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## RISK FACTORS ASSESSMENT OF BUILD-OPERATE-TRANSFER (BOT) PROJECTS IN NIGERIA

By

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### ABSTRACT

*The difficulty faced by governments in meeting huge infrastructure demand and improvement of service levels in many countries resulted in a shift from the conventional procurement process to a more innovative one, such as the Build Operate and Transfer (BOT) involving private sector participation for the delivery of public projects. However, the use of BOT procurement has been unsuccessful in many countries due largely to poor and unsuccessful risk identification and management leading to many project failures. This study assessed through a field survey the critical risk factors of Build Operate and Transfer (BOT) projects from the perception of key stakeholders with the view to providing a useful tool for analysis and management of their potential impact on projects. Structured questionnaires were randomly distributed to government officials, concessionaire, developers and lenders in Kaduna, Abuja, Lagos and Port Harcourt where ample BOT projects have been realized in recent times. Descriptive statistics specifically, Mean Item Score (MIS) and Mean Deviation were used for analyzing the perception of the respondents. The results revealed that on the overall change in government policies, unfavourable general business condition and project company default are considered as the topmost risk factors with MIS of 4.3953, 4.2093 and 4.2093 respectively while inclement weather is considered as the least factor with MIS of 2.9535. The results further showed that for the different risk categories, political risk is ranked highest with MIS of 3.7742 while Development risk was ranked as the least risk category with MIS of 3.6349. Therefore, for effective proposals, design, construction, operation and maintenance of infrastructure development the risk factors with high impacts are to be mitigated or adequately allocated.*

### INTRODUCTION

The need for infrastructure projects such as power plants, roads, railways, bridges, water supply and telecommunication projects and the budget constraints of the public agencies across the world has encouraged the use of innovative financing mechanisms in recent times (Jefferies and Chan, 2003; Chan *et al.*, 2015). Akerele and Gidado (2016) further observed that increased demand for public services occasioned by population explosion, improved information and communication systems and public awareness has over the years influenced governments of many countries to explore different

means of overcoming these challenges. One popular option in meeting these huge demand for infrastructure projects and improvement in service level has been the shift from the traditional approach to the involvement of the private sector participation through concession agreements.

The use of concession agreement contracts for the development of infrastructure projects has gained considerable acceptance and is becoming popular in both developed and developing countries. One of such mechanisms is the Build-Operate-Transfer (BOT) which enables clients to have access to funds for construction

through private partners in the event of inefficiency of fund. It involves financing partnership between a private and public agency with parties receiving concession on design, planning, financing, execution and management of project. The BOT mechanism provides opportunity for a project to be managed after completion to enable the proponents recover the sum invested in the project during the concession period (Lekan *et al.*, 2013; Garole and Jarad, 2016). BOT has been successfully deployed in the development of infrastructure projects such as power, engineering, telecommunication and transportation in many countries like USA, Japan, Indonesia, Malaysia, Singapore, India, Canada and UK among others (Lekan *et al.*, 2013).

In Nigeria, the federal government has declared and requests for proposals for many projects under the BOT mechanism in recent times indicating the importance and prospect of the mechanism for infrastructure development (Mohammed *et al.*, 2012). The Bureau of Public Procurement (BPP) further indicated that the economic environment in Nigeria is now favourable for the private sector to invest in local projects because government is putting in place policies aimed at increased private sector participation and modification of legislation and laws to encourage private investment in public projects like highways, airports, and power plants through PPP (Mohammed *et al.*, 2012).

However, promoters and investors are not too enthusiastic for the desired level of participation which may be attributed to the common risks associated with the arrangement which had actually restricted the award of few concessions in spite of the need for such projects in the country (Mohammed *et al.*, 2012). BOT contracts have been identified to have complex risk portfolio to a considerable extent resulting from the use of multiple parties with different objectives (Thomas *et al.*, 2006). However, the successful implementation of BOT projects depends to a very large extent on the degree to which various risks are identified, managed and allocated

(Thomas *et al.*, 2006). Therefore, it is imperative to identify and classify the different risk factors with the view to providing a platform for effective analysis and management.

