KNOWLEDGE, ATTITUDES AND PRACTICES OF SANITATION AMONG MARKET USERS AT THE DOME MARKET IN THE GA EAST MUNICIPALITY

BY

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DECLARATION

I certify that this research on Knowledge, Attitudes and Practices towards Sanitation among Market Users at the Dome Market in the Ga East Municipality is my own original work which I have produced after an intensive research. I have given full acknowledgement to people's views and references. None of the materials in this thesis has been presented fully or in part for the award of any degree in this or any university.

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DEDICATION

I dedicate this thesis to my mother, Christine Ama Sogyie for her unceasing love, enduring support and encouragement, and to Pat and Emma for their encouragement and support in this difficult and engaging period of the family life. I am grateful to you all.

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In addition, I would like to thank all of the participants that agreed to take part in the study, especially the Market Queen who provided me with valuable materials that enhanced data collection.

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Abstract

The campaign for improved sanitation is increasingly threatened as people's existing knowledge and attitudes seem not to promote proper sanitation practices. Environmental sanitation has become a problem to the extent that it has engaged the attention of authorities as well as concerned citizens. As a result, over the years Ghana failed to achieve her set sanitation target. One area that has suffered from this problem is the market places. The study sought to find out the knowledge level, attitudes and practices of market users toward sanitation since it could significantly affect their health, economic, social and physical environment. Towards these ends, the study explored knowledge with regard to educational level and age of market users about sanitation, attitudes towards sanitation and practices that ensure proper sanitation.

A sample of 168 respondents was selected for the study. Two interview guides, proportional probability and convenience sampling techniques and focus group discussion were the instruments and the procedures employed to collect data from respondents. Methodology adopted to address the objectives of the study was descriptive-analytical survey. The target population was adults (18+) who sell and buy in the Dome Market. A proportional probability was used to sample 133 sellers; convenience sampling technique was used to select 23 buyers and focus group discussion used to gather data from 12 sellers.

The study concluded that most of the market users have inadequate education on good hygiene and basic sanitation promoting practices. As a result they do not see the issue of improved sanitation as a current priority; hence, they failed to change their lifestyle which could lead them to practice proper sanitation. They also see sanitation as an issue to be addressed by authorities hence failed to maintain proper sanitation. Recommendations made included the need for the Ga

East Municipal Assembly and Management of Accra Markets to liaise with adult education institutions to inform market users about proper sanitation. Waste management and sanitation be put under the Ministry of Health so that a close eye would be kept on it by experts. There should be adequate provision of waste collection bins and timely evacuating of waste to deal with the threat of spill over at collection centres. The public should be involved in policy making decision about sanitation, and also a system should be put in place (courts) to deter people who try to sabotage the drive for improved sanitation.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

One of the crucial, unsolved, or even unresolved problems for those concerned with the quality of life in the world, especially the developing world is that of adequate, accessible and acceptable basic sanitation (World Health Organisation (WHO), 2004). In the recent report by the United Nations Independent Expert, Albuquerque (2009) suggests that the human right to sanitation in and of itself is inextricably linked to other human rights. Moreover, the right to sanitation involves explicit requirements in terms of accessibility, affordability, availability, quality and acceptability (Albuquerque, 2009). Based on this Mulama (2008:7) contends that Mahatma Gandhi is quoted to have said that 'sanitation is more important than political independence'.

It is a commonly held view, that developing countries would follow the development path forged by industrialised countries, aided by these 'more developed' countries (McGranahan, Pedro, Songsore, Surjadi, and Marianne, 2001: 3). According to McGranahan et al (2001) these urban sanitary practices of industrialised countries, have helped contribute to the dignity, health and wealth of people in those countries, and thus have great bearing on the practices and the aspirations of developing countries. Many municipalities, cities and towns continue to grapple with the problem of Solid Waste Management, especially plastic waste and the Municipality of Accra, Ghana is no exception (Amankwah, 2005).

This has made the issue of improved sanitation a real priority at present in Ghana, since sanitation benefits connect between environment and health (Harvey, 2008). Sanitation for the purpose of this study has to do with solid waste management, specifically the plastic waste menace. Enormous amount of plastic waste is generated throughout the world and the most crucially posed question is how to manage this waste effectively and efficiently to save the environment and the continuous existence of mankind. A solid waste is any material which comes from domestic, commercial, and industrial sources arising from human activities which has no value to people who possess it and is discarded as useless (Freduah, 2004; 2007).

In the early days, waste disposal did not pose difficulty as habitations were sparse and land was plentiful. Sanitation became problematic with the rise of towns and cities where large numbers of people started to congregate in relatively small areas in pursuit of livelihoods (Shafiul and Mansoor, 2003). While the population densities in urbanised areas and per capita waste generation increased, the available land for waste disposal decreased proportionately (Shafiul and Mansoor, 2003). Sanitation thus emerged as an essential, specialised sector for keeping cities healthy and liveable (Fobil, 2001). Hunter (2000) predicts that in the foreseeable future more than half of the world's population will live in urban areas, and that the developing countries, including Ghana will be the worst hit by sanitation problems. In a joint Monitoring Programme for water and sanitation, conducted by United Nation International Children Education Fund (UNICEF) and (WHO) (2006), Ghana is said to have an encouraging water supply of 75% and worse sanitation coverage of just 18% with less hope of improvement. It is estimated that about 2.6 billion people still do not have a safe means of disposing of their wastes exposing them to several diseases (WHO and UNICEF, 2004). In fact, so practical and pervasive are the issues of

sanitation that the United Nations declared the year 2008 as the International Year of Sanitation. This is meant to address what has been called the "global sanitation crisis" (Black and Fawcett, 2008:14). While a little of the bulk of the waste generated as a result of new technology in the Municipal and Districts all over the country is biodegradable, the larger chunk of this waste is non-biodegradable and problematic which is solely plastic (Neubeck, 1991; Mitchell, 2002). Also over the years, plastics have replaced leaves, glass and metals as a cheaper and more efficient means of packaging (IRIN, 2006). According to Freduah (2007) and Fobil (2001) the use of plastic as a cheap, convenient, and perceived health-enhancing packaging material, explains in part the strong taste for plastic use in handling water and food items alike.

The word plastic is derived from the Greek word "Plastikos" meaning capable of being shaped or molded (Neubeck, 1991). According to Neubeck (1991) this property of plastics allows them to be cast, pressed, or extruded into a variety of shapes during production and this has made Plastic a highly useful material and its applications are expected to increase as more new products and plastics are developed to meet demands (Mudgal *et al.*, 2011). Unfortunately, the properties of plastic that make it so valuable also make its disposal problematic. In many cases plastics are thrown away after one use, especially packaging and sheeting, but because they are durable, they persist in the environment (Mudgal *et al.*, 2011). According to a study conducted in Accra, Ghana by GOPA Consultants in 1983, Plastic Waste accounts for 1-5% (of net weight) of the total amount of waste generated (Lardinois and Van de Klundert, 1995). Since then, there has been a tremendous increase in plastic waste due to increase urbanization and consumption pattern. Also subsequent studies showed that, per capita generation of plastic wastes stands at 0.016–0.035 kg/person/day and plastics make up between 8-9% of the component materials in

the waste stream (Fobil, 2000). Now most products are packaged in polyethylene films, which form about 70% of the plastic waste in the municipal waste stream. According to Fobil (2000), the plastic materials in commerce across the sub-region include low-density polyethylene (LDPE) commonly called Polyethylene films, high-density polyethylene (HDPE) among others. The analysis of the historical trend of plastic waste composition in the waste stream in Ghana shows that in 1979 the percentage by component was 1.4% and by 1993 it had risen to 4% (Schweizer and Annoh, 1996). In 1996/97, the proportion of plastic waste in the waste stream was 5% (Schweizer & Annoh, 1996; Archer, Larbi and Anim, 1997) and by 1999/2000 its proportion increased to 8% (Fobil, 2000).

