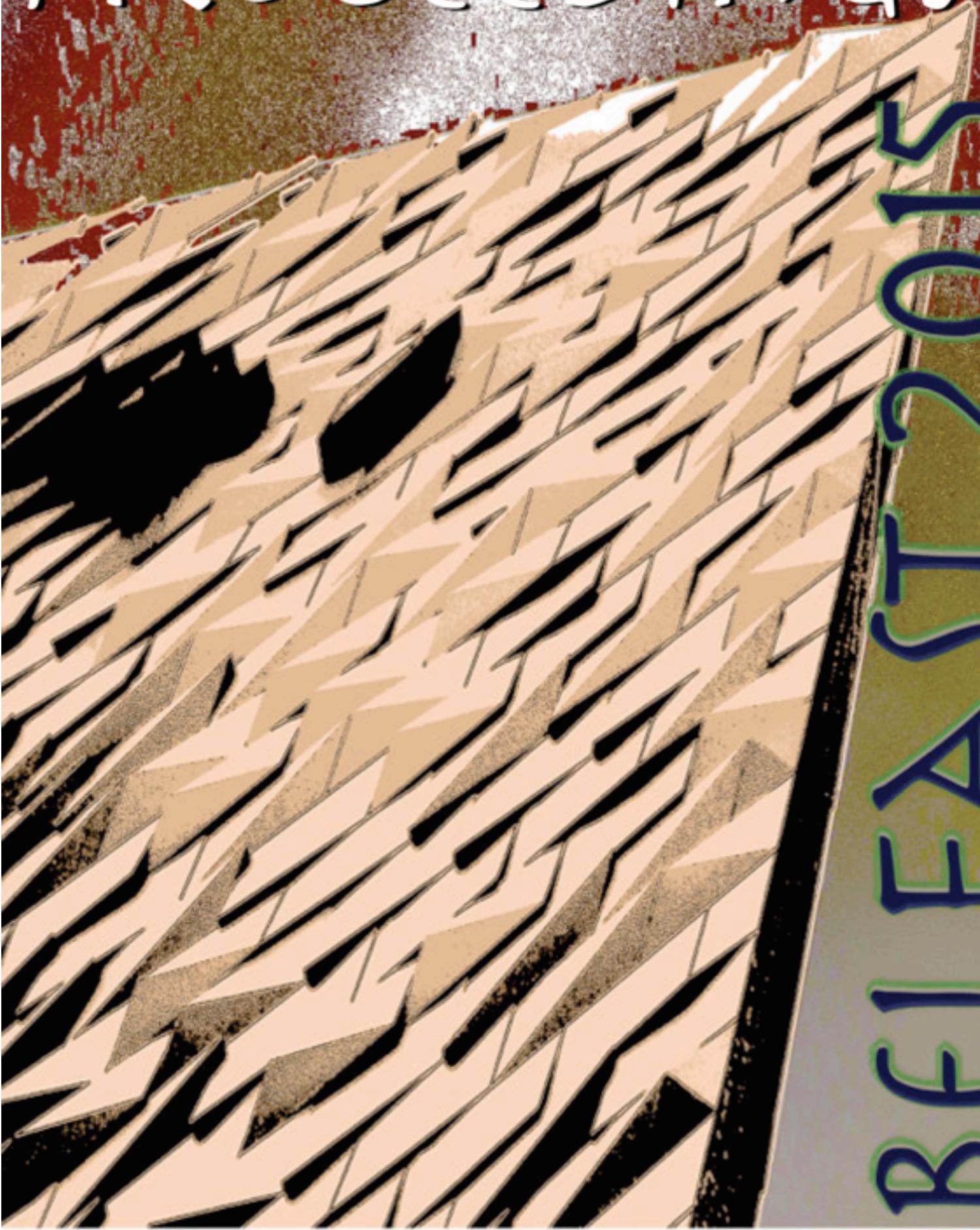


PROCEEDINGS

BELFAST 2015



International Council
for Research and Innovation
in Building and Construction

CIB W099 International Health and Safety Conference
**Benefitting Workers & Society through Inherently
Safe(r) Construction**

