

**UNIVERSITY OF EDUCATION, WINNEBA
COLLEGE OF TECHNOLOGY, KUMASI**

**CAUSES OF POOR SANITATION AND THEIR IMPLICATION ON
THE ENVIRONMENTAL HEALTH OF THE USERS OF METRO
MASS TRANSIT TERMINALS IN GHANA- CASE STUDY OF
KUMASI, SUNYANI AND BIBIANI**



RASMOS EKOW GAISIE

OCTOBER, 2014

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**A Dissertation in the Department of CONSTRUCTION AND WOOD TECHNOLOGY
EDUCATION, Faculty of TECHNICAL EDUCATION , submitted to the School of Graduate
Studies, University of Education ,Winneba in partial fulfilment of the requirements for
the award of Master of Technology (Construction Technology) degree.**

OCTOBER, 2014

DECLARATION

STUDENT'S DECLARATION

I Rasmus Ekow Gaisie, declare that this Dissertation, with the exception of quotations and references contained in published works which have all been acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for any other degree elsewhere.

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.

NAME OF SUPERVISOR:

SIGNATURE :.....

DATE:.....

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I would like to express my sincere gratitude to the Almighty God for seeing me through this programme especially this Thesis successfully.

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I owe a deep of gratitude to the managers and the entire staff of the Metro Mass Transit terminals in Kumasi, Sunyani and Bibiani in the Ashanti, Brong Ahafo and Western respectively.

I dully acknowledge here, the contribution of my class mates, friends and family.

DEDICATION

This Thesis is dedicated to my wife Mrs. Agnes Kwabea Gaisie and children; Fiifi, Maame Esi and Paa Kwesi Gaisie.



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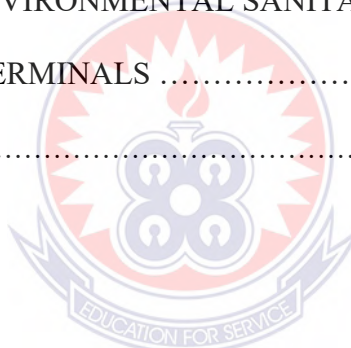
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ABBREVIATION / ACRONYMS

AMC – Air Mobility Command

ATMs – Automated Teller Machines

CCTV - Closed Circuit Camera and Television

ESP – Environmental Sanitation Policy

GDP – Gross Domestic Products

GNA – Ghana News Agency

MLGRD – Ministry of Local Government and Rural Development

MMDAs - Metropolitan, Municipal and District Assemblies

MMDCEs - Metropolitan, Municipal and District Chief Executives

MMT – Metro Mass Transit

MMTM -Metro Mass Transit management

NSTF – National Sanitation Task Force

SPSS – Statistics Programme For Social Sciences

PHAST- Participatory hygiene and Sanitation Transformation

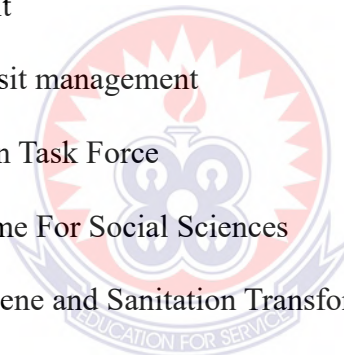
UNICEF - United Nations International Children Educational Fund

UNEP – United Nations Environmental Programme

WB – World Bank

WHO - World Health Organisation

WSP – Water and Sanitation Programme



ABSTRACT

Poor environmental sanitation at road transport terminals in developing countries is a global challenge. The main objective of the study is to examine the causes of poor sanitation and their implication on the environmental health of the users at (MMT) terminals in Ghana. Stratified random sampling and convenient sampling technique was used in selection of 385 respondents (the permanent and temporary users, the statutory bodies managing the selected cities and the management of the selected (MMT) terminals) from Kumasi, Sunyani and Bibiani representing Ashanti, Brong Ahafo and Western Regions respectively. An observation or survey, questionnaire and interviews were used to gather responses from the respondents. The data was analysed using SPSS version 16.0 and Ms. Excel. The study revealed differences in opinion of the respondents from the selected (MMT) terminals. However, general environmental sanitation condition is poor; poor attitude towards sanitation coupled with inefficiencies on the part of those responsible for sanitation at (MMT) terminals. In conclusion, the location of the terminals be maintained, the level of the pedestrian and vehicular conflicts is very high, there is inadequate facilities in the terminals, the available facilities are in a deplorable state, the current sanitation situation is very bad, the maintenance culture at the terminals is not the best, there is a high level of awareness of health risk, the severity of the health risk also very high and the safety and the security at the terminals is not the best. The study recommends that there is the need for intensive public education on sanitation at the (MMT) terminals frequently to promote a positive attitude and behaviour towards environmental sanitation. In addition, there must be conscious effort to provide adequate facilities and ensure strict enforcement of the sanitary bye-laws to let people be responsible for good environmental sanitation practice at the terminals.



CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND

Poor environmental sanitation is causing the country to lose two hundred and ninety (290) million US dollars which is equivalent to four hundred and twenty (420) million Ghana cedis (World Bank, 2012). According to the desk study carried out by the Water and Sanitation Programme (WSP) of the World Bank in 2009, the amount represent 1.6 per cent of the country's Gross Domestic Products (GDP) or the equivalent of US \$12 per person in Ghana per year. Also, a lot of money is being spent on communicable diseases and other sickness which could have been avoided if an improved and proper environmental sanitation practices could have been observed or promoted.

In view of this, there is the need to do something about the poor environmental sanitation because of its health implication and also to save the country from throwing moneys into the drains as it could have been used for developmental projects to better the life of the people. Honourable Mr Samuel Ofose Ampofo, Minister of the Ministry of the Local Government and Rural Development (MLGRD) confirmed this as he said “environmental sanitation accounts for seventy (70%) per cent of outpatient diseases of hospitals and other health facilities in the country” (GNA, 2012).

Considering the above discussion, it is very prominent to look at the causes of poor sanitation and their implication on the environmental health of the users at the lorry transport terminals in the country.

Environmental sanitation of transport terminals is in a deplorable state or not the best because of bad, and lack of proper or inadequate sanitation practices.

The UNEP (2000) recommends community participation in environmental sanitation problem-solving using the Participatory Hygiene and Sanitation Transformation (PHAST) approach. Community participation means a readiness on the part of both local governments and the citizens to accept equal responsibilities and activities in managing their surroundings. Therefore there is the need for collective action to address the current state of environmental sanitation at lorry transport terminals to make it very conducive for human health.

In fact, most of our lorry transport terminals in the country are engulfed with filth; indiscriminate refuse disposal, total blockage of the gutters by sachets, styrofoam and rubber bags all over threaten the health of commuters and other users.

Afon , Abolade & Okanlawon (2006) confirmed this assertion as they reported that solid and liquid waste management system, toilet facilities, drainage system and, the general environmental sanitation at the motor park are all in very poor states.

Therefore, there is the need for all stakeholders to appreciate and adopt strategic practices that can help clean and to promote good health. This initiative will assist to remove completely from health centres patients with diseases like malaria, cholera and other communicable diseases. Hence, there is the need to examine or investigate the causes of poor sanitation and their implication on the environmental health of the users of Metro Mass Transit (MMT) terminals in Ghana.

1.2 PROBLEM OF STATEMENT

Sanitation is one of the basic services in human life; hence improving environmental sanitation has a significant beneficial impact on the health of the people at the environment. In other words, a nation needs healthy and energetic people to contribute their quota in national development. Urbanization, coupled with high population growth is making it difficult to ensure proper environmental sanitation in public places in the major cities and towns in Ghana, especially at the lorry terminals including Metro Mass Transit (MMT) terminals.

A survey conducted by the world health organization (WHO) in 2012 indicates that about 2.4 billion people globally live under highly unsanitary conditions, poor hygienic behaviours and that their exposure to risks of incidence and spread of infectious disease, are enormous.

An observation made by the researcher in Metro Mass Transit (MMT) terminals in Kumasi, Sunyani and Bibiani indicate that; there are indiscriminately disposal of plastic bags as package of drinking water and other wares, Styrofoam as a package of cooked food at fast food joint and papers as well as cardboards as a package of other wares in the (MMT) terminals is an eye sore. Parts of the (MMT) terminals of the areas mentioned above are almost always dirty; littered with refuse and in most cases, drains are choked or blocked posing a health threats to the users of the said terminals.

Several efforts have been made to improve the sanitation of the said terminals to ensure quality and clean environment always; the services of cleaners, sweepers and security

(who also drive the hawkers away from littering the terminals) are engaged to ensure that the grounds of the terminals are always clean, with little provision of facilities, but it seems the desired results are not produced. If appropriate efforts are not made to halt such practices, then an attempt to ensure good environmental sanitation will not be successful.

Poor environmental sanitation is a serious health risk issue and affront to human dignity. Therefore, the study was set to examine the causes of the poor environmental sanitation at the Metro Mass Transit (MMT) terminals in Kumasi, Sunyani and Bibiani and their implication on the environmental health of the users, and offer recommendations that could help ensure good environmental sanitation at the terminals.

1.3 RESEARCH QUESTIONS

The study seeks to find answers to the following relevant questions:

- What is the current state of environmental sanitation at the (MMT) terminals?
- What factors contribute to the current state of environmental sanitation at the (MMT) terminals?
- How significant are the possible effects on the poor environmental sanitation at the (MMT) terminals?
- What is level of interventions put in place to promote clean and hygienic environmental condition?
- What recommendation can be offered to ensure clean and hygienic environment?

1.4 AIMS AND OBJECTIVES

1.4.1 GENERAL OBJECTIVE

- The aim of the study was to examine causes of poor sanitation at the Metro Mass Transit (MMT) terminals and their implication on the environmental health of the users.
- Propose effective interventions for an improved sanitation at the Metro Mass Transit (MMT) terminals.

1.4.2 SPECIFIC OBJECTIVES

Specifically, the study seeks to achieve the following objectives:

- To examine the current situation of the environmental sanitation at the (MMT) terminals.
- To identify the factors that contribute to the current environmental sanitation situation.
- To assess the various interventions embarked by the stake holders in the quest of promoting clean and healthy environmental condition at the (MMT) terminals.
- To examine the users of lorry transport terminals perception on environmental condition to address the issue at stake.

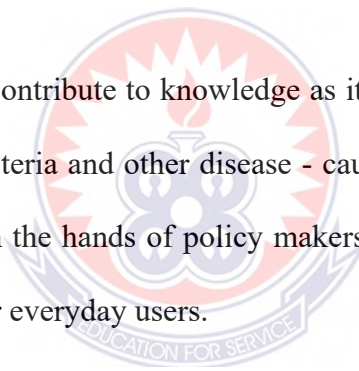
1.5 SIGNIFICANCE OF THE STUDY

The Kumasi, Sunyani and Bibiani cities profile show that communicable disease is on the increase with death occurring from cholera, malaria, respiratory tract infection and many others. These communicable diseases can be prevented by observing proper environmental sanitation. Most of the diseases in health facilities have their root cause in poor environmental sanitation. In actual fact, the cities of Accra and Kumasi have for some time

now battled with environmental sanitation challenges. It is therefore important to trace the root cause and deal with it accordingly before it aggravates.

The study, would help solve poor environmental sanitation by focusing on the component of environmental sanitation; the factors that contributed to the poor environmental sanitation and the extent to which the causes of poor environmental sanitation can be solved and aimed at promoting good environmental sanitation conditions by making the findings, conclusions and recommendations available to the management of the terminals as well as the Metropolitan, Municipal and District Chief Executives (MMDCEs) to implement them for good and healthy environment.

The study would also help contribute to knowledge as it would serve as basis for others to research further into the bacteria and other disease - causing agents. In addition, the study could be an effective tool in the hands of policy makers at ensuring that public places are hygienic, safe and secure for everyday users.



1.6 SCOPE OF THE STUDY

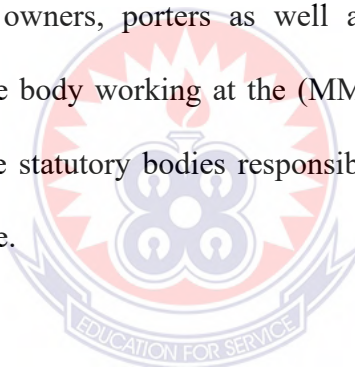
The scope of the study is defined by the spatial and conceptual dimensions. The spatial scope of the study is limited to the users or patrons of the (MMT) terminals in Kumasi, Sunyani and Bibiani representing the Ashanti, Brong Ahafo and Western regions respectively.

With conceptual dimensions, environmental sanitation comprises all activities aimed at developing and maintaining a clean, safe and pleasant physical environment in all human

settlement, to promote social, economic and physical well-being of all sections of the population (MLGRD, 1999).

