

## Causes of Failure in Commercial Building Projects in Nigeria

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### ABSTRACT

This paper examined the factors responsible for the failure of commercial building projects in Nigeria. It investigated the most frequent types of project failure in the study area and identified the most important factors causing failure in building projects alongside its effects. A 3 point research question and three null hypotheses were fashioned. A well-structured survey questionnaire on a 5-point likert scale was administered to well select project supervisors, estate surveyors & valuers and clients who were chosen using a purposive sample technique, the validity of the questionnaire was subjected to test analysis using Cronbach alpha before administration after a pilot survey. The returned questionnaires were analyzed while the hypotheses were tested using relative importance index. Findings were discussed appropriately while proffering the best way to eradicating project failure. It was concluded that most of the factors have effect on commercial building project feasibility.

**Keywords:** Building, Project, Failure, Commercial, Nigeria

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### 1. INTRODUCTION

Most building projects or constructions in Nigeria are undertaken for the benefit of the owner(s) who invest their equity and/or borrowed capital (Bello et al, 2002) and for those who benefit directly or indirectly (Balchin, 2000; Udechukwu, 2006; Mayaki 2002:7). Commercial projects are privately or publicly instituted for the receipt of annual regular income in lieu of the use for businesses, capital growth, and longevity of the building (Balchin et al, 2000). However, most projects in Nigeria fail due to many uncalculated measures, Nafkhia et al, (2016) put forward that most often; projects are not built in accordance with the planned expectations and therefore fail. (The Standish Group, 1998 cited in Kariuki, 2008) classified projects into three headings namely successful, challenged, and impaired projects. In most projects, failure appears in many forms such as building collapse, abandon, delay, cost and time over run etc Mohammad et al, (2017). Failed building project have no record in Nigeria as much as failures have appeared in many forms.

This lack of data posed concern to every professional in the building industry; hence need to study the types, causes and the effects on the building project. In view of the above stated problems, it is necessary therefore to ask as follows:

1. What are the types of commercial building project failure?
2. What are the factors causing failure in commercial building project and
3. What are the effects of the failure on commercial building project?

The aim of this work which is limited to Kwara state is to seek the perception of professionals in the construction industry on the factors causing building project failure particularly in commercial properties with a view to ascertaining the relative importance index factors. The aim will be achieved through the following objectives:

1. To establish the types of commercial building project failure
2. To establish the causes of commercial building project failure
3. To determine the effect of the commercial building project

The null hypotheses below are postulated and tested.

1.  $H_{01}$ : There is no significant difference in relative importance index of the types of commercial building project failure.
2.  $H_{02}$ : There is no significant difference in relative importance index of the factors causing commercial building failure.
3.  $H_{03}$ : There is no significant difference in relative importance index in the effects of commercial building project failure.

The scope of the study thus, covers the types, the causes and the effects of building project failure in Kwara State, Nigeria. It is anticipated that findings from this work if implemented will serve the benefit of establishing a database for different types and causes of commercial building project failures and their eradication or reduction will not be difficult to achieve. The study will furnish the private investors and other professionals the idea and the need to have fore-knowledge of the causes of project failure and its effect on commercial building project.

## 2. LITERATURE REVIEW

### 2.1 Concept of Building Project Failure

Porteous, (1992) defined building failure as a shortfall in the technical performance of the building, according to Porteous empirical evidence have shown that all buildings develop failures when they are left standing for long period whether completed or not. He added that building failures occur from both natural and human mistakes.

### 2.2 Types of Building Project Failure

A detailed examination of the nature of human error can be found in bad apple theory of Love et al., (2018). The authors noted that errors are not a cause of an event but a symptom of a much deeper problem within a system. 'The bad apple theory' of human error fundamentally assumes that: complex systems such as construction projects fail due to the unpredictable behavior of people; human errors cause accidents; and failures are unexpected. Frank et al, (2010), Onozulike,(2016), all submitted that projects fail due to errors and such errors include errors of knowledge (ignorance), errors of performance (carelessness and negligence), errors of intent (greed) and maintenance failure. Mohammad et al, (2017) placed failure under four broad categories as failure during construction, failure due to failure of services, failure, due to improper maintenance and design failure; the author added that controllable causes of construction failures are error in design, improper detailing and drafting, improper selection of materials, lack of proper inspection, formwork failure, geotechnical failure, and technical failure.

