

Common Risk Mitigating Mechanisms Adopted In Southeast Nigerian

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Submitted: 01-04-2022

Revised: 04-04-2022

Accepted: 07-04-2022

ABSTRACT

The nature and unique features of construction activities, make it prone to high risk inherent in the construction process. Thus, there is pressing need to identify the common risk mitigation mechanism considering the peculiarities of southeast Nigeria. The research was pursued through the use of a structured questionnaire administered to the professionals within the South East states. The questionnaire was distributed to (60) firms but only (50) were obtained filled, the data collected in the survey were subjected to statistical analysis. The result revealed among others that; the reliable means of mitigating the effect of risk in construction is the use of insurance cover and it's frequently used in the area. The result also revealed that consultants are the most reliable risk management advisors. Consequently it is recommended that contractors to take up insurance cover and also seek for the professional advice of consultants in order to manage the risk inherent in the construction process. Also, there is need for increase in the level of awareness of insurance, government should implement and make it mandatory for construction firms to undertake at least one of the established insurance policies as it's applied to construction industry

Keywords: Risk Mitigation, Construction Industry

I. BACKGROUND OF THE STUDY

The construction industry is considered as one of the most hazardous industrial sectors wherein the construction workers are more prone to accidents. Construction projects involve numerous unpredictable and complex processes which are

plague with risk. Size can be one of the major causes of risk, so can change in political or commercial planning, other factors carrying risk with them include complexity of construction project, location, speed of construction and familiarity with the type of work. It is commonly known that accidents have serious implications to the construction industry both in financial and humanitarian terms. Construction accidents may cause many problems, such as demotivation of workers; disruption of site activities; delay of project progress; and adversely affecting the overall cost, productivity and reputation of the construction industry (Mohamed, 2009)

In most developing countries, including Bhutan, safety consideration in construction project delivery is not given a priority, and employment of safety measures during construction is considered a burden (Udo, Usip & Asuquo, 2016)

The level of risk in construction projects is due to the uniqueness of every project, the uncertainties introduced by the project stakeholders, regulatory protocol, and many other factors at the start of any project (Larson, 2008).

Considering the adverse impacts of accidents, construction safety management is of genuine concern to all stakeholders in the construction industry. Government, unions and insurers have spent a great deal of time and effort attempting to evolve legislation, rules and regulations to help reduce the large loss of life and limbs, and the high number of "lost-work days" (Ogbu., 2013)

In the context of project define risk an uncertain event or condition that if occurs, has

positive or negative impact on a project objectives. Risk condition could include organization or project environment than enhance the risk. A risk has a one or more causes and if occurs has will have one or more impact. For example, accident may bring down a team member, or there could be change in scope requirement, market fluctuation if any of these uncertain event occurs, it will have impact to the cost, schedules, and quality of the project. Risk in construction has been the object of attention because of time and cost overrun associated with construction project. Too often these risk are not dealt with satisfactorily and the industry has suffered poor performance as a result (Tah and Carr, 2000)

Unlike the developed countries, genuine risk management practices are still at infancy stage in Nigeria (Odunsami et al 2002). Clients and contractors' knowledge of its significance is skewed and it is no news that they are risk shy (Winch 2002). Risk exists when a decision is expressed in terms of a range of possible outcomes and when known probabilities can be attached to the outcome. Similarly, uncertainty exists when there is more than one possible outcome of a course of action but probability of each outcome is not known (Smith et al 2006). Thus the application of risk management allows for effective management of expected events where the outcome is either to the benefit or detriment of the decision maker where the ultimate purpose of risk management is risk mitigation (Shofoluwe and Bogale 2004)

Consequently, there is need understudy the risk mitigation strategies commonly used in the construction industry with reference to the Suth east Nigeria and establish the professionals opinin on the on the most viable option taking into consideration the percularities orthe uniqueness of the southeast state. to That is the why the need to study the risk effects on construction arises, there by addressing method to counter there impact as well as educating the construction organization toward understanding the issue of insurance in general, there by highlighting the main problems associated with the insurance in construction and Providing possible solutions respectively.

