SCHOOL OF POSTGRADUATE STUDIES
AHMADU BELLO UNIVERSITY ZARIA

PG STUDENTS' CONFERENCE 2016
(ABUPGSC 2016)

BOOK OF PROCEEDINGS

THEME: CONSOLIDATING AHMADU BELLO UNIVERSITY POSTGRADUATE STUDIES THROUGH ENHANCED MANAGEMENT, DELIVERY AND TIMELY GRADUATION

23rd - 24th November 2016 @ The School of Postgraduate Studies, Ahmadu Bello University Zaria, Nigeria

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FOREWORD

The maiden Ahmadu Bello University Postgraduate Students' Conference (ABUPGSC) was held on the Main Campus of Ahmadu Bello University (ABU), Zaria, Nigeria between 23rd and 24th November 2016. The School of Postgraduate Studies, ABU, Zaria with its pleasant surroundings, was a delightful venue for the conference.

The conference was declared opened by the Vice Chancellor, Professor Ibrahim Garba, who was ably represented by the Deputy Vice Chancellor (Academics), Prof. Ezra Amans. The Dean, School of Postgraduate Studies (SPGS), Ahmadu Bello University, Zaria, Prof. Kabir Bala, the Chief Host, cordially welcomed the participants from across the University and gave a brief introduction of the University and its research and teaching activities. The conference was attended by Deans of Faculties, Heads of Departments, Assistant Deans of Faculties, Departmental Postgraduate Coordinators, Postgraduate students Supervisors, Postgraduate students and participants from within and outside the University. There were Keynote address from renowned scholars, presentations from the representative of the National Universities Commission (NUC) and resource persons within the University. In addition, a pre-conference workshop was held during which discussants contributed to issues relating to Regulations Governing Higher Degrees in the University.

The Scientific Programme consisted of plenary sessions and parallel sessions chaired by the Deans of Faculties. The papers presented at the technical sessions cuts across the various faculties in the University. The Plenary lectures and the papers presented by resource persons in various areas of specialization are as follows:

- Journey to Timely Graduation: The Role of Students, Supervisors, Examiners and SPGS - Prof. Kabir Bala, Dean SPGS
- Referencing and Abstract in Academic Writing - Prof. Ibrahim Umar, University Librarian.
- The Role of Statistics in Research -Dr. Mamman Musa, Head, Department of Science Education.
- Aligning Postgraduate Research Topics in Industrial Sectors: The Need for Specialization -Prof. A.Z. Hassan, Director Distance Learning Center.
- NUC Bench Mark with Regards to Postgraduate Programmes – Dr. B.G. Kumo, Director Academic Standards, NUC.
- Research Trends in the Faculty of Medicine: Prof. Aisha I. Mamman.

- The ICT and Analogue Methods of Searching for Information: The Trends, Directions and Publications in Administration and Legal Complexes: Prof. Yusuf Aboki.
- Utilization of Local Research Outputs: A neglected Issue in National Development: Prof. D.D Yusuf

The 2-day conference had over 500 participants. In total, **eight (8)** plenary talks and **226** contributed talks were given. The scientific participants had many fruitful discussions and exchanges that contributed to the success of the conference. The **226** abstracts that were presented during the technical section formed the heart of the conference and provided ample opportunity for discussion. The contents of many of these can be found in this book of proceedings. All the articles published in this book of proceedings were reviewed by competent assessors. The organizing committee has made efforts to ensure that no misleading information appears in this book of proceedings. The contents of the articles are the responsibility of the authors. Hence, the organizing committee accepts no responsibility or liability for the consequences of any misleading information in the articles.

We gratefully acknowledge the financial support from Ahmadu Bello University Zaria. We would also like to thank the staff of SPGS, the University Management and other members of the University Community for their contributions and help; without them we would not have been able to organize this great meeting.

In general, the Maiden ABUPGSC 2016 was very successful. The plenary lectures and the various presentations in the different fields made it possible for non-experts in a given area to gain insight into new areas. Also, included among the speakers were several young enthusiastic PG students attending a conference for the first time, who showed tremendous interest in this maiden ABUPGSC. Therefore, considering the number of papers submitted (242) and the number of participants (over 500) at this maiden conference, we expect that the future ABUPGSC conferences will be as stimulating as this first one was, as indicated by the contributions presented in this book of proceedings.

