

UNIVERSITY OF EDUCATION, WINNEBA

A STUDY OF SEKONDI-TAKORADI RESIDENTS' PERCEPTION OF FIRE
FIGHTING OPERATIONS BY GHANA NATIONAL FIRE SERVICE

ANNI PRINCE KWAKU

(716160001)

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DECLARATION

STUDENT'S DECLARATION

I, Prince Kwaku Anni, declare that this dissertation, with the exception of quotations and references contained in published works which have all been identified and acknowledged is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

CANDIDATE'S SIGNATURE.....

DATE.....

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of dissertation as laid down by the University of Education, Winneba, Ghana.

NAME OF SUPERVISOR.....

SIGNATURE.....

DATE.....



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To all above and those I could not mention, I say God richly bless you.

DEDICATION

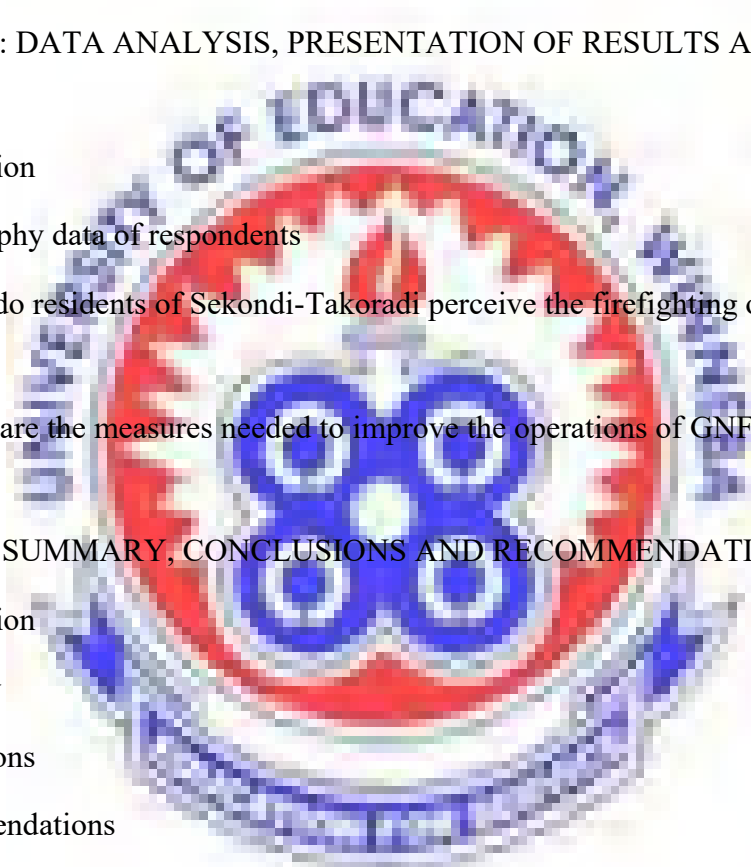
I dedicate this work to my son, Dennix Anni, all my siblings, my sister-in-law, Mrs Abigail Anni and my lovely parents Mr & Mrs Anni.



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ABSTRACT

This study investigated the perceptions of Sekondi-Takoradi residents in the Western Region, Ghana of the firefighting operations of the Ghana Nation Fire Service (GNFS) in the Metropolis. Being underpinned by the theories of perception, the study specifically sought to investigate how the residents perceive the firefighting operations of GNFS and examine measures needed to improve their operations. Using quantitative approach, survey was used to collect data from 120 respondents through purposive and systematic sampling procedures. The SPSS was used to analyze data gathered through frequencies, percentages and descriptive statistics. The study found that most of the residents were of the perception that the firefighting operations of GNFS in the Metropolis were unsatisfactory because of their slow response to calls on fire outbreaks. With the highest mean score of 4.95, it was revealed that the residents were of the opinion that availability of fire hydrant at vantage points was the most significant means by which GNFS could improve upon their firefighting operations. The next significant measure needed to improve their operations was the use of fire tenders with higher water capacities. The study therefore recommends that management of the GNFS must collaborate with Motor, Traffic and Transportation Unit of Ghana Police Service to put in place measures that will control presence of heavy traffic during fire outbreaks. This will ensure that there is always swift response to fire outbreaks so as to protect and preserve lives and properties during fire outbreaks.



CHAPTER ONE

INTRODUCTION

1.1 Background to the study

For centuries, fire has continuously been a basic everyday element of human life. The tendency of fire, one of mankind's best friends, to turn into his worst enemy cannot be underplayed. This is because inappropriate managing and use of fire has led to several accidents in homes, offices, schools, and other public places with very serious repercussions (Ayarkwa, Danso & Adinyira, 2010; Norman, Awiah, Aikins & Binka, 2015).

In recent years, Ghana has experienced fire outbreaks. Mention can be made of the following fire incidences: Ministry of Foreign Affairs, Swedru Melcom, Kumasi Central Market, Tema Central Medical Stores and the June 3rd twin disaster in Accra. Also records show barely 44 days into 2013, 254 fire cases were recorded nationwide (Anaglatey, 2013) and 160 fire outbreaks were recorded by the Ghana National Fire Service within the first week of January 2015 (Amoh, 2015). Anaglatey (2013) notes that the problem of fire outbreaks in Ghana is further compounded by congestion because not only are accessible lanes blocked by buildings and shops but also fire hydrants have been obscured by these structures.

The principal causes of fire outbreaks in Ghana, especially in informal settlements and sub-standard buildings, are electrical faults, children playing with sources of ignition, cooking practices, heating, candles, burning of wastes, smoking and incidents involving household gas cylinders (Addai, Tulashie, Annan & Yeboah, 2016; Norman et al, 2015). Fire risks in all of the above mentioned situations are also affected by structural hazards and/or seasonal variability (Anaglatey, 2013; Inter-Agency Coordination, 2018). Therefore, Drysdale (2011) notes that the

dynamics of fire outbreak and control would continue to require a rapid response by fire and rescue services, irrespective of fire protection measures put in place by fire regulatory establishments. Several of these fire outbreaks occur at fuel filling stations, market places, institutional buildings and populated neighborhoods where slow traffic flow is a serious challenge for the fire tender driver and the crew (Addai et al, 2016; Fleming, 2009; Norman et al, 2015).

Studies on fire incidents in Ghana (Appiah, Damnyag, Blay & Pappinen (2010); Forkuo & Quaye-Ballard, 2013; Norman, Awiah, Aikins & Binka, 2015) have reported that the appalling nature of road networks, poor road maintenance practices, uncontrolled human and vehicular traffics in addition to several unstandardised speed calming interventions on road have rendered the GNFS ineffective in service delivery. These often lead to the loss of huge sums of capital resources each year. These factors tend to affect the rate of rapid response by GNFS to the public whenever their services are needed. As a result, the service is seen as not being able to discharge their duties as expected.

It is argued that Fire Prevention, Preparedness and Response (FPPR) activities should not be viewed from the perspective of a single sector. Rather, it should be considered from a cross-sector dimension. Thus, through efforts and collaboration from shelter, education, health and protection sectors, FPPR activities can and should be mainstreamed (Inter-Agency Coordination, 2018). In Ghana however, Fire Prevention, Preparedness and Response activities have been viewed from a single sector perspective. This is evident in the budget preparatory processes which tend to address each sector needs without a holistic view of how fire prevention and response activities interplay in the resource allocations. Fire stations are also sited without

commensurate road constructions which would provide accessibility to remote settlements for firefighting activities.

Additionally, in the area of infrastructure, there is the emergence of high rise buildings especially in urban centers without due provision of adequate fire and rescue measures. The Ghana National Fire Service took cognizance of the emergence of these high rise buildings in the country and appealed to Parliament to enact a legislation that would empower it to prevent the construction of high rise buildings in the country until provision is made for hydraulic platforms that could reach the height of these buildings. Dr. Brown Gaisie, the then Chief Fire Officer, made the appeal when he appeared before the Public Accounts Committee (PAC) on Tuesday, January 26, 2016, to respond to issues raised in the Audit Report on GNFS' performance. (Source: Newsghana.com.gh)

It has also been argued by Agyekum, Ayarka and Opoku (2016) that fire safety management should be encompassing: covering the whole life span of a building. It should start with the preliminary design and cover all aspects of its occupation, maintenance, modification, and decommission and demolition. This, according to the authors, this is better than the situation whereby the provision of appropriate fire safety measures within buildings has generally been considered as a legislative issue determined by prescriptive standards for construction and compartmentalization. Adequate legislative instruments (LI 1724, 2003 and LI 2249, 2016) have been enacted to empower the Ghana National Fire Service in enforcing an encompassing fire safety management practices in the life of a building. The enforcement of these legislations however has not been effective therefore requires greater support from the local government and the judiciary to effectively enforce them.