This was a consequence of huge profits from the sale of plastics and the existing large domestic market, propelling private enterprises to begin to commit huge capital into plastic industry, and, by 1996, there were about 20 plastic producing establishments in Ghana (Freduah, 2007). This included those of plastic films, with notable ones such as Poly Products, PolyTank and Sintex (Adarkwa & Edmundsen, 1993; Archer *et al*., 1997; Accra Sanitation Workshop, 1998; Agyenim-Boateng, 1998). By the turn of this century, it was reported that there were about 40 plastic manufacturing companies producing about 26,000 metric tones of assorted plastic products annually in Ghana, with 90% of the companies in the Accra-Tema Metropolitan Area (Fobil, 2001). Additionally, over 10,000 metric tones of finished plastic products are imported annually into Ghana (Fobil, 2001).

Market centres are important modules of the economic landscape of Ghana, as they are in other parts of the world. They do not only serve as places for commodity exchange but also as centres of information exchange, local administration, health delivery, education, entertainment and

what have you (Gordon and Aryeetey, 2012; Addo, 1988). According to Good (1975: 70) local markets are organized on periodic basis and they "set the rhythm for the convergence of people and goods". Even urban markets which operate daily have overlay of periodicity, that is, special market days when there is significant increase in trading activities (Aryeetey and Nyanteng, 2006). Market centres do not only serve as places where basic domestic needs such as consumables are purchased, but also they are centres for individual and institutional income generating activities such as selling and buying as well as important sources of revenue for administrative districts.

The contribution of trading activities to the livelihoods of the population, particularly in the informal sector cannot be overemphasized (Aryeetey and Nyanteng, 2006). The market place as an important structural part of the local economy which facilitates the exchange of commodities, transfer of monies, traffic generation, information flow and other forms of spatial and social interactions also leads to waste generation especially, plastic waste. This issue has the potential for environmental pollution with its attendant public health implications (Aryeetey and Nyanteng, 2006; Mwanza, 2007).

This topic came to light when the researcher viewed a documentary on waste situation in the Accra Metropolitan Area (AMA). Upon viewing the clip and listening to the discussions, a quick survey was done to assess the situation in Dome. The observation confirmed that the situation was not different from those showed and discussed in the media. Based on observation at Dome market, the researcher's conclusion is that even if more containers are put there, the tendency to litter indiscriminately would still be rife which would be dealt with in subsequent chapters.

1.2 Statement of the Problem

Over the years, waste disposal especially, plastic waste has become a major problem in the Accra Metropolitan Area (AMA). This development has the potential to destroy the natural environment in which human and natural resources in the country inhabit. The status of the local natural environment is important in the development process, since poor and marginalised people lack the resources needed to reduce the negative effects of a degraded environment. A damaged natural environment as a result of waste will hit the most vulnerable groups of society the hardest such as those who make living from the market environment. On the basis of this, the researcher adopted the concepts of knowledge, attitudes and practices as one of the key thematic areas to address the problem of people without access to improved sanitation as stated in the MDGs (7).

Ghana's population proportion with access to improved sanitation at present will reach 21.2% by 2015 instead of the targeted 52%. The proportions of urban population with access to improved sanitation will reach 23.4% instead of 55% target by 2015 (Ghana MDGs Report, 2008; UNDP, 2010). Apaak (2010) indicates that the United Nations' report has established that Accra and other African cities generate 80% organic waste; 10% plastic, glass, and metals waste and less than 12% paper waste per day. Despite plastic waste is within the 10% total waste generation, it poses the most serious environmental threat to the Ghanaian people (Apaak, 2010). This is believed to be due to low level of knowledge and inadequate campaign to change people attitude for better sanitation practices. Given the magnitude and importance of the problem, a question to be answered then is: what are the knowledge, attitudes and practices of market users on sanitation at Dome in the Ga East Municipality?

1.3 Purpose of the Study

The purpose of this study is to find out the knowledge, attitudes, and practices of sanitation among market users at the Dome market, in the Ga East Municipality.

1.4 Research Objectives

The ultimate aim of this research is to impact on the general quality of life of market users by making them practice improved sanitation in order to facilitate a change in behaviour towards a higher level of general and personal sanitation and health within the market. On the basis of the above, the specific objectives of the research were to:

1. Find out the knowledge level of market users about sanitation in relation to:

   (I) educational level (II) age

2. Find out the attitudes of market users toward sanitation.

3. Identify the environmental sanitation practices that market users engage in.

1.5 Related Research Questions

Basic questions related to the objectives of the study include:

1. What is the knowledge level of market users about sanitation in regard to: (I) educational level and (II) age?

2. What are the attitudes of market users toward sanitation?

3. What kind of environmental sanitation practices do market users demonstrate?

1.6 Significance of the Study

The issue of improved sanitation has become a major development challenge in Ghana especially her capital city, Accra in recent times. This issue has engaged the attention of institutions as well as individuals all making efforts just so a lasting solution was found to the problem. The study in the attempt to do same intends to explore appropriate strategies and recommendations to ensure good sanitation in all market places in the Metropolis in a sustainable manner.

Despite the immensity of the problem, very little research on sanitation has been carried out in the Metropolis. The study will serve as a reference point to the Metropolitan Assembly and waste management institutions as far as improved sanitation is concerned in the market. In this case, it will give them an in-depth understanding of what the problems of poor sanitation are and the strategies to tackle the problem. Additionally, the study will contribute to existing body of knowledge on solid waste management in relation to sanitation and also stimulates further research on the subject in other Metropolitan Areas and Municipalities in the country.

1.7 Operational Definition of Terms

Knowledge

The information that market users have which will enable them to ensure environmental sanitation.

Attitudes

How market users think and feel about sanitation.

Practices

The overall behavioural habits of the Dome market users.

Sanitation

The way to separate solid waste into components so that it becomes a resource.

Market users

People who sell and buy items in the market place.

Participants

This is used interchangeably with users of the market.

Litter

Waste that is improperly disposed of outside of the regular disposal system.

1.8 Organisation of the Study

The study is in six chapters. Chapter one which is the introduction of study, focus on the background of the study, statement of the problem, objectives of the study, related research questions, purpose of the study. The researcher also looks at significance of the study, definition of terms, organisation of the study and profile of the study area. Chapter two comprises theoretical framework and review of related literature. Chapter three treats methodology which composed of the population of the study, the sample, the research design, the sampling procedures, the data collection instruments, pilot study and methods of data analysis. Chapter

four deals with the analysis of data, presentation of the data collected from the field. Chapter five is discussion of results. Chapter six looks at the summary, conclusion and relevant recommendations.

1.9 Study Area

The study was conducted in the Ga East municipality of the Greater Accra Region. The Ga East Municipality covers a land area of 166sq km. It boarded on the west by Ga West Municipality, on the east by the Adentan municipality, the south by Accra Metropolitan Assembly and the north by the Akwapim South District (Bening, 2010). The municipality has an estimated population of 255,215 (PHC, 2010). The growth of the population is due mainly to the influences of migration inflows. The structure of the population has about 51% males and 49% females with an average household size of 6.2 (Ghana Statistical Service, 2012).

