment	Organisation
Director of Project	CITEC International
Executive Director Business Development	CITEC International
Chief Technical Officer	FHA
Project Site Engineer	FHA
Chief Building Officer	FCDA
Assistant Director, Institutional Buildings	FCDA
Project Manager	APDC
Chief Quantity Surveyor	APDC
Representative of Occupants I	Mount Pleasant Estate
Representative of Occupants II	Mount Pleasant Estate
Representative of Occupants I	APDC
Representative of Occupants II	APDC
Representative of Occupants I	CITEC Villas
Representative of Occupants II	CITEC Villas

CASE STUDY ANALYSIS

The analysis of this section was patterned in line with the study objectives. The structure of the presentation in this section therefore involves a background of each case, risks encountered and their impact on project objectives, measures adopted in mitigating such risks and cross-case analysis of data obtained.

Case 1: Mount Pleasant Estate

Background Information on Mount Pleasant Estate

Mount Pleasant Estate is located along Jabi-Airport road bye-pass, Nbora district, Abuja. The FCDA contracted CITEC to provide 308 housing units comprising of one, two, three, four and five bedrooms bungalows and duplexes which commenced in 2001 and the Estate was to be delivered in 2003. The government provided the land at a low price with the compensation paid in full as its own equity contribution to the housing scheme. In addition to the land, the government was to also provide the infrastructure such as roads, electricity and water supply. The design of the Estate was provided by the private developer (CITEC) in accordance with the specifications of the FCDA.

In order to guarantee the sustainability of development finance, the project was to be funded partly by equity finance and partly Mortgage fund from the Federal Mortgage Bank of Nigeria (FMBN). Housing consumers were required to make a down payment of 10% (for houses within the price range of ₦1million – ₦10 million), 20% (for houses within the price range above ₦10 million – ₦20 million) and 30% (for houses with prices above ₦20 million) through their registered PMI's while the PMIs would help to secure the remaining balance from the FMBN. The contributors were expected to repay the balance paid by the FMBN through installmental deductions from their salaries over a period of 30 years. On payment of the said down payment, the FMBN would disburse the collected funds to the various developers for necessary work on site. Once the balance has been remitted to the developer, the keys to the housing units are handed to the contributors. A cross-section of houses in Mount Pleasant Estate is presented in Plate 2:

Risk Encountered and their Impacts on Mount Pleasant Estate

The major risks encountered in Mount Pleasant Estate were political, financial and construction risks. Factors associated with political risks were inconsistencies in government policies and lack of support from the government. The socio-economic growth and sustainable development of any nation is significantly reliant on national laws, policies and legislative guidelines (Ojoko, Abubakar, Ojoko & Ikpe, 2016). In the cause of developing Mount Pleasant Estate, there was a carbonate reshufflement which ushered in Mallam Nasiru El-Rufai as the FCT minister. There was a new government policy that no developer would be allocated more than 50 hectares of land for housing development within the FCT; the land that had been allocated for this project was slashed and title there on revoked in line with the new policy. Land is considered an indispensable element in housing development process and its acquisition is vital to achieving efficient and sustainable housing delivery in urban environment (Owoeye & Adedeji, 2015). Consequently reduction in the size of land necessitated the re-planning of the housing project, reduction in the number of housing units, amount of development funds required and well as number of contributors (Director of Projects CITEC). Furthermore, the government failed to provide the infrastructure as contained in the contract agreement.



