

Causes, effects and remedies of errors in Nigerian construction documents

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Research paper

ERRORS ENTAIL DIFFERENT MEANINGS AND USAGES DEPENDING ON HOW IT IS CONCEPTUALIZED. The purpose of this paper is to determine the causes, effects and remedies of the errors in Nigerian construction documents. A structured questionnaire was administered on ninety consultants (Builders, architects, engineers and quantity surveyors) obtained from regulatory bodies of each profession. Forty four questionnaires were returned and this gives a response rate of 49%. The findings of the research show that clients are the major stakeholders responsible for the generation of errors in Nigerian construction documents. The causes of the errors are lack of adequate documentation, poor communication, negligence and changes to specifications among others and the effects on construction projects include project abandonment, delays, rework, dissatisfaction by project owners and lack of confidence in project consultants. The suggested solutions include provision of comprehensive information, good communication among project teams, effective and efficient project management, constructability, design review management and adequate financial provision. The study recommends that clients should allow adequate time for the preparation of construction documents and adopt appropriate procurement method. The designers were advised to engage in partnering while preparing construction documents.

Keywords

Construction, Consultants,
Documents, Errors, Nigeria,
Project, Stakeholders

Background to the study

Error entails different meanings and usages depending on how it is conceptualized. According to Reason (1990), errors relate to those occasions in which a planned sequence of mental or physical activities fails to achieve its intended outcome, and when these failures cannot be attributed to the intervention of some chance agency. Furthermore, Busby (2001) defines errors as the occurrences which were unexpected, involve surprise and which could not be attributed entirely to chance or circumstance. The unsafe act and procedural violations of people at the sharp end (Reason, 2006). Unintended deviations from correct and acceptable practice that are avoidable (Love et al, 2008).

Construction documents on the other hand are the drawings, design specifications, quality control reports, and others (Hajjar & AbouRizk, 2000). Furthermore, Murdoch and Hughes (1997) defined contract documents as the means by which designers' intentions are conveyed to the client, the statutory authorities, the quantity surveyor, the contractor and sub-contractors. It was added that the contractor's basic undertaking is to carry out the works in accordance with these contract documents. The types of design errors (Atkinson, 1998; Love et al, 2011; Chapman, 1991), factors responsible for design errors (Palaneeswaran, Ramanathan & Tam, 2007; Shelton, 1999; Endsley, 1999, Barkow, 1995) and effects of design errors (Love et al, 2008, Oyewobi, Ibironke, Ganiyu & Ola-Awo, 2011; Mohammed, 2007) on construction projects have been studied by authors outside the Nigerian construction industry. However in Nigeria, this subject area appears to be virgin in spite of the continual poor project performance experienced in the country (Waziri, 2012).

The motivation behind this study is that the identification of the causes and effects of errors in construction

documents will provide a basis for error minimization in Building projects in Nigeria. Reduction of errors in construction documents will most likely project a better professional image for firms; lead to more effective design management and more fundamentally, improve the profitability and competitiveness of consulting firms. Against this background therefore, the objectives of the study are to identify the stakeholders that are mostly implicated in error causation in construction documents, identify the prevalent causes of errors in various construction documents, determine the prominent types of errors usually found in construction documents, identify the effects of errors in construction documents on building projects and determine the measures to be taken in order to reduce the occurrence of errors in construction documents.

Past studies

Hammarlund, Jacobsson and Josephson, (1990) investigated the sources of errors in a building project and found that the source of the error is the project itself. In another study, Josephson and Hammarlund (1999) discovered that, on the average, 32% of the defect costs originates from the client and the designers, 45% is related to site management, the workers and the sub-contractors and about 20% originates from materials or machines. Moreover, the Building Research Establishment (1981) found that 50% of errors in buildings had their origin in the design stage and 40% in the construction stage. The research carried out in Australia reveals that ninety-two (92%) of the variation in their construction industries were attributable to errors in construction documents and the clients shared 16%, design team shared 60%, documentation shared 1.2% and quantity surveying shared 4% (Choy & Sidwell, 1991). Diekman and Nelson (1985) also noted that the largest proportion of change orders and modifications originated

from the owners or their representatives (consultants/designers) and these account for 46% of claims in federally funded projects.

