

ASSESSMENT OF RISK MANAGEMENT CAPABILITY LEVEL OF BUILDING CLIENTS IN ABUJA, NIGERIA

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Abstract

Construction organisations in developing countries face uncertain events that occur in different environment and with different characteristics and impacts. These uncertain events called risk can generate more or less severe consequences for the organisation. The purpose of this study is to evaluate the risks management capability by the client. The study appraises the basis for assessing the risk management capacity of building client with a view to improving the level of competencies of the client. In order to attain the objective of the study Mean item score (MIS) and Relative importance index (RII) were used. It was evident that risk response development and risk identification are the highly ranked risk management processes that relate to client's knowledge about risk. This study also concludes that risk management is a critical success factor which significantly improve project performance. Organisations and construction stakeholders should encourage, ensure and promote the implementation of the risk management maturity model as it is intended to support organisation and stakeholders.

Keywords: Capability, Client, Management, Nigeria, Risk

INTRODUCTION

Today every organization faces uncertain events that occur in different environments and with different characteristics and impacts. These uncertain events can generate severe consequences for the organization (Aven, 2011). Uncertain events with negative impacts are called risks. The construction industry is no exception in being exposed to these uncertainties, which are complex and diverse risks (Zhao *et al.*, 2013).

Risk is a term that has long been studied in different areas. Hillson (2013) defines risk as the uncertainty that can be measured, while uncertainty is a risk that cannot be measured. In an effort to mitigate or eliminate the risk, researchers count on risk management, which is an integral part of project management. Risk management is a positive and proactive process intended to reduce the likelihood of unsatisfactory consequences to the project in its different stages, such as design, construction and operation (Mills, 2001; Rohaninejad and Bagherpour, 2013).

One of the challenges being faced at this time then is how to measure the capability of a construction organization to perform risk management effectively and how to help this organization to improve along time. Although risk is a somewhat multi-layered concept, in a construction context, it typically refers to the likelihood of a detrimental event/factor occurring during the lifespan of a construction project (Wang *et al.*, 2004).

Accordingly, risk management is concerned with the identification of risks and the execution of plans aimed at minimizing, sharing, transferring, or accepting those risks (Jergeas and Put, 2001). In order to reach the targets, set up for the construction projects, the risks associated with the project need to be managed on a proactive basis (Goh *et al.*, 2012). This in turn necessitates that project related risks have been identified and classified prior to the commencement of the construction project (Adam and

Göran, 2015). There are numerous ways in which risks can be classified. A typical convention in risk management is to consider risks as belonging to either an internal group wherein one possesses some amount of control or an external group where one is subjected to circumstances beyond control. The aim of this research is to assess the risk management capability level of building clients in Nigeria, with a view to improving the level of competence of the client. (i.) Identify and assess risk management process in relation to client knowledge of risk. (ii) Identify and examine the basis for assessing the risk management capacity of building client (iii.) To evaluate current capacity in order to improve areas of strength and weakness in the risk management practice.

LITERATURE REVIEW

The need for infrastructural development brings about the rapid growth in construction industries around the world. Development of infrastructure is one of the key drivers in business over the globe; it increases the GDP of a nation (Odeyinka *et al.*, 2007). This made countries to prioritize infrastructural development and make provisions in their budgets for financing it. This leads to new challenges and considering the risks involved in the design and production. Construction projects by its nature allows a lot of scope for many environmental and socio-political problems from pre-contract, contract up to post-contract stage leading to completion time problem, cost overruns and poor-quality work (Okuwoga, 1998). Cost overruns will definitely affect project especially when involving a large amount of money (Odeyinka *et al.*, 2007). In order to avoid or reduce the losses, management of the risk involved in the construction project is required.

Construction process or activity deals with materials and components which need to be assembled, designed and produced by different suppliers from diverse disciplines and with different technologies, so as to develop 'the built environment'. These activities include project planning, work regulation, design, construction, maintenance and final commissioning of the structure. The complexity and size of activities differs from one activity to the other based on the work undertaking by local builders or international construction firms engaging in complex or even high-risk projects e.g. civil construction or a simple building. A new construction is regarded as a means of providing a structure or building (e.g., a warehouse or bungalow), or infrastructure which will develop the economy (e.g. a railway), a societal improvement or service (e.g., a hospital) or provision for direct need. This means that construction can be a means of economic development for a nation and accounts for a certain percentage of a nation's annual fixed capital formation. It helps in the delivery of goods and services from other parts of the economy.

