An Evaluation of the Effects of the Factors Contributing to Contractual Claims on Public Building Projects

Samuel Onyemechi Igbokwe[1], Kevin Aku Okorocha[2], Benedict Amade[3] and Emmanuel Efe Uwaifo[4]
[1]Postgraduate Scholar, Department of Project Management Technology,
Federal University of Technology,
P.M.B. 1526, Owerri, Imo State Nigeria. Email: igbokwesamuel6@gmail.com
[2]Department of Project Management Technology,
Federal University of Technology,
P.M.B. 1526, Owerri, Imo State Nigeria.
[3]Department of Project Management Technology,
Federal University of Technology,
P.M.B. 1526, Owerri, Imo State Nigeria. Email: benedictamade@futo.edu.ng
[4]UG Global Limited, 5A Bori Road, Rumuibekwe, Port Harcourt, Rivers State, Nigeria
DOI: 10.56201/rjpst.vol.8.no9.2025.pg35.45

Abstract
This study is aimed at evaluating the effects of the primary factors contributing to contractual claims on public building project delivery in Imo State. The study used a survey and exploratory research design methods of investigation, and a simple random sampling technique was used to select a sample size of 149 from a population of 418 practitioners using the Krejcie and Morgan's method of sample size determination from the sampled practitioners in Imo state. The data collection and survey instrument included a well-structured questionnaire, discussion and personal observations and visits to elicit information from respondents/building project locations. The collected data was presented in the form of frequency distribution using descriptive statistical tools using IBM SPSS Statistics version 25.0. While the factor analytical approach and multiple regression was used to analyze the study's main topic of discourse. The study's findings indicate that delay claims (X_3) is the first important primary factor that affects public building project delivery in Imo state. This was followed by in that order by client-related claims (X_9) and contract-related claims (X_8). This study recommends that, to avoid contractual claims in public building projects, resolve contract-related issues ab initio, streamline contract clauses, and handle design components and change management details. Reduce construction delays, start and finish on time, and reduce design changes during construction using the right procurement method.

Keywords: *Building projects, Contractual claims, Multiple regression, Imo state.*

Introduction

Contractual claims in construction projects adversely impact outcomes, frequently leading to delays, disagreements, and substantial expenses. The existence of these detrimental traits has led to a decrease in client confidence in consultants. Conflicts that emerge in the construction sector adversely impact construction projects (Igbokwe, 2025). The utilization of resources that could be allocated more efficiently, incur higher costs and delays, and may jeopardize the working relationships among the concerned parties, potentially resulting in their total collapse (Kalogeraki & Antoniou, 2024). Claims may incur significant additional costs for a contracting

party, beyond the project's budget and extending the construction completion timeline beyond the stipulated schedule (Asuquo et al., 2020).

Ho and Liu (2004) assert that construction claims are perceived by project participants as significantly disruptive and undesirable events during a project. It is essential to analyze the many types and sources of claims, and meticulously assess the methods by which the owner and contractor can present and negotiate claims, culminating in a change order or modification that addresses the issue. Claims can be resolved and settled via negotiation, mediation, arbitration, or litigation (Igbokwe, 2025). This research aims to examine the effect of the factors contributing to contractual claims on public building projects and propose measures to enhance contract administration and monitoring practices to mitigate the incidence of contractual claims in Imo State.

Literature review

Causes of contractual claims in building projects

Contractors' claims are formal requests for compensation for additional expenses incurred due to actions by the employer or the employer's representative that result in delays or disruptions to the contractor's work, which are not compensable under the contract terms (Cunningham, 2014). Construction projects, often contractual, are intricate and protracted in nature. These variables frequently result in conflicts among the concerned parties (Ojo, 2013).

Numerous disagreements frequently occur in the construction sector among the participating parties, often resulting in the submission of claims. Drawing from insights provided by diverse industry experts, including seasoned contractors, clients, designers, arbitrators, and other construction professionals, alongside a comprehensive analysis of pertinent research on construction claims, the subsequent factors are recognized as potential causes of claims (Igbokwe, 2025).

