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Project Risk Management Practices in the Construction Industry in Ghana: A Case Study of Two Construction Companies in Sekondi Takoradi Metropolis

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Abstract:- Ineffective project work in the construction sector is costing employers enormously because of poor risk management at the workplace and there are huge economic disadvantages. Risk management activities in the construction industry are extremely important in determining whether a construction project is going to succeed by adopting steps to mitigate negative risks at work. The objectives of this study were to identify the most practiced risk control approach in construction projects in Sekondi Takoradi Metropolis and to identify the effective methods used in risk identification and planning in the construction industry in Sekondi Takoradi Metropolis. A sum of 96 out of the 108 respondents from two construction firms who took part in the study, Questionnaires were the primary instrument for gathering the data for quantitative and qualitative analysis based on a Five-likert scale. The mean, standard deviation and variances were determined and utilized in analyzing the opinions of all the respondents. The results revealed that about 83.4% out of the respondent agree that there is periodic reassessment of risks in the construction industry in Ghana (Mean is 4.0104, Standard Deviation of .92332, and Variance of .853) and 79.1% out of the whole sampled size in the nutshell said that they are in agreement with a mean of 3.8421 as well as a standard deviation and a variance of 1.04490 and 1.092 respectively.

Keywords:- *Project Management, Project Risk Management, Risk Management.*

I. INTRODUCTION

Building is one of the main drivers of economic growth in any country. The sector represents a large proportion of Gross Domestic Product (GDP) of nations, making it one of the sectors that has been drawn to policymakers and other actors worldwide (Cox & Townsend, 2014). In Levy (2014), for instance, the construction industry accounts for an average of 15% of total employment generated annually in the United States of America. In the USA, the sector is also lent 12 percent annual GDP contribution. Cox and Townsend (2014) in the United Kingdom has reported that the construction sector generates 2 million jobs annually and accounts for 7% of the country's annual GDP. Although the construction industry is listed as one of the leading drivers of economic growth, Sey & Dikbas notes (2014) that this is also a risky industry with several threats. While some of the building industry is intrinsic and internal, other threats are external. Forese et al (2014) also noted that, as the result of the involvement of several companies playing a different role for the achievement of common objectives, the global construction industry has been identified as a risky industry. Besides these factors, Clough (2014) noted that the construction industry has been identified as risky as it includes constructing many projects that are often more complex in nature. The situation in Ghana is nothing other than the world situation in the building industry. In Ghana, the construction sector is also a major driver of national economic development. Abor (2009) has noted that the sector is the fourth-highest contributor to the nation's GDP and accounts for over 3 million jobs in the country. Nonetheless, due to the various types of risk-related problems associated with the construction sector in Ghana, this sector was identified as a risky sector. Various authors such as Westring (2012) and Anvuur and Kumaraswamy (2016) concluded that if it is to succeed on a worldwide basis, the Ghana construction industry should enhance risk management efficiency. According to Anvuur and Kumaraswamy (2016), Ghana is facing problems such as poor management, lag payment for completed works, the use of substandard materials and high labor costs which lead to Ghana's increasingly risky industry. In addition to these issues, Westring (2012) also pointed that the Ghana construction industry's output is low as a consequence of factors such as delayed reimbursement of employers ' wages and the effects of demoralized workers whose performance is poor and who contributed to the bad or risky situation. The limited number of building experts and a large number of non-skilled workers are also factors responsible for the high risks associated with the Ghana construction industry. This has contributed to the continuous growth in the use of unqualified staff and personnel with very low expertise in the management of construction projects (Ashworth, 2014).

II. RISK FACTORS FACED BY GHANA'S CONSTRUCTION INDUSTRY

The hazard in the construction industry can be due to external and internal factors. Such factors guide the design and should be viewed as a tactical project planning. Ghanaian construction companies face a number of challenges, as they encounter competition from foreign and local companies, political interference and the challenging economy climate. Ayirebi-Dansoh (2014) said Ghanaian construction companies have a number of problems. The risks faced by Ghana's construction industry are divided into two: external and internal risks (Berko, 2010; Smith, 2013).