Plate 2: Cross-section of Housing Units in Mount Pleasant Estate

Financial risks associated with this estate include unavailability of development funds, high cost of borrowed funds and lack of government guarantee. Ojoko, Abubakar, Ojoko & Ikpe (2016) stressed that, the establishment, survival and growth of any housing market depends on access to long term supply of funds; where this is lacking, the development and provision of housing is affected. Mount Pleasant Estate was to be funded through equity contributions and loans from the FMBN. However, even when contributors had paid their equity contributions through their registered PMI's, those funds were not disbursed by the FMBN. This threatened the financial capacity of the private developers and it slowed down their performance on site. One representative of the government submitted that "we tried all possible means to have FMBN release the equity contributions paid by households to the concerned developers but the bank could not do so as at the time it was needed due to lack of funds and administrative bottlenecks". CITEC international had to borrow funds at higher interest rate from commercial banks to continue with the development. In 2008, the FMBN eventually disbursed the collected contributions to the private company; however the company had already accumulated debt due to high interest on borrowed funds. In order to offset these debts, the developer had to factor in the accumulated interest into the cost of housing which led to increase in the cost of housing units. "The initial cost of 1 bedroom bungalow was ₦2 million but it was sold at ₦3.6 million; the cost of a 2 bedroom bungalow increased from ₦3.95 million to ₦6.7million and a 3 bedroom bungalow

increased from ₦5million to ₦9 million; increase in prices of housing affected the ability of the target population to access the housing units which is a key objective of every housing programme” (Project Manager, CITEC). In the words of Representative of Occupants I “the cost of the housing units kept increasing and by the time the houses were completed, the cost had gone beyond the reach of most of the contributors; we had to make extra effort to pay for the houses”

Risk factors related to construction were high cost of building materials due to price hike and cost of labour. The developer used an environmentally friendly material known as Expanded Polystyrene System (EPS) which aided in delivering the desired quality of housing. EPS is formed by union of so many beads of polystyrene produced during a modeling process with supply of heat as water. The thickness of foamed polystyrene may vary from 4 cm to 25 cm according to the requirements of the architectural design. The representatives of the housing consumers II said “in terms of quality, the project, it’s very ok; the material they used is very good, the walls are very solid, and the floors as well as the ceilings are fantastic. We really commend the developer in this aspect”.

On the overall, the project did not achieve the objective of timely delivery due to these risks enumerated earlier. Similarly, these risks also affected the project budget. The delay encountered resulted into cost overrun due to increase in the cost of building materials and labour which indicated that the project was executed above the estimated budget. The project however achieved the desired level of quality due to the technology adopted.

Measures adopted for mitigating risks encountered on Mount Pleasant Estate

On the measures adopted in preventing risks in Mount Pleasant Estate, the Project Management submitted that: “from the initial stage our company ensures the design and layout of project complies with the local development plan and that all necessary approvals are sought and obtained from the requisite government departments to ensure smooth implementation of the project; in addition, we develop contingency plans in case of unpredicted events. For instance, CITEC entered into fixed rate loan contract with commercial banks should the company ran into shortage of development fund from FMBN”. Similarly, the company engaged in training and retraining of staff in order to improve the performance of operatives on site. This statement was corroborated by one representative of CITEC who said “been a new technology introduced in housing in Nigeria, there was the need to train the operatives to ensure smooth implementation of the project; CITEC therefore kept organizing regular training workshops in order to educate workers on the new technology”. The Executive Director Business Development affirmed that “during the implementation of the project, CITEC International ensures there were regular meetings with stakeholders as well as operatives in order to identify challenges that could affect the achievement of the project objectives. During such meetings, past projects were reviewed in order to determine the challenges on site, operatives were asked to report various challenges they were encountering and experts were required to analyse the ongoing project with the view to make suggestion on the ways to improve project performance”.

In summary therefore, the measures used in preventing and mitigating risks in Mount Pleasant Estate include ensuring that project design complies with the local development plan, having designs approved by the requisite government departments, developing contingency plans in case of unpredicted events, brainstorming during regular meetings to identify major challenges that could influence project objectives, review of past projects in order to determined the challenges that were encountered.

Case 2: Capital Estate

Background Information on Capital Estate

Capital Estate is located on plot 17 Kaba Districts, Phase IV along Kubwa Express Way, Opposite Brick City, Behind AP Filling Station, Abuja. Capital Estate is a tripartite partnership arrangement between the FCDA, APDC and a number of private developers. The FCDA entered into partnership with APDC to develop the estate for civil servants under the National Housing Fund scheme and APDC in turn contracted 14 private developers to implement the project. Capital Estate was to be constructed in three phases; 600 housing units in phase one, 297 housing units in phase two while 118 housing units in phase three. Construction work commenced in 2012 and was to be completed within two years.