- Postponement in the provision of drawings.
- Postponement in the transfer of the Site.
- Postponement in the provision of materials.
- Postponement of payments.
- Postponement in the commencement of work.
- Postponement in the completion of the task.
- Completed work that remains unmeasured and unpaid.
- Reimbursement of maintenance deposit.
- Financial detriment resulting from additional overheads owing to the increase of the time restriction.
- Owing to insufficient or deficient specifications.
- Owing to insufficient information pertaining to design.
- Owing to insufficient bid information.
- Owing to insufficient time for bid preparation.
- As a result of a modification in the job scope.
- As a result of modifications in plans and specifications during the construction phase.
- Owing to inadequate plans and specifications.
- Owing to additional products and modifications.
- Because the engineer in charge did not grant completion.
- Resulting from the engineer's bias.
- Arising from impractical expectations.
- Attributable to inadequate management and administration of the construction site (Igbokwe, 2025).

Types of claims

Most of the claims from the aforementioned list are often resolved by negotiation and mutual understanding between the parties. However, certain allegations frequently surface and are unanswered, leading to disputes between the parties. The assertions that follow are listed below.

- Payment-related claims.
- Modification or alteration claims.
- Claims for Inconsistencies in Pricing and Measurement.
- Claims for Delays.
- Claims for Extra Work Project-Related Claims.
- Acceleration Claims.
- Contractual Claims.
- Client Claims.

Effect of contractual claims on public building projects

Harris and Scott (2001) highlighted the certainty of claims arising in construction projects because project designers struggle to anticipate and adapt to unforeseen circumstances that can impact project performance. It is clear that changes or adjustments to construction contracts are practically inevitable as projects progress (Oyewobi et al., 2016). As a result, this frequently leads to increased construction expenses, requiring modifications in contract payments, and setting the stage for the emergence of claims on construction projects.

In his study on claims management, Levin (1998) establishes a standardised procedure that emphasizes crucial components, such as identifying and acknowledging the causes of claims, systematically documenting them, and analysing their time and cost implications.

The literature reviewed in this context confirms that claims have a significant impact on the cost and time performance of construction projects. Nevertheless, the exact magnitude of this impact has yet to be determined. Prior research conducted by Sharafadeen et al. (2015) and Obiegbu (2012) indicates that effective communication between parties involved in a contract, implementation of sound contract management practices, strong financial capacity of project owners to make timely payments for completed work, and prompt design modifications during construction have the potential to reduce the negative effects of claims on the performance of construction projects.

Methodology

The chosen study area is Imo State. Using the Krejcie and Morgan's method of sample size determination, a sample size of 215 was arrived at (Krejcie & Morgan, 1970). As part of the descriptive survey approach, two hundred and fifteen (215) questionnaires that were well-structured were sent out to the three geopolitical zones of the state with most important players in the construction industry, which are the clients, the consultants and the contractors as well as other professionals consisting of engineers, project managers, builders, quantity surveyors, estate managers etc. One hundred and seventy-two (172) were retrieved, while one hundred and forty-nine (149) were found fit and usable for the analysis.

There are two different sections that make up the questionnaire:

First, this has to do with the demographics of the respondents. The second component has to do with the main issues bordering on the key objectives of the study. In this study, a Likert-five-degree type scale was adopted and values of 1-5 were assigned to each of the degree of agreement viz; 1 – 5, where; 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree as the case may be. Data was extracted from the returned questionnaires

using broadsheets that were coded. These were analysed with the aid of IBM SPSS version 25.0 after it had been cleaned and the variable inputted.

In achieving the objective, multiple regression was used to analyze it. The multiple regression model is an extension of the linear model that includes several independent variables using the same theory.

Multiple regression formular:

$Y = a + b1X1 + b2X2 + ------- + bnXn + ei$……..(1)

Where:

Y = Public building project delivery

α = Constant

X1 - Xn = the independent variables (primary factors contributing to contractual claims)

b1 - bn = beta coefficient of the independent variable which measures the amount of the variation in Y associated with a unit change in X

e = the error term assumed to be associated with the variables.

Where, Ni is the number of respondents where ki=1 to 5 or more on the Likert scale, N is the total number of questionnaire collected, and Rh is the highest value in ranking order.