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Chairman
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Proceedings of The Ahmadu Bello University Postgraduate Students' Conference 2016

AN ASSESSMENT OF UTILISATION OF RISK IDENTIFICATION TECHNIQUES AMONG NIGERIAN CONSTRUCTION FIRMS

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ABSTRACT

Risk identification is considered the most important step in the risk managemnet process, it also attempt to uncover the source and type of risk right from the project planning stage to finishing. It has been widely reported that the output of building construction in Nigeria is usually characterised by poor quality of work, cost and time overuns as a result of non-utilisation of risk identification. Therefore, the aim of this paper is to assess the utilisation of risk identification techniques by nigerian construction firms,with a view to identifying the most utilised techniques. Descriptive statistics was used to analyse the data collected using likert scales. The findings shows that, the risk identification techniques which were mostly adopted among various categories of firms were, checklist analysis (mean = 3.94, rank=1st), documentation review techniques (mean = 3.82,rank = 2nd), and information gathering techniques (mean = 3.80, rank = 3rd), while assumption analysis techniques (mean = 2.62, rank = 6th) is least common among various categories of firms due to low level of knowledge of the techniques. Also,the result of the ANOVA test sugests that there is significant difference between the perceptions of construction firms concerning the risk identification techniques mostly used by Nigerian construction firms. It is recommended that Construction firms should train their personnel on how to utilise assumption analysis risk identification technique, in other to further enhance their risk identification capabilities.

Keywords: Assessment, Firms, Risk Idemtification, Risk Management,Utilization.

INTRODUCTION

Inadequate identification of risks at different phases of project construction has lead to cases of cost and time overruns of most construction projects. According to Odimabo and Oduosa (2013) which stated that building construction in developing countries like Nigeria is still characterised by poor quality work, cost and time overruns, resulting from the inability of the construction firms to properly take into consideration certain risk factors during project planning and implementation stage. While other developed countries across Europe and America are already taking the lead in the application of Risk Management RM, the extent of usage and application amongst Nigerian construction firms is still reported to be at its infancy.

Various definitions of risk management have been put forward over time, and thus it is difficult to choose one which is most appropriate. Each author provides his own perception of what risk means and how to manage it, this perception depends on the profession, project and type of business (Samson, 2009).

The Australian/New Zealand Standard, (2004) described risk management as the culture, processes and structures that are directed towards realizing potential opportunities whilst managing adverse effects. this involves establishing an appropriate infrastructure and culture and applying a logical and systematic method of establishing the context, identifying, analysing, evaluating, treating, monitoring and communicating risks associated with any activity, function or process in a way that will enable organisations to minimize losses and maximize gains. One of the nine knowledge areas propagated by the Project Management Institute PMI is the Risk management RM which are; integration, scope, time, cost, quality, human resource, communications, risk, and procurement management (Project Management Institute PMI, 2008). Zou *et al*, (2007) describe risk management in the construction project management context as a systematic way of identifying, analyzing and dealing with risk as associated with a project with an aim to achieve the project objectives. But according to Smith *et al*. (2006) risk management RM cannot be perceived as a tool

to predict the future, since that is rather impossible. Instead, as a tool to facilitate the project in order to make better decisions based on the information from the investment. In this way, decisions based on insufficient information can be avoided, and this will lead to better overall performance. From the various definitions the concept in which the authors defined risk differ, however the core information is the same. Banaitiene and Banaitis (2012) affirm that RM helps the key project participant's client, contractor or developer, consultant, and supplier to meet their commitments and minimize negative impacts on construction project performance objectives. It also helps to identify those areas in which they are likely to face challenges and the measures to be taken to avert, prevent or reduce the effect of such challenges. Similarly, Akintoye and Macleod, (1997) Stated that RM is essential to construction activities in minimizing losses and enhancing profitability. Baker *et al*, (2010) also noted that Risk management is imperative to the achievement of project objectives. This study views risk management as the deliberate action taken to organise potential risk factors into groups, assess the level of severity of each risk factors and respond to them base of the level of their impact of project objectives.