This research work intend to outline the challenges faced by professionals in construction industry specifically contractors in insuring construction projects with the view to suggesting possible ways through which its use could be improved.

II. LITERATURE REVIEW

Statement of fact in insuring construction risk

The construction activity poses great risk exposure for the investor. This is due to its unique nature as no construction site project is the same; each requires a varying number of skills (very wide skill pool on large project), spanning a few months to many years, timing, currency and other financial related issues, design, contractual, labor and force majeure are some of the risks associated with construction. Like majority of risks, if not properly managed, these could result in significantly high cost implications, impacting negatively on projects and has been through many examples, derail the objectives of the projects entirely.

An insurance product is designed as a basic form of risk management to provide protection against possible loss of life or assets. In construction, insurance product help to transfer a variety of risks from client, contractor, and other related agents to insurers, who provide contingency that, mitigate losses via a promise of compensation for specific potential future losses in exchange for periodic payments.

Odeyinka (2000) investigate the use of insurance in managing construction and found out that the most favored policy is the all- risk policy, all-risk policy covers all the anticipated risk in construction except those specified by exclusion clauses, the policy is found to be more effective in protecting the insured against all planned losses covered in construction works and the preference placed on it is due largely to convenience, ease of settlement and the coverage of broad risk factors

Sources of risk in construction

Research found that risks are typically determined in the initial phase of a project, while the impacts are not experience until the construction phase. Because of this, the primary responsibility for managing risks lies with the client and consultants.

The main risks originating from the client include: frequent and late changes at critical stages of design and construction processes, resulting in scope modifications and variation; unrealistic expectations, requiring the project to be constructed too quickly and defect-free, yet at minimal cost ; inability to comprehensively articulate own and users need and requirements, resulting in poorly defined scope of work; and delay in decision making, often due to conflicts in multi stake holders interest

The main risks originating from consultants include: incomplete design information; delay in supplying information

required by contractors; design errors and frequent changes resulting in variations, claim and cost escalation; not taking into consideration the design, construction methods familiar to the contractors; and poor information documentation.

Mitigating risks in construction

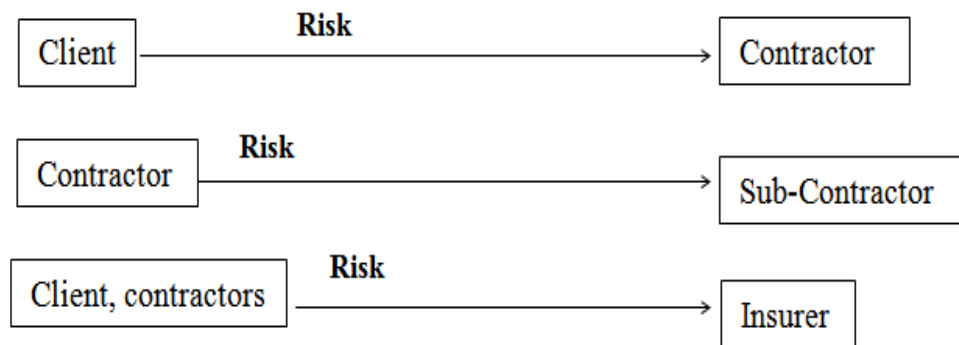
Risk is a universal phenomenon which is inherent in all human endeavors. Risks are ever present depending on the uncertainties and the consequences; they are accepted routinely measures are taken to minimize their impacts, risks cannot be avoided in any business not even construction. But it may be avoided, mitigated or transferred, project management institute suggested three ways of responding to risk in construction projects, they are; risk avoidance, reduction, and retention. Ahmed et al. (2002), Akintoye and Enshassi and Mayer (2002) have added risk transfer as another way of risk response. From the review of various authors, some tools have been identified for mitigating the effect of risk

in construction. These are the use of insurance policy, use of contingency sum and the use of contingency plan, the combined way of responding to risk and the tool employed to manage them constitute the way by which the effects of risk can be mitigated.