### 2.3 Causes of Building Project Failure

Mohammad et al, (2017) classified causes of building failure as controllable and uncontrollable. Frank et al, (2010), Onozulike, (2016), observed that climatic conditions, location of building, construction materials, building type and change in use, maintenance, faulty design & construction, corruption and lack of supervision are all factor bringing about project failures. Porteous, (1992) advanced the human factors that can cause error in building project as defective materials, overlooked site condition, ignorance, over-emphasis on first cost, defective documentation, unanticipated consequence of change, specialist contractor's lack of knowledge, design too difficult to build well, dereliction or negligence and poor communication.

Vondráčková et al, (2016) view human factors as a cause of building failure, with special focus on safety and site accidents, factors include the quality of education, experience with stress, workload, fatigue, and workplace ergonomics, working hours, social climate and private matters. Rauzana et al, (2016) identified specific causes of failure which include inactive decision making, contract deficiencies, lack of project control, poor relationship management, poor system analysis and abortive decision process. (Kariuki (2008) identified 12 major causes of project failure as lack of stakeholders' involvement, poor planning, poor communication, lack of executive support, lack of resources, scope creep, poor requirements, lack of control, unrealistic budget, project leadership, organization structure and project methodology. Sambasivan & Soon, (2007) discovery was time overrun, cost overrun, disputes, arbitration, litigation and total abandonment as the major consequences of project delays.

Nguyen et al, (2013) studied the causes of construction failure in Vietnam, the authors investigation revealed ten most critical factors causing the failure of construction project as disregard of the significance of project planning process and project planning, lack of experience in executing complicated project, poor design capacity and frequent design changes, lack of knowledge and ability in managing construction projects, lack of financial capacity of owner, poor performance of contractors, lack of a systematic approach to managing the project and entire organization, corruption and bribery in construction projects, the delays in payment, and economic volatility and high inflation.

Damoah, (2015) identified thirty-two (32) causes of project failures, these include monitoring, corruption, political interference, change in government, bureaucracy, fluctuation of prices, lack of continuity, planning, delays in payment, release of funds, change in project leadership, management practices, procurement processes, project funding, commitment to project, selection of project managers, project team formation, project management techniques, feasibility studies, communication, supervision, scope change, capacity, task definition, definition of specification, requirement, regulations, culture and belief systems, user involvement, labour, pressure groups (media, NGOs, political activities etc.), and natural disaster. He linked overall causes to political leadership.

### 2.4 Effect of Project Failure

The effect of building project failure has been attributed to two basic factors which are poor feasibility study and building project delay, which eventually can lead to project abandonment, collapse of building, dispute, lawsuit, total desertion, litigation etc. Sweis et al, (2008), Abd El-Razek et al, (2008), Ayman, (2000) (Odeh and Battaineth, 2001) all recognizes failure as delay in projects and concluded that financial difficulties, change order by the owner are the leading causes of construction delay design changes by owner or his agent during construction, partial payments during construction, and non-utilization of professional construction/contractual management.(Ahzahar et al, 2011) in the study of Malaysia acknowledged that failures and defects can cause unnecessary expenditure and delays which may occur from cost, duration and resources of project. Haseeb et al, (2011) examined the causes and effects of building project and discovered delay with root cause from several overlapping factors such as contractor and owners. The general effects are loss of wealth or income, unavailability of facilities, funds for maintenance on equipment and materials and hiring the labor and loss of time. (Damoah, 2015) investigated the extent of project failure, causes of project failure and the effects of project failure on key stakeholders, he discovered (26) possible effects.

The 26 effects include slows down in economic growth, loss of revenue by state, unemployment, bad image for government, collapse of local businesses, cost escalation, government sector underdevelopment, loss of foreign aid/grants, discourages investment, stricter donor regulations, loss of election, financial institutions lose confidence in the state, loss of revenue by the citizens, lack of capacity, sub-standard infrastructure, it slow down citizens' human empowerment, loss of worker hours, pollution, armed robbery and theft, relocation of services, denial of citizens' basic rights, loss of properties, emotional stress on citizens, accidents and deaths, imprisonment, and abandonment of homes.