For the purpose of this study, the research would focus on specifically selected component of environmental sanitation; the factors that contributed to the current condition and the extent to which the interventions aimed at promoting good environmental sanitation conditions are achieving their intended purpose.

There are three actors in the environmental sanitation management; these are generators which compose of the users or patrons of the (MMT) terminals- drivers, conductors, passengers, vendors, shop owners, porters as well as hawkers. Another actor is the managers and administrative body working at the (MMT) terminals of the selected areas for the study and finally the statutory bodies responsible for the selected cities and their respective regions as a whole.



CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter of the study reviews past studies in environmental sanitation. It deals with basic concepts such as environmental sanitation and its health implication on the users with relationships in providing a framework from which assumptions are derived for hygienic environmental sanitation.

2.1 DEFINITION

Barrow (1995) defines environmental sanitation as the description of the method used in an attempt to minimize environmental factors that are linked to diseases.

World health organization (2010) also defines environmental sanitation as the control of all those factors in man's physical environment which exercise or may exercise a deleterious effect on its physical development, health and survival

The researcher agreed with the two definitions above on the grounds that environmental sanitation refers to all the activities that aim at improving the basic environmental sanitation affecting the users. In other words, all activities aiming at improving or increasing hygiene to minimize or prevent human contact with hazardous materials that can increase health risk is refers to as environmental sanitation.

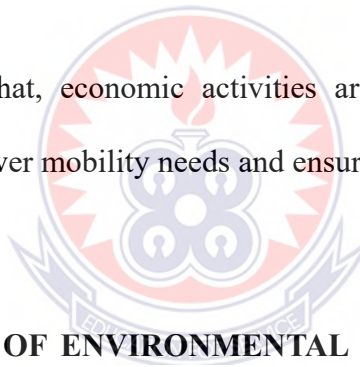
Therefore, the researcher defined environmental sanitation as controlling pests and pathogens with the main aim of improving human health through elimination or minimizing transmission of diseases.

2.2 LOCATION OF THE TERMINALS

The main function of lorry transport terminals is for commuting or transit of people, however, location of transport terminals in Sub-Sahara Africa are being determined by the economic activities and easy access to markets and buses to be boarded to their respective destination.

Traditionally, the focus of urban transportation has been on passengers as cities were viewed as locations of utmost human interactions with intricate traffic pattern lined to commuting, commercial transactions and Leisure/culture activities, however, there are negative consequences such as congestion, accidents and mobility gaps. (Redrigue, Cotois, & Slack, 2006).

It is an established fact that, economic activities are likely to arise where transport infrastructure is able to answer mobility needs and ensure access to markets and resources.



2.3 CURRENT SITUATION OF ENVIRONMENTAL SANITATION AT THE (MMT) TERMINALS IN GHANA.

Currently, most of the part of the terminals are filled with filth; used ice water sachets, rubber bags, papers and cardboards. The drainage system is not the best; broken gutters, total blockage of the gutters with refuse and a very strong stench emanating from the sanitary facilities is overwhelming.

Also, this was supported by Honourable Samuel Oforu Ampofo the Minister of Local Government and Rural Development (MLGRD) when he reported that “there is the need for collective action to address the current poor state of sanitation in the county” (GNA, 2012).

Afon et. al (2006) confirmed that the solid and liquid waste management system, toilet facilities, drainage system and the general environmental sanitation of the motor park are all in very poor state.

If this document is something to go by then, it can be concluded that environmental sanitation on the lorry transport terminals in major urban centres are in a poor state thereby becoming health hazards to the users.

2.4 PERSONAL ATTITUDE AND BEHAVIOUR

The increasing access to sanitation and improving hygienic behaviour are keys to reducing this enormous disease burden (WHO, 2000).

It is established that personal attitude and behaviour contribute to the poor state of lorry transport terminals because the users are the very people who litter the environment indiscriminately.

World Health Organisation (WHO), 2012 about 2.4 billion people globally live under highly insanitary condition and have such poor hygiene behaviour that they are exposed to the risk of incidence and spread of infectious diseases are enormous.

2.5 EDUCATION ON ENVIRONMENTAL SANITATION

A primary desired outcome of environmental education programmes is environmental literacy. There is the tendency of improving environmental sanitation where education on sanitation is done compare to where education on sanitation is not done.

This is supported by Dinesen in 2010 who reported that environmental education increases public awareness and knowledge about environmental issues or problems; it provides the

public with the necessary skills and information to help them make an informed decisions and take responsible actions.

2.6 SANITATION SYSTEM

Bracken, (2005) define a sanitation system as comprising the users of the system, the infrastructure, the collection, transportation, treatment, and management of end products (human excreta, solid waste, grey water, storm water and industrial wastewater). A sanitation system considers all components required for the adequate management of wastes produced by humans including the users of the system

2.7 ENVIRONMENTAL SANITATION

The concept of environmental sanitation refers to activities aimed at improving or maintaining the standard of basic environmental conditions affecting the well-being of people. These conditions include clean and safe water supply, clean and safe ambient air, efficient and safe animal, human, and industrial waste disposal, protection of food from biological and chemical contaminants, adequate housing in clean and safe surroundings. Ministry of Local Government and Rural Development (MLGRD) (1999), environmental sanitation refers to efforts or activities aimed at developing and maintaining a clean, safe and pleasant physical environment in all human settlements. It comprises a number of complementary activities, including the construction and maintenance of sanitary infrastructure, the provision of services, public education, community and individual action, regulation and legislation. Environmental sanitation therefore involves controlling the aspects of waste that may lead to the transmission of diseases.

According to the International Water and Sanitation Centre, the term environmental sanitation“ is used to cover the wide concept of controlling all the factors in the physical environment which may have an impact on human health and well-being of people (IRC, 2006). In developing countries, environmental sanitation normally includes drains, solid waste management, and vector control, in addition to the activities covered by sanitation (DFID, 1998).

2.8 ENVIRONMENTAL MANAGEMENT

Mitchel (2002) defines environmental management as the actual decisions and action concerning policy and practices regarding how resources and the environment are appraised, protected, allocated, developed, used, rehabilitated, remediated and restored, monitored and evaluated. Environmental Management has been described as the process of allocating natural and artificial resources in order to make optimum use of the environment in satisfying human needs at the minimum and if possible, for an indefinite future. Sound environmental law and governance are essential for protecting the natural environment and the life and livelihoods that depend on it.

2.9 ENVIRONMENTAL SANITATION MANAGEMENT

Environmental sanitation management is a process of implementing environmental sanitation policies and allowing resources to improve environmental sanitation and the health of the users through improved services; provision of sanitary facilities, infrastructure and proper disposal of all aspect of waste in a hygienic environment.

World Bank in 2012 when reported that they have introduced environmental policies and the procedures to integrate good environmental management into their operations and they have also developed environmental assistance programmes to help client countries to integrate environmental issues into their development process, to address pressing environmental challenges.

Environmental sanitation management necessarily requires the assignment of responsibilities to specialised institutions involved in overseeing the use of natural resources. As such, a number of institutions have been established to guide and co-ordinate all activities involving the appropriation of natural resources.

2.10 ENVIRONMENTAL SANITATION POLICY

The policy was developed by the Ministry of Local Government and Rural Development (MLGRD). It is a fairly concise document that sets out basic principles and objectives, identifies roles and responsibilities and also covers environmental management and protection, legislation and funding among others.

The Environmental Sanitation Policy is aimed at developing and maintaining a clean, safe and pleasant physical environment in all human settlements, to promote the social, economic and physical well-being of all sections of the population. It comprises a number of complementary activities, including the construction and maintenance of sanitary infrastructure, the provision of services, public education, community and individual action, regulation and legislation (MLGRD, 1999).

The policy identifies many of the major problems and constraints in environmental sanitation, including the lack of assigned roles for governmental bodies, agencies, and committees.

The environmental sanitation policy determines the objectives, basic principles, roles and responsibilities of the institutions; environmental sanitation management and protection, funding, privatizations of environmental sanitation and others. Actually, the main aim of environmental sanitation policy is to develop a hygienic environment to promote good health and development among people.

2.11 SANITARY BYE-LAWS

Sound environmental law and governance are essential for protecting the natural environment and the life and livelihoods that depend on it. Governance here refers to the a range of legal tools by the assemblies to promote desired behaviour. These tools could be traditional regulations, environmental assessments, information disclosure requirements, market mechanisms, economic incentives, or public policies to promote voluntary action on a large scale that will enhance urban environmental sanitation and environmental protection.

Ministry of Local Government and Rural Development (MLGRD) in 1999 reported that the environmental sanitation comprises a number of complementary activities; construction and maintenance of sanitary infrastructure, the provision of services, public education, community and individual action, regulation and legislation.

In addition, the policy also entrusts in the assemblies the power to promulgate bye laws and regulations to help in their environmental sanitation management process with the

help of judiciary which is expected to establish and empowered community law of courts to prosecute offenders against environmental sanitation bye laws and regulations.

2.12 SUPERVISION AND MONITORING

Supervision and monitoring of the environmental sanitation helps improve environmental sanitation because the sanitary worker can be controlled to clean the place regularly and properly on the daily basis.

This is confirmed by the United Nations Environmental Programme (UNEP) when reported that it considers environmental management as a control of all human activities which have a significant impact on the environment (UNEP, 2005).

The Environmental Protection Agency is the leading public body responsible for protecting and improving the environment in Ghana. The Environmental Protection Agency (EPA) seeks to ensure environmentally sound and efficient use of both renewable and non-renewable resources, to prevent, reduce, and as far as possible, eliminate pollution and actions that lower the quality of life; and to apply the legal processes in a fair, equitable manner to ensure responsible environmental behaviour in the country.

2.13 MAINTENANCE CULTURE

Maintenance culture helps infrastructure to last longer and also to maintain its function as well as serving the purpose for which it was constructed, however, lack of maintenance culture deteriorate infrastructure for it to lose its function as well as the purpose for which it was built.

Ministry of Local Government and Rural Development (MLGRD), 1999 is in agreement with this when reported that the environmental sanitation comprises of a number of complementary activities, construction and maintenance of sanitary infrastructure, the provision of services, public education, community and individual action, regulation and legislation.

2.14 NATIONAL SANITARY TASK FORCE

Honourable Mr Samuel Ofori Ampofo, the minister of the (MLGRD) reported on the Friday October 12, 2012 that the Government of Ghana in her national development blue print has prioritized sanitation as a key area of action in the Ghana shared growth development agenda. He made this known at the launch and inauguration of the national sanitation task force (NSTF) in Accra (GNA, 2012).

2.15 SAFETY AND SECURITY MANAGEMENT

Improving access to sanitation is a critical step towards reducing the impacts of diseases; also helps create physical environments that enhance safety/security, dignity and self-esteem. This is confirmed by the UNICEF in 2013 when reported that safety and security issues are particularly important for women and children, who otherwise risk sexual harassment and assault when defecating at night and in secluded areas.

Closed circuit television helps to incorporate security surveillance cameras into the queuing and security checkpoint areas and throughout the terminal in general to monitor each interior open, waiting area either from an adjacent or opposite view (AMC, 2013).

2.16 IMPACTS OF POOR ENVIRONMENTAL SANITATION

Poor sanitation impacts public health, education and the environment. This is supported by World Health Organisation (WHO) in 2005 when reported that, globally, poor sanitation leads to about 700,000 premature deaths annually.

Diseases associated with poor environmental sanitation are diarrhoea, acute respiratory infections, and tropical diseases like helminthic and schistosomiasis infections. In addition, eighty-eight per cent of diarrhoea diseases world-wide are attributed to unsafe water, inadequate sanitation and poor hygiene (Barrow, 1995).

Poor environmental sanitation or hygiene also has tremendous economic costs. The health impact of inadequate environmental sanitation leads to a number of financial and economic costs including direct medical costs associated with treating sanitation-related illnesses and lost income through reduced or lost productivity and the government costs of providing health services.

World Bank country environmental analysis conducted in Ghana has shown that health cost resulting from poor water, sanitation and hygiene is equivalent to 2.1% of Annual Gross Domestic Product (GDP)(UNICEF, 2008). Poor environmental sanitation practices also affect the environment in diverse ways.

In the context of urbanization, indiscriminate littering, domestic wastewater, sewage and solid waste improperly discharged presents a variety of concerns as these promote the breeding of communicable disease vectors as a result of air, water and soil pollution. Improved environmental sanitation management reduces environmental burdens, increases sustainability of environmental resources and allows for a healthier, more secure future for the population.

The significant economic benefits of good environmental sanitation are not well known; the media often emphasise on health benefits, but the time savings and opportunity cost are equally important stories. Environmental sanitation management ensures that there is prudent allocation of limited resources tailored to the needs of the people to ensure economic sustainability.

On the contrary, a healthy people produce more and miss fewer days and on the other hand, a healthy community is often a more lucrative market for goods, services and investment. Every dollar spent on improving sanitation generates economic benefits (about nine times) that far exceed the required sanitation investments

2.17 FACILITIES AT THE TERMINALS

Environmental sanitation involves both human behaviours and facilities which work together to form a hygienic environment (World Bank, 2002).