The construction industry on its part, provide many employment opportunities within the field of building, engineering, architectural and private industries. It requires the effort of different firms, experience contractors, architects and engineers, professionals like structural engineers and quantity surveyors, suppliers and manufacturers of equipment.

The Concept of Management

According to Bhandari and Gayakwad (2014), throughout the world the construction industry has changed rapidly over the past decade; companies are now faced with more risk and uncertainty than before. As the project starts taking up speed and progresses further many points, misunderstanding, conflicts start to rise up which leads to probable risk in the projects.

Risk which have not been identified and managed are undoubtedly unchecked threats to a project's objectives, which in turn may lead to considerable overruns in cost scheduling/time. Risk management presently is a critical factor for successful project management, as projects are tending to be more complex and day by day competition is increasingly tougher. It can be said that exist direct relationship between effective risk management and project success since risks are assessed by

their potential effect on the objectives of the project. Therefore, a systematic approach must be taken to manage risks through the development of a project (Mills, 2001). Risk management is a proactive decision-making process, which involves accepting known risks, and/or taking steps to mitigate the impact and likelihood of the occurrence of risks, to minimize the threats and maximize the opportunities (Loosemore *et al.*, 2006). Despite numerous risk management processes proposed in the literature (He, 1995; Chapman, 1997; Tah and Carr, 2001; PMI, 2004; Loosemore *et al.*, 2006), the five main steps in the risk management processes are generally, risk planning, risk identification, risk analysis, risk response and risk monitoring and control.

Risk Management Process

The identification, assessment and management of risk across an organization help to reveal the importance of the whole project. The overall risk management process is summarized into the following four processes

Risk Identification

According to Bhandari and Gayakwad (2014), risk identification is the first step of risk management process, in which potential risk associated with a construction projects are identified. Determination of most likely affecting the project and documentation of characteristics of each risk is the main task in risk identification. Risk identification involves accepting the risk which would occur at any phase of the project. It helps to understand the risk, its consequences and probability of occurrence. The project or the risk manager will react to the risk in case of occurrence. Identification of risk can be carried out according to Mahendra *et al.* (2013) through the following five (5) methods as stated below:

- i. **Brainstorming:** This is one of the most popular techniques. Generally, it is used for ideas generation, it is also very useful for risk identification. All relevant persons associated with the project gather at one place. There is one facilitator who is briefing about various aspects with the participants and then after, note down the factors. Before closing, the facilitator reviews the factors and eliminates the unnecessary ones.
- ii. **Delphi Techniques:** This Technique is similar to brainstorming but the participants in this do not know each other and they are not at the same place. They will identify the factors without consulting other participants. The facilitators like in brainstorming sum up the identified factors.
- iii. **Interview/expert Opinion:** Experts or personnel with sufficient experience in a project can be a great help in avoiding/solving similar problems over and over again. All the participants or relevant persons in the can be interviewed for the identification of factors affecting risk.
- iv. **Past Experience:** Past Experience from the same kind of project, the analogy can be formed for identification of the factors. When comparing the characteristics of projects, this will provide insight about the common factors.

Risk Assessment/Quantification

Assessment of risk and the possible interaction of risks with project activities to evaluate the possible outcomes of the project. Actually, risk can be avoided by not doing part of the project which contains risk or otherwise changing strategy so as to minimize the risk which would likely to come into the

project phase (Bhandari and Gayawad, 2014). According to Mahendra *et al.* (2013), risk qualification/assessment can be carried out through any of the under listed four methods

Risk Response

According to Bhandari and Gayawad (2014), risk response can be defined as response steps for opportunities and threats associated with risks. Risk can be monitored by employing a predictive indicator to watch the project as it approaches a risky point. The risk strategy is to monitor the risk by being part of the test term. Mahendra *et al.* (2013) identified eight (8) methods listed below for risk response.