Ulster University 9th - 11th September 2015

AN EXPLORATORY STUDY INTO PROMOTING CONSTRUCTION HEALTH AND SAFETY IN GHANA THROUGH PUBLIC WORKS PROCUREMENT

Dorothy Donkoh⁵⁰, Emmanuel Adinyira and Emmanuel Aboagye-Nimo²

⁵⁰ *Department of Building Technology, Kwame Nkrumah University of Science and Technology, Kumasi-Ghana*

² *School of Environment and Technology, University of Brighton, Cockcroft Building, Brighton, East Sussex, BN2 4GJ, UK*

The construction industry is commonly associated with high or increasing levels of work-related hazards with ensuing injuries and fatalities. Studies have shown that procurement can further promote good construction H&S practice as it occurs throughout the life cycle of a project. However, the use of procurement as an instrument to promote H&S practices in construction has received little attention till date especially in developing countries. For this reason, the research aimed to explore practical measures to improve construction H&S through public works procurement in Ghana. Qualitative data was collected through semi-structured interviews. Seven respondents (procurement managers, consultants and Quantity surveyors), selected through a non-probabilistic purpose sampling from public institutions participated in the survey. In Ghana, the Public Procurement Act, Act 663 which was introduced in 2003 to ensure sanity and value for money in public procurement provides guidelines for the procurement of public works. In view of this, a case study of the H&S management of project procured using the Act 663 was also carried out. This was done to ascertain how public works is carried out in the Ghanaian public sector setting by determining the various stakeholders involved, the processes the project underwent and the various considerations looked at especially under H&S. The results however indicated that the Act 663 has no clause that addresses construction H&S. The paper also finds that, H&S does not form part of the criteria for evaluating tenders. To address the constraints so as to improve upon construction H&S, certain recommendations are offered. These include the inclusion of non-ambiguous H&S requirements as criteria for evaluating tenders and the pricing of H&S items in bills of quantities. Additionally, practical measures to improving construction H&S in Ghana at the key stages of works procurement are also provided. It also includes the specific roles and involvements of other stakeholders in the procurement process.

Keywords: Ghana, Health and Safety, Public Procurement, Public Procurement Act.

INTRODUCTION

Health and safety (H&S) has become a major concern to governments and private individuals. As a result, there have been efforts all over the world to promote H&S especially H&S at work. The International Labour Organisation (ILO) estimates that 6,300 people die every day as a result of work-related diseases and injuries which is more than 2.3 million deaths per year (ILO, 2013).

The construction industry is not left out of this plague. H&S is a major concern for the construction industry (Hislop, 1999; Teo et al., 2005). About 60,000 fatal accidents occur on construction sites around the world every year (Wells and Hawkins, 2011). In 2005, the industry was the special focus of the World Day for H&S (ILO, 2005). This is because the industry is largely labour intensive and

⁵⁰ ojaysdonkoh@gmail.com

employs a large number of people such as contractors, architects, engineers and labourers, and these construction workers are involved in an inherently dangerous occupation because of the potential for exposures to multiple hazards (Lew and Lentz, 2010).

Why is H&S an issue for procurement to consider? According to Hawkins and Wells (2011), procurement procedures can further promote or inhibit good Occupational Health and Safety (OHS) practice. If the government at all levels, integrates H&S into all the stages of the procurement process, contractors will need to demonstrate their abilities to meet those requirements.

Research problem

In many developing countries (including Ghana), accurate statistics of injuries and fatalities in the construction industry are hard to come by because many of these accidents go unreported (Boakye et al., 2010). Nevertheless, the available statistics in some of these countries underscore the evidence that the construction industry is fraught with hazard and risk (Fugar et al., 2010). In the Ghanaian construction industry for example, the rates of accidents have been increasing steadily every year as indicated in table 1. In 2004, the number of accidents was 8 and this rose to 28 in 2009 (250%).