Risk transfer

The essential characteristic of risk transfer is to share it with or transfer the total risk to other party. The transfer of allocation of risk to another party can be done either via the condition of contract to another party or via an insurance policy by payment of an agreed insurance premium for the risk. Risk can be passed on to other parties, but unfortunately this does not normally eliminate the risk, it just makes someone else worry about it.

- Insuring against the impact of an event
- Sub-contracting to another party
- Modifying the contract conditions to ensure the risk is modified



RESEARCH METHOD

The study was pursued using a quantitative research approach that entailed a field work that was carried out using a Structured questionnaire was administered to professionals in construction firms who have reasonable knowledge related to construction matters.

The target population were professional involve in the construction industry practicing within Imo state and Abia State, the respondents are all experienced and practicing professionals who worked with small, medium and large scale construction firms and Also have an awareness on insurance. A sample size of 60 questionnaires was administered out of which only 50 were fully completed and returned. Question regarding the problem of this research work were drawn up and

computed in a questionnaire soliciting information from respondents.

The question regarding the purpose of this research work were drawn up based on selection and ranking using Likert scale principle, toward this research question. The data acquired from the field survey were analysed using; Descriptive statistic frequency, Frequency distribution tables and mean weight. The data was arranged in a table and percentage out of each question determined. For those have to do with ranking, the mean weight will be determined as: $Mean\ weight\ (M_w) = \frac{\sum fx}{\sum f}$
 Where f= frequency of the respondent and x= is the ranking scale of respondent.

III. DATA, PRESENTATION, ANALYSIS AND DISCUSSION

Data Presentation and Analysis

Table 1 presents the percentage response gotten from the distribution of the questionnaires.

From the Table it can be deduced that out of a total of 60 questionnaires distributed 50 were returned satisfactorily filled which represent a response rate of 83.33 percent.

Table 1: Percentage Response

Questionnaire	number	percentage (%)
Distributed	60	100
Returned	50	83.33%

Source: Field Survey, 2018

Respondent Profile

Table 2 presents the respondents profile. From the Table it reveals that largest proportions of the respondents are contractors making 28% of the total. The next groups are project managers making 26% of the total respondents, developers making 24% of the total. However the least are consultants making 22% of the total.

Similarly, it can be deduced that based on the years of experience of respondents, a largest portion of the respondents falls within the age group of 10-20 years, making 36% of the total, the next groups are 6-10 years making 30% of the total respondents, followed by age group 1-5 years making 22% of the total. However the least proportion of the respondents falls within age group of above 20 years, making 12% of the total population.

Also the table reveals that the largest proportion of the respondent are engaged in building works making 54% of the total. The next groups of the respondents stated their nature of construction to be both building and civil engineering works making 34.0% of the total. While least proportion of the respondents stated

their nature of construction company to be Civil engineering works making 12.0% of the total

The Table further reveals years of operation of construction firms. The table shows that the majority of the respondent indicates their years of operation as a company, to be 11-20 years making 56% of the total respondents; the next groups are above 20 years of operation making 24% of the total, followed by 6-10 years of operation making 10% of the total. However the least groups falls within 1-5 years of operation making 8% of the total.

Finally, the Table presents the educational qualification of the respondents. The table shows that the highest proportion of the respondents indicate their educational qualification as B.sc making 44.0% of the population and the next are 19 respondents that stated their educational qualification to be HND making 38.0% of the total, 5 respondents indicate their qualification as M.sc making 10.0% of the total respondents, while the least respondent indicate their qualification to fall under ND making 8.0% of the population.

Table 2: Respondent Profile

S/N	Profile	Option	Frequency (No)	Percentage (%)
1	Category of respondent	a) Consultant	11	22.0
		b) Contractor	14	28.0
		c) Developer	12	24.0
		d) Project manager	13	26.0
		Total	50	100
2	Years of Experience of respondents	a) 1-5yrs	11	22.0
		b) 6-10yrs	15	30.0
		c) 10-20yrs	18	36.0
		d) Above 20yrs	6	12.0