Although, there are various model of the risk management process available in literature, their main steps are still the similar. According to Smith *et al.* (2006) Risk Management Process (RMP) is simply described as the basic concept of understanding, monitoring and controlling risks in a project in which the main phases of the RMP are; identification, analysis, response and review. Risk identification is the first and perhaps the most important phase in the RMP, this is because it develops the basis for the next phase which are; risk analysis, risk response and risk review of risk. Similarly, Carbone and Tippett (2004) also considered risk identification to be one of the most significant steps in managing successful projects.

A number of studies have been conducted in the area of risk management without specific emphasis on the risk identification techniques mostly adopted by Nigerian construction firms. This paper focused on the assessment of utilisation of risk identification techniques among Nigerian construction firms with a view to identifying the most often utilised technique, laying emphasis on the perception of top and middle level management personnel in building construction firms within Abuja, the Nigeria Federal Capital Territory (FCT). The top and middle level managers of construction contracting firms which include, Directors, Deputy directors, Project managers and other senior personnel who are involved in the decision making and are likely to have more knowledge regarding the risks identification techniques mostly adopted by their firms were the respondents. The scope of the risk identification techniques to be assessed is limited to the following; documentation review, information gathering, checklist analysis, assumption analysis diagram techniques and SWOT analysis techniques. These techniques were extracted from the literature.

LITERATURE REVIEW

Concept of Risk Management Process

Risk management process RMP involves the systematic application of management policies, procedures and practices to the tasks of communicating, establishing the context, identifying, analyzing, evaluating, treating, monitoring and reviewing risk (AS/NZS, 2004).The ISO 31000 listed the following as the core element of the RMP, communication and consultation, establishing the context, risk assessment risk treatment and finally monitoring and review (ISO/IEC 31010, 2009). But, according to Smith *et al* (2006) RMP is simply described as the basic concept of understanding, monitoring and controlling risks in a project in which the main phases of the RMP are; identification, assessment and analysis, and response as shown in Figure 2.1. All steps in RMP should be included when dealing with risks, in order to efficiently implement the process in the project. There are many variations of RMP available in literature, but most commonly described frameworks consist of those mentioned steps. In some models there is one more step added, and the majority of sources identify it as risk monitoring or review as was stated in the Australian/New Zealand standard. This paper focused on the risk identification phase of the RMP will be focused on, in order to assess the level of utilisation of risk identification techniques among

construction firms in Nigerian.

Risk Identification

As there is no problem that can be solved without proper identification of the source and cause of such a problem. Risk identification is an important step of the RMP which involves finding, recognizing and recording of risk event, situation or circumstances that might exist or occur which could have a material impact on project objectives and the nature of that impact. Bu-Qammaz (2007) also described risk identification as a critical aspect of RMP in which without it, the succeeding phase (i.e. risk assessment) would not be achieved. The risk identification can be done in various ways in various ways depending on the organisation and project team. Mostly, identification of risks relies on past experience of the organisation on similar projects (Winch, 2002). The purpose of identifying risks is to obtain a list with potential risks to be managed in a project (PMI, 2004).

In order to find all potential risks which might affect the delivery of a project, different techniques can be applied. It is important to use a method that the project team is most familiar with. Reasonable degree of risk identification will lead to stoke of feasible risk. Then, the identified risk must be categorised to facilitate the assessment process. Risk identification can be done using evidence based approach, examples of which are check-list and review of historical information. Others are, using systematic team approaches where a team of experts follow a systematic process like brainstorming to identify risks (ISO/IEC 31010, 2009). Table 2.1 shows list of risk identification techniques extracted from (Ewelina and Mukaela, 2011).

METHODOLOGY

Wood and Haber, (1998) described Research design as a framework that the researcher creates to plan or organise scientific investigation. Designing of a research study involves the development of a plan or strategy that will guide the collection and analyses of data. To achieve the objectives set for this study, a four step research process was followed. The summary of the sequence is illustrated in figure 3.1 below.

In order to realise the objective of this research, quantitative research approach which involves the use of structured questionnaire as data collection instrument, data analysed to be use to make comparison of mean and findings of the study to be applicable to other population. This according to Johnson and Christensen, (2008) can be considered as a quantitative research.

The population for this research was the Nigeria Construction firms; while the sample frame was the construction contracting firms within Abuja. According to data received from Federal Inland Revenue Service FIRS, (2014) which shows that there are 814 tax-paying building construction firms within the FCT. The sample size for this research was calculated using the formulae for determining sample size found in Bartlett *et al* (2001) and Rose *et al* (2015) in which the sample size was calculated to be 105 after applying the corretion formular;

$$n = \frac{M}{1 + \left(\frac{M}{N}\right)} \quad \text{---------} \quad (1)$$

This research adopts a non-random sampling technique of purposive and convenience sampling method to select the 105 firms that participated in the research.

