

**THE ROLE OF COMMUNICATION ON FIRE SAFETY MANAGEMENT:
A STUDY OF THE UNIVERSITY OF GHANA COMMUNITY**

BY

HARRIET ANYELEY NUNOO

(10600182)

A DISSERTATION SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN


PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF

MASTER OF ARTS DEGREE IN COMMUNICATION STUDIES

OCTOBER, 2017

DECLARATION

I hereby declare that this dissertation is the result of my original research, and no part of it has been presented for another degree or diploma in this University or elsewhere. The references to related works in this dissertation have been duly acknowledged. This dissertation was supervised by Dr Gilbert K. Tietaah in accordance with the guidelines on supervision of dissertation by the University of Ghana, Legon.



.....

Gilbert K. Tietaah

Harriet Anyeley Nunoo

Date.....

Date.....

INTEGRI PROCEDAMUS

DEDICATION

I dedicate this dissertation to my daughters

Katelyn Diane Mensah

and

Carolyn Davina Mensah



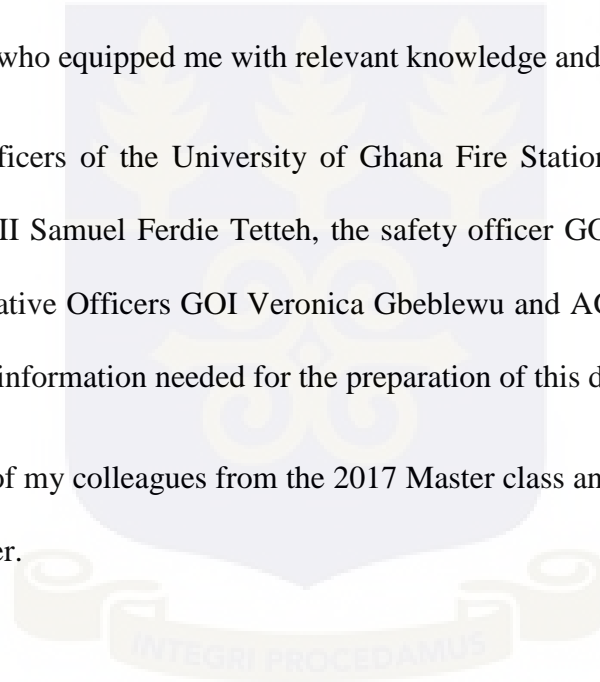
ACKNOWLEDGEMENTS

I am most grateful to the Almighty God for His love, direction and protection through which I have been able to complete this dissertation.

My unceasing appreciation goes to my supervisor, Dr. Gilbert K. Tietaah, a lecturer at the Department of Communication, University of Ghana, Legon for his patience and tolerance. He meticulously guided me in the process of conducting this dissertation. I am grateful for his enormous support. Sir, I salute you. I say “Thank you” to the entire faculty at the School of Communication Studies who equipped me with relevant knowledge and skills.

I am also grateful to officers of the University of Ghana Fire Station, Legon particularly the second in command DOII Samuel Ferdie Tetteh, the safety officer GOI Augustina Apaloo and especially the Administrative Officers GOI Veronica Gbeblewu and AGO Ellen Portia Maar for assisting me with all the information needed for the preparation of this dissertation.

I appreciate the support of my colleagues from the 2017 Master class and all those who urged me on in one way or the other.



ABSTRACT

With advancements in technology and the complex systems of high rise buildings, the trend of fire outbreaks in buildings is increasing worldwide, including developing countries like Ghana. This requires public awareness and information to ensure the safety of owners or occupiers of such premises. Fire incidences are anticipated at the University of Ghana which accommodates a number of different facility users. This study was conducted to find out the knowledge and impressions of stakeholders about the role communication plays in fire safety management. The general objective was to assess the effectiveness of communication in fire safety management in the University of Ghana, Legon

The study employed the quantitative and qualitative research methods. The multi-stage sampling technique was used to sample 150 respondents administered with questionnaires and the purposive sampling method was used to sample two officers of the University of Ghana Fire Station, Legon who were interviewed. For the theoretical framework, the systems theory and the media richness theory were used. The findings of the study revealed that community education is the highest means of communication used by the Ghana National Fire Service. The University community are aware of the communications technologies available to them to access information on fire safety management. It was also evident that the University of Ghana place much emphasis on fire safety management by supporting the Ghana National Fire Service and providing the required fire safety equipment in the University community. It is therefore recommended that the existing community education and training is intensified and replicated in all Fire Stations nationwide.

TABLE OF CONTENTS

Declaration	-----	-----	-----	-----	-----	-----	-----	-----	i
Dedication	-----	-----	-----	-----	-----	-----	-----	-----	ii
Acknowledgements	-----	-----	-----	-----	-----	-----	-----	-----	iii
Abstract	-----	-----	-----	-----	-----	-----	-----	-----	iv
Table of contents	-----	-----	-----	-----	-----	-----	-----	-----	v

CHAPTER ONE

1.1	Background of the study-	-----	-----	-----	-----	-----	-----	-----	1
1.1.1	Communication	-----	-----	-----	-----	-----	-----	-----	2
1.1.2	Communication Strategy	-----	-----	-----	-----	-----	-----	-----	4
1.1.3	The role of Communication	-----	-----	-----	-----	-----	-----	-----	5
1.1.4	Causes of fire outbreak	-----	-----	-----	-----	-----	-----	-----	5
1.1.5	Effects of fire outbreak	-----	-----	-----	-----	-----	-----	-----	6
1.1.6	Fire Safety Management	-----	-----	-----	-----	-----	-----	-----	8
1.1.7	Importance of Fire Safety Management	-----	-----	-----	-----	-----	-----	-----	8
1.2	Statement of the Research Problem	-----	-----	-----	-----	-----	-----	-----	10
1.3	Objectives of the Research	-----	-----	-----	-----	-----	-----	-----	12

1.4	Research Questions	-----	-----	-----	-----	-----	-----	13
1.5	Significance of the Research	-----	-----	-----	-----	-----	-----	13
1.6	Scope of the Research	-----	-----	-----	-----	-----	-----	14
1.7	Organisation of the Research Report	-----	-----	-----	-----	-----	-----	14

CHAPTER TWO

2.	Literature Review and Theoretical Framework	-----	-----	-----	-----	-----	-----	15
2.1	Introduction	-----	-----	-----	-----	-----	-----	15
2.2	Literature Review	-----	-----	-----	-----	-----	-----	15
2.3	Theoretical Framework	-----	-----	-----	-----	-----	-----	23
2.3.1	Systems Theory	-----	-----	-----	-----	-----	-----	24
2.3.2	Application of the Systems Theory	-----	-----	-----	-----	-----	-----	25
2.3.3	Limitations of the Systems Theory	-----	-----	-----	-----	-----	-----	26
2.3.4	Media Richness Theory	-----	-----	-----	-----	-----	-----	27
2.3.5	Application of the Media Richness Theory	-----	-----	-----	-----	-----	-----	28
2.3.6	Limitations of the Media Richness Theory	-----	-----	-----	-----	-----	-----	28

CHAPTER THREE

3.	Research Methodology	-----	-----	-----	-----	-----	-----	30
----	----------------------	-------	-------	-------	-------	-------	-------	----

3.1	Introduction	-----	-----	-----	-----	-----	-----	30
3.2	Research Settings	-----	-----	-----	-----	-----	-----	30
3.3	Research Method	-----	-----	-----	-----	-----	-----	30
3.4	Target Population	-----	-----	-----	-----	-----	-----	31
3.5	Sampling Techniques	-----	-----	-----	-----	-----	-----	31
3.6	Sources of Data	-----	-----	-----	-----	-----	-----	31
3.7	Data Collection Instruments used and Procedures	-----	-----	-----	-----	-----	-----	32
3.8	Data Presentation and Analysis	-----	-----	-----	-----	-----	-----	32
3.9	Ethical Considerations	-----	-----	-----	-----	-----	-----	33
CHAPTER FOUR								
4.	Presentation and Analysis of Data	-----	-----	-----	-----	-----	-----	34
4.1	Introduction	-----	-----	-----	-----	-----	-----	34
4.2	Demographics Characteristics of Respondents	-----	-----	-----	-----	-----	-----	34
4.3	Knowledge about Fire Safety Management	-----	-----	-----	-----	-----	-----	37
4.4	University of Ghana Fire Safety Management	-----	-----	-----	-----	-----	-----	39
4.5	Ghana National Fire Service awareness creation	-----	-----	-----	-----	-----	-----	41
4.6	How Ghana National Fire Service uses communication	-----	-----	-----	-----	-----	-----	43

4.7	Data Gathered from Interviews with Two Officers of University of Ghana Fire Station, Legon	----	----	----	----	44
-----	---	------	------	------	------	----

CHAPTER FIVE

5.	Discussion of Findings, Recommendations and Conclusions	----	----	----	----	47
5.1	Introduction	----	----	----	----	47
5.2	Discussions of findings	----	----	----	----	47
5.2.1	Research Question 1	----	----	----	----	47
5.2.2	Research Questions 2	----	----	----	----	49
5.2.3	Research Question 3	----	----	----	----	50
5.2.4	Research Question 4	----	----	----	----	50
5.3	Limitations of the Study	----	----	----	----	52
5.4	Recommendations	----	----	----	----	52
5.5	Conclusions	----	----	----	----	54
	Bibliography	----	----	----	----	
	Appendix A	----	----	----	----	
	Appendix B	----	----	----	----	

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Fire safety management is a legal responsibility of an owner or occupier of a building having control over the premises, taking reasonable actions to prevent a fire outbreak, and protecting the lives of people in the occurrence of a fire. The occupiers have to know the importance of their responsibilities and the suitable action to take in the occurrence of fire outbreak. (Chow, 2001 cited by Amoako 2014). In this regard, buildings are conceived of as complex systems which require communication networks to ensure the safety of occupants. Any communication intended for fire safety must be in accord with a systems framework in order to be effective.

The systems framework or systems approach means the design of the communication system must be integrated into the functioning of the whole building. Consequently, this requires the development of alternative safety approaches. These approaches, especially when combined with partial evacuation, have highlighted the importance of effective communication in building safety (Nadzim and Taib, 2014).

Fire is known as a main threat to the activities of universities. In terms of management, buildings and densely populated communities like universities need to lay emphasis on fire safety for their buildings. Educational buildings are one category of government assets that should be protected

against fires, because they play an important role as temporary common gathering places for students, teachers and communities. It is acknowledged that fires are not only a threat to occupants of the buildings, but also to the properties and the general environment (Nadzim and Taib, 2014).

1.1.1 Communication

According to Keyton (2011) communication is “the process of transmitting information and common understanding from one person to another” (Owusu, 2014). Communication therefore refers to the transfer of messages from one person to another or a group of persons through any medium. It is the process of sharing information among two or more individuals or groups which leads to the desired conclusion. The aims of communications among others are to provide information, seek information, persuade or express feelings through appropriate gestures and language. Communication is said to be effective when it obtains an ideal outcome, response, or feedback. The information shared should be transmitted and received efficiently without the proposed meaning being distorted or altered.

Generally, people have diverse ways in communicating with each other. This may be interpersonal, group and mass communications. The United States National Wildlife Fire Communication and Education Guide (1999) identified the different methods used by people to exchange information as “communication networks”. Some of the networks such as the internet, radio, television, newspapers or advertisement are formal and established. Additionally, the

individual communities maintain an amount of effective but informal “communication networks”. These informal “communication networks” are part of all cultures and communities. They are trustworthy, effective, well-organized and easily identified. It is therefore important for the Fire Service Department to identify these “communication networks” and use them to share information.

Communication and communications systems are also significant to safe and effective performance at the fire incident scene. Communications is a fundamental and quickly progressing aspect in the operations of the Fire Service. The evolution of sophisticated appliance, systems for incident command, and congestion of radio frequency amongst other forces are inspiring change, and it is more crucial for the Fire Service officers to acquire knowledge of communications systems and strategies. Other information technology such as portable fax machines, automatic vehicle location, computerized dispatch, vast computer hardware, and more sophisticated software available is also changing rapidly as well as international standards for communications. These changes and many more require Fire Service Departments worldwide to be well-informed with communications technologies. (Fire Department Communications Manual, <http://www.iapsonline.com>)

Communication is also said to be the ‘life blood’ of an organization. It is a means by which institutions and organizations bring out changes in people’s attitude, motivate them, establish and maintain mutual relationships with their publics. The Ghana National Fire Service (GNFS) is a typical Fire Service Department or organization in Africa. It was established by Act 537, (GNFS Act of 1997) to help realize a general objective of “prevention and management of undesired fires and other related matters”.

1.1.2 Communication Strategy

A communication strategy is defined “as a well-planned series of actions aimed at achieving specific objectives through the use of communication methods, techniques, and approaches” (Mefalopulos and Kamlongera 2004) cited by Mefalopulos (2008 p: 114). According to Mefalopulos it is very essential to know that the starting point of a strategy is neither the “audience nor the message”. He presented stages for planning an effective communication strategy by the illustration of dealing with the deforestation caused by farmers who use fires to clear the grounds at the environs of the forest area.

