COMBATING ENVIRONMENTAL RISK ASSOCIATED WITH ABANDONED BUILDING PROJECTS IN MINNA METROPOLIS IN NIGER STATE, NIGERIA

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***Abstract**; The purpose of this study is to assess the strategies for combating environmental risk associated with abandoned building projects in Minna metropolis in Niger State, Nigeria. Two research questions and hypotheses guided the study. The study made use of descriptive survey research design. It was carried out in Minna metropolis in Niger State. The target population for the study is about 51 respondents made up of 21 Building Professional in Ministry of Land and 30 Building Professional in Urban Development Board in Niger State. There was no sampling due to relatively small size of the population. The instrument used for data collection was a 25 structured questionnaire which was validated by three experts and data were collected and analyzed using mean and standard deviation while the hypotheses were tested using t-test statistic. It was found out that all the 13 items as the environmental risk associated with abandoned building projects were agreed by the respondents and the 15 items as strategies that can be applied to overcome the risk associated with abandoned building projects were also agreed by the respondents. The study recommended that all building clients in Minna metropolis should ensure that no building projects commence without adequate planning to avoid the risk of abandonment that can pose environmental risk and Niger State Urban Development Board if possible should strictly abide by the strategies as agreed by the respondents for combating the risk associated with abandoned building projects.*

***Keywords:** Combating, Environmental Risk, Abandoned Building Project*

1. INTRODUCTION

Despite the importance of buildings to human activities, field survey revealed that there are alots of building projects abandoned in many major towns in Nigeria. Supporting this is Kolawole (2006), Ayodele and Alabi (2011) who reported that a good number of building projects initiated with good intentions are abandoned at different stages of the design and construction process Ibadan and Ikeja Township. Kolawole (2006) described abandoned building projects as the project that has started at an earlier date but the construction work for one reason or the other has stopped. An abandoned construction project is an uncompleted project in a time frame of a contract. An abandoned building project is a project in which all construction activities are totally suspended due to one reason or the other.

Some reasons advanced by Ajayi, Fadipe, Oyedele and Oluchukwu (2000) for abandonment of building projects are: incorrect estimation; lack of available skilled personnel; inadequate

planning; misunderstanding of the work requirement; poor quality control by regulatory agencies; corruption and communication gap among the personnel and poor risk management. According to Chris and Isaac (2013), most of the abandoned building projects are abandoned either at damp proof course level, lintel/window level or head course level. Odeyinka, Oladipo, and Dada (2004) reported that Nigeria has become the junk yard of abandoned projects worth billions of naira and it is greatly unthinkable that Nigeria blessed with so much great potentials in the construction industry can experience such magnitude of project abandoned. The level of abandoned building projects in Nigeria is scary and it has adverse risk on the host community and the environment.

Risk according to Jaafari (2001) is the chance of something happening that will have either positive or negative impacts on set objectives. Risk can also be described as the possibility of something unpleasant or harmful happening at an unpredictable time. Tarila, Ochieng and Awuzie (2011) identified five categories of risk associated with abandoned building projects. These are environmental risk; political risk; economic and financial risk; operational and technical risk; and force majeure. They authors further explained that environmental risk has to do with risk associated with building contractors operations which may lead to the pollution of the air, water, land and others to the host community.

1.1 Statement of the Problem

Abandoned building projects in Minna metropolis litter the host communities in several locations within the town. Abandoned building construction sites are habitat for rodents, reptiles, and dump site for refuse thereby polluting the environment and negates the aesthetics of the landscape. Apart from reducing the beauty of the area where the building is located, abandoned building projects has a lot of potentials for variety of criminal activities as it may serve as hide outs for hoodlums, robbers and miscreant people. Hence there is a need to investigate the strategies for combating the environmental risk associated with abandoned building project in Minna metropolis.

1.2 Purpose for the Study

1. Determine the environmental risk associated with abandoned building projects in Minna metropolis.
2. Find out strategies that can be applied to overcome the environmental risk associated with abandoned building projects in Minna metropolis.

1.3 Research Questions

1. What is the environmental risk associated with abandoned building projects in Minna metropolis in Niger State?
2. What are the strategies that can be applied to overcome the risk associated with abandoned building projects in Minna metropolis in Niger State?

1.4 Research Hypotheses

The following null hypotheses were formulated to guide the study and will be tested at 0.05 level of significance.

H_{O1}: There is no significant difference in the mean responses of Building Professional in the Ministry of land and Building Professional Urban Development Board in Niger State on the environmental risk associated with abandoned school building projects in Niger State.