Nearly 40% of the World's population has no access to hygienic means of personal sanitation (WHO / UNICEF, 2008)

According to World Health Organisation (WHO) in 2012, globally, 2.5 billion people live without access to improved sanitation; 1 billion of these people practice open defecation and only 64% of the world's population have access to improved sanitation, but 70% of the Sub-Sahara Africa population and 59% of South Asia still lack access.

WHO / UNICEF in 2008 confirmed that improving sanitation facilities and promoting hygiene in schools benefit both learning and the health of children.

2.18 STANDARD TERMINAL

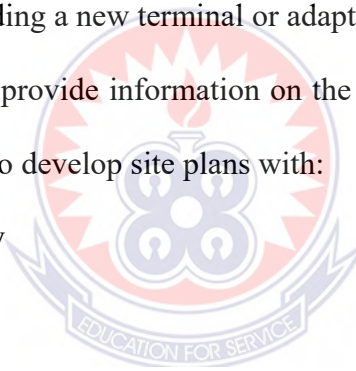
A quality passenger terminal provides an environment that promotes customer satisfaction and comfort, conveys professionalism, improves job performance, and maintains security.

Transportation is such an important component of contemporary society, capable of producing significant benefits, yet giving rise to many negative externalities, therefore appropriate policies need to be devised to minimize the inconveniences, at the same time the location, design and construction of such transportation infrastructure and services must be subjected to careful planning, both by public and private (Redrigue, 2012).

The site location and development of passenger terminals are critical to be successful operation facility when building a new terminal or adapting an existing structure.

According to (AMC, 2013) provide information on the necessary element of the selection and the site design in order to develop site plans with:

- Facility expansion capacity
- Proximity
- Ease accessibility
- Availability of energy



CHAPTER THREE

METHODOLOGY

3.0 INTRODUCTION

The chapter dealt with description and analysis of specific research methods and techniques used for the study. It also considered the appropriate data collection procedures and tools used for the data analysis.

3.1 RESEARCH METHODS AND DESIGN

Descriptive Design method was used to investigate the current environmental sanitation situation at the (MMT) terminals in the selected areas. This approach was preferred to others because it provides a systematic way of considering events, collecting data, analysing information and reporting results.

The researcher employed observation or survey, questionnaire and interviews to obtain relevant information to provide answers to the research questions posed and help in drawing suitable conclusions through data analysis. Thus, combinations of quantitative and qualitative data were gathered for the data analysis.

3.2 PROFILE OF THE STUDY AREAS

There are many (MMT) terminals in Ghana for which every region has one, however, three of these (MMT) terminals were selected in Kumasi, Sunyani and Bibiani representing Ashanti, Brong Ahafo and Western region respectively.

These transport terminals were selected on the basis of representing Metropolitan, Municipal and District Assemblies (MMDAs) respectively.

Again, these selected (MMT) terminals also connect all parts of the country because of their location (middle belt of the country).making it easy for commuting or travelling. They are the mostly used terminals in Ghana.

3.3 STUDY POPULATION

The study population comprises the users at the (MMT) terminals and statutory bodies or agencies, managers and administrative body working at the (MMT) terminals. The users can be categorized into three and these are;

Subgroup A: Permanent and temporary users or patrons of the selected terminals. Permanent users are those who patronized the transport terminals on the daily basis for their own economic activities. Temporary users or patrons are passengers or commuters or transit users of (MMT) terminals selected and also include those who visit the (MMT) terminals on temporary basis for commuting purposes and those who visit the (MMT) terminals only to welcome arrivals' or wish passengers fare-well. The permanent category includes drivers, conductors, food vendors, shop owners, security officers, taxi drivers, porters as well as hawkers on the (MMT) terminals selected for the study.

Subgroup B: The statutory bodies managing the cities of the selected terminals. This category includes Town and Country Planning, Environmental and Protection agencies.

The study population also entails subgroup C which includes: managers and administrative body working at the (MMT) terminals and the statutory bodies or agencies which manage the three selected areas. This category includes; managers, administrators, supervisors of the (MMT) terminals, Metropolitan, Municipal and District Assembles (MMDAs) rate officers, and statutory sanitary agencies.

3.4 SAMPLE SIZE

It is necessary to take a part of the population from which information will be drawn from to represent the entire population in the selected (MMT) terminals. Using the following formula below, a sample size of 385 users was determined as follows:

$$n = Z^2 (p q) / d^2$$

(Source: The Basic Practice of Statistics by David S. Moore)

Where:

n= sample size

Z= reliability coefficient = 1.96

The value Z= 1.96 is the standard normal critical point/value for the level of confidence.

p = population proportion = 0.5

The value p = 0.5 is a conservative guessed value for the sample proportion.

(If take guess value to be 0.5 the margin of error will be less than or equal to d)

q = 1- p

d = error of margin = 0.05

The value d= 0.05 was used because any value smaller than d= 0.05 will call for larger sample (n).

$$n = 1.96^2 (0.5 * 0.5) / 0.05^2 = 384.16 \text{ approx. } 385$$

This formula was used because it will allow the researcher to estimate the parameter within a given margin of error.

For the purpose of the study the figure is round off to 385 respondents.

The break down was as follows:

- Sub- group (A) - Permanent and temporary (transit) users or patrons of the selected terminals. This category includes administrative body working at the terminals, drivers, conductors, passengers, food vendors, shop owners, security officers in the terminal, taxi drivers, hawkers etc.= 226
- Sub- group(B)- Statutory bodies managing the cities of the selected terminals = 84
- Sub- group(C)- The management of the selected (MMT) terminals = 75

The actual population in each of the three sub-groups are as follows:

- Sub- group (A) = 689
- Sub- group (B) = 150
- Sub- group (C) = 100

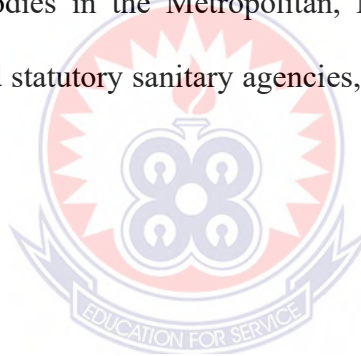
3.5 SAMPLING TECHNIQUES

Simple random sampling and Purposive systematic sampling techniques were used to select population under study. Purposive systematic sampling was used to select permanent users at stores or shops. The first store or shop is randomly selected and any other store or shop at the subsequent ones to get the required information for the purpose of the study. Simple random sampling was used to select drivers and conductors at the selected (MMT) terminals so that each driver and conductor will get equal opportunity for being selected. Purposive systematic sampling technique was used to select porters and food vendors in stalls to get required information for the purpose of the study. Purposive systematic sampling technique was also used to select one hawker with an average distance of five (5m) metres, taxi drivers' operating at the selected (MMT) terminals and security officers

to get required information for the purpose of the study. The number of permanent users that were surveyed was 45 at each of the selected (MMT) terminals.

Simple sampling was used to select the temporary or transit users. Five people were selected from every loaded vehicle to various part of the country for the study so that each driver and conductor will get equal opportunity for being selected. The total number of transit users that were surveyed was 30 at each of the selected (MMT) terminals.

The number of the (MMT) terminals management (managers, administrators and supervisors) that were surveyed was 25 at each of the selected (MMT) terminals. The number of management bodies in the Metropolitan, Municipal and District Assemblies (MMDAs) rate officers, and statutory sanitary agencies, etc. that were surveyed were 28 at each of the selected areas.



3.6 DATA COLLECTION

A combination of questionnaire and interviews was used in the data collection.

3.6.1 QUESTIONNAIRE

Questionnaires were given to both permanent and temporary users who could read and write on their own for their responses to obtain relevant information from the respondents.

3.6.2 INTERVIEWS

The researcher conducted interviews to obtain information from permanent and temporary users who could not read and write because of the literacy level of some of the respondents

and also to create a rapport to boost the confidence of the respondent so to provide detail answers to the questions posed before them.

A structured question was used by the interviewer and recorded answers from the respondents to obtain relevant information. Furthermore, formal interviews were conducted for some of the management of the (MMT) terminals as well as statutory sanitary agencies sanitation agencies because of their educational background. This helped assess the interventions made and what could be done in addressing environmental sanitation situation.

3.6.3 SECONDARY DATA COLLECTION

Secondary data were obtained from on-line search, hand search, web-based statistics, internet, journals, articles, newsletters, books, and magazines, published and unpublished materials. The researcher also obtained data from statutory sanitary agencies; Ministry Local Government and Rural Development (MLGRD)), management of the (MMT) terminals and others to ensure that the research outcome are logically explained.

3.7 PRE-TESTING

The study instrument was tested on the 3rd week in December, 2012 at the selected (MMT) terminals using the users.

3.8 DATA HANDLING AND ANALYSIS

Data that was collected from the various questionnaires were categorized and coded where necessary. Regular verification and validation of data set was done with all inconsistencies checked and resolved with the researcher and research assistant. Data that was collected

were summarized entering it into a pre-designed template using statistical package for social sciences (SPSS) version 16.0,

3.8.1 UNITS OF ANALYSIS

The units of analysis for the research included the following:

- Permanent and temporary (transit) users or patrons of the selected terminals. This category includes administrative body working at the terminals, drivers, conductors, passengers, food vendors, shop owners, security officers in the terminal, taxi drivers, hawkers etc.
- Statutory bodies managing the cities of the selected terminals
- The management of the selected (MMT) terminals

3.9 ETHICAL CONSIDERATION

Ethical clearance for this study was obtained from any agency where information was collected. An informed consent was also obtained from any respondents that responded to the questionnaire. Actually, respondents were assured of confidentiality and privacy.

3.10 LIMITATIONS OF THE STUDY

This study was not to examine or assess extensively in diseases-causing agents and its impacts on the users. However, the study was to ascertain the causes, factors that may lead to the poor environmental sanitation and their implication on the environmental health of the users.

3.11 ASSUMPTION

- The users that were selected form a true representation of the users in the selected (MMT) terminals.
- The users that were selected provided accurate and reliable information relating to the objectives of the study.
- As a result of the difference in socio-economic background of the users, the purpose of visiting the (MMT) terminals, and the differences in the perception of the users affected their responses. However, the aggregate responses of the users were used as inputs into the data.



CHAPTER FOUR

4.0 RESULTS / FINDINGS

4.1 INTRODUCTION

This section of the study focuses on the findings resulting from analysis of the responses provided by the respondents. It is organized based on the objectives of the study. Presentation of the findings highlights characteristics of poor environmental sanitation.

4.2 RESPONDENT RATE

Thirty persons from each of the three terminals were interviewed in a one-on-one basis. Those interviewed were drivers, conductors, passengers, vendors, shop owners, porters as well as hawkers in the (MMT) terminals selected for the study. This method was employed because most of them were busy doing their work and also majority of them were not literate enough to fill the questionnaires but preferred to answer questions in a one-on one dialogue basis.

In addition to the interviews conducted, hundred (100) people from each terminal were served with questionnaires. Out of 300 questionnaires distributed to respondents in the three selected terminals, 220 were received representing a response rate of 73.3%.

The details of the valid responses received from the three selected (MMT) terminals on the questionnaires were Kumasi = 80, Sunyani = 70 and Bibiani = 70 representing a total of 73.3% response rate, In all a total of 310 respondents from the three selected terminals (both questionnaire and interviews) were used in the analysis. The details are shown in Table 1.

Table 1: Questionnaire and interview

Terminals	Total No. of questionnaires		Total no. of valid questionnaires		Total No. of people interviewed		Total no. of respondents used in the study	
	value	%	value	%	value	%	value	%
Kumasi	100	33.3	80	26.7	30	33.3	110	35.50
Sunyani	100	33.3	70	24.0	30	33.3	100	32.25
Bibiani	100	33.3	70	22.7	30	33.3	100	31.25
Total	300	100	220	73.4	90	100	310	100

All the people interviewed belonged to subgroup A. In addition to this, 73 valid questionnaires were received from people from subgroup A representing 24.3% of the total valid questionnaire received. In all 73 respondents were from group A and 78 of the valid questionnaires were also received from subgroup B representing 26.0% of the total valid questionnaire received while 69 of the valid questionnaires were received from subgroup C representing 23.0% of the total valid questionnaire received.

The total recovery rate of the questionnaire was about 73%.

Group A: Permanent and temporary (transit) users or patrons of the selected terminals. This category includes administrative body working at the terminals, drivers, conductors, passengers, food vendors, shop owners, security officers in the terminal, taxi drivers, hawkers etc.

Group B: Respondents from statutory bodies managing the cities of the selected terminals.

