

## **Risk Management; Key to Successful Project Delivery in Nigeria**

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**Abstract:** *Project delivery has become a vital tool to nation's economic measurement and evaluation. Project success is valued in terms of delivered time, executed cost, work quality and environmental sustainability. Meanwhile, the actualization of the listed objectives may be hindered by factors identified as risks like poor estimation, poor construction management, and variation and so on. Risk management is the most effective project management practices in order to achieve the project delivery and sustainability. This work aims at identifying and evaluating the risks militating against successful delivery of construction projects in Nigeria and means of curbing it. Data were collected via distributed questionnaire and case study. The data collected were analyzed using parametric and non parametric statistics such as severity index, ANOVA and the t-test statistic. Findings revealed that the client bear the cost of unsuccessfully delivered projects as his dream are not realized. Risk identified like inadequate quantities, corruption and poor planning have significant impact on project delivery in Nigeria. The work further revealed that risks does not occur at a specific work stage but spread through the whole project life cycle while impact more on execution stage. It is concluded that for successful project delivery in Nigeria, all parties involved must factor risk effect into planning in order to ensure successful delivery of project to time, expected quality and cost.*

**Keywords:** *construction projects, project delivery, project objectives, risk, risk management.*

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### **I. Introduction**

The financial and economic crisis has had an adverse impact on the Nigeria's economy inclusive of construction industry. The construction sector, one of the engines of economic growth in Nigeria over the last decade, is now facing serious challenges such as abandoned projects, cost overruns and companies closures among others. These have changed the clients' and construction companies' behaviour. This increased pressure to ensure safety delivery of project at improved quality, targeted costs without being a victim of unexpected failure calls for effective and constant risk management. BS 6079 (British Standard Institution 1996) defines risk as 'the uncertainty inherent in plans and possibility of something happening that can affect the prospects of achieving, business or project goals'. For any project to be certified successful and delivered; it is most times assessed on the basis of three parameters which constitute risks namely: time, cost and performance. In this vein, Charles & Anderson (1990) opined that the cost parameters operates on the premise that funds set aside for the project must not be duly over-spent.

Some of the risks associated with construction are poor quality of work, premature failure of the facility, a lack of safety, poor or incorrect design, and financial risks (Mahesh & Kumaraswamy, 2007). Edwards and Bowen (2005) have identified risk management as an important tool in dealing with and overcoming some of the above risks on a construction project. According to Mills (2001), risk management plays a significant role in the decision making process. It can affect productivity, performance, quality and the budget on a construction project. The purpose of risk management is to ensure that all parties to a construction project understand the specific risks specific to the project and work out patterns on how these risks should be managed for effective project delivery.

### **II. Review Of Literature**

#### **Action plan to a successful project Execution**

Projects don't just come into existence. It must be sought and developed. That development is an involvement of a process. That process may lead to the success or the failure of the project depending on the action plan adopted as briefly described.

**The Think-tank (Conceptualization) phase:** This is the thinking process which gives birth to the conception of the project. The success point here is the purpose of the conceived project which becomes the driving force to its eventual realization or untimely death. The client or the developer comes up with the idea of the project; while the experts express the vision in terms of the feasibility and viability of that thinking.

**Action Phase:** The idea of the client is turned into design (i.e. sketch and detail at later stages) upon appraisals and approvals. The action plans here include cost analysis; provision of bill of quantities and other useful

information that can help the potential contractor and the client. The plan includes selection of the most suitable contractor for the job. The last phase and the most active is the actual construction on site.

**Result Phase:** At this stage, the probability of having a successful or failed project is determined. If it meets the four set criteria of time, cost, quality and sustainability; it becomes successful. In the other way, a failed project is gotten because it brings about an unexpected or undesired issue.

### **The cause of project failure**

That which hindered any project from being delivered to specified quality at target cost and expected period in relation with the environment could be regarded as uncertainty, threat or possibility. Nnadi (2015) identified and ranked factors (in descending order) that have significant impact on the project delivery and performance in Nigeria as: inadequate cash flow, corruption, security, unstable exchange rate, locations, project complexity, poor construction management, and government policy. These factors are generally regarded as risk as it has the capacity of slow down or abort the realization of the said project.

Risks presence is verified during the initial stage and throughout the construction process. There have been low profit margins recorded by Nigeria contractors on several projects in recent years. Some contractors (mostly the indigenous ones) have accumulated several loss making projects such that their whole annual result has been negative and this viability-threatening situation for several contractors has been one of the drivers for this document. Other effect of risk is highlighted as cost overrun, time overrun and poor quality (Nnadi, 2015).

