

Risks Associated with Real Estate Project Delivery in Southwestern Nigeria

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Abstract

Real estate project has many factors that affect successful delivery. Among such factors is risk. This is responsible for the failure of many real estate project in Nigeria. However, this study is focused on the risks associated with real estate project delivery. The study adopted multi-stage sampling design among the professionals in Estate Surveying and Valuation Firms registered by the Nigerian Institution of Estate Surveyors and Valuers in Southwestern Nigeria. A set of questionnaires was administered on 476 respondents with 88% response rate. Both descriptive and inferential statistical tools were used to analyse the data. The descriptive tools include mean, percentage, tables and charts. The inferential statistical tool was factor analysis which was carried out with the aid of Statistical Package for Social Science (SPSS). The study assessed the various risks that affect real estate projects and classified them into two components. Suggestions were given on how to manage them to promote successful delivery of real estate projects in Southwestern Nigeria.

Keywords: Estate, Project, Delivery, Micro Risks, and Macro Risks

Introduction

The development of real estate projects is associated with great risks. Risk are usually not easily identifiable at the beginning of a project or very difficult to be managed by a single party (Akinbogun, Jones and Dunse, 2014). Risks may occur from the inception stage to the delivery stage of real estate projects. (Pereira, Ferreira and Santo, 2020). The development of real estate projects is usually speculative and anticipatory of capital gain with uncertain future demand in real estate market. Risk management is highly important in real estate project delivery due to the increasing complexity of many real estate projects, unpredictable project environment, coupled with the prevailing global economic crisis (Beigh, 2016). The real estate industry is considered to be one of the industries with high risk, unfortunately, it falls below expectations in the utilization of risk management (Kaklauskas, Zavadskas, Dargis and Bardauskiene 2015). Wilkinson and Reed (2008) stated that participants in the real estate industry are usually criticized for not having a proper understanding of risks in real estate project delivery. Decisions are made under strict social conditions which involve uncertainties.

The successful completion of real estate project increases the level of satisfaction of stakeholders and makes it more attractive in the market. The realized return on the project largely depends on the ability to overcoming all the inherent risks and make sure that the cost of the project is considerably lower than the current market value. If the cost is higher than the market value of the project, it brings losses. (Okonu, Umeh, Akinwande, and Muraina, 2019). According to Bahamid, Doh and Al-Sharai (2019), “reduction of risk is a major task in real estate delivery process, while uncertainty is the main condition within which real estate project is implemented.” Seven major factors describe the complexity of estate project delivery process, they are, real estate market, period of project development, environmental condition of the project, prevailing condition of the economy, interest of the stakeholders, cost of the project, and regulatory bodies (Oladapo, 2015). Real estate project supply is centered on several coordinated

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teamwork among many participants with several related activities and numerous risks normally shared among them. Therefore, each project is with its unique risks which can be managed jointly or severally by the participating parties in the real estate projects. The more complex the real estate projects, the more complex the risks with significant lifecycle effects (Khedekar and Dhawale, 2015).

Risks have negatively affected so many real estate projects in this country. There are many evidences of real estate project abandonments such as the Independence Building at Tafawa Balewa Square, NECOM House at Marina, Old Defense House in Lagos, and many others in major cities in Nigeria (Garbababa, 2014). Many real estate projects had collapsed such as the 2016 Lekki Gardens building collapse, the collapse of the Four-Square Towers 21-story building, Gerald, Ikoyi, Lagos in 2021. Many real estate projects were not sold over a long period, in other cases, finished projects are auctioned by development creditors due to the failure of the developers to redeem the mortgages (Obi, Nwalusi and Okeke 2022). This shows waste or tying down of economic resources that ought to have been used for other developments (Na Ayudhya and Kunishima, 2019). Therefore, the study was carried out to identify the risks associated with real estate project delivery in the study area.

Material and Methods

The study was carried out in the six states of Southwestern Nigeria comprising Lagos, Ogun, Oyo, Ondo, Ekiti, and Osun. The area lies between longitude 20 311 and 60 001 East and Latitude 60 211 and 80371 N (Faleyi, Agbaja and Akinyemi, 2013). The population of the study comprised 425 Estate firms registered by the Nigerian Institution of Estate Surveyors and Valuers (NIESV, 2019) in the six states of Southwestern Nigeria. The sample size was 238 firms, two respondents are studied in each of the firms making 476 respondents. 380 Copies of the questionnaire were retrieved representing 88% of the total questionnaire. A multistage sampling technique was used for the study. There were six stages, each stage for each of the six states in Southwestern Nigeria. The sampling technique adopted was judgmental sampling. The measurement value adopted was scale. rating 5= Highly Agree (HA), that is (i.e.) very satisfied with the practice, 4= Agree (A), i.e. satisfied with the practice, 3= Partially Agree (PA) i.e not too satisfied with the practice, 2= Disagree (D), i.e. not satisfied with the practice, 1= Highly Disagree (HD), i.e. dissatisfied with the practice. A descriptive statistical tool was also adopted for this study which involved the use of frequency, percentage and means scoring, and tables were used to show the prevalence and percentage distribution of the socio-demographic variables of the respondents. The inferential statistical techniques employed are factor analysis and Kaiser-Meyer-Olkin (KMO).