		Total	60	100
3	Nature of Construction Company	a) Civil works	6	12.0
		b) Building	24	48.0
		c) Both	20	40.0
		Total	60	100
4	Duration of company existence	a) 0-5yrs	4	8.0
		b) 6-10yrs	6	12.0
		c) 11-15yrs	28	56.0
		d) 20yrs and above	12	24.0
		Total	60	100
5	Highest Educational qualification of respondents	a) ND	4	8.0
		b) HND	19	38.0
		c) Bachelor's Degree	22	44.0
		d) Masters	5	10.0
		Total	60	100

Source: Field Survey, (2018)

Viable Source of Advice on Risk management in the Construction industry

Table 3, presents the respondents ranking of effectiveness of various sources of advice on risk management, Consultant (RII= 0.87) was identified as the most viable source of advice on risk management. This was closely followed by the

following insurer, design team, and Construction team with Relative Importance Index (RII) of 0.82, 0.74, and 0.70 and ranked second, third and fourth respectively. Other sources of viable advice on risk management and their ranking are as presented in the Table.

Table 3 Effectiveness of acquiring professional advice on risk management

S/N	Sources of Advice	ΣF	ΣFX	MEAN	RII	RANK
1	Insure image	50	206	4.12	0.82	2 nd
2	Design team	50	184	3.68	0.74	3 rd
3	Consultants	50	214	4.28	0.86	1 st
4	Construction team	50	174	3.48	0.70	4 th
5	General contractor	50	147	2.94	0.59	5 th
6	Clients	50	97	1.94	0.39	6 th

Source: Field Survey, (2018)

Where 1= least effective, 2=effective, 3=moderately effective, 4=effective 5=very effective

Common Risk Mitigation Mechanism used in the Southeast Nigeria

The respondents ranked the various available risk mitigation mechanism and the result of the analysis is as presented in the Table 4. From the Table, Insurance was ranked the most common

used and effective risk mitigation process. This was closely followed by 'Bonds', 'Contingency sum' and contingency plan which ranked second, third and fourth respectively. The least ranked as indicated by the respondents is 'surety', details are as presented in the Table

Table 4Frequency of Usage of Risk Mitigating Mechanisms in Construction

S/N	Risk Mitigating Mechanisms	∑F	∑FX	MEAN	RII	RANK
1	Insurance	50	202	4.04	0.81	1 st
2	Bonds	50	161	3.22	0.64	2 nd
3	Surety	50	101	2.02	0.40	5 th
4	Contingency sum	50	151	3.02	0.60	3 rd
5	Contingency plan	50	158	3.16	0.63	4 th

Source: Field Survey, (2018)

Where 1= least frequent, 2=less frequent, 3=moderately frequent, 4=frequent, 5=most frequent

Degree of Effectiveness (Mechanism Used) For Preventing Loses Of Construction Materials on Site

Table 5: shows the degree of effectiveness of some mechanism that can be employed to guide against loss of construction materials on sites as a result of theft and defect caused by harsh weather conditions. The table

reveals that adequate supervision and insurance cover were found to be the effective mechanism weighting 4.14 and 4.06 respectively, followed by proper management of the construction site and site security employment weighting 3.14 and 3.0 respectively, However the less effective mechanism which is adequate skill labour employment weighing 2.24.

Table 5.Degree of effectiveness (Mechanism used) for preventing Loses of construction materials on site as a result of theft and defect by weather)

S/N	Mechanism used) for preventing Loses of construction materials	∑F	∑FX	MEAN	RII	RANK
1	Site security employment	50	150	3.0	0.60	4 th
2	Insurance cover	50	203	4.06	0.81	2 nd
3	Adequate skill labor employment	50	112	2.24	0.45	5 th
4	Proper site management	50	157	3.14	0.63	3 rd
5	Adequate supervision	50	207	4.14	0.83	1 st

Source: Field Survey, (2018)

Where 1= least frequent, 2=less frequent, 3=moderately frequent, 4=frequent, 5=most frequent

Degree of importance to contractors for decreasing the likely hood of financial hardship and frequency of payment of premium

Table 6. Indicates some the degree of importance some approaches adopted by contractors for decreasing the likely hood of financial hardship that contractors may suffer

during construction. The table shows that the most important approaches was found to be insurance weighting 4.52, followed by cost planning and cost control weighting 4.18 and 4.1 respectively i.e. important, while the moderately important approach was found to be contingency.

