

**PREVENTING AND MITIGATING RISKS IN PUBLIC PRIVATE PARTNERSHIP (PPP)  
HOUSING PROJECTS IN ABUJA, NIGERIA**

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**ABSTRACT:**

The application of public private partnership(PPP) in sustainable housing development is on the increase across the globe. However, studies have shown that no construction project is risk free and that these risks cannot be eliminated but prevented from occurring or mitigated by cushioning their effects should they occur. This paper examines the strategies for preventing and mitigating risks in public private partnership (PPP) housing projects in Abuja, Nigeria. Data for the study were obtained through questionnaire survey and the information was analysed using mean rating and charts. The most effective measures for preventing and mitigating risks were developing a clear and appropriate measure for controlling plan and project schedule and insisting on having trustworthy people in key places within the partnership. The results indicated a significant variation in the measures adopted by contracting parties in preventing and mitigating risks in Public Private Partnership (PPP) housing projects. The study recommended diversification of the economy to bring the desired stability to the economic environment as well as the construction industry and making development funds readily available, accessible and affordable to housing developers to ensure timely completion of projects so as to reduce chances of cost and time overrun risks.

**Keywords:** Prevention, Mitigation, Risks, Public Private Partnership, Housing, Nigeria

## **BACKGROUND TO THE STUDY**

The application of public private partnership in housing provision is on the increase across the globe; with the adoption of the 2030 Agenda for Sustainable Development, the initiative has become even more prominent (Max, 2019). The idea behind PPP is that, through synergy a team of stakeholders with requisite knowledge would be created to develop houses that will satisfy the needs of the populace without compromising environmental standards. Presently, PPP is being embraced to foster sustainable housing development in many developing countries including Nigeria. In Nigeria, a handful of housing estates have been developed through PPP arrangements and some of the projects are ongoing in some states of the Federation as well as the Federal Capital, Abuja. The adoption of the Public Private Partnership (PPP) is a clear deviation from the earlier adopted direct approach to an enablement approach which was in line with the provision of International Organizations such as the World Bank as necessary condition for socio-economic growth and development. In theory, the benefits of these collaborative schemes to the developing countries includes increased private sector participation in housing and infrastructure development, reduced burden of debt on governments and ensure development of local capital markets, promotes cost efficiency, foster best practices in sharing and transferring of risks, assure superior value for money, save time, streamline contracts and simplify procurements, facilitate innovation through public private cohesion, eradicate bureaucratic and political processes, encourage technology transfer and act as vehicles which adopt life cycle approaches to deliver sustainable housing, public infrastructure and services (Quarthey, 1996; Capital, 2010). In practice however, these objectives have not been achieved as earlier envisaged because while some of the PPP projects were successfully executed, some failed to be actualized.

Failure in PPP housing have been attributed to inherent risks associated with PPP projects resulting from the number of contracting parties involved in addition to the changing economic, political, social and cultural conditions under which the projects are undertaken (Carbonara, Costantino, Sciancalepore & Pellegrino, 2011). These risks have direct influence on the sustainability of project objectives such as project budget, delivery period, quality, project safety, environmental sustainability, satisfaction of contracting parties and access to housing by target groups among others. There is the need for these risks to be properly addressed to ensure that, the right types of housing are produced at the right time; accessible by and affordable to the target groups. Risks can be addressed in construction projects either by preventing the risks from occurring or through mitigating the impact of the risks on project objectives should they occur. Risk prevention and mitigation therefore define the core purpose of risk management in construction projects. Although risk prevention and mitigation are presented as two distinct concepts in theory, they are taken together in practice because one measure may be useful in preventing as well as mitigating risks.

The need for preventing and mitigating risks in PPP projects for sustainable housing calls for investigations in that area. However, studies on PPP housing in Nigeria are concentrated on its general application in housing provision rather than the risks associated with such contractual arrangements. Ibrahim, Price and Dainty (2006) investigated the perceptions of Nigerian construction professionals on relative importance of risks associated with PPP infrastructure projects. Akinyemi, Ojiako, Maguire, Steel and Anyaegbunam (2009) explored the perceptions of risks in PPP projects among bankers. The study focused was on the basis of sharing the risks identified in public private partnership (PPP) projects among the contracting parties. Awodele, Ogunlana and Motawa (2011) studied critical risk factors affecting the performance of privately financed markets in Nigeria. The work concentrated on identifying risks factors and their impact on the performance of markets