Table 1: Number of Fatal Construction Accidents from 2004 to 2009 (Boakye et al, 2010)

Year	Number of Accidents Per Year	Index
2004	8	100
2005	21	362.5
2006	29	362.5
2007	20	250
2008	30	375
2009	28	350

In developed countries, there are efficient, independent bodies in charge of H&S at the workplace, for example, the Health and Safety Executives (HSE) in the United Kingdom. Such bodies do not only enforce H&S laws, but also prosecute employers or companies when the laws are breached. That is not the case in Ghana. Ghana, like many other developing countries, cannot boast of any comprehensive national H&S policy (Bruce, 2009). Meanwhile the country is geared towards industrialization as one of the fastest growing economy of the world (Solari et al., 2012) especially after the recent oil discovery. A report by the Ghana Health Service in 2007 indicated that, Ghana's challenge of mainstreaming Occupational H&S (OHS) practices in its national developmental agenda is certainly mitigated by lack of national OHS policy. Though the nation has different agencies under different jurisdictions which monitor different industries for workplace and employee H&S including the Department of Factories Inspectorate (DoFI), there is no national body, policy nor process that govern occupational H&S in Ghana. The problem is not so much as the lack of H&S laws or policies. In the absence of these laws, the existing laws should deal with the situation. One of such laws that can greatly help improve H&S standards in the country is the Public Procurement Act, Act 663. To address the issue of in the procurement of works in Ghana, it is imperative to look at how the procurement Act addresses issues of H&S in the procurement of works and to explore the changes necessary to improve the present situation. The paper aims to explore practical measures to improve construction H&S through public works procurement in Ghana. The study focuses on only public works procurement.

UNDERSTANDING GHANA'S CONSTRUCTION INDUSTRY

Procurement can be classified into public procurement and private procurement. Public procurement generally refers to the use of public or state funds to purchase goods, services and works. Brammer

and Walker (2007) pointed out that public procurement is a significant phenomenon which is understudied

Procurement of construction contracts in Ghana alone consumes over 60% of the National Budget Expenditure according to the Public Procurement Authority in 2010. Therefore, an efficient system could ensure value for money in government expenditure which is essential to a country facing enormous developmental challenges (Ameyaw et al., 2012).

The construction industry holds the key to the development of the nation through the provision of employment opportunities, and also its contribution to the nation's GDP. The African Economic Outlook (2012) report notes that the industry contributes 8.6% to the total gross domestic product (GDP) of Ghana and employs over 1.4% of the country's labour force. The sector has grown significantly from around 4.5% of GDP in the 1980s to become one of Ghana's most important industries. The Economic Outlook Report (2013) described the construction sector as one of the sectors that have sustained the industrial sector of Ghana. According to Ashiboe-Mensah (2012) and Agbojah (2008), the stakeholders in the Ghanaian construction industry are as follows: the client (GoG Agencies and ministries, corporate organisations and individuals), the project execution team which involves the design and construction teams, end-users and financiers.

In Ghana, the growth of construction has led to the increasing severity of risks on construction sites (Kheni et al., 2008). Laryea and Mensah (2010) reported that, there is a lack of strong and appropriate H&S legislation for governing construction work and site operations in construction in Ghana. They identified two(2) Acts in Ghana (the Labour Act, 2003 and the Factories, Offices and Shops Act, 1970) that provide some form of regulatory instruments for ensuring H&S on construction sites. However, these are not strongly enforced and many contractors are not even aware of their H&S obligations under these Acts. Regulatory bodies responsible for ensuring compliance are not properly resourced to carry out their statutory responsibilities under the two legislations. This depicts that there is a big problem with construction H&S in Ghana. Most workers interviewed in the course of the study indicated that injuries and accidents are common on sites and often they have to go through long periods of frustration and pleading with employers before they are provided with their some form of compensation for injuries and accidents (Laryea and Mensah, 2010). Accident statistics show that, construction accounted for 1,108 out of a total of 6,064 accidents reported to the Labour Department in 1975. This translates into 18% of accidents in the country's occupational setting and over 1,500 accidents per 100,000 workers. Again, out of the claims reported, only 10% were settled, amounting to 150,000 US Dollars (Kheni et al., 2010).

INTEGRATING H&S INTO WORKS PROCUREMENT

According to the Victorian government (2010), there are a number of profitable benefits associated with including H&S principles into procurement which are improved productivity, reduced costs, innovation in design and construction, and better estimation and management of production and operational costs over the lifecycle of the project. Wells and Hawkins (2011) assert that many measures are needed to improve OHS, including an appropriate legal framework, an effective inspectorate, training of workers and supervisors, restrictions on working hours and wide availability of occupational health services. If these other measures are in place, procurement procedures and contract documents have the potential to act as important mechanisms to remind the parties to the contract of their obligations under the law. When these other measures are lacking, an appropriate use of procurement procedures and contract documentation has the potential to raise the standard of OHS on individual projects. Hence procurement is a direct way for clients and donors to make a real difference to OHS in their area of influence (ibid). Wells and Hawkins (2011) argued two reasons why OHS is a serious issue to consider during the process of works procurement. First; H&S legislation is increasingly holding clients responsible for the H&S of the workforce on their construction projects. This responsibility may to some extent be passed on to consultants and to contractors and subcontractors. Hence the terms on which these services are procured are critical in ensuring that the responsibility is taken seriously by all parties and that the interests of the client are safeguarded.