The significance of risk stems from the fact that the future is beset with uncertainties both in terms of human behaviour and the characteristics of certain elements (Oyeteran, 1994; cited by Nnadi, 2014). Some risks are virtually unavoidable and could cause much damage to construction projects such as natural disasters like flood. All choices in life involve risk. Risks cannot be totally avoided, but the choice can be made so that risk is minimized. Once the risks of a project have been identified and analyzed, an appropriate method of treating it must be adopted. According to Odeyinka (1993; cited by Nnadi 2014), 'risk is inherent in any construction project right from inception through its completion'. The riskier the activity is, the costlier the consequences if the wrong decision is made. In that wise, knowing how much risk is involved will help decide if costly measures taken/adopted to reduce the level of risk are justifiable.

Without risk, a project offers little potential for reward. Every available resource must be marshaled to ensure that identified potential risks are overcome. There are a number of risks which can be identified in the construction industry and which can be faced in each construction project regardless of its size and scope. Winch (2002) claims that the first step in the risk identification is usually informal and can be performed in various ways, depending on the organization and the project team. It means that the identification of risks relies mostly on past experience related to upcoming projects. Risks and other threats can be hard to eliminate, but when they have been identified, it is easier to take actions and have control over them.

## **III. Risk Management**

Since risk has become inevitable in construction works; to ensure successful project delivery, managing risk is therefore an integral part of construction activities. Hence, Risk management provides a structured way of assessing and dealing with future uncertainty. Hence, Ugwu (2013) asserts that Risk management spans across all project phases; planning, design, construction, operation and maintenance.

This "risk management" was asserted by Bunt (2004) as the entire set of activities and measures that are aimed at dealing with any possible risks, in order to maintain control over a project; and PMBOK (2000) defines risk management as the systematic process of identifying, analyzing and responding to risk. Therefore, the risk management continues to be a major feature in an attempt to deal effectively with uncertainty and unexpected events and to achieve project success. Construction projects are always unique and risks raise from a number of the different sources. Construction projects are inherently complex and dynamic, and involving multiple feedback processes. A lot of participants—individuals and organizations are actively involved in the construction project, and they interests may be positively or negatively affected as a result of the project execution or project completion. Different participants with different experience and skills usually have different expectations and interests. This naturally creates problems and confusion for even the most experienced project managers and contractors (Opolot et al. 2012).

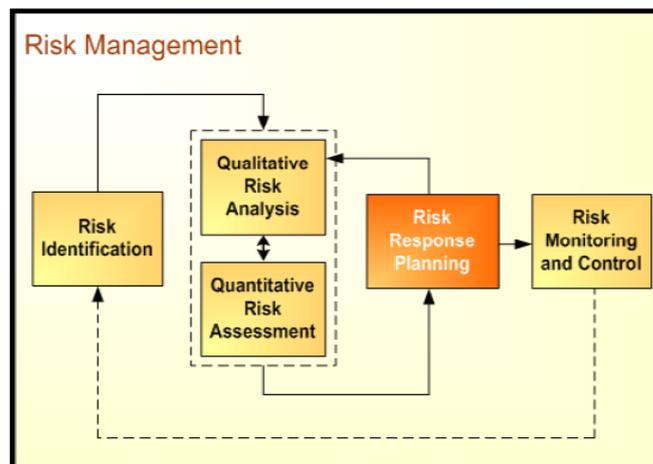
The aim of managing risks is to achieve the project objective in terms of delivering the project to time, quality and cost. Ugwu (2013) further opined that good project management practice involves estimating the likelihood of a risk occurring, its impact on the project and identifying appropriate risk management strategies. The process of risk management does not aim to remove completely all risks from a project but to develop an organized framework to assist decision makers to manage the risks, especially the critical ones, effectively and efficiently in order for project to be delivered to time, with value and reasonable cost. Risk and uncertainty can potentially have damaging consequences for the successful construction projects' delivery. For the purpose of the research, the definition of risk was limited to the one that has a negative impact on a project; and hence the definition of risk management is limited to the process of dealing with adverse risks, as these pose hurdles to achieving investors dream.

Risk is always present and must be dealt with accordingly. Risk management can be sophisticated and complicated, but the starting point should always be a simple assessment of the problem and possible solutions (Nnadi, 2013). Effective risk management requires identifying risks, measuring their potential for harm, and creating plans to deal with the threats.