Fire disaster is a common phenomenon in Ghana (Appiah, Damnyag, Blay & Pappinen (2010); Forkuo & Quaye-Ballard, 2013; Gakpe & Mahama, 2014; Norman, Awiah, Aikins & Binka, 2015) and the rate of incidents of fire outbreak increase yearly (Addai et al, 2016; Norman et al, 2015). It is important to note that Addai et al (2016:285) identify inadequate public protection due to inadequacies of the GNFS as one of “the contributing factors that help” fire outbreaks “to spread easily and become more destructive”.

In agreement with Article 190 of the 1992 Constitution, the GNFS was established by the National Fire Service Act, 1997 (Act 537). Among others, the service is mandated to prevent and manage undesired fires and disaster rescue operations. GNFS is also responsible for fire safety and management education in Ghana. Therefore, it is expected that the service should promptly attend to fire outbreaks at homes, offices, markets and shops. GNFS spends most of its resources on fire response operations (Norman et al, 2015), yet, it has been under frequent verbal attacks from the media “for their inability to act promptly and bring fires under control” whenever there is a fire outbreak (Gakpe & Mahama, 2014, p.2). Accordingly, this current study aims to empirically establish if the GNFS, through its firefighting operations, is able to swiftly prevent and manage fire outbreaks or otherwise. Thus, it seeks to examine the perception of Sekondi-Takoradi residents of the firefighting operations of the GNFS.

1.2 Problem statement

In every society, fire and rescue services are required to perform a wide range of services at an organizational level. It is for this reason that the GNFS was established in Ghana. Some of these services expected to be rendered by the organisation include risk registers, large scale incidence response planning and co-operating with other agencies (Bateman, Maher & Randall, 2016), fire

safety awareness, fire rescue operations among others. Nevertheless, a lot of people often accuse fire and rescue services for not being swift enough in their operations, which the Ghana National Fire Service is not an exception (Gakpe & Mahama, 2014).

It is important to note that the issue about fire outbreak and rescue services is of importance to mankind, therefore, it has been given attention in literature. In western countries, studies have focused on residents' perception on the operations of fire and rescue services in wildfire locations (Edgeley & Paveglio, 2017; Faas, Velez & Steelman, 2017; Gordon, Gruver & Luff, 2013), measures used in the mitigation and adaptation to wild fires, especially at the local levels (Mockrin, Fishler & Stewart, 2018) and the challenges encountered in the implementation of fire safety management in organisations (Woo & Suleiman, 2015).

In Ghana as well, literature has given some attention to fire and rescue services (Acquah, 2017, Addai et al, 2016; Agyekum et al, 2016; Amo-Asante, 2012; Gakpe & Mahama, 2014; Norman et al, 2015; Owusu-Sekyere, Adjuik & Wedam, 2017; Twum-Barima, 2014). These studies considered the trend and causes of fire outbreaks in Ghana (Acquah, 2017; Addai et al, 2016), institutional compliance in the prevention of fire disasters (Owusu-Sekyere et al, 2017), awareness and patronage of fire insurance by traders (Twum-Barima, 2014), catastrophic fires and risk communication (Norman et al, 2015), reportage of fire outbreaks in Ghanaian newspapers (Gakpe & Maham, 2014) and fire safety and management awareness in multi-storey hostels (Agyekum et al, 2016).

Addai et al, (2016) evaluated the pattern of regional fire distribution in the whole Ghana in their attempt to investigate the trend of fire outbreaks in Ghana. One of the key recommendations by Addai et al (2016), which is of relevance to this study is the suggestion that “public education on fire prevention and safety measures should be intensified among residents because “most fires

actually occur out of ignorance and negligence” (p.290). To be able to effectively implement this recommendation (the necessary fire prevention and safety measures education needed by residents), there is the need to first determine the perception of residents about the firefighting operations of GNFS. Though Gakpe and Mahama (2014) have noted that the GNFS has constantly been verbally attacked in the media for slow response to fire outbreaks, this has not been empirically affirmed in fire and disaster rescue operations literature in Ghana and this is the gap this study seeks to fill. This is because knowledge of the perception of residents on the operations would enable GNFS to know of the appropriate education needed by residents.

Even though Agyekum et al (2016) have studied the perception of KNUST students on “fire safety awareness and management in multi-storey hostels” (p.329) in one of the fire prone regions in the middle part of Ghana (Addai et al, 2016, p.287), the focus of this study is on the perception of residents in Sekondi-Takoradi on the firefighting operations of GNFS in one of the coastal regions of Ghana described by Addai et al (2016) as being fire prone.

1.3 Objectives of the study

The main objective of the study is to examine the perception of Sekondi-Takoradi residents on the operations of GNFS.

The specific objectives of the study are:

- i. To investigate how the residents of Sekondi-Takoradi perceive the operations of GNFS.
- ii. To examine measures needed to improve the operations of GNFS in Sekondi-Takoradi.

1.4 Research questions

The study is guided by the following questions:

- i. How do residents of Sekondi-Takoradi perceive the operations of GNFS?
- ii. What are the measures needed to improve the operations of GNFS in Sekondi-Takoradi?

1.5 Significance of the study

The purpose of this study is to examine the perception of Sekondi-Takoradi residents on the operations of the GNFS. Accordingly, the outcome of the study is expected to inform the GNFS on the perception of residents on their firefighting operations. The outcome of the study is also expected to add to literature on the perception of residents of GNFS operations in Ghana. Moreover, the study highlights some of the measures to improve the operations of GNFS. Furthermore, the study serves as a source of reference to the GNFS and researchers who may want to conduct studies on the perception of residents elsewhere on firefighting operations of the GNFS.

1.6 Scope of the study

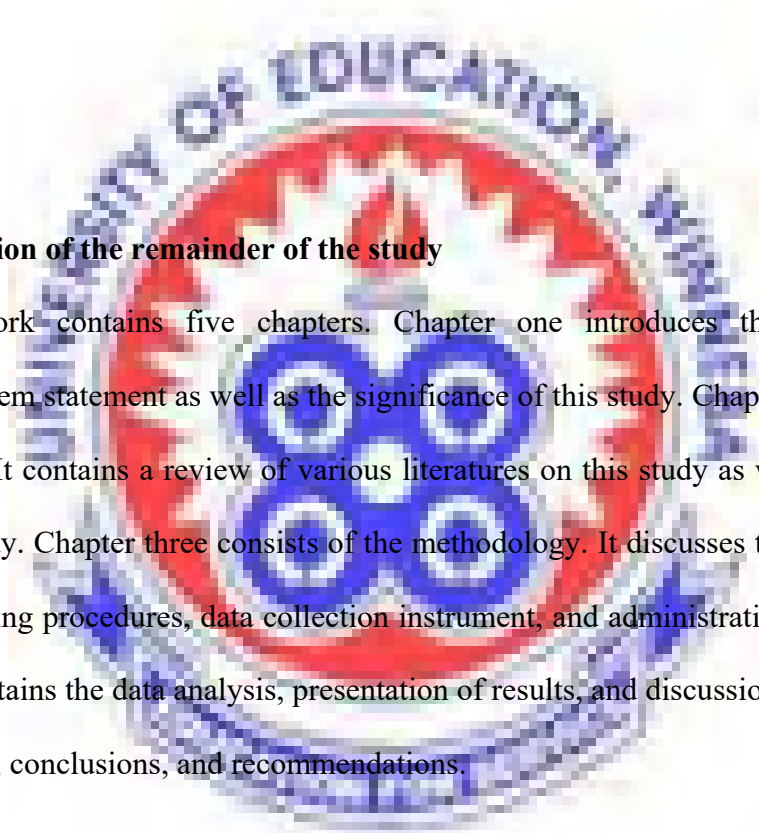
The study focuses on examining the perception of only Sekondi-Takoradi residents on firefighting operations of GNFS, even though there are several towns in the Western region. Also, there are several communities in the Sekondi-Takoradi Metropolitan Area, however the study focuses on Takoradi-Tanokrom. Moreover, residents of Takoradi-Tanokrom will form the respondents of the study. In all one hundred and twenty (120) respondents were included in the study.

1.7 Limitation of the study

This study aimed at investigating the perception of residents of Sekondi-Takoradi Metropolis on the firefighting operations of GNFS and a survey was used to gather data for the study. One limitation to this study is the restriction of its generalizability to the setting of the study. Thus, the outcome of this study is not generalizable to the whole of Ghana but only to Takoradi-Tanokrom.