The survey by Kartam and Kartam (2001) in Kuwait shows that defective design is one of the most significant sources of errors in construction documents. A similar result was obtained in Japan (Sawada, 2000) and the US (Kangari, 1995). In another study, Stasiowski et al (1994) found that most design firms spend 25-50% of design man-hours redesigning details that have already been designed on other projects and correcting errors found during design reviews. Moreover, the occurrence of errors at the design stage is not limited to construction industry alone. The withdrawal of many cars from the market in order to change some systems in the cars (National Highway Traffic Safety Administration, 2000) was due to design errors.

There are various types of errors in construction documents and they have been classified in diverse ways. Rooney, Heuvel and Lorenzo (2002) classified errors in construction documents into unintentional and intentional errors while Atkinson (1998) classified them into active and latent errors. Other classifications are slips and lapses, mistakes, omission and violations (Mason, not dated; Love, et al, 2011); observational, conceptual/mapping, convention, measurement and keyboard errors (Chapman, 1991); skill-based, rule-based, knowledge-based and decision error (Foth, Byrne & Luther, Not dated); design, environmental and personnel errors (Cheng-Wing & Davey, 1998); intentional non compliance, procedural, communication, proficiency and operational decision (Helmreich, et al, 1999), errors (decision, skill-based and perceptual) and violations (Routine and exceptional) (Shappell & Wiegman, 2000), omission and commission (American Institute of Chemical Engineers, 2010). Errors in capital cost estimating,

design errors, errors in project contextual factors, errors and omissions in bills of quantities, errors in specifications (Mohammed, 2007).

A total of sixty two factors have been traced to errors in construction documents by various researchers in the construction industry (Palaneeswaran, Ramanathan & Tam, 2007; Love, Edwards & Han, N.D; Love, Mandal, Smith & Georgiou, N.D; Shelton, 1999; Cheng-Wing & Davey, 1998; Endsley, 1999; Barkow, 1995; Vrouwenvelder, Holicky & Sykora, 2009; Long, 2011; Love & Josephson, 2004 and Love, et al, 2008). As a result of the enormity of these factors, they were classified into management related factors, designers' factors, clients' factors, project characters and industry related factors (Mohammed, 2007). Since it is people who decide what to do, how it should be done, and who has to do it, it is assumed that all errors in design are originated from humans (Andi et al, 2003). Moreover, studies on construction failures (Sowers, 1993; Petroski, 1994) have reported that human and organizational factors were the major causes of the failures and only a few cases were caused by the absence of contemporary technology.

Errors in construction documents have had serious effects on construction projects and these effects are mostly manifested at the construction and post-construction stages of projects. The major effects identified are design-induced rework (Love et al, 2008), propagation of failure (Vrouwenvelder, Holicky & Sykora, 2009), structural collapse, financial loss, inconvenience, deterioration of buildings, personal injury and sickness, time delay, damaged equipment (Barkow, 1995), defects, wastages and inconveniences (Palaneeswaran, et al, 2007), conflicts and ambiguities (Olatunji, Not dated). Oyewobi, Ibronke, Ganiyu and Ola-Awo (2011) noted that reworks (usually caused by designers' errors) threaten design quality as a result of incomplete

and inexplicit drawings. Another serious effect of errors in construction documents is project cost overrun (Mohammed, 2007), procurement systems (Rashid, Taib & Ahmad, 2006), incomplete designs, change order, rework, construction delay, etc (Alarcon & Mardones, 1998).

Burati et al (1992) noted that the quality of the design and documentation provided has a major influence on the overall performance and efficiency of construction projects. Any improvement in design and documentation quality will lead to corresponding improvements in the efficiency of the construction process (Tilley, Mcfallan & Tucker, 1999). The suggestions provided by Mohammed (2007) to improve the performance of the construction industry through increasing the quality of construction documents include partnering, concurrent engineering, Electronic Document Management systems (EDM), Autodesk building systems 2005, Red-Green-Yellow checking technique, the REDICHECK method, the principle of single statement, sequencing of work process, Taguchi approach (quality by design), developing a corporate memory, design review management, Constructability, value management and quality function deployment.