The easiest way to identify risk is to analyze and draw a conclusion from projects which failed in the past. To make sure that the project objectives are met, the portfolio of risks associated with all actors across the project life cycle should be considered (Cleland and Gareis, 2006). In the early stages of the project where planning and contracting of work, together with the preliminary estimated budget are being drawn, risk management procedures should be initiated. In later stages, risk management applied systemically, helps to control those critical elements which can negatively impact project performance. In other words, to keep track of previously identified threats, will result in early warnings to the project manager if any of the objectives, time, cost or quality, are not being met (Tummala and Burchett, 1999). If the causes of the risks have been identified and allocated before any problems occur, the risk management will be more effective (PMI, 2004). Risk management is not only solving problems in advance, but also being prepared for potential problems that can occur unexpectedly.

Thompson and Perry (2009) conclude that risk management is most valuable at an early stage in a project, for example at the proposal stage, where there is still some flexibility available in design and planning to consider how the serious risk might be avoided.

*Fig. 1: risk management chart*



Source: Ugwu, 2013

The different risk reduction models include risk avoidance, risk sharing (e.g. by project owner and contractor or between the main contractor and sub-contractors), and risk transfer (e.g. from contractor to sub-contractors or through appropriate insurance mechanisms). Risk estimation can be done qualitatively or quantitatively. Risk analysis and management in construction is a dedicated topic and a thorough understanding is pivotal for the success of a construction organization and hence the sustainability of a construction business. While there are several global risks, some risks can be project- and/or country-specific (Ugwu, 2013).

Risk management can therefore be summarized as a formal and orderly process of systematically identifying, analyzing, and responding to risks throughout the life-cycle of a project to obtain the optimum degree of risk elimination; mitigation and/or control.

#### **IV. Research Methodology**

This work investigated risk management as a key to successful project delivery in Nigeria. Data for the research was collected; this included both primary and secondary sources. The primary data was obtained from questionnaires administered to construction industry stakeholders. The secondary data was obtained from the internet, journals, library books, conference papers, theses, magazines and newspapers. This data served as a basis for establishing the theory and criteria against which empirical research of the primary data was measured. The research was quantitative in nature; a descriptive quantitative method was used in the study. Some of the data collected was descriptive while some was in numeric form. Leedy and Ormrod (2005) point out that descriptive research examines a situation as it is; it does not involve changing or modifying the situation under investigation, nor does it intend to detect cause-and-effect relationships.

A total of 80 questionnaires were sent to construction industry clients, property developers, consultants (architects, quantity surveyors, consulting engineers, builders) and contractors. Sixty five (67) responses were received of which two was not satisfactorily completed.

**Questionnaire design**

The questionnaire was developed consisting of four sections. The first section consisted of questions pertaining to the respondent’s demographic background. In the second section, aspects related to the awareness of RM were covered. The third section investigated the implementation of RM from inception to completion in construction projects while the fourth section investigated collaboration and communication between the parties associated with construction projects in terms of risk. Closed questions were asked which offered the respondents the opportunity of selecting answers that they felt were (most) appropriate. Closed ended questions are advantageous, especially when a substantial amount of information on a subject exists and the response options are relatively well known (Walliman, 2006). The use of closed ended questions considers the fact that respondents are usually busy and this method enables the researcher to obtain responses promptly.

**V. Findings, Discussions And Summary**

**Knowledge of risk management**

From the responses it was evident that all respondents were aware of risk management in the construction industry. As many as 43% of the respondents became aware of risk management through study, 21% through workshops, and 29% of the respondents through other means, for example, word of mouth, on construction sites and application on projects. The majority of the respondents (71%) evaluated their knowledge of risk management as fair, despite the fact that they were fully aware of it

**Risk management processes during project stages**

Findings revealed risk management steps are utilized during the different project stages of construction projects; indicating that:

- i. All the processes are used during all the project stages;
- ii. Very few processes are utilized during the ‘Inception’ and ‘Design’ stages. This is alarming as many potential risks can be identified during these stages;
- iii. The construction stage being the most significant stage in terms of the utilization of the risk management processes; and
- iv. Risk management is utilized least during the inception stage of a contract.

**Importance of risk management during project stages**

The respondents were requested to rate the importance of risk management during every project stage. The pre-construction and construction stages were identified as being most important for the management of risks. Interestingly, compared to Contractors and Consultants, Clients do not perceive risk management to be that important. From the responses, it can be concluded that parties associate the highest incidence of risks with the construction stage.