1.8 Organisation of the remainder of the study

This research work contains five chapters. Chapter one introduces the study with the background, problem statement as well as the significance of this study. Chapter two presents the literature review. It contains a review of various literatures on this study as well as other topics related to this study. Chapter three consists of the methodology. It discusses the research design, population, sampling procedures, data collection instrument, and administration procedures. The fourth chapter contains the data analysis, presentation of results, and discussion. The fifth chapter presents summary, conclusions, and recommendations.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature related to the topic. Thus, relevant literature from books, magazines, articles and journals are reviewed. Though the study generally explicates the two basic theories of perception, it specifically expounds the constructivist theory of perception because it underpins the study. Also, this chapter entails the history and functions of Ghana National Fire Service, an empirical review of studies on operations of fire and disaster rescue services in America and Ghana as well as their relevance to this study.

2.1.1 Theoretical Framework

The thrust of this study was to examine the Sekondi-Takoradi residents' perception of the fire fighting operations of GNFS in the Metropolis. As a result, this study is underpinned by theories of perception. Specifically, it examines the two basic theories of perception and then focus on the constructivist theory of perception and its relevance to the current study.

2.1.2 Two Basic Theories of Perception

Though perception can be explained in numerous ways, it is used in this study in agreement with Norman's (2002) definition. To Norman, (2002, p.1), perception is "the conscious awareness of the objects and events in the perceiver's environment". Thus, it is the awareness that comes with the assessment of information in our environments. As a process of acquiring and processing information, perception has been analysed from two contrasting perspectives: direct and indirect

(Demuth, 2013; Norman, 2002). Also, these labels have been referred to as bottom-up and top-down (Demuth, 2013) and constructivist and ecological (Norman, 2002).

The bottom-up/ecological perception theorists argue that perception processes originate from the lowest sensory level and gradually lead to a higher sensory level or complicated and complex levels. Thus, how humans perceive information depends on the information entering the sensory receptors of individuals (Demuth, 2013; Gibson 1979). This implies that according to this school of thought, the mental processes of the information/stimuli does not influence perception (Norman, 2002) whereas the content and quality of information/sensory data of an individual is exposed to play a determinative role in influencing the final perception of an individual (Demuth, 2013). This makes sensory input of information key to the perception realised. For this reason, the ecological theory of perception is described as data driven processing of information. Under this approach, the process of perception is direct because it involves a single stage where there are no intervening processes between stimulation and perception (Norman, 2002).

However, the top-down theorists of perception are of the view that the process of perception entails “the active process of extracting sensory stimuli, their evaluation, interpretation and backward organisation of sensory stimulus (Demuth, 2013, p.31). Thus, it involves the receipt of information/stimuli and the processing of the information together with previous experience. This implies that the mental processing of the content of information based on an individual’s previous knowledge and understanding of his/her environment plays a determinative role in influencing one’s perception. Citing Eysenck and Keane, Demuth (2013) notes that perception is the outcome of the interaction stimulus, internal processes, expectations and previous knowledge of an individual. Unlike the ecological approach, the constructivist approach sees the processes of perception as indirect because it is “multi-staged with meditational processes intervening

between stimulation and percept” therefore the individual is not passive but active in the process (Norman, 2001, p.74).

Two topics have been identified by Norman (2002) as being the major differences between the two theories of perception. These are “the richness of the stimulation reaching our sensory apparatus, and the involvement of higher mental processes in the apprehension of our environment” (p. 74). Whilst “ecologically oriented theorists argue that the information in the ambient environment suffices and is not equivocal, and thus, no mental processes are needed to enable the pickup of the relevant information”, the constructivist theorists describe “the stimulation reaching our senses as inherently insufficient” therefore, necessitating an intelligent perceptual system that relies on inferential types of mechanisms to overcome this inherent equivocality of stimulation” (p. 74). Therefore, the ecological theory of perception focuses on analysis of the information that the perceiver picks from the environment but the constructivist theory of perception is concerned with the analysis of the mental processes and mechanisms that underline perception.

2.1.3 Constructivist Theory of Perception

Constructivist theorists argue that information is vague until it is influenced by previous experiences (Demuth, 2013). The process of perception entails high cognitive activities and learning. To Gregory (1990), experience, context and motivation are critical to the kind of interpretation an individual assigns to any sensory information received. Thus, perception goes further than just interpretation of information but includes consideration of personal history/experience. For instance, in the context of this study, this implies that the perception of

the residents of Sekondi-Takoradi of the firefighting operations of GNFS would be influenced by their previous knowledge/experience during fire outbreak with the organisation.

Therefore upon receipt of sensory information, an individual does not just accept the data. Rather, they construct perception when they try to organise the information based on the previous experiences. To this effect, an individual needs to have previous experience, knowledge or other influence to help in organising information and forming perceptions. Though Gregory's theory of perception is criticised for giving room to halo effect and selective exposure, it demonstrates "that to operate with sensory data does not necessarily mean to perceive, but to perceive always means to integrate feelings into a broader context of our beliefs and opinions" (Demuth, 2013, p.26).

The constructivist theory of perception is of relevance to this study because it affords the researcher insights during data collection: the selection of respondents for this study. The theory posits that previous experience plays a key role in the process of perception therefore in studying the perception of Sekondi-Takoradi residents on the fire fighting operations of GNFS, there is the need for the researcher to select respondents who have previous experience on fire outbreaks. For instance, Edgeley and Paveglio (2017) included 53 persons who had experienced some form of property damage in their sample when they were studying the perceptions of disaster aid allocation after the Carlton Complex fire in north-central Washington in the US. This is because "to perceive always means to integrate feelings into a broader context of our beliefs and opinions" (Demuth, 2013, p. 26).

2.2 History of Ghana National Fire Service

The Ghana National Fire Service was established by an Act of Parliament, (Fire Service Act 1963; Act 219) in 1963. It emerged from the then fragmented Railways, Ports and Harbours and

the Municipal Fire Brigades in Accra, Kumasi and Sekondi/Takoradi that existed as separate entities under government departments or municipal councils (GNFS, 2015). The principal aim of the Ghana National Fire Service was to extinguish fires and to render humanitarian services. Subsequently, in 1997 the Ghana National Fire Service Act (Act 537) was enacted to re-establish the Ghana National Fire Service with an expanded mandate to prevent and manage undesired fires and other related matters. Thus taking modern trends in the Fire Services all over the world into cognisance, the purpose of Act 537 was to expand the functions of the GNFS to not only cover fire intervention but also fire prevention and safety (GNFS, 2015).

Currently, the GNFS is one of the agencies under the Ministry of the Interior. Under the strategic objectives of the mother ministry, the Ghana National Fire Service is required to provide adequate protection of life and property, sensitize and provide technical assistance and advice to schools, markets, MMDAs, lorry parks and other institutions nationwide on fire safety measures. The major programme and project assigned to the service is fire management, rescue and extrication services (Ministry of The Interior, n.d).

2.2.1 Functions of the GNFS

The GNFS is required to perform the following functions to achieve her objectives:

GNFS is to organize public education programmes to create and sustain awareness of hazards of fire; heighten the role of the individual in the prevention of fire; provide technical advice for building plans in respect of machinery and structural layouts to facilitate escape from fire rescue operations and fire management; and inspect and offer technical advice on fire extinguishers.

They are also required to co-ordinate and advice on the training of personnel in fire fighting departments of institutions in the country; train and organize fire volunteer squads at community level; offer rescue and evacuation services to those trapped by fire or in other emergency situations; and undertake any other function incidental to the objective of the service.

2.2.2 Vision and Mission of Ghana National Fire Service

The vision of Ghana National Fire Service is to ensure safer communities throughout Ghana by containment of fire and reduction of fire-related accidents and deaths. The mission of GNFS is to provide an efficient and valued fire and rescue services. The organisation is also expected to maintain and improve public safety from fires and related emergencies so as to protect people, the environment and the economy through a motivated workforce and adequate resources.

2.3 Empirical Review

This section reviews literature on fire rescue and disaster services. This is because familiarity with literature in a discipline enables a researcher to determine the existing theoretical controversies as well as identify the methodologies employed to gather, analyse and explain data in an investigation. This assertion justifies the need to review literature relevant to the issue under investigation so as to be familiar with the modern trends in research in this area of study.