H_{O2}: There is no significant difference in the mean responses of Building Professional in the Ministry of land and Building Professional Urban Development Board in Niger State on the strategies that can be applied to overcome the risk associated with abandoned school building projects in Niger State.

2. METHODOLOGY

The research was carried out using descriptive survey research design. The study was conducted in Minna metropolis. The population for the study consisted of all the 21 Building Professional in the Ministry of Land and 30 Building Professional in the Urban Development Board. Therefore the entire population of the study was 51 and no sampling was conducted as the population is manageable. A 25 items questionnaire instrument was used to solicit information from the respondent. The instrument was validated by three experts in the Department of Industrial and Technology Education of the School of Science and Technology Education, Federal University of Technology, Minna. The reliability of the instrument was tested using the Cronbach Alpha statistic and a coefficient of 0.75 was obtained. The researcher distributed and collected back the completed questionnaire with the help of 2 research assistants. The instrument distributed was returned at 98%. Data collected for this study was analyzed using mean, standard deviation and t-test statistics. The questionnaire items were structured using five point rating scale with response options of: Strongly Agreed (SA) 5 points, Agreed (A) 4 points, Disagreed (D) 3 points, Strongly Disagreed (SD) 2 points and Undecided 1 point for the research questions. Mean was used to answer the research questions while t-test was used to test the hypotheses at 0.05 level of significance. Real Upper and lower limit of numbers was used in order to determine the level of agreement or disagreement of the respondents to the items. To determine acceptance level, the researcher considers the real lower and upper limit of numbers on the five point scale

3. RESULTS

Research Question One

What is the environmental risk associated with abandoned building projects in Minna metropolis?

Data that answered this research question are presented in Table 1.

Table 1: Mean Responses and Standard Deviation of the Respondents on Environmental Risk Associated with Abandoned Building Projects in Minna Metropolis

N1=21,N2=30, Total N=51

S/N	Items	$\bar{x}_1$	SD1	$\bar{x}_2$	SD2	$\bar{x}_A$	SD	Decision
1	Abandoned buildings projects attract thieves who are after electrical fittings, iron rods, wood & other useful building materials.	3.71	0.88	3.28	0.46	3.50	0.67	Agreed
2	Contributes to loss in the beauty of the environment.	4.26	0.82	4.25	0.95	4.26	0.89	Agreed
3	Abandoned buildings projects serve as avenues for hiding stolen properties.	4.12	0.99	4.12	0.99	4.12	0.99	Agreed
4	Abandoned buildings are at risk of being used as refuse dump.	3.56	0.73	3.50	0.84	3.53	0.79	Agreed
5	Abandoned buildings are at risk of fire	3.79	0.84	3.25	0.88	3.52	0.86	Agreed

	outbreak in the environment.							
6	Abandoned buildings are used as waste disposal which generate diseases or health hazards.	4.12	0.88	3.48	1.28	3.80	0.68	Agreed
7	They are at risk of becoming hide-out for drug abuse.	3.59	0.86	3.20	0.90	3.40	0.88	Agreed
8	Abandoned buildings provide hide out for rapists and other sexual immoral activities.	3.56	0.87	3.43	0.95	3.50	0.91	Agreed
9	Contributes to risk of being used by hoodlums for illegal activities.	4.51	0.85	4.12	0.92	4.32	0.89	Agreed
10	Abandoned buildings are at risk of unlawful usage by homeless person trying to stay warm.	3.64	0.90	3.72	0.92	3.68	0.91	Agreed
11	Contributes to risk of becoming locations for illegal activity such as hemp smoking.	4.06	0.89	4.08	0.89	4.07	0.89	Agreed
12	Abandoned buildings used for smoking are at risk of fire hazards.	3.58	0.87	3.60	0.85	3.59	0.86	Agreed
13	Contributes to risk of becoming hide-out for kidnappers, miscreant gang or cult activities.	4.05	0.94	4.03	0.94	4.04	0.94	Agreed

Key: N_1= Number of Building Professional in the Ministry of Land, N_2= Number of Building Professional in Urban Development Board, $\bar{x}_A$= Grand mean of both groups of respondents, SD= Standard Deviation of both groups of respondents, $\bar{x}_1$= Mean of Building Professional in Ministry of Land, $\bar{x}_2$= Mean of Building Professional in Urban Development Board, SD_1= Standard Deviation of Building Professional in Ministry of Land, SD_2= Standard Deviation of Building Professional in Urban Development Board.

