NIPES

Journal of Science and Technology Research

Journal homepage: www.nipesjournals.org.ng

# Assessment of the Effectiveness of Public-Private Partnerships in Infrastructural Development within the Nigeria Construction Industry

***Esther E. Ambrose-Agabi*[*1], *Freda E. Abu*[*2]**

[*1,2] Department of Civil Engineering, Faculty of Engineering, University of Benin, Benin City, Nigeria

**Article Info**

***Keywords:*** *Public Private Partnerships, infrastructural development, effectiveness of PPP, IBM SPSS.*

*Received 4 March 2024*
*Revised 17 May 2024*
*Accepted 22 May 2024*
*Available online 26 June 2024*

https://doi.org/10.5281/zenodo.12562368



**Abstract**

*The assessment of public-private partnerships (PPPs) in infrastructural development within the Nigerian construction industry is a critical initiative. It aims to assess the effectiveness, challenges, and opportunities of collaborative ventures between the public and private sectors. As Nigeria deals with the challenge of addressing infrastructural gaps and reviving economic growth, PPPs have emerged as a key strategy to harness private sector expertise, innovation, and capital to deliver essential infrastructure projects. This study evaluated the effectiveness of public-private partnerships (PPPs) in Nigeria's construction industry, focusing on road and building construction. Using an analytic cross-sectional design and a Likert scale for measurement, the study targeted infrastructure stakeholders, including Engineers, Architects, and Quantity Surveyors. Data was collected through self-administered questionnaires and analyzed using IBM SPSS version 27. The study highlights the importance of demographics, qualifications, and professional experience in determining the effectiveness of public-private partnerships (PPPs) in Nigeria's construction industry and their varying levels of experience and exposure to PPP initiatives, providing valuable insights for workforce development and strategic planning within the sector. Also, utilizing diverse expertise and collaboration between the public and private sectors can improve PPP projects.*

## 1. Introduction

Historically, the responsibility for providing public services and infrastructure rests solely with the government. However, due to rising population density, urbanization, and developmental requirements, limited availability of public funds, a trend towards deregulation in infrastructure, and the expanding global market, governments have faced limitations in adequately meeting the anticipated needs of their citizens [1-3]. The utilization of the Public-Private Partnerships (PPPs) concept appears to be a strategic method to address the infrastructural gap in Nigeria [4]. Harnessing the abilities of both the public and private sectors promotes progress in value for money, achieves heightened efficiencies, and enhances service delivery standards [5]. Although Nigeria faces significant pressure on its infrastructure due to rapid urbanization, population growth, and economic expansion, there has been a notable growth in PPP adoption across various sectors of the Nigerian economy [6]. And because of the difficulties ahead, Public-Private Partnerships (PPPs) present an encouraging avenue for driving essential progress [7]. This paper analyzes a PPP's effectiveness in

infrastructural development within Nigeria's construction industry through the exploration of notable achievements, encountered challenges, and suggestions for future enhancements, significant insights into this essential aspect of Nigeria's development journey.

In recent years, Governments in different countries, spanning from developed to developing economies, have increasingly turned to collaboration with the private sector to enhance and expand the provision of public infrastructure properties [8-9]. According to the International Institute for Sustainable Development (2012), over 1,300 PPP agreements were concluded within the European Union alone with a cumulative capital worth surpassing €250 billion from 1990 to 2009 but in Nigeria, the burden of financing infrastructure rests solely on the government's shoulders [10-11].

In an analysis [12], Nigeria's construction sector is depicted as being at a critical stage. Despite its promising prospects for economic expansion and infrastructural advancement, the industry deals with systemic hurdles threatening public safety, project reliability, and essential private investments. These challenges stem from the presence of unskilled practitioners, ethical lapses, the use of substandard materials, and inadequate adherence to building standards.

Within Nigeria's construction sector, the prevailing challenges pose a significant barrier to the widespread adoption of Public-Private Partnerships (PPPs). Although instances of success can be observed in Lagos and Abuja [13]. These isolated victories have not catalyzed tangible infrastructural progress nationwide. It is imperative to confront these fundamental issues to release the complete potential of PPPs and their transformative impact on Nigeria's infrastructure environment. This research aims to evaluate the key factors influencing the success of PPPs in some infrastructure sectors such as transportation, energy, and sanitation within the Nigerian construction industry. Also to develop a framework for effective collaboration between public and private entities in implementing successful PPPs for infrastructure development in the Nigerian construction industry.