## CONCEPT OF BOT

BOT is a project financing mechanism where the public partner with private sector in executing capital projects. Lekan *et al.* (2013) referred to BOT as a mechanism that helps a private entity to obtain a concession from the public to finance, design, construct and maintain a facility. The typical BOT mechanism has a complex structure comprising of multiple independent agreements among various parties including government, private company (concessionaire), lenders (bank), equity investors, contractors, suppliers, operators and financial advisers. Concession is normally granted by the government to the private sector through an agreement which enables the concessionaire to design, finance, construct and operate the facility. The concessionaire thereafter retains the title of ownership during the concession period which normally ranges between 10 and 30 years after which the title of ownership is transferred to the government (Tiong, 1995; UNIDO, 1996; Jeffereies and Chen, 2003; Lekan *et al.*, 2013 and Garole and Jarad, 2016). The typical BOT agreement would provide for concession agreement, loan agreement, shareholder agreement, construction contract, supply contract as well as operation and maintenance agreement (Lekan *et al.*, 2013).

The need for the provision of infrastructure projects despite financing difficulties, unwillingness of government to share risk in such projects and the availability of offering finances from lending institution and investors are the key reasons encouraging private sector participation. Some numerous advantages of BOT financing mechanism as documented by Tiong (1995) include:

1. The use of private sector financing to provide new sources of capital thus reducing public burden and improving the host government's credit rating.
2. The ability to accelerate the development of projects that would otherwise have to wait for scarce sovereign resources
3. The use of private sector capital, initiative and knowhow to improve operating efficiency.
4. The allocation of project risk and burden to the private sector that would otherwise have to be undertaken by the public sector.
5. The improvements of private sponsors and experienced commercial lenders providing an in-depth review and additional assurance of project feasibility.
6. Technology transfer, training of local personnel and development of national capital market.
7. Government reservation as strategic control over the project which is transferred back at the end of the concession
8. The opportunities to establish a private benchmark to measure the efficiency of similar public sector projects and thereby offer opportunities for the enhancement of public management of infrastructure facility.

Based on the conventional BOT, diverse variants have evolved in many countries including Build-Own-Operate (BOO), Build-Lease-Transfer (BLT), Build-Own-Operate-Transfer (BOOT), Build-Own-Operate-Maintain (BOMM), Design-Bid-Finance-Operate (DBFO) and Build-Transfer-Operate (BTO) among others. (Garole and Jarad, 2016; Patel, 2013). Some key infrastructure developments based on the PPP include water distribution – Perrier bros Paris (1782); Suez Canal (1869), Hong Kong Cross harbor Tunnel (1972); Toronto Airport- Canada (1990) and Dartford bridge- UK (1991) among others.

## RISKS ASSOCIATED WITH BOT

Risk identification and classification is an important step in studying risk pattern obtainable on a construction project. Project risk can be defined as a coalescence of all the uncertain factors which will have a combined negative effect on the objectives of the project (Garole and Jarad, 2016). In BOT contracts most of the risks are borne by the private sector as provided by the arrangement. The identification, classification and presentation of comprehensive critical risk factors provides for a useful tool for analyzing the potential impact and considering appropriate strategies to mitigate their effect (Xenidis and Angelides, 2005). Risk can only be assessed if it can be identified and quantified (Akerle and Gidado, 2003).

The identification and classification of critical risk factors governing BOT contracts across the world has been a subject of many studies (Tiong, 1990; Woodward, 1992; Chapman and Ward, 2001; Akintoye, *et al.*, 2005; Lekan *et al.*, 2013; Patel, 2013; Sach *et al.*, 2007; Zhang *et al.*, 2008; Wang *et al.*, 2000, Chan *et al.*, 2015; Garole and Jarad, 2016). Tiong (1990) categorized risk in BOT into technical, political, and financial risks and concluded that political risk has the highest impact on the implementation of BOT projects. Woodward (1992) considered risks as global (political, legal, commercial) that have a wider range and elemental (technical, operational, financial and revenue) that are specific to particular project.