Results and discussion

Based on the demographic analysis of the firms surveyed, the result on table 1 revealed that (13) 8.72% of the respondents were project managers, (15) 10.07% were quantity surveyors, (20) 13.42% were builders, while (29) 19.46% were engineers, while (72) 48.32% were contractors. Based on the analysis of the firms surveyed, the result indicate that, 20 of the respondents representing 13.42% have a working experience of 1-5 years, while 44 of the respondents representing 29.53% have a working experience of 6-10 years, 29 of the respondents representing 19.46% have a working experience of 11-15 years, 16 of the respondents representing 10.74% have a working experience of 16 – 20 years, while 40 of the respondents representing 26.85 are having 20 years and above working experience.

Table 1: General demographic characteristic of respondent

	Clients	Consultants	Contractors	Total
No. Distributed	47	73	95	215
No. Received	25	52	72	149
Percentage	53.19%	71.23%	75.79%	69.30%

Table 2: Communalities for primary factors contributing to contractual claims

Communalities		
	Initial	Extraction
Payment related claims	1.000	.770
Change or variation claims	1.000	.543
Delay claims	1.000	.659
Extra work claims	1.000	.562
Difference in pricing and measuring claims	1.000	.581
Project-related claims	1.000	.666

Acceleration claims	1.000	.664
Contract-related claims	1.000	.618
Client-related claims	1.000	.744
Extraction Method: Principal Component Analysis.		

The average communality of the variables after extraction, as shown in the table above, was 0.631. Therefore, the extracted communalities provide justification for employing factor analysis on the variables. It is evident that none of the items had eigenvalues below the 0.50 threshold, indicating that all variables meet the criteria for further analysis.

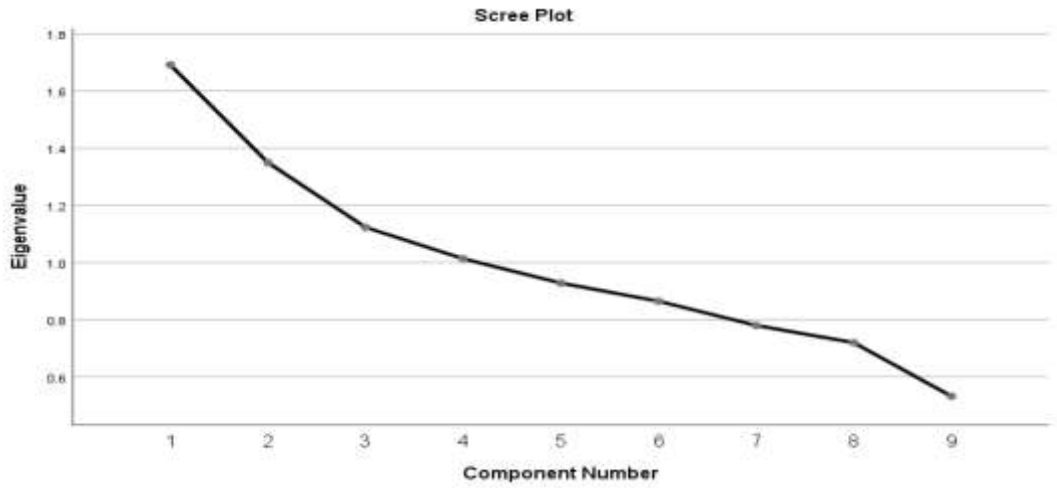

Figure 1: Scree plot

The scree plot resulting from the conducted EFA report includes seven factors according to Kaiser's rule, which suggests keeping elements with eigenvalues greater than one, and the observation that the scree plot displayed a steep decline after the third factor. The four factors collectively explain more than 50% of the total variance.

Table 3: Component matrix for Primary factors contributing to contractual claims

Component Matrix[a]				
	Component			
	1	2	3	4
Payment related claims		.443		**.751**
Change or variation claims	.426	.192		**.637**
Delay claims	.279	.380	**.661**	
Extra work claims	**.617**	.229		.350
Difference in pricing and measuring claims	.398	.432	**.574**	.106
Project-related claims	.288	**.561**	.444	.283
Acceleration claims	**.535**		.399	.117
Contract-related claims	**.647**	.418		.140
Client-related claims	.309	**.589**	.314	.102
Extraction Method: Principal Component Analysis.				
a. 4 components extracted.				