Second; while it is often argued that the monitoring and enforcement of H&S regulations is the responsibility of regulatory authorities, the large number and wide dispersion of construction sites means that it is practically impossible to inspect all. In this context the procurement process and the terms and conditions of the contract can be seen as complementary mechanisms for ensuring compliance with existing legislation and/or the terms and conditions of project finance. The Government of Australia (2006) revealed that certain considerations are required to integrate H&S into procurement. The considerations needed are principles, processes and application. The principles and processes refer to the reasons and steps respectively for considering H&S in procurement. It is relevant to note that, a considerable number of studies have been carried out on this topic in developed countries. However, there is still a knowledge gap on how procurement can help to improve H&S in developing countries more specifically Ghana.

RESEARCH METHOD

Semi structured interviews were conducted with seven respondents who are involved in construction procurement from the following public institutions: the Kumasi Metropolitan Assembly (KMA), Public Procurement Authority (PPA), Urban Roads Department (URD), KNUST, Architectural and Engineering Service Limited (AESL) and Building, Roads and Research Institute (BRRI). Participants were chosen based on their experience and expert knowledge in the field of study. The study adopted a non-probabilistic purposive sampling in selecting the respondents for the interview. The reason for using purposive sampling lies in the selection of information-rich cases, with the objective of yielding insight and understanding of the phenomenon under investigation. The average tenure of the respondents in the industry is nine years and all of them have a Bachelor's degree or higher. The interviews took place face-to-face between the researcher and the respondents. The interviews were audio taped and on the average took between 30 to 45 minutes. Documentary analysis of a project procured using Act 663 was also carried out which involved the examining of documents, specifically tender and contract documents, site report minutes and tender evaluation report from the assembly and juxtaposed with a model for integrating H&S into procurement. This is to highlight the limitations of the Act 663 with respect to H&S.

Interview data were transcribed verbatim and then sorted into themes. The items that were identified as themes were items that captured something important about the data in relation to the research objective and their relevance was not based on their prevalence within the dataset (Braun and Clarke, 2006). The themes are: a) H&S provisions in the PPA Act 663, b) H&S challenges in the Procurement of works, c) Incorporation of H&S into the procurement process and d) Stakeholders' roles in promoting H&S in the procurement process.

RESULTS AND DISCUSSION

DOCUMENTARY FINDINGS

Documents analysed revealed the following: At the planning stage no H&S considerations were made. At design stage H&S considerations were made for only the end-users of the building and not the construction workforce. Potential contractors were not involved in the design stage. At the tender stage H&S did not form part of criteria for evaluating tenders. General clause in the conditions of contract placing all H&S obligations on the contractor at the contract stage. During construction, regular site meetings were carried out in accordance with the Act 663 but H&S did not form part of the discussion. Inspections out were solely for inspecting work done. There was no H&S report. At the post evaluation stage, financial audits were carried out but no audit was done on H&S

INTERVIEW FINDINGS

Limitations of Act 663 with respect to construction H&S

The Act 663 enacted in 2003 has established guidelines, principles and tender committees to take charge of its objectives, it is however not clear in addressing issues of health safety. This study

therefore sought to outline the limitations of the Act with respect construction H&S. The emerging themes under the limitations are: H&S challenges that associated with the procurement of works and adequacy of H&S provisions in the Act 663.

H&S Provision in the Act 663

In response to the question “Does the Public Procurement Act address H&S issues in the procurement of works? How?”, all the respondents mentioned that there is no specific aspect of the Act 663 that gives details on H&S of issues in the procurement of works.