2.3.1 Studies on operations of fire and disaster rescue services in America

Quite a number of studies have been carried out to assess the operations of fire and rescue service across the globe. For instance, Faas, Velez, FitzGerald, Nowell and Steelman (2017) did a study involving 21 large-scale wildfire events in the wildland–urban interface near national forests in the American Northwest to evaluate wildfire preparedness and response networks. The researchers sought to establish how key persons in responder networks anticipated seeking out specific people in perceived bridging roles prior to the occurrence of wildfires. It also aimed at capturing who in fact assumed the roles during actual large-scale events. Two conceivable, but conflicting, bodies of theory; similarity and dissimilarity, that propose who people might seek

out as bridgers and who they would really go to during a disaster guided the study. It was observed that generally one-half of all pre-fire nominations were consistent with similarity. Yet, similarity does not hold up for how they organise during the real incident whereas it is a dependable indicator of how people expect to organise.

Also, Edgeley and Paveglio (2017) carried out a study to comprehend long-term community recovery following impactful wildfire events through existing hazards literature. The study particularly explores the local perceptions about agency suppression efforts or the allocation of disaster aid after a wildfire influence recovery processes or adaptive actions to organise for hazards in the future. Interviews were conducted by the researchers with 87 professionals and local residents a year after the Carlton Complex Fire in north-central Washington. Also, 53 persons who had experienced some form of property damage were also interviewed.

Findings from Edgeley and Paveglio's (2017) study indicate that a number of local residents and professionals express disappointment with fire management approaches. This is because they felt the fire management approaches were not aggressive enough. It was also observed that the local people were frustrated as a result of lack of individual assistance from the Federal Emergency Management Agency. The respondents attributed their frustration to the challenging nature of the application process as well as the lack of understanding about rural impacts from wildfires. Expectations that were not realised on recovery aid and uncertainty about future firefighting measures impacted recovery efforts focused on building local autonomy during future hazard events.

Using a typological framework of intersecting ecological, social, and cultural processes, Gordon, Gruver, Flint and Luloff (2013) explored landscape dynamics and wildfire between 2003 and 2007. The researchers used key informant interviews, to investigate risk perception as they are

related to community challenges and opportunities in the Kenai Peninsula, Alaska. As an integral part of community and landscape change, risk perceptions were examined by the researchers. It was observed that although informants were less likely to discuss it as a major threat compared to the original study, wildfire was a concern among informants in 2003 and remained a concern in 2007. In the western part of the peninsula, informants tended to express more concern about wildfire than those in eastern principally as a result of their experiences with recent fires. The expanding wild land urban interface, changing forest fuels, and contrasting values of new residents were other significant factors residents considered. The study indicated that informants had difficulty describing the possibility of a wildfire event in a broader geographical context than the community scale, underscoring the localised nature of risk perceptions.

In another study, Dupéy and Smith (2018) sought to explore how individuals prepare for, and respond to, the risks associated with prescribed burning and wildfire. The study carried out a review, a systematic compilation, and quantification of dominant trends. Empirical studies that were carried out in the United States (US) that addressed perceptions and behaviours about various aspects of prescribed burning and wildfire were all reviewed. The researchers reported that among other theories, Protection Motivation Theory (PMT), and Attribution Theory (AT) and approaches for instance could produce insightful results that can readily be implemented by fire-management professionals and decision makers.

A qualitative study was undertaken by Dodd, Scott, Howard, Scott, Rose, Cunsolo, and Orbinski (2018) with the aim to explore the experience among four communities in the Northwest Territories (NWT) of the 2014 wildfire season. The researchers carried out 30 semi-structured interviews in Yellowknife, N'Dilo, Detah, and Kakisa. Respondents were purposively sampled to include a broad cross-section of backgrounds and experiences. The study results showed that

the respondents experienced evacuation and isolation as well as feelings of fear, stress, and uncertainty. These were found to have contributed to acute and long-term negative impacts for their mental and emotional well-being. It was also observed that smoke events that prolonged were associated with extended time indoors and respiratory problems. The study further found that for some respondents, livelihood and land-based activities were disrupted, which had negative consequences for mental, emotional, and physical well-being.

Stasiewicz and Paveglio (2017) also explored the local circumstances that influenced the establishment and functioning of Rangeland Fire Protection Associations (RFPAs). The study carried out in-depth interviews with the RFPA members and land management professionals. The study's findings showed that factors that contributed to RFPA formation and functioning included intergenerational ties to 'working the land,' existing reciprocity among neighbours, a culture of self-reliance, and informal social networks. It was further found that there were improved relationships between RFPA members and professionals as a result of interaction between them which also promoted shared understandings about wildfire response.

It has been indicated that to improve the operations of fire and rescue service, guidelines must be developed by an initiative with the objective to promote best practices of prevention, preparedness and response that will reduce fire-related hazards among the residents of informal settlements, residential and non-residential buildings in every society. There should also be the promotion of the development of long-term, harmonized cross-sectoral strategies of fire hazard reduction that will produce sustainable solutions and integrate disaster resilience and mitigation into actions and decisions (Inter-Agency Coordination, 2018)..

In United States, a study was conducted in eight locations by Mockrin, Fishler and Stewart (2018) to assess the extent the destructive wildfire affected progress toward becoming fire

adapted. The researchers report that adaptation following destructive fires is most common at the community-level where destructive wildfire is novel and government capacity and investment in wildfire regulation and land use planning are already in place. It was observed that to bring about change after wildfire, external funding, staff capacity, and the presence of issue champions were combined. The study further showed that locations that saw fewer changes were those with extensive previous investment in formal wildfire regulation and mitigation, long histories of destructive wildfire, or little government and community capacity to manage wildfire. It was also found that communities consistently used the most common tools and actions for wildfire mitigation and planning across diverse settings. The study observed that at the community and local governmental level, adaptation might perhaps follow from each wildfire incident, nor easily integrate formal measures and approaches to minimizing land use and development in harmful environments.

2.3.2 Studies on fire and disaster rescue operations in Ghana

Some studies have been carried out in Ghana on the various aspects of fire and disaster rescue operations. One of such studies was conducted by Acquah (2017) with the objective to probe the 2015 June 3rd Twin-Disaster in Accra to establish the causes of the disaster. The study also sought to examine NADMO's role during the disaster situation. The study established that no association existed between alleviation and risk reduction initiatives and the vulnerability of people. The study further indicated that mitigation and disaster risk reduction initiatives fail to address vulnerability of people. It was also suggested that the appropriate means to prevent perennial flooding is to start addressing peoples' social vulnerabilities holistically.

In another study, Twum-Barima (2014) using the Kumasi Central Market as a case study assessed whether the traders in the market were aware of fire insurance policies and had taken fire policies to cover their goods and stalls. Through random sampling technique, 100 respondents were selected for the survey. Findings revealed that majority of the traders had wrong perceptions about the concept of insurance and they often used water and sand to quench fire during outbreaks. Few of the respondents however admitted to using foam, carbon dioxide and dry powder to control fire outbreak.

In testing for institutional compliance in disaster prevention in Ghana, Owusu-Sekyere, Adjuil and Wedam (2017) used the Central Medical Store fire disaster to examine the cause of the inferno that burnt one of the largest medical storage facilities in West Africa. Through two sets of interviews conducted two weeks after the fire outbreak and six months after the incident, data were gathered to explore and analyse on the preparedness level of Ghana to cater for such disasters and possible causes of the inferno. Findings revealed that the cause was attributed to shadowy political opponents but the worker attributed the cause to “naked and unprotected fire outside but near to the facility” (p.4). It was also discovered that fire safety requirements had not been followed through because the “fire safety certificate for the premises had long expired and fire extinguishers had no foams that could quench any preliminary naked fires” (p.5). The study again “revealed that the fire hydrant at the Central Medical Store was out of order at the time the incident occurred” (p5) so private water tankers had to join in supplying water to be used in quenching the inferno. Therefore, Ghana’s preparedness level was low.

In their attempt to examine coverage of fire outbreaks in Ghanaian media, Gakpe and Mahama (2014) quantitatively analysed the content of 288 editions of *Daily Graphic* and *the Chronicle* from January 2009 to June 2010. Using agenda setting, attribution framing and normative news

values, the study sought to establish the extent and nature of newspaper coverage of fire outbreaks and fire safety issues. Findings revealed that *Daily Graphic* gave more coverage to fire outbreak issues than *the Chronicle* because out of the total of 144 stories within the period of study, 82 were from *Daily Graphic* while 32 were from *the Chronicle*. Also, the nature of coverage showed that 71.9 % of the stories were given inside pages placement and just 7 % were given front page placement.