constructed through PPP arrangement in Nigeria. Tolani (2013) examined risk allocation preferences of parties with the view to eliminate lengthy contract negotiations in PPPs. Although there are evidences of studies on risks in PPP projects, they failed to specifically examine the measures for preventing and mitigating those risks. Moreover, these studies are concentrated on infrastructure rather than housing projects. It is to this end that this paper seeks to appraise risks preventing and mitigating practices in PPP housing projects in Nigeria with the view to suggest best practice in order to improve the performance of PPP initiative in housing provision. The study seeks to provide answer to this pertinent question: How can the inherent risks associated with PPP housing projects be prevented or mitigated so as to improve housing production and delivery towards promoting economic growth and national development in Nigeria? This central research question is addressed through the following sub-questions: What are the measures used in preventing and mitigating risks in Public Private Partnership (PPP) housing projects in Nigeria? What risk response strategies are adopted by stakeholders in PPP housing projects in Nigeria? The objectives of the study are to:

- i. Evaluate the measures used in preventing and mitigating risks in Public Private Partnership (PPP) housing projects in Abuja, Nigeria.
- ii. Assess the risk response strategies adopted by stakeholders in PPP housing projects in Abuja, Nigeria

#### **RESEARCH HYPOTHESIS**

- H<sub>0</sub> There is no significant variation in the measures adopted by contracting parties in preventing and mitigating risks in Public Private Partnership (PPP) housing projects in Abuja, Nigeria.
- H<sub>1</sub> There is significant variation in the measures adopted by contracting parties in preventing and mitigating risks in Public Private Partnership (PPP) housing projects in Abuja, Nigeria.

#### **RISKS PREVENTION AND MITIGATION IN PPP HOUSING PROJECTS – A REVIEW**

Construction projects such as PPP housing have been adjudged to be risky in nature due to number of stakeholders involved. Consequently, the desire to deliver housing that would satisfy the present needs of households without compromising the ability of future generations to meet their own needs makes the consideration of risk management principles a necessity in contractual arrangements such as PPP. Zhi (1995) stressed that an effective risk management method can help in understanding not only what kinds of risks the project faces, but also how to manage these risks at the contracting and construction stages. Effective risk management should be proactive in nature; should start much earlier in the project than the detail design phase (Smith, 2002). This may be achieved by anticipating and influencing events before they happen; provide knowledge and information about predicted events; inform and improve the quality of decision making; recognise the preferred hierarchy of response to risk; avoid covert assumptions and false definition of risks; make the project management process overt and transparent; assist in the delivery of project objectives in terms of predetermined quality, time and cost; allow the development of scenario planning in the event of the identification of a high impact risk; provide improved contingency planning; and provide verifiable records of risk planning and risk control. Risk management process therefore should be implemented at the early project phases, when there is still a possibility of fundamental changes.

The implementation of risk management principles at the project inception stage promotes project sustainability as anticipated challenges are identified and tackled at the early stages of the project. Identified risks in construction Projects can

be addressed either by preventing the risks from occurring through proper planning and adequate implementation of project plan or through adopting adequate measures to cushion the impact of such risks on the project objectives should they occur. Risk prevention involves conscious efforts by stakeholders to ensure, that risks factors identified during the planning stage do not occur during project implementation. However, not all risks can be prevented no matter the level of sophistication of the risk management plan. It is therefore imperative that project managers adopt adequate measures of responding to those risks that would occur during the project implementation stage in order to minimise their impacts on the project objectives. The sole aim of risk management therefore is to as far as practicable prevent project risks from occurring and to devise possible measures of reducing the impact of those risks that occur.

In a study on risk management in privately financed market in Nigeria, Awodele (2012) reported that the top five effective risk prevention measures were ensuring that the project complies with the local development plan, proper measurement and accurate pricing of Bills of Quantities at the bidding stage, ensuring that the approval is sought at the right local government departments, obtaining payment and performance bonds from local and international banks and maintaining a good relationship with local government and higher officials. While these measures may effectively prevent risks in market projects, they may not be necessarily effective in PPP housing projects because risks are known to vary between projects; and housing and market projects connote different risks.