A study conducted to explain and measure the farmer’s attitude, knowledge, and practices. The results showed the farmers did not have any precise purpose to set fire to the forest rather they have limited knowledge about fire safety technique when clearing their fields and lacked knowledge of the consequences in burning the forest. The communication strategy was therefore designed to provide fire safety training for the farmers of the area and raise the awareness and knowledge of the farmers and other stakeholders about the important of preserving the forest.

1.1.3 The role of Communication

The use of peculiar fire alarm systems has been a major way of communicating an outbreak of fire. Fire alarm systems came into existence with the origination of the telegraph so the communities were given the telegraph-alarm system. Telephone call boxes were also used. Invariably, private telephones are now used largely to report fire outbreaks. Fire alarms systems basically transmit the same message to each and every one during fires outbreaks. However,

there are numerous types of signals that could be employed to communicate outbreaks of fire; with each signal consisting of a unique set of instructions to a particular group of persons.

Communication is a major tool used by Fire Service Departments to achieve the goal of public fire safety education. To perform the task of creating and sustaining awareness on hazards of fire it is important for the Ghana National Fire Service to provide their publics with accurate information which will enable them to participate in the various aspects of fire safety management.

1.1.4 Causes of fire outbreak

According to Antwi (2013) fire outbreak is possibly the most severe hazard that Ghana experience currently (Amoako, 2014). Naturally, fuel, heat and oxygen are the three basic elements needed to start fire. These three elements are called the fire triangle and for any fire to ignite and continue burning, it is necessary to have them in their right quantities. A fire cannot start if any one of these elements is omitted. Therefore, there is the need to avoid the three elements coming together. “Ultimately fire can be prevented or extinguished by removing any one of the elements in the fire triangle” (Twumasi, 2013)

Fire outbreaks are generally caused by people through carelessness, ignorance, negligence, malicious ignition among others. This happens when the person handling the fire does not take it seriously and it gets out of hand. Other causes of domestic fires are people smoking in bed near flammable materials, cigarettes not extinguished appropriately, children playing with matches, leaving gas and stove unattended whilst cooking, careless handling of candles, and the use of

faulty electrical gadgets (Abubakar 2012). Giwa (2012) cited by Amoako (2014: p14) found that over 90% of fire outbreaks that occur in Nigeria are initiated by people's carelessness, and this could be stopped by changing "the values, cultures and practices of the people. Fire outbreak has remained a major disaster not only in Nigeria but the world over. Some of these fire disasters are caused as a result of power surges from electrical wires".

Other studies Kachenje *et al.*, (2010) shown that non-existence and faulty of firefighting gears, lack of management of fire occurrences and absence of exit routes on high-rise buildings similarly started fire outbreaks.

1.1.5 Effects of fire outbreak

The fire disasters experienced in Ghana repeatedly caused remarkable damages, which had negative effect on socio-economic development of the affected communities. The hazards posed by these fires and the devastating effects on life and property underline the establishment of specific institutions to ensure optimum fire safety for the protection of communities and the entire nation.

The Ghana National Fire Service has the legal responsibility and the requisite knowledge in fire safety management and the necessary arrangements and actions that are essential in the prevention of day-to-day fire accidents. The Ghana National Fire Service Statistics (2017) indicate a total of 6214 fire outbreaks occurred in the country in 2015 leading to 67 injuries, 32 deaths and GH¢ 28,282,081 (\$64,890) estimated cost of damage. A total of 2,654 domestic fires were recorded making it the most frequent fire outbreaks in Ghana. This was followed by bush

fires which recorded 846, commercial fires were 742, vehicular fires were 738, electrical fires were 601, industrial fires were 172 and institutional fires were 140.

In 2016, a total of 6841 fire outbreaks occurred in Ghana resulting in 84 injuries, 32 deaths and damage to properties worth GH¢ 96,822,143. Out of this, domestic fire was leading with 2,333, followed by 1817 bush fires, 783 vehicular fires, 722 commercial fires, 597 electrical fires, 159 institutional fires and 150 industrial fires. The statistics indicated an increase of 10.9 % fire outbreaks in 2016 when compared to 2015. There was a decrease in the other nature of fires however; the statistics portray an increase of 13.57% in institutional fires and 114.78% in bush fires.

According to the Ghana National Fire Service these fires have affected not only private households and commercial entities but also government institutions like the Ministry of Foreign Affairs offices in 2009, Ministry of Defense in 2015, key strategic installations such as the Tema Oil Refinery in 2014 and the Tema Central Medical Stores in 2015, as well as the fire and flood disaster which occurred at the Kwame Nkrumah Circle on June 3, 2015. The spate of institutional, commercials, vehicular, market and industrial fire outbreaks has therefore raised concerns over the state of fire safety management in the country.

1.1.6 Fire Safety Management

Nadzim and Taib (2014) defined fire safety management as the mixture or co-ordinating of activities or programmes towards the prevention of injuries and damages from any fire occurrence. Such programmes consist of fire drill training, fire prevention (housekeeping, periodic inspection etc), escape routes, staff training among others. They gave reasons why fire safety management systems must be put in place at educational buildings to avert any fire outbreaks.

1.1.7 Importance of Fire Safety Management

According to DiGuisseppi et al., (2002) the Fire Protection Association of Australia (2004) specifies the importance of “fire safety knowledge in the community’s role in the avoidance and readiness to deal with fire. It is necessary that communities are “provided with training to retain an adequate level of fire safety knowledge. It is also important that people retain an adequate level of knowledge about the importance of maintaining functional fire safety equipment” (Amoako, 2014).

According to the British Institute of Facilities Management Good Practice Guide (2016), fire safety management is of the utmost importance within an organization since majority of fires are preventable. When the fire occurs then the potential losses can result in a majority of organizations never recovering. It is therefore important for organizations and institutions to have an effective fire safety management system. The Guide requires that employers, occupiers and owners of all buildings as well as persons responsible for the management of these

buildings should ensure Fire Safety Policy or Fire Strategy, Fire Risk Assessment and Maintenance schemes are in place to ensure fire safety.

The Fire Safety Policy or Fire Strategy is to show how the organization will prevent fire and manage fire safety. The organization should also be able to exhibit they have a policy not just for the general running of their business but also that they consider fire safety very important and have preventive and protective measures in place. The fire risk assessment process is the most important means for identifying fire hazards, ensuring proper preventative and protective measures have been put in place, followed by maintenance and review of fire safety. This will indicate that the organization has identified all of the hazards present in the building, the people that may be affected and have sufficient controls to reduce the fire safety risk. The assessment will also help persons responsible for fire safety recognize risks that can either be removed or reduced and to decide the general fire safety precautions that need to be in use to protect people against any fire risks that remain. The Maintenance scheme will equally ensure that assets within the building are maintained in accordance with statutory requirements.

The main objectives of fire safety management comprise of ensuring that fire safety procedures “are kept in good order; to initiate actions which in case of fire would help occupants to reach a safe place; and to review adequacy of existing fire safety measures where there is a change of building, a change of building use and new technology on fire services installation” (Chow, 2002 cited by Amoako, (2014).

While Chow (2002) does not expressly acknowledge or address the role of communication, the realization of these objectives, it may be argued, is inevitably linked to the role of communication in creating public awareness and developing the skills requisite for fire safety management. Thus, this study assesses the role of communication in fire safety management using the community of University of Ghana, Legon.

1.2 STATEMENT OF THE RESEARCH PROBLEM

A study undertaken by Agyekum *et al* (2016) revealed that awareness of fire safety management precautionary measures was low among most of the student occupants of multi-storey hostels and the likelihood of extreme danger to lives and properties in any fire occurrence was high.

Ayarkwa and Danso (2010) also identified a number of factors, including institutional lapses, non-adherence to basic fire safety practices and resource limitations of the Ghana National Fire Service as contributing largely to the frequent fire outbreaks in the country.

This may explain the observation by Kahwa (2009) that there had been a trend of increasing incidences of fires and their consequences in educational and other public institutions in Ghana between 1999 and 2006. This showed that, fire incidences in educational and commercial buildings in Ghana resulted from negligence and lack of public awareness on proper use of firefighting facilities.

The statistics on the University of Ghana are similarly striking. According to the records of the

University of Ghana Fire Station, the University recorded a total of 19 fire outbreaks in 2015 and 20 in 2016. The fires involved the Department of Political Science library, Department of Linguistics and Bani Hostel in 2015 as well as an office at the Balme Library, the Noguchi Memorial Institute, and the University of Ghana Business School in 2016.

By virtue of being a university which accommodates a number of different facility users and the trend of fire outbreaks in buildings, fire incidences are anticipated. However, no study available has attempted to assess the preparedness with regards to fire safety management particularly in universities in Ghana. The question is, to what extent does fire safety receive policy attention and prevention activities within the University of Ghana organizational structures? To what extent are members of the University community aware of and responsive to fire safety systems and procedures generally and within the campus in particular? What is the role of the Ghana National Fire Service in creating awareness and skills for adhering to fire safety protocols and remedies? It is against this background that this study attempt to assess the role of communication in fire safety management in the University of Ghana community.

1.3 OBJECTIVES OF THE RESEARCH

The main objective of the research was to assess the effectiveness of communication in fire safety management in the University of Ghana, Legon.

The specific objectives of the research were to:

1. Assess the knowledge of members of the University of Ghana community in fire safety management.

2. Find out the availability and nature of the University of Ghana organizational policy on fire safety management.
3. Assess the Ghana National Fire Service role in creating awareness for adhering to fire safety precautionary measures.
4. Ascertain how the Ghana National Fire Service uses communication to carry out its mandate in the University of Ghana community.

1.4 RESEARCH QUESTIONS

The major questions in this study were the following;

1. What do members of the University of Ghana community know in fire safety management?
2. What if any, is the University of Ghana organizational policy on fire safety management?
3. What role is the Ghana National Fire Service playing in creating awareness on fire safety precautionary measures?
4. How does the Ghana National Fire Service use communication to mitigate emergencies posed to the University of Ghana community?

1.5 SIGNIFICANCE OF THE RESEARCH

Fire outbreaks occur without any notification. In Ghana, the frequency of such occurrence suggests a deficiency of fire safety management resulting in unrecovered physical and psychological damages to the affected communities.

The research will become a source of information for fire safety policy and management within public institutions and among the larger population. It will also provide addition to existing knowledge with specific reference to the University of Ghana. This would instill fire safety habits in the community leading to reduction of fire incidences and their predicted consequences in Ghana.

The research will also be of significance to the University of Ghana Fire Station in particular and the Ghana National Fire Service in general to come out with appropriate fire safety standard in communities. The implementation on the findings and recommendations in the final report can be the foundation of a structured approach to fire safety management in Ghana.

1.6 SCOPE OF THE RESEARCH

The research involved administration of questionnaires to a sample of 150 students and staff of the University of Ghana and residents in the community. During the research two (2) personnel of the University of Ghana Fire Station were interviewed. It is therefore worthy to note that the results of the research are limited to the sample and the University of Ghana Fire Station, Legon.

1.7 ORGANISATION OF THE RESEARCH REPORT

The research report is divided into five chapters. Chapter one contains the introductory aspect of the research which consist of the background, the statement of the research problem, objectives

of the research, research questions, significance and organization of the research. Chapter two reviews existing relevant literature and the theoretical framework of the study. Chapter three describes the research methodology employed. Chapter four contains the presentation and analysis of the data. Chapter five summarizes the key findings of the research, draws conclusion and offers recommendations



CHAPTER TWO

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 INTRODUCTION

This chapter reviews existing relevant literature for the study and the theoretical framework on which the research is underpinned. The main focus of this research is on the role of communication in fire safety management within the University of Ghana community. The first section discusses literature relevant to the topic. According to Anson et al (2009 as cited by Ahianyo (2016), the ‘Literature’ of a literature review could be anything from a set of government publications on a particular issue to scholarly articles on the same subject matter. In this regard, various articles, journals, thesis and other publications are reviewed under the topic.

This second section discusses the theory used for the research. Theories are expressed to explain, envisage, and understand phenomena and, in many cases, to challenge and extend existing knowledge.

2.2 LITERATURE REVIEW

A study by Agyekum, Ayarkwa and Opoku (2016) around the Kwame Nkrumah University of Science and Technology campus sought to evaluate the level of fire safety awareness among students living in multi-storey hostels. It also sought to ascertain the existing firefighting equipment in the hostels under study, and to identify fire safety management practices needed to be put in place to control fire outbreak in the hostels.

The researchers collected data for the study through a questionnaire survey made up of closed-ended questions, but the respondents were given options of providing extra comments when necessary. A total of 220 respondents were conveniently sampled for the study and they consisted of continuing students who were occupants in eleven multi-storey hostels around Kwame Nkrumah University of Science and Technology campus.