The findings from the results shown above indicate that 9-factors can be grouped into four (4) decision matrix (components) for primary factors contributing to contractual claims. However, four-principal components were later extracted for effectiveness. In the first component, 3 factors in that order loads positively maximally, 2 factors loaded positively maximally in the second component, while 2 factors load positively maximally in the third component. In the fourth and last component, 2 factors loads, positively maximally. From this result, the components that emerged could be the dominant underlining primary factors contributing to contractual claims in building projects in Imo state.

Table 4: ANOVA for primary factors contributing to contractual claims

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	27.785	9	3.087	1.336	.004[b]
	Residual	321.262	139	2.311		
	Total	349.047	148			
a. Dependent Variable: Public building project delivery						
b. Predictors: (Constant), Client-related claims, Project-related claims, Payment related claims, Delay claims, Extra work claims, Change or variation claims, Acceleration claims, Difference in pricing and measuring claims, Contract-related claims						

The regression model analyzed the impact of primary factors on contractual claims. The findings present the values of the coefficient of determination R squared and R, which are 0.08 and 0.682, respectively. The R-squared value indicates that 8.0% of the variation in the effects of the main factors that contribute to contractual claims in public building projects can be explained by the fluctuations in these factors. The coefficient of determination (R squared) suggests that the model's fit is not optimal. The adjusted coefficient of determination, which takes into account the number of predictors in the model, is 0.185, indicating a higher value compared to the unadjusted R square. This indicates that there is a possibility to improve the model's effectiveness by including an extra factor that influences the outcome variable. Adding an additional independent variable would lead to an increase in the R Square value, equivalent to the adjusted R square value.

Table 5: Coefficients for primary factors contributing to contractual claims

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.077	1.326		1.566	.120	.545	4.699
	Payment related claims	.175	.141	.104	1.241	.217	.454	.104
	Change or variation claims	.169	.126	.113	1.346	.181	.417	.079
	Delay claims	.358	.136	.224	2.629	.010	.089	.627
	Extra work claims	.036	.118	.027	.307	.759	.198	.271
	Difference in pricing and measuring claims	.086	.118	.062	.733	.465	.147	.319
	Project-related claims	.161	.121	.114	1.336	.184	.077	.400
	Acceleration claims	.055	.129	.036	.426	.671	.200	.310
	Contract-related claims	.227	.109	.106	1.166	.046	.342	.088
	Client-related claims	.186	.087	.084	.992	.023	.086	.258
a. Dependent Variable: Public building project delivery								

The result of an Analysis of Variance (ANOVA) that was performed to examine the impact of primary factors on contractual claims in public building projects was also presented. The analysis of variance (ANOVA) results for the regression coefficients indicate that the F value is 0.004, which suggests statistical significance at a significance model is highly appropriate for the given task level lower than 0.05. This implies that the predictor coefficient is not equal to zero, at the very least. This further indicates that the In table 5, the beta coefficients of all nine independent variables, which are the primary factors contributing to contractual claims, in relation to the public building project delivery in Imo state were also found out. The finding displayed a coefficient of 0.141 for payment related claims (X1), indicating that it is greater than zero. The calculated t statistic is 1.241, and the corresponding p-value is 0.217. This indicates that the coefficient of X1 is not statistically significant at the 0.05 level of significance. This indicates that payment-related claims do not have a significant impact on the main factors that contribute to contractual claims in the delivery of public building projects in Imo state. The magnitude of change or variation claims (X2) was 0.126, indicating a value greater than zero. The t statistic for this coefficient is 1.346, and the p value is 0.181, which exceeds the threshold of 0.05. This indicates that the coefficient is not significant. Due to the insignificance of the X2 coefficient, the change or variation claim does not have a significant impact on the primary factors that contribute to contractual claims.

The delay claim (X3) has a coefficient of 0.136, which exceeds zero as indicated by the coefficient table. The t statistic is 2.629, and the p-value is 0.010, which is smaller than 0.05. This indicates that the coefficient of X3 is statistically significant at the 0.05 level of significance. This indicates that delays have a substantial impact on the main factors that contribute to contractual claims. The table indicates that the extra work claim (X4) had a coefficient of 0.118, a t statistic of 0.307, and a p-value of 0.759 (which is greater than 0.05). Therefore, the X4 coefficient does not meet the level of significance at the 0.05 threshold. This illustrates that making additional work claims has a significant adverse impact on the main factors that contribute to contractual claims.