- i. Risk Avoidance: Risk can be avoided by removing the cause of the risk executing the project in a different direction while still aiming to accomplish project objectives. Change project management plan to eliminate a threat, to isolate project objective from the risk's impact, or to relax the project objective that is in jeopardy, such as extending schedule or reducing the scope.
- ii. Risk Transfer: Transfer risk involves finding some other party who is willing to accept responsibility for its management, and who will bear the liability of the risk should it occur. Transferring a threat does not eliminate it; the threat still exists however it is owned and managed by other party. Transferring risk can be an effective way to deal with financial risk exposure. The aim is to ensure that the risk is owned and managed by the party best able to deal with it effectively.
- iii. Risk Mitigation/Reduction: Risk mitigation reduces the probability and/or impact of an adverse risk event to an acceptable threshold. Taking early action to reduce the probability and/or of risk is often more effective than attempting to repair the damage after the risk has passed.
- iv. Risk Exploit: This risk by creating the opportunity definitely happen Eliminate the uncertainty association with a particular upside risk. An opportunity is defined as a risk event that if it occurs will have a positive effect on achievement of project objectives.
- v. Risk Share: Allocate risk ownership of an opportunity to another party who is best able to maximize its probability of occurrence and increase the potential benefit if it does happen. Transferring threats are sharing opportunity are similar in that a third party is used, those to whom the threat is transferred take on the liability and those to whom opportunity are allocated should also be allowed to share in the potential benefits.
- vi. Risk Enhance: This response aims to alter the "size" of the positives risk. The opportunity is enhanced by increasing its probability and/or impact thereby maximize, the benefit gained from the project. Seeking to facilitate or strengthen the cause the case of the opportunity, and proactively targeting and reinforcing its trigger conditions.
- vii. Risk Acceptance: Ultimate it is not possible to eliminate threat or take advantage of all opportunity through documenting them and at least provide awareness that these exist and have been identified, some term this passive acceptance. This strategy is adopted when it is not possible or practice to grandness of the risk by the other strategies or a

response is not justified by the accepted a risk, they agreeing to address the risk if and when it happens.

- viii. Contingency Plan: This involves the use of a fall-back plan if a risk occurs. Contingencies can also be in the form of sometime kept in reserve to idea with unknown risks.

Risk Control

Mahendra *et al.* (2013) stated that risk control is the final step of the process. After implementation of response action. Tracking and recording must be carried out for their effectiveness and take care of any change to the project risk profile. Did the response action have a positive or negative effect on achieving project objective? Response to the change implemented to remove risk throughout the project duration by transferring the risk by mean of insurance. Response taken in risk should also document for future reference and project plan.

Classification of Risk

Risk classification is a significant step in the risk management process, as it attempts to structure the diverse risk affecting a contracture project. In the effective management of risk, several many methods have been suggested for the classification of risk.

Furthermore, Bhandari *et al.* (2014) classified risk according to their source into the following:

- i. Technical risks: improper and inadequate site Survey & investigation, incomplete and faulty design, Appropriateness of specification and uncertainty over the source and availability of materials.
- ii. Logistical risk: Non availability of sufficient transportation facilities and Non availability of construction equipment spare parts, fuel and labour.
- iii. Management related risk: Uncertain productivity of resource and industrial relation problems.
- iv. Environmental risk: Weather and seasonal change and Natural disaster
- v. Financial risk: availability and fluctuation in foreign exchange. Delay in payment, inflation and local taxes.

RESEARCH METHOD

Having reviewed the related literature on various research methods, the study adopts the quantitative methods of approach, first handed source of data collection follow through the establishment of well-structured questionnaires to 200 respondents and completed questionnaires returned were analysed that is from the contractor and professionals' groups respectively. The data collected was analysed using the computer software packages, Statistical Products for Services Solutions (SPSS), in order to attain the objectives of the study as discussed, mean items score (MIS) was used in analysing the objective. Data was analysed using descriptive statistics to show the frequencies and mean of reaction to questions with fixed reactions to establish the background information of the respondents and other various project parameters to respondent's organization, risk management capability level.