Table 6: Degree of importance to contractors for decreasing the likely hood of financial hardship

S/N	Approaches	∑F	∑FX	MEAN	RII	RANK
1	Cost planning	50	209	4.18	0.84	2 nd
2	Cost control	50	205	4.10	0.82	3 rd
3	Insurance	50	226	4.52	0.90	1 st
4	Contingency	50	145	2.9	0.58	4 th

Source: Field Survey, (2018)

Table 7, shows the periodic payment of premium to the insurer. The table reveals that the largest proportion of the respondent indicated that they pay premium semi-annually making 46% of

the total, followed by those that pay annually making 38% of the total and least proportion of the respondent pay quarterly making 16% of the total.

Tables 7 how often do you pay premium to the respective insurer?

Often	frequency	percentage (%)
Quarterly	8	16.0
Semi- Annually	23	46.0
Annually	19	38.0
Total	50	100.0

Source: Field Survey, 2018

IV. DISCUSSION OF RESULTS

Table shows that the majority of the professional investigated are contractor, there response is very important because of their direct involve in construction. Table 4.3 the largest proportion are engage in building works, from this it could be deduced that majority of construction firms investigated are involved in building works as indicated on table 4.3. From the table 4.5 it be seen that majority of the professionals investigated are B.sc holders, having reasonable years of working experience of about 10-20 years. These places certain level of reliability on the data collected.

Table 4.6 indicate that large portion of the professional (34%) investigated are not absolutely aware of insurance as a means of mitigating risk, also from table. table 4.13 highlight the percentage of projects usually indemnify with insurance by construction firms, the result shows weak percentage of project being covered with insurance. This calls for increased awareness on the subject among professional. Majority of the projects (90%) indemnified with insurance by construction firms investigated are medium and large scale projects, this is because Size of a project can be one of the major causes of risk, and other factors carrying risk with them include complexity of construction project, location, speed of construction and familiarity with the type of work, large proportion of the firms investigated pay relatively high premium as indicated on table 4.8. from the table 4.17 it could be seen that the high premium is the main factor mitigating the use of insurance by construction firm.

Research found that risks are typically determined since in the initial stage of a project, while it impacts are experience at the construction phase, table 4.9 shows that the effective advise on issues related to risk can be acquired effectively from insurer, consultants, design team, and moderately from construction team. Contractors suffer from financial hardship during project as a result of risk issues that may arises along the way, in some tends to affect the financial status of the

contractors, table 4.10 shows the degree of importance of some of the major approaches for decreasing the likely hood of financial hardship and suffering. From the table it can be seen clearly that the most important approach is the use of insurance cover to indemnify projects, because ideally risk are inherent in construction. Table 4.16 shows some of the majors problems associated with insuring risks in construction, however from the result it can be deduce that the problem faced by construction firms is usually delay of payment of claim when a need for that arises, this call for minimizing bureaucracy claim payment from the perception of the respondents as indicated on table 4.17.

By doing so more firms will give emphases on employing insurance as a risk mitigating tool for most of the projects, which will surely increase the percentage of projects indemnified with insurance annually. From table 4.19 show some of the major policies employed by construction firms, however from the result indicate that the most frequent policy adopted by the firms for construction projects is builders all risk insurance. This strongly calls for enforcing other policies by government.

V. SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 SUMMARY

- i. Risks are uncertain conditions that directly affect project objectives, such as time, scope, and cost, it has been seen that risk in construction are inherent, that no amount of planning can absolutely overcome the occurrence of risk. The Size of a project can be one of the major causes of risk, so can change in political or commercial planning, other factors carrying risk with them include complexity of construction project, location, speed of construction and familiarity with the type of work. The level of risk in construction projects is due to the uniqueness of every project.