After the field work analysis, the data obtained from both groups of respondent presented in Table 1 shows that the listed items with average mean ranged from 3.50-4.32 were agreed upon as environmental risk associated with abandoned building projects in Minna metropolis in Niger State. The decision on the items was based on the acceptance level of above 3.00 stated for agreement to an item for the five point scale used for this study. Also the Table 1 revealed that the standard deviation of the items ranged from 0.67-0.99 whose difference is less than 1.00. This implies that both groups of respondents were not far from the mean and from one another in their responses.

Research Question Two

What are the strategies that can be applied to overcome the risk associated with abandoned building projects in Minna metropolis?

Data that answered this research question are presented in Table 2.

Table 2: Mean Responses and Standard Deviation of Respondents on the Strategies that can be Applied to Overcome the Risk Associated with Abandoned Building Projects in Minna Metropolis

N1=156,N2=60, Total N=216

S/N	Items	$\bar{x}_1$	SD1	$\bar{x}_2$	SD2	$\bar{x}_A$	SD	Decision
1	Instituting a team of building professionals to supervise & monitor every stage of building construction projects.	4.06	0.89	3.17	0.46	3.62	0.68	Agreed
2	Carrying out adequate planning & feasibility study to reduce chances of project abandonment.	3.58	0.87	4.25	0.95	3.92	0.91	Agreed
3	Proper financial plan on building construction works involving huge capital outlay.	4.05	0.94	4.12	0.99	4.09	0.97	Agreed
4	Ensuring stable government policies relating to building construction projects.	3.74	0.89	3.30	0.84	3.52	0.87	Agreed
5	Ensuring consistency & fairness in selecting building contractors for building construction projects.	4.14	0.84	3.25	0.88	3.70	0.86	Agreed
6	Ensuring adequate building materials before & during building construction works.	4.10	0.99	3.48	1.28	3.79	0.74	Agreed
7	Making policies that will discourage abandonment of ongoing building projects of previous.	3.42	0.80	3.60	0.90	3.51	0.85	Agreed
8	Ensuring merit in pre qualification procedures concerning building projects.	3.60	0.91	3.43	0.95	3.52	0.93	Agreed
9	Initiating only building projects which can be completed with the available resources within the reach client.	3.88	1.10	4.12	0.92	4.00	0.91	Agreed
10	Ensuring strict adherence to due process to prevent corruption effect that may lead to abandonment of building projects.	3.40	0.91	4.17	0.99	3.79	0.95	Agreed
11	Setting up national construction industrial bank for easy access to building construction funds.	4.37	0.91	3.57	0.72	3.97	0.82	Agreed
12	Avoiding unrealistic contract durations imposed by client.	3.60	0.91	4.17	0.99	3.89	0.95	Agreed

Key: N_1= Number of Building Professional in the Ministry of Land, N_2= Number of Building Professional in Urban Development Board, $\bar{x}_A$= Grand mean of both groups of respondents, SD= Standard Deviation of both groups of respondents, $\bar{x}_1$= Mean of Building Professional in Ministry of Land, $\bar{x}_2$= Mean of Building Professional in Urban Development Board, SD_1= Standard Deviation of Building Professional in Ministry of Land, SD_2= Standard Deviation of Building Professional in Urban Development Board.

The result of the analysis from both groups of respondent shown in Table 2 revealed that they agreed to all listed items since their average mean ranged from 3.51-4.09 which is above the acceptance level for agreement. This implies that the listed items are among the possible strategies that can be applied to overcome the risk associated with abandoned building projects in Minna metropolis in Niger State. Table 2 also indicated that the standard deviation of the items ranged from 0.68-0.76 whose difference is less than 1.00. This implies that the two groups of respondents were not far from the mean and from one another in their responses concerning the possible strategies that can be applied to overcome the risk associated with abandoned school building projects.

Hypothesis One

There is no significant difference in the mean responses of Building Professional in Ministry of Land and Building Professional in Urban Development Board on the environmental risk associated with abandoned building projects in Minna metropolis.

Table 3: T-test Analysis of the Mean Responses of the Respondents on the Environmental Risk Associated with Abandoned Building projects in Minna Metropolis

Group	N	$\bar{x}$	SD	Df	t-value	p-value, Sig.(2tailed)	Alpha Level	Decision
Building Professional in Urban Development Board	156	3.89	0.92	214	5.73	0.000	0.05	Rejected
	60	3.65	0.99					

*Significant at p≤0.05.