Risk management

In the past four decades, research on risk management has grown considerably in the construction industry (Chapman & Ward, 2011; Lehtiranta, 2011) due to the fact that construction projects are permanently exposed to risks and are perceived as projects with greater inherent risk due to the involvement of many stakeholders. It is possible to analyze project risks from two different perspectives. From the point of view of the client, who is key to decision-making in the project, and from the point of view of the contractor, who traditionally increases costs to hedge risks, but given that the margin utility is getting lower, is facing a practice that has become unprofitable (Baloi and Price, 2003). These two groups have different behaviors against the risks of the project and different possibilities of transferring risks to the party best able to manage them (Wang et al, 2011). Currently the practice of risk management is reactive, semi-permanent, casual and unstructured within the construction industry, resulting in a lack of capacity to manage risks appropriately. The main barriers that were found for the implementation of an effective risk management system are the lack of formality of the system and the lack of integrative mechanisms of risk management among the parties involved in the project (Choudhry and Iqbal, 2013). In addition, risk management is not applied with the same rigor as other topics of the project management process (Fan et al, 2008). The system used for risk management in projects has been mainly based on a qualitative analysis, but this technique does not allow to record risks, issues, and actions taken to resolve them as well as lessons learned so that they can be used for development of new projects (Tah et al, 2001a; Hubbard, 2009).

Risk management work has grown significantly in the construction sector over the past four decades (Chapman and Ward, 2011; Lehtiranta, 2011), because the presence of many investors means that Construction projects are increasingly exposed to risks and are seen as more risk-inherent projects. Project threats can be evaluated from two different angles. For the consumer who makes decision in the plan and for the contractual partner, who typically raises hedge risk costs but who decreases the margin benefit, the practice is unprofitable (Baloi and Price, 2003). Both of these parties have different behaviors against the project's risks and multiple possibilities for the party's best management of risks (Wang et al, 2011). Risk management practices in the construction industry are currently reactive, semi-permanent, casual and unstructured, leading to a lack of risk management capacity. The main obstacles to an effective risk management process are the lack of formality of the system and integrative risk management processes between project stakeholders (Choudhry and Iqbal, 2013). Risk management, moreover, is not applied to the same extent as other project management process (Fan et al, 2008). The risk management system used in projects was mainly based on qualitative analyses, but that technique did not allow risks, problems and actions to be recorded and lessons learnt to be learned to develop new projects (Tah et al, 2001a; Hubbard, 2009). It is known that the construction industry uses a limited number of hazard-management techniques that are not suitable for any situation over time and in different countries. Brainstorming, check list, sensitivity and register of risk are some of the techniques used to identify hazard (Goh et al., 2013), and also show that qualitative risk evaluation methods are much more widely used than quantitative or semi-quantitative methods. These shortcomings have an effect on the development of the project. In building projects, risks can have serious implications for its main objectives: time, costs, scope and quality, which can mean an additional cost and therefore, in addition to other effects, a low return on the client's investment and a lost profit to the contractor. Nonetheless, hazard interaction throughout the entire value chain of construction projects is imprecise, incomplete and inconsistent (Tah and Carr, 2001a; Aven, 2011). In addition, there is no common understanding of risk and consequences of the projects, which precludes effective, early warning action and strategies to mitigate the problems of decision-making in any part of the chain adequately (Tah and Carr, 2001b). In addition, threats are often only recognized during plan and budget planning but are not tracked properly during the implementation of the project (Nielsen, 2004). The lack of a common language is another obstacle to the management of threat (Aven, 2010; Xanbo et al, 2012; Goh et al, 2013), Inadequate resources to implement the risk management process and the failure in construction projects to officialize this process (Tah and Carr, 2001b).

Problem Statement

Construction projects are associated with risk according to Loosemore (2016), as risk for all construction activities is inherent in them. The dangerous nature of construction is the reason why the industry cannot meet triple constrains in project management such as time, budget and performance targets (Loosemore, 2016). The risks associated with projects can have several adverse effects, including overall project failure into worker injury and loss of life (Flanagan et al, 2016). The Ghana construction industry is characterized by its weak regulatory framework, leading to poorly constructed and hazardous projects that are sometimes stuck in death. Inappropriate staff with respect to infrastructure risk management exacerbate this condition (Ahadzie & Amoa-Mensah, 2010). Such problems have led to increased risks in connection with building projects and, subsequently, in Ghana the construction sector. Nonetheless,

both industry players and academics are very unfamiliar with the concept of risk management in the building industry in the country (Chileshe & Yirenkyi-Fianko, 2011). Effective measures that can contribute to good risk management in the construction sector are therefore required but before that, various risks must be identified before its impact can be reduced and this is the main aim of this research work.

Research Aim and Objectives

The aim of this study is to examine the risks associated with the construction projects in Ghana. With respect to the objectives, the study sought to;

1. To identify the most practiced risk control approach in construction projects in Ghana
2. To identify the effective methods used in risk identification and planning in the construction industry in Ghana.

Research Questions

The study will seek to address the following questions:

1. What is the most practiced risk control approach in construction in Ghana?
2. What is the effective method used in the identification of risk and planning in the construction industry in Ghana?