Using the Kwame Nkrumah University of Science and Technology (KNUST) campus as a case, Agyekum, Ayarkwa and Opoku (2016) also examined the perceptions of students on fire safety awareness and management in multi-storey hostels. Through survey, data was gathered from 220 students living in some of the hostels on campus. Mean score rankings and percentages were means of analysis of data obtained from respondents through questionnaire. After data analysis it was observed that in the various hostels most of the students do not consider the issue of fire safety serious. The study found fire management and safety awareness to be low amongst most of the students. Findings of the study also indicated that provision of clear signage indicating exit routes and location of fire safety equipment, storage of flammable materials in safe areas, regular inspection and maintenance of fire safety equipment, regular inspection and maintenance of electrical installations, and accessibility to fire hydrants' are key practices which if implemented by management could control the outbreak of fire in the hostels.

2.4 Relevance of the Empirical Review to the Study

From the review of the empirical studies, it was discovered that studies from Ghana focused on aspects of the operations of GNFS but did not focus on residents' perceptions of the fire fighting operations of the organisation. This justifies the need to undertake this study. Also, Dupey and

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter outlines the methods and techniques that were adopted to address the objectives of the study. The research design, population, sampling techniques and sample size, research method, data collection procedure, and the data analysis technique adopted in this study are presented in this chapter.

3.1 Research Approach

Research design has been defined as the approach employed to undertake a research or a study. A research design is also referred to as the plan for selecting subjects, research sites and data collection procedures to answer the research questions (McMillan & Schumaker, 2001). According to Burns and Grove (2001), designing a research assists researchers to arrange and implement the research/study in a manner that will aid them achieve the intended results; hence, augmenting the possibility of attaining information that could be related to the real situation. The study adopted quantitative research approach to enable the researcher to attain information that could be related to the perception of Sekondi-Takoradi residents on the firefighting operations of GNFS.

In quantitative research, variables are measured on instruments, so that numbered data can be analysed using statistical procedures (Creswell, 2008). Thus, data collected in quantitative form can be transposed into numbers, in an objective, formal, organised procedure to attain data and illustrate variables and their relations (Burns & Grove, 1993; Brink & Wood, 1998). In this

study, responses gathered from the respondents were quantified to help the researcher attain objective data on the perception of the residents on the operations of GNFS.

3.2 Research Design

Survey, specifically descriptive survey, was employed in this study to gather primary data for the study. According to Wimmer and Dominick (2011, p.185), a descriptive survey “attempts to describe or document current conditions or attitudes ... to explain what exist at the moment”. They further add that the focus of a descriptive survey “is in discovering the current situation in the area under study”. Therefore, this study used descriptive survey to gather data on the current perception of Sekondi-Takoradi residents about the operations of GNFS.

3.3 Study Population

According to Polit and Hungler (1999), population is the entire set of respondents from which a sample is selected. In general, population of a research refer to the total elements, individuals and groups who share or display same description (Polit et al., 1999). The population for this study was all the residents of Sekondi-Takoradi.

3.4 Sampling Technique

Sampling is the procedure of choosing a section of the population to represent the total population (Wimmer & Dominick, 2011). Consequently, the study used purposive and systematic sampling to select the location and the 120 respondents respectively. Thus, Takoradi-

Tanokrom was purposively selected from the Sekondi-Takoradi Metropolis as the location for the study because according to the 2016 and 2017 reports by GNFS on fire emergency response, it is one of the most fire prone areas in the Metropolis. In addition, only residents who had experienced fire outbreak were purposively considered as potential respondents for this study because constructivist theory of perception posits that previous experience play a key role in forming perceptions.

Also, systematic sampling was used to select the respondents for the study because Wimmer and Dominick (2011) note that it enables accurate selection of samples. Wimmer and Dominick, (2011, p. 97) posit that in systematic sampling, “a researcher randomly select a starting point and a sampling interval” from a sampling frame. All the residents in Takoradi-Tanokrom who are above 18 years served as the sampling frame then through balloting, numbers 5, 3 and 2 were randomly selected as starting point, sampling interval and number of respondents (to be selected from a household) respectively (Wimmer & Dominick, 2011). Therefore, the fifth house in the suburb marked the starting point for the selection of respondents. With the sample interval of 3, 2 respondents who have experienced fire outbreak from the selected households were systematically chosen for the study.

3.5 Sample Size

A sample is said to be the subset of the population that is representative of the entire population (Wimmer & Dominick, 2011). It is also referred to as a section of the entire population, chosen to partake in a research (Polit et al. 1999). Wimmer and Dominick (2011) argue note that “no single sample size formular or method [was] available for every research method or statistical procedure” (p. 102). However, they outlined “few general principles in determining an

acceptable sample size” (p. 103) and two of the principles outlined that inform the sample size of this study are financial and time constraints. A sample size of one hundred and twenty (120) residents from Takoradi-Tanokrom was employed for the study because of time and financial constraints. The hundred (120) residents selected for the study were those who could provide the required information on the operations of the GNFS to help carry out the study.

3.6 Research Instrument

A structured questionnaire was the main instrument to collect primary data from the respondents for the study. The questionnaire was designed and administered to gather data on the perception of Takoradi-Tanokrom residents on the operations of GNFS. The items were designed based on insights from the empirical review of literature. The questionnaire was made up of ten (10) structured questions in three (3) sections. The first part contained the demographic characteristics of the respondents. The second part assessed information on the perception of residents on the fire fighting operations of GNFS. The third part ascertained the information needed on measures to improve the firefighting operations of the GNFS.

3.7 Validity and Reliability of Instrument

To Wimmer and Dominick, (2011), confounding variables in research may come from several sources therefore to ensure validity and reliability, a researcher need to guard against such variables. In this study, randomness in the selection of respondents and pilot study were used to ensure validity and reliability of the study. Citing Cook and Campbell, Wimmer and Dominick (2011:31) outline the “use of random samples” as a procedure that can be used to guard against

invalidity that relates to sample selection. The randomness in the systematic selection of the respondents for this study ensured validity. Wimmer and Dominick (2011) also note that “the best way to discover whether a research instrument is adequately designed is to pre-test it” (p. 200). Therefore, a pilot study was conducted to pre-test the questionnaire. Thus, 10 copies of the questionnaire were administered to residents in Sekondi-Takoradi who were not part of the sample for this study. Then discussions on the suitability of the questionnaire to generate relevant data for the study were carried out. Afterwards, necessary changes were made before administering the questionnaire to the respondents. Finally, the order of questions was used to address the possibility of prestige bias.

3.8 Data Collection Procedure

The questionnaire was administered by the researcher and research assistant. The research assistant was trained on how to establish rapport with the respondents and the need to exercise patience when administering questionnaire to respondents. The researcher and the research assistant personally distributed 150 copies of the questionnaire to the respondents from 3rd to 7th September, 2018. Most of the respondents were assisted to complete the questionnaires and this enhanced the response rate. However, some respondents took the questionnaire and later submitted them. Out of the 150 copies of questionnaires administered 120 filled copies were retrieved, thus recording a 80 per cent rate response.

3.9 Method of data Analysis

As stated by Bryman and Bell (2003), data analysis is a procedure used to make inferences from data collected by way of an organised and objective identification of specific characteristics. The data obtained in the course of the study were coded and analysed with the use of Statistical Package for the Social Sciences (SPSS) software programme. The processed data were analysed using percentages, frequencies and descriptive statistics. The analysed data were then presented in the form of tables.



CHAPTER FOUR

DATA ANALYSIS, PRESENTATION OF RESULTS, AND DISCUSSION

4.0 Introduction

This chapter is concerned with the presentation of the findings from the analysis of data obtained from the respondents. Primarily, the chapter presents a brief biographic data of the respondents of study. These include their gender, age and marital status. Findings from the analysis of data collected on the research questions are thus presented. The questions are:

- i. How do residents of Sekondi-Takoradi perceive the operations of GNFS?
- ii. What are the measures needed to improve the operations of GNFS in Sekondi-Takoradi?

4.1 Demographic data of respondents

This section focuses on biographic data of the respondents.

Table 4.1: Demography of respondents

Respondents' Biographic Data	Frequency	Percentage (%)
Gender		
Male	75	60.50
Female	45	37.50
Total	120	100.00
Age		
20-29 years	15	12.50
30-39 years	60	50.00
40-49 years	36	30.00
50 years and above	9	7.50
Total	120	100.00
Marital status of respondents		
Single	37	30.80
Married	72	60.00
Divorced	8	6.70
Widowed	3	2.50
Total	120	100

Source: Field data, 2018

Table 4.1 shows that out of the one hundred and twenty (120) respondents, 75 of them representing 62.50% were males while 45 of them representing 37.50% were females. Thus, the results indicated that majority of the respondents were males. Generally, the female population in Ghana is higher than the male but during the data collection stage, it was realised that the females preferred that their male counterparts should rather attend to the researcher. Also, data in the table 4.1 reveals that out of the one hundred and twenty (120) respondents, 15 of them representing 12.50% were between the 20-29 years; 60 of them representing 50.00% were between 30-39 years; 36 of them representing 30.00% were 40-49 years; while 9 of them representing 7.50% were 50 years and above. Hence, most of the respondents were between the age range of 30-39 years. As shown in the table, 37 out of the 120 respondents representing 30.80% were single; 72 of them representing 60.00% were married; 8 of them representing 6.70% were divorced; while 3 of them representing 2.50% were widowed. Thus, majority of the respondents were married.