“I don't know of any specific H&S provisions in the Act.” (KNUST)

This confirms what was reviewed from literature that, there is no specific clause or section in the Act 663 that addresses H&S. A study by Amponsah-Tawiah and Dartey-Baah (2012) revealed that, the governments of Ghana, past and present, have not shown any political will, commitment and support for bold occupational H&S policies. The neglect of H&S provisions in the Act 663 is a barrier that affects H&S in the procurement of works as it does not make H&S mandatory.

“It is mostly donor-funded projects that insist on H&S measures in works procurement. For example, World Bank always talk about what we call the safeguards. Aside that, there isn't anything embedded in our construction procurement laws.” (KMA)

The results above indicate that there is a need to strengthen efforts to promote construction health and safety in the procurement of works. The Act 663 lacks portions on construction health and safety and needs to be amended to include a health and safety clause or provision in order health and safety mandatory.

Challenges Associated With H&S on Works Procured Under the PPA Act 663

As to the question on the H&S challenges associated with works procured under the PPA Act 663, the respondents raised the issues of inadequate enforcement and monitoring, training and inadequacy of the H&S laws as illustrated in the following quotations.

“H&S issue is a challenge in terms of implementation because it is not contractual.” (BRRI 1)

“The challenge has to do with enforcement, training and education. We are not doing much as a nation.” (KNUST)

This confirms the findings of Akorsu (2013), Kheni et al., (2008) and, Laryea and Mensah (2010) who revealed that, H&S regulations are not strongly enforced and many contractors are not even aware of their H&S obligations under these Acts. Akorsu (2013) stated that, “we tend to have fine laws, we tend to ratify labour standards as quickly as they are adopted by the ILO but we hardly enforce these.”

The respondent from PPA however mentioned that the challenge has to do with cost associated with H&S as seen in the quote below:

“There is a challenge of cost rising as a result of inclusion of H&S measures.” (PPA)

This confirms the findings of Wells & Hawkins (2011) who revealed that, improved H&S in construction comes with a cost. According to the researchers, the cost estimated in improving H&S is however less than the cost of lost time due to accidents.

The results indicates that making rules and regulation relating to health and safety of workers is one step ahead of causing a positive change in the sector but it does not end there. Going further to implement it; that is making sure individual contractors and consultants strictly adhere to these rules and regulations will make much of a difference in ensuring health and safety of workers.

Incorporating H&S into the various stages of Procurement

There are some specific processes that respondents mentioned that need to be followed when integrating H&S into procurement process. These processes are planning stage, design stage, tender stage, and tender evaluation, award of contract, construction stage and then evaluation (post).

Below are snippets of comments and views shared by respondents in relation to the various construction stages.

Planning stage -

“..... H&S will be considered through budgetary allocation. This means that the cost of construction will go up a little. For whatever the contractor does, he has to be paid and it's going to increase his preliminaries a little.” (AESL)

“Thorough investigation to determine how risky the project is, H&S issues involved. And this could help those carrying out the documentation to know exactly what they need to incorporate in their documentation.” (KNUST)

These are in line with the findings of the Government of Australia (2006) and Charles et al. (2007) who suggested that risk assessment, assigning of responsibilities is necessary at the planning stage in order to prevent accidents. Also it is emphasized that risk assessment carried out should be recorded in a register, out of which a H&S plan is developed and carried through tender (Wells and Hawkins, 2011).

Design stage -

“Design stage is involves putting together drawings Bills of quantities. Capture whatever H&S measure you envisage and incorporate it into the drawings and tender documents.”(BRRI 2)

“At this stage ask yourself the type of safety measures that will be needed... Your designs must not conflict with the use of these equipment.”(PPA)

Many H&S challenges encountered at the construction stage could be avoided if due consideration and effort was put into the planning and design stage (Charles et al., 2007; Hawkins and Wells, 2011).

Tender stage -

“H&S should be a pre-requisite in evaluating the tenders.” (AESL)

“All stated conditions for the award of contract or for a firm to qualify must be strictly adhered to during evaluation....Awards should not be based on cost alone.”(PPA)

The suggestions of the respondent from PPA are in conformity to the work of Wells and Hawkins (2011) who suggest that, per the rules of World Bank, contracts should be awarded to the ‘lowest evaluated tender’. However, if a contractor fails to meet the requirements of the client in terms of H&S, the tender should be rejected as invalid or non-conforming even though his price may be lower.