The study also demonstrated that both the global and local factors have significant impact on the achievement of the projects. UNIDO (1996) categorized the risk bore by the project sponsor as construction and completion, operation, currency and interest rates. Common risks in PPP/PFI as identified by Akintoye (2001), and Blackwell (2000) are availability risk, completion risk, construction risk, technical risk, revenue risk, tax risk, political risk, contract risk, currency risk and technology risk. Akerle and Gidado (2003) revealed that from the myriad of risks factors associated with PPP

arrangements, they identified and classified the risks into political risk, inflation risk, currency risk, regulation risk, completion risk, availability risk, operating risk, technology risk, market (demand) risk and resources risk. The study observed that political and regulation risk are the highest in terms of severity index. Odeyinka *et al.* (2006) observed that the different types of risks often associated with BOT projects includes social and economic risk, operational and technological risk, health and safety risks and environmental and physical risk. Lekan *et al.* (2013) in their study of evaluating risk's cost implication from the perspective of concessionaire and professionals revealed that the common risk associated with projects expected are inflation, variation to works, changes in judgement policy and fluctuation nature of foreign exchange. Sciah *et al.*, (2007) identified currency inconvertibility, and transfer restriction, expropriation, breach of contract, political violence, legal, regulatory and bureaucratic risks as key risk factors of PPP project. Mohammed *et al.* (2012) classified risk into four categories of political risk, construction risk, operating risk and market and revenue risk. The study indicated that instability in the political system and change in policy affects the effective achievement of BOT projects significantly.

Thomas *et al.*, (2006) noted that private infrastructure under BOT have complex risk portfolio due to several factors such as lengthy payback period, lumpiness of huge investment, high developmental efforts and upfront cost, length of term of loan, susceptibility to political and economic risk, low market value of security package and complex construct mechanism involving many participants with diverging interest. Garole and Jarad (2016) observed that infrastructure projects in developing countries are characterized by some typical risk factors due primarily to variables of legal systems, market situations and climate. Garole and Jarad (2016) investigated the risk factors of road projects in India and identified delay in approval, change in law, cost overrun,

dispatch constraints, land acquisition and compensation, enforceability of contract, construction schedule, financial closing tariff adjustment and environmental risk as the key risk factors.

Patel (2013) identified a procedure for risk identification management and its perception from the Indian construction industry players. The study revealed that time constraints and experience of the project manager are crucial for identification of the level of risk for large and complex projects. The study further suggested the integration of time and cost management with the identification process. Renuka *et al.*, (2014) discovered critical risk factors and assessment techniques through comparative study of various international project. The review indicated that early project risk identification and assessment during the bidding and incorporated in the bidding package would assists in better estimation of budget and schedule. The study recommended a simple analytical tool for each project task for the assessment of risk swiftly for effective analysis.

Chan *et al.* (2015) identified and evaluated typical risks associated with PPP projects in China. The study revealed that completion risk, inflation and price change risks have higher impact on Chinese PPP water projects while government corruption and imperfect law and supervision system and change in market demand have lower impact. The result of the investigation would to a large extent assist in improving the efficiency of privatization in public utility service. Garole and Jarad (2016) viewed risk in BOT projects according to different perspectives as; lenders perspective, developers' perspective, governments' perspective and contractors' perspective.