### 1.1 Definition of Public-Private Partnerships (PPPs)

Due to the contextual nature and response to legal, institutional, and jurisdictional differences, there is no clear definition of Public-Private Partnerships (PPPs) [14], [15] and [16]. PPPs can be defined as a procurement method where both public and private sectors collaborate to share risks and resources in delivering a facility [17]. PPP is defined as an agreement between public and private sector service providers to jointly provide infrastructure using their resources [18]. While there are different definitions of PPPs, the most specific revolves around the concessioning of such projects. The National Council for Public-Private Partnerships in the US defines PPPs as a contractual agreement between a public agency and a for-profit corporation, where the skills and assets of each sector are shared to deliver a service or facility for the public [19-20].

## 2. Methodology

The study used a quantitative approach focusing on infrastructure stakeholders in Nigeria, particularly in road and building construction. The study employed a Purposive Sampling method which involved the deliberate selection of participants who met specific criteria relevant to our research question, hence, targeted professionals such as Engineers, Architects, and Quantity surveyors in Government Agencies, construction firms, Engineering consultancies, project management companies, and expertise in construction management in the university. The study employed ordinal and interval measurement levels and scaling methods such as the Likert scale for research purposes.

The validity and reliability of the instrument were ensured through rigorous assessment, and data were collected using self-administered questionnaires distributed to various stakeholders. Stakeholder analysis and Social and Economic Impact Assessment were used to understand the needs, expectations, and potential effects of public-private partnerships (PPPs). Data analysis was conducted using IBM SPSS version 27, and primary and secondary sources were used for data collection. Numerical data were processed using various methods such as simple tables, percentage distribution, and statistical analysis, ensuring accuracy and clarity in presentation.

## 3. Results

The study aimed to understand various demographic factors among respondents, including age, gender, academic qualifications, and others. In total, 150 questionnaires were distributed in Edo State and Port Harcourt, out of which 100 were successfully returned for analysis, resulting in a retrieval rate of 67%, as shown in equation 1. Considering the challenges encountered in distributing and retrieving the given questionnaires, the retrieval rate was considered satisfactory. The survey results are presented in Tables 1 to 19. They present the findings of a survey on PPP (Public-Private Partnership) in the construction industry and provide a detailed analysis of the distribution of respondents.

150 questionnaires were distributed, of which 100 were successfully returned for analysis. Hence:
Total number of questionnaires distributed: 150
Total number of questionnaires returned: 100

$$\text{Retrieval rate } \frac{total\ number\ of\ questionnaires\ shared}{total\ number\ of\ questionnaires\ collected} \times 100\% \quad (1)$$

$$Retrieval\ rate = \frac{100}{150} \times 100\% = 67\%$$

The retrieval rate of 67% was deemed satisfactory, considering the challenges encountered in distributing and retrieving the given questionnaires in Edo State. In total, 100 respondents participated in this research and the results are presented as follows:

Table 1. Age of Respondents

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| 21 to 30 years | 39 | 39.0 | 39.0 | 39.0 |
| 31 to 40 years | 17 | 17.0 | 17.0 | 56.0 |
| 41 to 50 years | 23 | 23.0 | 23.0 | 79.0 |
| 51 and above | 21 | 21.0 | 21.0 | 100.0 |
| Total | 100 | 100.0 | 100.0 | |

Table 1 shows the age distribution of respondents. According to the survey results, 39% of respondents were aged 21-30, while 17% were aged 31-40, and 23% were aged 41-50. The oldest age group represented was 51 years and above, comprising 21% of the total respondents.

Table 2. Gender of Respondents

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Male | 81 | 81.0 | 81.0 | 81.0 |
| | Female | 19 | 19.0 | 19.0 | 100.0 |
| | Total | 100 | 100.0 | 100.0 | |

Table 2 presents the gender distribution of respondents. Most respondents, comprising 81% of the total, identified as male, and 19% identified as female.

Table 3. Highest academic qualification of Respondents

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Diploma | 11 | 11.0 | 11.0 | 11.0 |
| | Bachelor's Degree | 63 | 63.0 | 63.0 | 74.0 |
| | Master's Degree | 16 | 16.0 | 16.0 | 90.0 |
| | PhD | 10 | 10.0 | 10.0 | 100.0 |

Table 3 shows the highest academic qualification of respondents. In this dataset, 11% of respondents hold a diploma, 63% possess a bachelor's degree, 16% have earned a Master's Degree, and the remaining 10% have attained a Ph.D.