III. METHODOLOGY

Research Approach

The theoretical approaches to empirical research are mainly divided into two categories: quantitative and qualitative. In some studies, both methods are used separately, but in other studies both are used at the same time. Also known as qualitative and quantitative approaches is mixed approach (Myers and Avison, 2002). Qualitative methods of analysis include non-numerical requests for information on a particular phenomenon (Creswell, 2003). According to Guba and Lincoln (2014), this technique is used by a researchers to detail a subject. Qualitative research techniques implies that the whole group can be reflected in every setting, so that thoughts, feelings and experiences can be viewed as a representative of the entire society. It makes it possible to resolve individual views through qualitative research interviews and to be interpreted in order to reflect the situation of the whole community. This is used when the population is perceived to be small. Creswelle (2003) suggested that the study of environments for the creation of a concept uses qualitative approaches. In comparison, a number-based request for information on a particular investigative phenomena is included in the quantitative approach (Creswell 2003). Wilcock and Mingers (2002) identified the methods of the quantitative sample as scientific methods for the collection and evaluation of primary data from a large population. Unlike qualitative approaches that take the feelings of respondents into account, quantitative methods ignore the feelings of respondents. Therefore, quantitative approaches aim to describe the opinions of respondents instead of interpreting them as qualitative methodology (Guba and Lincoln 2014).

Research Design

The study was based on the descriptive survey design. Descriptive design allows researchers to obtain information about the current state of an observed phenomenon and to make a report by explaining the views of the respondents rather than interpreting them. Descriptive models provide a detailed description of circumstances, human beings or incidents without influencing or changing the environment. Mark, Philips and Adrian (2010) noted that the development of descriptive surveys allows researchers to obtain information through interviewing or asking questions. This research aimed to use the questionnaire to request information from the interviewees and therefore identify the descriptive study design without modifying it.

Population of the Research

Creswell (2003) noted that all individuals or subjects of interest in the sample form the study population. The opinions of Wayoe Engineering and Construction Limited (WEC) and Stresster Construction Limited (SCL) workers about the risks associated with their daily operations and the management of these risks in organizations were what was required, so the study carried out across the entire team of both organisations. The fact that the problem of risk in the company was perceived to influence everyone is another variable that allowed all workers to be selected as the population. Total Wayoe Engineering and Construction workers were 95 (95), compared with fifty-five (55) at Stresster Construction. The research therefore had a population of 150.

Sample Size and Sampling Technique

Sampling was defined by Malhotra and Birks (2010) as a selection method for a proportion of the population in order to infer the entire population. Sampling is performed in analysis for a number of reasons. For example, the idea of research sampling is that Cooper et al. (2003) experience a reduction in research burdens and costs. The testing of an entire population could lead to an increase in the workload, and the company needs considerable financial resources, which is why sampling should minimize workload and costs. It can be helpful to assess the study sample size by census or table and equation. This work included the Krjechie and Morgan (2013) sample size determination table for a reasonable calculation of the sample size of the overall population. According to the sample size evaluation table, Krjechie and Morgan (2013) were fairly represented at a confidence interval of 95 percent for a population of 150. Table 3.1 shows the sample distribution size of this study.

Table 3.1: Sample Size Distribution

Company	Population	Sample size
Wayoe Engineering and Construction Ltd	95	68
Stresster Construction Limited	55	40
Total	150	108

(Source: Author, 2019)

The simple random sampling technique was then employed to select sixty-eight (68) employees from WEC and forty (40) from SCL. The simple random sampling technique was employed because the study sought to ensure that all the employees had equal chances of selection.

Data Collection Instrument and Procedure

The study uses questionnaires to collect primary data. Questionnaires are instruments that demand an answer to collect specific information on an examined phenomenon (Pinsonneault and Kraemer, 2010). This is a set of questions for respondents. As the instrument for data collection, the selection of the questionnaire in the study was told by the following: the sample size of 108 employees were considered too big for interviews; shift workers were hired, making it hard to get them all at the same time for the interview; employees were also working at different locations in Takoradi. The respondents could provide their views on the topic in their different locations and at their convenience through the questionnaire. Closed as well as open questions were included in our questionnaires. The questions finished were based on a Likert scale of 1-5 where 1 was strongly disagree and 5, strongly agreed. The researchers first received the approval of both companies ' general managers through an introductory letter with respect to the data collection process. The researcher, after approval was granted, told the administrator the study needs and intent, and then took the questionnaire on behalf of the researcher to be administered. The interviewees were issued with a two-week answer period to return the questionnaire.

Pre-testing of Questionnaire and Quality Control

It was designed for a smaller number of people in the areas of study in order to assess issues and hiccups that could arise during the main time of selection. All the major challenges facing us were solved efficiently during the primary selection era.

Data Analysis

The answers from the respondents are initially grouped under the various headings under which the questionnaire is addressed. Using SPSS v 21, the findings were analysed to get the authors to draw meaningful conclusions. The results were then analyzed. The results of the analyses obtained were presented in the form of tables, together with a summary of the content of each table and the results of each column.