In this project, the government provided land through the FCDA as its own equity contribution to the project. APDC was to provide an environmentally friendly design bearing in mind the needs and financial capacity of the target groups which were the low and medium income earners. The project was to be funded by the Federal Mortgage Bank of Nigeria (FMBN). The arrangement was that, both developers (APDC) and contributors to the NHF would access the housing loan on application through the APDC. APDC would borrow from the FMBN and turn out number of housing units equivalent to the amount borrowed while the excess units become profit to the company. The contributors were required to make a down payment of 10%, 20% and 30% for one, two and three bedrooms respectively. These funds were to be accessed from the FMBN to be paid to the developers while FMBN pays the remaining balance through the customers' registered PMI's then the keys to those housing units would be handed to the owners.

Phase I which comprise of 600 housing is about 90% completion and majority of the housing units have been occupied. Infrastructure such as road network, electricity and water supply has been provided. The housing units are been marketed by APDC and the private developers. The modes of disposal of the housing units are cash purchase and installmental payment through mortgage arrangement with the FMBN. On the overall, the Phase I can be regarded as successful considering the number of housing units provided, the number of units occupied, level and quality of infrastructure provided. A cross-section of houses in Capital Estate in shown in Plate 3

Risks Encountered and Impact on Capital Estate

One of the risk factors highlighted in capital estate was design/technical risk which manifested in inadequate space. The design provided was inconsistent with earlier arrangements because the financial capacity and space need of the households which are key aspects of sustainability were not considered; hence, many households were not satisfied with design of the housing units. Confirming this statement, one of the developers said: "in the process of implementation, the design was found to be inadequate in space and functionality, the living room were inadequate, the design concept was poor and weather unfriendly thereby making it unattractive to the customers". In order to improve the design " the unnecessary balcony was merged to the living room to create more space, the staircase was also redesigned and the roofing system as well as the finishing were also modified in accordance with the needs of the housing consumers"(Chief Building Officer FCDA).

Furthermore, housing finance which is key to sustainable housing development was not available; this prompted developers and contributors to seek for alternative sources of funds from commercial banks at higher interest rates. The project was to be funded through mortgage financing from the FMBN. However, the cash inflow from the FMBN was not forthcoming as earlier envisaged. The developers could not access the development loans from the FMBN likewise some of

the housing consumers. Contributors had to explore other means such as cooperative societies to fund their housing units (Project Manager, APDC). The inability of the developers to access the needed development funds from the FMBN affected their performance on site and high cost of borrowed funds affected their estimated turn over. In addition, many contributors could not remit their contributions which also affected the progress of work on site leading to project time overrun.

Economic risks highlighted in capital estate were exchange rate volatility and high rate of inflation which affected the cost of building materials as well as labour. One of the private developers reported that “in the estimates we submitted during the bidding process a bag of cement was estimated at ₦1, 200 but a bag of cement sales for ₦ 2,500 and this price increase extends to other building materials such as roofing sheets, steel bars for reinforcement, gravels, ceiling boards among others”. Consequently, private developers had to review their estimates upwards which also affected the contributions of the customers as well as the cost of housing. According to the Project Manager “the initial price of 1 bedroom was ₦5.9 million but on completion of the project, it had gone up to ₦6.6 million; a 2 bedroom was to be sold at ₦11.8million but it is been sold at ₦13.57; a 3 bedroom sales at ₦16.2 million instead of ₦14.8 million while the terraces are been sold at ₦31.9 million instead of ₦27 million”. Increase in the prices of houses affected the ability of the households to pay for those units resulting to some of the houses remaining vacant longer than anticipated.