There are about 65 settlements with the Gas as the indigenes and a cluster of other ethnic groups within the municipality. Out of the 65 settlements, there are some notable urban and peri-urban communities (Bening, 2010). The Ga east municipality has Abokobi as its capital. Some of the communities in the Ga East Municipality include, Madina, Dome, Taifa,Haatso, Kwabenya, Oyarifa, Ashongman, Pantang, Otinibi, Danfa to mention but a few. The Ga East Municipality has several economic opportunities such as industry, service, commerce, and agriculture activities.

The market centres play a major role in making these opportunities a reality. Two market centres stand out in the Ga east municipality when it comes to bettering the life of the people in the municipality. The Madina and Dome market centres are these economic nerves in the

municipality. One problem that confronts the smooth operation at these market centres is the issue of poor sanitation. Thus malaria continues to be the most reported disease at the Out-Patient Department (OPD) of facilities in the Ga east municipality.

There are 39 health facilities in the Ga East Municipality, two government polyclinics at Madina, two health centres and a Community Based Health Planning (CHPS) compound, special hospital at Pantang which has become a general hospital for only OPD cases. Dome and Taifa sub-municipality do not have any government health facilities and are challenged with few number of private health facilities. Diarrhoea and malaria continue to be most reported diseases in the private facilities and an endemic Lymphatic Filariasis (Elephantiasis) within the area (DMH-MOH, 2012).

Farming is the major economic activity for about 55% of the economically active population. About 70% of the rural population depends on agriculture as their main source of livelihood with about 95% of them being small holders. The major agriculture activities include crop production: cassava, maize. Livestock production: rabbits, pig, sheep, goats and poultry. Among the wide range of vegetables produced are peppers, cabbages, tomatoes, okras, garden eggs just to mention but a few (DFA-MOFA, 2010). Alternative livelihood activities in the area include mushroom, snail production, grass cutter rearing, rabbit and poultry farming. These initiatives have become crucial as arable agricultural lands for farming activities are gradually being turned into communities due to urbanization.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter deals with both the theoretical and empirical literature that underpinned the study. Theories adopted for the study are the Strecher and Rosenstock (1997) Health Belief Model (HBM) and Rogers' (2003) Diffusion of Innovation (DoI) Theory. These theories were appropriate for the study based on the argument advanced in Redding, Rossi, Rossi, Velicer, and Prochaska (2000) that the Health Belief Model (HBM) and Diffusion of Innovation (DoI) are the most appropriate theories for the purpose of this research. These theories focus on the role of individual's perceptions in influencing the probability of performing protective behaviour to prevent illness as well as facilitate the adoption of any new idea by society that will lead to social behaviour change.

This chapter discusses and reviews issues regarding environmental sanitation as follows:

- The Health Belief Model (HBM)
- Diffusion of Innovation (DoI)
- Sanitation, Health and Hygiene
- Knowledge and Behaviour of People
- How Attitudes influence Behaviour of People
- Current Practices to improve Sanitation Conditions
- General Knowledge, Attitudes and Practices of people regarding Sanitation

2.2 The Health Belief Model (HBM)

Strecher, et al. (1997) described Health Belief Model (HBM) as a theory that explains why people do or do not engage in preventive health measures, such as getting tested for a disease, eating healthy food and exercising, or keeping their environment clean. It is one of the models which adopted theories from other disciplines and one of such is the behavioural science to study health problems. Redding, et al. (2000) argued that it is one of the most widely recognized and used models in health behaviour applications. Slovic (2000) also intimates that the model explains why people would or would not use available preventive services.

The presupposition is that people who feared diseases are influenced by the type of health activities they do. This is seen in the degree of fear (perceived threat) and the expected fear reduction actions so far as that supposed reduction seemed to outweigh practical and psychological barriers to taking action (net benefits) (Slovic, 2000). The researcher thinks that the fear of diseases is not enough for people to engage in activities that will prevent them, but the awareness that certain preventive activities can help reduce the threat is important. Hence should the market users at Dome be equipped with knowledge about activities that can prevent waste related diseases, they will engage in them to prevent diseases.

Strecher, et al. (1997) as stated in Redding et al. (2000), explain four expectations that exemplify the HBM. These expectations correspond to the perceived threat of the illness and expected outcome as discussed below:

Perceived susceptibility

This refers to how much individuals believe that they are vulnerable to or at risk for some illnesses. In relation to this study, if market users in Dome believe that the poor way of managing waste generated in the market poses a risk and that they are at risk to such health hazards then their attitude will change. They will thereby adopt good sanitation practices based on the knowledge that they are vulnerable. For instance making them aware that plastic waste which does not degenerate easily tends to block culverts, leaving in its wake stagnant water that can cause floods and also serve as a breeding place for mosquitoes, that lead to the high incidence of malaria cases, typhoid, cholera and other contagious diseases will make them to adopt practices aimed at avoiding these negative outcomes.

Perceived severity

This refers to how serious the individual believes the consequences of being ill are. The study bears on the presupposition that if the market users know that the risk associated with poor sanitation can be fatal, they will change their attitude and engage in practices that improve sanitation in the market. For example, if the market users know that dirty surroundings breed flies which settle on food items and make them unwholesome and cause a deadly disease like cholera, they will change their attitude.

Perceived effectiveness

This refers to the expected benefits if one engages in the protective behaviour. Fitting this into the study, if Dome market users realize that by disposing of waste, especially plastic waste in the market will actually reduce the risk of contracting sanitation related diseases they are more likely

to engage in proper sanitation practices. To this end, the market users will be healthy and go about their daily activities without let or hindrance.

Perceived cost

This refers to the barriers or losses that interfere with health behaviour change. Referring to the barriers and losses that can impede the practice of proper waste management, especially plastic waste, allusion is to the perceived time waste, financial burden and inadequate information on the expected gain associated with improved sanitation practices. For instance, when market users in Dome market think that practicing proper waste management is relatively time consuming, drawing on their finances or that the practice would not yield any tangible benefits, they are not likely to be motivated to change their attitude and practices despite their awareness of proper waste management.

As in the economics literature, according to Mosse (2000) it is assumed that the preventive action will be taken only if the expected benefits outweigh the expected costs. The role of demographic and social variables (called mediating factors) can indirectly affect behaviour by influencing an individual's perceptions of susceptibility, severity, benefits and costs. This can apply to the Dome market where market users fit into the four aforementioned expectations.

A systematic review of studies regarding people's behaviour and environmental sanitation had used the Health Belief Model among adults into the late 1980s and found it lacking in consistent predictive power for much behaviour, sometimes due to its limits of scope to predisposing factors (Harrison, Mullen, and Green, 1992). Mullen, Hersey, and Iverson, (1978) also found the model to account for a smaller proportion of the variance in diet, exercise, and other behaviours than did the theory of reasoned action, theory of planned behaviour, and the precede-proceed

model in terms of predictive power when it was compared in one study. Redding et al. (2000), however argue that, the Health Belief Model continued to be the most appropriate and frequently used model in published descriptions of programmes and studies in health education and health behaviour in the early 1990s and this was supported by (Croyle, 2005).

According to Redding et al. (2000), the expectancy concepts are gradual change in the area of health related behaviour. The translation is first geared towards the desire to avoid illness or to get well that is value. Next is the belief that a specific health action available to a person would ameliorate illness, and that is the expectation (Boskey, 2010). The expectancy was further delineated in terms of the individual's opinion that an illness is serious and of the likelihood of being able to reduce that threat through personal behavioural action (Johnson, 2000). It should however, be noted that this set of beliefs is not equivalent to actual rewards and barriers referred to as reinforcing factors (Glanz, Rimer and Lewis, 2002). According to Glanz, Rimer and Lewis (2002) the health belief model, highlights 'perceived' or 'expected' benefits and costs to predisposing factors. The person receives a 'cue to action' or a precipitating force that makes the person feels the need to take action (Boskey, 2010; Croyle, 2005).