On mitigating risks in construction projects, Flanagan and Norman (1993) and Raftery (1994) in Baker, Ponniah & Smith (1997) identified four strategies which include risk avoidance (elimination), risk transfer, risk reduction and retention (absorption). Risk Avoidance is sometimes referred to as risk elimination which is about refusing to accept risk. The organisation can simply refuse a project that is too risky by refusing to place a bid or may include exceptional clauses in the tender. The principle of risk avoidance is that, risks should be eliminated as far as practicable. However, it must be noted that, it is impossible to eliminate all risks in construction. Unavoidable risks can be transferred to another party. Risk transfer entails shifting of project risks to a third party that can handle the risk in a better way. Risk transfer can be achieved either by transferring the activity responsible for the risk (hiring a sub-contractor to do the work) or by transferring the financial risks (through insurance) while retaining the activity (Thompson & Perry, 1992).

Risk reduction is another way of responding to identified and estimated risks by devising possible strategies for reducing the probability of the risk occurring or the consequences of the risk event to a bearable level. Risk reduction can be accomplished by the company through improving its physical, procedural, and educational and training devices (Flanagan & Norman, 1993). Risk acceptance connotes taking risk consciously and taking necessary measures to deal with the negative consequences as they occur; it is sometimes referred to as risk retention. Under this type of response, the risks, foreseen and unforeseen, are controlled and financed by the company or contractor that is fulfilling the terms of the contract. The project management team decides to accept certain risks without changing the project plan or identifying alternative response strategy other than agreeing to address the risks if it occurs. Risk acceptance is used when the probability of the risk and the impact of the risk are not of great concern or where there are no resources for risk management. Project managers employ one or a combination of these strategies to ensure that risks associated with complex and risky arrangements such as PPP housing are efficiently tackled and the projects implemented to the satisfaction of project stakeholders.

Usually, organizations' choose a risk strategy with a mixture of the different positions. Furthermore, joint ventures are other ways of handling risks and costs that have become more common during the last decade, especially in large projects

with substantial technical risks. A joint venture implies shared risks and investments between parties (Triantis, 2000). The most common aim of risk-taking is for an organization to be able to keep the opportunities and minimize the potential losses (Herman, 1996)

## **RESEARCH METHODOLOGY**

This study focused on preventing and mitigating risks in PPP housing projects in Abuja, Nigeria. Abuja is the Capital City of Nigeria, geographically located in the center of the country; at the 2006 Abuja had a population of 1,406,239, making it one of the ten most populous cities in Nigeria. Abuja has witnessed a huge influx of people into the city which has led to the emergence of satellite towns such as Karu Urban Area, Suleja Urban Area, Gwagwalada and other smaller settlements. In 2012, the population of Abuja was 2,245,000 making it the fourth largest urban area in Nigeria behind Lagos, Kano and Ibadan. The population density of FCT is 190/km<sup>2</sup> (500/sq mi). 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 map of Abuja is shown in Plate 1.

Data for the study was obtained through questionnaire survey. Registered contractors and professionals in the built environment formed the study population but the sample frame consisted only of those with requisite experience in PPP housing. In order to determine the total population, the list of all registered contractors operating within the study area was obtained from the Federation of Construction Industry (FOCI), which is the registration body for contractors. The registered professionals were identified from the various professional bodies of the respective professionals such as the Nigerian Institution of Quantity Surveyors (NIQS), Nigerian Society of Engineers (NSE), Nigerian Institution of Architects (NIA) and Nigerian Institution of Builders (NIOB). Purposeful sampling technique was used to select the study sample from the total population. The study adopted mean rating to determine the most effective measures of preventing and mitigating risks in PPP housing projects. Risk response strategies were analysed using descriptive statistics and the result was represented on a chart. Kruskal-Wallis test was used to test the hypothesis in order to determine whether there is significant variation in the perception of stakeholders on the effectiveness of measures for preventing and mitigating risks in PPP housing projects.