Others include improving working conditions and procedures, build more error tolerance into the system (Airbus, 2005), monitoring oversight, procedural compliance, self check practice, independent verification, three-way communication strategy (Cheng-Wing & Davey, 1998), good human factor engineering, job relevant training and practice, help workers to achieve their social and psychological needs, improve overall system performance, provide ways to detect and correct human errors (Rooney, et al, 2002), project documentation, feedback from failures, motivation, supervisory control (Barkow, 1995), use of incident reporting system and data acquisition system (Ortega & Bisgaard, 2000),

change in attitude, develop design specifications that considers the functionality of the human with the same degree of care that has been given to the rest of the system (Lee, ND), adequate design time, briefing and the brief, competency, design task and information dependencies (Johansen & Carson, 2003), robotic error sensing and detection (Lee, Barnes & Hardy, ND), accurate mental models, reduce complexity, visibility, design for errors, standardization, user-centred design (Post note, 2001), regulation/enforcement (O'Hare, 2004), design planning scheme, work specification, task list (Alarcon & Mardones, 1998), avoid 'quick fix' trap and a single corporate focal point (Manusco, 1995).

Research method

A structured close ended questionnaire was designed to capture data on the types, causes, effects and remedies to the occurrence of errors in Nigerian construction documents. Ninety copies of a questionnaire were administered on consultants (Architects, Engineers, Quantity Surveyors and Builders) in the Nigerian construction industry. Forty-four responses were obtained to give a return rate of 49%. The questionnaire was divided into general information of respondents, causes of errors according to construction documents, stakeholders' influence on generation of errors, common types of errors according to construction documents, effects of errors and remedies to the occurrence of errors in construction documents. The data for the study was basically collected from consultants that were based in Lagos state, Nigeria.

A list of Lagos-based registered consultants was obtained from professional Registration Boards like Architect Registration Council of Nigeria (ARCON), Council for Regulation of Engineering (COREN), Council of Registered Builders of Nigeria (CORBON) and Quantity Surveyors Registration Board of Nigeria (QSRBN). The questions were

based on a 4 point Likert scale ranging from 1, lowest to 4, highest. The results of the study was computed through the use of Statistical Package for Social Sciences (SPSS 17) using frequencies, percentages and mean scores.

Results and findings

Table 1 shows the information of the respondents for this study. The study covers building projects out of which 63.6% were residential, 22.7% were commercial and 13.6% were industrial. 40.9% of these respondents deal with public projects while 59.1% deal with private projects. The highest academic qualifications of respondents were HND (18.2%), B.Sc (45.5%) and M.Sc (36.1%). 31.8% of the respondents had less than 5 years of work experience, 27.3% had 6-10 years, 18.2% had 11-15 years, 18.2% had 16-20 years and 4.5% had above 20 years of work experience. 9.1% of the respondents were builders, 22.7% were architects, 31.8% were engineers and 36.4% were quantity surveyors. 68.2% of the respondents practice consultancy while 31.8% practice contracting. The respondents were asked to conceive a building project that would be used to answer subsequent questions on errors in construction documents and 31.8% of the conceived projects were below N100 million, 27.3% conceived N101-N500 million projects, 18.2% conceived N501 million-N1 billion and 22.7% conceived projects worth more than N1 billion. 22.7% of the conceived projects were to be completed in less than 1 year, 72.7% were to be completed between 1-3 years and 4.5% were to be completed after 3 years.

The causes of errors in construction documents were tabulated according to construction documents in table 2. The causes of errors in construction documents that fell below 2.5 were expunged from the results as they are regarded as having causes that affect construction documents to a low extent. Errors in bill of quantities are

	Frequency	Percentage (%)
Type of building project		
Residential	28	63.6
Commercial	10	22.7
Industrial	6	13.6
Total	44	100
Type of client		
Public	18	40.9
Private	26	59.1
Total	44	100
Highest academic qualification		
HND	8	18.2
Bsc	20	45.5
Msc	16	36.1
Total	44	100
Work experience of respondents		
Less than 5yrs	14	31.8
6-10yrs	12	27.3
11-15yrs	8	18.2
16-20yrs	8	18.2
above 20yrs	2	4.5
Total	44	100
Profession of respondents		
Building	4	9.1
Architecture	10	22.7
Engineering	14	31.8
Quantity surveying	16	36.4
Total	44	100
Services rendered by the Organizations		
Consultancy	30	68.2
Contracting	14	31.8
Total	44	100
Estimated contract sum		
below N100m	14	31.8
N101m - N500m	12	27.3
N501m - N1bn	8	18.2
Above N1bn	10	22.7
Total	44	100
Project duration		
less than 1 year	10	22.7
1-2yrs	32	72.7
above 3yrs	2	4.5
Total	44	100