Efforts to model several health-related actions have multiplied and increasingly had become complex. On account of these circumstances, the person believes that benefits accruing from the recommended behaviour outweigh the costs and inconvenience. When market users in Dome are given a recommended behaviour, it is assumed that they will derive benefits from it. Such recommended behaviour includes the avoidance of indiscriminate littering, covering waste bins as well as sorting waste and disposing waste properly and regularly.

The HBM, in this case helped to explain certain health related behaviours and guided the search for why the market users at Dome put up with poor sanitary conditions and dispose of their waste especially, plastic waste indiscriminately. It also helped the researcher to relate knowledge to behaviour changes that play crucial role in making informed choices and this can motivate and stimulate the participants' readiness to act in a concrete and an observable manner (practice) (Glanz, Rimer and Lewis, 2002) thus bring about the desirable change.

The next theory that offered explanation to the problem of the study is the theory Diffusion of Innovation (DoI).

2.3 Diffusion of Innovation (DoI) Theory

Several theoretical frameworks are pertinent to market users' knowledge, attitudes and practices in the adoption of basic environmental sanitation behaviours. However, the current study adapted Diffusion of Innovation (DoI) theory propounded by Rogers (2003). The rationale for adapting this theory is to illustrate how any new innovation moves from creation to widespread use or non-use. Rogers as cited in Yidana (2007: 14) defines innovation as "an idea, practice or object that is perceived as novel by the individual", and diffusion as "the process by which an innovation makes its way through a social system". Innovations are, therefore, seen as a new concept or object that has to be shared among prospective adopters within a social system, and may be considered as a new thing by the potential adopters. Environmental sanitation issues were hitherto not much of a concern for most developing countries as population was low and issues of human survival in terms of food security took centre stage.

The fact remains however that, "most developing countries have long established laws and formal governmental structures to address their serious environmental problems but few have been successful in alleviating those problems" (Bell, 2002:12). Regulations are the most common approaches to environmental problems. Standards, bans, permits and quotas are often favoured by planners because they promise certainty of outcome – without costly monitoring and enforcement, but this promise may not be realized.

In Ghana, the introduction of the concepts of knowledge, attitudes and practices regarding sanitation represents an innovation in the solid waste management system. The Ministry of Local Government and Rural Development (MLGRD) (2004) is responsible for general waste management, and supervises the decentralized Metropolitan, Municipal and District Assemblies (MMDAs). However, the ministry indicates that, regulatory authority is vested in the Environmental Protection Agency (EPA) under the auspices of the Ministry of Environment and Science. Ghana Environmental Protection Agency has noted that waste management is essential in the present day context for the following reasons:

- To protect human health against waste-related hazards and risks.
- To prevent pollution of the environment and its natural resources like air, water and land.
- To produce energy that could be an alternative for the fast depleting fossil fuels and other conventional energy sources.
- To make optimum use of the waste generated for a better and sustainable future (Ghana EPA, 2002).

The Metropolitan, Municipal and District Assemblies are responsible for the collection and final disposal of solid waste through their Waste Management Departments (WMDs) and their

Environmental Health and Sanitation Departments (EHSD). The policy framework guiding the management of hazardous solid waste includes the Local Government Act (1994), Act 462, the Environmental Protection Agency Act (1994), Act 490, the Environmental Sanitation Policy of Ghana (1999), and the Guidelines for the Development and Management of Landfills sites in Ghana (Environmental Protection Agency, 2002). But recent increases in the waste stream point to a looming danger if nothing innovative is done to find a lasting solution to the waste menace.

"Newness" of an innovation, according to Rogers (2003), may be expressed in terms of knowledge, persuasion, or a decision to adopt. Dearing (2009) argues that with the innovation decision process, individual innovativeness, rate of adoption and perceived attributes are among the most important characteristics. For instance the market users in the Dome market can undertake the sorting out of waste into components before they are finally disposed of.

Diffusion theory identifies numerous factors that facilitate or hinder the adoption and implementation of a new idea. These factors include characteristics of the new idea, characteristics of adopters, and the means by which adopters learn about and are persuaded to adopt the new idea. Market users' characteristics (e.g. individual's educational level, age, gender, experience with plastic waste for disposal/management purposes and financial position) can influence the adoption of an innovation (Rogers, 2003). Davies (2008) cited two external attributes; the perceived usefulness and ease of use with regards to using sanitation facilities.

Knowledge, attitudes and practices (system use) are other attributes that can affect market users' desire to adopt improved ways of managing solid waste especially, plastic waste. The relationship between an innovation's attributes and adoption has been examined in a number of diffusion studies. Albirini (2006) found that plastic waste management attributes are significantly

correlated to market users' attitudes towards sanitation. These attributes of Diffusion of Innovation make it the most appropriate theory for this study of good sanitation behaviour among market users in Dome since they are to adopt the new idea of sanitation in the management of plastic waste in the solid waste management process (Dupont 2005).

Figure 2.1 below shows the way to encourage the basic sorting decision process using the innovation decision stages as proposed by Rogers (2003). Rogers (2003) described the innovation-decision process as an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation. The innovation-decision process involves five steps: namely knowledge, persuasion, decision, implementation, and confirmation. The five steps are to end in taking a decision that ensures proper sanitation through basic sorting which the figure below exemplifies.

Fig. 2.1 Waste Bins for ensuring that Sorted Waste is properly categorized

2.3.1The Innovation-Decision Process

The innovation-decision process according to the five ordered steps in relation to improving waste management and sanitation are discussed in the order below:

2.3.2 The Knowledge Stage

At this stage, an individual learns about the existence of innovation and seeks information about the innovation. “What?” “How?” and “Why?” are the critical questions at the knowledge stage. During this stage, the individual attempts to determine what the innovation is, how and why it works. According to Rogers (2003), the questions comprise three types of knowledge: which are awareness-knowledge, how-to-knowledge, and principles-knowledge.

Awareness-knowledge: Awareness-knowledge represents the knowledge of the innovation’s existence. This type of knowledge can motivate the individual to learn more about the innovation and eventually, to adopt it. When market users are aware of the relatedness of knowledge, attitudes and practices of sanitation and how it affects either negatively or positively their operations, livelihoods and health, it becomes imperative for them to concern themselves with the innovation. Market users, who are socially aware, know where to go for support and resources and are sensitive to the needs and priorities of others thereby more likely to have a try to succeed.

How-to-knowledge: This type of knowledge contains information about how to use an innovation correctly. According to Sahin (2006), even individuals who have technical backgrounds may not use technology, if they do not have knowledge of how to use it correctly.

An innovation in this case such as separating waste into different categories for instance plastic, organic food waste, paper and card, metal, glass and textile is essential. This implies market users providing separate bins for the various wastes in the Dome market, and teaching them to sort and deposit the waste into bins meant for each. The purpose is to make market users put into

practice the innovation since individuals need help on how to use the new idea effectively. In the management of plastic waste, there will be the required innovation, but without how-to-knowledge, the facility will be there without any use or its use can become difficult for lack of the requisite human knowledge, attitudes and practices. The market users, who do not have knowledge about how to sanitarily manage plastic waste, may not attempt to do so (Mosse, 2001).

The researcher reasons that if market users at Dome acquire the relevant knowledge it will help shape their attitudes and this will lead them put into practice measures that deal with the problem of waste, especially that of plastics.