The coefficient of the difference in pricing and measuring claims (X5) was 0.118, with a t statistic of 0.733 and a p-value of 0.465 (which is greater than 0.05). This indicates that the coefficient of X5 is not statistically significant at the 0.05 level of significance. This illustrates that variations in pricing and measurement of claims have a significant adverse impact on the key factors that contribute to contractual claims. The project related claims (X6) had a coefficient of 0.121, a t statistic of 1.336, and a p-value of 0.184, which is greater than the significance level of 0.05. This indicates that the coefficient of X4 is not statistically significant at the 0.05 level of significance. This illustrates that claims related to the project have a significant adverse impact on the main factors that contribute to contractual claims. The acceleration claim (X7) had a coefficient of 0.129, a t statistic of 0.426, and a p-value of 0.671, which is greater than 0.05. This indicates that the X7 coefficient does not exhibit statistical significance at the 0.05 level of significance. This illustrates that the assertion of acceleration has a significant adverse impact on the key factors that contribute to contractual claims. The contract-related claim (X8) had a correlation coefficient of 0.109, a t-statistic of 1.166, and a p-value of 0.046 (which is equal to 0.05). This indicates that the X8 coefficient is statistically significant at the 0.05 level of significance. This illustrates that contract-related claims have a significant beneficial impact on the key factors that contribute to contractual claims. The client-related claim (X9) had a correlation coefficient of 0.087, a t-statistic of 0.992, and a p-value of 0.023 (which is less than the significance level of 0.05). This indicates that the X9 coefficient is statistically significant at the 0.05 level of significance. This illustrates that claims related to clients have a significant beneficial impact on the main factors that contribute to contractual claims.

Conclusion

From the outcomes of the results, the study now concludes that the most significant primary factors contributing to contractual claims on public building project delivery in Imo State are; contract-related claims; client-related claims; delay claims and payment-related claims. The study concludes that Delay claims (X_3) is the first important primary factor that has effect on public building project delivery in Imo state. The optimal model of the study shows that Delay claims (X_3) has a significant effect on public building project delivery in Imo state. This implies that increasing levels of Delay claims (X_3) by a unit would increase the levels of public building project delivery in Imo State. This shows that Delay claims (X_3) has a positive effect on public building project delivery in Imo State. Client-related claims (X_9) is the second important primary factor that has effect on public building project delivery in Imo state. The optimal model of the study shows that increasing levels of Client-related claims (X_9) by a unit would increase the levels of public building project delivery in Imo State. Finally, the study concludes that contract-related claims (X_8) is the third and last important primary factor that has effect on public building project delivery in Imo state. The optimal model of the study shows that contract-related claims (X_8) has a significant effect on public building project delivery in Imo state. Increasing levels of contract-related claims (X_8) by a unit would increase the levels of public building project delivery in Imo State.

REFERENCES

Adeyinka, H.A. & Yusif, A. (1997). The causes and effects of construction delays on completion cost of housing projects in Nigeria. *Journal of Financial Management Property and construction, 2*(3), 31-44.

Aghimien, D. O. & Awodele, O.A. (2017). Variability of cost and time delivery of educational building in Nigeria. *International Journal of Built Environment and Sustainability: IJBES*, *4*(3), 156-164.

Aibinu, A. A. & Jagboro, G. O. (2002). The effects of construction delays on project delivery in Nigerian construction industry. *International Journal of Project Management*, *20,* 593-599.

Akewusola, W.A.O. (2007). Effect of economic trade cycle on final cost of construction projects in Nigeria. *The Journal of the Nigerian Institute of Quantity surveyors, 55*(2), 31-40.

Alintah-Abel, U. & Nnadi, E. O. E. (2015). An assessment of foreign construction firms participation on the cost of construction works in Nigeria. *NIQS Proceedings,* 2-13.

Al-Qershi, M.T. & Kishore, R. (2017). Claim causes and types in Indian construction industry - contractor's perspective. *American Journal of Civil Engineering and Architecture, 5*(5), 196-203. http://pubs.sciepub.com/ajcea/5/5/3 ©Science and Education Publishing DOI:10.12691/ajcea-5-5-3.