4.2 RQ 1: How do residents of Sekondi-Takoradi perceive the fire fighting operations of GNFS?

This question primarily sought to examine whether the respondents perceived the firefighting operations of GNFS as very satisfactory, satisfactory, or not satisfactory. It has been noted by Wimmer and Dominick (2011:214) that in surveys, respondents are sometimes unable “to explain their true feelings, perceptions or beliefs” or they employ “prestige bias” in their answers when they have inadequate knowledge on the topic. To guard against these, respondents were also asked about their familiarity with GNFS firefighting operations and the swiftness of GNFS in responding to their call. Thus, responses to these questions were used to affirm or refute

respondents' perception of the operations of the organisation. The results have been presented below:

Table 4.2.1: Have you ever witnessed a fire outbreak?

Response	Frequency	Percentage (%)
Yes	120	100.00
No	0	0
Total	120	100.00

Source: Field Data, 2018

As depicted in Table 4.2.1, all the respondents (100%) noted that they had witnessed a fire outbreak before. This outcome is in consonance with similar study carried out by Edgeley and Pavaglio (2017) the United States. They explored the perception of local residents on agency suppression and aid allocation during wildfire recovery processes. Their findings indicated that all respondents employed for their study had experienced some form of property damage. In this study, it could also be argued that people who might have not had any personal experience of fire outbreak might have witnessed coverage of fire outbreaks in the media.

Table 4.4.2: Are you familiar with the firefighting operations by GNFS

Response	Frequency	Percentage (%)
Very Familiar	97	80.80
Familiar	23	19.20
Not familiar	0	0
Total	120	100.00

Source: Field Data, 2018

In Table 4.2.2, 97 out of the 120 respondents representing 80.80% acknowledged that they were familiar while 23 of them representing 19.20% said they were not familiar. Thus, the results indicate therefore that majority of the respondents were familiar with the operations of the GNFS.

This finding addresses the likelihood of prestige bias in the responses of the respondents because majority of the respondents are familiar with the operations of GNFS therefore, reduction of the bias in their perception of GNFS fire fighting operations in Sekondi-Takoradi. Also, Faas et al. (2017) in their study did note that individuals who are familiar of the activities of fire and disaster management services would really call on them during a disaster. By extension, it implies that majority of the respondents would rely on GNFS during fire outbreak, therefore, they would be able to have an objective opinion of firefighting operations of the organisation due to their previous experience with the organisation.

Table 4.2.3: Was the GNFS called to put out the fire?

Response	Frequency	Percentage (%)
Yes	112	93.30
No	8	6.70
Total	100	100.00

Source: Field Data, 2018

As depicted in Table 4.2.3, 112 of the 120 respondents representing 93.30% admitted to calling on GNFS to help put out a fire outbreak. However, 8 of them representing 6.70% did not call on GNFS to put out the fire. Thus, the results indicate that majority of the respondents indicated that the GNFS was called to put out the fire. This finding confirms the claim by Faas et al. (2017)

that majority of respondents tend to rely on the fire service agencies in time of disasters. It could be argued that people tend to call on the fire service agencies due to the fact that they are aware that the fire service agencies or organisations have the necessary skills to fight fire and put it out to save lives and preserve properties.

Table 4.2.4: How was the response of the GNFS?

Response	Frequency	Percentage (%)
Very swift	11	9.20
Swift	48	40.00
Slow	61	50.80
Total	100	100.00

Source: Field Data, 2018

Out of the one hundred and twenty (120) respondents, the results in table 4.2.4 show that 11 of the respondents representing 9.20% agreed that GNFS was very swift in response to their call; 48 of them representing 40.00% had the opinion that GNFS was swift; and 61 of them representing 50.80% were of the view that the organisation was slow. Hence, the results indicate that most of the respondents had the view that the response of GNFS to their call to fight a fire outbreak was slow. The finding is in agreement with the claim in the Ghanaian media that the organisation does not promptly respond to fire outbreak (Gakpe & Mahama, 2014).

According to the study by Mbauni (2014) undertaken in informal settlements in Kenya, during the Sinai tragedy, it took the fire service authorities as long as two hours late to arrive at the scene after the fire outbreak instead of their commended five minutes. In Ghana, the slow

response of the GNFS has been of concern. It was no wonder respondents indicated that during fire outbreak the response of the GNFS was slow. Their slow response has been attributed to several factors including inaccessible roads, traffic and lack preparedness (Addai et al, 2016; Norman et al, 2015).

Table 4.2.5: How satisfied are/were you with the fire fighting operations of the GNFS?

Response	Frequency	Percentage (%)
Very satisfied	9	7.50
Satisfied	53	44.20
Not satisfied	58	48.30
Total	100	100.00

Source: Field Data 2018

As depicted in Table 4.2.5, 9 out of the one hundred and twenty (120) respondents, representing 7.50% were very satisfied with the firefighting operations of GNFS in the Metropolis while 53 of them representing 44.20% were satisfied. However, 58 of them representing 48.30% were not satisfied thus, indicating that most of the respondents were not satisfied with the firefighting operations of the organisation. The foregoing suggests that the perception of Takoradi-Tanokrom residents on firefighting operations of GNFS was not satisfactory. Comparably, Edgeley and Paveglio (2017) also discovered in their study that local residents expressed disappointment with fire management approaches. Hence, there is the need for GNFS to adopt proper procedures to prevent delays and encourage swift response when residents call on the organisation during fire outbreak.

4.3 RQ 2: What are the measures needed to improve the operations of GNFS in Sekondi-Takoradi?

The focus of this question was to elicit the respondents' views on measures that they felt would improve the firefighting operations of GNFS in the Sekondi-Takoradi Metropolis. Descriptive statistics, specifically the mean is used as a summative method to find the average scores so as to understand the order of significance the measures needed by GNFS to improve firefighting operations in the Metropolis.

Table 4.3.1: Descriptive statistics of the opinion of residents on measures to improve fire fighting operations by GNFS

Statement	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
Good road network for easy accessibility	120	4	5	4.81	.395
Proper human and vehicular traffic control at fire scene during firefighting operations	120	4	5	4.82	.389
Sensitisation on respect for siren during firefighting operations	120	4	5	4.77	.425
Use of fire tenders with bigger water capacity	120	4	5	4.89	.312
Availability of adequate fire hydrants at vantage points	120	4	5	4.95	.219

Source: Field data 2018

Data from table 4.3.1 indicates the opinion of residents on measures needed to improve firefighting operations by GNFS with mean score and the standard deviations. As indicated in the table, it was revealed that availability of adequate fire hydrants at vantage points scored the highest mean of 4.95; the use of fire tenders with bigger water capacity followed with mean score of 4.89; proper human and vehicular traffic control at fire scene during firefighting operations scored 4.82; good road network for easy accessibility had mean score of 4.81; while sensitisation on respect for siren during firefighting operations scored the lowest mean of 4.77.

Based on the mean scores in table 4.3.1, the residents are of the view that availability of adequate fire hydrants at vantage points is the main significant measure to improve firefighting operations by GNFS. It is quite obvious, according to the empirical review, that inadequate fire hydrants is a big challenge to the operations of fire and rescues services in Ghana (Agyekum et al, 2016; Owusu-Sekyere et al, 2017). For instance Owusu-Sekyere et al (2017, p.3) noted that:

the noticeably lack of water supply in the fire hydrant on the premises also hindered efforts of the firefighters who had to rely on members of the Tema Water Tankers Association (private water suppliers) who carted volumes of water from a nearby hydrant to replenish firefighting vehicles. It took firefighters nearly 30 hours (a day and more) to bring the inferno under control.

The findings, according to the views of the residents, shown that use of fire tenders with bigger water capacity (other than the one used by GNFS in their fire fighting operations) is the second most significant measure to improve firefighting operations by GNFS. Some fire tenders are designed to carry water capacity of 1000 gallons (approx. 3800 litres) and most of the fire tenders in Ghana carry water capacity of 1000 to 3000 gallons. Some water tenders may carry up to or even upwards of 5000 gallons (approx. 19,000 litres) of water – even more with a trailer

(Fleming, 2009). Providing the GNFS with such fire tenders with bigger water capacity would assist the personnel to provide better service.