The findings of the study, indicated that majority of the students did not attach seriousness to the issue of fire safety. Therefore, fire safety awareness was low among most of the occupants of the hostels. Also, fire safety management on the premises was obviously low and the likelihood of extreme danger to lives and properties in any fire incidence was high. It was evident that, the management of the hostels had neglected their responsibilities to keep the students safe from fire

outbreaks. The researchers therefore recommended that pragmatic steps should be taken for reduction of fire outbreaks.

Meng *et al* (2015) also carried out a survey to explore college students' awareness of fire safety, the operation of the fire safety apparatus and weak links of firefighting at the Zhengzhou University of Light Industry in China. The method of data collection was questionnaires and the respondents were mainly students. Out of the 700 questionnaires that were distributed, 674 were recovered of which 655 were valid.

The data indicated that college students' awareness of fire safety was low. The Fire Safety Management Regulations had included fire education into the educational curriculum, but the findings revealed that the majority of the students did not really make use of the knowledge. The survey also indicated that most of the students acquired basic knowledge of fire safety during the organization of fire-drills but not from the active learning. On the use of fire safety equipment, most of the students said they had seen the equipment but never used them. Meng *et al* (2015) recommended that fire safety implementation should be based on the awareness of fire, through publicity and education.

The study by Agyekum *et al* (2016) near the Kwame Nkrumah University of Science and Technology in Ghana and that by Meng *et al* (2015) at the Zhengzhou University of Light Industry in China both revealed that fire safety awareness among students was very low.

Students generally had the same behaviour and attitude towards fire safety management despite the geographical locations. In situations where fire education had even been incorporated into the educational curriculum, students did not even pay active attention due to their belief that fire was far from them.

In a study to assess the management of domestic fires, Amoako, (2014) sought to determine residents in the Kumasi Metropolis level of compliance in fire safety measures and to determine the various roles played by the appropriate stakeholders in managing domestic fires. It was also to find out the problems which militated against the effective management of such fires. The study used the cross-sectional research design and employed both probability and non-probability sampling methods. Purposive and systematic sampling was employed to select 362 from the selected communities where landlords or their representatives were interviewed. They also selected and interviewed major stakeholders like the Ghana National Fire Service, Ghana Ambulance Service, NADMO and the Kumasi Metropolitan Assembly. The study discovered that, landlords or their representatives had not prepared for fire disasters as their knowledge on fire safety procedures were low. It was therefore essential to increase fire safety education and also empower Fire Management institutions by giving them the necessary logistics to perform their functions effectively to decrease fire outbreaks.

The Forestry Research Institute of Ghana (2003) conducted a study with the specific objective of reducing the rate of natural forest depletion by developing efficient fire management systems to enhance sustainable forest management in Ghana. The study employed the Rapid Rural

Appraisal (RRA) methodologies including focus group discussions, community fora, consultative meetings, household and key informant's interviews. The research was conducted in the Afram Headwaters, Worobong South, Pamu Berekum, and Tain II forest reserves for their relatively short fire–return interval and variation in ecology.

The study revealed forest fires in Ghana are strongly linked with livelihoods and caused mainly by human activities that impacts negatively on sustainability of agricultural and forest land use. It was also revealed that the ecological position of the forest brought about by previous use was a recipe for more fires. The research identified fuel treatment, fire detection, and training of fire volunteers as the methods and procedures for effectively controlling forest fires in Ghana as well green firebreaks, tree planting and forest aggradation as means for rehabilitating fire-degraded forests. The report concluded that the safe use of fire must be the key objective of any fire management programme to be instituted by the Forestry Commission and recommended an initiation of a forest fire prevention and awareness programme through the development of a fire prevention communication plan and anti bushfire campaign in collaboration with Ghana National Fire Service.

Kosoe (2012) in a similar study on community fire management near the Tain II forest reserve indicated till 1983, uncontrolled bushfires were quite uncommon specifically in the forest areas of Ghana. He came to this conclusion by comparing the usefulness of ethnic fire safety management systems before 1983 and orthodox fire safety management systems introduced after 1983. He used the descriptive statistics, index of participation and chi square to analyze the data which revealed that 85% of the respondents thought ethnic fire safety management systems were

effective in reducing bushfires because of taboos and other traditional beliefs as against 15% of respondents who agreed that orthodox fire safety management systems were more effective due to government regulations.

He also concluded that the lack of fire insurance scheme for fire volunteers affected persons who suffered fire outbreaks, because fire volunteers declined to heed to the call of the members of the community. It was also recommended that the participation of the local communities and the support given to stakeholders could help in curbing fire outbreaks in the communities.

A study on fire safety for high-rise buildings: the role of communications' was conducted in Washington DC, the United States of America by Glass and Rubin in 1979. They examined the communications requirements for fire safety in buildings from the perspective of the building occupants based on a report of a fire that occurred on April 17, 1975 in a high-rise building; the World Trade Center in New York which was equipped with a state-of-the-art control center. Although the fire caused some smoke on the 9-22 floors, it was quickly contained and the occupants were not in danger. Nevertheless, many occupants saw the smoke and ignored constant requests over the loudspeaker systems to go back to their offices which resulted in confusion but they were finally evacuated. From the experience of this fire emergency, it was obvious that the sophisticated communications network installed in the building did not accomplish the purpose for which it was designed. The building occupants did not also behave in accordance with the fire safety arrangement; they did not reply appropriately to the messages which were communicated to them.

A study was conducted by Ahenkorah-Marfo and Borteye (2010) to examine how prepared the staff of the Kwame Nkrumah University of Science and Technology (KNUST) main library are in preventing, fighting and managing disasters. The main data collection instrument adopted by the researchers was the questionnaire made up of close-ended questions requiring a yes or no, or one response from a list of possible answers. Personal observation and interview of the University Librarian were also used for the data collection. The researchers also employed the purposive sampling technique for the selection of 50 respondents from the junior staff, senior staff and senior member categories of the KNUST main library for the study.

The findings from the study revealed that although the respondents were well educated with about 90% very familiar with the library setting, there was lack of knowledge of the members of staff preventing, fighting and managing disasters such as fire outbreaks and flooding when they occur. This was as a result of inadequate basic training for members of staff even though the Librarian disagreed in an interview that training for the staff of the library was done yearly by the Fire Service unit on campus. The researchers therefore a disaster control plan for the library.

Gyasi (2016) explored the economic effects of industrial fires in Ghana. The study was also to identify preventive measures to avoid fire outbreaks in industrial buildings. He employed both quantitative and qualitative methods involving the use of open and closed ended questionnaires whilst the simple random sampling technique was used to select seventeen respondents made up of senior officers particularly safety officers in manufacturing industries in the Tema metropolis. The study revealed the economic effects of industrial fires are increase in insurance premium for

manufacturing companies, purchasing of new equipment as a result of industrial fires as well as compensation to persons affected by fire and in some cases permanent closure of businesses. It was also revealed the major causes of fires in manufacturing industries were faulty equipment, overheating of equipment, poor wiring, and power fluctuation and over loading of sockets.

He concluded that compliance with fire safety standards during the design and construction stages of domestic and industrial buildings, the right storage of hazardous material, regular maintenance of equipment as well as fire safety awareness are the appropriate measures to avoid industrial fires in Ghana. The researcher recommended the Ghana National Fire Service to inspect the compliance of fire safety measures before the construction of any industrial buildings and perform fire safety audits quarterly to determine fire safety conditions of industrial buildings.

A research was undertaken by Forkuo and Jonathan (2013) to establish a Geographic Information System (GIS) based fire emergency response services for the Ghana National Fire Service to identify the most favourable route from its location to any fire incident within the Kumasi Metropolis. They took into account the distance of travel, the slope of the roads and the delays in travel times and also for the Ghana National Fire Service perform geospatial analysis on location of fire hydrants. The researchers digitized, projected, and geo-referenced the topographic map of the study area in GIS environment, updated street names and house addresses, conducted Global Position Systems (GPS) survey to coordinate the Fire Stations, fire hydrants locations and buildings such as residential, official facilities, factories, depots in the study area. The study revealed that the combination of diverse impendence factors in modelling the most favourable route would improve the operation of the Ghana National Fire Service to

timely respond to fire emergency services or to reduce cost of fire fighting. The digital environment made it possible for the GNFS to without difficulty determine the locations of the fire hydrants and its conditions as to whether they are functioning, in high or low pressure or disconnected from water source.

2.3 THEORETICAL FRAMEWORK

Theories play an important role by serving as a foundation on which a social science research is based. Theories help to clarify an otherwise baffling situation by synthesizing the information and drawing attention to the pertinent issues (Griffin, 1994). This study which is the role of communication in fire safety management, a study of the University of Ghana community underscores the various theoretical frameworks that relates to the role communication play in fire safety management. The researcher therefore chose the systems theory and the media richness theory for this study.

Jurich and Myers-Bowman, 1998 (cited by Iving, 2000) explained how one system is always a part of a different or a larger system, They further discussed how systems work using feedback mechanisms and looked at the different forms of feedback and their significance to changing human behaviour through communication. It therefore means the University community as a system has different parts that play a role in fire safety management. This implies that all stakeholders that matters in fire safety management must be identified and an appropriate channel of communication used in communicating among the various stakeholders. The various

stakeholders are the students, teaching and non-teaching staff, and management of the University, the Ghana National Fire Service, the Ghana Police Service, and all other residents in the community.

In relation to the media richness theory, the theory suggests that face-to-face communication presents a richer blend of verbal and nonverbal signal systems that can express “highly nuanced emotions, and even double meanings” (Walther,2009). This therefore means that in managing fire safety within the University community, the various stakeholders must be communicated to with the appropriate medium of communication for a better understanding of fire safetymanagement. The two theories will therefore be discussed in relation to their relevance to the study.

2.3.1 Systems Theory

According to Gassmann (2016) the systems theory of communications has been in practice since the early 1950's. The theory was propounded by Ludwig Von Bertalanffy a biologist and further developed by Ross Ashby, a psychologist. The systems theory stipulates that examining an entity as part of a larger whole or system is essential in determining the appropriate course of action for the said entity. A large part of comprehending the systems theory is the self-correcting feedback loop that entities go through when adhering to the philosophies of systems theory. From Grunig, Grunig and Dozier's (1995 cited by Ansong 2013) viewpoint, the systems theory places emphasis on interdependence of organisations with both their internal and external environment.

Accordingly, in order to sustain their existence, organisations depend on their environment whilst the environment depends on the organisation for their products and services.

According to Littlejohn and Foss (2009) systems does not only reside in an environment of other systems, but they interact with forces within the environment. Organisations therefore do not exist on their own, they exist in the environment and it is necessary to maintain order in a bigger environment of external publics such as residents in the community that could drive the organisation out of control. The Ghana National Fire Service must put in place communication strategies that allow it to use the environment in a productive way leading to behavioural change and subsequent reduction in fire outbreak. Organisations must be able to take inputs such as feedback from the environment and release outputs such as constant education on causes of fire outbreak and training on how to fight fire to the residents in the community. They further indicated that, the system must be able to develop or convert inputs into outputs in an organised manner that enables the organisation to achieve its objectives, which thereby influences the larger system in a circular way.

2.3.2 Application of Systems Theory

Systems theory can be applied to analyse human behaviour with particular reference to human interactions between an organisation and its publics. The systems theory is also used to explain asymmetrical human relationships and probable approaches for treatment. In other for the system

to work effectively, communication strategies are the best probable approach for the Ghana National Fire Service to use in managing fire safety within University community.

Jurich and Myers-Bowman, 1998 (cited by Iving, 2000) explained how one system is always a part of a different or a larger system, thus it is importance to treat the individual in relation to their status as family residing in the University community, staff working in the community, students living in halls or hostels, etc. They further discussed how systems work using feedback mechanisms and looked at the different forms of feedback and their significance to changing human behaviour. Thus the usefulness of systems theory is significant when applied to the role communication plays in fire safety management.

2.3.3 Limitations of the Systems Theory

Determining communication strategies and the significance or otherwise of numerous variables given the amount of uncertainty in which the organisation operate is not a simple task. One must question whether the systems theory can really capture the complication of public interactions and inter-relationships that exist, whether officially or unofficially. Ghana National Fire Service communicating with their publics will require a regular re-evaluation of the desired objectives of the Service to ensure they are still in line with both current and future trends of fire safety management. If the Service is constantly familiarising and or reacting to public influences and criticisms it may have unpredicted repercussions in other areas within the organisation that could be unfavourable to its success generally (Iving, 2000). Furthermore, systems theory proponents repeatedly indicate how communication creates and maintains mutual relationship between an

organisation and its internal and external publics. The Ghana National Fire Service as an institution should create and maintain a mutual relationship among its internal publics and the University community as external publics for effective fire safety management.

2.3.4 Media Richness Theory

Media richness theory categorizes every communication medium according to the sophistication of the messages it can handle efficiently. The theory proposes that face-to-face communication presents a richer blend of verbal and nonverbal signal systems that can convey highly nuanced emotions, and even double meanings (Walther, 2009). Occasionally referred to as information richness theory, the media richness theory depicts a communication medium by its ability to duplicate the information sent over it.