The rationale for adopting purposive and convenience sampling method was to ensure that selected or sampled firms have adequate knowledge and experience to respond to the questions in the questionnaire and are willing to be part of the research.

Descriptive and inferential statistical tools were employed to analyse the set of data collected for this paper using the Statistical Product and Service Solutions (SPSS) software.

RESULTS AND DISCUSSIONS

Response rate

A total of 105 questionnaires were administered to construction firms, of which 49 was completed and returned. This represents about 47% effective response rate, which was retrieved and used for analysis, this percentage response rate is said to be adequate according to Moser and Kalton (1971) found in Abubakar *et al* (2014) which stated that response rate not lower than 30-40% of the sample size could be considered significant.

Position of respondents in the firm

The respondents to the questionnaire belong to the top and middle management level of the organisation that took part in the research. Most of them have clear understanding of the policies of the organisation, and have knowledge and experience as it relates to risk factors affecting their organisation. Table 4.1 shows that the senior management personnel of the

organisation forms (33.1%) of the total respondents followed closely by Project managers which are (31.7%).The C.E.O's represents (9.2%) of the respondents, while Directors are (5.6%), leaving the remaining (20.4%) to other positions which includes; senior engineers , builders, quantity surveyors and so on.

Table 4.1: Positions of respondent in the firm

Position	Percentage %
C.E.O	9.2
Director	5.6
Project manager	31.7
Senior mgt personnel	33.1
Others	20.4
Total	**100**

Source:Field survey,2015

Size of the firms

Table 4.2 shows the sizes in terms of full-time employees of the firms that participated in the research. The sizes are categorised as micro with 0-9 employees and they constitutes about (33.1%) of firms that took part in the research, while the highest participant fall into the categories of firms with 10-99 employees (small) with (35.2%) and the third category 100-299 (medium) which represents just (6.3%) and finally firms with employees above 300 (large) which constitutes (25.4%) of the firm that responded to the questionnaire.

Table 4.2: Size of firms

Category	Percentate%
0-9 (micro)	33.1
10-99 (small)	35.2
100-299 (medium)	6.3
300 and above (large)	25.4

Source: Field survey, 2015

Firms experience in the construction industry

Table 4.3 shows that majority of the firms that took part in the survey have long years of experience, this indicates that the responses provided by these firms during the research are quite significant and their experience is of high importance in assessing the impact of Global Risk Factors affecting construction industries. About 61.3% of them have been involved in construction for more than 10 years. While 29.6% of the firms have 5-10 years experience in the construction industry, and about 9.2% of the firms have less than 5 years of experience in the construction industry

Table 4.3: Firms years of experience

Years of involvement in construction activities.	Valid Percent
Less than 5 years.	9.2
5-10 years.	29.6
more than 10 years	61.3
Total	100.0

Source: Field survey, 2015

Region(s) in which the firms have executed project in the last five years

The information regarding the region(s) in Nigeria in which the construction firms have executed project in the last five years, is important to verify if the response from the firms could be used to reflect the perception of construction firms in other part of the country in which the survey could not cover

Table 4.4 Region(s) in which firms have executed project in the last five years

S/N	Region	Number of Firms
1	less tha North-West	30
2	North- East	16
3	North central	49
4	South-West	19
5	South-East	18
6	South-South	19

Source: Field survey, 2015

Table 4.4 shows the six geo-political zones in Nigeria and numbers of respondent's firm that have executed project in each of the six geo-political zones. Aside from north-central (Abuja) which is the study area for the research that has 49 firms, other zone in which the firms have executed project include north-west with 30 firms, 19 firms have executed project in south-west and south-south, 18 firms has executed project in the south-east and finally north-east with 16 firms which has the lowest number of firms that have executed project in that zone in the last 5 years. This may be as a result of insurgency in that region. These further justify the choice of Abuja as the study area in which a quit significant number of the respondent firms have executed project in other geo-political zones.

Utilisation of risk identification techniques.