Table 4. Area of Specialization of Respondents

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Engineer | 59 | 59.0 | 59.0 | 59.0 |
| | Architect | 10 | 10.0 | 10.0 | 69.0 |
| | Quantity Surveyor | 4 | 4.0 | 4.0 | 73.0 |
| | Others | 27 | 27.0 | 27.0 | 100.0 |
| | Total | 100 | 100.0 | 100.0 | |

Table 4 describes the area of specialization of respondents. According to the results of the survey, 59% of respondents are Engineers, 10% are Architects, 4% are Quantity Surveyors, and the remaining 27% belong to other professions.

Table 5. Sector of specialization

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Public | 35 | 35.0 | 35.0 | 35.0 |
| | Private | 43 | 43.0 | 43.0 | 78.0 |
| | Both | 22 | 22.0 | 22.0 | 100.0 |
| | Total | 100 | 100.0 | 100.0 | |

Table 5 shows the sector of specialization. In this context, 35% of respondents have experience in the public sector, 43% have experience in the private sector, and the remaining 22% have experience in both sectors.

**Table 6. Working experience in the construction industry**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 5 years and below | 44 | 44.0 | 44.0 | 44.0 |
| | 6 to 10 years | 17 | 17.0 | 17.0 | 61.0 |
| | 11 to 15 years | 12 | 12.0 | 12.0 | 73.0 |
| | 15 years and above | 27 | 27.0 | 27.0 | 100.0 |
| | Total | 100 | 100.0 | 100.0 | |

Table 6 presents the working experience of respondents in the construction industry. According to the results of the survey, 44% of respondents possess about 5 years of work experience in the construction industry, while 17% have between 6 to 10 years of work experience. 12% of respondents have 11 to 15 years of work experience, with the remaining 27% having over 15 years of experience in the industry.

**Table 7. Working experience on PPP-related projects**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 5 years and below | 52 | 52.0 | 52.0 | 52.0 |
| | 6 to 10 years | 21 | 21.0 | 21.0 | 73.0 |
| | 11 to 15 years | 11 | 11.0 | 11.0 | 84.0 |
| | 15 years and above | 16 | 16.0 | 16.0 | 100.0 |
| | Total | 100 | 100.0 | 100.0 | |

Table 7 shows the working experience of respondents on PPP-related projects. The data reveals that 52% of the respondents have 5 years and below works experience, while 21% have 6 to 10 years of work experience. 11% of respondents have 11 to 15 years of work experience, and 16% have over 15 years of experience.

Table 8. Respondents' familiarity with the concept of PPP in the construction industry

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Familiar | 72 | 72.0 | 72.0 | 72.0 |
| | Not Familiar | 17 | 17.0 | 17.0 | 89.0 |
| | Might be Familiar | 11 | 11.0 | 11.0 | 100.0 |
| | Total | 100 | 100.0 | 100.0 | |

The results of the survey presented in Table 8 indicate the familiarity of respondents with the concept of PPP in the construction industry. The table reveals that 72% of respondents demonstrated a clear understanding of PPPs, comprehending their definition, operation, and significance to the construction sector. 17% admitted to never encountering the term before, while the remaining 11% are familiar with the concept but uncertain about its application or relevance to the construction sector.

Table 9. Do you think PPP is a better and more reliable method for infrastructural procurement?

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 72 | 72.0 | 72.0 | 72.0 |
| | No | 5 | 5.0 | 5.0 | 77.0 |
| | No comment | 23 | 23.0 | 23.0 | 100.0 |
| | Total | 100 | 100.0 | 100.0 | |

Table 9 represents the respondents' opinions on whether PPP is a better and more reliable method for infrastructural procurement. The table shows that 72% of the respondents agree that PPP is a better and more reliable approach to obtaining infrastructure, while 5% disagree and 23% chose not to reply.

Table 10. Will you choose PPP over the traditional procurement method?