Robert L. Daft and Robert H. Lengel introduced the media richness theory in 1984 with the primary aim of evaluating communication mediums within organizations. It explains that richer, personal communication means are generally more effective for communication of ambiguous issues than leaner, less rich media. Media differ in “richness” with face-to-face communication being the richest because it has more signals while other media like memos, voice mails or emails are leaner. A communication medium is said to be rich if it has multiple signals in terms of visual, verbal and nonverbal whilst a lean medium has very few signals (Daft and Lengel (1986).

Bergin (2014) describes media richness as the ability of information to change understanding within a time interval. Therefore any communication that can clarify ambiguous issues to change understanding in a timely manner is considered rich. Communications that entail a long time to enable understanding or that cannot overcome diverse viewpoints are lower in richness. As such

face-to-face interactions and telephone calls are considered to have higher levels of media richness than written media.

The two main assumptions of the media richness theory are: people want to overcome ambiguity in organizations and a variety of media generally used in organizations work better for particular tasks than others. Trevino, Daft, and Lengel, (1990 cited by Soy, 2001) used four criteria in presenting a media richness hierarchy, arranged from high to low degrees of richness, to illustrate the capacity of media types to process ambiguous communication in organizations. The criteria are the availability of immediate feedback; the ability of the medium to transmit multiple signals such as body language, voice tone, and inflection; the use of natural language; and the personal focus of the medium.

2.3.5 Application of the Media Richness Theory

Media Richness Theory was conceived with regards to organizational communications. Generally, media richness is used to determine the "best" medium for an individual or organization to communicate a message. Media Richness Theory was proposed and adapted to assess the numerous communication mediums such as memos, emails, telephone, video, online conferencing, virtual environments, and social media in terms of their effectiveness (Bergin 2014). It therefore behooves on the Ghana National Fire Service to encourage its staff in the application of media richness theory in communicating among its publics.

2.3.6 Limitations of the Media Richness Theory

Researchers have argued that social pressures can influence the use of a medium much more strongly than richness, and in ways that are inconsistent with media richness theory's beliefs. It has also been noted that media richness theory should not assume that the feelings towards using a richer media in a situation are completely opposite to using a leaner media. The cultural and social background influence media choice by individuals in ways that are not compatible with predictions based on media richness theory (Ngwenyama and Lee 1997). This means that in communicating among institutions publics especially the external publics the cultural and social background must be considered for effective communication and feedback.



CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter describes the research methodology used in the current research. It explains the data and statistical methods that were employed and also gives the reasons for adopting these methods to achieve the objectives of the study. The chapter covers information on the research settings, research design, target group and sample, sources of data, data collection tools used and procedures, presentation and analysis of data and discussion of findings.

3.2 RESEARCH SETTINGS

The research was conducted in the University of Ghana community, Legon which is a suburb of Accra, the national capital of Ghana. Legon is located in the Accra Metropolis District and about 12 kilometres North-East of the center of Accra City. The University of Ghana is the oldest and biggest public university in Ghana. It has a student population of over 39,000(www.ug.edu.gh).

3.3 RESEARCH METHOD

The research design used for the current study was the mixed or hybrid method comprising the quantitative and the qualitative method. With the quantitative method open and close ended questionnaires will be administered to sampled respondents to obtain their responses on the research topic whilst the qualitative method samples views and opinions from respondents who have in-depth knowledge on the research topic.

3.4 TARGET POPULATION

A population is a set of existing units such as people, or a collection of all possible individuals, objects or events, or measurements of interest. The target population of the research was all the residents of the University of Ghana community, Legon. The population was large which made it necessary to select a sample for the research.

3.5 SAMPLING TECHNIQUES

The respondents for this study were selected through a multi-stage sampling technique. Stratified sampling was used to group the students into halls and staff into Departments and Faculties. The simple sampling technique was used to select ten halls of residence/hostels whilst the systematic sampling was used to select students and staff for the study. The researcher also used purposive sampling to select personnel from the Ghana National Fire Service who have in-depth knowledge in fire safety management.

3.6 SOURCES OF DATA

The researcher used self-administered questionnaires and interviews to gather responses from selected respondents.

3.7 DATA COLLECTION INSTRUMENTS USED AND PROCEDURES

The data for this study was collected through self-administered questionnaire and interview guide. The questionnaire was made up of both open-ended and closed-ended questions because it was necessary to allow the respondents to provide responses freely in some cases and also to restrict them to known options in some cases.

The questionnaire was made up of five sections: A, B, C, D, and E and included an introduction, confidentiality statement and request for permission to use the data provided. Sections A to D was mainly to know the respondents' knowledge on fire safety and the various roles played by the University of Ghana and the Ghana National Fire Service to ensure fire safety measures are put in place and effectively communicated to members of the University community. The demographic details of participants were in section E. The questionnaire was approved after all the necessary amendments. A total of 150 questionnaires were administered to the sampled respondents by the researcher. Two officers of the University of Ghana Fire Station, comprising the second in command and a fire safety officer were also interviewed by using the interview guide.

3.8 DATA PRESENTATION AND ANALYSIS

The data gathered were analysed using both quantitative and qualitative approaches. The responses in the questionnaires were processed and computed into frequencies and percentages by using the Statistical Package for Social Sciences (SPSS 17). The quantitative data were presented by drawing pie charts, bar charts, and cumulative frequency curves and analysed by

describing and interpreting them to reveal the facts or main findings of the research whilst the qualitative data were transcribed. The main findings were discussed in relation to the research questions, objectives, and literature review, out of which conclusion was drawn.

3.9 ETHICAL CONSIDERATIONS

To engage respondents in the study by seeking their views, the researcher assured them of confidentiality with respect to the information they are providing for the research.



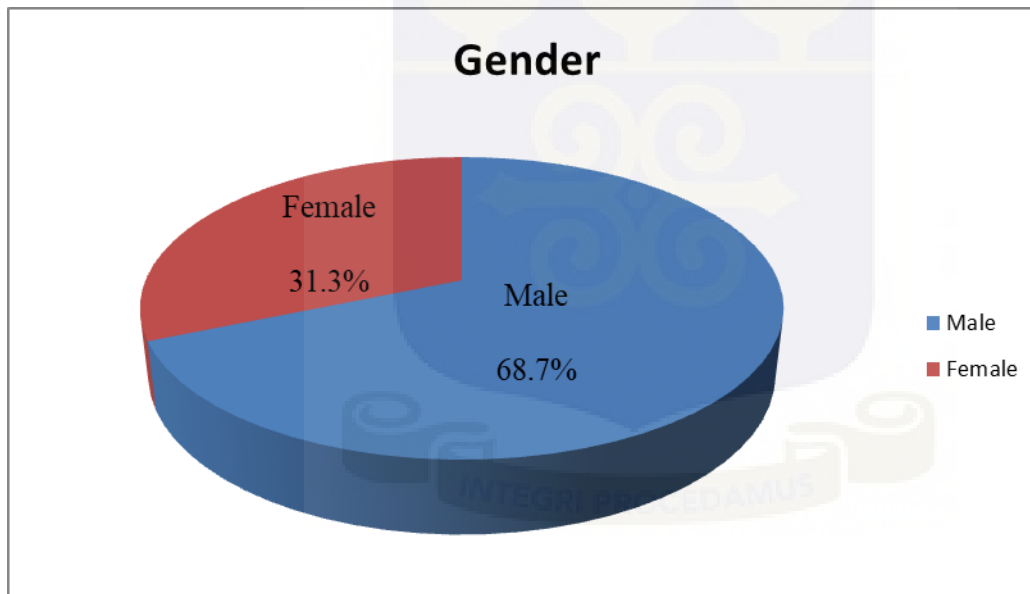
CHAPTER FOUR

4. PRESENTATION AND ANALYSIS OF DATA

4.1 INTRODUCTION

This chapter presents the analysis of the findings and discussions based on the data collected from the field on the role communication plays in fire safety management within the University of Ghana community. The demographic characteristics of the members of the community, their knowledge on fire safety as well as the role played by management of the University and Ghana National Fire Service is analysed.

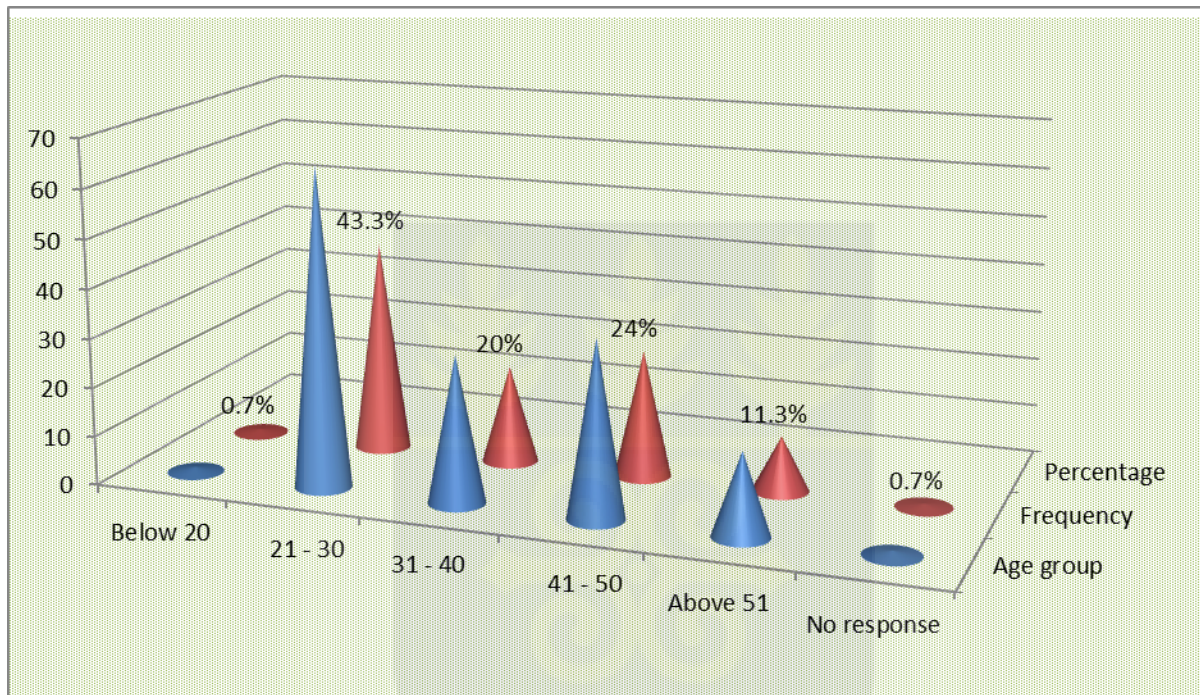
4.2 DEMOGRAPHICS CHARACTERISTICS OF RESPONDENTS



Source: Field data, 2017

Figure 1: A pie chart representing the gender distribution of respondents

A large number (103) of the respondents were males and 47 were females. This represents 68.7% for males and 31.3% for females. Generally, the percentage of males at the University of Ghana community outweighs that of females (male to female ratio of about 1.4:1) (www.ug.edu.gh/about/) thus it is not very surprising the sampled respondents had more males than females.

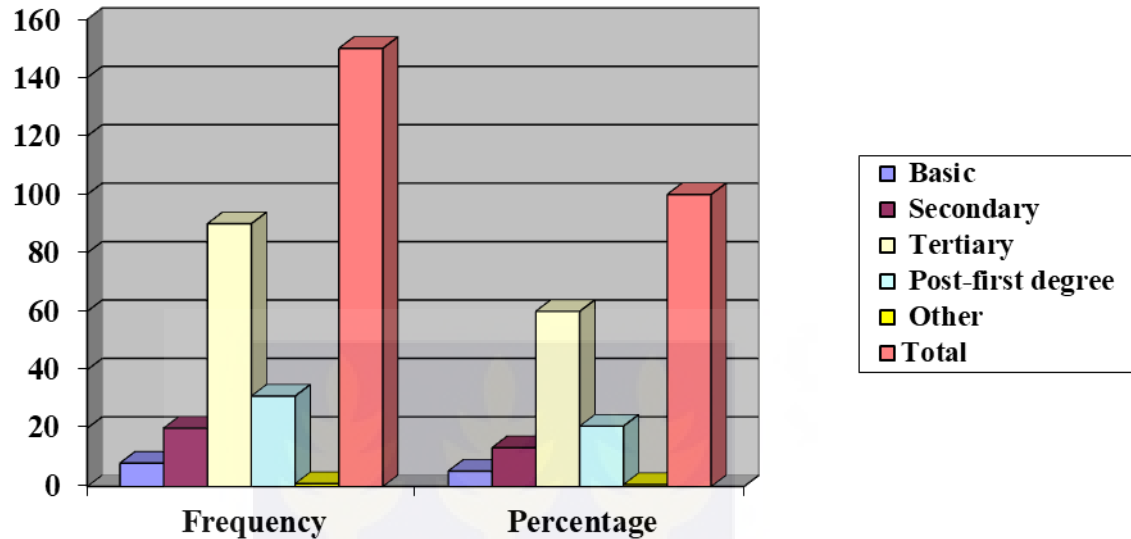


Source: Field data, 2017

Figure 2: A bar chart depicting age distribution of respondents

The ages of the respondents are as follows: One respondent representing 0.7% was within the age below 20. Sixty-five (65) respondents were between the age group of 21-30 representing 43.3%. Thirty (30) respondents representing 20% also fell between the age group 31-40. Respondents between the age group 41-50 were thirty-six (36) representing 24%. Five respondents were above the age 51 and this represents 11.3%. There was no answer from one respondent which indicate 0.7% of the sample size for the study.