Contract stage -

“You've set the rules so you go strictly by the requirement set in the tender document to evaluate them. Those who meet the requirements are then selected for the award.” (KNUST)

Construction stage - All the respondents deemed the construction stage as a very important stage, as it is the stage where all the paper work done in the previous stages of procurement on H&S is implemented or actualizes.

“This is the implementation stage. At this level, there should be some inspectors, who will go round to make sure that, what is stated in the documents you’ve signed is provided for.” (BRRI 2)

“This is where you make sure that the contractor complies with whatever provisions concerning H&S on the ground, and everything that has been indicated to promote H&S must actualise on the project site.” (PPA)

Post evaluation stage -

“As-built drawings should be provided at the completion of the project by consultants. H&S manuals must also be provided as to how the building should be used. Accidents should be recorded.”(AESL)

The respondent also suggested that, records of accidents should be kept by policy. This will serve as a yardstick or reference point in another project. Some also suggested that H&S audits should be carried after the project has been completed as illustrated in the following comment:

“H&S audits must be carried out before and after the project.” (URD)

Wells and Hawkins (2011) advised that audits carried out after the completion of the project should not only be financial but also on H&S.

RECOMMENDATIONS AND CONCLUSIONS

The findings revealed the following: First, the Act 663 was not explicit on the issue of H&S. Secondly, H&S does not form part of the criteria for evaluating tenders. Also H&S audit is carried out before, during and after the project. There is also the use of traditional approaches where design is split from construction. This does not encourage contractor participation in the project. Lastly, there are also challenges with supervision, enforcement and monitoring of H&S measures.

To promote construction H&S at the various stages of procurement, the study recommends the following as indicated in Table 2. The recommendations are based strictly on data analysed.

Table 2: A Simplified Layout of Integrating H&S into the Stages of Construction Procurement.

Stages of Procurement	H&S considerations
Planning stage	- Scope the project. - Carry out risk assessment of the project to determine H&S issues involved. - Determine who to bring on board.
Design stage	- BOQ’s to include itemised provision of H&S, architectural drawings which are H&S friendly. - Safe method statements.
Tender stage	- Inclusion of H&S as a requirement for evaluating tenders. - Evaluating and awarding tenders based on criteria set which includes H&S.
Contract stage	- Include health and safety clause in the contract. - Clearly defined roles and responsibilities of parties especially in the area of H&S.
Construction stage	- Carry out regular site visits. - Effective monitoring and supervision to ensure compliance. - Require monthly H&S reports.
Post Evaluation stage	- H&S audits should be carried out in addition to the financial audits after the completion of the project.

To address the limitations of the Act 663 in addressing construction H&S, it is recommended that H&S issues should form part of the requirements for evaluating tenders. Again, the Public Procurement authority could also amend the law to include a clause in the Act 663 specifically on

H&S. The PPA has Standard Tender Documents which most public institutions use. H&S items must therefore be priced and captured under the preliminary section of the bill of quantities of the tender document. Laws alone may not ensure effective H&S. A collaboration between all the parties involved in the process is therefore essential. Potential contractors must also be encouraged to participate in the design process to bring their expertise to bare on a project. H&S performance targets on all projects irrespective of the scope. Again, the GhIS, GIA, GIE, who form the professional body in construction in Ghana must champion the discipline of construction H&S in Ghana on sustained basis by providing training on H&S and certification of construction professional, and the establishment of codes of practice. Lastly, the Government of Ghana should equip the Department of Labour and the Department of Factories Inspectorate with the needed resources to strengthen the monitoring and enforcement of H&S laws.

The overriding importance of human life and health suggests that any project which is completed in accordance to its cost, quality and time objectives, but fails to fully ensure the H&S of the people associated should probably be regarded as a failure (Honu et al., 2013). Literature reviewed clearly shows that procurement is an important tool that can be used in achieving social objectives, in this case H&S. Therefore a successful integration of H&S in public works procurement is of benefit to the government, client, contractor and employees (workforce) as it will help minimize construction accidents, enhances contractor's corporate's image, and also help in savings on cost. The nation as a whole saves on cost since as an accident free site will help minimize the payment of compensations.

A follow up study into the private sector of Ghana's construction industry is proposed. The proposed study will adopt a similar methodological approach with the hope of generating results that are comparable to findings presented in this paper. Comprehensive recommendations can thus be made for the private sector of the country in relation to the integration of H&S practices as requirements for the procurement of works in construction.