- ii. Construction insurance is a major method of managing risks in the construction industry. Its primary function is to transfer certain risks from clients, contractors, subcontractors and other parties involved in the construction project to insurers, to provide contingent funding in time of difficulty.
- iii. Risk is One of the major problem in many construction organizations particularly in under-developed countries such as Nigeria
- iv. The negative influence of risk on construction was targeted and planned to be deal with by employing the idea of insurance in to construction to guide against the risk.
- v. Various stake holders face severe problems in carrying out complex construction work due to the unsatisfactory attitude of insurance.
- vi. The paper reports on a study carried out through a questionnaire survey of professionals within the construction industry, in order to assess the relative importance placed on risk various risk mitigating mechanism. Most frequent policies utilized by construction firm.
- vii. Responses from the survey were analyzed using frequencies and mean values.

5.2 Conclusions

The construction industry is proved to several risks in which the contractor or client cannot shoulder alone when it happens. There is therefore a need for the contractor to take up insurance to cover these risks. But from the survey carried out, the absolute awareness has not yet sink into contractors. The study shows that, out of various risks mitigating mechanism in construction, great importance was place on the use of insurance cover, but not all category of projects are covered with insurance. The paper highlight major problems associated with insurance to be lack of implementation of the Act, lack of enforcement of the Act, delay of payment of claims, high premium but great importance was placed on delay of payment of claim and high premium. Which are the main factors mitigating the use of insurance cover by construction firm, the study highlights some of the approaches through which the use of insurance can be encourage; great importance was placed on reduction of high premium as well as enforcement of the Act. The study also shows the various policies adopted by construction firm, where construction all risk insurance policy is the most frequently used.

5.3 Recommendations

- i. Insurance companies should endeavor to carry out proper documentation and make their policies well known and understood by operators of the construction companies.
- ii. Insurance companies should try as much as possible to honor settlement of claim as at when due. In general, government should monitor, control and enforce insurance Act.
- iii. Insurance company should minimize the premium to reasonable amount which will increase the desire of construction firm toward employing insurance cover.
- iv. Level of awareness of insurance of insurance should be increase to create understanding of the administration of insurance services in the industry.
- v. The government should implement and make it mandatory for construction companies to undertake at least one of the established insurance policies as it applies to the construction industry
- vi. Provisions for the inclusion of insurance cover should be also be made compulsory for all categories of project and its administrative framework be strengthened.

REFERENCES

- [1]. Enshassi, A., Mohamed, S., Mustafa, Z. A., & Mayer, P. E. (2007). Factors affecting labour productivity in building projects in the Gaza Strip. *Journal of civil engineering and management*, 13(4), 245-254.
- [2]. Larson G.I (2008) project management: the managerial process MC Graw Hill international edition united states of publication
- [3]. Mohamed, S., Ali, T. H., & Tam, W. Y. V. (2009). National culture and safe work behaviour of construction workers in Pakistan. *Safety science*, 47(1), 29-35.
- [4]. Odeyinka, H. A. (2000). An evaluation of the use of insurance in managing construction risks. *Construction Management and Economics*, 18(5), 519-524.
- [5]. Odusami K.T., Iyagba, R.R.O. and Omirin, M.M. (2002). The relationship between project leadership, team composition and construction project performance in Nigeria. *International Journal of Project Management* 21 (2003) 519–527
- [6]. Ogbu, C. P. (2013) "Risk Management Practices of Multinational and indigenous Construction Companies in Nigeria: A

- Comparative Analysis." *Journal of Research in National Development* 9.2: 315-324.
- [7]. Shofoluwe, M (2013) An exploratory study of risk management practices in top US contractor firms. *International Journal of Engineering Research And Innovation* | V5, N1, Spring/Sum
- [8]. Tah, J. H., & Carr, V. (2000). A proposal for construction project risk assessment using fuzzy logic. *Construction Management & Economics*, 18(4), 491-500.
- [9]. Udo, U. E., Usip, E. E., & Asuquo, C. F. (2016). Effect of lack of adequate attention to safety measures on construction sites in Akwa Ibom State, Nigeria. *Journal of Earth Sciences and Geotechnical Engineering*, 6(1), 113-121.