Educational Background

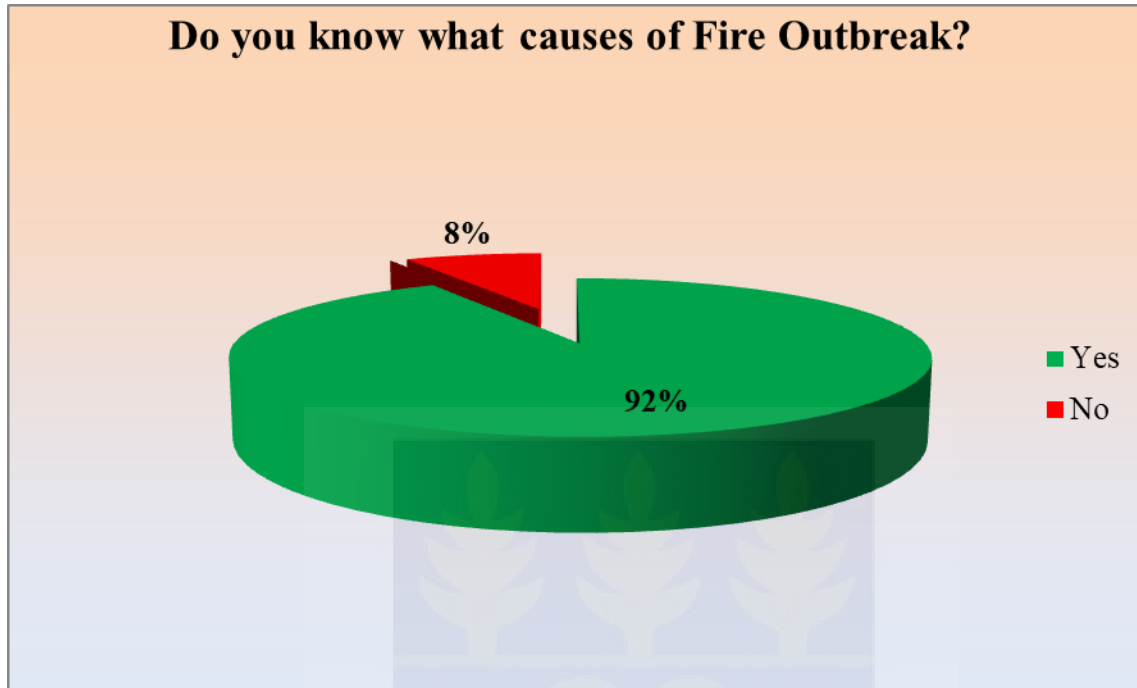


Source: Field data, 2017

Figure 2: A bar chart depicting the age distribution of the respondents

Eight respondents representing 5.3% had basic education while twenty (20) respondents were educated up to secondary level and this represents 13.3%. Respondents who had tertiary education were ninety (90) representing 60% of the population. Thirty-one (31) respondents had post-first degree education representing 20.7% while the remaining one respondent had other education representing 0.7%. The data in Figure 3 above indicate a large proportion (60%) of the residents in the University of Ghana community had tertiary education.

4.3 KNOWLEDGE ABOUT FIRE SAFETY MANAGEMENT

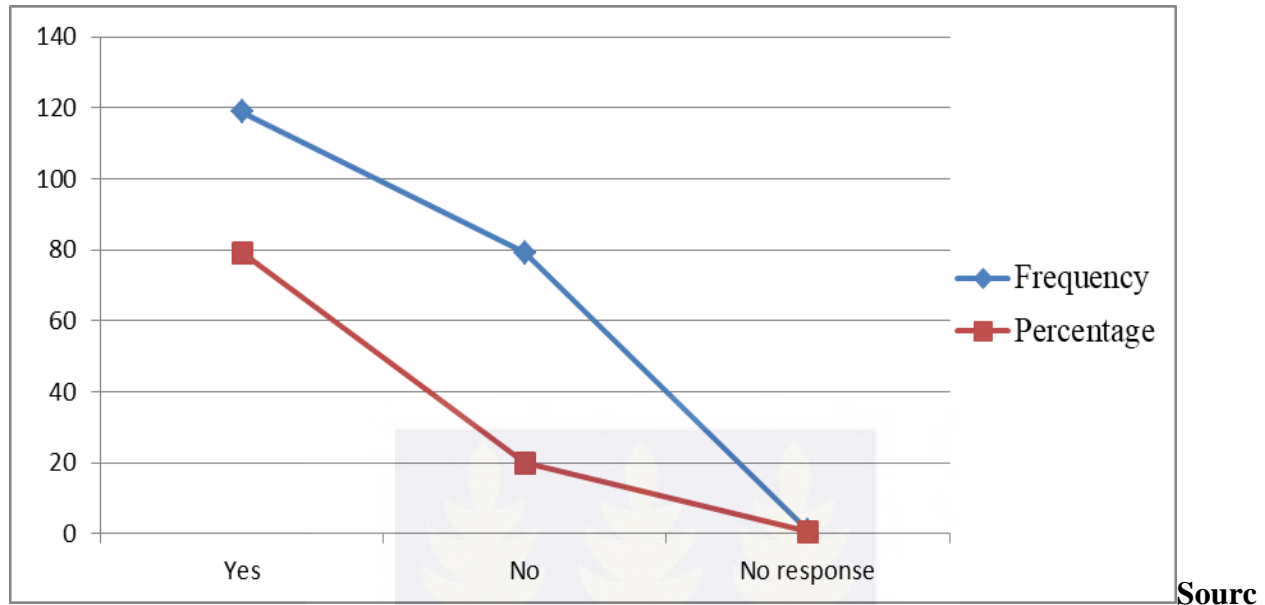


Source: Field data, 2017

Figure 4: A pie chart representing respondents' knowledge on what causes fire outbreaks.

The majority of the respondents, which is 138 of them representing 92%, said “Yes” they know what causes fire outbreaks. They mentioned overloading of electrical circuits, gas leakage, mishandling of naked flame and fuel, faulty electrical gadgets, carelessness or negligence, misuse of candle and matches, electrical fault, bush burning, power fluctuation, use of unqualified electricians and illegal connection and arson as some of the causes of fire outbreak. Twelve (12) respondents representing 8% said they do not know what causes fire outbreaks.

As a member of the University community, would you say that you have knowledge in fire safety management?

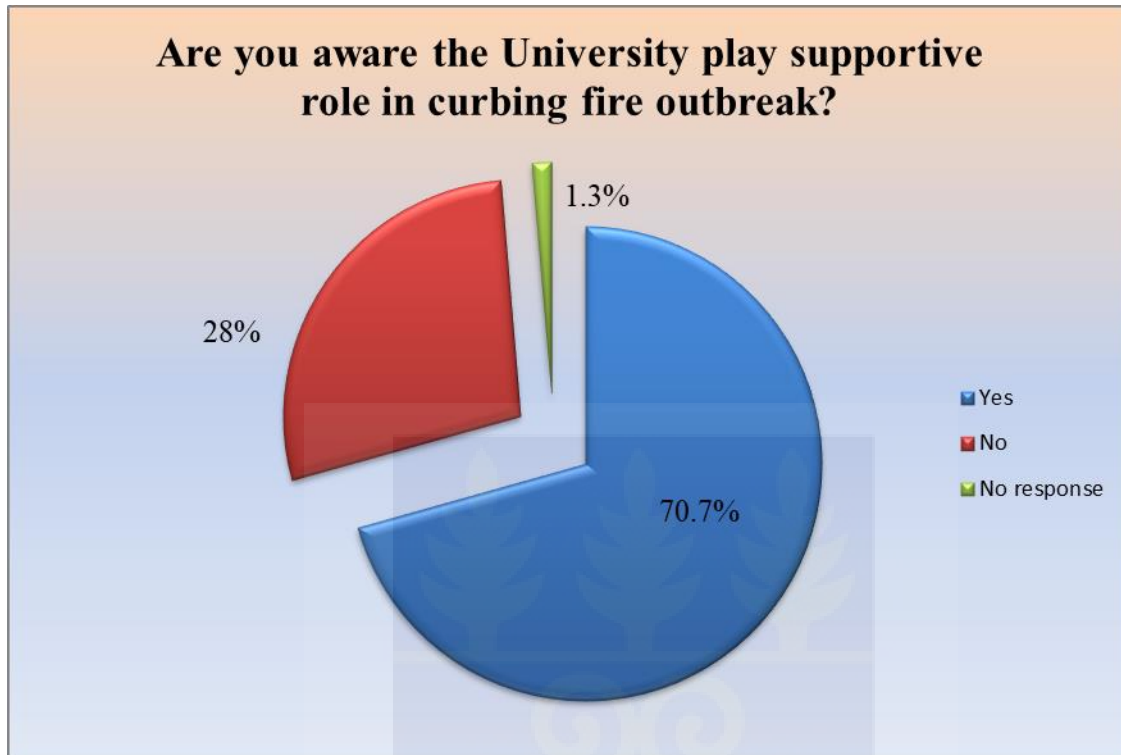


e: Field data, 2017

Figure 5: A cumulative frequency curve illustrating respondents' knowledge in fire safety management.

The research sought to find out whether the respondents have knowledge about fire safety management. Out of the 150 respondents sampled, 119 of them representing 79.3% responded in the affirmative. Thirty (30) respondents representing 20% did not have knowledge about fire safety management. The remaining one did not respond and this represents 0.7% of the total sampled views. The findings also indicated the respondents who affirmed their knowledge in fire safety management knew fire preventive measures such as cautious use of naked flames, avoid overloading electrical circuits, regular servicing of fire safety equipment, and the use of professional electricians. They could also identify fire precaution measures like entry/exit signs and notices, smoke detectors, emergency lightning system, portable fire extinguishers among others.

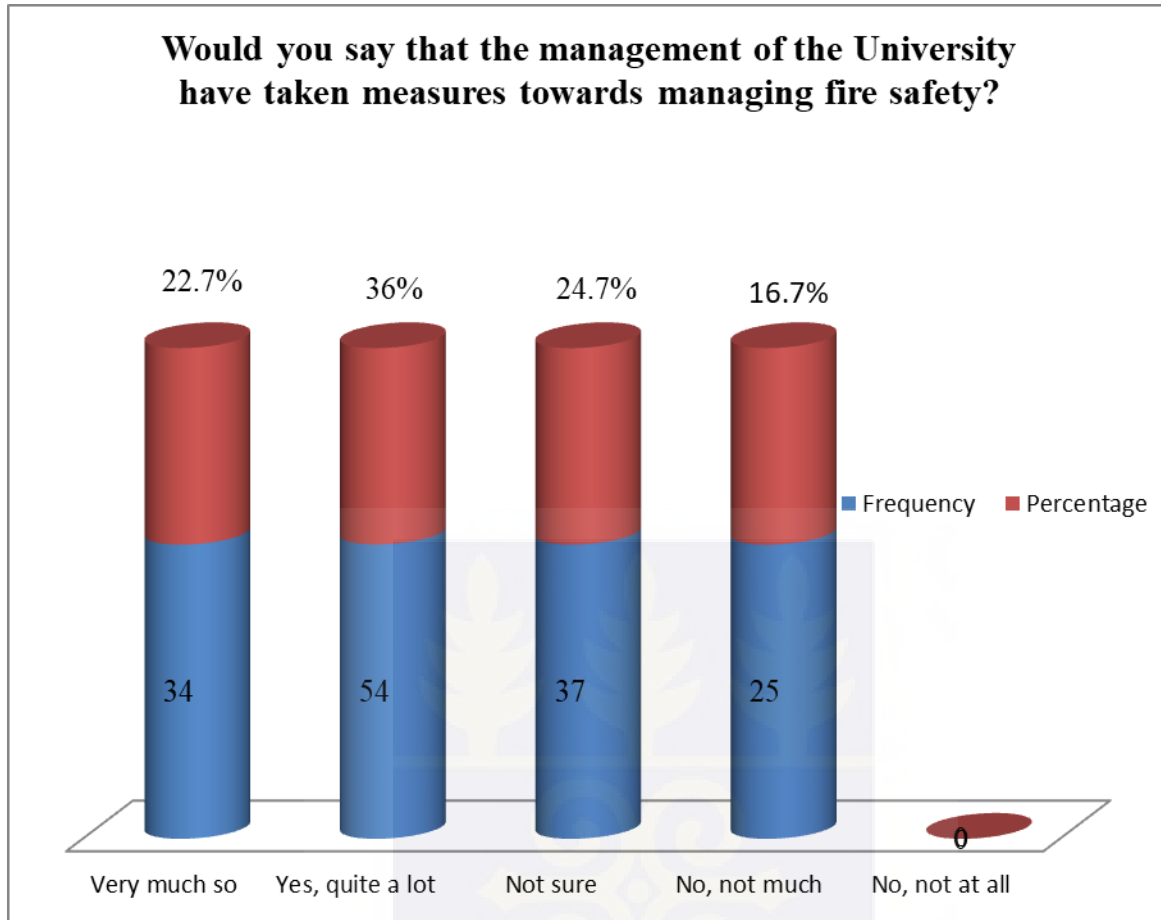
4.4 UNIVERSITY OF GHANA FIRE SAFETY MANAGEMENT



Source: Field data, 2017

Figure 6: A pie chart depicting the respondent’s knowledge on the University of Ghana supportive role in Fire Safety Management

The data collected indicate that 106 respondents said “Yes”, 42 said “No” and there were no response from two respondents. This represent 70.7%, 28% and 1.3% respectively. According to the respondents who said “Yes”, the University has a Ghana National Fire Service Station within the community and they collaborate to educate and train members of the community on fire safety. The University of Ghana also play supportive roles such as installation of fire safety equipment in the various Halls, Departments, and Faculties and servicing of fire extinguishers to reduce fire outbreaks.