Principles-knowledge: This knowledge includes the functioning principles describing how and why an innovation works. An innovation may be adopted without this knowledge, but the misuse of the innovation may cause its discontinuance. For market users it is crucial that they have this knowledge of the innovation due to the salient role they play in what we eat. Market users need to know how to effectively manage plastic waste through acquiring the needed level of knowledge, displaying the right attitudes and sound practices of and towards plastic waste in order to effectively apply it in their work and help other people learn and help in the management of plastic waste. To create new knowledge, awareness education and practice should provide not only a how-to experience but also a “know-why” experience according to

Seaman (2003). By this it is to make the market users aware of the dangers associated with waste in their surroundings, especially plastic waste.

2.3.3 The Persuasion Stage

The persuasion stage occurs when the individual has a negative or positive attitude toward the innovation. Saari, Luan and Roslan (2005) argue that, although market users may be equipped with knowledge and skills in handling plastic materials and other waste, the success of implementing the new idea (sorting waste into different categories) with sanitation education depends greatly upon the attitudes of the market users and their willingness to embrace such innovation. In view of this, market users should possess not only proper knowledge and skills of sanitation, but they must also have the right attitudes toward it (Wong, 2002).

An individual's knowledge about an innovation shapes his or her attitude towards an innovation. Pertaining to this study, Dome market users are made to know that they can generate an income by selling the sorted waste to prospective users for example sorted plastic waste can be sold to "Plastic Buying Companies", the bottles, glasses and ceramics to bead makers food waste to livestock owners and for manure and so on.

Rogers (2003) affirms that while the knowledge stage is cognitive (knowing) centered, the persuasion stage is more affective (feeling) centered. This requires that, after an individual has acquired knowledge on the "what", "how" and "why" of an innovation, the individual's feeling on the use of the new idea also affects his or her adoption and rejection of the innovation. The formation of a favourable or unfavourable attitude towards an innovation, however, does not always lead directly or indirectly to an adoption or rejection of a novelty (Rogers, 2003). Thus,

the researcher is of this opinion that a successful use and application of a new way of managing plastic waste in the sanitation agenda may very much relate to the involvement of other actors like market users whose knowledge and attitudes are necessary for an effective sanitation practice.

2.3.4 The Decision Stage

At the decision stage in the innovation-decision process, the individual chooses to adopt or reject the innovation. Adoption on the other hand refers to the full use of an innovation as the best course of action available, rejection means, “not to adopt an innovation” (Rogers, 2003). If an innovation has a partial trial basis where the market users do a pretest sorting and selling trial to verify its effectiveness, it is usually adopted quickly, since most individuals first want to try the innovation in their own situation and come to an adoption decision ((Rogers, 2003)). The gaudy trial can speed up the innovation-decision process (Robinson, 2009). However, rejection is possible in every stage of the innovation-decision process. Rogers (2003) expresses two types of rejection: active rejection and passive rejection. In an active rejection situation, an individual tries an innovation and thinks about adopting it, but later he or she decides not to adopt it. In a passive rejection (or non-adoption) position, the individual does not think about adopting the innovation at all. Market users can either adopt or reject the sorting exercise for reduction of waste at source depending on available waste bins and regular lifting of the waste from the market place.

2.3.5 The Implementation Stage

At the implementation stage, an innovation is actually put into practice. An innovation, however, brings with it some degree of uncertainty in the diffusion process. According to Robinson (2009), uncertainty about the outcomes of the innovation can still be challenging even at this stage. Thus, the implementer may need assistance from change agents such as Local Authority and private waste collectors like the provision of waste bins and ensuring that there is regular and available means of lifting waste for disposal to reduce the degree of uncertainty about the consequences of their sorting efforts. Rogers (2003) states that, the innovation-decision process will end when the innovation loses its distinctive quality as the separate identity of the new idea. In other words, a new idea will be implemented better and faster when individuals are able to modify the innovation's use to suit their needs (Rogers 2003). For example, market users will apply proper way of managing plastic waste in their operations when they are able to modify it to suit the way it will enhance their work when using it in their daily market operations such as packing, sorting and disposal of plastic and other waste in the market place.

2.3.6 The Confirmation Stage

At this stage, the innovation-decision has been completed but the individual looks for support for his or her decision. Rogers (2003) and Robinson (2009) argue that an adopter's decision can be reversed if the individual is exposed to conflicting messages about the innovation like media discussions that create the impression that market users are not accountable for waste they generate, but blame authority that do not immediately suffer from its impacts. Individuals, however, tend to stay away from these messages and seek supportive messages that confirm their

decision. Attitudes therefore become more crucial at the confirmation stage; depending on the support for adoption of the innovation and the attitude of the individual, later adoption or discontinuance happens during this stage (Rogers, 2003).

The government and civil society will play a critical role at this point by way of providing critical support in the form of resources such as investment in the provision of waste disposal facilities (Billand, 2006) and encouraging the practice of basic sorting. This should ideally be a role played by the public, at the source (of waste generation). Without waste sorting, it practically becomes difficult to manage the solid waste in a sustainable way. This will make the adopters feel they are making an impact in the plastic waste source reduction and disposal with a view to solving the waste problem. Rogers (2003) proposes five attributes that help to decrease uncertainty about an innovation, namely: relative-advantage, compatibility, complexity, trialability, and Observability. According to him, individuals' perceptions of these characteristics predict the rate of adoption of innovations.

Relative Advantage: This is the degree to which an innovation is perceived to be better than the idea it succeeds. The cost and social status motivation aspects of innovations are elements of relative advantage. This is to say that, to integrate plastic waste successfully in the management of solid waste, market users and plastic producers should be seen as critical in maintaining basic environmental sanitation as far as the issue of plastic waste is concerned. This could be achieved by helping them acquire the helpful knowledge, impactful attitudes and practical experiences for themselves and others that matter in curbing plastic waste to an acceptable level. These experiences could be the prospects that could be tapped into in dealing with other areas of waste other than plastic waste. If market users perceive the relative advantage of the plastic waste innovation, they would tend to adopt it more readily and at a faster rate.

Compatibility: Another motivation factor in the diffusion process is the compatibility attribute. Relative advantage and compatibility are sometimes viewed as similar, although they are different at a conceptual level. In that relative advantage relates to what is spent to feel satisfied with the state of affairs while compatibility looks at the new state of affairs in relation to whether it is in sync with existing knowledge, skills and abilities. Compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters. A lack of compatibility of a new idea with an individual's needs may negatively affect the individual's use of an innovation (Sahin, 2006). If an innovation is compatible with an individual's needs, then uncertainty will decrease and the rate of adoption of the innovation will increase. Bekin et al. (2007)) argue that there are other environmentally friendly ways that can be adopted to manage waste. They do not wholesomely buy the idea that recycling is an environmentally sound way of managing waste because of the shortcomings levelled against it. Recycling consumes energy and thus imposing costs on the users and environment (Mackaness cited in Bekin et al., 2007:274). The researcher rather differs on the point that the cost element alone, is not enough to avoid recycling but the benefits that accrue as against cost need appreciation for making an informed decision. In view of this, the researcher reasons that basic sorting should, therefore, be the ideal thing to do at the source (of waste generation) because it practically becomes easy to manage the plastic waste in terms of costs and sustainability. This means adopting a new way of handling plastic waste should not detract from the convenience with which market users at Dome do their daily activities because any marked inconvenience that emanates from the innovation will result in incompatibility and subsequent possible rejection of the new idea. It means sorting should not take too much of selling time at the market.