BOT projects are usually characterized by more risks than other traditional projects due primarily to different objectives and interest that are expected by a vast range of stakeholders (Shen *et al.*, 2006 and Chen *et al.*, 2015). The complexity of the projects under such

financing mechanism is further compounded by the unique features, external uncertainties and multidisciplinary characteristics involved as well as the public agencies and stakeholder's participation (Thomas *et al.*, 2006). Therefore, it is imperative to properly identify and classify the risk factors with the view to investigating their impact for effective infrastructure delivery

## METHODOLOGY

The study utilized both primary and secondary data. The primary data for analysis were obtained through structured questionnaire randomly distributed to four categories of respondents (government officials, concessionaires, developers and lenders) in Lagos, Port Harcourt, Kaduna and Abuja where ample infrastructure projects have been realized under the BOT financing option in recent time. The first section of the questionnaire was designed to capture background information of the participants while the second section captures the risk factors associated with BOT contracts. The instrument was scrutinized by four (4) experts who have considerable experience and knowledge on the subject matter to satisfy the desired level of validity and

was further modified based on the suggestions of the experts. The modified questionnaire consist of 45 risk factors and allows the participants to rate the factors based on a five (5) point Likert scale ranging from "very important" to "not important". One hundred and twenty (120) questionnaires were randomly distributed out of which 98 (81.6%) were returned and 86 corresponding to 71.6% were found to be fit for analysis. The information obtained were analysed by descriptive statistic using statistical software Origin version 5.0 for windows. Specifically Mean Item Score (MIS) and Mean Deviation (MD) were used to determine the significance and impact of each risk factor based on the perception of the respondents.

The secondary data were obtained through the survey of relevant literature consisting of published journals, factsheets, reports and other relevant national and international documents to identify and develop the risk factors for the investigation.

## RESULTS AND DISCUSSION

### *Profile of Respondents*

The profile of the respondents for the survey is presented in Table I. The results revealed that

**Table I:** Profile of Respondents

Characteristics		Frequency	Percent
<b>1. Category of Respondent</b>			
i.	Government	24	27.91
ii.	Concessionaire	21	24.42
iii.	Developers	19	22.09
iv.	Lenders	22	25.58
<b>2. Educational qualification</b>			
i.	High School	0	0.00
ii.	Diploma	18	20.93
iii.	University Degree/HND	51	59.30
iv.	Master/ PhD	17	19.70
<b>3. Work Experience</b>			
i.	Less than 5 years	11	12.79

Characteristics		Frequency	Percent
ii.	5 to 10 years	16	18.60
iii.	11 to 15 years	19	22.09
iv.	16 to 20 years	24	27.90
v.	Greater than 20 years	16	18.60
<b>4. Position</b>			
i.	Managing Director, Director, etc.	21	24.42
ii.	Principal officer	25	29.01
iii.	Senior Personnel	28	32.56
iv.	Others	12	13.95
<b>5. Designated Profession</b>			
i.	Engineering	19	22.09
ii.	Architecture	16	18.60
iii.	Quantity Surveying	12	13.95
iv.	Building	17	19.76
v.	Estate Surveying	12	13.95
vi.	Others	10	11.63

The demographic profile of the respondents revealed that 27.9% of the respondents are from government establishments whereas 24.42%, 22.09% and 25.58% are from the offices of concessionaires, developers and lenders respectively. The profile further revealed that majority (59%) are first degree holders and 19% either have master or Ph.D. degree. The results also show that majority of the respondents occupy management positions as either principals, deputy directors or directors in their organizations. This results

indicate that the information obtained from this category of respondents can be considered adequate.

#### **Mean Scores of Risk Factors**

The mean Item Scores (MIS) of risk factors under the categories of political risk, financial and revenue risk, legal risk, operating risk, construction risk, procurement risk and development risk are presented in Table 2.

**Table 2:** Mean Item Score of Risk Factors

Risk Factors		MIS	MD	Rank
<b>A. Political Risk</b>				
1.	Termination of concession	3.8721	0.2425	3
2.	Adverse action of the government	3.5465	0.0831	5
3.	Instability in government	4.0116	0.3821	2
4.	Outbreak of hostilities (wars, riots and terrorism)	3.1163	0.5133	6
5.	Lack of commitment to concession contract	3.5698	0.0598	4
6.	Strong public opposition	2.9651	0.6645	7
7.	Change in government policy	4.3953	0.7658	1