Group C: The management of the selected (MMT) terminals

4.3 LOCATION OF THE TERMINALS

The location of the terminals selected was easily accessible, close to commercial centres, and above all, it easy to locate it. When asked about the location of the terminal, in order to ask follow up question to help ascertain the causes of poor sanitation at the terminals, out

of 310 respondents, 187 respondents, representing 60.3.% of the respondents were of the view that the location of the terminals be maintained due to their easy accessibility and proximity to the commercial centres. A total number of 95 respondents representing 30.6% of the respondents were of a view that the location of the terminals be relocated to the heart of the cities so as to spare them of the cost of taking taxis to the terminals. However, 28 respondents representing 9.1% of the respondents were indifferent.

When follow up question was asked whether location of the terminals could be one of the causes of the poor sanitation situation at the terminals, 27 respondents, representing 28.4% said yes while 68 respondents, representing 71.6% said no. Table 2 shows the detail responses of the users at the terminals under studies.

Table 2. Respondents' responses on the location of the terminals

Location of the terminals	No. of people Kumasi		No. of people Sunyani		No. of people Bibiani		Total no. of respondents	
	Value	%	value	%	value	%	Value	%
Not good –be relocated	33	30.0	39	39.0	23	23.0	95	30.6
Good – be maintained	71	64.5	58	58.0	58	58.0	187	60.3.
It is not important	6	5.5	3	3.0	19	19.0	28	9.1
Total	110	100	100	100	100	100	310	100
Could location of terminals be one of the causes of poor sanitation	No. of people Kumasi		No. of people Sunyani		No. of people Bibiani		Total no. of respondents	
	Value	%	value	%	value	%	value	%
Yes	5	15.2	18	46.2	4	17.4	27	28.4
No	28	84.8	21	53.8	19	82.6	68	71.6
Total	33	100	39	100	23	100	95	100

4.4 EJECTION OF STREET HAWKERS AT THE TERMINALS

When asked about the ejection of the street hawkers at the terminal, in order to ask follow up question to help ascertain the causes of poor sanitation at the terminals, out of 310 respondents, 180 respondents, representing 58.1% of the respondents were of the view that the street hawkers must be ejected at the terminals and 121 respondents also representing 39.0% of the respondents were of the view that the street hawkers must be allowed to sell their goods freely at the terminals. Most of the respondents who were of the view that, the street hawkers be allowed to sell their wares freely were traders. Nine respondents representing 2.9% of the respondents were indifferent to the ejection of the street hawkers at the terminals.

When follow up question was asked; whether street hawking at the terminals could be one of the causes of the poor sanitation situation at the terminal, a total number of 119 respondents, representing 66.1% said yes while 61 respondents, representing 33.9% said no. Table 3 shows the detail responses of the users at the terminals under studies.

Table 3 Respondents responses on the ejection of street hawkers at the terminals.

Ejection of street hawkers	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	value	%	value	%	value	%
Yes	66	60.0	59	59.0	55	55.0	180	58.5
No	42	38.2	40	40.0	39	39.0	121	39.5
Not important	2	1.8	1	1.0	6	6.0	6	2.0
Total	110	100	100	100	100	100	310	100
Could street hawking be one of the causes of poor sanitation	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	value	%	value	%	value	%
Yes	44	66.7	39	66.1	36	65.5	119	66.1
No	22	33.3	20	33.9	19	34.5	61	33.9
Total	66	100	59	100	55	100	180	100

4.5 THE LEVEL OF TRAFFIC CONGESTION

In determining the level of pedestrian and vehicular conflict at the terminals, to pave way for follow up question to help ascertain the causes of poor sanitation at the terminals. Traffic counts were conducted to determine morning peak hour which was found to be between 5.00 am and 10.00am and evening peak hours between 3.00 pm and 7.00pm. It was observed that during the day the off-peak hours was between 11.00am and 2.00pm. Table 3 shows average people and vehicles congestion recorded at each of the three selected terminals. It was also shown that the average total number of people that use the terminals were 3570, 2170 and 1750 for Kumasi, Sunyani and Bibiani terminals respectively as shown in table 3 below.

Average total of 225 vehicles use the terminals. Out of 225 vehicles, 15 were private, 35 were taxis, 25 were mini-bus and the remaining 150 vehicles were MMT buses. The private vehicles consist of all non-commercial vehicles that use the terminals.

When asked whether the level of pedestrian and vehicular conflict at the terminals could be one of the causes of the poor sanitation situation at the terminals. A total number of 260 respondents, representing 83.9% said yes while 46 respondents, representing 14.8% said no. Four respondents representing 1.3% were indifferent. The details are shown in table 4.

Table 4: Number of people using the terminals

Peak hours	No. of people Kumasi		No. of people Sunyani		No. of people Bibiani		Average	
Morning	1410		820		690		973	
Afternoon	980		610		460		683	
Evening	1180		740		600		840	
Total	3570		2170		1750		2496	
Could pedestrian and vehicular conflict be one of the causes of poor sanitation	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	Value	%	value	%	value	%
Yes	93	84.5	85	85.0	82	82.0	260	83.9
No	16	14.5	15	15.0	15	15.0	46	14.8
Not important	1	1.0	0	00.0	3	3.0	4	1.3
Total	110	100	100	100	100	100	310	100

4.6 CURRENT SANITATION SITUATION AT THE TERMINALS

When asked about the current sanitation situation at the terminal, to ascertain the sanitary condition of the terminals and the possible causes. Out of 310 respondents, 188 respondents, representing 60.7% of the respondents described the terminals as dirty. A number of respondents totalling 103, representing 33.2% of the respondents were of a view that the current sanitation situation was clean. However, 19 respondents, representing 6.1% of the respondents were of a view that the current sanitation situation was average. It worth to know, most of the respondents who were of the view that, the current sanitation situation was clean were managers of the terminals. Table 5 show the detail responses of the users at the terminals under studies.

Table 5: Respondents responses on the current sanitation situation at the terminals

Current sanitary situation at the terminals	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	value	%	value	%	value	%	value	%
Very clean	13	11.8	8	8.0	5	5.0	26	8.4
Clean	30	27.3	27	27.0	20	20.0	77	24.8
Average	12	10.9	2	2.0	5	5.0	19	6.1
Dirty	41	37.3	45	45.0	51	51.0	137	44.2
Very dirty	14	12.7	18	18.0	19	19.0	51	16.5
Total	110	100	100	100	100	100	310	100

4.7 EDUCATION ON SANITATION AT THE TERMINALS

When asked level of education on sanitation at the terminals, in order to ask follow up question to help ascertain the causes of poor sanitation at the terminals. Out of 310 respondents, 247 respondents, representing 79.7% of the respondents described the level of education on sanitation at the terminal as not good while 48 respondents, representing 15.5% of the respondents described the level of education on sanitation at the terminals as good: they were of the view that education on sanitation issues would not make any difference. Only 15 of the respondents representing 4.8% of the respondents were indifferent, but to them, there were other pressing issues that need to be tackled to avert the situation other than education on sanitation.

When follow up question was asked whether lack of education on sanitation at the terminals could be one of the causes of the poor sanitation situation at the terminals. A total number of 206 respondents, representing 83.4% said yes while 41 respondents, representing 16.6% said no. Table 6 show the detail responses of the users at the terminals under studies.

Table 6: Respondents responses on the education on sanitation at the terminals

Level of education on sanitation	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	value	%	value	%	value	%	value	%
Good	22	20.0	13	13.0	13	13.0	48	15.5
Not good	81	73.6	83	83.0	83	83.0	247	79.7
Not necessary	7	6.4	4	4.0	4	4.0	15	4.8
Total	110	100	100	100	100	100	310	100

Could lack of education on sanitation be one of the causes of poor sanitation	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	value	%	value	%	value	%	value	%
Yes	66	81.5	70	84.3	70	84.3	206	83.4
No	15	18.5	13	15.7	13	15.7	41	16.6
Total	81	100	83	100	83	100	247	100

4.8 ATTITUDE AND BEHAVIOUR OF THE USERS AT THE TERMINALS

When asked about the attitude and behaviour of the users at the terminals, to pave way for follow up question to help ascertain the causes of poor sanitation at the terminals. Out of 310 respondents, 262 respondents representing 84.5% of the respondents described the attitude and behaviour of the users at the terminals as not good enough while 31 respondents, representing 10.0% of the respondents described the attitude and behaviour of the users at the terminals as good. Only 17 respondents, representing 5.5% of the respondents were indifferent.

When follow up question was asked whether bad attitude and behaviour of the users at the terminals could be one of the causes of the poor sanitation situation at the terminals. A total number of 221 respondents, representing 84.4% said yes while 41 respondents, representing 15.6% said no. Table 7 show the detail responses of the users at the terminals under studies

Table 7: Respondents responses on the attitude and behaviour of users at the terminals

Attitude and behaviour of the users	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	value	%	value	%	value	%	value	%
Not good	94	85.5	81	81.0	87	87.0	262	84.5
Good	12	10.9	13	13.0	6	6.0	31	10.0
Not necessary	4	3.6	6	6.0	7	7.0	17	5.5
Total	110	100	100	100	100	100	310	100

Could bad attitude and behaviour of the users be one of the causes of poor sanitation	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	value	%	value	%	value	%	value	%
Not good	94	100	60	74.1	67	77.0	221	84.4
Good	0	0	21	25.9	20	23.0	41	15.6
Total	94	100	81	100	87	100	262	100

4.9 LEVEL OF AWARENESS OF THE SANITARY BYE-LAWS

When asked about the level of awareness of the sanitary bye-laws, to help ask follow up question in order to ascertain the causes of poor sanitation at the terminals. Out of 310 respondents, 148 respondents, representing 47.7% of the respondents were aware of the sanitary bye-laws but 162 respondents, representing 52.3% of the respondents were not aware of the sanitary bye-laws. It was clear in the study that, most of the respondents who were not aware of the sanitary bye-laws were those with low academic level.

When follow up question was asked whether unawareness of the sanitary bye-laws at the terminals could be one of the causes of the poor sanitation situation at the terminals. A number of 96 respondents, representing 59.3% said yes while 66 respondents, representing 40.7% said no. Table 8 show the detail responses of the users at the terminals under studies.

Table 8: Respondents responses on the level of awareness of the bye-laws

Level of awareness of sanitary bye laws	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	value	%	Value	%	value	%
V. much aware	26	23.6	6	6.0	4	4.0	36	11.6
Much aware	17	15.5	13	13.0	20	20.0	50	16.1
Aware	21	19.1	29	29.0	12	12.0	62	20.0
Unaware	21	19.1	32	32.0	44	44.0	97	31.3
Much unaware	25	22.7	20	20.0	20	20.0	65	21.0
Total	110	100	100	100	100	100	310	100

Could unawareness' of sanitary bye laws be one of the causes of poor sanitation	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	value	%	Value	%	value	%
Yes	22	47.8	34	65.4	40	62.5	96	59.3
No	24	52.2	18	34.6	24	37.5	66	40.7
Total	46	100	52	100	64	100	162	100

4.10 LEVEL OF ENFORCEMENT OF THE SANITARY BYE-LAWS

When asked the level of the enforcement of the sanitary bye-laws at the terminals, to pave way for follow up question to help ascertain the causes of poor sanitation at the terminals. Out of 310 respondents, 186 respondents, representing 60.0% of the respondents were of the view that the enforcement of the sanitary bye-laws at the terminals as bad while 92 respondents, representing 29.7% of the respondents described the level of the enforcement of the sanitary bye-laws at the terminals as good. Only 32 respondents, representing 10.3% of the respondents were of the view that the enforcement of the sanitary bye-laws as average..

When follow up question was asked whether non-enforcement of the sanitary bye-laws at the terminals could be one of the causes of the poor sanitation situation at the terminals. A number of 114 respondents, representing 61.3% said yes while 72 respondents, representing 38.7% said no, Table 9 show the detail responses of the users at the terminals under studies.

Table 9: Respondents responses on the level of enforcement of the bye-laws

Level of the enforcement of sanitary bye-laws	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	Value	%	Value	%	value	%
very good	15	13.6	10	10.0	9	9.0	34	11.0
Good	18	16.4	24	24.0	16	16.0	58	18.7
Average	12	10.9	9	9.0	11	11.0	32	10.3
Bad	45	40.9	36	36.0	37	37.0	118	38.1
Very bad	20	18.2	21	21.0	27	27.0	68	21.9
Total	110	100	100	100	100	100	310	100
Could non-enforcement of sanitary bye-laws be one of the causes of poor sanitation	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	Value	%	Value	%	value	%
Yes	45	69.2	29	50.9	40	62.5	114	61.3
No	20	30.8	28	49.1	24	37.5	72	38.7
Total	65	100	57	100	64	100	186	100

4.11 FACILITIES AT THE TERMINALS

When asked about the adequacy of the facilities at the terminals, to help ask follow up question in order to ascertain the causes of poor sanitation at the terminals. Out of 310 respondents, 210 respondents, representing 67.7% of the respondents described the available facilities at the terminals as inadequate. The minority of the respondents totalling

100 representing 32.3% of the respondents were of the view that the available facilities were adequate. Most of the respondents who were of the view that, the available facilities were adequate were the managers of the terminals.