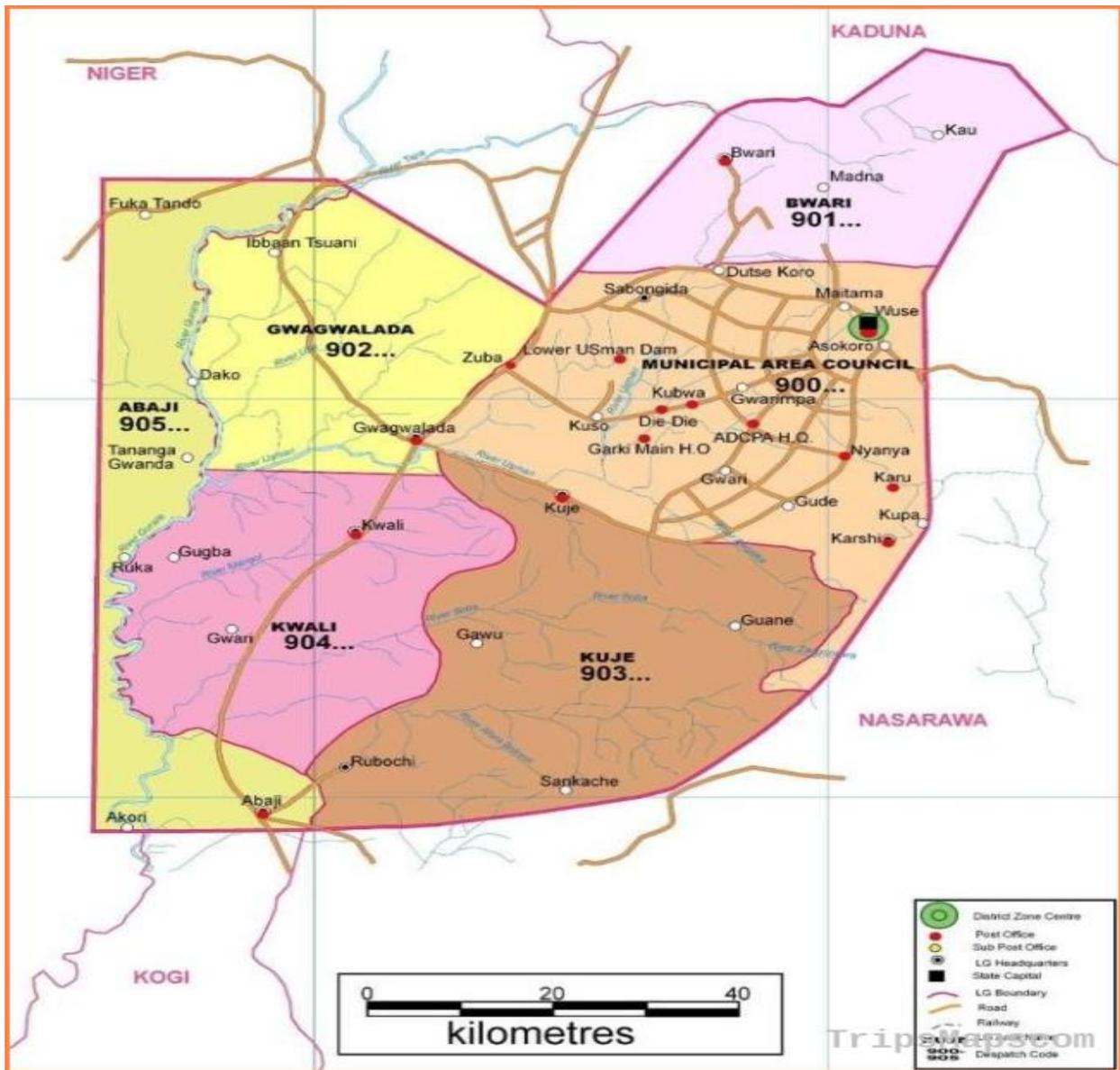


Plate 1: The Map of FCT Abuja, Nigeria.

## **RESULTS, ANALYSIS AND DISCUSSIONS**

This paper appraises risk prevention and mitigation in public private partnership (PPP) housing projects. This section presents the results of the study which were patterned in line with the study objectives as discussed below.

### **Preventing and Mitigating Risks in Public Private Partnership (PPP) Housing Projects**

The extent to which risk can be prevented or mitigated is dependent on the effectiveness of the measures employed. Table 1 presents the result of investigations carried out on the effectiveness of the measures used by respondents in preventing risks in PPP housing projects. The top three effective measures adopted were Developing a clear, appropriate measure for controlling plan and project schedule(4.17), Insisting on having trustworthy people in key places within the partnership (3.90) and Securing standby cash flow in advance (3.82).