Data Analysis

Analysis of the Respondent's Profile: Two hundred (200) numbers of questionnaires were administered during the course of the study a total of 133 questionnaire which represent 66.5% were correctly completed and good for analysis. The analysis below represents the professional

designation of the various professionals involved in the survey. Quantity Surveyors made the largest population representing 25% of the total responses, followed by Architects representing 25% of the response, 16% of the response represents Builders, Engineers represents 14% of the survey while 11% represents other professionals in the built environment which were not categorized here.

Table 1: Respondent’s Professional Designation

S/NO	Professional Designation of Respondents	Frequency	Percentage (%)
1.	Architects	33	25
2.	Builders	21	16
3.	Engineers	19	14
4.	Quantity Surveyors	45	34
5.	Others	15	11
	Total	133	100

RESULTS

The respondents agree that “having risk discussion on the project scope and milestone information at regular interval”, “a documented, repeatable for identifying project risk and an improvement process to completely identify the risk as early as possible” and “identifying risk has effect on the long-term objective of project” were ranked fifth, sixth and seventh with the MIS of 2.947, 2.939 and 2.782 respectively.

Table 2: Risk Identification in Relation to Client’s Knowledge of Risk

S/NO	Risk Identification	Mean Score	Ranking	Decision
1.	At the beginning of project risk is identify as a standard activity.	3.308	1 st	Strongly Agree
2.	Risk identification has impact on quality, health and safety, environment.	3.203	2 nd	Strongly Agree
3.	Identifying risks has impact on time and cost.	3.045	3 rd	Strongly Agree
4.	Applying formalized risk identification process to most of the projects.	3.015	4 th	Strongly Agree
5.	Having risk discussion on the project scope and milestone information at regular interval.	2.947	5 th	Agree
6.	A documented, repeatable for identifying project risk and an improvement process to completely identify the risk as early as possible.	2.939	6 th	Agree
7.	Identifying risk has effect on long term objective of project.	2.782	7 th	Agree
	<i>Group Mean</i>	<i>2.782</i>	<i>7th</i>	<i>Agree</i>
		<i>3.034</i>		<i>Strongly Agree</i>

Source: Researcher’s Field Survey, (2020).

The analysis of the second process which is risk analysis, shows that the respondents strongly agree with “risk assessment using qualitative methods such as risk rating technique, probability impact matrices” which ranked first with the MIS of 3.000.

However, the respondents agreed with “Systematic approach impact project assessed intuitively” which was ranked second with the MIS of 2.993, “risk analysis using advanced methods such as simulation, sensitivity testing and decision support tools” which was ranked third with the MIS of 2.917 and “risk analysis using statistical tools as well as qualitative methods” which was ranked fourth with the MIS of 2.316.

Table 3: Risk Analysis in Relation to Client’s Knowledge of Risk

S/No.	Risk Analysis	MIS	Ranking	Decision
1.	Risk assessment using qualitative methods such as risk rating technique, probability impact matrices. Systematic approach impact project assessed intuitively.	3.000	1 st	Strongly Agree
2.	Risk analysis using advanced methods such as simulation, sensitivity testing and decision support tools.	2.993	2 nd	Agree
3.	Risk analysis using statistical tools as well as qualitative methods.	2.917	3 rd	Agree
4.	Risk analysis using statistical tools as well as qualitative methods.	2.316	4 th	Agree
Mean Score		2.807		Agree

From the analysis in Table 4, it can be seen that the stakeholders strongly agree that “historical information such as common risk items and risk triggers are collected and organized in the historical data base” which was ranked first with the MIS of 3.090 followed by “besides collecting the information such as common risk items and risk triggers, historical database is subject to a continuous improvement process” which was ranked second with the MIS of 3.000.

However, the respondents agree that “team members take decisions based on their own past experiences and discussion with the project team” with the MIS of 2.993, “have specific method to collect historical information, although some historical information about general trends in risk on similar projects may have been collected” with the MIS of 2.993 and “organization having a data base on typical risk encounter and related experiences impact on project” with the MIS of 2.91.