Plate 3: Cross-section of Housing Units in Capital Estate

Lack of commitment from the contracting parties was another challenge encountered. Successful sustainable development through PPP performs better when there is cooperation and mutual understanding among the major stakeholders. However, conflict of interest which affects the sustainability of such arrangements is often inevitable in PPP projects. In the course of the interview, the chief Quantity Surveyor, APDC submitted that: “in addition to starting work behind schedule, some of the developers did not follow the contract documents in implementing the project; they did not follow the design specifications as contained in the drawings, specified building materials were been substituted with substandard ones, specified mix ratios were not adhered to and some used low quality reinforcement”. These led to dispute between APDC and the concerned contractors such that some developers were sanctioned and directed to demolish and re-do such work in line with the contract specifications.

On the overall, the project was delivered behind schedule; it was started in 2012 and was to be completed and delivered in 2014. However, only the phase one was about 90% completion and was delivered in 2016 which was two years behind the planned delivery period. Similarly, the projects were executed above the planned budget due to increase in the prices of building materials, labour, and cost of finance. The project did not achieve the desired quality and satisfaction of the contracting parties.

Measures adopted for mitigating risks encountered on APDC Capital Estate

On the measures adopted in preventing and mitigating risks of increase in cost of construction, the Chief Quantity Surveyor said “we vet all cost items of the projects to ensure they are in agreement with what we have in our records and to ensure that developers keep to planned schedule and payment to contractors was tied to their performance on site”. In order to minimise delay of material supply by suppliers, the Project Manager of APDC said “our company is in charge of supply of building materials and labour; this is to avoid delay by ensuring that orders are placed only to suppliers with known track records for timely delivery and to minimize design errors; APDC is also responsible for construction of the substructure ensuring that the work of the private developers were restricted only to the superstructures. The Project Manager also submitted that “going by the antecedence of FMBN with respect to lack of fund, our company has to make alternate arrangement by entering into fixed rate loan contract with commercial banks; in addition, contributors were not limited to mortgage finance only which gave them the flexibility to source for funds from other means”

In summary therefore, the measures adopted for preventing and mitigating risks in Capital Estate were regular site meetings to discuss the progress as well as the potential challenges that could affect the project, vetting of all cost items to ensure there were no discrepancy in order to minimise cost overrun, retaining the right for material supply and labour to avoid delay in material supply by suppliers of building materials, undertaking development of the superstructure to minimise design errors and making contingency plan against unpredicted events.

Case 3: CITEC Villas

Background Information on CITEC Villas Estate

CITEC VILLAS is located in Gwarimpa along Kubwa Expressway, after Chembian Plaza, 3rd Avenue Road. Originally, the project was to be executed by the Federal Housing Authority (FHA) through the direct approach, however the private sector was later co-opted into the project due to lack of development fund . The land was provided by the government been a public project and the FHA provided the design which was approved by the requisite agencies. The project including the infrastructure was to be financed by FHA through the FMBN. The project took off as expected; however due to number of challenges, it was abandoned. Private developers were later co-opted into the project and CITEC International allocated 310 housing units to be completed. This case therefore is limited to the activities of CITEC International within the wider Gwarimpa Housing Estate.

These houses were targeted at the civil servants especially the low income group. In this contract, CITEC was to undertake the construction work while the FHA will provide the infrastructure as earlier mentioned. On completion therefore, CITEC would market the housing units while payments would be made directly to FHA by the buyers. Upon completion of payment, keys to the houses would then be handed to the owners while the loans would be recovered through installmental deduction from salaries of affected customers. The private developer has since completed 48 units of 3 bedroom fully detached, 42 number 4 bedroom fully detached, 158 units of 4 bedroom semi-detached and 62 units of 5 bedroom fully detached. The estate is provided with quality road network, electricity, water supply, a security outpost, a shopping mall, effective waste disposal system and functional drainage system. Plate 4 shows a cross-section of houses in CITEC Villas.