Table 1 General Information about the Respondents

CAUSES	Mean scores	Standard deviation	Rank
1. Bill of quantities			
Lack of adequate documentation	2.74	0.801	1
Poor communication between the professional and the client	2.65	0.766	2
Negligence of the professional	2.52	0.658	3
2. Drawings			
Deficient or missing input information	3.14	0.979	1
Incomplete drawings	3.14	0.765	1
Insufficient Planning and design work	2.86	0.979	3
Design error	2.64	0.892	4
Negligence of the professional	2.57	0.544	5
Incorrect drawings	2.57	0.886	5
3. Specification			
Changes to specification	3.00	0.961	1
Incorrect drawings	2.86	0.843	2
Insufficient planning and design work	2.77	0.677	3
Designer's experience	2.73	0.665	4
4. Form of contract			
Poor cost control method	2.86	0.878	1
Availability of detailed information	2.86	0.824	1
Lack of adequate documentation	2.77	0.677	3
Long period between time of bidding/tendering and award	2.73	0.758	4
5. Schedules			
Availability of information	2.76	0.617	1
Professional's experience	2.73	0.617	2
Lack of adequate documentation	2.59	0.787	3
Lack of adequate computatio	2.55	0.791	4

1= No extent, 2= Low extent, 3= high extent, 4= Very high extent

Table 2 Common causes of errors in construction documents

caused mostly by lack of adequate documentation (2.74), poor communication between professionals and client (2.65) and negligence of professionals (2.52).

Errors in drawings are caused by deficient or missing input information (3.14), incomplete drawing (3.14), insufficient planning and design work (2.86), design errors (2.64), negligence of professionals and incorrect drawings (2.57) and incorrect drawings (2.57). Errors in specifications are caused by changes to specifications (3.00), incorrect drawings (2.86), insufficient planning and design work (2.77), and designers' error (2.73). The causes of errors in form of contract are poor cost control method (2.86), non availability of detailed information (2.86), lack of adequate documentation and long period between time of bidding (2.77), tendering and award (2.73). In schedules, the causes of errors are non availability of information (2.76), professionals' experience (2.73), lack of adequate documentation (2.59) and lack of adequate computation (2.55).

Table 3 shows that the client (2.78) has the greatest influence on the generation of errors in construction documents. This is followed by architects' (2.77) influence, quantity surveyors (2.68), engineers (2.64) and builders (2.59). This means that to reduce the occurrence of errors in construction documents, the holes through clients, architects, quantity surveyors and engineers must be plugged.

Table 4 indicates that the causes of errors in construction documents when preference is not given to individual documents are professionals' inexperience (3.35), non availability of information (3.32), lack of quality management (3.26), negligence of professionals (3.17), insufficient planning and design work (3.00), design error (2.91) and employing the wrong procurement method (2.80).

Table 5 reveals that the common types of error in drawings are design errors (3.52), poor coordination

between design disciplines (3.36), inaccuracy of details (3.36), dimensional errors (3.14), missing information (3.05) and symbol and abbreviation error (2.82).

The common types of errors in bills of quantities are approximation error (3.45), measurement errors (3.41), omission and ambiguity (3.18), dimensional error (3.00), random errors (3.00) and arithmetic error (2.91). In specifications, the common types of errors are design errors (3.43), poor coordination between design disciplines (3.36), missing information (3.23), abbreviation (2.82) and symbol errors (2.77). The common types of

errors in schedules are pricing error (3.36), missing information (3.23) and arithmetic error (2.86). The types of errors in forms of contract are document does not conform to code (2.91), symbol errors (2.86), biddability (2.86), abbreviation error (2.76) and document does not conform to building regulations (2.68).

The effects of errors in construction documents on building projects were indicated in table 6. Abandonment of project (3.45) tops the list, followed by delay (3.45), rework (3.21), dissatisfaction by project owners (3.18), lack of confidence in consultants (3.14), reputation of consultants' office (3.10), frustra-

Stakeholders	Mean Item score	Standard deviation	Rank
Client	2.78	0.759	1
Architect	2.77	0.902	2
Quantity Surveyor	2.68	0.743	3
Engineer	2.64	0.769	4
Builder	2.59	0.794	5

1= No influence, 2= Low influence, 3= high influence, 4= Very high influence

Table 3 Stakeholders' influence on generation of errors in construction documents

