

Evaluation of Risk Management Identification Strategy in Construction of Schools' Buildings in Enugu Metropolis of Enugu State

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ABSTRACT

The study evaluated risk management identification strategy in the construction of schools' buildings in Enugu Metropolis of Enugu State. One research question guided the study while two null hypotheses were tested at 0.05 level of significance. The study adopted a survey design. The population of the study consisted of 205 registered builders and contractors (135 builders and 70 building contractors) in Enugu Metropolis of Enugu State. No sampling was carried out since the population is small; hence the entire population was used for the study. A structured five-point Likert scale questionnaire titled: Evaluation of Risk Management Identification Strategy in Construction of School Buildings (ERMISB) was used for the study. Three experts from the Department of Vocational and Technical Education, University of Nigeria, Nsukka, Enugu State validated the instrument. The reliability of the instrument was determined using Cronbach Alpha reliability method and a reliability coefficient of 0.77 was obtained. The data collected from the administered questionnaire were analyzed using mean and standard deviation to answer the research question and t-test for analysis of the hypotheses respectively. The findings of the study show that risk management identification was carried out to high extent. Also, there was no significant difference in the mean responses of builders and contractors on the extent at which that risk management identification was carried out in schools' buildings in Enugu Metropolis of Enugu State based on years of experience.

The study recommended among others that construction companies should appreciate and value the importance of risk management identification strategy before and during building construction and renovations, government at all levels, especially ministry and office of directors of works should ensure that contractors provide with detailed risk management identification documents before they embark on any building project.

KEYWORDS

risk; risk management; risk identification strategy; school buildings

INTRODUCTION

Education plays a pivotal role in both human capital development and social, economic, political and technological development of a nation. As a result both developing and developed nations of the world attached great importance to education by providing human resources, infrastructures, and facilities that supports it. Among the facilities provided is school building.

School building is a physical structure where teaching and learning and academic support system or activities takes place (Evans, 2016). It is one of the critical assets of an educational institution. School building provide a platform for educational activities to take-off (Francis, 2019). According to Gang (2018), school buildings consist of classrooms, offices, laboratories, workshops, libraries, hostels, restrooms among others. Owing to the great importance school building plays in promotion of academic activities, governments at all levels as well as private individuals usually embark in construction or renovation of school buildings.

The construction or renovation of school buildings provide an avenue for engagement and employment of skilled workers and the assemblage of material resources, tools and equipment. The construction sites according to Kingsley (2016)), usually poses a risk to human lives when proper risk management strategies are not obsessed and implemented.

A risk is the chance of something happening that will have a negative effect. The level of risk according to Akpan (2019) reflects:

1. the likelihood of the unwanted event
2. the potential consequences of the unwanted event.

The prevention of negative occurrence of unforeseen circumstances and events is what risk management entails. Among the risk management strategies is risk management identification.

Risk management identification strategy is a deliberate and systematic effort to identify and document the construction's key risks. The objective of risk identification is to understand what is at risk within the context of the construction's explicit and implicit objectives and to generate a comprehensive inventory of risks based on the threats and events that might prevent, degrade, delay or enhance the achievement of the objectives. This necessitated the development of risk identification guidelines to ensure that contractors and developers manage risk effectively and efficiently (Raz et al, 2012).

Risk identification is a deliberate and systematic effort to identify and document the Institution's key risks (Adams, 2018). The objective of risk identification is to understand what is at risk within the context of the institution's explicit and implicit objectives and to generate a comprehensive inventory of risks based on the threats and events that might prevent, degrade, delay or enhance the achievement of the objectives. This necessitated the development of risk identification guidelines to ensure that Institutions manage risk effectively and efficiently (Wang & Chou, 2013).

Comprehensive identification and recording of risks are critical, because a risk that is not identified at this stage may be excluded from further analysis. In order to manage risks effectively, Institutions have to know what risks they are faced with. The risk identification process should cover all risks, regardless of whether or not such risks are within the direct control of the Institution (Simu, 2016). Institutions should adopt a rigorous and on-going process of risk identification that also includes mechanisms to identify new and emerging risks timeously (Simu, 2016).

Risk identification should be inclusive, not overly rely on the inputs of a few senior officials and should also draw as much as possible on unbiased independent sources, including the perspectives of important stakeholders. It is crucial to have knowledge of the business before commencing with risk identification process. It is also important to learn from both past experience and experience of others when considering the risks to which an Institution may be exposed and the best strategy available for responding to those risks (Nasir et al, 2013).

Risk identification starts with understanding the Institutional objectives, both implicit and explicit. The risk identification process must identify unwanted events, undesirable outcomes, emerging threats, as well as existing and emerging opportunities. By virtue of an Institution's existence, risks will always prevail, whether the Institution has controls or not (Nasir et al, 2013).