The assessment of the utilisation of risk identification techniques was based on The ISO/IEC standard 31010, (2009) which contains some of the global best practices of risk identification. The table below shows the level of adoption of the various risk identification techniques across different categories of firms.

Table 4.5 shows that amongst the micro firms the following risk identification techniques were "Often" utilised; information gathering techniques with a weighted mean of 4.00 followed by checklist Analysis with mean of 3.71, documentation review with mean of 3.67, SWOT analysis with mean of 3.59 and diagram techniques with a weighted mean of 3.50, while assumption analysis with mean of 2.72 is "sometimes" utilised. Similarly, for small firms, items 1,2,3,4 and 5 are "Often" utilised, while item 6 (Assumption analysis) is "sometimes" utilised. The table further shows that items 1 and 3 are "Often" used by medium firms, while items 2, 4, 5 and 6 are utilised "sometimes". Finally, for large firms, documentation review techniques with mean of 3.86, checklist analysis with mean of 3.71 and information gathering technique with mean of 3.57 are "often" utilised, while SWOT analysis with mean of 3.23, diagram techniques with mean of 3.36 and assumption analysis with mean of 2.62 are "sometimes" utilised. Table 4.6 shows the overall ranking of the risk identification techniques mostly used by different categories of construction firms. The table revealed that checklist analysis is "often" utilised by construction firms as it was ranked 1st with the highest weighted mean of 3.94, while assumption analysis techniques with the lowest weighted mean of 2.62 was ranked 6th. The low ranking of the assumption analysis may by as a result of inadequate knowledge of the technique by most firms, as most respondent find it difficult to validate most of their assumptions.

Test of Research Hypotheses

In order to conduct an inferential test for the study to identify the significant differences in the means of the four categories of construction firms assessed in this study the following hypothesis was postulated i.e. H_0 = there is significant difference between the perceptions of construction firms concerning the risk identification techniques mostly adopted. Table 4.7 shows the results of the ANOVA statistic test for the null hypothesis.

The results of ANOVA statistic test in table 4.7 shows the P calculated values for all the items listed are greater than 0.05 level of significance (i.e. P is significant at $p < 0.05$) which suggested that the null hypothesis should be accepted i.e. there is significant difference between the perceptions of construction firms concerning the risk identification techniques mostly used by Nigerian construction firms.

CONCLUSIONS AND RECOMMENDATIONS

It was found that out of the six identified risk identification techniques assessed, checklist analysis with mean value of 3.94 was ranked 1st, documentation review with mean value of 3.82 was ranked 2nd , information gathering with mean value of 3.52 and was ranked 3rd were found to be "often" utilised by construction firms. This finding was contrary to that of previous study by Baloi (2002) which found that checklist analysis is rarely used by construction firms.

Conclusion

The assessment of the utilisation of risk identification techniques among Nigerian construction firms is necessary in order to unravel ares that needs to be improved upon, so as to reduce the cases of poor quality of work, cost and time overrun that characterised construction activity in Nigerian as a result of the inability of the construction firms to utilise the risk identification techniques. The risk identification techniques mostly adopted by Nigerian construction firms was found to be Checklist analysis technique and documentation review technique which were relatively easy to use when compared to diagram techniques and assumption analysis.

Recommendations

In view of the finding and conclusion, the following recommendation weas put forth:

Construction firms should train their personnel on how to utilise assumption analysis risk identification technique among other risk identification techniques, in other to further enhance their risk identification capabilities.

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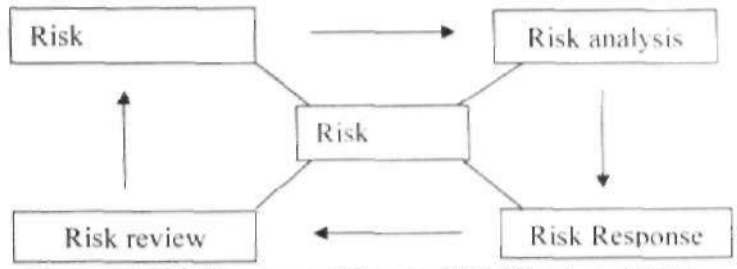

Figure 2.1 Risk Management Process RMP (*Smith et al 2006*)

Table 2.1 Risk Identification Techniques

Techniques	Types
Information gathering	Workshops
	Brainstorming
	Interviews
	Questionnaires
	Benchmarking
	Consulting experts
	Past experience
	Delphi technique
	Risk breakdown structure
	Visit locations
Documentation	Databases, historical data from similar projects
	Templates
	Checklists
	Study project documentation (plan, files etc.)
	Study specialist literature
Research	Stakeholder analysis
	Research assumptions
	Research interfaces

Source: Ewelina and Mukaela, (2011).