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 66 | 66.0 | 66.0 | 66.0 |
| | No | 9 | 9.0 | 9.0 | 75.0 |
| | Not sure | 25 | 25.0 | 25.0 | 100.0 |
| | | | | | |
| | Total | 100 | 100.0 | 100.0 | |

Table 10 shows whether respondents would choose PPP over the traditional procurement method. The result reveals that 66% of the respondents prefer the PPP procurement method over the conventional procurement method. However, 25% remain uncertain about their choice, while 9% disagree with the concept entirely.

Table 11. Comparing PPP with the traditional procurement method

| | | Long term collaboration | PPP contracts have a longer duration | PPP projects are delivered faster | Risk is allocated to both parties |
|---|---|---|---|---|---|
| Agree | Count | 89 | 65 | 80 | 81 |
| Disagree | Count | 11 | 35 | 20 | 19 |

Table 11 compares PPP with the traditional procurement method. The result of the comparison between PPP and traditional procurement methods, shows that 89 respondents believed that PPP contracts foster longer-term collaboration, while 11 contested this view. Moreover, 65 respondents agreed that PPP agreements typically have longer timeframes, while 35 of the respondents disagreed. Also, 80 respondents admitted that PPP projects are completed more quickly, while 20 respondents had a contrary view. However, 81 respondents agreed that risks are mutually shared in PPP agreements, but 19 respondents expressed disagreement. Hence, the results of this survey can provide useful insights for businesses and policymakers considering the use of PPP agreements in their projects.

Table 12. Which type of PPP model are you familiar with

| | | Build-Operate-Transfer (BOT) | Build-Own-Operate (BOO) | Design-Build-Finance-Operate (DBFO) | Buy-Build-Operate (BBO) | Design-Build-Maintain (DBM) | Concession | Joint Ventures |
|---|---|---|---|---|---|---|---|---|
| Yes | Count | 41 | 13 | 18 | 14 | 19 | 19 | 43 |
| No | Count | 59 | 87 | 82 | 86 | 81 | 81 | 57 |

Table 12 shows the familiarity of respondents with different PPP models. The presented table reveals that Joint Ventures are the most recognized models of PPP, with 43 responses. followed by BOT, with 41 responses. However, BOO emerged as the least familiar PPP model, receiving 87 responses not familiar with the model, closely followed by BBO with 86 responses of non-familiarity. The results presented in Table 12 emphasize the importance of understanding the different models of PPPs, as they can offer valuable opportunities for collaboration between the public and private sectors.

Table 13. Infrastructural Projects Best Suited for PPP

| | | Road/Highway | Water and Environmental | Structures | Waste Management |
|---|---|---|---|---|---|
| Yes | Count | 64 | 19 | 36 | 22 |
| No | Count | 36 | 81 | 64 | 78 |

Table 13 shows the results of a survey on the suitability of PPP for various infrastructural projects, including road/highway, water and environmental, structures, and waste management. Out of the

respondents, 64 believed that PPP is most suitable for road/highway projects, while 36 disagreed. Similarly, 19 respondents considered water and environmental aspects as the ideal choice for PPP infrastructure projects, while 81 disagreed. In the case of structures, 36 respondents believed that PPP is the most appropriate, whereas 64 expressed disagreements. However, 22 respondents considered waste management as the optimal choice for PPP projects, while 78 disagreed. Hence, these results provide insight into the varying opinions among the respondents regarding the suitability of different types of projects for PPP.

Table 14. Benefits of PPP to the construction industry

| | | Infrastructure development | Job creation | Social-economic progress | Financial stability |
|---|---|---|---|---|---|
| Yes | Count | 50 | 38 | 37 | 15 |
| No | Count | 50 | 62 | 63 | 85 |

Table 14 provides information on the benefits of PPP implementation in the construction industry. The benefits of PPP in the construction sector include not limited to infrastructure development, job creation, socio-economic progress, and financial stability. The provided table indicates that 50 individuals acknowledged infrastructure development as a key advantage of PPP to the construction sector, while an equal number of respondents, 50, disagreed with this opinion. 38 respondents believed that job creation was the primary advantage of PPP for the construction sector, but 62 respondents disagreed. Furthermore, 37 respondents agreed that PPP contributed to socio-economic progress, whereas 63 disagreed. Regarding financial stability, 15 respondents cited it as the most significant advantage of PPP in the construction sector, while 85 respondents disagreed with this assessment.