Factor analysis is employed to examine the risks in real estate project delivery in Southwestern Nigeria. The intention here is to apprehend the existing multivariate relationship between the risks. This is with a view to categorizing and classifying the factors adequately. It is very imperative to note that a total of ten (10) variables were identified and collated from the reviewed literature in the course of the research work which was found to have either been critical or slightly critical in the analysis. However, the aim at this stage is to determine the risks that could significantly affect real estate project delivery.

Results and Discussion

Respondents' Education

The educational qualification of professionals in the real estate industry in the study area is quite moderate due to larger portion of the respondents having either an HND or B.Sc. (81.3%). Higher degrees were not so pronounced. The reason for this was that higher degrees are not highly required for their profession. Attainment of first degree or Higher National Diploma with professional registration it's the basic requirement as presented in Table 1.

Respondents' Profession

Respondents' profession is analyzed in Table 1. According to the table, it is observed that 82.1%, 3.2%, and 2.1% of respondents are professional members of Estate Surveyors/Valuers, Architects, and Engineers respectively. Planners, Builders, Quantity Surveyors, and Civil Engineers accounted for 1.8%, 3.2%, 2.9%, and 2.1% respectively. It could be of interest to note that Mechanical Engineering, Electrical Engineering, and other professions are 0.8%, 0.8%, and 0.3% respectively. The highest proportion of respondents (82.1%) was observed to be professional members of Estate Surveyors/Valuers.

Respondents' Work Experience

Table 1 shows that 46.6% of respondents maintained working in their present firms for 10 years and below. Another 41.3%, 7.6%, and 3.4% of respondents working for 11-20 years, 21-30 years, and 31-40 years, while 0.5% of respondents indicated that years of relevant work experiences are 41 years and above respectively. Only 0.5% of respondents refused to respond. This implies that most of respondents in the study area have been working for less than 10 years in their respective establishments.

Table 1: Respondents' Socioeconomic Characteristics

Socio-Economic Character	Frequency	Percentage
OND/NCE	62	16.3
HND	187	49.2
B.A/B.Edu./B.Sc./B.Tech.	122	32.1
M.A/M.Edu./M.Sc./ M.Tech.	6	1.6
PhD	3	0.8
Total	380	100
Respondents Profession		
Estate Surveyors/Valuers	312	82.1
Architects	12	3.2
Planners	12	3.2
Builders	11	2.9
Quantity Surveyors	8	2.1
Civil Engineers	10	2.6
Mechanical Engineers	3	0.8
Electrical Engineers	1	0.3
Others	3	0.8
Total	380	100.0
Years of Relevant Work Experience		
Below 10 years	117	46.6
11-20 years	157	41.3
21-30 years	29	7.6
31-40 years	13	3.4
Above 40 years	2	0.5
Total	380	100.0

Source: Author's Field Survey, 2021

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Table 2 reveals ratings of the risk associated with real estate project delivery in Southwestern Nigeria. Out of all the ten variables employed for measurement, it is observed that "Inflation Risk" has the highest mean weighted value of 3.90 and scores the first (1st) rank. This implies that "Inflation Risk" is a major risk that respondents considered as being extraordinarily important in real estate project delivery in the

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region. The risk that was ranked second (2nd) is “Project completion time risk” with a mean weighted value of 3.57. The risk that took the third (3rd) is “Project cost risk” with a mean weighted value of 3.56. This shows that “Project cost risk” is also the important risk associated with real estate project delivery. It is highly expedient to observe in Table 1 that the mean weighted values for seven variables are below average. This means that the seven variables identified risks associated with real estate project delivery could be noted as being not significant as agreed upon by the respondents. The ratings of mean weighted values as obtained from the frequency of respondents are listed in decreasing order: Change Order Risk (3.48); Financial Risk (3.47); Construction Risk (3.46); Project Quality Risk (3.44); Market Risk (3.35); Regulatory Risk (3.36); Environmental Risk (3.36). It could be of interest to report that two (2) variables of risks are tied in the ninth (9th) rank. The variables are “Regulatory Risk (3.36); and “Environmental Risk (3.36)”. Seven variables of risks in real estate project delivery were rated below average suggested a clear emphasis of respondents on the significance of risks in influencing real estate project delivery. The overall mean value of responses to the risks in real estate project delivery in Southwestern Nigeria, as obtained from the respondents is 3.50. This implies that the mean responses of the people were far below average indicating the disagreement of respondents in their position concerning the risks in real estate project delivery.