### 3. METHODOLOGY

To obtain a range of views as to what a building failure is, causal and effect, the opinions of professionals in the designing, building, maintenance and management of buildings as well as educators in the building industry were sought from estate surveyors, quantity surveyors, architects, builders and civil engineers using a 5 point likert scale questionnaire.

#### 3.1 Research Design

Primary and secondary data were used in this work with a well-structured questionnaire divided into four sections to elicit information from selected audience. The primary source of data was a questionnaire while secondary sources comprised of articles collected from human resource management journals, conference papers, and databases such as Springer, Science Direct, and PhD thesis.

#### 3.3 Sample Frame and Sample Size

The researcher divided the respondents into two distinct categories: academia and practicing (professionals) who are willing to fill the questionnaire. A total of 23 respondents sample were used as basis for analysis.

#### 3.4 Sampling Unit

The researcher used purposive sampling technique to select a sample from the target population. This method helped the researcher to create four level of authority, this include estate surveyors, builders, architects, civil engineers.

**Table 3.1 Target Population from Kwara state**

Category	Population	Percentage (%)
Estate surveyors	10	15.40
Architects	6	30.80
Builders	4	30.80
Civil Engineers	2	23.00
Total	22	100.00

Source: Researcher, 2018

#### 3.5 Research Area

Kwara state with population of 2,365,353 (2006 census) was created in 1967, there are presently sixteen local government areas, of the sixteen local government areas, two are prominent towns: Ilorin and Offa. The two towns have well consolidated administrative presence with commercial prowess with well popular and established markets that attracts traders and consumers towards the cities.

#### 3.6 Research Instruments

The major instrument used for the collection of data in this work is a well-structured 5 point likert scale questionnaire adapted from extant literature of Damoah (2015). The questionnaire was divided into three sections A, B, C, which include background section, Section B contained questions bordering types of building failure, C' are questions about

causes of building failure, while the section D was about the effect of failure of a project. The researcher designed using specific constructs to measure types, causes and effect of building project failure study.

### 3.7 Validity and Reliability

The study measured the validity of the questionnaire through a pilot survey on 6 target professionals each from all the two sectors of the case study. The reliability of the instrument was determined by standardization using the Cronbach Alpha (Coefficient Alpha) test on the questionnaire to test for reliability. A result of 80% was arrived at, which showed that the questionnaire was adequately reliable for collecting data.

### 3.8 Data Presentation

What follows are presentation of demographic and other data based on the questionnaire distributed and hypothesis formulated

**Table 1: Showing the gender of the respondents**

Gender	Questionnaire Distributed	%
Male	20	91
Female	2	9
<b>Total</b>	<b>22</b>	<b>100</b>

Source: authors field survey 2018

The table above, 20 of the 22 respondents (91%), are male while 2 (9%) are female. Thus the 91% respondents that are male are in good capacity to be administered the questionnaire.

**Table 2: Showing the Age of the respondents**

Age Limit	Distribution	%
25- 40	8	36.4
40- 55	11	50
55-65	3	13.6
65- above	None	0
<b>Total</b>	<b>22</b>	<b>100</b>

Source: Authors field survey 2018

In the table above, 8 respondents which represents 36.4% of the total population is (91%), have married while 2 (9%) are still single. Thus the 91% respondents are matured enough to answer the questions in the questionnaire.

**Table 3: Showing the marital status of the respondents**

Marital status	Distribution	%
Married	20	91
Single	2	9
Separated	-	-
Divorced	-	-
<b>Total</b>	<b>22</b>	<b>100</b>

Source: Authors field survey 2018

The table above, 20 of the 22 respondents (91%), have married while 2 (9%) are still single. Thus the 91% respondents are matured enough to answer the questions in the questionnaire.

**Table 4: Showing the qualification of the respondents in Ilorin and Offa**

Qualification	Respondents	%
School leaving certificate	-	-
ND/NCE/	-	-
HND/BSc/	10	45.5
MSc/PGD/ PhD	12	54.5
<b>Total</b>	<b>22</b>	<b>100</b>

Source: Authors field survey 2018

From the table above, 10 of the 22 respondents (45.5%), have either HND or BSc degree in various environmental discipline. While 12 (54.5%) have either MSc/PGD or PhD in various environmental discipline. Thus the two major categories of respondents have knowledge of building projects.