Table 15. Risks associated with implementing PPP in the construction industry

| | | Construction risk | Financial risk | Environmental risk | Operation risk | Legal risk |
|---|---|---|---|---|---|---|
| Yes | Count | 19 | 45 | 18 | 25 | 31 |
| No | Count | 81 | 55 | 82 | 75 | 69 |

The table shows the risks associated with implementing PPP in the construction industry. In the financial risk category, 45 respondents identified it as a concern while 55 respondents disagreed. For legal risk, 31 respondents considered it as a significant risk associated with PPP implementation in the construction industry, while 69 respondents disagreed. 25 respondents indicated operational risk with implementing PPP in the construction industry, but 75 respondents did not see Operational risk as a significant issue in the context of PPP projects in construction. Regarding construction risk, 19 respondents agreed with the risks associated with implementing PPP in the construction industry, while 81 respondents disagreed. Finally, 18 respondents agreed with its significance regarding environmental risk, yet 82 respondents did not identify it as a significant concern in PPP implementation within the construction sector.

Table 16. Risk Mitigation Methods Associated with PPP

| | | Prioritizing sustainable construction practices | Checking the financial history of the groups involved | Planning and project management | Developing a contractual framework | Evaluating the track records of your prospective partners |
|---|---|---|---|---|---|---|
| Yes | Count | 30 | 35 | 32 | 28 | 38 |
| No | Count | 70 | 65 | 68 | 72 | 62 |

Table 16 presents various risk mitigation methods associated with Public-Private Partnership (PPP) projects. The table outlines the counts of respondents who indicated "Yes" or "No" for each method. The table shows that the most favored approach for mitigating risk, as indicated by the respondents, is evaluating the track records of prospective partners, with 38 respondents in agreement and 62 in disagreement. 35 respondents supported checking the financial history of the involved groups as an approach for mitigating risk, while 65 disagreed. Planning and project management, and prioritizing sustainable construction practices, which are the third and fourth risk mitigation methods, received agreement from 32 and 30 respondents respectively with 68 and 70 disagreeing with their opinions. Developing a contractual framework is the least favored approach among the given methods with only 28 respondents in agreement and 72 respondents in disagreement.

Table 17. Major problems associated with carrying out PPP-related projects in Nigeria

| | Government interference | Corruption and lack of transparency | A limited number of professionals | Tribalism | Non-compliance of building codes | Constant price change | Valid N (listwise) |
|---|---|---|---|---|---|---|---|
| N | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mean | 4.05 | 4.14 | 3.23 | 3.49 | 3.26 | 4.14 | |
| Std. Deviation | 1.048 | 1.137 | 1.205 | 1.219 | 1.070 | 1.045 | |

According to the survey findings, carrying out PPP-related infrastructure projects in Nigeria is challenging due to several issues. The primary concern among respondents was corruption and lack of transparency, which was identified as the most significant obstacle to project completion Constant price change was also recognized as a significant problem to project completion in executing PPP projects in Nigeria. The study also revealed that government interference could affect the successful execution of PPP-related projects in Nigeria.

Table 18 presents key indicators of a successful Public-Private Partnership (PPP) project, as identified by respondents. The research findings indicate that respondents agreed on several factors contributing to the success of PPP projects. These include a strong private partnership, appropriate risk allocation and sharing, a favorable financial market environment, the delivery of publicly needed services, and the presence of good governance and political support.

Table 18. Key Indicators of a successful PPP project

| | Strong private partnership | Appropriate risk allocation and sharing | Good governance and political support | Delivering publicly needed service | Favorable financial market | Valid N (listwise) |
|---|---|---|---|---|---|---|
| N | 100 | 100 | 100 | 100 | 100 | 100 |
| Mean | 4.54 | 4.27 | 4.03 | 4.06 | 4.09 | |
| Std. Deviation | .702 | .827 | 1.058 | 1.023 | .842 | |

Table 19. Rate of influence of PPP in the construction industry

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 5 to 10% | 14 | 14.0 | 14.0 | 14.0 |
| | 10 to 25% | 22 | 22.0 | 22.0 | 36.0 |
| | 25 to 50% | 27 | 27.0 | 27.0 | 63.0 |
| | 50 to 75% | 29 | 29.0 | 29.0 | 92.0 |
| | | | | | |
| | 75 to 99% | 8 | 8.0 | 8.0 | 100.0 |
| | Total | 100 | 100.0 | 100.0 | |

Table 19 presents the rate of influence of Public-Private Partnership (PPP) in the construction industry, as indicated by respondents for an understanding of the extent of PPP's influence in the construction industry. The survey findings as presented in Table 19 show that 14 respondents indicated that PPP influences the construction industry by 5 to 10%. 22 respondents reported that PPP influences construction industries by 10 to 25% while 27 respondents stated that PPP influences it by 25 to 50%. Furthermore, 29 respondents mentioned that PPP influences it by 50 to 75%. and 8 respondents indicated that PPP influences it by 75 to 99%.