The result indicated that a well developed cost plan and project schedule accorded with adequate control measure are key to successful projects. A well drawn project plan which is based on extensive market survey and wide consultations with stakeholders serves as a blue prints that guides in the execution of the projects to avoid eventualities that may affect the achievement of project objectives. Project planning, monitoring and controlling ensures that the project is updated and ready toface sustainability-related problems, based on the environmental, economic and social principles of the project life-cycle (Yu, Zhu, Yang, Wang & Sun, 2018).Project plans are most reliable in economic environment where prices of building materials and labour remain fairly stable over a period of time. However, in Nigeria the economic environment is highly unpredictable. This causes variability in the prices of building materials, labour, and interest rates thereby prompting contractors to review their price estimates submitted during contract bidding.

Although the results indicated that having trustworthy people in key places within the partnerships was effective in preventing and mitigating risks in PPP housing projects in Abuja, trustworthiness is tentative in business parlance and is difficult to achieve in projects such as PPPs. PPP arrangements involve numerous stakeholders with varying interests and whenever one party contracts the other to work on his behalf there is bound to conflict of interest that could affect the success of the project. This has resulted into completion of housing projects behind schedule, below quality standard, way above budget, beyond the reach of the target groups and unacceptable to the stakeholders especially the end users and clients. These can only be addressed by putting in place adequate institutional and regulatory frameworks. However, it has been noted that there is no adequate framework for regulating PPP practices in Nigeria (Abdullahi, 2014). Furthermore, there is also no adequate legal and institutional framework backing PPP in Nigeria (Okpara, 2012). Consequently, parties to PPP projects engage in unethical practices for selfish gains at the expense of the project objectives.

It has been established that PPPs are generally performance based projects and the practice is that, funds meant for such projects are released in installments based on level of performance. However, many housing projects have been delivered behind schedule or abandoned because the contractors were not able to receive the next installments from project sponsors. Sustainable housing through PPPs hinges on availability of long-term funds at affordable rates, accessible to developers for housing production and the end users to actively participate in the housing market on a continuous basis.It is therefore needful that the availability of funds is ascertained, and where possible,standby development financeshould be secured in advance to guard against shortage of funds during the project execution. Ibem and Aduwo (2012) stressed that high interest rates on short term borrowed funds from commercial banks shrinks the quantum of development funds available

for financing PPP housing projects. Lack of cash flow guarantee exposes PPP projects to financial risks and affects the implementation as well as the success of any project management plan.

**Table 1: Effectiveness of Risk Prevention and Mitigation Measures in PPP Housing**

Risk mitigation measures	Overall Rating	
	MS	Rank
Develop a clear and appropriate measure for controlling plan and project schedule	4.17	1
Insist on having trustworthy people in key places within the partnership	3.90	2
Secure standby cash flow in advance	3.82	3
Measure and price Bills of Quantities properly during bidding stage	3.79	4
Obtain all necessary approvals in timely manner to minimize chance for corrupt individual to obstruct work	3.75	5
Include clauses for delays and additional payments in contract, which occur due to new rules or change in law	3.74	6
Offer training to new and existing staff	3.66	7
Insure all of the insurable force majeure risks	3.66	7
Ensure the approval is sought at the right local government departments	3.61	9
Ensure the project complies with local development plan	3.57	10
Develop own contingency for possible political instability, such as plan for emergency evacuation	3.54	11
Enter into fixed rate loan contract with lending banks	3.52	12
Conduct market study and obtain exact information of competitive projects	3.50	13
Adopt Design & Build option which enables contractor to design in harmony with site conditions thus minimizing design/drawing dispute	3.47	14
Maintaining good relationship with local government and higher officials	3.46	15
Provide dispute settlement clauses in the contract	3.45	16
Undertake pre-project planning to minimize design Errors	3.44	17
Get Letter of Credit from local government	3.41	18
Obtain payment and performance bonds from local and international banks	3.41	18
Employ reputable third party consultant to forecast market demand	3.32	20