When follow up question was asked whether the inadequacy of the facilities at the terminals could be one of the causes of the poor sanitation situation at the terminals. Total number of 125 respondents, representing 59.5% said yes while 85 respondents, representing 40.5% said no. Table 10 shows the responses of the users or patrons at the terminals under studies

Table 10: Respondents response on the facilities at the terminals

The level of adequacy of the facilities at the terminals	No. of people Kumasi		No. of people Sunyani		No. of people Bibiani		Total no. of respondents	
	value	%	value	%	Value	%	value	%
very much adequate	3	2.7	6	6.0	3	3.0	12	3.9
much adequate	10	9.1	8	8.0	5	5.0	23	7.4
Adequate	22	20.0	18	18.0	25	25.0	65	21.0
Inadequate	47	42.7	45	45.0	43	43.0	135	43.5
much inadequate	28	25.5	23	23.0	24	24.0	75	24.2
Total	110	100	100	100	100	100	310	100
Could inadequacy of facilities at the terminals be one of the causes of poor sanitation	No. of people Kumasi		No. of people Sunyani		No. of people Bibiani		Total no. of respondents	
	value	%	value	%	Value	%	value	%
Yes	45	60.0	40	58.8	40	59.7	125	71.2
No	30	40.0	28	41.2	27	40.3	85	28.8
Total	75	100	68	100	67	100	210	100

4.12 CONDITION OF THE FACILITIES AT THE TERMINALS

When asked about the condition of the facilities at the terminals, to pave way for follow up question to help ascertain the causes of poor sanitation at the terminals. Out of 310 respondents, 206 respondents, representing 66.5% of the respondents described the condition of the available facilities as bad. The same numbers of respondents emphasized on the deplorable state of the sanitary facilities at the terminals. Total number 66 respondent, representing 21.3% of the respondents were with the view that the conditions of the available facilities were good. Only 38 respondents, representing 12.2% of the respondents described the facilities at the terminals as average; good.

When follow up question was asked whether the poor condition of the facilities at the terminals could be one of the causes of the poor sanitation situation at the terminals. Total number of 126 respondents, representing 61.2% said yes while 80 respondents, representing 38.8% said no. Table 11 shows the responses of the users or patrons at the terminals under studies.

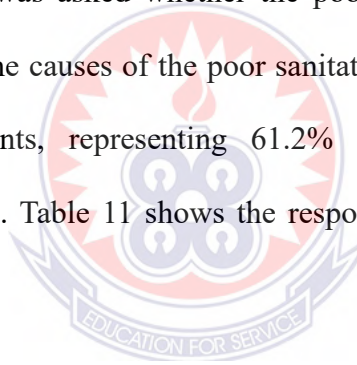


Table 11: Respondents response on the condition of the facilities at the terminals

Condition of facilities at the terminals	No. of people Kumasi		No. of people Sunyani		No. of people Bibiani		Total no. of respondents	
	value	%	value	%	Value	%	value	%
Very good	4	3.6	3	3.0	2	2.0	9	3.0
Good	21	19.2	18	18.0	18	18.0	57	17.0
Average	15	13.6	14	14.0	9	9.0	38	12.5
Bad	46	41.8	43	43.0	52	52.0	141	46.2
Very bad	24	21.8	22	22.0	19	19.0	65	21.3
Total	110	100	100	100	100	100	310	100
Could poor condition of existing facilities be one of the causes of poor sanitation	No. of people Kumasi		No. of people Sunyani		No. of people Bibiani		Total no. of respondents	
	value	%	value	%	Value	%	value	%
Yes	42	60.0	39	60.0	45	63.4	126	61.2
No	28	40.0	26	40.0	26	36.6	80	38.8
Total	70	100	65	100	71	100	206	100

4.13 MAINTENANCE CULTURE AT THE TERMINALS

When asked about their opinion on the maintenance culture at the terminal, to pave way for follow up question to help ascertain the causes of poor sanitation at the terminals. Out of 310 respondents, 193 respondents, representing 62.3% of the respondents were of the view that the maintenance culture of the terminals was not the best while 86 respondents, representing 27.7% of the respondents described the maintenance culture of the terminals as good. Only, 31 respondents, representing 10.0% of respondents described the maintenance culture of the terminals as average; good. Most of the respondents, who were of the view that, the maintenance culture at the terminals was good, were the managers of the terminals.

When follow up question was asked whether poor maintenance culture at the terminals could be one of the causes of the poor sanitation situation at the terminals. In all 160 respondents, representing 82.9% said yes while 33 respondents, representing 17.1% said no, Table 12 shows the responses of the users or patrons at the terminals under studies.

Table 12: Respondents responding to the maintenance culture at the terminals

Level of maintenance at the terminals	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	Value	%	Value	%	value	%
very good	6	5.4	10	10.0	10	10.0	26	8.4
Good	30	27.3	18	18.0	12	12.0	60	19.4
Average	10	9.0	17	17.0	4	4.0	31	10.0
Bad	40	36.4	32	32.0	44	44.0	116	37.4
Very bad	24	21.9	23	23.0	30	30.0	77	24.8
Total	110	100	100	100	100	100	310	100

Could poor maintenance culture at the terminals be one of the causes of poor sanitation	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	Value	%	Value	%	value	%
Yes	52	81.3	45	81.8	63	85.1	160	82.9
No	12	18.7	10	18.2	11	14.9	33	17.1
Total	64	100	55	100	74	100	193	100

4.14 PERFORMANCE OF THE SUPERVISORY AND MONITORY TEAM AT THE TERMINALS

When asked about the performance of the supervisory and monitoring team at the terminals, to help ask follow up question in order to help ascertain the causes of poor sanitation at the terminals. Out of 310 respondents, 217 respondents, representing 70.0% were of the view that the performance of the supervisory and monitoring team at the

terminals was bad while 66 respondents, representing 21.3% of the respondents described the performance of the supervisory and monitoring team at the terminals as good. Only 27 respondents, representing 8.7% of the respondents were of the view that the performance of the supervisory and monitoring team was average.

When follow up question was asked whether poor supervisory and monitoring at the terminals could be one of the causes of the poor sanitation situation at the terminals. In all 145 respondents, representing 66.8% said yes while 72 respondents, representing 33.2% said no, Table 13 shows the responses of the users or patrons at the terminals under studies.

Table 13: Respondents responding to the performance of supervisory and monitoring team at the terminals

Performance of the supervisory and monitoring team	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	value	%	Value	%	value	%
very good	9	8.2	10	10.0	8	8.0	27	11.2
Good	16	14.5	11	11.0	12	12.0	39	16.2
Average	11	10.1	9	9.0	7	7.0	27	11.2
Bad	48	43.6	57	57.0	61	61.0	166	40.2
Very bad	26	23.6	13	13.0	12	12.0	51	21.2
Total	110	100	100	100	100	100	310	100
Could poor supervisory and monitoring at the terminals be one of the causes of poor sanitation	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	value	%	Value	%	value	%
Yes	48	64.9	46	65.7	51	69.9	145	66.8
No	26	35.1	24	34.3	22	30.1	72	33.2
Total	74	100	70	100	73	100	217	100

4.15 FORMATION OF SANITARY TASK FORCE AT THE TERMINALS

When asked about the formation of sanitary task force at the terminals, to pave way for follow up question to help ascertain the causes of poor sanitation at the terminals. Out of 310 respondents, 210 respondents, representing 67.7% of the respondents described the idea as necessary. They were of the view that the task force when formed would help solve the poor sanitary situation at the terminals. In all 100 respondents, representing 32.3% of the respondents were of the view that the formation of the task force as unnecessary.

When follow up question was asked whether non-existence of sanitary task force at the terminals could be one of the causes of the poor sanitation situation at the terminals. In all 210 respondents, representing 100% said yes while no respondents, representing 0% said no. Table 14 shows the responses of the users or patrons at the terminals under studies.

Table 14: Respondents responding to the formation of sanitary task force at the terminals

Formation of sanitary task force	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	value	%	value	%	Value	%	value	%
Very much necessary	20	18.2	13	13.0	25	25.0	58	18.7
much necessary	30	27.3	22	22.0	25	25.0	77	24.8
Necessary	19	17.3	26	26.0	30	30.0	75	24.2
Unnecessary	24	21.8	30	30.0	14	14.0	68	22.0
much unnecessary	17	15.4	9	9.0	6	6.0	32	10.3
Total	110	100	100	100	100	100	310	100
Could non-existence of sanitary task force be one of the causes of poor sanitation	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	value	%	Value	%	value	%
Yes	69	100	61	100	80	100	210	88.1
No	8	11.6	7	11.5	10	12.5	0	11.9
Total	69	100	61	100	80	100	210	100

4.16 THE LEVEL OF SAFETY AND SECURITY AT THE TERMINALS

When asked about their opinion on the level of safety and security at the terminal, to pave way for follow up question to help ascertain the causes of poor sanitation at the terminals. Out of 310 respondents, 181 respondents, representing 58.4% of the respondents were of the view that the safety and security of the terminals were not the best. A total number 73 respondents, representing 23.5%, were of the view that the safety and security of the terminals as good. Only 56 respondents, representing 18.1% described the safety and security at the terminals as average.

When follow up question was asked whether the level of safety and security at the terminals could be one of the causes of the poor sanitation situation at the terminals. Total number 103 respondent, representing 56.9% said yes while 78 respondents, representing 43.1% said no, Table 15 shows the responses of the users or patrons at the terminals under studies.

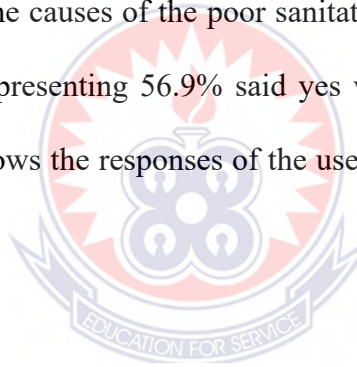


Table 15: The level of the safety and security in the terminals

The level of safety and security at the terminals	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	value	%	Value	%	value	%
very safe and secured	14	12.7	12	12.0	7	7.0	33	10.6
Safe and secured	25	22.7	9	9.0	6	6.9	40	12.9
Average	24	21.8	14	14.0	18	18.0	56	18.1
Unsafe and not secured	30	27.2	44	44.0	44	44.0	118	38.1
Very unsafe and very unsecured	17	15.6	21	21.0	25	25.0	63	20.3
Total	110	100	100	100	100	100	310	100

Could the level safety and security at the terminals be one of the causes of poor sanitation	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	value	%	Value	%	value	%
Yes	35	74.5	34	52.2	34	49.8	103	56.9
No	12	25.5	31	47.8	35	50.2	78	43.1
Total	47	100	65	100	69	100	181	100

4.17 THE LEVEL OF ENVIRONMENTAL HEALTH RISKS TO THE USERS.

When asked about the awareness of the environmental health risk to the users due to the poor sanitation at the terminal, to help ask follow up question in order to ascertain if this could entice users to practice proper sanitary practices at the terminals. Out of 310 respondents, 233 respondents, representing 75.1% of the respondents emphasized that they were aware of the environmental health risk at the terminals. Only 77 respondents, representing 24.9% were not aware of environmental health risks of the poor environmental sanitation.

When follow up question was asked whether the level of awareness of the environmental health risk at the terminals could encourage users to engage in proper sanitary practices at the terminals. Total number of 173 respondents, representing 74.2% said yes while 60 respondents, representing 25.8% said no. Table 16 shows the responses of the users or patrons at the terminals under studies.

Table 16: Respondents responding to the level of environmental health risk at the terminals

Level of awareness of health risk	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total No. of respondents	
	value	%	value	%	value	%	value	%
very much aware	29	26.3	24	24	33	33	86	27.7
much aware	28	25.5	21	21	24	24	73	3.5
Aware	28	25.5	27	27	19	19	74	3.9
not aware	14	12.7	17	17	15	15	46	14.8
not much aware	11	10.0	11	11	9	9	31	10.1
Total	110	100	100	100	100	100	310	100
Could awareness of health risk at the terminals encourage users to engage in proper sanitary practices	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total No. of respondents	
	value	%	value	%	value	%	value	%
Yes	63	74.1	52	72.2	58	76.3	173	74.2
No	22	25.9	20	27.8	18	23.7	60	25.8
Total	85	100	72	100	76	100	233	100

4.18 SEVERITY OF HEALTH RISK

When asked about the severity of the health risk, to ascertain the severity of the environmental health implication to the user of the terminals. Out of 310 respondents, 203 respondents, representing 65.5% of the respondents were of the view that the health risk was severe and emphasized that they were all at risk, but they still patronized the terminals

due to economic reasons. A number of 107 respondents, representing 34.5% of the respondents were of the view that the health risk was not severe, to them they only spend few hours there to be affected by this unpleasant situation; however, they think right thing must be done to save masses.