Reliability of Research Instrument

The accuracy of the instrument is an indicator of its quality, Tabachnick and Fidell (2010) pointed out. Therefore, an effective tool is a coherent tool. A robust instrument can be used in similar conditions to calculate the same effect. A trustworthy questionnaire item is an item which always has the same value. Reliability contributes to trust, according to Neuman (2006). This is trustworthy instruments that produce reliable performance. In other respects, the questionnaire was dominated by narrow questions that ensured the responses were within the scope. Therefore, the questions are formulated based on the literature and also on objectives.

Ethical Considerations

Kwabia (2010) acknowledged that studies involving other parties ' feedback must not violate ethical boundaries. The research took a number of ethical considerations in this respect.

Secondly, the study ensured that both companies ' consent and management approval were obtained prior to the response from the respondents. This was done through an introduction letter with the general manager and a face to face chat. The study also ensured that all respondents had clear explanations of its criteria and intent. In doing so, the respondents understood what the study wanted them to do and also gave them the opportunity to participate willingly or to abstain from taking part in the survey. The respondents were also given assurances that their inputs were going to be kept confidential.

IV. DATA ANALYSIS AND DISCUSSION

Demographic Features of Respondents

It might be perhaps pertinent at this stage to indicate that out of the 80-questionnaire distributed 72 returned safely representing 90% response rate. Discussed here under are the gender, marital status, age range, academic background and respondent's service duration with print media house.

Gender of Respondents

Findings on respondent's gender details have been shown in table 4.0 below;

Table 4.2: Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	88	91.7	91.7	91.7
Female	8	8.3	8.3	100.0
Total	96	100.0	100.0	

Source: Field Data (2019)

Of the 96 respondents in table 4.1, 88 are male, (or 91.7%), while 8 (or 8.3%) are women in the building industry.

Looking at the quantity of energy required for projects in the construction sector, the industry is not unexpectedly dominated by men.

Level of Education of Respondents

The detailed information on the level of education of the respondent are as shown in table 4.2 below;

Table 4.3: Highest Education Qualification				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
SSSCE/WASSCE	51	53.1	53.1	53.1
Diploma	21	21.9	21.9	75.0
Degree	18	18.8	18.8	93.8
Masters	6	6.2	6.2	100.0
Total	96	100.0	100.0	

Source: Field Data (2019)

Work Experience of Respondents

The author also decided to learn about the work experience of everyone, because the findings as shown in Table 4.2 below are very important for the assessment of outcomes.

Table 4.4: How Long Workers Have Worked in The Construction Industry				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
1-5 years	45	46.9	46.9	46.9
6-10 years	33	34.4	34.4	81.2
over 10 years	18	18.8	18.8	100.0
Total	96	100.0	100.0	

Source: Field Data (2019)

Since the respondents ' experience is very significant in answering the questionnaire, they asked the respondents how long they worked in the construction industry to respond to questions. It was reported that 45 people had one-to five years' experience of 46.9 percent, 33 had 6-10 years' experience of 34.4 and finally 18 people had more than 10 years experience of 18.8 percent, which is shown in Table 4.3.

Risk Identification and Planning

Table 4.53: Continuous and Systematic Identification of Risks (C1)					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Strongly Disagree	5	5.2	5.2	5.2
	Disagree	8	8.3	8.3	13.5
	Neutral	7	7.3	7.3	20.8
	Agree	54	56.2	56.2	77.1
	Strongly Agree	22	22.9	22.9	100.0
	Total	96	100.0	100.0	

Source: Field Data (2019)

The workers were also asked if the risks in the construction industry are continuously and systematically identified. Of the 96 respondents, 5.2% were strongly in disagreement. 8 of the respondents depicting 8.3% also disagreed, 7 respondents, representing 7.3%, responded neutrally. Yet, 54 interviewees representing 56.2 percent agreed that threat detection was continuous and systematic. As shown in Table 4.13 above, 22.9% of respondents also agreed strongly.

Table 4.14: Effective Classification of Risks (C2)					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Strongly Disagree	1	1.0	1.0	1.0
	Disagree	8	8.3	8.3	9.4
	Neutral	16	16.7	16.7	26.0
	Agree	49	51.0	51.0	77.1
	Strongly Agree	22	22.9	22.9	100.0
	Total	96	100.0	100.0	

Source: Field Data (2019)

The researcher also asked the respondents whether the risks in the construction industry are routinely classified. The answers from the respondents are shown in Table 4.14 above. 1 out of 96 respondents who represent 1.0% strongly disagree that the construction industry has a systematic classification of risks, 8 representing 8.3% also disagreed. 16 people have answered this particular question in a neutral way suggesting 16.7%. But 49 respondents representing 51.0% agreed that the risks in the construction industry were routinely classified and 22 people representing 22.9 % agreed strongly.