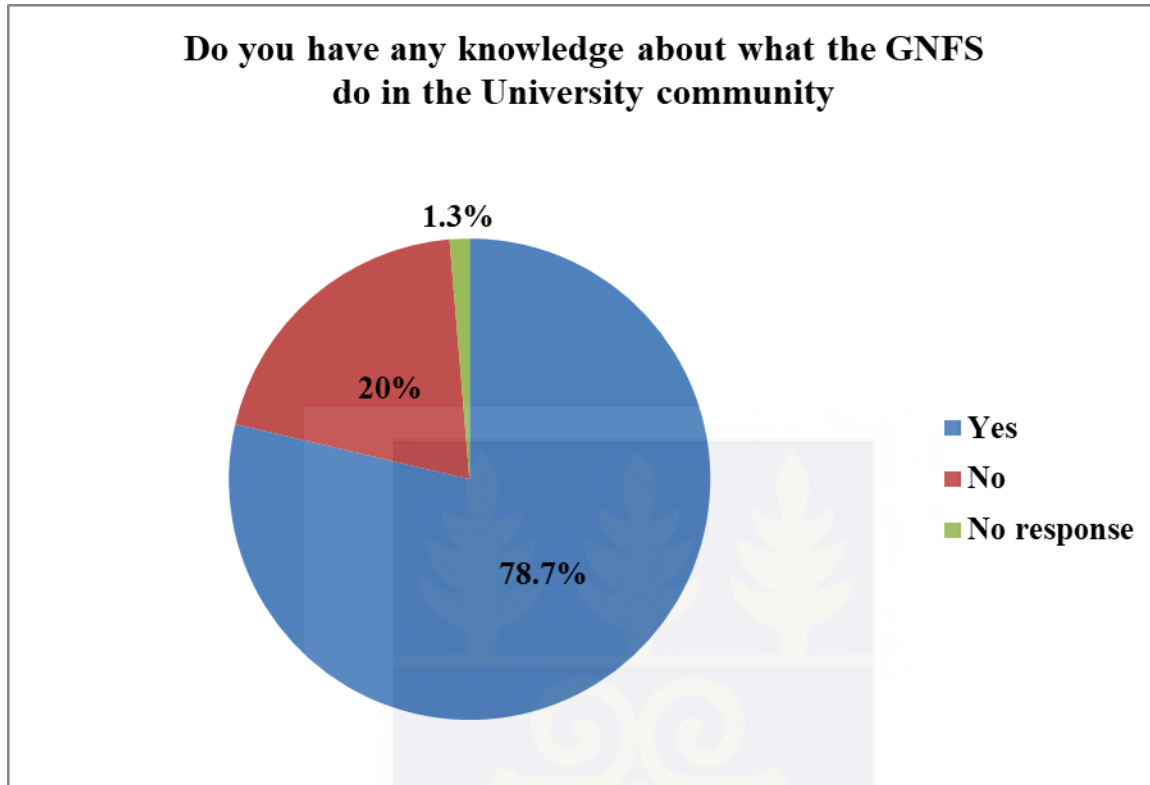


Source: Field data, 2017

Figure 7: A bar graph showing on University of Ghana Fire Safety Management.

The respondent's were asked to say whether the University of Ghana has taken measures towards managing fire safety. Thirty-four (34) respondents representing 22.7% said 'very much so'. Fifty-four (54) respondents were of the view that 'Yes' the University of Ghana has done quite a lot and this represent 36%. Thirty-seven (37) respondents representing 24.7% were 'not sure'. According to twenty-five (25) respondents 'No' the University of Ghana has not taken measures towards managing fire safety and they represent 16.7% of the sample size for the study.

4.5 GHANA NATIONAL FIRE SERVICE AWARENESS CREATION

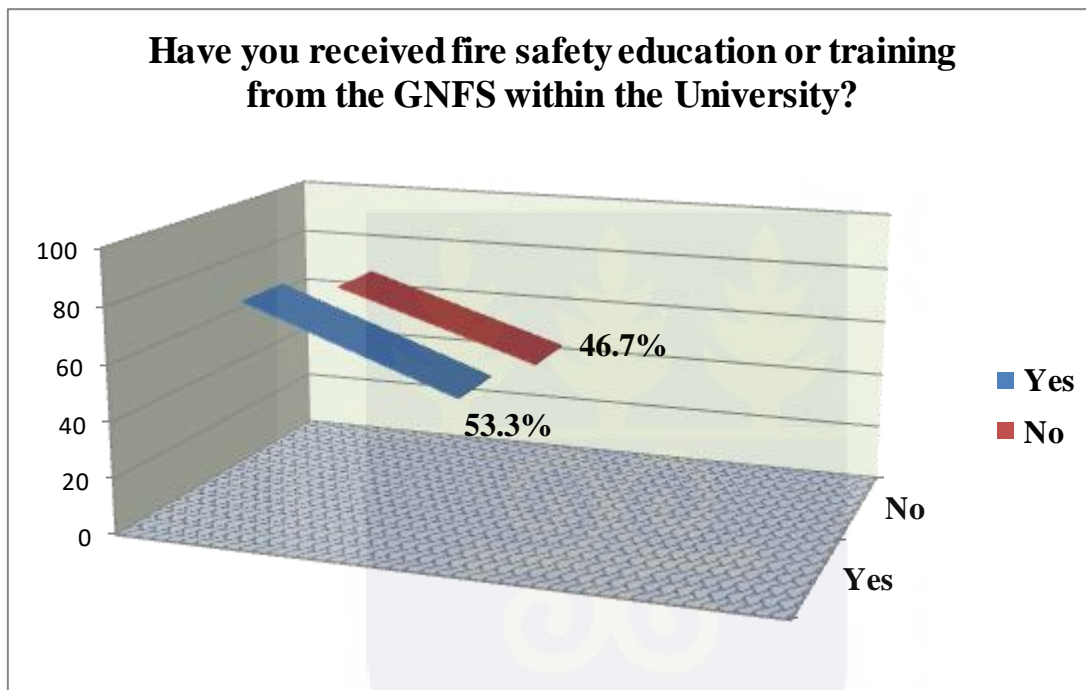


Source: Field data, 2017

Figure 8: A pie chart depicting distribution of respondents’ knowledge about what the Ghana National Fire Service do within the University community

Regarding whether the respondents have adequate knowledge about what the Ghana National Fire Service does within the University community, 118 out of the 150 respondents sampled responded in the affirmative. This number represents 78.7% of respondents. Thirty (30) of them representing 20% said ‘No’ whilst the remaining two respondents representing 1.3% did not respond. The majority of the respondents who responded “Yes” explained that the Ghana National Fire Service respond to emergencies, fight fire outbreaks, educate the public on fire safety measures, encourage the community to adhere to safety precautions to save lives and

properties. The 20% who said ‘No’ indicated they do not know the existence of the Ghana National Fire Service in the University community because the personnel have not made themselves known, their education is not massive and there are no extinguishers in some of the offices.



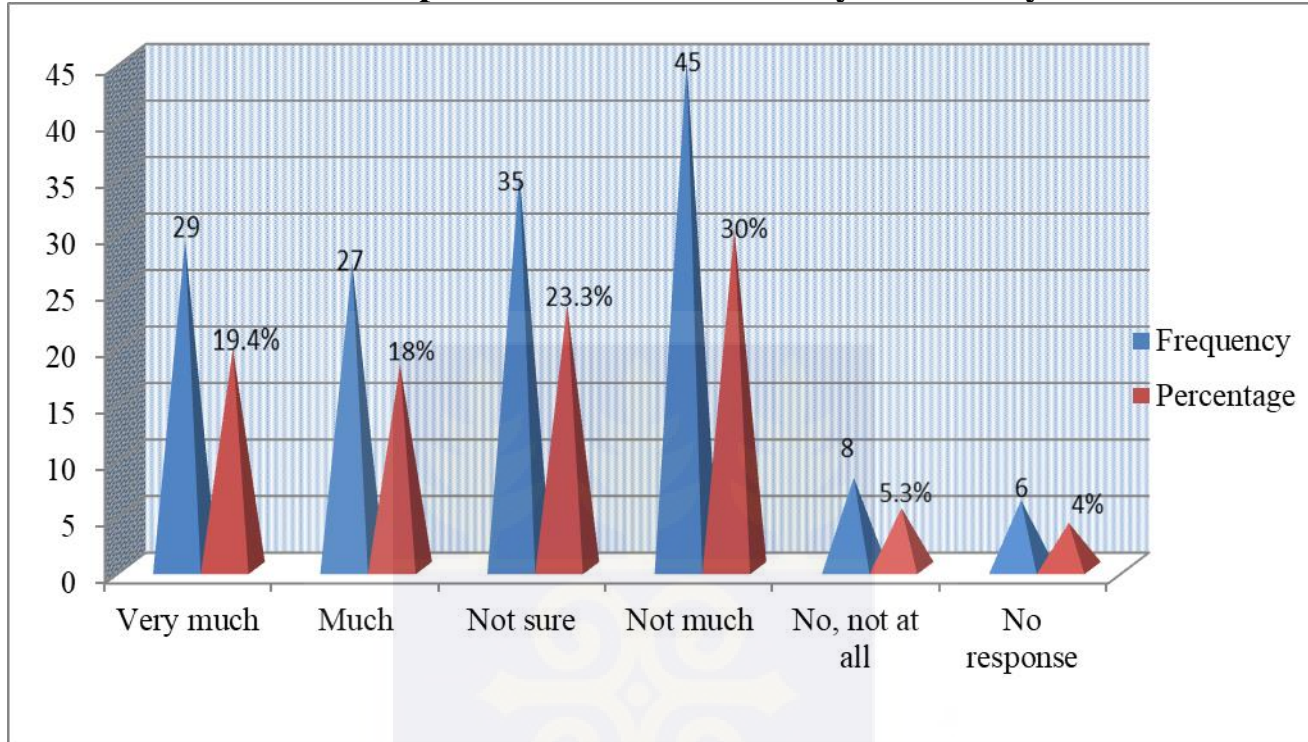
Source: Field data, 2017

Figure 9: A bar chart illustrating respondent’s knowledge about GNFS awareness creation

When the respondents were asked whether they have received fire safety education and training from the Ghana National Fire Service, most of them, that is eighty (80) respondents representing 53.3% said “Yes” whilst seventy (70) respondents which is 46.7% said they havenot. The respondents who answered in the affirmative confirmed they received the fire safety education and training through fire drills or practical fire fighting on how to use fire extinguishers; lectures/orientation; seminar/forums; posters; the media; particularly Radio Universe.

4.6 HOW GHANA NATIONAL FIRE SERVICE USES COMMUNICATION

Would you say the GNFS use communication effectively to meet the expectations of the University community?



Source: Field data, 2017

Figure 11: A bar chart indicating Respondents knowledge on whether the Ghana National Fire Service use communication effectively

The data collected indicated that fifty-six (56) respondents, representing 37.3% were of the view that the Ghana National Fire Service used much communication to meet the expectations of the University community. Thirty-five (35) respondents were not sure the Ghana National Fire Service used communication effectively and this represents 23.3%. Forty-five (45) respondents representing 30% said not much communication. Whilst eight respondents claimed ‘No’ the Ghana National Fire Service did not use communication effectively at all and they represent 5.3%. There was no response from six respondents, representing 4%.