When identifying risks, it is also important to bear in mind that "risk" also has an opportunity component. This means that there should also be a deliberate attention to identifying potential opportunities that could be exploited to improve institutional performance. In identifying risks, consideration should be given to risks associated with not pursuing an opportunity and failure to implement an IT system to collect municipal rates (Nasir et al, 2013).

Risk identification exercise should not get bogged down in conceptual or theoretical detail. It should also not limit itself to a fixed list of risk categories, although such a list may be helpful. The following are key steps necessary to effectively identify risks from across the institution as identified by Choudhry and Iqbal (2013):

1. Understand what to consider when identifying risks;
2. Gather information from different sources to identify risks
3. Apply risk identification tools and techniques
4. Document the risks
5. Document the risk identification process; and
6. Assess the effectiveness of the risk identification process

An institution should apply a set of risk identification tools and techniques that are suited to its objectives and capabilities, and to the risk the Institution faces. Relevant and up-to-date information is important in identifying risks. This should include suitable background information where possible. People with appropriate knowledge should be involved in identifying risks (Choudhry & Iqbal 2013).

Approaches used to identify risks could include the use of checklists, judgments based on experience and records, flow charts, brainstorming, systems analysis, scenario analysis, and system engineering techniques such as noted by Choudhry and Iqbal (2013) as follows:

1. The approach used will depend on the nature of the activities under review, types of risks, the Institutional context, and the purpose of the risk management exercise.
2. Team-based brainstorming for example, where facilitated workshops is a preferred approach as it encourages commitment, considers different perspectives and incorporates differing experiences.
3. Structured techniques such as flow charting, system design review, systems analysis, Hazard and Operability (HAZOP) studies and operational modeling should be used where the potential consequences are catastrophic and the use of such intensive techniques are cost effective.
4. Since risk workshops are useful only for filtering and screening of possible risks, it is important that the workshops are supplemented by more sophisticated or structured techniques described above.
5. For less clearly defined situations, such as the identification of strategic risks, processes with a more general structure, such as 'what-if' and scenario analysis could be used.
6. Where resources available for risk identification and analysis are constrained, the structure and approach may have to be adapted to achieve efficient outcomes within budget limitations. For example, where less time is available, a smaller number of key elements may be considered at a higher level, or a checklist may be used.

The risks identified during the risk identification by Choudhry and Iqbal (2013) are typically documented in a risk register that includes (at this stage):

1. risk description
2. how and why the risk can happen (i.e. causes and consequences)
3. the existing internal controls that may reduce the likelihood or consequences of the risks
4. It is essential when identifying a risk to consider the following three elements
5. description/event - an occurrence or a particular set of circumstances
6. causes - the factors that may contribute to a risk occurring or increase
7. the likelihood of a risk occurring
8. consequences - the outcome(s) or impact(s) of an event

It is the combination of these elements that make up a risk and this level of detail will enable an institution to better understand its risks. In addition to documenting identified risks, it is also necessary to document the risk identification process to help guide future risk identification exercises and to ensure good practices are maintained by drawing on lessons learned through previous exercises Choudhry and Iqbal (2013). Documentation of this step should include as noted by Choudhry and Iqbal (2013):

9. the approach or method used for identifying risks
10. the scope covered by the identification
11. the participants in the risk identification and the information sources consulted

Experience has shown that management often disregards well controlled risks when documenting the risk profile of the Institution. It is stressed that a well-controlled risk must still be recorded in the risk profile of the Institution (Baloi & Price, 2013). The reason for this logic is that the processes for identifying risks should ignore at that point any mitigating factors (these will be considered when the risk is being assessed). Baloi and Price (2013) buttressed the following:

1. The document in which the risks are recorded is known as the "risk register" and it is the main output of a risk identification exercise. A risk register is a comprehensive record of all risks across the Institution or project depending on the purpose/context of the register. There is no single blueprint for the format of a risk register and Institutions have a great degree of flexibility regarding how they lay out their documents. The risk register serves three main purposes
2. It is a source of information to report the key risks throughout the Institution, as well as to key stakeholders.
3. Management uses the risk register to focus their priorities risks.
4. It is to help the auditors to focus their plans on the Institution's top risks.