When follow up question was asked whether the severity of the health risk at the terminals could make one come into contact with germs easily at the terminals. Total number of 134 respondents, representing 66.0% said yes while 69 respondents, representing 34.0% said no.

Table 17 shows the responses of the users or patrons at the terminals under studies.

Table 17: Respondents responding to the level of severity of the health risk at the terminals

Severity of health risk	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	value	%	Value	%	value	%
V. much severe	23	20.9	21	21.0	30	30.0	74	23.9
much severe	25	22.7	21	21.0	22	22.0	68	21.9
Severe	17	15.5	26	26.0	18	18.0	61	19.7
not severe	29	26.4	18	18.0	17	17.0	64	20.6
not much severe	16	14.5	14	14.0	13	13.0	43	13.9
Total	110	100	100	100	100	100	310	100
Could severity of health risk make one come into contact with germs easily	No. of respondents Kumasi		No. of respondents Sunyani		No. of respondents Bibiani		Total no. of respondents	
	Value	%	value	%	Value	%	value	%
Yes	39	60.0	45	66.2	50	71.4	134	66.0
No	26	40.0	23	33.8	20	28.6	69	34.0
Total	65	100	68	100	70	100	203	100

CHAPTER FIVE

5.0 DISCUSSIONS

5.1 INTRODUCTION

This study examined the location, level of traffic congestion, facilities available, current sanitation situation, maintenance culture, awareness of environmental health risks, severity of health risks, and safety and security issues of the users who patronized the areas under study as well as Ghana as a whole. This part of the study highlights the implication of the findings of the study, and further discusses the implication of the findings on health of the users as well as poor sanitation is concerned.

5.2 LOCATION OF THE TERMINALS

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as reflects in the results that 64.5%, 58.0% and 58.0% of the respondents in Kumasi, Sunyani and Bibiani respectively preferred that the location of the terminals be maintained at their present location with improved situation as compared to 30.0%, 39.0% and 23.0% that preferred relocation. It also evident that 84.8%, 82.6% and 53.8% of the respondents representing Kumasi and Sunyani and Bibiani respectively were of the view that the location of the terminals is not a contributing factor to the poor sanitation situation as compared to 15.2%, 17.4% and 46.2% that thought otherwise. However, the difference in the findings shows that 5.5% and 3.0% of the respondents representing Kumasi and Sunyani respectively were indifferent as compared to higher percentage of 19.0% of the respondents for Bibiani that were also indifferent.

On the whole, there is the evidence that 60.3% of the respondents preferred that the location of the terminals be maintained at their present location with improved situation as compared to 30.6% that preferred relocation. They might have been influenced by the position; being at vantage points with easy access to the terminals without any fatigue. Also, the road networks to these terminals are in the best shape making it easy for a lot of cars apply these areas. However, as evident in the study 9.1% of the respondents were indifferent and this does not affect the position of the majority 60.3% that the terminals be maintained.

Traditionally, the focus of urban transportation has been on passengers as cities were viewed as locations of utmost human interactions with intricate traffic pattern lined to commuting, commercial transactions and leisure/culture activities, however, these are negative consequences such as congestion, accidents and mobility gaps (Redrigue , 2012). This is in line with the evidence in the study that 28.4% of the respondents said yes as compared to 71.6% who said no implies that, the location of the terminals is not a contributing factor to the poor sanitation situation.

5.3 EJECTION OF STREET HAWKERS AT THE TERMINALS

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as reflects in the results that 60.0%, 59.0% and 55.0% of the respondents in Kumasi, Sunyani and Bibiani respectively were of the view that the street hawkers be ejected at the terminals as compared to 38.2%, 40.0% and 39.0% that were of the view that street hawkers must be allowed to sell their goods freely at the terminals.

In fact, it is also evident that 66.7%, 66.1% and 65.5% of the respondents in Kumasi, Sunyani and Bibiani respectively were of the view that street hawking at the terminals is a contributing factor to the poor sanitation situation as compared to 33.3%, 33.9% and 34.5% that were of contrary view. However, the difference in the findings shows that 1.8% and 1.0% of the respondents representing Kumasi and Sunyani respectively were indifferent as compared to higher percentage of 6.0% of the respondents for Bibiani that were also indifferent.

It is clear that majority of the respondents representing 58.1% respondents were of the view that the street hawkers be ejected at the terminals as compared to 30.0% that were of the view that street hawkers must be allowed to sell their goods freely at the terminals. However, as evident in the study 2.9% of the respondents were indifferent and this does not affect the position of the majority 58.1% that the street hawkers be ejected at the terminals. This reflects in the evidence in the study that 66.1% of the respondents said yes as compared to 33.9% who said no and this implies that, the street hawkers at the terminals is a contributing factor to the poor sanitation situation.

5.4 THE LEVEL OF TRAFFIC CONGESTION

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as reflects in the results that 84.5%, 85.0% and 82.0% of the respondents in Kumasi, Sunyani and Bibiani respectively were of the view that pedestrian and vehicular conflict at the terminals is a contributing factor to the poor sanitation situation as compared to 14.5%, 15.0% and 15.0% that were of different view. Again, it is also evident that 1.0%, 0.0% and

3.0% of the respondents representing Kumasi, Sunyani and Bibiani respectively were indifferent.

There is a high level of pedestrian and vehicular conflict at the terminals. This reflects in the evidence that the average total number of people that use the terminals were 1790, 990 and 789 for Kumasi, Sunyani and Bibiani terminals respectively. It must be noted that the average total of 225 vehicles use the terminals.

Traditionally, the focus of urban transportation has been on passengers as cities were viewed as locations of utmost human interactions with intricate traffic pattern lined to commuting, commercial transactions and leisure/culture activities, however, these are negative consequences such as congestion, accidents and mobility gaps (Redrigue, 2012).

This reflects in the evidence in the study that the traffic counts conducted in different days in separate locations, indicates that, the level of pedestrian and vehicular conflict at the terminals happened during the peak periods; morning peak hour was found to be between 5.00 am and 10.00am and evening peak hours between 3.00 pm and 7.00pm and this is in line with the standard terminals as expressed above.

Again, this reflects in the evidence in the study that 83.9% of the respondents said yes as compared to 14.8% who said no. However, as evident in the study 1.3% of the respondents were indifferent and this does not affect the position of the majority 83.9% that the pedestrian and vehicular conflict at the terminals is a contributing factor to the poor sanitation situation.

5.4 CURRENT SANITATION SITUATION AT THE TERMINALS

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as reflects in the results that 50.0%, 63.0% and 70.0% of the respondents in Kumasi, Sunyani and Bibiani respectively were of the view that the current sanitation situation was not the best. However, the difference in the findings shows that 50.0% of respondents in Kumasi were of the view that the current sanitation situation was good as compared to lower percentage of 37.0% and 30.0% of the respondents in Sunyani and Bibiani respectively that were of the view that the current sanitation situation was good.

Afon et. al (2006) confirmed that the solid and liquid waste management system, toilet facilities, drainage system and the general environmental sanitation of the motor park are all in very poor state.

This reflects in the evidence that majority of the respondents 60.7% described the terminals as dirty. They emphasized on the uncollected waste, and the filthy drains as well as indiscriminating disposal of waste. Indeed it is also evident in the study that, 33.2% of the respondents were of the view that the current sanitation situation was good. However, 6.1% were also of the view that the situation was average or good. Implicitly, it is suggestive that the terminals are dirty that something must be done to avert the situation

5.5 EDUCATION ON SANITATION

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as reflects in the results that 73.6% , 83.0% and 83.0% of the respondents representing Kumasi, Sunyani and Bibiani respectively were of the view that education on sanitation issues is not the best as compared to as compared to 26.4 % , 17.0% and 17.0% that hold

contrary view. Again, it is evident that 81.5%, 84.3% and 84.3% of the respondents in Kumasi, Sunyani and Bibiani respectively were of the view that lack of education on sanitation is a contributing factor for the poor sanitation situation as compared to 18.5 %, 15.7% and 15.7% that differs.

In totality, there is the evidence that 79.7% as compared to 15.5% respondents were of the view that education on sanitation issues is not the best and that has contributed to the poor sanitation situation. The same 79.7% complained bitterly about the insanitary condition at the terminals and is suggestive that education on sanitation issues was not the best. However, 4.8% were indifferent and this would not affect the views of the majority of the respondents.

This is supported by Dinesen, 2010 as he said environmental education increases public awareness and knowledge about environmental issues or problems; it provides the public with the necessary skills and information to help them make an informed decision and take responsible actions.

This is in line with the evidence in the study that 83.4% of the respondents said yes as compared to 16.6% who said no and this implies that, lack of education on sanitation is a contributing factor for the poor sanitation situation.

5.6 ATTITUDE AND BEHAVIOUR OF THE USERS AT THE TERMINALS

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as shows in the results that 85.5%, 81.3% and 87.0% of the respondents representing Kumasi, Sunyani and Bibiani respectively were of the view that personal attitude and behaviour of the users is not the best as compared to 10.9 %, 13.0% and 6.0% that hold different view.

However, the difference shows that 100.0% of respondents in Kumasi were of the view that personal attitude and behaviour of the users at the terminals is a contributing factor to the poor sanitation situation as compared to lower percentage of 74.1% and 77.0% of the respondents in Sunyani and Bibiani respectively that were of the same view. In fact, 3.6%, 6.0% and 7.0% of the respondents in Kumasi, Sunyani and Bibiani respectively were indifferent.

It is evident that 84.5% of the respondents as compared to 10.0% were of the view that personal attitude and behaviour of the users is not the best and that there is much to be desired about the attitude and behaviour of the users at the terminals. However, as evident in the study 5.5% of the respondents were indifferent and this does not affect the position of the majority. Implicitly, it is suggestive that personal attitude and behaviour of the users was not the best at the terminals.

This is confirmed by World Health Organisation (WHO), 2012 which reported that about 2.4 billion people globally live under highly insanitary condition and have such poor hygiene behaviour that they are exposed to the risk of incidence and spread of infectious diseases are enormous. The increasing access to sanitation and improving hygienic behaviour are key to reducing this enormous disease burden (WHO, 2000).

This reflects in the evidence in the study that, 84.4% of the respondents said yes as against 15.6% who said no is suggestive that personal attitude and behaviour of the users at the terminals is a contributing factor to the poor sanitation situation.

5.7 LEVEL OF AWARENESS OF THE SANITARY BYE- LAWS

The differences in the findings show that 58.2% of the respondents in Kumasi as compared to lower percentage of 48.0% and 36.0% of the respondents representing Sunyani and Bibiani respectively were of the view that users are aware of sanitary bye-laws. Again, 41.8% of the respondents in Kumasi as compared to higher percentage of 52.0% and 64.0% of the respondents representing Sunyani and Bibiani respectively those were of the view that users are unaware of sanitary bye-laws. It is also evident that 47.8% of respondents in Kumasi were of the view that unawareness of the sanitary bye-laws is a contributing factor to the poor sanitation situation as compared to higher percentage of 65.4% and 62.5% of the respondents in Sunyani and Bibiani respectively that were of the same view. On the contrary, as evident in this study 52.2% of the respondents in Kumasi were of the view unawareness of the sanitary bye-laws is not a contributing factor to the poor sanitation situation as compared to lower percentage of 34.6% and 37.5.0% of the respondents representing Sunyani and Bibiani respectively that were of the same view.

A higher 52.3% as compared to the 47.7% is evidence that users are unaware of sanitary bye-laws. it is worthy to note that 59.3% of the respondents said yes while 40.7% said no, implicitly , it is a suggestive that, unawareness of the sanitary bye-laws is a contributing factor to the poor sanitation situation.

Ministry of Local Government and Rural Development (MLGRD), 1999 is in agreement with this which reported that the environmental sanitation comprises a number of complementary activities, construction and maintenance of sanitary infrastructure, the provision of services, public education, community and individual action, regulation and legislation.

5.8 LEVEL OF THE ENFORCEMENT OF THE SANITARY BYE- LAWS

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as reflects in the results that 40.9%, 43.0% and 36.0% of the respondents representing Kumasi, Sunyani and Bibiani respectively were of the view that users are aware of sanitary bye-laws as compared to 59.1 %, 57.0% and 64.0% that thought otherwise. It is also evident that 69.2%, 62.5% and 50.9% of the respondents in Kumasi, Sunyani and Bibiani respectively that were of the view that non-enforcement of the sanitary bye-laws is a contributing factor to poor sanitation situation as compared to 30.8%, 37.5% and 49.1% that were of the contrary view.

Ministry of Local Government and Rural Development (MLGRD), 1999 reported that the policy also entrust in the Assemblies the power to promulgate bye-laws and regulations to help in their environmental sanitation management process with the help of the Judiciary which was expected to be established and empowered community law of courts in prosecuting offenders.