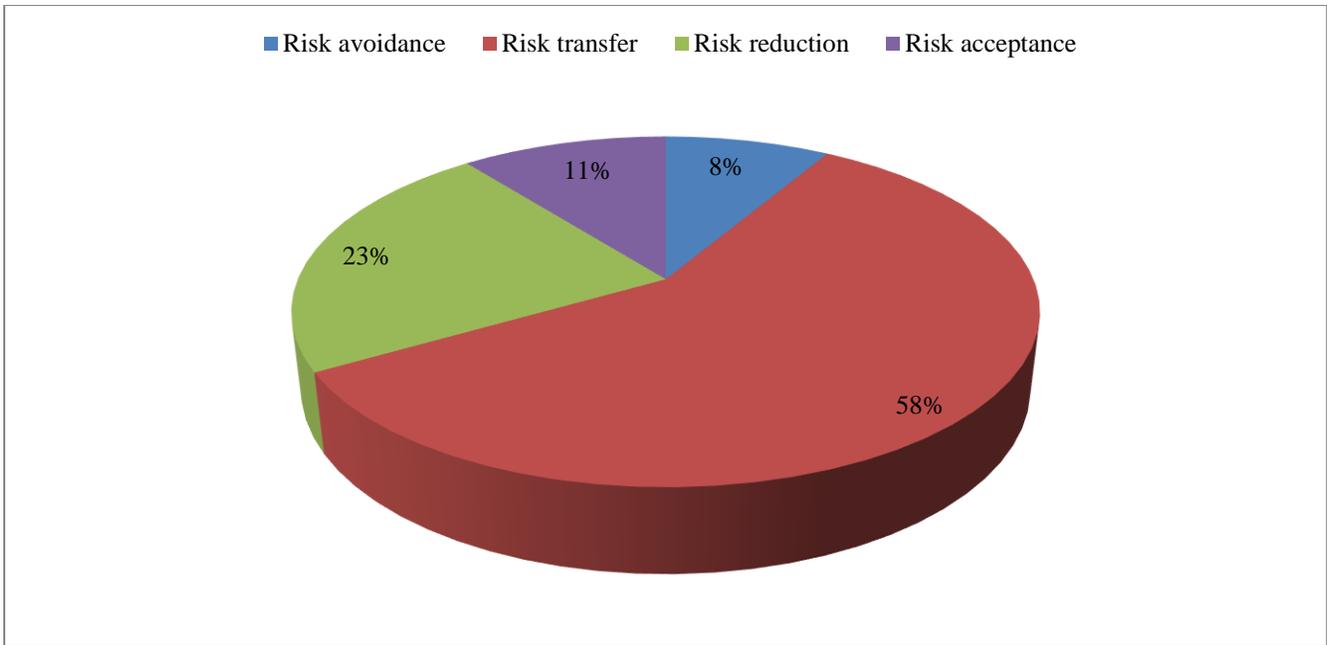
**Hypothesis 1: There is no significant variation in the measures adopted by contracting parties in preventing and mitigating risks in PPP housing projects.**

The results of the study showed that there were inconsistencies in the rating given by individual groups of respondents (Appendix 1) with respect to the effectiveness of the top three risk prevention and mitigation measures. For instance, developing a clear and appropriate measure for controlling plan and project schedule was ranked first by contractors, consultants and sponsors while Government officials ranked it fifth. The corresponding Kruskal-Wallis sig P. value was 0.000 indicating a significant variation in the opinion of the respondents. The other two measures: Insisting on having trustworthy people in key places within the partnership and Securing standby cash flow in advance were also ranked differently and their respective Kruskal-Wallis Sig. P values were 0.043 and 0.024 indicating a significant variation. Therefore, the alternative hypothesis there is significant variation in the measures adopted by contracting parties in preventing and mitigating risks in Public Private Partnership (PPP) housing projects in Abuja is accepted.

**Risk Response Strategies adopted in PPP housing Projects**

The respondents were required to indicate risk response measures they frequently adopt in mitigating risks in PPP housing projects and the result is shown in Figure 1. The result revealed that Risk Transfer is used by 58% of the respondents, 23% used Risk Reduction, and 11% use Risk Acceptance while 08% preferred Risk Avoidance. This therefore means that all the four measures are being used by stakeholders in PPP housing projects. However, the most widely used method is Risk Transfer. One of the key rationales for PPP arrangements is transferring risks to the party that can handle it best at a lower cost. Transferring risks to the private sector is one of the critical value-for-Money (VFM) drivers in a PPP transaction; however, this must be done through thorough risk pricing and objective negotiations on risk allocation because an attempt to transfer risks, which the public sector is better placed to manage than the private sector can damage the VFM proposition of a PPP transaction (Tolani, 2003).

Risk transfer and risk reduction have been reported elsewhere as the most frequent risk response measures in construction projects (Baker, Ponniah & Smith, 1999). Adequate assessment and allocation of risks amongst contracting parties encourages participation in PPP projects, ensure financial sustainability and reduces project vulnerability. However, the Infrastructure Concession Regulatory Commission document that was meant to regulate the practice of PPP in Nigeria does not provide detailed procedures and criteria for allocating PPP project risks among stakeholders. Risks in PPP projects therefore are not properly addressed which affects the outcome of such projects.