Table 4.15: Identified Risks are Documented (C3)					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Strongly Disagree	3	3.1	3.1	3.1
	Disagree	7	7.3	7.3	10.4
	Neutral	12	12.5	12.5	22.9
	Agree	47	49.0	49.0	71.9
	Strongly Agree	27	28.1	28.1	100.0
	Total	96	100.0	100.0	

Source: Field Data (2019)

The study also sort to find out if the identified risks are documented or not. As shown in Table 4.15 above, the results of the respondents are; 3 of the respondents, which represented 3.1%, strongly disagreed that defined risks in the construction industry were documented, 7 respondents representing 7.3% also amazingly disagreed, 12 respondent representing 12.5% answered neutral, In the construction industry 47 of 96 respondents, 49.0% agreed that the risks identified are documented, 27 interviewees representing 28.1 percent strongly agreed that the identified risks were documented in the sector.

Table 4.16: Identified Risks are Communicated to all Stakeholders (C4)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.0	1.0	1.0
	Disagree	3	3.1	3.1	4.2
	Neutral	19	19.8	19.8	24.0
	Agree	41	42.7	42.7	66.7
	Strongly Agree	32	33.3	33.3	100.0
	Total	96	100.0	100.0	

Source: Field Data (2019)

There has also been an effort to determine how risks identified were communicated to all stakeholders. As shown above in Table 4.16, views of respondents are presented. Surprisingly, only1 of the respondents representing 1.0 percent strongly disagreed that all stakeholders were informed of identified risks, 3 respondents, who also expressed disagreement with 3.1%, Out of 96 people, 19.8% replied that they were neutral. Nonetheless, 41 respondents of 42.7% agreed that all stakeholders were told about the identified risks and finally 32 respondents, 33.3% of whom agreed strongly that all stakeholders are always informed of the risks found.

Risk Assessment

Table 4.17: Effective Evaluation of the Impact of Each Risk (C5)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	2.1	2.1	2.1
	Disagree	6	6.2	6.2	8.3
	Neutral	19	19.8	19.8	28.1
	Agree	45	46.9	46.9	75.0
	Strongly Agree	24	25.0	25.0	100.0
	Total	96	100.0	100.0	

Source: Field Data (2019)

In the construction industry, respondents were asked to indicate whether the impact of each perceived risk is effectively evaluated. As shown in Table 4.17, 2.1% of respondents strongly disagree with the fact that the impact of each hazard on the construction industry is effectively evaluated, 6 respondents representing 6.2% disagreed, 19 respondents who accounted for 19.8% responded positive that an effective impact assessment of each risk exists, 45 of 96 interviewees representing 46.9% accepted that the impact of the risk on the construction industry was effectively assessed, 24 respondents representing 25.0% agreed strongly that the influence of risks on the sector is efficiently evaluated.

Table 4.18: Employees with Experience Spearhead Risk Assessment Process (C6)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	8	8.3	8.3	8.3
	Neutral	14	14.6	14.6	22.9
	Agree	44	45.8	45.8	68.8
	Strongly Agree	30	31.2	31.2	100.0
	Total	96	100.0	100.0	

Source: Field Data (2019)

8 out of the total surveyed, 8.3 percent disagreed with workers with a enough experience lead risk assessment process in the construction industry, The question was also answered neutrally by 14.8% of the respondents, 44 people of 45.5 percent agreed clearly that the company's risk assessment process was led by experienced people. The question was strongly agreed by 30 respondents comprising 31.2%.

Table 4.19: Different Risk Assessment Techniques are Employed (C7)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	2.1	2.1	2.1
	Disagree	10	10.4	10.4	12.5
	Neutral	13	13.5	13.5	26.0
	Agree	46	47.9	47.9	74.0
	Strongly Agree	25	26.0	26.0	100.0
	Total	96	100.0	100.0	

Source: Field Data (2019)

The researcher also asked whether the construction industry employed different risk assessment methods. The responses of the respondents were as described above in Table 4.19. 2.1% of the respondents strongly disagreed, 10.4% of respondents also said they disagreed of the use of various techniques for risk assessment, of the respondent, 13 people, 13.5%, replied neutrally. Nevertheless, there were 46 respondents, 47.9% of whom agreed, and 25 of the total, 26.0%, strongly agreed to the use of different risk analysis techniques.