On the contrary, as evident in this study 60.0% as compared to 40.0% of respondents were of the view that the sanitary bye-laws are not enforced to the letter to have a significant impact on the current sanitation situation.

This is in line with the evidence in the study that 61.3% of the respondents said yes while 38.7% said no; implicitly, it is a suggestive that non-enforcement of the sanitary bye-laws is a contributing factor to poor sanitation situation.

5.9 FACILITIES AT THE TERMINALS

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as shows in the results that 31.8%, 32.0% and 33.0% of the respondents representing Kumasi, Sunyani and Bibiani respectively were of the view that there are adequate facilities at the terminals as compared to 68.2 %, 68.0% and 67.0% that were of the view that the facilities at the terminals are inadequate. It is also evident that 60.0%, 58.8% and 58.7% of the respondents representing Kumasi, Sunyani and Bibiani respectively were of the view that the inadequacy of the facilities at the terminals is a contributing factor to the poor sanitation situation as compared to 40.0 %, 41.2% and 40.3% that were of the view that the inadequacy of the facilities at the terminals is not a contributing factor to the poor sanitation situation.

There is evidence that 67.7% of the majority as compared to 32.3% were of the view that the facilities at the terminals were inadequate. Implicitly, it is suggestive that the inadequacy of the infrastructure including sanitary facilities at the selected terminals, increased the waiting time; access to the existing facilities. Eventually, people are compelled to urinate openly which also has its own associated problems. During the peak periods, some of the passengers get seats to sit at the waiting rooms for their buses while others have to stand to board the bus. This indicates that there is the need to provide enough facilities.

From the available literature it was revealed that standard terminal should have some basic infrastructure such as washrooms, toilet booths, waiting rooms, tarred or paved grounds washing bays and many more (Redrigue, 2012).

This is supported by evidence on the ground; it was observed that waste disposable bins at the terminals were inadequate and this might have compelled users at the terminals to litter waste indiscriminately on the untreated ground making it difficult for the cleaners to tidy up. Environmental sanitation involves both human behaviour and facilities which work together to form a hygienic environment (World Bank, 2002). Nearly 40% of the World's population has no access to hygienic means of personal sanitation (WHO / UNICEF, 2008) This reflects in the evidence in the study that, 59.5% of the respondents said yes as against 40.5% who said no. It is a suggestive that the inadequacy of the facilities at the terminals is a contributing factor to the poor sanitation situation.

5.10 CONDITION OF THE FACILITIES AT THE TERMINALS

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as indicates in the results that 63.6%, 65.0% and 71.0% of the respondents representing Kumasi, Sunyani and Bibiani respectively were of the view that the state of the available facilities were in bad condition as compared to 36.4%, 35.0% and 29.0% that were of different view. It is also evident that 60.0%, 60.0% and 63.4% of the respondents in Kumasi, Sunyani and Bibiani respectively were of the view that the poor condition of the facilities at the terminals is a contributing factor to the poor sanitation situation as compared to 40.0%, 40.0% and 36.6% that thought differently.

Majority of the respondents 78.7% as compared to 21.3% were of the view that the state of the available facilities were in bad condition due to poor maintenance culture at the terminals and also emphasised that there is the need to improve upon the existing facilities to make commuters feel comfortable when travelling with MMT buses.

This is confirmed by UNICEF, 2013 which reported that improving sanitation facilities and promoting hygiene in schools benefit both learning and the health of children. It also attracts and retains students' schools. On the contrary, where such facilities are not available students are withdrawn from school.

Globally, 2.5 billion people live without access to improved sanitation; 1 billion of these people practice open defecation and only 64% of the world's population have access to improved sanitation, but 70% of the Sub-Sahara Africa population and 59% of South Asia still lack access (WHO, 2005).

This is in line with the evidence in the study that 61.2% of the respondents said yes as against 38.8% who said no. It is a suggestive that the poor condition of the facilities at the terminals is a contributing factor to the poor sanitation situation.

5.11 MAINTENANCE CULTURE AT THE TERMINALS

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as reflects in the results that 81.3%, 81.8% and 85.1% of the respondents representing Kumasi, Sunyani and Bibiani respectively were of the view that poor maintenance culture at the terminals is a contributing factor to the poor sanitation situation as compared to 18.7 %, 18.2% and 14.9% that were of different view. However, the difference in the findings shows that 41.7% and 45.0% of respondents in Kumasi and Sunyani respectively were of the view that the maintenance culture at the terminals is good as compared to lower percentage of 26.0% of respondents for Bibiani that were of the same view. On the contrary, 58.3 % and 55.0% of respondents in Kumasi and Sunyani respectively were of

the view that the maintenance culture at the terminals is not the best as compared to higher percentage of 74.0% of the respondents for Bibiani that were of the same view.

Majority of the respondents, 62.3% as compared to 37.7% described the maintenance culture at the terminals as bad. The fact that they have not seen major renovation at the terminals explains that the maintenance culture at the terminals is not the best.

This reflects in the evidence in the study that 82.9% % of the respondents said yes as against 17.1% who said no. It is therefore, a suggestive that poor maintenance culture at the terminals is a contributing factor to the poor sanitation situation which also indicates that failure to do maintenance regularly resulting to the poor state of affairs.

5.12 PERFORMANCE OF SUPERVISORY AND MONITORING TEAM AT THE TERMINALS

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as shows in the results that 68.2 %, 70.0% and 73.0% that were of the view that the performance of the supervisory and monitoring team at the terminals was not the best as compared to 31.8%, 30.0% and 27.0% that were of different view. It is also evident that 64.9%, 65.7% and 69.9% of the respondents representing Kumasi, Sunyani and Bibiani respectively were of the view that the poor supervision and monitoring at the terminals is a contributing factor to the poor sanitation situation as compared to 35.1 %, 34.3% and 30.1% that thought differently.

There is the evidence that 78.7% of the respondents as compared to 21.3% were of the view that the performance of the supervisory and monitoring team at the terminals was bad. Implicitly, it is suggestive that the performance of the supervisory and monitoring

team at the terminals was not good enough and something must be done to improve the sanitation situation at the terminals.

This is supported by United Nations Environmental Programme (UNEP) that considers environmental management as a control of all human activities which have a significant impact on the environment (UNEP, 2005).

This is in line with the evidence in the study that 66.8% of the respondents said yes as against 33.2% who said no. Implicitly, it is suggestive that the poor supervision and monitoring at the terminals is a contributing factor to the poor sanitation situation which indicates that some one must control all human activities, failure to do so regularly results in poor state of affairs.

5.13 FORMATION OF SANITARY TASK FORCE AT THE TERMINALS

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as indicates in the results that 62.8 %, 61.0% and 80.0% of the respondents representing Kumasi, Sunyani and Bibiani respectively were of the view that the formation of sanitary task force as necessary as compared to 37.2%, 39.0% and 20.0% that were of different view. It is also evident that 50.7%, 57.4% and 62.5% of the respondents in Kumasi, Sunyani and Bibiani respectively were of the view that non-existence of sanitary task force is also a contributing factor for the poor sanitation situation as compared to 49.3%, 42.6% and 37.5% that were of different view.

The fact that 67.7% of the respondents as compared to 32.3% described the idea of the formation of sanitary task force as necessary is a significant importance to sanitation

situation. It is suggestive that majority 67.7% were of the view that the when sanitation task force is formed, they would do a better job.

Government of Ghana in her national development blue print has prioritized sanitation as a key area of action in the Ghana shared growth development agenda during the inauguration of the national sanitation task force (NSTF) in Accra (GNA, 2012).

This reflects in the evidence in the study that non-existence of sanitary task force is also a contributing factor for the poor sanitation situation as 57.1% of the respondents said yes as against 42.9% who said no. Implicitly, it is a suggestive that there is the need to form a task force which would be in line with national sanitation task force (NSTF)

5.14 LEVEL OF SAFETY AND SECURITY AT THE TERMINALS

There is evidence of differences in the findings among Kumasi, Sunyani and Bibiani as reflects in the results that 57.2% of the respondents in Kumasi were of the view that the safety and security at the terminals is good as compared to lower percentage of 35.0% and 31.0% of the respondents in Sunyani and Bibiani respectively that were of the same view. On the contrary, it is evident that 42.8% of the respondents in Kumasi were of the view that the safety and security at the terminals is not the best as compared to higher percentage of 65.0% and 69.0% of the respondents in Sunyani and Bibiani respectively that were of the same view. Again, difference in the findings also shows that 74.5% of the respondents in Kumasi were of the view that the poor level of safety and security at the terminals is a contributing factor to the poor sanitation situation as compared to higher percentage of 52.2% and 49.8% of the respondents in Sunyani and Bibiani respectively that were of the same view. It is also evident that 25.5% of respondents in Kumasi were of the view that the

poor level of safety and security at the terminals is not a contributing factor to the poor sanitation situation as compared to higher percentage of 47.8% and 50.2% of the respondents in Sunyani and Bibiani respectively that were of different view.

It must be mentioned that over half respondents 58.4% as compared to 41.6% described the safety and security at the terminals as not safe and emphasized on the absence of some security light and (CCTV) cameras. It does necessarily suggest that the safety and security of the respondents at the terminals was not the best and proper safety and security measures must be put in place.

Improving access to sanitation is a critical step towards reducing the impacts of diseases; also helps create physical environments that enhance safety/security, dignity and self-esteem. Safety and security issues are particularly important for women and children, who otherwise risk sexual harassment and assault when defecating at night and in secluded areas (UNICEF, 2013).

This reflects in the evidence in the study that safety and security also have a link with sanitation as 56.9% of the respondents as against 43.1% who said yes and no respectively. Implicitly, it is a suggestive that the poor level of safety and security at the terminals is a contributing factor to the poor sanitation situation and that a standard terminal takes into consideration the safety and security of the patrons.

5.15 THE LEVEL OF ENVIRONMENTAL HEALTH RISKS TO THE USERS

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as reflects in the results that 22.7%, 28.0% and 24.0% of respondents representing Kumasi, Sunyani and Bibiani respectively were of the view that users were unaware of the

environmental health risk as compared to 77.3 %, 72.0% and 76.0% that thought otherwise. It is also evident that 74.1%, 72.2% and 76.3% of respondents representing Kumasi, Sunyani and Bibiani respectively were of the view that the awareness of the environmental health risk at the terminals could encourage users to practice proper sanitary practices at the terminals as compared to 25.9 %, 27.8% and 23.7% that were of different view.

Despite the users' high level of awareness 75.1% as compared to 24.9% on the environmental condition in the terminals which constitute risks to their healthy living; they still patronize the terminals mainly for economic reasons. However, they think the right thing must be done to avert the poor sanitation situation. It is therefore; suggestive that majority of the respondents were aware of the environmental health risk.

This is confirmed by World Health Organisation (WHO) in 2006 when reported that, globally, poor sanitation leads to about 700,000 premature deaths annually.

Diseases associated with poor environmental sanitation are diarrhoea, acute respiratory infections, and tropical diseases like helminthic and Schistosomiasis infections. Furthermore, eighty-eight per cent of diarrhoea diseases world-wide are attributed to unsafe water, inadequate sanitation and poor hygiene (Dinesen, 2010).

This is in line with the evidence in the study that 74.2% of the respondents said yes as against 25.8% who said no. Implicitly, it is a suggestive that the awareness of the environmental health risk at the terminals could encourage users to practice proper sanitary practices at the terminals.

5.8 HEALTH IMPLICATION TO THE USERS

There is evidence of similarities in the findings among Kumasi, Sunyani and Bibiani as shows in the results that 59.1%, 68.0% and 70.0% of the respondents representing Kumasi, Sunyani and Bibiani respectively were of the view that the severity of health risk is high as compared to 40.9%, 32.0% and 30.0% that were of different view. The similarity in the findings is also evident that 60.0%, 66.2% and 71.4% of respondents representing Kumasi, Sunyani and Bibiani respectively were of the view that one could come into contact with germs as compared to 40.0%, 32.0% and 30.0% that thought differently.

Information from the available literature revealed that the environmental health implication on the users due to poor environmental sanitation and their consequences is much to be desired; through the introduction of pathogens (disease causing organism); bacteria, viruses infectious which lead to cholera, diarrhoea, respiratory tracts infections and others..

This reflects in the evidence in the study that a higher respondents 65.5% as compared to 34.5% were of the view that the unpleasant smell (stench) coming from the toilet and urinal facilities, uncollected waste, was overwhelming which was coupled with pollution from the vehicle fumes, noise, dust including mosquito breeding and also the filthy drains could just make one ill. Implicitly, it is suggestive that the severity of the health risk is very high at the terminals under study.

Poor sanitation impacts public health, education and the environment. Globally, poor sanitation leads to about 700,000 premature deaths annually (WHO, 2006).