Key: p-value=probability value calculated by the computer.

Table 4.5 revealed the result of data analysis for testing first null hypothesis. As observed in Table 4.5, since the p-value, Sig. (2-tailed) (0.000) is less than 0.05, it implies that there is significant difference in the mean responses of the respondents. Therefore, the researcher rejects the null hypothesis regarding the perception of the stakeholders on the general environmental risk associated with abandoned school building projects. Hence, there is significant difference in the mean responses of Building Professional in Urban Development Board on the environmental risk associated with abandoned building projects in Niger State.

Hypothesis Two

There will be no significant difference in the mean responses of Building Professional in Ministry of Land and Building Professional in Urban Development on the strategies that can be applied to overcome the risk associated with abandoned building projects.

Table 4: T-test Analysis of the Mean Responses of Respondents on the Strategies that can be Applied to Overcome the Risk Associated with Abandoned Building Projects

Group	N	$\bar{x}$	SD	Df	t-value	p-value, Sig.(2 tailed)	Alpha Level	Decision

Building Professional in Urban Development Board	156	3.80	0.96	214	4.22	0.000	0.05	Rejected
	60	3..63	0.99					

*Significant at p≤0.05.
Key: p-value=probability value calculated by the computer.

Table 4.8 provided the result of data analysis for testing fourth null hypothesis. Based on the statistical data presented in Table 4.8 since the p-value, Sig. (2-tailed) (0.000) is less than 0.05, it implies that there is significant difference in the mean responses of the respondents. Therefore the researcher rejects the null hypothesis regarding the strategies that can be applied to overcome the risk associated with abandoned building projects in MInna metropolis. Hence, there is a significant difference in the mean responses of respondents on the strategies that can be applied to overcome the risk associated with abandoned school building projects in Niger State.

4. DISCUSSION OF FINDINGS

The research data presented in Table 1 revealed that environmental risk associated with abandoned building projects in Minna metropolis are numerous in numbers to includes among others are attraction of thieves who are after useful building materials, loss in the beauty of the environment, serve as avenues for hiding stolen properties, risk of being used as refuse dump or waste disposal which generate diseases or health hazards, risk of fire outbreak in the school resulting from hemp smoking plus drug abuse activities by hoodlums as well as risk of becoming hide out for kidnappers, miscreant gang or cult activities. This is because the items have their average mean ranged from 3.50-4.32 which is above the acceptance level. This implies that there are a lots of risk environmental associated with abandoned building projects in Minna metropolis in Niger State. Also from the Table 1 the standard deviation tabulated result with range of the items score from 0.67-0.99 whose difference is less than 1.00. This implies that the both groups of respondents were not far from the mean and from one another in their responses. This is an indication that Minna metropolis abandoned building projects have environmental risk associated with it. The understanding of the respondents on environmental risk associated with abandoned building projects in Minna metropolis in Niger State could be due to the proneness of the abandoned buildings projects to hideout for nefarious activities within the community.
The findings is in agreement with Lagos State government through the Special Adviser to the Governor on Central Business District (CBD), Agboola Dabiri, who said that over 60 abandoned buildings belonging to the individual clients and Federal Government in Lagos Island Central Business District (CBD) have been converted to criminal hideouts by hoodlums. He further disclosed that most of the abandoned buildings had been converted to criminal hideouts where hoodlums perpetrate their nefarious activities. (Nigerian Tribune, May 2017). The findings is also in consonance with Chris and Isaac (2013) that stated, that most of the abandoned building projects in different part of the Nigerian towns are abandoned either at damp proof course level, lintel/ window level or head course level. The level of abandoned building projects in Nigeria is scary and it has adverse effect on the national economy in disastrous ways since a lot of risks are associated with abandoned building projects in Minna metropolis in Niger State of Nigeria.

Similarly, Odeyinka, Oladipo, and Dada (2004) in a study on assessment of risks in Nigerian building construction industry, revealed that abandoned building projects litter the host communities in several locations in Nigeria. Odeyinka, Oladipo, and Dada (2004) also reported that Nigeria has become the junk yard of abandoned projects worth billions of naira and it is greatly unthinkable that Nigeria blessed with so much great potentials in the construction industry can experience such magnitude of project abandoned that lead to nefarious activities in such building site.