Risk Factors	MIS	MD	Rank
<b>B. Financial and Revenue Risk</b>			
1. Failure to raise finance for the project	4.0116	0.3821	2
2. Unfavourable general business environment	4.2093	0.5797	1
3. Changes in demand of the facility over concession period	3.4767	0.1528	7
4. Change in economic policies	3.6628	0.0332	4
5. Inflation risk	3.7093	0.0797	3
6. Currency risk	3.7093	0.0797	3
7. Resources risk	3.5814	0.0482	6
8. Foreign exchange	3.5930	0.0365	5
<b>C. Operating Risk</b>			
1. Project company default	4.2093	0.5797	1
2. Labour risk	3.4419	0.1877	3
3. Error in operation and maintenance cost estimate	3.5814	0.0482	2
4. Unavailability of quality personnel to operate facility	3.1628	0.4668	4
5. Inappropriate operating methods	3.1628	0.4668	5
<b>D. Construction Risk</b>			
1. Cost performance risk	4.0814	0.4518	2
2. Production target slippage	3.6047	0.0249	4
3. Time performance risk	4.1279	0.4983	1
4. Quality performance risk	3.7326	0.1030	3
5. Variation	3.7326	0.1030	3
6. Default by concessionaire	3.6047	0.0249	4
7. Force majeure	3.7326	0.1030	3
8. Labour shortage	3.2209	0.4086	5
9. Material unavailability	3.2791	0.3505	5
10. Inclement weather	2.9535	0.6761	6
<b>E. Legal Risk</b>			
1. Nonexistence of legal and regulatory system	3.6047	0.0249	1
2. Changes in general legislation affecting the project	3.5930	0.0365	2
<b>F. Procurement Risk</b>			
1. Lack of experience in handling the project	3.8837	0.2542	1
2. Lack of expertise	3.5465	0.0831	4

Risk Factors	MIS	MD	Rank
3. Changes in project specifications	3.7558	0.1262	2
4. Expensive and lengthy tendering process	3.3605	0.2691	8
5. Lack of integrity in the tendering process	3.6977	0.0681	3
6. Flaws in contractual documentation	3.3953	0.2342	7
7. Delay in settling claims	3.4302	0.1993	6
8. Complicated negotiations	3.4535	0.1761	5
<b>G. Development Risk</b>			
1. Excessive development cost	4.0581	0.4286	1
2. Delays in design approval	3.6047	0.0249	2
3. Changes in design during construction	3.5814	0.0482	3
4. Delay in feasibility study	3.5349	0.0947	4
5. Unfavourable local conditions	3.3953	0.2342	5

Considering the risk factors under the political risk category, 'change in government policy' was perceived to be the highest risk factor with MIS of 4.3953 and mean deviation of 0.7658. This is followed by 'instability in government' with MIS of 4.0116. This is in consonance with the studies of Akerele and Gidado (2003), Lekan *et al.* (2013) and Vosoughi and Vosoughi (2015) where change in government policies in respect of infrastructure projects and instability in government have been identified as a critical risk factor for effective conception and implementation. The least risk factor under the political category is strong opposition of the public. Political risk influences to a large extent other factors necessary for the implementation of the projects because government's opinion in relation to the benefit of the project is critical for pulling government's effort toward the project. The risk under the political category is usually borne by the Project Company and lenders (Garole and Jarad, 2016).

For the financial and revenue risk category, the respondents indicated that unfavorable general business environment is considered as the most critical risk factor with MIS of 4.2093 followed by frequent failure to raise funds to finance the project with MIS of 4.0116. Financial

risk has also been identified as a key risk factor by Chan *et al.* (2015). The revenue risk relates to the revenue that a project could actually generate during the operation of the project. The factor with least degree of risk under the financial and revenue risk category is 'change in demand for the facility' over the concession period. Financial risk is one risk that forces a project to bear additional risk. This has been recognized to be very significant in large projects having funds borrowed from banks for financing the projects (Garole and Jarad, 2016).