As a minimum, the risks register records according to Baloi and Price (2013):

1. the risk
2. risk category
3. how and why the risk can happen "cause of risk"
4. how will the risk impact the Institution if it materializes "impact on Institution"
5. the qualitative and / or quantitative cost should the risk materialize
6. the likelihood and consequences of the risk to the Institution
7. the existing internal controls that may minimize the likelihood of the risk occurring
8. a risk level rating based on pre-established criteria
9. framework, including an assessment of whether the risk is acceptable or whether it needs to be treated
10. a clear prioritization of risks (risk profile)
11. accountability for risk treatment (may be part of the risk treatment plan)
12. timeframe for risk treatment

Once the risks have been identified and existing control have been assessed and it is having been established that controls are inadequate, an assessment of whether the risk is acceptable or whether it needs to be treated needs to be performed.

Statement of the problem

Risk management identification practice is an important area of project management, since it allows anticipating the occurrence of events that could adversely affect a construction project. The identification of those potential risks reduces the chances of such occurrences. However, it is worthy of note that most individuals have expressed their views on how risk management strategies are observed in the construction of school buildings in the state; more especially in Enugu Metropolis. Dike (2019) observed that most construction sites poses a real-life threat to people; as materials, tools and equipment as well as the manner in which work is carried out are unsafe. How could the level of implementation of risk management identification strategy in building construction sites in school in Enugu Metropolis be ascertained? Hence the study

Aim and Objectives of the Study

The aim of the study was to evaluate risk management identification strategy in the construction of school buildings in Enugu Metropolis of Enugu State. Specifically, the study evaluates;

1. extent at which risk management identification strategy are carried out during construction of school buildings.

Research Questions

The following research questions guided the study.

1. What is the extent at which risk management identification strategy are carried out during construction of school buildings in Enugu Metropolis of Enugu State?

Hypotheses

The following two null hypotheses were formulated and were tested at 0.5 level of significance.

Ho₁: There is no significant difference in the opinions of Builders on the extent at which risk management identification strategy are carried out during construction of school buildings in Enugu Metropolis of Enugu State based on years of experience (0-10 years and 11 years – above).

Ho₂: There is no significant difference in the opinions of Contractors on the extent at which risk management identification strategy are carried out during construction of school buildings in Enugu Metropolis of Enugu State based on years of experience (0-10 year and 11 years – above).

METHOD

The study adopted descriptive survey research design. The population of the study consists of 205 registered builders and contractors (135 builders and 70) in Enugu Metropolis of Enugu State. No sampling was carried out since the population was small and manageable. The instrument for data collection was a structured questionnaire titled "Evaluation of Risk Management Identification Strategy in Construction of School Buildings" (ERMISB). The questionnaire contained items organized into two sections namely sections A and B. Section A contains items centered on the demography of respondents. While section B centered on items in risk management identification strategy. The questionnaire items were formulated based on a 5-point Likert scale response categories of Very High Extent (VHE), High Extent (HE), Moderate Extent (ME), Low Extent (LE), and Very Low Extent (VLE). Those response categories are assigned numerical values of 5,4,3,2, and 1 respectively. Three experts from the Department of Vocational and Technical Education, University of Nigeria, Nsukka, Enugu State validated the instrument.

To establish the reliability of the instrument, the instrument was trial tested on four (10) Builders and ten (4) Contractors in Awka. Using Cronbach Alpha, the reliability coefficient of .77 was obtained. The researcher with the help of three research assistants administered and retrieved copies of the questionnaire to and from the respondents. The data collected were analyzed using mean and standard deviation to answer the research question and determine the closeness of responses respectively while t-test was used to test the null hypotheses at .05 level of significance. In answering the research questions, a criterion means of 3.5 was established. Mean responses equal to 3.5 and above were considered high extent, whereas mean responses below 3.5 were regarded as low extent. In testing the null hypotheses, when the significant value at two tailed test is equal or greater than the .05, the null hypotheses were accepted and when the significant value at two tailed test was less than .05, the null hypothesis were rejected.

RESULTS

The answer to the research question and analysis of the hypotheses are presented in tables 1 to 3.

Research Question 1: What is the extent at which risk management identification strategy are carried out during construction of school buildings in Enugu Metropolis of Enugu State?

Data collected with respect to research question 1 were presented in Table 1.

TABLE 1: Mean and Standard Deviation of Respondents on the Risk Management Identification Strategy for the Construction of School Buildings.