The findings also revealed that forty-two (42) out of the 150 respondents got to know about fire safety issues on television, forty-eight (48) respondents said on the radio, twenty-four (24) respondents through social media, twenty-seven (27) respondents in the newspapers, fifty-four (54) respondents through fire safety posters and stickers whilst seventy-six (76) respondents said through community education implying that community education is the highest means of communication by the Ghana National Fire Service.

4.7 DATA GATHERED FROM INTERVIEWS WITH TWO OFFICERS OF UNIVERSITY OF GHANA FIRE STATION, LEGON

Qualitative data were also gathered from two officers of the University of Ghana Fire Station, Legon. The second in command and a fire safety officer were purposively sampled and interviewed in relation to the role communication play in fire safety management. They stated that the Station operates within the core objective of the Ghana National Fire Service which is the “prevention and management of undesired fires and other related matters”.

The Fire Precaution (Premises) Regulation LI 1724 (2003) gives the Ghana National Fire Service legal responsibility to carry out their mandate of inspection of proposed and existing premises, review building plan regarding fire safety and issuance of fire certificate. This law requires that premises used as public residential accommodation; for the purpose of entertainment; as an institution for providing health treatment; for the purpose of training teaching or research; and for a purpose involving access to the premises by members of the public. Obviously,

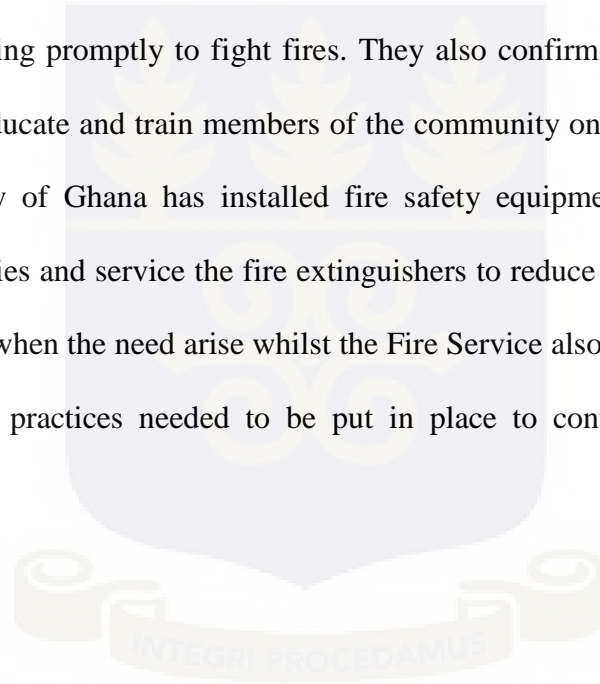
communication is an essential component of Fire Service operations. In order to perform their functions effectively they use communication for their internal publics as well as the external publics.

Internally, the Ghana National Fire Service has a Controlroom and or a Watchroom which is the communications centre of the Fire Station. It is the nerve centre of Fire Service operations and generally the first point of interaction with the public. The Fire Master Control (FMC) at the National Headquarters is in charge of all operational communication within the Service. The FMC receive calls from the public and the information is transmitted to the appropriate Fire Stations. For instance, when FMC receives a call that there is a vehicular fire outbreak in front of the Legon Police Station, they will transmit the information to the Controlroom of the University of Ghana Fire Station to dispatch a fire appliance to the fire scene. The Controlroom also records information on time the appliance was dispatched, and times of returning to base with a report on the incidents. It also deals with further assistant calls for additional water tankers, Police for protection or Electricity Company of Ghana assistance to disconnect power to the fire scene so the fire personnel can fight the fire effectively.

Externally, the officers indicated whilst providing rapid response services in emergency situations remains the core mandate of the Ghana National Fire Service, they dedicate significant time on fire safety and preventive duties. Such preventative measures are wide range including organising public education programmes, fire safety inspections, training on how to use fire extinguishers, ensuring adherence to building design regulations and fire safety precautionary measures to intensify the role of the individual in preventing fire outbreak; and also to create

awareness of the hazardous nature of fire. The Service use public service announcement, television shows, radio programmes, newspapers, social media, posters and community education as communication tools to get information to the community. Thus they are confident that University of Ghana community have adequate knowledge in fire safety management.

Regarding the role played by the University of Ghana on fire safety management in the community, the officers indicated that the Station has a fire appliance which they use to tackle emergencies by responding promptly to fight fires. They also confirmed the GNFS collaborate with the University to educate and train members of the community on fire safety precautionary measures. The University of Ghana has installed fire safety equipment in the various Halls, Departments, and Faculties and service the fire extinguishers to reduce fire outbreaks. They also support the Fire Station when the need arise whilst the Fire Service also advice the University on fire safety management practices needed to be put in place to control fire outbreak in the community.



CHAPTER FIVE

5. DISCUSSIONS OF FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

5.1 Introduction

This study sought to find out the role communication plays in fire safety management particularly in the University of Ghana community. The findings from the data collected have been presented and discussed in chapter four. This chapter therefore discusses the key findings made by the study, makes recommendations as to the measures the Ghana National Fire Service can put in place to communicate effectively and concludes the study.

5.2 Discussion of Findings

In discussing the findings and their implications it is vital to do so in respect of whether the research objectives have been met or the research questions have been answered.

5.2.1 Research Question 1

What do members of the University of Ghana community know in fire safety management?

The findings revealed that indeed respondents had knowledge about what causes fire outbreak. In fact, ninety-two percent (92%) of the respondents said “Yes” they know what causes fire outbreaks and mentioned overloading of electrical circuits, gas leakage, naked flame and fuel, carelessness, misuse of candle and matches, bush burning, and accident as some of the causes of fire outbreak. Majority of the respondents who said “Yes” mentioned electrical fault, faulty electrical gadgets, power fluctuation, use of unqualified electricians and illegal connection as the major causes of fire outbreaks.

Regarding respondent’s knowledge on fire safety management, 119 out of the 150 respondents sampled were absolutely confident about their knowledge in fire safety management. This is due to the fact that they know fire preventive measures such as cautious use of naked flames avoid

overloading of electrical circuits, adhered to fire signs and notices, regular servicing of fire safety equipment, and the use of professional electricians. The confidence of the respondents stems from their ability to identify fire precaution measures like entry/exit signs and notices, smoke detectors, emergency lightning system, portable fire extinguishers among others. The findings by Agyekum *et al* (2016) to evaluate students' knowledge in fire safety awareness indicated that majority of the students were not serious with fire safety issues.

According to the fire officers interviewed, they organised public education programmes, trained the University community on how to use fire extinguishers, ensured adherence to building design regulations and fire safety precautionary measures and also created awareness of the hazardous nature of fire. Thus they were confident the University of Ghana community have knowledge in fire safety management. The respondents in this study who do not have knowledge about fire safety management affirmed their willingness to know how to use fire extinguishers to curb fire outbreaks.

5.2.2 Research Question 2

What if any, is the University of Ghana organizational policy on fire safety management?

In terms of University of Ghana policy on fire safety management there were mixed reactions from respondents. Fifty-eight point seven percent (58.7%) of the respondents confirmed they were very much aware that the University of Ghana has done quite a lot towards fire safety management at the University campus. According to them the University has a Ghana National Fire Service Station within the community and they collaborate to educate and train members of the community on fire safety. The University of Ghana also play supportive roles such as installation of fire safety equipment in the various Halls, Departments, and Faculties and servicing of fire extinguishers to reduce fire outbreaks. This is a confirmation that the University of Ghana play significant role in fire safety management in the community as compared to the management of the hostels in the study by Agyekum *et al* (2016) neglected their responsibilities to keep the students safe from fire outbreaks. Therefore fire safety management on the premises was obviously low and the likelihood of extreme danger to lives and properties in any fire incidence was high. The remaining 41.3% of the respondents were either not sure or assumed that the University of Ghana has not done much in terms of fire safety management. They therefore advised that the University should add fire safety management to the university educational curriculum; provide visual and graphical fire safety signs, maintain the fire safety equipment and employ certified electrical engineers. In a study by Meng *et al* (2015) the Fire Safety Management Regulations had included fire education into the educational curriculum, but the findings revealed that the majority of the students did not really make use of the knowledge.

5.2.3 Research Question 3

What role is the Ghana National Fire Service playing in creating awareness on fire safety precautionary measures?

Another objective for the study was to find out the relevance of the Ghana National Fire Service to the University of Ghana community. The findings revealed that certainly, respondents recognized the existence of the University of Ghana Fire Station. In all 118 out of the 150 respondents sampled indicated they had knowledge about what the Ghana National Fire Service do in the University community and explained that the service “*educate the public on fire safety measures and encouraging them to adhere to safety precautions*”, fight fire outbreaks, “*do routine checks in the University community*” and “*ensure that the University is well secured about fire and other occurrences*”. Whilst two respondents were silent on the subject, thirty (30) of them said they had an idea about the existence of the University of Ghana Fire Station but did not know what the GNFS do in the community. In terms of awareness creation 53.3% of the respondents confirmed they had received fire safety education and training from the Ghana National Fire Service whilst 46.7% said they have not.

5.2.4 Research Question 4

How does the Ghana National Fire Service use communication to mitigate emergencies posed to the University of Ghana community?

The respondents were asked the communications technologies the Ghana National Fire Service used to empower and engage the University community with issues of fire safety and they mentioned television, radio, social media, newspapers, posters, community education among others. Forty-two (42) out of the one hundred and fifty (150) respondents got to know about fire safety issues on television, forty-eight (48) respondents said on the radio, twenty-four (24)

respondents through social media, twenty-seven (27) respondents in the newspapers, fifty-four (54) respondents through fire safety posters and stickers whilst seventy-six (76) respondents said through community education. Therefore the data gathered served a great deal in assisting the researcher to meet the objectives of the study, as this finding certainly imply that the external publics of the Ghana National Fire Service are aware of the communications technologies available to them to access information on fire safety management. Furthermore, this awareness clearly indicate that community education is the highest means of communication by the Ghana National Fire Service. The finding is also a confirmation of Bergin (2014), assertion that face-to-face interactions and telephone calls have higher levels of media richness than written media.

With regards to whether the Ghana National Fire Service use these communication technologies effectively to meet the expectations of the University community, the findings revealed that the fifty-six (56) respondents, representing thirty-seven point three percent (37.3%) were absolutely sure and confident that the Ghana National Fire Service uses much communication to meet the expectations of the University of Ghana community. Thirty-five (35) respondents were not sure and this represents twenty-three point three percent (23.3%). Forty-five (45) respondents representing thirty percent (30%) said “not much”, eight respondents claimed ‘No’ the Ghana National Fire Service did not use communication effectively at all and they represent 5.3%. Six respondents, representing 4% did not comment on the issue.

5.3 LIMITATIONS OF THE STUDY

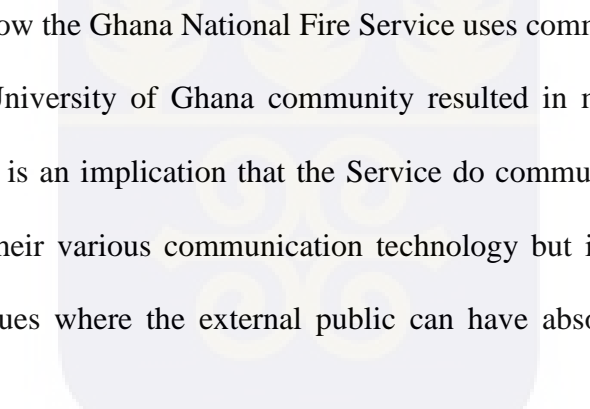
Due to time constrains, the study has to take a longer period to be submitted instead of the actual stipulated time.

5.4 RECOMMENDATIONS

The following recommendations need to be taken into consideration in order to use communication effectively in fire safety management. The recommendation will be given according to objectives of the study.

- i.** In order to increase public knowledge and meet the needs of the respondents in this study who do not have knowledge about fire safety management the Ghana National Fire Service should embark on sensitisation and educational programmes in the media and also interact with churches, educational institutions, commercial entities and associations among other social groups to inform them about their existence, operations, services and fire safety precautionary measures.
- ii.** It was evident that the University of Ghana place much emphasis on fire safety management by supporting the Ghana National Fire Service and providing the required fire safety equipment in the University community. With the request by the respondents for the University of Ghana to place fire safety management on the university educational curriculum, the University should do that after carrying out a research.
- iii.** As revealed in this study, community education has proven to be the best mode employed by the Ghana National Fire Service to communicate with their external public on fire safety management. Accordingly, the existing practice of public education and training on fire safety should be intensified and replicated across all Fire Stations nationwide. The findings also indicated that just twenty-four (24) out of the 150 respondents knew the

Ghana National Fire Service use of social media. There is the need for the Service to explore social media as an effective medium of communication to reach out to the youth especially the students in the University community. In addition to the Ghana National Fire Service website, their presence on Facebook and other social media should be enhanced. This would expand the accessibility of information by their external publics and generate feedback thus creating a cordial relationship between the organization and its publics.