REFERENCES

- Akorsu, A. D. (2013) Labour Standards Application along Value Chains in Ghana: Reality Check and Policy Option Economics and Management of Networks Conference, Robinson Hotel and University Ibn Zohr Agadir, Morocco.
- Ameyaw, C., Mensah, S. and Osei-Tutu, E. (2012) Public Procurement in Ghana: The Implementation Challenges to the Public Procurement Law 2003(Act 663). *International Journal of Construction Supply Chain Management*, 2 November, Volume 2, 55-56.
- Ashiboe-Mensah, N.A. (2012) Photovoltaic Adoption in the Ghanaian Building Industry: Perceptions and Relational Dynamics of Innovation Adoption Decision Factors. Ph.D. dissertation, Kwame Nkrumah University of Science and Technology, Kumasi.
- Boakye, N.A., Fugar, F.D.K. and Akomah, B.B. (2010) Ensuring the Health and Safety of Ghanaian Construction Workers by Decentralised Government Agencies: An Exploratory Study In: Laryea, S., Leiringer, R. and Hughes, W. (Eds) *Proc West Africa Built Environment Research (WABER) Conference*, 27-28 July 2010, Accra, Ghana, 295-304.
- Brammer, S., and Walker, H. (2007) Sustainable Procurement Practice in the Public Sector: An International Comparative Study. University of Bath School of Management Working Paper Series.
- Braun, V. and Clarke, V. (2006) Using Thematic Analysis in Psychology Qualitative Research in *Psychology*, 3 (2), 77-101.
- Charles, M., Pillay, J. and Ryan, R. (2007) Guide to Best Practice for Safer Construction: Literature Review, From Concept to Completion. Icon.Net Pty Ltd.
- Government of Australia (2006) Guidance on Occupational Health and Safety in Government Procurement.

- Hislop, R. D. (1999) *Construction Site Safety: A Guide for Managing Contractors*. Illustrated. Taylor & Francis Group.
- Honu, M., Laryea, S. and Smallwood, J. (2013) *Conceptual Model for Integrating Health and Safety into Construction Procurement in Ghana*. Accra, Ghana. Procs 5th West WABER conference.
- International Labour Organization (2013) *Safety and Health at Work*.
Available at: www.ilo.org/global/topics/safety-and-health-at-work/long--en/index.htm
[Accessed 12-09-2013].
- International Labour Organization (2005) *World Day for Safety and Health at Work: A Background Paper*. International Labour Office, Geneva.
- International Labour Organization (2003) *Safety in Numbers; Pointers for Global safety at work*. ILO publications, Geneva.
- Laryea, S. and Mensah, S. (2010) *Health and Safety on Construction Sites in Ghana*. Dauphine Université, Paris, COBRA (The Construction, Building and Real Estate Research Conference of the Royal Institution of Chartered Surveyors).
- Kheni, N. A., Dainty, A. R. and Gibb, A. G. (2008) *Health and Safety Management in Developing Countries: A Study of Construction SME's in Ghana*, *Construction Management and Economics*, 26(11), 1159-1169.
- Kheni, N. A., Gibb, A. G. and Dainty, A. R., (2010) *Health and Safety Management Within Small and Medium Sized Enterprises (SMEs) in Developing Countries: Study of Contextual Influences*. *Journal of Construction Engineering and Management*, 136(10), 1104-1115.
- Public Procurement Act, Act 663, 2003
- Solari, G., O'Maonaigh N., Hesp, C., Sanchez, M., and Gutierrez, G. (2012) *The Second Fastest-growing Economy in the World in 2011*. *Worldfolio* (September 2012). A United World Supplement. Available at: <http://www.worldfolio.co.uk/region/africa/ghana/joseph-samuel-annan-deputy-minister-of-trade-ghanan1589#sthash.FmoDpEYB.dpuf> [Accessed 22-02-2014]
- The Government of Australia, (2010) *Health and Safety in Construction Procurement. A Handbook for the Public Sector*. Edition 1.
- Wells, J. D. and Hawkins, J. (2011) *Promoting Construction Health and Safety through Procurement: A briefing Note for Developing Countries*. Procs of the ICE-Management, Procurement and Law. 1-12.