**Table 5: Showing the Professional qualification of the respondents**

Qualification	Respondents	%
Yes	18	81.8
No	4	18.2
<b>Total</b>	<b>22</b>	<b>100</b>

Source: Authors field survey 2018

From table 5 above, 18 of the 22 respondents (81.8%), have professional qualification while 4 (18.2%) are yet to be qualified as professional. This implies that majority of the respondents are certified to handle construction projects.

**Table 6: Showing the years of experience of the respondents**

Year of Experience	Respondents	%
1-10	7	31.8
10-20	8	36.4
20-30	4	18.2
30-40	3	13.6
<b>Total</b>	<b>22</b>	<b>100</b>

Source: Authors field survey 2018

From the above table, 7 of the 22 respondents (31.8%), have between 1-10 years' experience in commercial building projects, 8 respondents (36.4%) have between 10-20 years' experience in commercial building projects, while 4 (18.2%) have between 20-30 years' experience in commercial building projects, and 3(13.6%) have between 30-40 years' experience in commercial building projects. The meaning of the above analysis is that majority of the respondents have minimum years of experience when it comes to private and public building projects.

**Table 7: Showing the respondents supervised projects**

Project number	Respondents	%
1-10	7	31.8
10-20	9	41.0
20-30	2	9.0
30-40	4	18.2
<b>Total</b>	<b>22</b>	<b>100</b>

**Source: Authors field survey 2018**

From the above table, 7 of the 22 respondents (31.8%), have supervised commercial building projects of between 1-10, 9 respondents (41.0%) confirm have supervised between 10-20 commercial building projects and 2 have supervised 20-30 commercial building projects. Similarly, 4 respondents making (18.2%) have supervised building project that ranges between 30 - and above. This implies that few percentage of the respondents supervised private or public commercial projects.

**Table 8: Showing numbers of failed project against Professional adherence**

Number of failed projects	Respondents	%
1-3	6	27.3
3-5	7	31.8
5-10	1	4.5
10- and above	-	-
Anonymous	8	36.4
<b>Total</b>	<b>22</b>	<b>100</b>

**Source: Authors field survey 2018**

Of the 22 respondents, 6 respondents (27.3%) confirm that successful building project they supervised was between 1-3 due to non the professional advice, 7 respondents confirmed that between 3-5 of the projects they supervised failed representing 31.8% of the total respondents, 1 respondent which is about 4.5% of the respondents affirmed that failed project they handled was between 5-10 while 8 respondents were anonymous, representing 36.4% of the respondents. None of the respondents affirmed that their failed project supervised was 10 and above. In this scenario 36.4% of the respondents remains anonymous meaning that they are indifferent to the fact that building project failure cannot concreted on whether there was derail from professional advice or not

**Table 9: Showing numbers of successful project through Professional adherence**

Number of successful projects	Respondents	%
5-10	7	31.8
10- 20	10	45.5
20- 30	3	13.6
30- and above	2	9.1
<b>Total</b>	<b>22</b>	<b>100</b>

**Source: Authors field survey 2018**

Of the 22 respondents, 7 respondents (31.8%) confirm that successful building project they supervised was between 5-10 due to the professional advice, 10 respondents confirmed that between 10-20 of the projects they supervised was successful representing 45.5% of the total respondents, three respondents which is about 13.6% of the respondents affirmed that successful project they handled was between 20-30 while 2 respondents, representing 9.1% of the respondents affirmed that their successful project supervised was 30 and above. The meaning of the above scenario is that building projects failure is on the high side.

### Hypotheses

Research question one: What are the types of building project failure?

H<sub>01</sub>: There is no significant difference in relative importance index of the types of building project failure.