The t-test statistics was used to test the first null hypothesis at 0.05 level of significance in Table 3. From Table 3 since the p-value, Sig. (2-tailed) (0.000) is less than 0.05, it implies that there is significant difference in the mean responses of the respondents. Therefore, the researcher rejects the null hypothesis was rejected based on the understanding of the respondents on the environmental risk associated with abandoned building projects in Minna metropolis. Hence, there is significant difference in the mean responses of Building Professional in Urban Development Board on environmental risk associated with abandoned building projects.

The findings in Table 2 provided answer to research question two and revealed the strategies that can be applied to overcome the risk associated with abandoned building projects in Minna metropolis to include; instituting a team of building professionals to supervise and monitor every stage of building construction projects, carrying out adequate planning and feasibility study to reduce chances of project abandonment, ensuring stable government policies relating to building construction projects, ensuring consistency and fairness in selecting building contractors, ensuring availability of adequate building materials before and during building construction works, making policies that will discourage abandonment of ongoing building projects of previous government by newly elected government, initiating only building projects which can be completed with the available resources within the reach of the clients, ensuring strict adherence to due process to prevent corruption effect that may lead to abandonment of building projects, as well as avoiding unrealistic contract durations imposed by universal basic education client. This is because the items have their average mean ranged from 3.50-4.09 which is above the acceptance level or cutoff point for agreement. This implies that the listed items are among the possible strategies that can be applied to overcome the risk associated with abandoned building projects in Minna metropolis. Table 2 also indicated that the standard deviation of the items ranged from 0.59-0.76 whose difference is less than 1.00. This implies that the two groups of respondents were not far from the mean and from one another in their responses concerning the possible strategies that can be applied to overcome the risk associated with abandoned building projects.

The findings on the strategies that can be applied to overcome the risk associated with abandoned building projects in Minna metropolis was supported by Jaafari (2001) whose work on management of risks, uncertainties and opportunities on building projects found out that the advancement in building construction technologies demand new work skills, adequate planning plus feasibility study to reduce chances of project abandonment as well as new educational requirements for instituting a team of building professionals to supervise and monitor every stage of building construction projects. Okorie (2000) added that common reactions to such advancement in building construction technologies and risk management have been the re-training of workers in order to update/upgrade their technical knowledge and vocational skills needed to carry out current practices that will reduce the high incidence of building abandonment.

A vital strategy also includes knowledge and training on how to identify and manage risks associated with building projects. To buttress this further, Datol et al (2004) described risk management as the minimization of the adverse effects of risk at minimum cost through its risk identification, measurement and control. Risk management therefore, could be a comprehensive strategy which when adopted can help to overcome the risk associated with abandoned building projects in Minna in metropolis in Niger State.

The t-test statistics was used to test the fourth null hypothesis at 0.05 level of significance on Table 4. From Table 4 since the p-value, Sig. (2-tailed) (0.000) is less than 0.05, it implies that there is significant difference in the mean responses of the respondents. Therefore the researcher rejects the null hypothesis regarding the strategies that can be applied to overcome the risk associated with abandoned building projects. Hence, there is a significant difference in the mean responses of Building Professional in Urban Development Board on the strategies that can be applied to overcome the risk associated with abandoned building projects. This implies that the Urban Development Board needs to look out for the possible strategies that can be applied to overcome the risk associated with abandoned building projects in Minna Metropolis in Niger State of Nigeria.

5. CONCLUSION

Based on the findings of the study, it was concluded that abandoned building projects in Minna metropolis has environmental risk which distort the beauty of the environment, environmental hazards and pollution and also serve as place where hoodlums carried out their nefarious activities as well as risk of becoming hide out for kidnappers, miscreant gang or cult activities. Therefore, there is need for management of Niger State Urban Development Board as well as other benefiting stakeholders to be mindful of the various risks associated with abandoned buildings projects in Minna metropolis and make frantic effort to combat them through adoption of the identified possible strategies that can be applied to overcome the risk associated with abandonment of building projects in Minna metropolis in Niger State of Nigeria.

5.1 Recommendations

Based on the findings from this study, the following recommendations were made:

1. Niger State Urban Development Board management should ensure that all abandoned building projects in Minna metropolis is completed since it pose environmental risk.
2. Niger State Urban Development Board should sensitize the community on the environmental risk associated with abandoned building projects for their well-being.
3. All building clients in Minna metropolis should ensure that no building projects commence without adequate planning to avoid the risk of abandonment that can pose environmental risk.
4. Niger State Urban Development Board if possible should strictly abide by the strategies as agreed by the respondents for combating the risk associated with abandoned building projects.

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