**Degree of stakeholders’ influence on risk management**

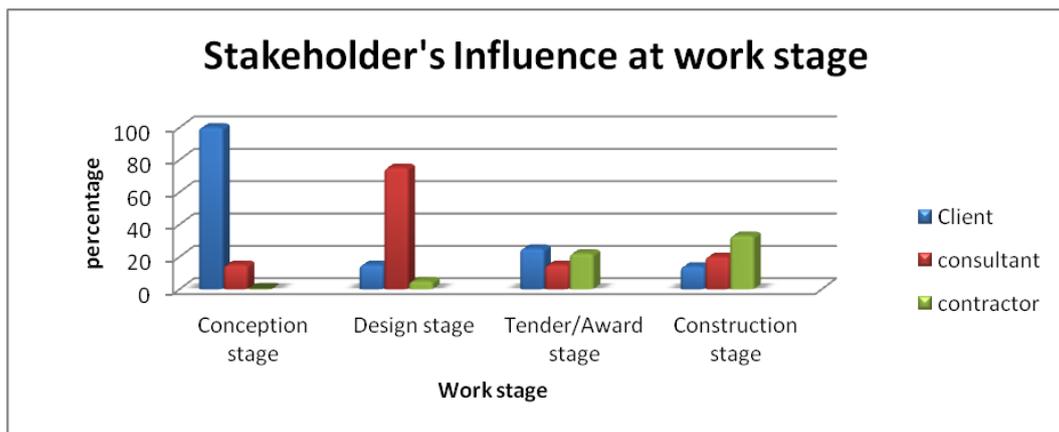
**Table 1:** Degree of influence on construction projects

Reference category: A=Not significant at all; B=Significant to very little extent; C=Significant to moderate extent; D=Significant to large extent; E=Significant to very large extent

Stakeholder’s Category	Extent of significance					Mean
	A	B	C	D	E	
Client	0	8	16	32	11	3.69
Consultant	0	4	12	43	8	3.82
Contractor	0	2	7	24	34	4.34

Table 1 presents the respondents’ judgement on the various parties’ influence on risk management in construction projects. It is evident that clients (mean 3.69) had a relatively moderate influence on construction project delivery. Consultants (mean 3.82) had more influence while it was affirmed that contractors (mean 4.34) had the large influence on construction execution and delivery.

Meanwhile Figure 2 presents the respondents’ judgement on the various parties’ influence on risk management in construction projects at various work stages. It is evident that clients (85%) had the major influence at the conception. Consultants (15%) had little influence while the contractors had no influence at this stage. The consultants had more influence at design stage while the contractor’s influence is the highest at the construction work stage as shown in fig. 2.



This phenomenon can be linked to the fact that risk management is traditionally practiced during the construction stage where the contractor is heavily involved with operations on site. Meanwhile, most risk factors can be better identified and dealt with during the earlier work stage (conception and design). The reliability of affecting risk management during construction stage is a major risk on its own to project realization.

Similarly, it is critical to the success of a construction project that the various parties to the project are integrated using communication methods that allow for the sharing and exchange of information and resources amongst its members. The construction industry needs to communicate better, not only with the outside world, but also its distinct professionals. Communication is a professional practice and it is therefore not surprising that the majority of people within the construction industry who communicate most often are the distinct professions, such as the contractor, the client and the consultant.

## VI. Conclusions

Time, cost and quality are the factors to be considered during the implementation of risk management. All parties to a project should have a comprehensive understanding of the risks involved, and risk management procedures should be implemented throughout all the stages of a construction project. The aim of this research was to increase the understanding of risk management and hence the need for the implementation of risk management during the different project stages. The survey conducted amongst clients, contractors and consultants concluded, amongst others that:

- i. The majority of the respondents (71%) evaluated their knowledge of risk management as 'Fair', despite the fact that they were fully aware of it;
- ii. The construction stage was identified as being the most significant project stage in terms of the utilization of risk management processes;
- iii. The stages where each stakeholders has more influence on risk management were identified;
- iv. The contractor has the biggest influence on risk management;
- v. Consultants have a major role to play during the first three project stages whereas, the contractor's role comes to the fore during the construction stage.

## VII. Recommendations

The findings of this research are expected to contribute to more effective risk management implementation and, therefore, should benefit the construction industry as a whole. To achieve this objective the following recommendations are made:

- a) The majority of respondents evaluated their knowledge of RM as intermediate; it would therefore be reasonable to suggest risk management workshops to further educate all parties involved with construction projects. With adequate training opportunities in place, an increase in knowledge of the subject and an awareness of the importance of risk management throughout the construction project life cycle can be achieved;
- b) All built environment stakeholders should become more involved in the implementation of risk management. Their early involvement will facilitate a better understanding of each party's roles and enhance collaboration and communication within the Nigerian construction industry.

Based on the research results, the recommendations are made to the construction contractors to cope with the major risks in the industry and to improve their risk management practice

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