- 
- iv. The findings on how the Ghana National Fire Service uses communication to carry out its mandate in the University of Ghana community resulted in mixed reactions from the respondents. This is an implication that the Service do communicate with their external publics through their various communication technology but it is equally important to create more avenues where the external public can have absolute access to good fire safety practices.

5.5 CONCLUSION

In view of the above-mentioned, the conclusion is that all the objectives of the research have been realized. The research questions have also been answered. This is because it has been established that communication does play a major role in fire safety management. It has also been established that members of the University of Ghana community have knowledge in fire safety management due to the periodic education and training by the University of Ghana Fire

Station. Even though the Service is in the public domain, the public still do not know much about their activities which as a matter of fact can lead to lack of public confidence. Nevertheless, the Ghana National Fire Service exists to carry out its mandate.



Abubakar J. (2012) *Causes and Preventions against Fire Outbreak*. Available from

<https://corpersdiary.wordpress.com/2012/02/05/> (Accessed on July 10, 2017)

Agyekum *et al* (2016) *Fire Safety Awareness and Management in Multi-Storey Students'*

Hostels. Asian Journal of Applied Sciences (ISSN: 2321 – 0893)

Volume 04 – Issue 02

Ahenkorah-Marfo, M. and Borteye, E. M. (2010) Disaster Preparedness in Academic Libraries: The Case of The Kwame Nkrumah University of Science and Technology Library, Kumasi, Ghana Available at <https://www.researchgate.net> (Accessed on July 10, 2017)

Ahiany, G. (2016), *Training as Investment Tool for Improving Efficiency in the Utility Company, Case Study of the Electricity Company of Ghana. (Ecg) Ashanti Region.* A Thesis Report Presented to the Department Of Management Education, Faculty of Business Education, University Of Education, Winneba, in Partial Fulfillment Of The Requirements for the Award of Masters of Business Administration (Human Resource And Organisational Behaviour).

Amoako, T. (2014). *Assessment of Domestic Fire Management In Kumasi Metropolis.* Retrieved from ir.knust.edu.gh/bitstream/ on June 8, 2017

Ansong, R. A. (2013). Communication between state institutions and their publics: A study of the Commission on Human Rights and Administrative Justice

Ayarkwa *et al* (2010) *Incidence of domestic fire outbreaks in Ghana: causes and prevention* Available from <https://www.academia.edu/431516> (Accessed on June 8, 2017)

Babbie, E. (1992). *The Basics of Social Research.* CA: Thompson Wadsworth Belmont.

Bergin, R. (2014), *Media Richness Theory* Center for Homeland Defense and Security Dept. of National Security Affairs, Naval Postgraduate School

British Institute of Facilities Management Good Practice Guide (2016) *Managing Fire Safety* Available at www.bifm.org.uk (Accessed on June 1, 2017)

Fire Department Communications Manual, A Basic Guide To System Concepts And

- Equipment, Federal Emergency Management Agency, United States Fire Administration Available at <http://www.iapsonline.com> (Accessed on June 8, 2017)
- Forestry Research Institute of Ghana (2003) *Forest Fire Management in Ghana*
PD. 32/98 Rev. 1 (F) (Final Technical Report)
- Ghana Government (1997). Act of Parliament: Ghana National Fire Service ACT, 1997-ACT 537. Accra.
- Ghana National Fire Service (2003) *Fire Precaution (Premises) Regulation LI 1724*
- Ghana National Fire Service (2004). *Establishment of the Ghana National Fire Service*.
- Glass, R.A. and Rubin A. I. (1979) *Fire Safety for High-Rise Buildings: The Role of Communications* Center for Building Technology National Engineering Laboratory National Bureau of Standards Washington, D.C. 20234
- Gyasi, F (2016) *Exploring the Economic Effects of Industrial Fires in Ghana: A Case Study of Manufacturing Industries in Tema Metropolis* Retrieved from ir.knust.edu.gh/xmlui/handle/123456789/9098 on June 8, 2017
- Hoepfl, M. C. (1997). *Choosing Qualitative Research: A Premier for Technology Education Researchers*. Journal of Technology Education. Vol. 9, No. 1.
- Iving, A. (2000) *Systems Theory* Available at <http://www.bechervaise.com/page/SystemsTheory>. Accessed on September 20, 2017)
- Kosoe, E. A.(2012) *Assessment of Community Fire Management around Tain II Forest Reserve* Retrieved from ir.knust.edu.gh/xmlui/123456789/4770 on May 10, 2017
- Littlejohn, I. and Foss (2009) *Encyclopedia of Communication Theory*
SAGE Publications, Inc. 2455 Teller Road, Thousand Oaks, California 91320
- Mefalopulos, P. (2008). *Development Communication Sourcebook: Broadening the*

Boundaries of Communication. The World Bank 1818 H Street NW, Washington DC
20433, USA

Meng et al (2016) *Survey and countermeasure discussion of College students' campus fire
Safety* Available at www.sciencedirect.com, *Procedia Engineering* 135 (2016) 25 – 28

Mensah, C.N.B. (1998). *Handbook for Fire Officers*. Accra: Firex Ltd.

Nadzim. N & Taib, M. (2014). *Appraisal of Fire Safety Management Systems at Educational
Buildings* EDP Sciences <http://www.shs-conferences.org>

Ngwenyama, O. K. and Lee, A. S. (1997) *Communication Richness in Electronic Mail*
Available at <http://umfundi.barbourians.org/article/ngwenyama1997communication>
Accessed on January 31, 2018

National Wildfire Coordinating Group (1999) *Fire Communication and Education* National
Interagency Fire Center 3833 S. Development Ave., Boise Id 83705. NFES #2602

Owusu, E. (2014). *The Role Of Communication In Sustaining Development Projects. The
Case Of Ejura Sekyedumase Municipality, Ghana*. Retrieved on August 14, 2017 from
<http://ir.knust.edu.gh/bitstream/123456789/6864/1/ESTHER%20OWUSU.pdf>

Savia, S.A.(2001) *Improving Communication*

[http://www.fireengineering.com/articles/print/volume154/issue5/departments/_volunteers-
corner/improving-communication.html](http://www.fireengineering.com/articles/print/volume154/issue5/departments/_volunteers-corner/improving-communication.html) Accessed on July 10, 2017

Twumasi, O. P., (2013). *Using Science and Technology to Solve Market Fires*. Feature Article Available at www.ghanaweb.com/GhanaHomePage/NewsArchive/Using-Science-and-Technology-to-Solve-Market-Fires-276445 Retrieved on July 10, 2017

Wimmer, R. D. & Dominick, J. R. (2000). *Mass media research an introduction*. (6th ed.). Belmont, CA: Wadsworth Publishing Company.



QUESTIONNAIRE

UNIVERSITY OF GHANA, LEGON

Dear Sir/Madam,

Please, I am a Masters student at the Department of Communication Studies. This questionnaire is designed to collect information about your assessment of fire safety management within the University of Ghana community. Please, you have been included in a random selection process as a respondent to this questionnaire. This research is for academic purpose only; your identity will not be disclosed and your responses cannot be personally attributed to you. It will take about 10 to 15 minutes to fill this questionnaire.

A. KNOWLEDGE ABOUT FIRE SAFETY MANAGEMENT

1. Do you know what causes fires outbreaks?

- a. Yes () b. No ()

2. If 'Yes', what are the causes?

a.....

b.....

3. Which of these fire preventive measures do you know about? [Check all that apply]

a. Cautious when using naked flames ()

b. Avoid overloading of electrical circuits ()

- c. Adherence to fire signs and notices ()
- d. Regular servicing of fire safety equipment ()
- e. The use of professional electricians ()
- f. Other (specify).....

4. Do you know of visual and graphical precautions about fire safety in the University community? a. Yes () b. No ()

5. Which of these fire precaution measures can you identify? [Check all that apply]

- a. Entry/exit signs and notices ()
- b. Smoke detectors ()
- c. Emergency lightning system ()
- d. Portable Fire Extinguishers ()
- e. Fire Blankets ()
- f. Fire buckets ()

6. As a member of the University community, would you say that you have knowledge in fire safety management?

- a. Yes ()
- b. No ()

7. If 'No', what do you want to know about fire safety management?

.....
.....

B. UNIVERSITY OF GHANA FIRE SAFETY MANAGEMENT

8. What type of building do you work or live in, within the University community?
a. Single storey () b. One storey () c. Two storey ()
d. Three storey () e. Above three storey ()
f. Other (specify).....
9. Do you know if the University premises and structures are fire risk assessed?
a. Yes () b. No () c. Don't know ()
10. Are you aware the University play supportive roles in curbing fire outbreaks?
a. Yes () b. No ()
11. If 'Yes' what role does the University play?
a.
b.
12. If 'No' what role should the University play to curb fire outbreaks?
a.
b.
13. Would you say that the management of the University have taken measures towards managing fire safety?
a. Very much so () b. Yes, quite a lot () c. Not sure ()
d. No, not much () f. No, not at all ()

C. GHANA NATIONAL FIRE SERVICE AWARENESS CREATION

14. Do you have any knowledge about what the GNFS do in the University community?
a. Yes () b. No ()
15. If 'Yes' explain.....
.....
.....

16. If 'No', why not?.....
.....

17. Have you received fire safety education or training from the GNFS within the University? a. Yes () b. No ()

18. If 'Yes' how did you receive the education from GNFS?
a.
b.

19. If 'No' what should the GNFS do to create awareness on fire safety?
a.
b.

20. How does the GNFS communicate to the University community on good fire safety practices to mitigate emergencies?
a.
b.

D. HOW GHANA NATIONAL FIRE SERVICE USES COMMUNICATION

21. Does the GNFS often use communication and practical fire safety training to tackle emergencies in University community?
a. Yes () b. No () c. Don't know ()

22. Does the GNFS have diverse processes of communicating to the University community on issues of fire safety?
a. Yes () b. No ()

23. Which of these communications technologies does the GNFS use to empower and engage the University community with issues of fire safety?

- a. Television ()
- b. Radio ()
- c. Social media ()
- d. Newspapers ()
- e. Posters ()
- f. Community education ()
- g. Other (specify).....

24. Would you say that the GNFS use communication effectively to meet the expectations of the University community.

- a. Very much () b. much () c. Not sure ()
- d. Not much () e. No, not at all ()

25. Please explain your answer.

.....

.....

E. DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

26. **Gender:** Male () Female ()

27. **Age:** Below 20 () 21 – 30 ()

31 – 40 () 41 – 50 ()

51 above ()

28. **Nationality:** Ghanaian () Other (please specify).....

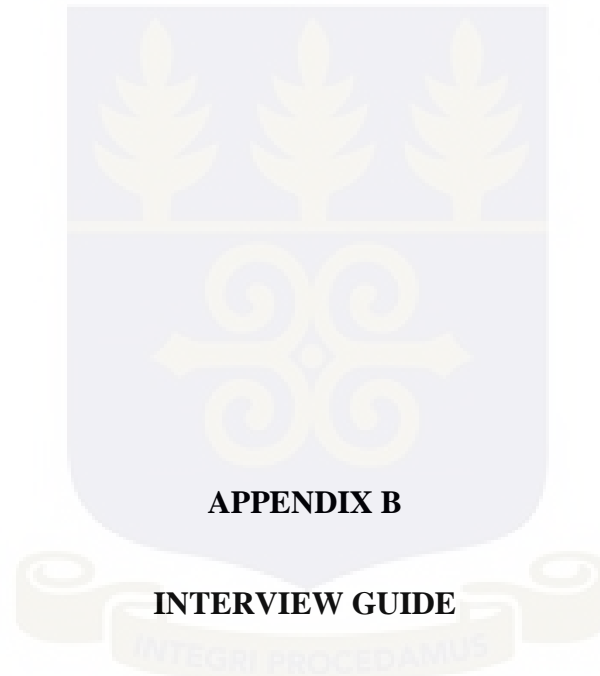
29. **Educational Background:**

Basic () Secondary () Tertiary ()

Post-first degree () Other (please specify).....

Thank you for spending time in answering these questions.

Have a nice day.



APPENDIX B

INTERVIEW GUIDE

OFFICERS OF GHANA NATIONAL FIRE SERVICE, LEGON

I am a Masters student at the Department of Communication Studies, University of Ghana, Legon. This interview guide is designed to collect information about your assessment of fire safety management within the University of Ghana community. Please, you have been selected through a purposive sampling process. I would be pleased if you could provide your own

responses to the questions below. This research is for academic purpose only; your identity will not be disclosed and your responses cannot be personally attributed to you.

1. What is the mandate of the Ghana National Fire Service, (GNFS)?
2. How does the GNFS use communication to achieve its mandate?
3. Do people in the University community know about fire safety management?
4. What communication technologies does the GNFS use?
5. What role does the University of Ghana in fire safety management?

Thank you for spending time in answering these questions.