4.3.3 Risk Response

Table 4.20: Risks are avoided (terminated) (C8)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	3.1	3.1	3.1
	Disagree	15	15.6	15.6	18.8
	Neutral	36	37.5	37.5	56.2
	Agree	33	34.4	34.4	90.6
	Strongly Agree	9	9.4	9.4	100.0
	Total	96	100.0	100.0	

Source: Field Data (2019)

Table 4.20 displays the respondents ' reactions on how risks are actually handled, in order to explain how often risks in the construction industry are avoided or terminated. 3 of respondents with 3.1% strongly disagreed to the idea that in the construction sector risks were avoided, 15 of whom disagreed with 15.6%, 36 respondents representing 37.5% responded neutrally that the risks were eliminated, 33 which is 34.4% agreed that the risks in construction industry have often times been terminated, The 9.4 percent respondents strongly agreed that in the industry risks were avoided.

Table 4.21: Risks are Transferred to Third Parties (C9)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	10	10.4	10.4	10.4
	Disagree	22	22.9	22.9	33.3
	Neutral	23	24.0	24.0	57.3
	Agree	30	31.2	31.2	88.5
	Strongly Agree	11	11.5	11.5	100.0
	Total	96	100.0	100.0	

Source: Field Data (2019)

The response from respondents to the question whether risks were transferred to third parties was as mentioned above in Table 4.21. 10.4 % strongly disagreed with the case, 22.9% of the respondents also said they disagreed with the transfer of risks to third parties and 23 respondents represented 24.0% neutral responds. Yet 30 interviewees representing 31.2% agreed, 11 out of the total amounting to 11.5% agreed strongly on the transfer of risks to third parties in the construction sector.

Table 4.22: Measures are put in place to reduce risks (Tolerated) (10)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	3.1	3.1	3.1
	Neutral	15	15.6	15.6	18.8
	Agree	56	58.3	58.3	77.1
	Strongly Agree	22	22.9	22.9	100.0
	Total	96	100.0	100.0	

Source: Field Data (2019)

The investigator often asked about initiatives to mitigate risks. The response obtained from the respondents is given in Table 4.22 above. 3.1% of respondents disagreed with the introduction of risk mitigation measures, 56 of the respondents representing 58.6% said that steps to reduce risks have been put in place for the construction industry, and 15.6% responded neutral and strongly agreed responds received from 22.9% of the respondents.

Table 4.23: Risks are Accepted and Managed (Treated) (C11)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	4.2	4.2	4.2
	Neutral	11	11.5	11.5	15.6
	Agree	58	60.4	60.4	76.0
	Strongly Agree	23	24.0	24.0	100.0
	Total	96	100.0	100.0	

Source: Field Data (2019)

The researcher also asked whether the construction industry accept risks and manage them. The responses of the respondents were as described above in Table 4.23. 4.2% of respondents said they disagree to the fact that risks are accepted and managed in the construction industry, of the respondent, 11 people, 11.5%, replied neutrally. Nevertheless, there were 58 respondents, 60.4% of whom agreed, and 23 of the total, which is 24.0%, strongly agreed that risks are accepted and managed.

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Risk Control

Table 4.24: Periodic Reassessment of Risks (C12)					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Strongly Disagree	2	2.1	2.1	2.1
	Disagree	7	7.3	7.3	9.4
	Neutral	7	7.3	7.3	16.7
	Agree	52	54.2	54.2	70.8
	Strongly Agree	28	29.2	29.2	100.0
	Total	96	100.0	100.0	

Source: Field Data (2019)

2 of the respondents representing 2.1 percent strongly disagreed that the construction industry is constantly reassessing risks, 7 respondents which is 7.3% disagreed, and 7 respondents depicting 7.3% responded neutral to the question asked in the survey, Of the 96 respondents, 52 agreed to a regular reassessment of risks in the construction industry, representing 54.2 percent; 28 respondents representing 29.2% agreed strongly that the reassessment in the industry is performed on a regular basis, as shown in Table 4.24 above.

Table 4.25: Alternative risk responses are identified and employed (C13)					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Strongly Disagree	1	1.0	1.0	1.0
	Disagree	8	8.3	8.3	9.4
	Neutral	10	10.4	10.4	19.8
	Agree	58	60.4	60.4	80.2
	Strongly Agree	19	19.8	19.8	100.0
	Total	96	100.0	100.0	

Source: Field Data (2019)

The response from respondents to the question whether there were alternative risk responses identified and employed in the construction industry in Ghana as mentioned above in Table 4.25. 1.0 % strongly disagreed with the case, 8.3% of the respondents also said they disagreed with the fact that alternative risk responses are identified and employed, 10 respondents representing 10.4% gave neutral responds. Yet 58 interviewees representing 60.4% agreed, 19 out of the total amounting to 19.8% agreed strongly.