Muhammed, Wesam and Liew (2021) observed that inflation risk negatively impacts real estate projects by increasing the impact level of other risks in the project. Inflation risk can lead to poor project quality if the contractor undermines the quality of the building material due to increasing cost which may lead to project collapse. It can also lead to increased costs for the project. If finance is difficult to assess, it can lead to a delay in the completion of the project. The developer may eventually reduce the extent of the project, or it may usher in a dispute over remuneration with the contractor.

Table 2: Risks Associated with Real Estate Projects Delivery in Southwestern Nigeria

S/N	Variables	Ranking					NR (f)	SWV	MWV	Rank
		5	4	3	2	1				
1	Inflation Risk	180	468	228	148	76	379	1479	3.90	1
2	Environmental Risk	315	484	306	144	19	377	1268	3.36	9
3	Market Risk	305	464	333	136	18	374	1256	3.35	8
4	Regulatory Risk	315	476	324	136	20	378	1271	3.36	9
5	Financial Risk	280	604	297	98	19	374	1298	3.47	5
6	Construction Risk	325	516	342	110	14	377	1307	3.46	6
7	Project Quality Risk	265	596	312	114	11	374	1288	3.44	7
8	Change Order Risk	380	476	327	92	23	373	1298	3.48	4
9	Project Cost Risk	395	532	276	106	14	371	1323	3.56	3
10	Project Completion Time Risk	305	660	282	94	11	378	1352	3.57	2
								35.04		

Mean of $\sum MWV/n = 35.04/10 = 3.50$

Source: Author's Field Survey, 2021

Appraisal of the Data Suitability for Factor Analysis

In the assessment of risk management techniques in real estate projects, Kaiser-Mayer-Olkin (KMO) was used. The KMO value is reported as 0.879. This implies that KMO obtained an 87.9% for measure of sampling adequacy suitable for analysis. Moreover, Bartlett's test of the sphericity result value is 2119.250, $df = 55$, at $p < 0.05$ (0.000) confidence level, it is indicating statistically significant results. However, it can be deduced, that the data obtained were suitable and adequate for Factor Analysis (FA) in the study.

Table 3: KMO and Bartlett’s Test of Sphericity

KMO and Barlett’s Test		
Kaiser-Meyer-Olkin	Measure of Sampling Adequacy	879
Barlett’s Test of Sphericity	Approx. Chi-Square	2119.250
	df	55
	Sig,	.000

Communalities of Variables

Table 4 is the communalities of variables in the analysis. It is observed from the table that the variable with the highest communalities value is “Inflation risk” which accounted for 0.778% of variance after extraction in the analysis while the variable with the lowest communalities is “Risks have no significant effect on real estate project delivery” having 0.486% variance. However, all ten (10) variables were retained for further analysis. The Principal Component Analysis (PCA) was used in the analysis to determine the amount of variance in each variable which is explained by other variables.

Table 4: Communalities of Variables Communalities

Variables	Initial	Extraction
Inflation Risk	1.000	.778
Environmental Risk	1.000	.722
Market Risk	1.000	.742
Regulatory Risk	1.000	.670
Financial Risk	1.000	.600
Construction Risk	1.000	.571
Project Quality Risk	1.000	..589
Change Order Risk	1.000	.486
Project Cost Risk	1.000	.778
Project Completion Time Risk	1.000	.650

Source: Author (2021)

Variance Explained by Determinants of Respondents

Factor analysis uses variances to produce communalities between variables. The variance is equal to the square of the factor loadings (Child, 2006). In many methods of factor analysis, the goal of extraction is to remove as much common variance in the first factor as possible (Child, 2006). The communality is the variance in the observed variables which are accounted for by a common factor or common variance (Child, 2006). Factor extraction under Factor Analysis is described as a method of determining the smallest numbers of factors that best represent the interrelations among the set of variables in the Factor Analysis. Eigenvalues associated with linear factors before and after extraction as well as after rotation are deemed to be very important as such that values associated with each particular linear factor represent the variance explained by each composite as well as the percentage of variance explained (Pallant, 2020). For this study, two (2) factors were extracted as shown in Table 5. According to the table, the initial Eigenvalues of the two extracted factors with variance explained before extraction for variables 1 and 2 as 49.006%, and 15.120% respectively. In a related development, after rotation, factor 1 accounted for 49.006%, while factor 2 accounted for 15.120% variance respectively.

The total variance explained by all the two factors extracted as indicated in Table 4 is 64.126% both before and after extraction. The screen plot as shown in Figure 1 indicated vividly that there are two factors extracted for this analysis.