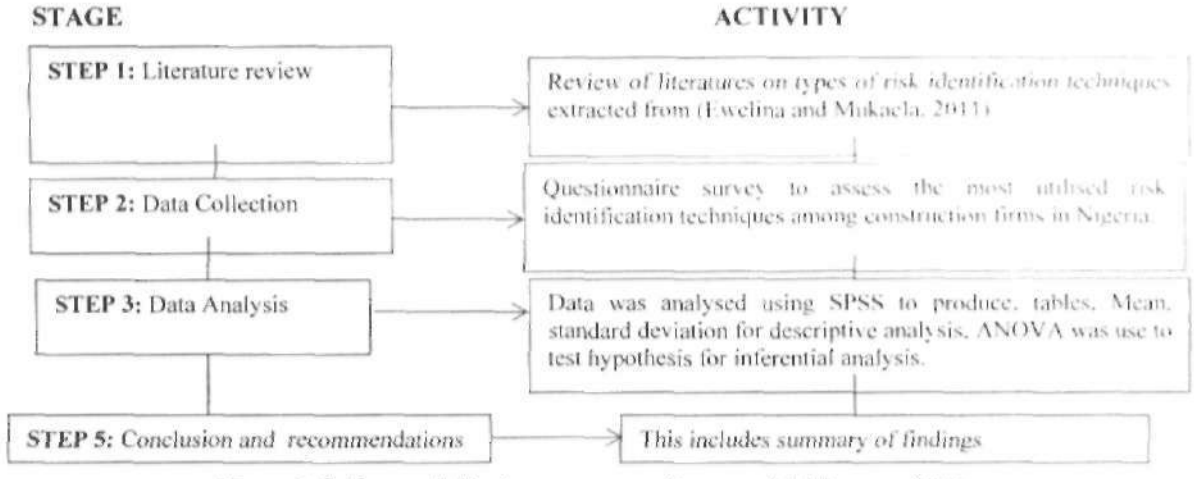

Figure 3.1: Research Design. **Source:** field Survey, 2015

Table 4.5: Utilisation of Risk identification techniques among various categories of construction firms

S/No.	Risk identification Techniques	Micro firms			Small firms			Medium firms			Large firms		
		N	Mean	SD	N	mean	SD	N	mean	SD	N	mean	SD
1	Checklist Analysis	17	3.71	.985	14	4.36	.745	3	4.33	.577	14	3.71	.825
2	Documentation Review	18	3.67	.970	14	4.07	.616	3	3.33	1.155	14	3.86	.770
3	Information Gathering	18	4.00	1.029	14	3.71	1.069	3	4.00	1.000	14	3.57	.938
4	SWOT Analysis	17	3.59	1.064	13	3.77	1.166	3	3.33	1.528	13	3.23	1.363
5	Diagram Techniques	18	3.50	1.150	14	3.71	1.267	3	3.00	1.732	14	3.36	1.151
6	Assumption Analysis	18	2.72	.826	13	2.38	.961	3	3.00	1.000	13	2.62	.961

Source: Field survey, 2015.

Table 4.6. Overall utilisation of Risk Identification Techniques among Construction firms.

S/No.	Risk identification Techniques	N	Mean	Std. Deviation	Rank
1	Checklist Analysis	48	3.94	.885	1
2	Documentation Review	49	3.82	.834	2
3	Information Gathering	49	3.80	1.000	3
4	SWOT Analysis	46	3.52	1.188	4
5	Diagram Techniques	49	3.49	1.192	5
6	Assumption Analysis	47	2.62	.898	6

Source: Field survey, 2015.

Table 4.7 Result of ANOVA test for null hypothesis two.