Amade, B. (2016). *Development of supply chain management framework for successful construction project delivery in Nigeria*. Doctoral Thesis of the Federal University of Technology, Owerri, Nigeria.

Arditi, D. & Pattanakitchamroon, T. (2008). Analysis methods in time-based claims. *Journal of Construction Engineering Management, 134,* (4), 242-252.

Asuquo, C.A., Udo, I.E., & Otali, M. (2020). A conceptual framework for managing construction claims in the face of the COVID-19 pandemic in Nigeria. *International Journal of Real Estate Studies, 14*(1), 98-106.

Bajere, P. A., Galadima, U. N. & Durodola, O. D. (2017). Impact of selected project characteristics on construction claims in Niger State, Nigeria. *Covenant Journal of Research in the Built Environment (CJRBE), 5*(1), June 2017.

Barrie, D.S. & Paulson, B.C. (1992). Professional construction management. Mc. Graw-Hill, New York. 1992.

Boatright, J.R. (2002). Contractors as stakeholders: reconciling stakeholder theory with the nexus-of-contracts firm. *Journal of Banking & Finance, 26* (2002), 1837–1852. PII: S03 7 8-4 2 66 (0 2)0 01 9 4- 2.

Bramble, B.B. & Callahan, M.T. (1992). Construction delay claims. (2nd ed.). New York: Wiley.

Bryan, S. (2005). Inherent conflicts in the construction industry and the structure of contracts. Paper at the fundamentals of construction contracts: understanding the issues, Vancouver, BC. February 10, 1-23.

Chandra, H.P. (2005). Study of submitting construction claims from contractors to building owners. *Journal of Dimensi Teknik Sipil, 7*(2), 90-96.

Cheung, S. O, Suen, H. C.H. & Cheung, K. K.W. (2004). PPMS: a web-based construction project performance monitoring system. *Automation in Construction*, *13*, 361 – 376.

Chiwuzie, A., Dabara, D.I., Omotehinshe, O.J., Prince, E.M. & Aiyepada, E.G. (2021). Changing macroeconomic indicators and the rental values of residential properties in Ede, Nigeria. *African Journal of Built Environment Research, 5*(1), 1-18. https://doi.org/10.33796/ajober.5.1.01.

Cohen, J (1988). Statistical power analysis for the behavioural science. Hillsdale, NJ: Erlbaum.

Cox. R. K. (1997). Managing change orders and claims. *Journal of Management in Engineering, 13*(1), 24-29.

Cunningham, T (2014). Contractors' claims for loss and expense under the principle 'traditional' forms of Irish building contract, school of surveying.

Harris, R. A. & Scott, S. (2001). UK practice in dealing with claims for delay. *Engineering, Construction and Architectural Management, 5/6,* 317-324.

Igbokwe, S. O. (2025). Strategies for minimizing the effects of contractual claims on public building projects in Imo state. A master's thesis of the Federal University of Technology Owerri, Nigeria.

Kalogeraki, M. & Antoniou, F. (2024). Claim management and dispute resolution in the construction industry: current research trends using novel technologies. *Buildings, 14,* 967. 1-27. https://doi.org/10.3390/buildings14040967.

Krejcie, R.V. & Morgan, D.W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30,* 607-610.

Levin, P. (1998). Construction contract claims, changes & dispute resolution. (2nd ed.). New York: ASCE Press.

Obiegbu, M. E. (2005). Overview of total performance concept of buildings: focusing on quality, safety, and durability. Proceedings at the 34th Annual Conference of the Nigerian Institute of Building, held in Abeokuta. April 27-28. Pp 2-10.

Ojo, A. E. (2013). Comparative review of construction contract variation claims administration under FIDIC and standard forms of building contract of Nigeria. *Innovative and Sustainable Management of Building and Infrastructure Projects.*

Oyewobi, L. O., Jimoh, R. A., Ganiyu, B.O. & Shittu, A.A. (2016). Analysis of causes and impact of variation order on educational building projects. *Journal of Facilities Management, 14*(2), 139-164, https://doi.org/10.1108/JFM-01-2015-0001.

Sharafadeen, O., Babatunde, O. & Ajetomobi, O. O. (2015). Delay of building construction projects in Nigeria-a review of causes, effects and solutions. *International Journal of Engineering Sciences & Management Research,* www.ijesmr.com.