Table 4.26: Technology is employed to effectively control risks (C14)					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Strongly Disagree	10	10.4	10.5	10.5
	Disagree	13	13.5	13.7	24.2
	Neutral	12	12.5	12.6	36.8
	Agree	37	38.5	38.9	75.8
	Strongly Agree	23	24.0	24.2	100.0
	Total	95	99.0	100.0	
Missing	System	1	1.0		
Total		96	100.0		

Source: Field Data (2019)

The respondents were asked to indicate whether technology is actually employed so that effectively risks can be controlled in the construction industry and these are the responses received from the respondents as shown in table 4.26 above. 10 of the respondents depicting 10.4% indicated that they strongly disagree because there is no use of technology to effectively control risks in the industry, 13% disagreed to the assertion, 12 out of the total respondent being 96 answered neutral to the question. However, 37 of the respondents representing 38.5% said that they agree to the fact that technology is employed to effectively control risks in the construction industry, and finally, 23 of the respondents representing 24.0% strongly agreed. It is important to note that of one of the respondents did not answer this particular question.

Statistics															
		C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**	**C11**	**C12**	**C13**	**C14**
N	**Valid**	95	95	95	95	96	96	95	96	94	96	95	96	95	95
	Missing	1	1	1	1	0	0	1	0	2	0	1	0	1	1
Mean		3.8421	3.8737	3.9158	4.0421	3.8646	4.0000	3.8632	3.3125	3.1064	4.0104	4.0526	4.0104	3.9053	3.5263
Std. Deviation		1.04490	.90203	.99641	.87417	.93606	.89443	.99585	.95490	1.20454	.71811	.72005	.92332	.85145	1.28694
Variance		1.092	.814	.993	.764	.876	.800	.992	.912	1.451	.516	.518	.853	.725	1.656

V. SUMMARY, CONCLUSION AND RECOMMENDATION

Specifically, the study achieved the following objectives:

1. To identify the most practiced risk control approach in construction projects in Ghana
2. To identify the effective methods used in risk identification and planning in the construction industry in Ghana.

Main Findings

The following main findings were made after the analysis of data and results obtained from the field survey through the quantitative and qualitative methods.

To identify the most practiced risk control approach in construction projects in Ghana

Addressing objective 1, to identify the most practiced risk control approach in construction projects in Ghana, the research findings from table 4.3 above revealed that 2 of the respondents representing 2.1 percent strongly disagreed that the construction industry is constantly reassessing risks, 7 respondents which is 7.3% disagreed, and 7 respondents depicting 7.3% responded neutral to the question asked in the survey, Of the 96 respondents, 52 agreed to a regular reassessment of risks in the construction industry, representing 54.2 percent; 28 respondents representing 29.2% agreed strongly that the reassessment in the industry is performed on a regular basis, as shown in Table 4.24 above. In the nutshell, the research revealed that about 83.4% out of the respondent agree that there is periodic reassessment of risks in the construction industry in Ghana (Mean is 4.0104, Standard Deviation of .92332, and Variance of .853). The response from respondents to the question whether there were alternative risk responses identified and employed in the construction industry in Ghana as mentioned above in Table 4.25. 1.0 % strongly disagreed with the case, 8.3% of the respondents also said they disagreed with the fact that alternative risk responses are identified and employed, 10 respondents representing 10.4% gave neutral responds. Yet 58 interviewees representing 60.4% agreed, 19 out of the total amounting to 19.8% agreed strongly. This also indicates that about 80.2% of the respondents agree that alternative risk responses are identified and employed in the construction industry (Mean is 3.9053, Standard Deviation of .85145, and Variance of .725).

The respondents were asked to indicate whether technology is actually employed so that effectively risks can be controlled in the construction industry and these are the responses received from the respondents as shown in table 4.26 above. 10 of the respondents depicting 10.4% indicated that they strongly disagree because there is no use of technology to effectively control risks in the industry, 13% disagreed to the assertion, 12 out of the total respondent being 96 answered neutral to the question. However, 37 of the respondents representing 38.5% said that they agree to the fact that technology is employed to effectively control risks in the construction industry, and finally, 23 of the respondents representing 24.0% strongly agreed. It is important to note that of one of the respondents did not answer this particular question. It also approximately 62.5% of the total respondent agreed that technology is employed to effectively control risks in the construction industry (Mean is 3.5263, Standard Deviation of 1.28694, and Variance of 1.656). This answers the research question that the most practiced risk control approach in the construction industry in the metropolis is the periodic reassessment of risks.

To identify the effective methods used in risk identification and planning in the construction industry in Ghana.