**Table 10: showing the relative importance index of types of building project failure in Kwara State**

TYPES OF PROJECT FAILURE	1n1	2n2	3n3	4n4	5n5	sum	RII
Environmentally insecure, unhygienic, unsafe site & constitute failed project	3	0	3	11	5	81	0.74
Vacant, abandoned and fag-end structures cannot constitute a failed project	5	6	6	6	0	59	0.54
Trespassed or proposed development under litigation are not failed project	5	3	0	5	9	76	0.69
Development with court restraint or injunction is not a failed building project	5	6	2	6	3	62	0.56
Development restricted by communal clash or paucity of fund is a failed project	3	2	0	6	11	86	0.78
Proposed development with negative feasibility & viability report is a fail project	0	0	3	0	19	104	0.95
Any delayed construction or incapacitated by human error cannot be regarded as failed project	2	9	0	8	3	67	0.61
Policy restraint building cannot be included among failed project	8	3	3	5	3	58	0.53
Building projects fails because costs and time overrun	0	0	3	6	13	98	0.89
Sick buildings or dilapidated projects with un-habitable tendencies are failed projects	0	0	3	6	13	98	0.89

N =22

Source: Authors field survey 2018



Research question two: What are the factors causing failure in a self-financed building project?

H0<sub>2</sub>: There is no significant difference in relative importance index of the factors causing building project failure in kwara state

**Table 11: showing the relative importance index of factors causing building project failure in Kwara State**

CAUSES OF BUILDING FAILURE IN BUILDING PROJECT	1n1	2n2	3n3	4n4	5n5	Sum	RII
Projects fail due to inexperience of the developers and site supervisors	0	0	0	12	10	98	0.89
Poor budget control can be a great factor for building failure	0	0	0	3	19	107	0.97
Projects fails when there is paucity of fund or capital is being frustrated	0	0	3	0	19	104	0.95
Most projects fails because of poor project planning & procurement method	0	0	0	0	22	110	1.00
Projects fails because of clients expectation, interference, change orders	3	0	0	11	8	87	0.79
Project fails due to delay factors	0	6	0	12	4	80	0.73
Building projects fails due to stringent borrowing conditions from banks	0	3	3	14	2	81	0.74
Improper briefing or detailing of work accounts for project failure	0	3	0	12	7	89	0.81
Failure in building project arises from the use of inferior building materials	0	0	0	11	11	99	0.90
Project fail due to change in policy, leadership and fluctuation of prices	0	0	6	8	8	90	0.82
Location of project, construction materials, faulty & frequent design changes	3	0	0	11	8	87	0.79
Poor site communication and in effective organogram can lead to project failure	3	0	3	14	2	78	0.71
Non-compliance with planning, safety & building regulations cannot fail project	3	3	0	6	10	83	0.75
Site disputes, litigation or undefined project term can cause failure	2	6	0	6	8	78	0.71
Maintenance failure, slow decision making can constitute to project failure	0	3	3	9	7	86	0.78
Projects fail due to errors of knowledge, carelessness, and greed intent	0	0	0	12	10	98	0.89
Natural disaster, weather, climatic, poor site conditions, soil investigation	0	0	0	17	5	93	0.85
Partial payments and non-utilization of professional construction managers	0	0	0	8	14	102	0.93
Inexperience of contractors, project supervisor and sub-contractors	0	0	0	14	8	96	0.87
Poor feasibility and viability studies	0	0	0	6	16	104	0.95
Poor project funding, commitment to project, cost, duration & resources	0	3	0	6	13	95	0.86
Selection of project managers, team formation, management techniques	0	0	6	12	4	86	0.78
Poor task definition, specification, requirement, regulations, culture and belief	0	0	3	11	8	93	0.85
Lack of a systematic approach to managing the project and entire organization	0	0	3	11	8	93	0.85
Corruption, delays in payment, bureaucracy, change in project leadership	0	3	6	5	8	84	0.76
Lack of executive support, lack of resources, poor requirements, lack of control	0	0	3	8	11	96	0.87
Experience with stress, workload, fatigue, workplace ergonomics, working hrs	0	3	0	14	5	87	0.79

Source: Authors field survey 2018

Research question Three: What are the most frequent effects of building project failure on the economic?

H0<sub>3</sub>: There is no significant relationship between the most frequent effect of building project failure and the economy?