### 3.1 Discussion

The survey data presented offers a comprehensive picture of the demographic and professional characteristics of respondents involved in the construction industry and their experience with Public-Private Partnerships (PPP). The findings reveal a predominantly young and well-educated workforce with a strong technical background. The majority falls within the 21-30 age bracket, suggesting a potential for fresh perspectives and innovation in PPP project implementation. The high percentage of respondents holding bachelor's and master's degrees indicates a pool of professionals with advanced skills and knowledge that can enhance project planning and execution.

Engineers constitute the largest group in terms of specialization with significant representation from other professions as well. The significant representation of respondents with experience in both public and private sectors indicate opportunities for collaboration and knowledge exchange, essential for effective PPP implementation. Also, the varying levels of work experience among respondents highlight a mix of junior and senior professionals, each bringing unique perspectives and insights to PPP projects and a significant majority of respondents demonstrate a clear understanding of PPPs, highlighting their comprehension of the concept's definition, operation, and relevance to the construction sector

Stakeholders' views of PPP effectiveness and preferences for project delivery mechanisms highlight the importance of PPPs in addressing infrastructural development needs. Positive perceptions indicate confidence in PPP as a viable approach, potentially influencing decisions regarding project implementation. However, challenges such as corruption, lack of transparency, and risk allocation remain significant concerns that need to be addressed to ensure the success and sustainability of PPP initiatives. Additionally, stakeholders' familiarity with different PPP models emphasizes the importance of addressing knowledge gaps to facilitate informed decision-making and maximize the benefits of PPPs.

Risk mitigation methods play a crucial role in enhancing the effectiveness of PPP projects, with strategies such as evaluating prospective partners' track records, financial assessment, and sustainable construction practices identified as key approaches. Addressing risks associated with PPP implementation is essential for minimizing uncertainties, fostering investor confidence, and ensuring project success. Furthermore, the recognition of strong private partnerships and favorable governance as indicators of PPP project success highlights the importance of collaboration, transparency, and stakeholder engagement in driving PPP effectiveness and promoting sustainable infrastructural development.

This study contributes to knowledge of PPPs and construction management by providing insights into the workforce demographics, stakeholder perceptions, challenges, and risk mitigation strategies associated with PPP project implementation in the construction industry. These insights will inform policymaking and project planning aimed at promoting sustainable infrastructural development through PPPs.

## 4. Conclusion

The demographics, qualifications, and experience levels of professionals in the Nigerian construction industry can significantly influence the effectiveness of PPP initiatives. By utilizing the diverse expertise and experiences of professionals, and promoting collaboration between the public and private sectors, Nigeria can enhance the planning, execution, and outcomes of PPP projects in the construction industry. While positive insights of PPPs indicate confidence in their effectiveness, challenges such as corruption and risk allocation highlight the need for robust governance frameworks and risk management strategies. According to the research, a significant number of survey respondents consider Public-Private Partnerships (PPPs) as a feasible option to the conventional procurement approach. The findings also indicate that Joint Ventures and BOT have emerged as successful PPP models in the construction sector.

## References

[1] Dada, M.O. and Oladokun, M., 2012. Public-Private Partnerships in Nigeria: Public And Private Sector Perceptions About Critical Success Factors. Journal of International Real Estate and Construction Studies, 2(1/2), p.55.

[2] Devkar, G.A. and Kalidindi, S.N., 2013. Modeling and assessment of competencies in urban local bodies for implementing PPP projects. Built Environment Project and Asset Management, 3(1), pp.42-57.

[3] Dao, H. 2023. A Study of Public-Private Partnerships Through the Public Value Lens: Case Study Of Transport Infrastructure Provision In Vietnam (Doctoral dissertation, Open Access Te Herenga Waka-Victoria University of Wellington).