The study has also found that proper human and vehicular traffic control at fire scene during firefighting operations will improve firefighting operations by GNFS. The issue of human and vehicular traffic has been observed as a challenge which significantly impedes the operations of national service agencies in many developing countries which Ghana is not an exception. Appiah et al. (2010) in their study emphasised that uncontrolled human and vehicular traffics hamper the successful operations of the fire service. Therefore, there is the need for GNFS to collaborate with MTTU whenever there is a fire outbreak to deal with the situation of heavy traffic to help enhance the operation of the fire service.

It was found that good road network for easy accessibility will improve firefighting operations by GNFS. With this observation, it could be said that due to the fact that most residential areas in the country are not well-planned, GNFS is mostly challenged in case they need access road networks to fire outbreak areas. There is thus, the need for government to ensure that residential roads are well-planned for free passage of fire tenders (Mockrin et al., 2018).

The study finding has indicated sensitisation on respect for siren during firefighting operations will improve firefighting operations by GNFS. According to a recent study by Mockrin, Fishler and Stewart (2018), the inability for fire personnel to get to fire seen are as a result of disregard of the personnel by residents. Mockrin et al. (2018) indicated that consistently, most communities use the most common tools and actions deal with fire outbreak and which obstruct the operations of fire personnel. The need to educate people on proper fire safety practices is thus, paramount in every society.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter is arranged into four sections. The first section deals with the summary of the research study. The second section focuses on the various conclusions drawn from the findings of the study. The third section is deals with some recommendations for the GNFS. The last section focuses on recommendation for future studies.

5.2 Summary

The study sought to investigate the perception of Sekondi-Takoradi residents of the operations of the GNFS. Specifically, it sought to investigate how residents of Sekondi-Takoradi perceive the operations of GNFS and to examine their views on the measures needed to improve the operations of GNFS in Sekondi-Takoradi. Constructivist theory of perception guided this study and descriptive survey method was employed to gather data for the study. Residents of Takoradi-Tanokrom formed the respondents of the study. The purposive, random and systematic sampling methods were used to select one hundred and twenty (120) respondents from the area. To ensure validity for generalisation, different questions were used to affirm responses from the respondents.

The study found that the respondents were very much familiar with the operations by the GNFS. It was also established that all the respondents have witnessed fire outbreak before. It was found that in most cases, the GNFS was called to put out the fire. The results indicated further that the

response of the GNFS when they were called to put off fire was slow. Moreover, the study observed that most of the respondents were not satisfied with the operation of the GNFS.

Data from respondents also established that availability of adequate fire hydrants at vantage points was the major measure needed to improve the firefighting operations by GNFS. The study finding had also indicated that use of fire tenders with bigger water capacity is the second major measure to improve the firefighting operations by GNFS. Proper human and vehicular traffic control at fire scene during firefighting operations is found to be the third most significant measure to improve firefighting operations by GNFS. Furthermore, good road network for easy accessibility has been observed to be another measure to improve firefighting operations by GNFS. The study revealed that sensitisation on respect for siren during firefighting operations could also improve firefighting operations by GNFS.

5.3 Conclusions

Based on the findings of the study, it is concluded that respondents perceived the firefighting operations of GNFS in Sekondi-Takoradi as not being satisfactory. Drawing on the opinions on their familiarity with the GNFS firefighting operations and the slow response of the organisation when called to put out fire, most of the respondents were dissatisfied with the firefighting operations of the GNFS.

As a result, they suggested that the availability of adequate fire hydrants at vantage points is a major measure to improve the firefighting operations by GNFS. The study concludes also that use of fire tenders with bigger water capacity, proper human and vehicular traffic control at fire scene during firefighting, good road network for easy accessibility would improve firefighting

operations by GNFS. Another measure outlined for improvement in firefighting operations in the Sekondi-Takoradi Metropolis was sensitisation on respect for siren during firefighting operations.

5.4 Recommendations

The study made several significant observations; however based on the findings of the study, the following recommendations are made:

- The study found that the response of the GNFS was slow when they were called to put off fire. The study recommends that management of the GNFS put measures in place to ensure that there is always swift response when there is fire outbreak. This will aid in protecting and preserving life and property.
- It was found that respondents are dissatisfied with the operation of the GNFS. It is thus, recommended that the management of the GNFS engage in extensive public relations to sensitize the public on the operations of the service. This will assist in winning the public trust in the service.
- Furthermore, the study observed that fire tenders with bigger water capacity than the tenders being used currently by GNFS will improve the fire fighting operations by GNFS. It is recommended that management of the service ensure that tenders with bigger water capacity are purchased and also ensure that those tenders always contain water to aid in the swiftness of their operations in case there is fire outbreak.

5.5 Recommendations for future research

The study recommends that future studies should be conducted in other Metropolis and Regions in Ghana to broaden the scope of observations and for proper and appropriate generalization.



REFERENCES

- Acquah, R. (2017). *The 2015 June 3rd twin-disaster in Accra: a situational analysis of Ghana's disaster preparedness*. Unpublished Thesis Submitted to the University of Agder.
- Addai, E. K., Tulashie, S.K. & Annan, J.-S., Yeboah, I. (2016). Trend of fire outbreaks in Ghana and ways to prevent these incidents. *Safety and health at work*, 7(4), 284–292.
- Agyekum, K., Ayarkwa, J., & De-Graft, J. O. (2016). Fire safety awareness and management in multi-storey students' hostels. *Asian Journal of Applied Sciences*, 4(2), 329-338.
- Amo-Asante, K. (2012). *Location of two fire stations in five Sub-Metros of the Kumasi Metropolis*. Unpublished Thesis Submitted to the Kwame Nkrumah University of Science and Technology.
- Amoh, E. K. (2015). *160 fire outbreaks in 2015 so far, GNFS confirms*. Accessed October 16, 2018 from: <http://tv3network.com/all-news/news/local/160-fire-outbreaks-in-2015-so-fargnfsconfirms.html>
- Anaglatey, B. (2013). *Strengthening leadership in disaster resilience program*. Accra: Personal Communication, Practitioners' Workshop.
- Appiah, M., Damnyag, L., Blay, D., & Pappinen, A. (2010). Forest and agro-ecosystem fire management in Ghana. *Mitigation and adaptation strategies for global change*, 15(6), 551-570.

Ayarkwa, J., Danso, A. K., & Adinyira, E. (2010). Incidence of domestic fire outbreaks in Ghana: causes and prevention. *Ghana Surveyor*, 4:1-3.

Bateman, N., Maher, K., & Randall, R., (2016). *Drivers of change in the UK Fire Service: an operations management perspective. Public Service Operations Management: A Research Handbook*. Abingdon: Routledge, 139 - 155.

Brink, J. B., & Wood, M. J. (1998). *Advanced designs in nursing research* (2nd edition). Thousand Oaks: Sage.

Bryman, A., & Bell, E. (2003). *Business research methods*. Oxford: Oxford University Press.

Burns, N., & Grove, S. (1993). *The practice of nursing research: conduct, critique and utilization* (2nd edition). WB Saunders: Philadelphia, Pennsylvania, USA.

Burns, N., & Grove, S. K. (2001). *The practice of nursing research: conduct, critique and utilization*. Philadelphia: WB Saunders.

Creswell, J.W. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (3rd edition). Upper Saddle River, NJ: Pearson Education.

Demuth, A (2013). *Perception Theories*. Faculty of Philosophy and Arts · Trnava University in Trnava Hornopotočná 23 · 918 43 Trnava filozofia@truni.sk · [Http://fff.truni.sk](http://fff.truni.sk)

Dodd, W., Scott, P., Howard, C., Scott, C., Rose, C., Cunsolo, A., & Orbinski, J. (2018). Lived experience of a record wildfire season in the Northwest Territories, Canada. *Canadian Journal of Public Health*, 109(3), 327-337.

Drysdale, D. (2011). *An introduction to fire dynamics*. Chichester: John Wiley and Sons Ltd.

Dupéy, L. N., & Smith, J. W. (2018). An integrative review of empirical research on perceptions and behaviors related to prescribed burning and wildfire in the United States. *Environmental Management*. <https://doi.org/10.1007/s00267-018-1031-8>

Edgeley, C. M., & Paveglio, T. B. (2017). Community recovery and assistance following large wildfires: The case of the Carlton Complex Fire. *International Journal of Disaster Risk Reduction*, 25, 137-146.

Faas, A. J., Velez, A-L. K., FitzGerald, C., Nowell, B. L., & Steelman, T. A. (2017). Patterns of preference and practice: bridging actors in wildfire response networks in the American Northwest. *Disasters*, 41(3), 527-548.