Table 4: Risk Information Database in Relation to Client’s Knowledge of Risk

S/No.	Risk Information Database	MIS	Ranking	Decision
1.	Historical information such as common risk items and risk triggers are collected and organized in the historical data base.	3.090	1 st	Strongly Agree
2.	Besides collecting the information such as common risk items and risk triggers, historical database is subject to a continuous improvement process.	3.000	2 nd	Strongly Agree
3.	Team members take decisions based on their own past experiences and discussion with the project team.	2.993	3 rd	Agree

4.	Have specific method to collect historical information, although some historical information about general trends in risk on similar projects may have been collected.	2.993	4 th	Agree
5.	Organization having a data base on typical risk encounter and related experiences impact on project.	2.910	5 th	Agree
Mean Score		2.997		Agree

The analysis in Table 5 shows that the respondents strongly agree with “contingency plans and mitigation strategies are developed for each risk item, so that project reserves can be allocated to cover such items when needed”, “risk management plans, contingency plans and risk allocation plans are prepared and risk control strategies are formulated as well as risk finance strategies” and “organization determines mitigation strategies or contingency plans for the future risk events” which were ranked first, second and third with the MIS of 3.233, 3.226 and 3.008 respectively. “Risk consideration in large emerge” was the least ranked factor under risk response development with the MIS of 2.707.

Table 5: Risk Response Development in Relation to Client’s Knowledge of Risk

S/No.	Risk Response Development	MIS	Ranking	Decision
1.	Contingency plans and mitigation strategies are developed for each risk item, so that project reserves can be allocated to cover such items when needed.	3.233	1 st	Strongly Agree
2.	Risk management plans, contingency plans and risk allocation plans are prepared and risk control strategies are formulated as well as risk finance strategies.	3.226	2 nd	Strongly Agree
3.	Organization determines mitigation strategies or contingency plans for the future risk events.	3.008	3 rd	Strongly Agree
4.	Risk consideration in large emerge.	2.707	4 th	Agree
Group Mean		3.044		Strongly Agree

The analysis in Table 6 indicates that the respondents strongly agree that “a formalized process for risk monitoring is used for project and risk management plan updated periodically” which was ranked first with the MIS of 3.083.

The respondents agreed with “project teams apply their own approach to management and controlling risks as a former process”, “responsibility is assigned for each risk item as it occurs” and “formalized generic process for actively and routinely tracking risks for projects” which were ranked second, third and fourth with the MIS of 2.932, 2.865 and 2.865 respectively.

Table 6: Risk Monitoring and Control in Relation to Client’s Knowledge of Risk

S/No.	Risk Monitoring and Control	MIS	Ranking	Decision
1.	A formalized process for risk monitoring is used for project and risk management plan updated periodically.	3.083	1 st	Strongly Agree
2.	Project teams apply their own approach to management and controlling risks as a former process.	2.932	2 nd	Agree
3.	Responsibility is assigned for each risk item as it occurs. Formalized generic process for actively and routinely tracking risks for projects	2.865	3 rd	Agree
4.		2.865	4 th	Agree
Group Mean		2.936		Agree

From the analysis below, it was identified that the respondents strongly agree with “prepare report stored on the computer, shared and used forthcoming projects” as the notable factor of risk evaluation with the MIS of 3.083.

“Prepared report stored as hardcopy and shared” and “prepared report on an ad-hoc basis and failed” were ranked second and third with the MIS of 2.925 and 2.850 respectively.

Table 6: Risk Evaluation in Relation to Client’s Knowledge of Risk

S/No.	Risk Evaluation	MIS	Ranking	Decision
1.	Prepare report stored on the computer, shared and used forthcoming projects.	3.083	1 st	Strongly Agree
2.	Prepared report stored as hardcopy and shared.	2.925	2 nd	Agree
3.	Prepared report on an ad-hoc basis and failed.	2.850	3 rd	Agree
Group Mean		2.953		Agree

From the analysis of the level of agreement of the six processes of risk management as it relates to client knowledge of risk, a group mean of each of the processes was derived and it shows that stakeholders in the various ministries and parastatals strongly agreed that “risk response development” and “risk identification” which were ranked first and second with the group mean of 3.044 and 3.034 respectively.