[4] Dada, M. and Oladokun, M.G., 2012. Analysis of critical success sub-factors for public–private-partnerships in Nigeria. *ALAM CIPTA, International Journal of Sustainable Tropical Design Research and Practice*, *5*(2), pp.13-26.
[5] Akintoye, A. Liyanage, C., and Renukappa, S. (2011) "Public Private Partnerships". Proceedings of the CIB TG12/ARCOM Doctoral Research Workshop Organized by the University of Central Lancashire, Preston U.K Wednesday 12th October, 2011.
[6] Zadawa, A.N., Hussin, A.A. and Osmadi, A., 2015. Determinants of compliance with public procurement guidelines in the Nigerian construction industry. *Jurnal Teknologi*, *75*(9), pp.107-110.
[7] Ben Obi1 & C. Chris Ofonyelu Public-Private Partnership (PPP) In Nigeria: A Game Theoretic Conjecture of Low-Level Equilibrium in the Power Industry Applied Economics and Finance Vol. 2, No. 4; November 2015 ISSN 2332-7294 E-ISSN 2332-7308 Published by Redfame Publishing URL: http://aef.redfame.com
[8] Babatunde, S.O., 2015. *Developing public-private partnership strategy for infrastructure delivery in Nigeria*. University of Northumbria at Newcastle (United Kingdom).
[9] Zadawa, A.N., Omran, A. and Dahiru, A., 2015. Effectiveness Of Public Private Partnerships Procurement For Sustainable Development Of Water Supply Projects In Nigeria. Journal of Academic Research in Economics, 7(1).
[10] Obi, B. and Ofonyelu, C.C., 2015. Public-Private Partnership (PPP) In Nigeria: A Game Theoretic Conjecture of Low-Level Equilibrium in the Power Industry. *Applied Economics and Finance*, *2*(4), pp.137-142.
[11] U-Dominic, C.M., Igbokwe, N.C., Ono, G.C. and Okoro, B.U., 2023. Sustainability in Construction of Commercial Buildings in Anambra State, Nigeria: Re-Orienting the Antique Construction Ethics. *East Asian Journal of Multidisciplinary Research (EAJMR*, *2*, pp.3835-3852.
[12] Mudi, A., Bioku, J. and Kolawole, O., 2015. Assessing the characteristics of Nigerian construction industry in infrastructure development. *International Journal of Engineering Research & Technology*, *4*(11), pp.546-555.
[13] Gbadegesin, J.T., van der Heijden, H., Boelhouwer, P., Oladokun, S.O., Windapo, A.O., Odediran, S.J. and Adediran, A., 2016, February. Formulating an effective public private Partnership policy for housing provision in Nigeria urban centres: A conceptual approach. In 9th cidb Postgraduate Conference February (pp. 2-4).
[14] Colversons, S. and Perera, 2012. Harnessing the Powers of PPPs: The Role of Hybrid Financing Strategies in Sustainable Development. A Report by The International Institution for Sustainable Development. 1- 57 February
[15] Kwak, Y.H., Chih, Y.Y., Ibbs, C.W., 2009. "Towards a Comprehensive Understanding of Public Private Partnerships for Infrastructure Development". California Management Review. Vol 51. No. 2. Winter 2009. unr. Berkeley. Edu. pp. 51-78
[16] Roehrich, J.K., Lewis, M.A. and George, G., 2014. Are public–private partnerships a healthy option? A systematic literature review. *Social science & medicine*, *113*, pp.110-119.
[17] Cheung, E., Chan, A.P.C. and Kajewski, S. (2010). The Public Sector's Perspective on Procuring Public Works Projects-Comparing the views of Practitioners in Hong Kong and Australia. Journal of Civil Engineering and Management. Vol 16, Issue 1, pp 19-32.
[18] Chinyere, I.I. and Lin, X.X. 2011. "Understanding the Risks of Public Private Partnerships in Construction and Infrastructure Development before the 2008 Global Financial Crisis. In Proceedings of AABRI Conference Las Vegas. October 6-8, 2011.
[19] Roehrich, J.K., Lewis, M.A. and George, G., 2014. Are public–private partnerships a healthy option? A systematic literature review. *Social science & medicine*, *113*, pp.110-119.
[20] Akintoye, A. and Beck, M., 2015. An overview of public-private partnerships. *Public Private Partnerships*, pp.21-38.