Complexity: The degree to which an innovation is perceived as relatively difficult to understand and use is complexity (Rogers, 2003). Robinson (2009) asserts that new ideas that are simpler to understand are adopted more rapidly than innovations that require the adopter to develop new skills and understandings. From this premise, the sorting and placement of wastes into properly outlined bins does not require the learning of differently new skills, therefore, market users at Dome will adopt it more rapidly. Opposite to the other attributes, complexity is negatively correlated with the rate of adoption (Robinson, 2009). Thus, excessive complexity of an innovation is a significant obstacle to its adoption. Much as sanitation innovation might confront users with the challenge of changing their mode of doing things to integrate the sanitation innovation into their activities, in Diffusion of Innovations it is not people who change, but the innovations (Rogers, 2003; Robinson, 2009). If plastic waste was first littered just so the market users do not waste time in travelling to a waste container then the researcher thinks that the new way should be that after sorting, disposal receptors should be at vantage places so that the market users will see it to be within easy reach in order to facilitate their rate of adoption of the innovation to achieve the expected results.

Trialability: Trialability as the degree to which an innovation may be experimented within a limited basis also positively correlated with the rate of adoption (Rogers 2003). The more an innovation is tried, the faster its adoption, thus, the researcher is of the view that the more market users have an experimental experience of a new way of managing plastic waste through sorting and selling, the easier it is for them to apply it at the market place always. As discussed in the implementation stage, reinvention may occur during the trial of the innovation. The innovation may then be changed or modified by the potential adopters to suit their needs. Increased reinvention may create faster adoption of the innovation (Robinson, 2009).

Observability: Observability is the degree to which the results of an innovation are visible to others (Rogers, 2003). Parisot (1997), states that role modelling or peer observation is the key motivational factor in the adoption and diffusion of innovation. Robinson (2009) and Parisot (1997) confirm that visible results lower uncertainty and also stimulate peer discussion of a new idea, as friends and neighbours of an adopter often request information about it. To this extent, the researcher believes that not every market user will embrace the innovation instantly some of them will want their colleagues to be the pacesetters in order to test the effectiveness of the innovation before they adopt it. And they will only adopt it when they have seen that it is yielding the requisite dividend (result).

The Diffusion of Innovation theory stresses how an innovation becomes widely used among users (Rogers, 2003). The plastic waste sorting in basic environmental sanitation is an innovation in the Ghanaian environmental sanitation sector and market users are to adopt the new concept for their work with regards to the key issues raised. However, policy makers have a duty to provide the enabling platform in the form of education for market users to successfully adopt and sustain the innovation (Billand, 2006).

2.4. Concept of Sanitation, Health and Hygiene in Ghana.

The overall process of providing adequate universal sanitation, health and hygiene entails a high degree of integration across many disciplines but historically, the sanitation sector has been characterized by poor funding, fragmentation and disorganization (WHO, 2010). According to Lyse (2003) nine of every ten African Cities are facing serious sanitation problems. The most common method of waste disposal in most developing countries is some form of land filling

(WHO, 1973). However, Barr, (2004) argues that research findings show that landfill space is now scarce and yet the communities also are less likely to accept landfills to be sited near their habitation for environmental, health and aesthetic reasons.

2.4.1 Concept of Sanitation

Sanitation generally refers to the provision of facilities and services for the safe disposal of waste. It also means the maintenance of hygienic conditions, through service such as garbage collection and waste paper disposal World Health Organisation (WHO, 2010). Sanitation is a relatively broad concept involving among others the construction and use of sanitary facilities as a way of preventing diseases arising out of inappropriate hygiene habits such as poor disposal of plastic waste (Bukuluki, 1995). Sanitation could also be described as the process where people demand, effect and sustain a hygienic and healthy environment for themselves and others by erecting barriers to prevent the transmission of disease agents in order to lay foundation for sustainable development (Lancet, 2010).

The current environmental sanitation status of Ghana leaves much to be desired as a result of the numerous hygiene related health problems it poses (Goodwin, 2006). According to Boadi et al. (2004), less than 40% of urban residents are served by a solid waste collection service and only about 10% of solid wastes generated are properly disposed (Mensah et al.2005), with rural dwellers less well served (Boadi et al., 2004). Landfills in Ghana are primarily open dumps without leachate or gas recovery systems, several are located at ecological or hydrologically sensitive areas, and are generally operated below the recommended standards of sanitary practice (Mensah et al., 2005). Open refuse dumps are most commonly located at the perimeter of major urban centres in open lots, wetland areas, or next to surface water sources (Fobil, 2001).

The improvement in sanitation is known to have significant beneficial impact on health both in households and across communities and even in the niche of the working environment (Amoaning, 2006). Progress towards sanitation target within which plastic waste is removed from the risk of human contact or safe sanitation, encompasses segregation and selling waste to earn some income (Omran and Gebril, 2011; Defra, 2007). To the researcher, this idea will help to reduce the alarming sanitation challenges that currently confront Ghana.

2.4.2 Concept of Health

The 'healthy city' concept has been adopted in developing countries. From 1995 to 1999, the World Health Organization in Geneva supported Health City Projects (HCPs) in Cox's Bazar in Bangladesh, Dar es Salaam in Tanzania, Fayoum in Egypt, and Managua in Nicaragua and Quetta in Pakistan. The authors evaluated four of these projects, representing the first major evaluation of HCPs in developing countries. Methods used were stakeholder analysis, workshops, document analysis and interviews with one hundred and two managers/ implementers and one hundred and three intended beneficiaries. Municipal health plan development in Europe used the 'settings' approach of the healthy concept, whereby places such as markets and schools were targeted. The evaluation found that stakeholder involvement varied in relation to the level of knowledge of the project and the type of activities ranging from low stakeholder involvement among other things (Burton et al., 2000). It was also established that there was limited political commitment to the Healthy City Projects, perhaps due to the fact that most of the municipalities had not requested the projects. World Health Organization support enables the project coordinators to network at national and international levels (Burton et al., 2000). Municipal solid waste management practices caused flooding during rainy season in

Accra. The Accra Metropolitan Area in Ghana has been facing severe flood during the rainy season for the past decade (GMS, 2010).

There had been increasing recognition within the international community that improving the health of poor people across the world depended on adequate understanding of the socio-cultural and economic aspects of the context in which public health programmes were implemented (WHO, 2010). The health agency supports the view of the WHO (2010) that 'health' is a state of complete physical, mental and social well-being but not merely the absence of disease or infirmity. They agreed that health is a fundamental human right and the attainment of a highest possible level of health was crucial (Lancet, 2010). Generally people who have a duty to promote health saw it as resource for everyday life and not the object of living. It was a positive concept that emphasizes social and personal resources and physical capabilities (Lancet, 2010).

In rural areas and small towns, there are often no vehicles for collection of waste, hence uncontrolled dumping occurs within the built up areas with all its attendant health hazards and negative environmental impact (Mensah et al., 2005). The role of the researcher, therefore, is to assume the participants' point of view by exploring the subjective experiences of health, and to understand and interpret the meanings that make certain behaviours and opinions acceptable (Gatrell & Elliott, 2009).

2.4.3 Concept of Hygiene

Hygiene is the act of adopting safer practices in the communities to prevent sanitation related diseases (UN-HABITAT, 2003). There are some tangible components of health composed by specialist in preventive medicine. They called sanitation a state characterized by physiological

and psychological integrity (Johnson, 2000). According to Stokes, Noren and Shindell (2000) this implies the ability to perform personally valued family work, and community roles as well as the ability to deal with physical, biological, psychological and social stress (Johnson,2000). This generates the feeling of well-being and freedom from the risk of disease and untimely death (Stokes, Noren and Shindell, 2000). If market users see hygiene as a way to guaranteed well-being and long life, they will make efforts to put in place proper hygiene measures in their everyday life.