On the other hand, “risk information database”, “risk evaluation”, “risk monitoring and control” and “risk analysis” were agreed upon by the respondents having ranked third, fourth, fifth and sixth with a group mean of 2.997, 2.953, 2.963 and 2.807 respectively.

Generally, for exceeding the threshold of two (2) point, it can be deduced that the risk management processes are all in relation to the client knowledge of risk.

Table 8: Summary of Risk Management Processes

S/No.	Risk Management Processes	Group Mean	Ranking	Decision
	Risk Response Development	3.044	1 st	Strongly Agree
	Risk Identification	3.034	2 nd	Strongly Agree
	Risk Information Database	2.997	3 rd	Agree
	Risk Evaluation	2.953	4 th	Agree
	Risk Monitoring and Control	2.936	5 th	Agree
	Risk Analysis	2.807	6 th	Agree
	Average Mean	2.962		Agree

DISCUSSION OF RESULTS

Findings from the research revealed that the respondents strongly agree with risk response development and risk identification as it relates to client's knowledge about risk. They also agreed with risk information database, risk evaluation, risk monitoring and control and risk analysis as they also relate to client's knowledge about risk. This finding is in line with that of Jergeas and Put (2001) who found that risk management is concerned with the risk identification and the execution of plans aimed at minimizing, sharing, transferring, or accepting those risks. It also corroborates with the study of Ehsan *et al.* (2010) which concluded that risk information database is crucial because new projects are always prone to risk because the process has not been experienced over time. Hence, there is always uncertainty when something is been done for the first time. But if a similar project of that nature has been done before and documented, then the prospect of a successful operation is enhanced. From the analysis of the basis of assessing the risk management capacity of building client, it was discovered that some of the important basis for assessing risk management capability of building client are; risk management is a critical success factor which significantly improve project performance, risk management is essential to achieve successful projects, risk management provides benefits and adds value to organization performance, risk management minimizes cost increase/profitability, risk management increase safety and reliability, risk management increase quality of projects, risk management increase organization learning, and risk management increase client satisfaction. This is in consonance with the findings of Odeyinka *et al.* (2007) that cost overruns will definitely affect project especially when involving a large amount of money, hence the need for a reliable basis for assessing risk management. Findings from the analysis of the current capability in order to improve areas of strength and weakness in the risk management practice shows that: Risk management is necessary for every organization to improve its competitive advantage. Risk management is a critical success factor and it can significantly improve business performance, benefits of risk management demonstrated by various applications. This is in line with the study of Awodele *et al.* (2009). Top management gives full commitment to risk management, gives promotion, support and requires risk reporting. Risk management is practiced on all projects, it is systematic, routine and standardized. Total project risks are covered, but no risk management planning across projects. This is in line with the proposition of Mills (2001) that a systematic approach must be taken to manage risks through the development of a project and this is also consistent with the findings of Adam and Goran (2015). Risk management has a high integration with some project management tasks such as value management, quality assurance and management, contract management and environmental impact management. Risk management has a high

integration with some corporate management tasks such as business development, strategic planning, financial/portfolio management, and procurement management. This finding is supported by the findings reported by Ehsan *et al.* (2010).

CONCLUSION

From the six (6) processes of risk management identified, it was evident that risk response development and risk identification are the highly ranked risk management processes that relate to client's knowledge about risk. This study also concludes that, risk management is a critical success factor which significantly improve project performance, risk management is essential to achieve successful projects, risk management provides benefits and adds value to organization performance, risk management minimizes cost increase/profitability, risk management increase safety and reliability, risk management

Recommendation

This paper assessed the risk management capability level of building clients in Abuja Nigeria, with a view to improving the level of competence of the client. It is in this regard that the following recommendations are made:

- i. Organizations and construction stakeholders should encourage and foster participation in risk response development and risk identification, so as ascertain the possibility of risk occurrence and how to respond to it when it occurs.
- ii. Since it has been identified that; risk management is a critical success factor which significantly improve project performance, to achieve successful projects, provides benefits and adds value to organization performance, and minimizes cost increase. This study recommends that the aforementioned basis of assessment should be adopted and improved so as to improve organization's competitive advantage

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