Addressing objective 2: when the respondents were asked to indicate if there is a continuous and systematic identification of risks in the construction industry in the metropolis, 79.1% out of the whole sampled size in the nutshell said that they are in agreement with a mean of 3.8421 as well as a standard deviation and a variance of 1.04490 and 1.092 respectively. About 73.9% of the respondents also indicated that there is an effective classification of risks in the construction industry with a mean of 3.8737 as well as standard deviation and variance of .90203 and .814 respectively. Respondents were also asked to indicated if identified risks are actually documented in the industry and of all the responses received, 77.1% said that identified risks are documented with a mean of 3.9158 as well as .99641 and .993 respectively. Finally, the respondents were asked to indicate if identified risks are communicated to all stakeholder in the construction industry in the metropolis, and 76% indicated in agreement that stakeholders are told about identified risks with a mean of 4.0421 as well as standard deviation and a variance of .87417 and .764 respectively. This also answers the research question 2 that the effective methods used in risk identification and planning in the construction industry in the metropolis is the continuous and systematic identification of risks.

❖ ***Conclusion***

At the end of the research work, it was realized that in order for projects to be successful in the construction industry, there should be a continuous and systematic identification of risks in the identification and planning for risk stage and also the most practiced risk control approach is the periodic reassessment of risk in the construction industry.

❖ ***Recommendation***

Any researcher who want to research in this area should look at a very large sample size as this research work only looked two companies in the Sekondi Takoradi Metropolis. Researchers can look at more companies in the region if not the entire region.

REFERENCES

[1]. Q. Abor, "A critical analysis of institutional reforms in Nigeria's Oil and Gas Industry", Marina. Lagos. 2009.
[2]. G. Anvuur, T. Kumaraswamy, "Integrated Risk Management to Meet the Challenges of Today's Oil&Gas Industry", Paper presented at the Offshore Mediterranean Conference., Ravenna, Italy. 2016
[3]. Y. Ashworth, "Communication key to success in enterprise risk management", Business Insurance, 39(19), 18. 2014
[4]. T. Aven, "On the new ISO guide on risk management terminology", Reliability Engineering and System Safety, 96: 719-726. 2011
[5]. P. Baloi, A. Price, "Modeling global risk factors affecting construction cost performance", International Journal of Project Management , 21(4), 262-269. 2003
[6]. C. Chapman, S. Ward, "How to manage project opportunity and risk", Jonh Wiley and Sons Ltd. 2011
[7]. R. M. Choudhry, K. Iqbal, "Identification of risk management system in construction industry in Pakistan", Journal of Management in Engineering, 29, 42-49. 2013
[8]. F. Clough, "Risk management in small construction projects in Singapore: status, barriers and impact", International Journal of Project Management, 32(1), 116-124. 2014
[9]. [9] F. Cox, D. Townsend, "Oil Spillage and Pollution in Nigeria: Organizational Management and Institutional Framework", Journal of Environment and Earth Science 2(4), pp. 22-30. 2014
[10]. M. Fan, N. P. Lin, S. Chwen, "Choosing a project risk-handling strategy: An analytical model", International Journal of Production Economics, 112, 700-713. 2008
[11]. C. S. Goh, H. Abdul-Rahaman, Z. Abdul Samad, "Applying risk management workshop for public construction projects: case study", Journal of Construction Engineering and Management, 139, 572-580. 2013
[12]. D. W. Hubbard, "The failure of risk management", Hoboken, New Jersey: John Wiley and Sons Inc. INCOSE- International Council on Systems Engineering/Project Management Institute/Association. 2009
[13]. L. Lehtiranta, "Relational risk management in construction projects: modeling the complexity", Leadership and Management in Engineering, 11, 141-154. 2011
[14]. H. Levy, "Research on Risk Management of Petroleum Operations", Energy Procedia, 5(0), pp. 2330-2334. 2010
[15]. K. Nielsen, "Risk Management: lessons from six continents, Pipelines Engineering and Construction", Journal of Management in Engineering, 22, 61-67. 2004
[16]. H. Sey, H. Dikbas, "Potential for implementing relational contracting and joint risk management", Journal of management in engineering, **20** (4), 178-189. 2014
[17]. J. Tah, V. Carr, "Towards a framework for project risk knowledge management in the construction supply chain", Advances in Engineering Software, 32, 835-846. 2001a
[18]. J. Tah, V. Carr, "Knowledge-based approach to construction project risk management", Journal of Computing in Civil Engineering, 15, 170-177. 2001b
[19]. J. Wang, H. Yuan, "Factors affecting contractors' risk attitudes in construction projects: Case study from China", International Journal of Project Management, 29, 209-219. 2011
[20]. R. Westring, "Analysis of owner's design and construction quality management approaches in design/build projects", Journal of management in engineering, **20** (4), 162-169. 2012
[21]. Z. Xanbo, H. Bon-Gang, L. Sui Pheng, "Implementing enterprise risk management in a Chinese construction firm based in Singapore", Proceedings World Construction Conference- Global Challenges in Construction Industry. Colombo, Sri Lanka. 2012