2.5.1 Knowledge and Behaviour of People

To effectively achieve sustainable behaviour change it is necessary to understand how the Ghanaian public values, perceives, and behaves in relation to environmental change. It is for this reason that a KAP (knowledge, attitudes, and practices) approach is particularly useful for this research. KAP research approaches are used to understand what people know, believe and do in relation to a specific topic (WHO, 2008). In health research, this is particularly valuable as understanding the knowledge, attitudes, and practices of a community can provide data on how to improve quality and accessibility of services, current health and cultural practices (like seeking medical attention, exercising, keeping the environment clean among others), and opinions of a particular health outcome (WHO, 2008). Understanding these issues is particularly important when making policy decisions that will be sustainable, appropriate, and accessible to the community. For example, Jaffer et al.'s (2006) research on the knowledge, attitudes and practices of students' perceptions of reproductive health in Oman demonstrated that understanding what is culturally appropriate in a community is necessary in order to understand behaviour and identify vulnerable individuals. This knowledge will help the researcher target a population (Jaffer et al., 2006), and understand what is culturally appropriate among market

users in the Dome market so as to facilitate the implementation of an innovation to solve the problem of market sanitation.

KAP studies have been useful in health research in the past. They have spanned a number of health issues, such as public perceptions of HIV/AIDS (Al-Owaish et al.,1995; Tehrani & Malek-Afzali, 2008), complementary and alternative medicine (Al Shaar, et al., 2010), reproductive health (Jaffer et al., 2006; Roudsari et al. 2006), infectious diseases (Minung'hi et al., 2010; Yap et al. 2010), allergies (Gupta et al.,2010), cigarette smoking (Chisolm, et al., 2010), and the environment on which the study is premised (Esa, 2010; Stedman, 2004; Carlsen, Getz & Ali-Knight, 2001). Research using this approach has helped gain a deeper understanding of key health issues in both the developed and developing world. KAP studies can also target various populations, including the lay population (Al-Owaish, et al., 1995; Minungi'hi et al., 2010), health care professionals (Al Shaar et al., 2010; Chisolm et al., 2010) marginalized groups (Tehrani & Marlek-Afzali, 2008; Roudsari et al., 2006), adolescents (Tehrani & Marlek-Afzali, 2008; Jaffer et al., 2006), children (Ajiboye & Silo, 2008), teachers (Esa, 2010), parents (Gupta et al., 2010), healthcare patients (Chisolm, et al., 2010), and members of the military (Yap et al., 2010). KAP research as related to environmental change is valuable in both developing (Yap et al., 2010; Roudsari, et al., 2006; Jaffer et al., 2006) and developed countries (Dishman et al., 2010; Gupta et al., 2010; Chisolm, et al., 2010). For example, Esa (2010) examines the environmental perceptions of aspiring teachers in Malaysia.

Sustainable waste management and development is being integrated into the Malaysian education system, and teachers' behaviours and attitudes will impact the success of new teaching initiatives. Esa (2010) found that overall the teachers had sufficient knowledge about the environment and the depletion of natural resources as well as positive attitudes toward the

environment. They also demonstrated average behaviours (such as reducing energy consumption) related to the environment (2010). In addition, Carlsen, et al. (2001) used a KAP approach to the environmental goals and sustainable management and conservation practices of 198 family tourism and hospitality businesses in Western Australia.

For this research, however, KAP studies in developing countries, especially Ghana are of particular value. In developing countries, there is a gap in the literature related to knowledge, attitudes and practices on waste management, especially plastic waste. Although there are studies that discuss public perceptions of plastic waste (Harrington, 2001; Leiserowitz, 2005; O'Connor, Bord &Fisher, 1999; O'Connor, Bord, Yarnal & Wiefek, 2002; Palutikof, Wright & Karunam, 2004; Slimak & Dietz, 2006; Whitmarsh, 2008), they are not designed as KAP research.

Stedman's (2004) work, however, quantitatively assessed the knowledge, attitudes and practices of 356 key informants in the agriculture, forestry and water policy industries in the Prairie Provinces of Canada. Stedman (2004) found that 57.8% of participants believed climate change was a problem, but when ranked against other environmental issues was not a top priority. Although this work was conducted with key informants in Canada, to date there have been no environmental KAP studies that target the lay public in a national or provincial context.

The concept of knowledge and associated relationship with human behaviour has been a topic of interest among researchers for years. This has arisen as a result of the increasing need for cleaner and improved environment. Thus there is a constant search for a solution to sanitation and health problems. The global anxiety about high rate of waste generation has put waste prevention as a high priority on the waste management hierarchy. Medina (2002) argues that reducing the amount of waste generated, can have practical advantages such as few collection trucks,

personnel and waste handling facilities as well as longer life for the landfill sites if individuals have the right knowledge level about proper sanitation. Further Medina (2002) posits that this relevant knowledge will lead to a drastic decrease in related environmental problems that confront developing countries including Ghana. However, waste reduction seems to be very difficult to achieve because it is much associated with changing people's knowledge level and attitude (Mosse 2001).

According to Mosse (2001: 4) ''local knowledge reflects local power'' and it is important in contributing to maintain the legitimacy of decisions. It could be argued that local municipalities would not be able to function properly as community leaders if they do not gain the needed support from the broad masses of the people (Oduro-Mensah, 2012). In many parts of the world, communities continue to be looked at as passive recipients of government services, and are very often disregarded even in local decision-making process. Ultimately, this approach results in the people failing to know the role they can play in the process (Tadesse, 2006). This goes to lend support to the argument the researcher is advancing to include directly market users in the fight against poor sanitation in order to reduce plastic waste in the market centres and improve sanitation.

Pierre (2000) and Fekade (2000) have concluded that the prevailing waste management strategies have failed to take notice of the local knowledge. According to Lyse (2003) this has helped in compounding the waste management and scheme formulation problems instead of contributing to the solution of waste problems in Africa, especially Ghana. This was supported by Duan and Fortner (2005) who observed that people possessed high environmental awareness and knowledge of local environmental issues than global environmental issues. Waste separation is

not common practice in the market places in Ghana and also most African countries (Fobil, 2001). It is still an area that requires a lot of enlightenment and education.

The study of Wasteserv Malta (2004) showed that the community knowledge on waste separation and its importance was almost non-existent. Wasteserv Malta (2004) further argues that Waste separation at source can enhance the homogeneity of the waste recovered to minimize its level of contamination. According to Aljaradin et al. (2011) knowledge of people on source reduction of plastic waste is very low even though they showed a high level of awareness of recycling of plastic waste. The knowledge possess by a community refers to the understanding of any given phenomenon (Kaliyapermal, 2004)), and so is the issue of sanitation at Dome Market.

Differences however were observed in Port-Harcourt city residents' knowledge and practices of solid waste management. This is inconsistent with previous research (Van Liere & Dunlap 1981; Kellert 1985; Eagles & Muffitt, 1990; Palmer, 1995 and Raudsepp, 2001). According to Van Liere and Dunlap (1981) study, gender is not a significant predictor of basic environmental sanitation issues and attitudes as it is with other socio-demographic variables. A research conducted by Raudsepp (2001) found correlation between respondents' knowledge and practices of waste management.

However studies by Jones and Dunlap (1992; 2001) found enormous support with previous researchers who have documented some relationship between some socio-demographic variables such as sex, age, and education and environmental behaviour/practices. Fobil (2001) also observed that the tendency for solid waste management practices tend to differ by sex, social class and age of respondent. Raudsepp (2001) further observed significant relationships between Port-Harcourt city residents' sex, age and social class and their level of knowledge, awareness

and practices of solid waste management. Many studies of knowledge and attitudes have found a positive and often significant relationship between the two variables that is sanitation and health (Raudsepp, 2001).