S/N	Test Items		Sum of Squares	Df	Mean square	F	Sig. (p)
1	Documentation review	Between groups	2.037	3	.679	.976	.412
		Within groups	31.310	45	.696		
		Total	33.347	48			
2	Information gathering	Between groups	1.673	3	.558	.542	.656
		Within groups	46.286	45	1.029		
		Total	47.956	48			
3	Checklist analysis	Between groups	4.545	3	1.515	2.066	.118
		Within groups	32.268	44	.733		
		Total	36.812	47			
4	Assumption analysis	Between groups	1.341	3	.447	.538	.659
		Within groups	35.765	43	.832		
		Total	37.106	46			
5	Diagram techniques	Between groups	1.673	3	.558	.377	.770
		Within groups	66.571	45	1.479		
		Total	68.245	48			
6	SWOT analysis	Between groups	2.079	3	.693	.474	.702
		Within groups	61.400	42	1.462		
		Total	63.478	45			

Source: Field survey, 2015. Df = Degree of freedom, F = F- test, sig. (p) = probability value

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ENHANCING THE THERMO-PHYSICAL PROPERTIES OF RAMMED EARTH BY STABILIZING WITH CORN HUSK ASH

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ABSTRACT

Conventional building materials such as sandcrele and concrete blocks have high thermal cmnhn tivih and low specific heat capacity which increase thermal discomfort in comparison In rammed earth in buildings. However, rammed earth is susceptible to cracking as a result of shrinkage due the healing effect of the sun. The aim of this study is to investigate the potential of corn husk ash as a stabilizer foi the production of rammed earth blocks to improve thermal comfort in buildings. Three different levels of stabilization (0%, 10% and 20%) using corn husk ash are adopted for this study, beyond which the strength of the material is known to fail. The samples were moulded and subjected to thermal conductivity, specific heat capacity and density tests. In general there is a significant improvement in the thermal conductivity of stabilized rammed earth blocks. From the thermal conductivity test results. thermal conductivities of 0.996w/k.m', 0.637w/k.m'', and 0.489w/k.m~' were obtained for samples admixed with 0%, 10%, and 20% corn husk ash respectively. The 0"A 10%, and 20% samples had heal capacities of 962.1 j/kg.K, 984.9 j/kg.K and 993.-If/kg.K and density increased with the increase in the amount of ash from 862.3kg/m^{i} to 942.5kg/m^{3} and 959.5kg/nr respectively. Overall the 20% sample performs best when compared to the 0% and 10%. Stabilizing rammed earth with corn husk ash can improve the thermal properties of rammed earth blocks, making them suitable for use as a building material in enhancing thermal comfort.

Keywords: Corn husk ash, rammed earth blocks, thermal conductivity, specific heal capacity. Density

INTRODUCTION

As evident in developing countries such as Nigeria, it is challenging to fulfill the immense requirements for shelter with conventional construction techniques and building materials such as sandcrete blocks, concrete, aluminum and steel which are noted for their high energy consumption during production and associated negative environmental impacts (Minke 2006). This leads to a need to source for, modify and make use of locally available materials for construction.

Stulz and Mukerji (1993) reports that earth is a natural resource which is one of the oldest and versatile that is commonly used throughout the world as building material. It is cheap, has excellent heat insulation capacity and strong in compression. Rammed earth has been played down for use in the building construction industry because of its low strength, thermal conductivity inconsistencies, and need for heavy maintenance due to cracking in shrinkage mode (Kamang 1998). Earth can be stabilised so as to increase compressive strength, reduce shrinking and swelling, reduce or exclude water absorption, reduce cracking, reduce expansion and contraction using fibres. This has led to the stabilization of soil blocks with sand and clay, lime and pozzolanas, portland cement, gypsum, bitumen, sodium silicate, cow dung or horse urine, plant juices, resins, molasses, whey, animal products such as hair, termite hills, plant products such as cob and husk of stale crops such as rice and corn to improve its properties even though most of these stabilizers are costly and unsustainable.

Stabilization of rammed earth is the process of modifying the soil properties in relation to its strength, texture, voids and water resisting properties, to obtain permanent properties compatible with a particular application (Rigassi, 1985). Stabilizing rammed earth leads to irreversible change in the physical properties of soil depending on the quality of building design, materials employed, economic aspects of the project, or on issues of durability. Previous studies on rammed earth have shown that for experimental purposes, the stabilizers are added in 10% increment by weight and beyond 20% increment of ash, the strength of stabilized earth has been known to fail (Fatih & Umit, 2001; Okinade,2008).

Corn husks along with corn stalk and leaves are usually disposed either by burning or tilling into