Diseases associated with poor environmental sanitation are diarrhoea, acute respiratory infections, and tropical diseases like helminthic and schistosomiasis infections.

Furthermore, eighty-eight percent of diarrhoea diseases worldwide are attributed to unsafe water, inadequate sanitation and poor hygiene (Dinesen, 2010).

This reflects in the evidence in the study that 66.0% % of the respondents said yes as against 34.0% who said no. Therefore, it is a suggestive that the severity of the health risk at the terminals could make one come into contact with gems easily at the terminals.



CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 CONCLUSION

This study explained the causes of the poor sanitation at the MMT terminals and their impact on the environmental health of the users in Ashanti, Brong Ahafo and Western regions using Kumasi, Sunyani and Bibiani MMT terminals respectively as case study areas. From the evidence gathered in this study as discussed and their implications, the following conclusions are drawn based on the objectives of the study;

The location of the terminals be maintained and developed into modern terminals with adequate and improved facilities to attract specialized services in conformity to the standard terminals.

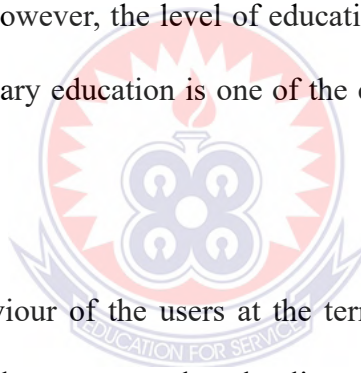
In fact, the location of the terminals selected was easily accessible, close to commercial centres, and above all, it easy to locate it; necessary element for location of terminals. Therefore, it was concluded that, the location of the terminals has nothing to do with the poor sanitation at the terminals.

The level of pedestrian and vehicular conflicts is high at the terminals and normally happened during the peak periods; morning peak hour was found to be between 5.00 am and 10.00am and evening peak hours between 3.00 pm and 7.00pm while the off-peak hours during the day was between 11.00am and 2.00pm. However, if the said satellite stations in towns and cities are created it would curb or reduce the level of pedestrian and vehicular conflicts.

It was concluded that, the level of pedestrian and vehicular conflicts is one of the causes of the poor sanitation at the terminals.

The state of current environmental sanitation situation is very bad due to inadequate facilities; waste disposable bins, washrooms, toilet booths, dusty and untreated ground at the terminals; expose users or patrons to insanitary conditions with its associated health hazards especially during the peak periods.

Educating the users or patrons of the terminals would go a long way to improve environmental sanitation. However, the level of education on sanitation at the terminals is low; therefore, lack of sanitary education is one of the causes of the poor sanitation at the terminals



Personal attitude and behaviour of the users at the terminals on sanitation are very bad, since the same users are the very people who litter the environment indiscriminately. Therefore, personal attitude and behaviour of the users on sanitation is one of the causes of the poor sanitation at the terminals

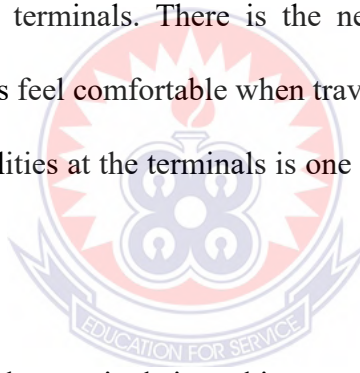
Though majority of the users are unaware of the sanitary bye-laws, however the sanitary bye-laws are not enforced to the letter, leading to non-observance of the bye-laws, Therefore, it was concluded that, lack of the enforcement sanitary bye-laws is one of the causes of the poor sanitation at the terminals.

There is inadequate facilities such as rest rooms, waiting rooms, litter bins, snack bars and others makes the users or patrons uncomfortable in the terminals when travelling with MMT buses. It was observed that due to inadequate sanitary facilities, some passengers wait for a long time before having access to sanitary facilities as well as other facilities, especially during the peak hours.

Again, it was concluded that, the inadequate facilities is one of the causes of the poor sanitation at the terminals.

The condition of the available facilities at the terminals was in bad shape due to poor maintenance culture at the terminals. There is the need to improve upon the existing facilities to make commuters feel comfortable when travelling with MMT buses

Also, poor condition of facilities at the terminals is one of the causes of the poor sanitation at the terminals.



The maintenance culture at the terminals is nothing to write home about and this has led to early deterioration of the existing facilities. Therefore, poor maintenance of facilities at the terminals is one of the causes of the poor sanitation at the terminals

The supervisory and monitoring team has not lived up to expectation. There has not been much work done by the supervisory and the monitoring team to improve sanitation condition at the terminals. Therefore, poor performance of the supervisory and monitoring team at the terminals is one of the causes of the poor sanitation at the terminals.

Formation of sanitary task force is advocated to take charge of the supervisory and monitoring role of the environmental sanitation at the terminals. It was concluded that, absence of the sanitary task force is one of the causes of the poor sanitation at the terminals.

Unavailability of enough security lights, alarm systems, and closed circuit camera and television (CCTV) at the terminals compromise the safety and security of the users especially during the peak periods.

Therefore, poor safety and security at the terminals is one of the causes of the poor sanitation at the terminals.

There is high level of awareness of the environmental health risks to the users at the terminals however; users still patronize the terminals mainly for economic reasons. Therefore, it was concluded that, environmental health risks is very high at the terminals.

The severity of the environmental health risks to the users at the terminals is very high due to the unpleasant smell from the toilet and urinal facilities, unbearable stench from uncollected waste, pollution from the vehicle fumes, noise, dust and mosquito breeding and the filthy drains could just make one ill.

The effect of the environmental health risks and its related consequences are of essences to the health of the users. Users may be ill through the introduction of pathogens (disease

causing organism); bacteria, viruses infectious which lead to malaria, cholera, diarrhoea, respiratory tracts infections and others in such an environment easily.

Moreover, a determination of the role played by poor environmental sanitation is very crucial in every society; hence there is the need to appreciate and acknowledge developing schemes to prevent poor environmental sanitation at the terminals to improve the health of the users

6.2 RECOMMENDATION

The study recommends that the location of the terminals under study be maintained, however, the Metro Mass Transit management (MMTM) in collaboration with the Metropolitan Municipal District Authorities (MMDAs) must endeavour to create number of satellite stations at vantage points in the hearts of the cities to reduce pedestrian and vehicular conflicts at the terminals and also to ease pressure at the existing facilities especially during the peak hours.

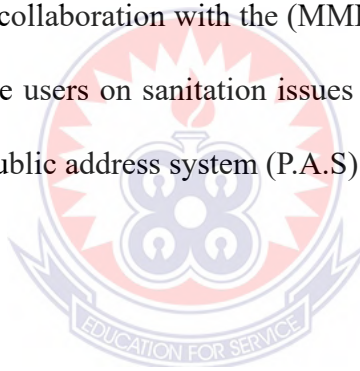
The (MMTM) must not only eject street hawkers but, there must be a conscious effort to provide all the necessary facilities to improve the sanitation condition at the terminals.

Also the (MMTM) need to create good maintenance culture practices to help improve the conditions of the facilities to be in conformity to the standard terminals without compromising the health of the users.

Again, the (MMTM) in collaboration with the (MMDAs) need to form sanitary task force to take in charge of supervisory and monitoring of the sanitary issues and also responsible statutory agencies should endeavour to enforce the sanitary bye-laws to the letter at the terminals to help improve the health conditions of the users.

In addition, the (MMTM) must make a conscious effort to provide enough security lights and to install closed circuit camera and television (CCTV) for monitoring activities at the terminals.

Above all, the (MMTM) in collaboration with the (MMDAs) in collaboration with the City Authorities must educate the users on sanitation issues by explaining the essence of good sanitary practices through public address system (P.A.S) at the terminals frequently.



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APPENDIX

**UNIVERSITY OF EDUCATION, WINNEBA
COLLEGE OF TECHNOLOGY EDUCATION, KUMASI**

TOPIC

**CAUSES OF POOR SANITATION AND THEIR IMPLICATION ON THE
ENVIRONMENTAL HEALTH OF THE USERS OF METRO MASS TRANSIT
TERMINALS IN GHANA**

My name is Gaisie Rasmos Ekow, M-tech student of university of education, Winneba. I am working on a project to help identify causes of poor environmental sanitation in the Metro Mass Transit (MMT) terminals and their implication on the environmental health of the users in order to find amicable solution to the problem.

Your participation in this study will help people who patronize MMT terminals and Ghana as a whole to understand factors that influence poor environmental sanitation and how to improve hygienic practices leading to healthy life to protect MMT users from effect of poor environmental sanitation. It is important to understand that everything you say will be confidential and your name will not appear on any public document.

I agree to participate

Tick [] the appropriate box

SECTION A: Demographic factors

1. Age group (in years)

Below 18 18-26 27-35 36-40 45 and above

2. Sex: Male Female

3 Marital status: Single Married Divorce Widow/ Widower

4. Level of education:

Basic education Secondary education Tertiary education

Non-formal education Others please specify

SECTION B: Socio-economic factors

1. Occupation:

Public sector Private organization Artisan/ Farmer/Trader

Student Unemployed

2. What is your opinion on the location of the terminal?

Not good –be relocated Good – be maintained It is not important

3. Could location of terminals be one of the causes of poor sanitation situation?

Yes No

4. Is it necessary to eject the streets/roadsides hawkers on the terminals?

Yes No Not Important

5. Could street hawking be one of the causes of poor sanitation situation?

Yes No

6. Could pedestrian and vehicular conflict be one of the causes of poor sanitation?

Yes No Not important

SECTION C: facilities factors

1. What is your opinion on current sanitation situation at the terminal?

Very clean Clean Average Dirty Very dirty

2. What is your opinion on the condition of the facilities at the terminals?

Very good Good Average Bad Very bad

3. Could the poor condition of the facilities at the terminals be one of the causes of the poor sanitation situation?

Yes No

4. What is your opinion on the adequacy of the facilities at the terminals?

very much Adequate Very adequate Adequate

Inadequate Much inadequate

5. Could inadequacy of facilities be one of the causes of poor sanitation situation?

Yes No

SECTION D: Educational factors

1. What is your opinion on level of education on sanitation at the terminals?

Good Not good Not necessary

2. Could lack of education on sanitation be one of the causes of poor sanitation situation?

Yes No

SECTION E: Personal attitude and behavioural factors?

1. What is your opinion on the attitude and behaviour of the users at the terminals?

Good Not good Not necessary

2. could the bad attitude and behaviour of the users at the terminals be one of the causes of the poor sanitation situation?

Yes No

SECTION F: Enforcement of the sanitary bye-laws factors

1. Are you aware that it is an offence to litter or not clean in and around of an individual house or shop?

Very much aware Much aware Aware Not aware Not much aware

2. could the bad attitude and behaviour of the users at the terminals be one of the causes of the poor sanitation situation

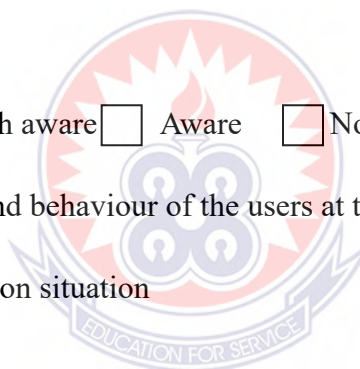
Yes No

3. What is the level of enforcement of the sanitary bye-laws?

Very good Good Average Bad Very bad

4. Could the bad attitude and behaviour of the users at the terminals be one of the causes of the poor sanitation situation?

Yes No



SECTION G: Maintenance culture factors

1. What is your opinion on the maintenance culture at the terminal?

Very good Good Average Bad Very bad

2. Could the maintenance culture at the terminals be one of the causes of the poor sanitation situation?

Yes No

SECTION H: Supervisory and monitoring factors

1. What is your opinion on the performance of the supervisory and monitoring team at the terminals?

Very good Good Average Bad Very bad

2. Could poor performance of the supervisory and monitoring team be one of the of poor sanitation situation?

Yes No

3. What is your opinion on about the formation of sanitary task force at the terminals?

Very much necessary Much necessary Necessary

Unnecessary Much unnecessary

4. Could non-existence of sanitary task force be one of the of poor sanitation situation?

Yes No

SECTION I: Safety and security factors

1. What is your opinion on the level of safety and security at the terminal?

Very safe and secured Safe and secured Average

Unsafe and not secured Very unsafe and very unsecured

2. Could the level safety and security at the terminals be one of the causes of poor sanitation situation?

Yes No

SECTION J: Environmental health risk factors

1. Are you aware of environmental health risks posed by poor sanitation?

Very much aware Much aware Aware

Every unaware Much unaware

2. Could awareness of health risk entice users to engage in proper sanitary practices?

Yes No

3. What is your opinion on the level of severity of the environmental health risks due poor sanitation?

very much severe very severe Severe

Not severe Not much severe

4. Could Severity of health risk increase the rate users come into contact with gems?

Yes No