The results of the construction risk category presented in Table 2 revealed that time performance risk is considered as the topmost risk factor with MIS of 4.127 followed by cost performance factor and quality risk factors with MIS of 4.0814 and 3.7326 respectively. The construction risk is essentially a collection of various factors that adversely affect the construction of project within the time frame and the projected cost of the specified standard. Akerele and Gidado (2003), Jefferies and Chan (2015) and Chan *et al.* (2015) indicated that many projects had failed in China due largely to poor risk management and indicated construction completion (schedule) risk as a key contributor. Moreover, delays in completion of concession projects will certainly lead to

shortened operation life which reduces the investors' income. However, if a project could not start operation as scheduled, the private company would not have sufficient cash flow to pay for the debt and charges of borrowed funds resulting in an extension of operation time which increases operation cost and reduces profit (Chan *et al.*, 2015). Considering the operating risk factors category, 'project company default' is considered as the most critical risk factor with MIS of 3.81 this is in agreement with the study of Garole and Jarad (2016) which considered the effectiveness and efficiency of the private company as crucial toward realizing BOT projects in India. Error in estimating for operating and maintenance cost is considered second and labour risk is ranked third with MIS of 3.581 and 3.4419 respectively.

Lack of legal framework and law governing the procurement process was considered by the respondents as the most critical risk factor with MIS of 3.6417 in the legal risk category while change in legislation is considered as the second most important risk factor with MIS of 3.595. Lack of regulatory framework has also been identified as a significant risk factor of PPP contracts by Chen and Doloi (2008), Zhang (2008), Chan *et al.* (2015) and Garole and Jarad (2016). These studies demonstrated that legal and regulatory framework remain vastly inadequate in most PPP projects due largely to the nature and form of the arrangement and constitute a grave risk for proper and effective implementation. Effective legal

framework is necessary for protecting the investment agreement and financing the projects.

The results of the procurement risk factors indicated that lack of expertise in similar projects by key stakeholders is considered the most critical with MIS of 3.883 which is followed by change in specification with MIS of 3.7558 and lack of integrity in the tendering process with MIS of 3.6177. Experience of key parties of the contracts is a crucial factor for desired performance of the contracts.

The results of the category of development risk factors showed that excessive development cost is the topmost risk factor with MIS of 4.6581 followed by delay in design approval with MIS of 3.6047 and change in design during construction with MIS of 3.589. At the BOT manager would incur considerable expenses at the development stages including the cost of planning, and the preparation of necessary documents and proposed plan.

### Overall Risk Factors

The results of all the factors irrespective of risk categories is presented in Table 3. The results indicated that change in government policy which falls under the political risk factor is ranked first which is followed by unfavorable business environment, project company default, time performance risk and cost performance risk. The factors considered to have least risk are outbreak of hostilities, strong public opposition and inclement weather.

**Table 3:** Mean Item Score for Overall Factors

S/No	Risk Factors	MIS	MD	Rank
1	Change in government policy	4.3953	0.7658	1
2	Unfavourable general business environment	4.2093	0.5797	2
3	Project company default	4.2093	0.5797	3
4	Time performance risk	4.1279	0.4983	4
5	Cost performance risk	4.0814	0.4518	5
6	Excessive development cost	4.0581	0.4286	6
7	Instability in government	4.0116	0.3821	7