Risks encountered and impact on CITEC Villas

Construction risk highlighted in CITEC Villas borders on the integrity of the building structures earlier constructed before the partnership was reached with the private sector. On mobilizing resources to site to begin construction, CITEC International discovered that the structural stability of work already done was questionable due to long years of neglect. The results of structural analysis by experts showed, that some of the building cannot stand especially those that had reached roofing level. Consequently, some of the buildings were demolished and rebuilding process started a new. In addition, the design provided by the FHA was defective due to inadequacy of space and layout; this affected the marketability of the estate because many housing consumers were not satisfied. CITEC international submitted a design proposal to FHA which was approved and the developer went ahead with the construction activities on site. The finishing proposal of the initial design provided by the FHA was also below standard which was later upgraded by the private company with the consent of the FHA.



Plate 4: Cross-section of Housing Units in CITEC Villas Estate

Financial risks encountered in this particular project include availability of funds to both developers and customers for development and acquisition of such houses. The project was to be funded by the FHA through the FMBN; however, these funds were not forthcoming to the private developers. CITEC international approached some commercial banks for development loans which were approved and work continued on site. The cost of funds at commercial banks rates were subsequently factored into the cost of housing thereby increasing the prices of housing units. For instance, the 3 bedrooms which are in block of flats were to be sold at ₦5 million but were sold at ₦8.5 million; 4 bedroom semi-detached were sold ₦16 million instead of ₦12 million; 4 bedroom fully detached were to be sold at ₦14.5 million but were sold ₦19 million; and 5 bedroom were sold ₦23 million instead of ₦17 million. The arrangement was that consumers would be given offer letters on payment of the stipulated deposits which could be used as collateral to obtain housing loans from the banks. CITEC International was responsible for obtaining those letters from FHA; however on application, these letters were never provided on time due to administrative procedures; consumers could not access the loans which became a major challenge especially in marketing the housing units. CITEC International made a proposal to pay off FHA for those housing to permit it assume ownership and the rights to dispose them. An agreement was reached between the major contracting parties; CITEC procured loans from commercial banks, paid off FHA and assume ownership of the housing units

Political risks were occasioned by lack of commitment from the government in terms of providing infrastructure as contained in the contract agreement. Lack of urban infrastructure such as waste management system, road network, drainage system among others often have negative impacts on the housing environment as well as the living condition of households. One of the government officials said “the government could not provide infrastructure due to some challenges relating to lack of funds”. Lack of infrastructure was another major challenge to the marketability of the housing units. It was also reported by one representative of the private developers that “after the completion of the housing units, customers who had shown interest in acquiring the houses later backed out on visit to the estate because of lack of infrastructure”. The private developer sourced for funds from commercial banks and provided infrastructure to some part of the estate, but those funds expended were never refunded by the government. In order to recoup the capital expended in providing infrastructure, FHA mandated CITEC International to factor the cost of infrastructure into the cost of housing and the private developers did.

These risks impacted the achievement of the estate objectives. For instances, the partnership was structured in 2001 and was to be for two years; however the housing units were not delivered until 2007 indicating time overruns of about 5 years. Lack of development funds which necessitated the private sector to obtained loans from commercial banks at higher costs led to budget overruns. Increase sales price of the housing units due to increase in cost of finance and infrastructure affected the ability of target groups to access the housing units. In terms of quality of work, the project achieved the desired standard which was evident during physical observation on visit to the study area. Despite been about 10 years under occupation, the buildings were in good condition and the building structures showed signs of standard construction work

Measures adopted for mitigating risks encountered on CITEC Villas

On strategies used to mitigate the risks encountered on CITEC Villas, the Executive Director Business Development submitted that “as a tradition of the company, during the implementation of projects CITEC International ensures there are regular meetings with stakeholders; during site meetings experts are required to deliberate on issues that may likely affect the project, present and past project documents are also reviewed to examine the correlation of possible risks factors between already executed projects and ongoing projects.

The Project Manager further maintained that: “in this project, we ensure operatives on site were adequately supervised by capable hands to ensure work in progress matches the initial project plan”. The private developer adopted corporate marketing strategy adopted by the company in disposing the housing units as attested by the Executive Director Business Development who said “we were scared that customers would not be able to pay for the housing units due to their level of income, so we embarked on corporate marketing where we targeted companies and financial institutions to purchase the housing units on behalf of their customers which many did and it helped in reducing the number of unoccupied housing units thereby reducing the demand risks to the company”

In Summary, the measures adopted in preventing and mitigating the risks encountered on CITEC Villas include provision of designs that were in compliance with local development plans, making contingency plans in case of unexpected events, regular meetings with stakeholders as well operatives to determine the challenges that could affect the project objectives, adequate supervision of operatives by capable hands, and corporate marketing strategy that was adopted by the private developer.