S/N	Items	Builders (N = 135)		Decision	Contractors (N = 70)		Decision
		\bar{X}	SD		\bar{X}	SD	
1.	Feasibility risk	4.20	0.28	High Extent	4.34	0.30	High Extent
2.	Design risk	3.70	0.16	High Extent	4.16	0.26	High Extent
3.	Funding risk	3.90	0.10	High Extent	4.31	0.37	High Extent
4.	Health and Safety risks	4.30	0.30	High Extent	4.38	0.51	High Extent
5.	Fire risk in construction projects	3.70	0.16	High Extent	4.16	0.26	High Extent
6.	Commercial risk	4.50	0.38	High Extent	4.38	0.51	High Extent
7.	Contractor risk	4.30	0.30	High Extent	4.38	0.51	High Extent
Grand		4.25	0.29	High Extent	4.41	0.37	High Extent

The data presented in Table 1 revealed that all the items in the table for builders has a grand mean of 4.25 while the contractors has a grand mean of 4.41. Therefore, the mean range of builders and contractors are above 3.50. This showed that both respondents are of the opinion that risk management identification strategy are carried out during construction of school buildings to a high extent in Enugu Metropolis of Enugu State. The values of standard deviation of 0.29 and 0.37 for builders and contractors respectively indicate that the respondents are homogeneous in their responses.

Hypothesis 1: There is no significant difference in the opinions of Builders on the extent at which risk management identification strategy are carried out during construction of school buildings in Enugu Metropolis of Enugu State based on years of experience (0-10 years and 11 years – above)

Data collected with respect to hypothesis 1 were presented in Table 2.

TABLE 2: t-test Analysis on the Risk Management Identification Strategy for the Construction of School Buildings.

Builders	\bar{X}	S.D	N	df	Std error	P	t-cal	t-crit	Decision
0 – 10 years	4.12	0.24	90	133	.315	.05	.159	1.96	Accepted
11 - above	4.17	0.38	45						

Data presented in table 2 indicated that the calculated t-value of .159 at 133 degree of freedom and at 0.05 level of significant is less than 1.96 critical t-value. Since the calculation value of 0.159 is less than the critical value of 1.96 the null hypothesis is upheld as postulated.

There is no significant difference in the opinions of Builders on the extent at which risk management identification strategy are carried out during construction of school buildings in Enugu Metropolis of Enugu State based on years of experience (0-10 years and 11 years – above)

Hypothesis 2: There is no significant difference in the opinions of Contractors on the extent at which risk management identification strategy are carried out during construction of school buildings in Enugu Metropolis of Enugu State based on years of experience (0-10 years and 11 years – above)

Data collected for hypothesis 2 are presented in Table 3.

TABLE 3: t-test Analysis on the Risk Management Identification Strategy for the Construction of School Buildings.

Contractors	\bar{X}	S.D	N	df	Std error	P	t-cal	t-crit	Decision
0 - 10 years	4.00	0.28	45	68	.40	.05	.170	1.96	Accepted
11 – above	4.20	0.30	25						

Data presented in table 3 revealed that, the calculated t-value of .170 at 68 degree of freedom and at 0.05 level of significant is less than 1.96 critical t-value. Since the calculation value of 0.170 is less than the critical value of 1.96 the null hypothesis is upheld as postulated. Therefore, there is no significant difference in the opinions of contractors on the extent at which risk management identification strategy are carried out during construction of school buildings in Enugu Metropolis of Enugu State based on years of experience (0-10 years and 11 years – above).

DISCUSSION

The data presented in table 1 revealed that all the items in the table for builders has a grand mean of 4.25 while the contractors has a grand mean of 4.41, therefore the mean range of builders and contractors are above 3.50 on the risk management identification strategy for the construction of school buildings in Enugu Metropolis of Enugu State. This showed that both respondents agreed in their responses. The closeness of the standard deviation shows the homogeneity of the respondents in their responses. At same the time, t-test to for hypotheses 1 and 2 as shown in tables 2 and 3 above indicated that there is no significant difference in the opinions of builders and contractors on the extent at which risk management identification strategy are carried out during construction of school buildings in Enugu Metropolis of Enugu State based on years of experience (0-10 years and 11 years – above).

The findings of this study are consistent with other previous findings of Ghasemi, et al. (2018) who opined that when risk identification is done accurately, it guarantees effective managing of risk as it exposes hidden sources of losses that could escalate into incidences that could not be managed with unforeseen consequences. The study also agreed with the study of Fadun and Saka (2018) who noted that the outcome of not being able to identify positive risks is equal to the consequences of not identifying adverse risks.

CONCLUSION

Based on the findings of the study, it concluded that risk management identification strategy was observed and implemented by contractors and builders of school buildings in Enugu Metropolis of Enugu State.

RECOMMENDATION

On the basis of the findings and conclusion reached, the study recommended the following.

1. Construction companies should appreciate and value the importance of risk management identification strategy before and during building construction and renovations.
2. Government at all levels, especially ministry and office of directors of works should ensure that contractors provide with detailed risk management identification documents before they embark on any building project.
3. Builders in construction sites should be encouraged by site supervisors to identify any potential risks in the site.

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