Fleming, R., S. (2009). *Effective fire and emergency services administration*. Tulsa: PennWell Corporation.

Forkuo, E., K., & Quaye-Ballard, J., A. (2013). GIS based fire emergency response system. *International Journal of Remote Sensing and GIS*, 2(1), 32–40.

Gakpe, B. K. and Mahama, P. Y. (2014). Reportage of stories on fire outbreaks in Ghana: An analysis of the *Daily Graphic* and *the Chronicle*. *New Mass Media and Communication*, 24.ISSN 2224-3275 (Online).

Ghana National Fire Service (GNFS), (2015). *History of Ghana National Fire Service*. Accessed October 17, 2018, from: <http://www.gnfs.gov.gh/about-us>

Gibson, J. J. (1979). *The ecological approach to visual perception*. Boston: Houghton Mifflin.

Gordon, J. S., Gruver, J. B., Flint, C. G., & Luloff, A. E. (2013). Perceptions of wildfire and landscape change in the Kenai Peninsula, Alaska. *Environmental Management*, 52(4), 807-820.

Gregory, R. L. (1990). *Eye and Brain. The psychology of seeing*. Oxford: Oxford University Press.

Guidotti, T., L. (2016). *Health risks and fair compensation in the fire service*. New York: Springer International Publishing.

Inter-Agency Coordination (2018). *Guidelines for the fire prevention, preparedness, and response (FPPR)*. Lebanon.

Mbaka, C. A. & Soola, E. 2015. "Health communication: tracking research trends in the journal of communication and media research". *Journal of Communication and Media Research*, 7.1: 183-198.

Mbauni, E. R. (2014). Challenges of dealing with fire outbreaks in informal settlements: a case of the 12th September 2011 Sinai Fire in Nairobi City County. Unpublished Thesis submitted to the Technical University of Kenya.

Ministry of The Interior (n.d). *Ghana National Fire Service*. Accessed October 17, 2018, from: <https://www.mint.gov.gh/agencies/ghana-national-fire-service/>

Mockrin, M. H., Fishler, H. K., & Stewart, S. I. (2018). Does wildfire open a policy window? Local government and community adaptation after fire in the United States. *Environmental Management*, 62(2), 210-228.

- Norman, J. (2002). Two visual systems and two theories of perception: An attempt to reconcile the constructivist and ecological approaches. *Behavioral and Brain Sciences*, 25, 73-144.
- Norman. I. D., Awiah, B. M., Aikins, M. K. and Binka, F. N. (2015). Review of catastrophic fires and risk communication, Ghana. *Advances in Applied Sociology*, 6, 167-177.
- Owusu_Sekyere, E., Adjui, Y. R. and Wedam, E. (2017). The central medical store fire disaster: A test for institutional compliance in disaster prevention in Ghana. *SAGE Open*, 1-10.
- Polit, D. F., & Hungler, B. P. (1999). *Nursing research: Principles and methods*, (6th edition). Philadelphia: JB Lippincott.
- Stasiewicz, A. M., & Pavaglio, T. B. (2017). Factors Influencing the development of rangeland fire protection associations: exploring fire mitigation programs for rural, resource-based communities. *Society & Natural Resources*, 30(5), 627-641.
- Twum-Barima, M. L. (2014). An assessment of the awareness of fire insurance in the informal sector: A case study of the Kumasi Central Market in Ghana. *International Journal of Humanities Social Sciences and Education*, 1(8), 41-47.
- Wimmer, R.D. & Dominick, J. R. (2011). *Mass media research: an introduction* (9th edition). Boston: Cengage Learning.
- Woon, C. O., & Suleiman, M. Z. (2015). Problems in implementation of fire safety management in Malaysia Government hospital. *Advances in Environmental Biology*, 9(4), 47-50.

APPENDIX

QUESTIONNAIRE FOR RESIDENTS AT TAKORADI-TANOKROM

THE PERCEPTION OF SEKONDI-TAKORADI RESIDENTS ON FIRE FIGHTING

OPERATIONS BY GHANA NATIONAL FIRE SERVICE

Preamble

Dear respondent, I am a student of the University of Education, Winneba, undertaking a research project on the topic '*THE PERCEPTION OF SEKONDI-TAKORADI RESIDENTS ON FIREFIGHTING OPERATIONS BY GHANA NATIONAL FIRE SERVICE*,' in partial fulfilments of the requirements for an MA Communication and Media Studies. To this end, I kindly request that you help me complete this questionnaire. The questionnaire is voluntary and the data collected is strictly confidential. Your response is of utmost importance to me.

(Please tick (✓) where necessary)

Section A: Demography

i. Gender

a. Male [] b. Female []

ii. Age range

a. 20- 29 years [] b. 30- 39 years [] c. 40- 49 years [] d. 50 years and above []

iii. Highest educational qualification

a. SHS/A Level b. Diploma [] c. HND [] d. BSC/BA/BBA [] e. Masters []

f. Professional qualification [] g. Others (Specify)

Section B: Assessing the perception of residents towards fire fighting operations by GNFS

Please choose the appropriate answer for the questions provided below.

4. Are you familiar with fire fighting operations by GNFS?

a. Very much familiar [] b. Familiar [] c. Not familiar []

5. Have you ever witnessed fire outbreak before?

a. Yes [] b. No []

6. Was the GNFS called to put out the fire?

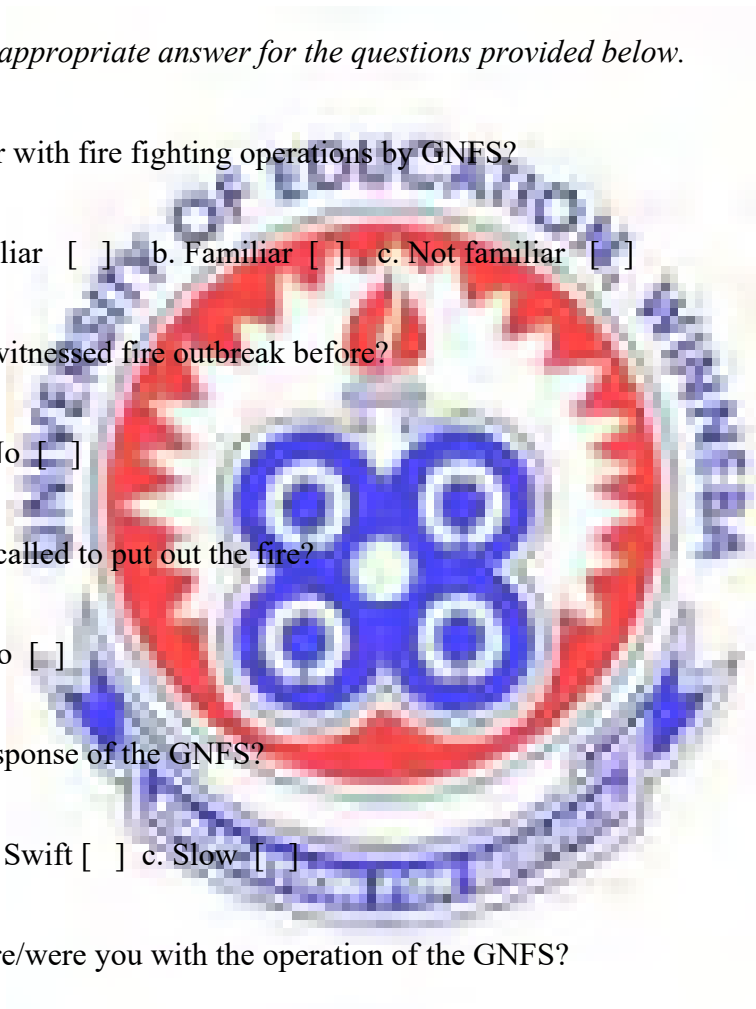
a. Yes [] b. No []

7. How was the response of the GNFS?

a. Very swift [] b. Swift [] c. Slow []

8. How satisfied are/were you with the operation of the GNFS?

a. Very satisfied [] b. Satisfied [] c. Not satisfied []



Section C: Residents opinion on measures to improve fire fighting operations by GNFS

Please indicate your level of agreement or disagreement with the following statements on the measures to improve fire fighting operations by GNFS.

(Please tick (✓) as appropriate)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
9. Good road network for easy accessibility					
10. Proper human and vehicular traffic control at fire scene during fire fighting operations					
11. Sensitisation on respect for siren during fire fighting operations.					
12. Use of fire tenders with bigger water capacity.					
13. Availability of adequate fire hydrants at vantage points.					

Thank You