Cross – Case Analysis

The essence of cross-case analysis in case study research is to examine and compare the results of findings between the selected cases with the view to determine if there are any convergences or divergences. This is usually done in line with the major themes of the study and it helps the researcher identify the themes that reoccur or cut across the selected cases. In line with the purpose and objectives of this study, the interview guide was designed to solicit information on types of risks associated with the PPP housing projects, impact of risks on project objectives, and measures of mitigating risks in PPP housing projects. These therefore formed the major themes for this study.

During the interview, the themes that kept reoccurring across the selected cases include lack of political will from the government manifesting in refusal to provide necessary housing infrastructure, unavailability of development funds and high cost of housing resulting into housing units remaining vacant longer than anticipated. These factors breed financial risks, political risks and revenue/demand risks which were common in the selected cases. In terms of achieving project objectives, all the selected projects experienced cost and time overrun. There were differences in responses among the interviewees across the selected cases. For instance, partnership issues were the major challenges unique to APDC estate which manifested in breach of contract by some of the contractors. Similarly, defective designs/design variations were identified in CITEC Villas Gwarimpa and APDC Estate. Construction risks on the other hand were identified in Mount Pleasant and Gwarimpa Estates. These factors breed various forms of risks including partnership risks (APDC Estate), design/technology risks (CITEC Villas and Mount Pleasant Estates) and construction risks (CITEC Villas). In relation to achieving project objectives, the result of the analysis indicated, that Mount Pleasant estate achieved the desired project quality due to the type of technology adopted.

Concerning risk management practices, none of the companies has a dedicated department for risk management; however, all scheduled regular meetings in order to identify major challenges that could threaten project objectives. All the developers ensured that designs were in compliance with local development plans and were approved by the right government departments. In addition, thorough supervision was enforced to ensure work on site matches original plan in order to minimise time overrun; and in all the cases, contingency arrangements were made against shortage of funds from the Federal Mortgage Bank of Nigeria. In terms of specific measures adopted for minimising risks that were unique to the individual estates, APDC retained the rights for the supply of materials and labour to guard against delay and all cost items were vetted by the company's cost analyst to minimise cost overruns. In CITEC Villas, the private developer adopted corporate marketing strategy in selling the housing units. This helped in reducing the number of housing units that might remain vacant longer than anticipated thereby minimising demand risks. Furthermore, training and re-training of operatives were adopted in the development of Mount Pleasant Estate and APDC Estate in order to enhance the performance of operatives on site and reduce the impact of construction risks.

In summary therefore, the most prevalent risks factors in the selected case studies were financial risks, political risks and revenue/demand risks; however, partnership risks, design/technology risks and construction risks were identified in the selected estates and were found to have profound influence in achieving the project objectives.

CONCLUSION

The study examined the risks associated with PPP housing projects and the measures used by stakeholders in preventing and mitigating risks in PPP housing projects. The findings of the study suggest, that in adopting PPP in housing provision much still needs to be done for the initiative to realise its full potentials. The findings show that the sustainability of PPP arrangements are bedeviled by insincerity among stakeholders and corruption among contractors which has become a major challenge in the implementation of PPP housing projects. PPP housing is further constrained by unavailability of development funds which affect the financial capacity of the developers as well as the ability of the housing consumers to purchase the housing units produced. There is the need for the introduction of competitive, transparent and efficient bidding process to eliminate corruption and nepotism in the Nigerian construction industry; strengthening the financial market to ensure available and sustainable long term loans to both developers and housing consumers at low interest rate; and the need for strong political support and stability if PPP is to be adopted to accomplish sustainable housing development and delivery.

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