S/No	Risk Factors	MIS	MD	Rank
8	Failure to raise finance for the project	4.0116	0.3821	7
9	Lack of experience in handling the project	3.8837	0.2542	8
10	Termination of concession	3.8721	0.2425	9
11	Changes in project specifications	3.7558	0.1262	10
12	Quality performance risk	3.7326	0.1030	11
13	Variation	3.7326	0.1030	11
14	Force majeure	3.7326	0.1030	11
15	Inflation risk	3.7093	0.0797	12
16	Currency risk	3.7093	0.0797	12
17	Lack of integrity in the tendering process	3.6977	0.0681	12
18	Change in economic policies	3.6628	0.0332	13
19	Production target slippage	3.6047	0.0249	14
20	Default by concessionaire	3.6047	0.0249	14
21	Nonexistence of legal and regulatory system	3.6047	0.0249	14
22	Delays in design approval	3.6047	0.0249	14
23	Foreign exchange	3.5930	0.0365	15
24	Changes in general legislation affecting the project	3.5930	0.0365	14
25	Resources risk	3.5814	0.0482	16
26	Error in operation and maintenance cost estimate	3.5814	0.0482	16
27	Changes in design during construction	3.5814	0.0482	16
28	Lack of commitment to concession contract	3.5698	0.0598	17
29	Adverse action of the government	3.5465	0.0831	18
30	Lack of expertise	3.5465	0.0831	18
31	Delay in feasibility study	3.5349	0.0947	19
32	Changes in demand of the facility over concession period	3.4767	0.1528	20
33	Complicated negotiations	3.4535	0.1761	21
34	Labour risk	3.4419	0.1877	22
35	Delay in settling claims	3.4302	0.1993	23
36	Flaws in contractual documentation	3.3953	0.2342	24
37	Unfavourable local conditions	3.3953	0.2342	25
38	Expensive and lengthy tendering process	3.3605	0.2691	26
39	Material unavailability	3.2791	0.3505	27
40	Labour shortage	3.2209	0.4086	38
41	Unavailability of quality personnel to operate facility	3.1628	0.4668	29
42	Inappropriate operating methods	3.1628	0.4668	30
43	Outbreak of hostilities (wars, riots and terrorism)	3.1163	0.5133	31
44	Strong public opposition	2.9651	0.6645	32

S/No	Risk Factors	MIS	MD	Rank
45	Inclement weather	2.9535	0.6761	33

### Mean Item Scores of Risk categories

The results of the mean score of the categories of risks is presented in Table 4. The results revealed that political risk is the category with the highest mean score based on the perception of respondent followed by financial and revenue risks and operating risks. The results further indicated that development risk is the category considered as the least with MIS of 3.6349. These results are in agreement with the outcome of several studies (Mohammed, et al 2012; Chan *et al.*, 2016; Garole and Jarad, 2016). Political risk has been identified by Mohammed *et al*

(2012) as a major risk factor as a result of instability in government, changes in policies among other political factors. However, Akerele and Gidado (2003) earlier opined that considering the global drive toward stabilizing political systems, political risk bedeviling PPP projects would be mitigated with time. Other risk factors in the categories of financial, operating, construction, legal, procurement and development were also identified by early investigations to have high impact in the proper achievement of BOT projects (Jefferies and Chen, 2003; Lekan, *et al.*, 2013; Chan *et al.*, 2016; Chan and Doloi, 2008).

Table 4. Mean Score of the Risk Categories

S/No	Risk Category	MIS	MD	Rank
1	Political Risk	3.7742	0.1554	1
2	Financial and Revenue	3.6395	0.0207	2
3	Operating Risk	3.5116	0.1072	7
4	Construction Risk	3.6070	0.0118	4
5	Legal Risk	3.5988	0.0200	5
6	Procurement Risk	3.5654	0.0534	6
7	Development Risk	3.6349	0.0161	3

Political risk has also been identified by as a major risk factor facing PPP projects in Nigeria by

Mohammed *et al* (2012). The study ranked political risk as the highest category.

### CONCLUSION

The Build Operate and Transfer (BOT) mechanism has been applied in many developed and developing countries for the delivery of capital projects through the involvement of private sector participation. In Nigeria, studies have indicated that some concession contracts were unsuccessful due largely to the plethora of risks associated with the mechanism. The risks associated with BOT projects in Nigeria are classified into political, procurement, operating, construction, legal and development with the political risk category having the

highest impact. Notable factors with high impacts among the categories are, change in government policies, unfavorable general business condition, project company default, time and cost performance risk, lack of legal framework and excessive development cost.

Therefore, the government needs to have the political will and must establish a clear and sound policy and legal framework for effective conception and implementation of public private partnership projects.

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