**Figure 1: Risk Response Measures adopted in PPP Housing Projects**

## CONCLUSION

This research focused on preventing and mitigating risks in PPP projects housing projects. The study examined the measures used by stakeholders in preventing and mitigating risks and risk response measures adopted by project managers. Result of the analyses indicated that risk management is highly impacted by the volatile economic condition of the country such that project plans are susceptible to variation and highly unreliable. Consequently, the efforts of the public and private sectors at providing affordable and sustainable housing to the populace have not yielded the desired results. The government should make conscious effort towards diversifying the economy to bring the desired stability to the economic environment as well as the construction industry.

PPP housing is also impacted by inadequate regulatory framework for regulating the conduct of stakeholders. PPP is a typical agency relationship in which adequate measures must be put in place to deter contracting parties from engaging in opportunistic behaviours for selfish gains. However, such legislations are lacking in the Nigerian construction industry. Consequently, PPP projects are bedeviled by insincerity among the contracting parties which increases the vulnerability of such projects to risks. Furthermore, PPP initiative is highly constrained by lack/cost of development funds. Lack of development funds breeds quality and time related risks in PPP housing projects. This challenge can be addressed by ensuring that development funds are readily available to both housing developers and consumers. Due to instability of the economic environment, project developers are skeptical in taking risks which influences the number of developers that would be ready to partner with the government in aspect of housing provision.

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Appendix 1: Effectiveness of Risk Prevention and Mitigation Measures

Risk Prevention and mitigation measures	Respondents									
	Contract No = 33		Consult. No = 26		Govt. No = 26		Sponsors No = 22		Overall Rating	
	MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank
Develop a clear and appropriate plan and control schedule and cost	3.91	1	4.54	1	3.77	5	4.59	1	4.17	1
Insist on having trustworthy people in key places within the partnership	3.91	1	4.00	5	4.04	1	3.59	9	3.90	2
Secure standby cash flow in advance	3.61	10	3.92	7	3.46	11	4.45	3	3.82	3
Measure and price Bills of Quantities properly during bidding stage	3.73	4	4.12	4	3.58	8	3.73	8	3.79	4
Obtain all necessary approvals in timely manner to minimize chance for corrupt individual to obstruct work	3.55	14	4.23	2	3.96	2	3.23	11	3.75	5
Include clauses for delays and additional payments in contract, which occur due to new rules or change in law	3.61	10	3.73	14	3.58	8	4.14	4	3.74	6
Offer training to new and existing staff	3.30	19	3.38	17	3.23	19	4.45	3	3.66	7
Insure all of the insurable force majeure risks	3.73	4	4.00	5	3.69	7	3.14	17	3.66	7
Ensure the approval is sought at the right local government departments	3.52	16	3.54	15	3.92	3	3.45	10	3.61	9
Ensure the project complies with local development plan	3.24	22	3.00	21	3.77	5	4.50	2	3.57	10
Develop own contingency for possible political instability, such as plan for emergency evacuation	3.58	12	3.77	12	3.65	7	3.09	18	3.54	11
Enter into fixed rate loan contract with lending banks	3.58	12	3.92	7	3.27	18	3.32	12	3.52	12
Conduct market study and obtain exact information of competitive projects	3.79	3	4.19	3	3.42	12	2.36	21	3.50	13
Adopt Design & Build option which enables contractor to design in harmony with site conditions thus minimizing design/drawing dispute	3.70	7	3.50	16	3.38	14	3.18	16	3.47	14
Maintaining good relationship with local government and higher officials	3.27	19	3.08	19	3.81	4	3.77	7	3.46	15
Provide dispute settlement clauses in the contract	3.67	8	2.92	22	3.35	15	3.86	6	3.45	16
Undertake pre-project planning to minimize design Errors	3.73	4	3.77	12	3.31	17	2.77	20	3.44	17
Obtain payment and performance bonds from local and international banks	3.21	23	3.85	11	3.35	15	3.27	14	3.41	18
Get Letter of Credit from local government	3.55	14	3.88	10	2.92	23	3.23	15	3.41	18
Employ reputable third party consultant to forecast market demand	3.64	9	3.92	7	3.42	12	2.00	24	3.32	20