Sources	Mean score	Standard deviation	Rank
Professional's inexperience	3.35	0.706	1
Non availability of information	3.32	0.771	2
Lack of quality management	3.26	0.855	3
Negligence of the professional	3.17	0.825	4
Insufficient planning and design work	3.00	0.667	5
Design error	2.91	0.784	6
Employing the wrong procurement method	2.80	0.795	7

1= No extent, 2= Low extent, 3= high extent, 4= Very high extent

Table 4 Collective causes of errors in construction documents

Types	Mean score	Standard deviation	Rank
Drawings			
Design errors	3.52	1.065	1
poor coordination between design disciplines	3.36	0.892	2
Inaccuracy of details	3.36	1.036	2
Dimensional errors	3.14	1.112	4
Missing information	3.05	0.939	5
Symbol and abbreviation errors	2.82	0.843	6
Bill of Quantities			
Approximation error	3.45	1.088	1
Measurement errors	3.41	0.897	2
Omissions and Ambiguity	3.18	0.896	3
Dimensional errors	3.00	0.747	4
Random errors	3.00	0.807	4
Arithmetic errors	2.91	1.030	6
Specifications			
Designer errors	3.43	1.063	1
Poor coordination between design disciplines	3.36	1.123	2
Missing information	3.23	0.803	3
Abbreviation	2.82	1.040	4
Symbol errors	2.77	1.054	5
Schedules			
Pricing errors	3.36	0.990	1
Missing information	3.23	0.912	2
Arithmetic errors	2.86	0.765	3
Form of Contract			
Documents does not conform to code	2.91	1.254	1
Symbol errors	2.86	0.765	2
Biddability	2.86	0.824	2
Abbreviation errors	2.76	0.983	4
Documents does not conform to building regulations	2.68	1.029	5

No extent, 2= Low extent, 3= high extent, 4= Very high extent

Table 5 Common types of errors according to construction documents

Effects	Mean score	Standard deviation	Rank
Abandonment of project	3.45	0.791	1
Delays	3.45	0.663	1
Rework	3.21	0.777	3
Dissatisfaction by project owners	3.18	0.896	4
Lack of confidence in consultants	3.14	0.878	5
Reputation of consultant office	3.10	0.821	6
Frustration on stakeholders	3.05	0.776	7
Lack of concentration on other projects	2.86	0.765	8
Discourages investment	2.73	0.973	9
Designer's profit	2.73	0.694	9

1= No extent, 2= Low extent, 3= high extent, 4= Very high extent

Table 6 Effect of errors in the construction documents on building projects

Remedies	Mean score	Standard deviation	Rank
Provision of comprehensive information	3.77	0.424	1
Good communication among the construction project team	3.73	0.451	2
Effective and efficient project management	3.57	0.587	3
Constructability	3.38	0.492	4
Design review management	3.27	0.758	4
Adequate financial provision	3.18	0.896	5
Electronic documents management systems	3.14	0.632	6
Employing the right procurement method	3.11	0.722	7
Partnering	3.05	0.854	8
Adequate contingencies allowance	2.91	0.910	9

1= No extent, 2= Low extent, 3= high extent, 4= Very high extent

Table 7 Extent to which remedies can reduce errors in construction documents

tration on stakeholders (3.05), lack of concentration on other projects (2.86), discouragement of investment (2.73) and designers profit (2.73).

To minimize the incidence of errors in construction documents, the measures to be taken were described in table 7. The top remedies according to respondents are provision of comprehensive information (3.77), good communication among the construction project team (3.73), effective and efficient project management (3.57), constructability (3.38), design review management (3.27), adequate financial provision (3.18), electronic document management system (3.14), employing the right procurement method (3.11), partnering (3.05) and adequate contingencies allowance (2.91).

Discussion of findings

The findings of this study show that there are different causes of errors in the Nigerian construction documents. Errors in bills of quantities are caused by lack of adequate documentation, poor communication and negligence of professionals. This is found to be consistent with the study of Burati et al (1992) and Cheng-wing (1998). Errors in drawings were caused by missing information, incomplete drawings, insufficient planning, design errors and incorrect drawings. This is also in agreement with the results of Alarcon and Mardones (1998). Changes to specifications, incorrect drawings, designer experience (Specification), poor cost control method, lack of detailed information, lack of adequate documentation (form of contract), availability of information, professional's experience and lack of documentation (schedules) are other causes of errors in construction documents. The consistency of the result was found in Love et al (2008) for design checks, audits and reviews, Barkow (1995) for lack of knowledge, Love et al (2009) for professional practice and Atkinson (1997) for education and experience, inspection and control.