**Table 12: showing the relative importance index of the effect of building project failure in Kwara State**

EFFECT OF FAIL BUILDING PROJECT	1n1	2n2	3n3	4n4	5n5	sum	RII
Failed projects slows down the economic growth and leads to loss of revenue for the state	0	0	0	7	15	103	0.94
Unemployment, low investment, slowdown in citizens' human empowerment	0	2	3	7	10	91	0.83
Failed project is consequent to collapse of local businesses	0	1	6	10	4	80	0.73
Loss of worker hours, emotional stress on citizens can be a result of failed project	0	2	3	13	4	85	0.77
Failed project can create cost escalation and loss of revenue by the citizens	0	1	1	10	10	95	0.86
Failed project cannot lead to underdevelopment in the government sector	9	4	1	5	3	55	0.50
Loss of foreign aid/grants and stricter donor regulations can as well be induced by failed projects	0	2	1	8	11	94	0.85
Incessant failure of projects can make financial institutions lose confidence in the state	0	0	1	8	13	100	0.91
Frequent fail of projects can create sub-standard infrastructure and deny citizens' their basic rights	0	1	1	7	13	98	0.89

**Source: Authors field survey 2018**

### 3.9 Data Analysis

The aim of this study is to determine the relative importance index of the factors causing commercial building project failure. The relative importance index (RII) was calculated using the following formula (Fagbenle et al., 2004):

$$RII = \frac{\sum P_i U_i}{N(n)} \dots\dots\dots (1)$$

- Where, RII = relative importance index
- P<sub>i</sub> = respondent's rating of cause of building project failure
- U<sub>i</sub> = number of respondents placing identical weighting/rating on cause of building project failure
- N = sample size
- n = the highest attainable score on cause of building project failure

The relative importance index for all the factors and groups was calculated using the equation (1) above. The indexes were ranked for estate surveyors, architects, builders and civil engineers. The group index is the average of relative importance index of the delay factors in each group.

### 4. DISCUSSION OF FINDINGS

In table 10, the most frequent relative importance of types of commercial building project failure has 0.95, followed by 0.89 and 0.75 while the least most important is with factor rating of 0.53, followed by 0.54 and 0.56. In table 11 the most frequent relative important causes of commercial building project failure has 1.00, followed by 0.97 and 0.95 while the least 0.71, and followed by 0.74 and 0.73 respectively. In table 12, the most frequent relative importance of effects of commercial building project failure has 0.94, followed by 0.91 and 0.89 while the least effect is with factor rating of 0.73, followed by 0.77 and 0.50. From the analysis it shows that proposed development with negative feasibility & viability report ranked highest in types building project failure with costs and time overrun and sick buildings or dilapidated projects with un-habitable tendencies coming next respectively.

On the other hand, policy restraint projects rank least among the project types with vacant or abandoned and fag-end structures and development with court restraint or injunction following in the least rank status. Similarly, the most ranked factors causing building project failure is poor project planning & procurement method with poor budget control and paucity of fund or capital frustration following respectively. However, both poor site communication, in effective organogram, site disputes, litigation or undefined project term ranked least in the factors causing project failure, this is followed by delay factors and stringent borrowing conditions from banks.

Furthermore, the most ranked effect of commercial building project failure is failed projects slows down the economic growth and leads to loss of revenue for the state, Incessant failure of projects can make financial institutions lose confidence in the state and frequent fail of projects can create sub-standard infrastructure and deny citizens' their basic rights. While loss of worker hours, emotional stress on citizens can be a result of failed project, failed project is consequent to collapse of local businesses and failed project cannot lead to underdevelopment in the government sector ranked least respectively.

## 5. CONCLUSION AND RECOMMENDATIONS

The study has looked at the types, causes and effect of building project failure on most especially commercial building projects. It has reviewed all the extant literature and has conducted the test with results emanating thereof. Based on the above foregoing however, it is hereby recommended that

1. Adequate provision of fund is most important in commercial building projects, there is therefore the need to provide adequate funds for self-financed project.
2. Conduct of adequate economic feasibility of project before execution
3. Protecting buildings from the 'forces of nature' from the moment construction of buildings is commenced and perfecting human behaviour so that human errors are not made.
4. Adequate site investigation and analysis should be conducted before the commencement of building project to forestall project failures
5. The bureaucratic processes of payment of contractors and subcontractors should be streamlined. Contract provisions which allow contractors to claim interest on delayed payments must be strictly enforced to serve as deterrent to clients.
6. Government should make the monitoring of all building projects a priority with minimal political interference.
7. Records of causes, types and effects of building project failure must be made a policy document to guide developers, clients and government

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