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Having identified the Eigenvalues associated with each of the two-component factors in the analysis, hence the identification and itemizing of variables that are loaded on each of the component factors rename and discuss the factors accordingly. There is a tendency that some of the variables may load high or low on any of the two-component factors, therefore, necessitating the rotation of the matrix. Varimax rotation was therefore employed in the rotation. The rotated component matrix of respondents' responses explains the structure of variables that are loaded on each factor.

It becomes imperative to stress here that all the variables used are included in the rotated component matrix, as depicted in Table 6. However, the cut-off point of 0.5 was set to rename the variables in the two factors. Only factors that are highly loaded at or above 0.50 were named and discussed in the analysis as shown in Table 5 for the factor grouping.

Table 5: Variance Explained by Determinants of Respondents

Components	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative	Total	% of variance	Cumulative	Total	% of variance	Cumulative
1	5.391	49.006	49.000	5.391	49.006	49.006	4.706	42.780	42.700
2	1.663	15.120	64.126	1.663	15.120	64.126	2.348	21.346	64.126
3	.821	7.462	71.588						
4	.698	6.343	77.931						
5	.570	5.178	83.109						
6	.477	4.333	87.442						
7	.357	3.246	90.688						
8	.350	3.180	93.868						
9	.266	2.415	96.283						
10	.227	2.063	98.345						

Extraction Method Principal Component Analysis

In Table 6, five (5) factors were loaded on factor one, at or above 0.5 which include: Inflation risk (0.853); Environmental risk (0.844); Market Risk (0.855); Regulatory Risk (0.817); and financial risk (0.753). These factors were re-named to describe issues on Macro Risks in Real Estate Projects delivery and thus termed as such because it treats issues on the nation's economy. This is because it articulates issues on the efficient utilization of material under study. Moreover, five (5) variables were loaded on factor two (2), and they include Construction risk (0.230); Project Quality risk (0.410), Change order risk (0.774); Project cost risk (0.812); and Project completion time risk (0.614). This factor is termed Micro Risks in Real Estate Project delivery because it treats issues on project development and project objective under study.

It is further revealed from Table 5, that the sum of squared loading (after rotation) for factors 1 and 2 were 49.006 and 15.120% while the total variant explained by these two factors was 64.126%. It is therefore observed from Table 7 that all the ten extracted variables were found to be the most significant factors constituting challenges to risks in real estate project delivery. Table 7 depicted the summary of the extracted factors and their nomenclature that was adopted for inclusion into the risks in real estate project delivery in Southwestern Nigeria.

Table 6: Rotated Component Matrix

Variables	Component 1	Component 2
Inflation Risk	.853	.154
Environmental Risk	.844	
Market Risk	.855	.100
Regulatory Risk	.817	.048
Financial Risk	.743	.182
Construction Risk	.720	.230
Project Quality Risk	.571	.410
Change Order Risk	.227	.774
Project Cost Risk	.344	.812
Project Completion Time Risk	.460	.614

Extraction Method Principal Component Analysis

Rotation Method Varimax with Kaiser Normalization. A Rotation converged 2 iterations.

Source: Author (2021)

Classification of the risks into two principal components is in line with the opinion of Rehacek and Bazsova (2018) that classified risk to be intrinsic and extrinsic risks while Rezakhani (2012) stated that risk can be classified as external and internal risks. Petrovic (2021) also classified risks as micro and macro risks. If risks are intrinsic, internal, or micro, these are risks within the system of the project and are easy to manage. Efforts should be made to prevent them from occurring through the use of the development of a risk management action plan. The ones that could not be prevented are shared among stakeholders through the use of a stakeholder action plan.

The risks that are external, extrinsic, or macro are risks outside the system of the project. External risks are difficult to manage, the option available is to reduce their impacts on the project. External risks may be transferred to an insurance company or by hedging into viable projects to greatly reduce their impacts. Factors indicated that the risks associated with real estate project delivery are both internal and external or are both within the project system and outside the project environment.

Table 7: Rotated Component Matrix using 0.5 as cut-off point

Rotated Component Matrix	Components	
	1	2
Regulatory Risk	0.853	
Environmental Risk	0.844	
Market Risk	0.855	
Inflation Risk	0.817	
Financial Risk	0.753	
Construction Risk		0.720
Project Quality Risk		0.571
Project Scope Risk		0.774
Project Cost Risk		0.812
Project Completion Time Risk		0.614

Source: Author's computation, 2021

Conclusion and Recommendation

This study assessed the risks associated with real estate project delivery in Southwestern Nigeria and identified three important risks that affect real estate project. This requires that adequate consideration should be given to inflation, project completion time, and the cost of the project to achieve successful real estate project delivery in the study area. The Factor Analysis regroups the risks associated with real estate project delivery into two (2) Principal Components which are Macro Risks and Micro Risks. The study concluded that real estate project delivery in Southwestern Nigeria can successfully be delivered if the effects of these risks are reduced.

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