This indicates that the causes of errors in construction documents are different in the areas of changes to specifications, incorrect drawings, lack of detailed information and lack of adequate documentation and this may be due to the inexperience of many designers in the Nigerian construction industry. Some clients also seem to be in a hurry and they want contractors to go to site almost immediately with priority for document preparation. Some professionals also carry out other professionals' duties which could lead to many of the inadequacies that are peculiar to the Nigerian construction industry.

Just like other studies (Josephson & Hammarlund, 1999; BRE, 1981; Choy & Sidwell, 1991; Diekmann & Nelson, 1985) the study discovered that clients are the stakeholders that are mostly responsible for the generation of errors in Nigerian construction documents. This is followed by the architect, quantity surveyor, engineers and builders respectively. However, Hammarlund et al (1990) noted that it is not the stakeholders that influence the generation of errors in construction documents but the projects themselves. The general causes of errors in construction documents were found to be professionals' inexperience, lack of information, lack of quality management, negligence, insufficient planning, design error, wrong procurement method and lack of understanding of the conditions of contract. This result agrees with other studies in the area of defective design (Kartam & Kartam, 2001), insufficient planning, design errors (National Highway Traffic Safety Administration, 2000), negligence and lack of knowledge (Barkow, 1995) and procurement (Rashid, Taib & Ahmad, 2006). However, there is difference in the area of procurement methods and lack of understanding of conditions of contract. The traditional method of procurement is the most popular in Nigeria and because it empowers the architects more than other professionals,

there are tendencies that architects would not put in their best to prevent the occurrence of errors in construction documents. The mistake of the architect would likely transfer to other designers' documents such as structural drawings and bills of quantities among others.

Design errors, poor coordination between disciplines, inaccuracy of details, dimensional errors (Drawings), approximation, measurement, dimensional and random errors (bill of quantities), abbreviation, symbol and missing information (specification), pricing and arithmetic errors (schedules), symbol, biddability and abbreviation error (form of contract) are the most common types of errors in Nigerian construction documents. These errors were equally noted by Mohammed (2007) as being common in Saudi Arabian construction documents. Bridges and Tew (2010) discovered that omission and commission errors and measurement and conventional error (Chapman, 1991) were common in construction documents.

The effects of errors on construction documents were found to be project abandonment, delay, rework, dissatisfaction by project owners and lack of confidence in consultants among others. This result is similar to that of Alarcon and Mardones (1998) in the area of delay and love et al (2008) in the area of reworks. However, other effects found in the study differ from the ones in the literatures reviewed. This may be due to the level of experience of the designers in the Nigerian construction industry.

The remedies suggested by this study were found to be consistent with the ones provided by Mohammed (2007) and Cheng-Wing (1998). However, the remedies were found to vary in the area of communication, project management, financing, procurement and contingencies allowance. Communication problem appears to be a problem in most sectors in Nigeria. Project management is not a popular procure-

ment method in Nigeria, therefore it is likely to be a problem for document production. Project financing is a herculean task because money lending rate in Nigeria banks is on the high side. The traditional procurement method is the most popular procurement in Nigeria in spite of the advent of newer procurement methods. The traditional procurement method empowers the architect and discourages project managers, hence the likelihood of making mistakes.

CONCLUSION AND RECOMMENDATION

The conclusion of this study is that the causes of errors in Nigerian construction documents are lack of documentation, poor communication between professionals and clients, incomplete and incorrect drawings, missing input information, changes to specification, poor cost control method and long period between bidding, tendering and award. It was also concluded that the clients are the stakeholders that are mostly responsible for the generation of errors in Nigerian construction documents.

The errors in Nigerian construction documents emanates from professionals' inexperience, non availability of information, lack of quality management, negligence, insufficient planning, use of wrong procurement method and lack of understanding of the conditions of contract. In order to prevent errors in Nigerian construction documents, there is need to always get comprehensive information for the design of construction documents, good communication among project participants, effective project management, constructability, design reviews management, electronic document management system, partnering and contingencies allowance.

Therefore, it was recommended that since there are several types of errors plaguing Nigerian construction documents, clients should always allow adequate time for the preparation of

construction documents so that there would be comprehensive information to use for the design of construction documents, constructability and design reviews. Designers should also be encouraged to partner with other designers while preparing construction documents and clients are advised to use the right procurement methods for construction projects.

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