In a study of the effectiveness of a visitor education strategy in raising levels of knowledge and attitudes toward nature conservation, Olson, Bowman and Roth (1984) found a positive relationship between scores on the knowledge test and scores on the attitude test for all concepts measured. The programme was successful in raising both the levels of knowledge and improving attitudes toward environmental management. Similarly, Armstrong & Impara (1991) found that positive attitudes followed exposure to environmental education publication on knowledge and attitudes about the environment. According to Jalan and Ravallion (2003) information access, are usually considered as proxies for household's awareness or knowledge about environmental safety issues and health practices. In all these studies attention has not been given to market users' knowledge of plastic waste management. The researcher thinks that the study would help explore this area in respect of market users in Dome in the Ga East Municipality, Accra. They have attempted to predict environmental awareness and attitudes of people based on their socio-demographic characteristics. For instance, Raudsepp (2001) reported that age, education and gender have shown strong and consistent relations with environmentalism. Other researchers (Mensah and Whitney, 1991; Gigliotti, 1992; Sheppard, 1995; Eagle and Demare, 1999; Tikka, Kuitunen, and Tyns, 2000) have attempted to ascertain the correlates of environmental knowledge and environmental quality awareness. Some others have also explored the influence of education, income, age, and gender on public awareness and attitude towards environmental quality issues. Chanda (1999) reported that environmental concerns among residents of

Gaborone vary according to education and income levels, while age and gender do not seem to have any significant influence on variation in concern.

Raudsepp (2001) found that women were significantly more likely than men to be concerned with environmental problems. Females have been consistently shown to have higher environmentally conscious attitudes and practices than men. The common reason advanced for gender differences is the different socialization patterns between boys and girls (Raudsepp, 2001; Diamontopoulos, Schlegelmilch, Sinkovics, and Bohlen, 2003). More often than not, girls are made to carry out most of all the sweeping and cleaning activities; they are called upon more than their male counterparts to perform maintenance tasks at home or in market centres.

The striking issue, however, is that the market centres have more women participants than men participants so if one is to go by these findings, one expects nothing but a clean market environment at Dome. But observations proved otherwise in these market centres of which Dome is no exception. The researcher deals with attitude as a key concept in the next section.

2.5.2 How attitude can affect behaviour of people

In psychology, attitude is a mental position with regard to a state or fact (Johnson, 2000). Attitudes reflect a tendency to classify objects and events and to react to them with some consistency (Lahey, 2003). Attitudes are not directly observable but rather are inferred from the objective, evaluative responses a person makes (Encyclopaedia Britannica, 2011). Attitudes are formed as a result of this ongoing evaluative process. Based on this that attitudes are defined as evaluations of entities, including behaviour, that results in perceptions of favour or disfavour (Eagly and Chaiken, 1993). Attitudes also refer to a person's general feelings about an issue,

object, or person (Petty and Cacioppo, 1981). There has been a lot of literature on recycling of solid waste in developing and developed economies by researchers and institutions such as Omran et al. (2009); Defra (2007); MORI (2002); Omran and Gebril (2011); Momoh and Oladebeye (2010). These studies have shown that attitude influences behaviour of people in taking decision on issues.

Kaliyapermal (2004) studied the knowledge, attitudes and practices of a community and found that changes in attitudes and practices tell what people know about certain things, how they feel and also how they behave. Attitude refers to the feelings towards the subject as well as any preconceived ideas that they may have towards it. According to Aiken (2002) practices refer to the ways in which people demonstrate their knowledge and attitude through their actions. Understanding the levels of attitude and practice will enable more efficient process of awareness creation as it will allow research findings to be tailored more appropriately to the needs of the community as in this study the Dome market. Attitudes are said to have a major impact on behaviour and one's ability to manage and adapt to change while also influencing the behaviour of others (Aiken, 2002). People can change their mind towards a higher plane or a lower plane according to their attitude towards a given situation, person or place or a concept (Aiken, 2002). Attitude is linked to our sense of belief and previous judgments. Attitude counts a lot in our individual and social life. We may say that our attitudes and inclinations are borne out of our experience or encounters with various aspects of life. Thus, Subramanian (2009) holds the view that our attitudes cannot be changed so long as our experiences remain so. Ever since the beginning of attitude research, investigators have puzzled over the relation between attitudes and behaviour. For instance reasons that made people sometimes said they liked something and then acted as if they did not, such as the case where the media awareness creation about poor

sanitation which the general public acknowledge, but do not practice proper sanitation in their surroundings. They wondered if these instances were much less frequent than instances where the attitude and behaviour matched perfectly (Campbell, 1963).

The consistent failure to find strong attitude and behaviour correlations led researchers to search for explanations. Fishbein and Ajzen (1975) pointed out that past researches often failed to measure a behaviour that directly corresponded to the attitude being measured. For instance, suppose we measured the relation between attitudes towards protecting the environment and using a recycling facility in a particular week. Even as a strong environmentalist, there might be many reasons why they might fail to recycle in a particular week. For instance, lack of a nearby facility, lack of time to sort recyclables, and so on. The problem was that the measured behaviour of recycling in a particular week was very specific, whereas the attitude object, protecting the environment, much more general. To better measure 'general' behaviour, Fishbein and Ajzen (1975) proposed the multiple act criterions, which involved measuring a large number of behaviours that were relevant to the general attitude being studied. For instance, to measure sorting and selling of waste, we could measure numerous pro-environmental behaviours, as recycling across several weeks, willingness to sort and sell waste as well as the tendency to pick up litter. This would give a more precise and reliable measured behaviour. Weigel and Newman (1976) gave a more precise and reliable measure to behaviour and found much stronger attitude and behaviour relations by taking an average measure of all of the behaviours (i.e. sorting, selling and recycling of waste), rather than any single behaviour (Weigel and Newman, 1976).

To help improve the health of poor people across the world depended on adequate understanding of the socio-cultural and economic aspects of the context in which public health programmes were implemented (WHO, 2010). Such information had typically been gathered

through various types of cross-sectional surveys, the most popular and widely used is the Knowledge, Attitude, and Practice (KAP) (Manderson and Aaby, 1992, Green 2001, Hausmann-Muela et al., 2003, Nichter, 2008). Besides, attitudes were interlinked with the person's knowledge, beliefs, emotions and values, and they were either positive or negative. Causal attitudes or erroneous attitudes were considered derivatives of beliefs and/or knowledge (Pelto and Pelto, 1994). Investigators depended heavily on behavioural indicators namely, what people say, how they responded to questionnaire or such physiological signs. Attitude research was employed by social psychologists; advertising professionals, and political scientists, among others. Public opinion researchers often attempted to distinguish attitudes from related concepts such as values, opinions, and knowledge (Encyclopaedia Britannica, 1994).

Attitude was later developed on the ABC model (Affect, Behaviour Change and Cognition). The affective response was a physiological response that expressed an individual's preference for an entity (Lahey, 2003). The behavioural intention was a verbal indication of the intention of an individual (Lahey, 2003). The cognitive response was a cognitive evaluation of the entity to form an attitude (Myers and Patz, 2009).

Good enough evidence suggested that attitudes had important influence on the adoption of health-related behaviours. However, the relationship between attitudes and behaviour could be complex, and to understand how attitudes influenced behaviour may be enhanced by the use of a theoretical framework. The theory of Diffusion of Innovation (DoI) (Rogers, 2003) and Health Belief Model (HBM) (Strecher, 1998) were based on the premise that attitudes influence behaviour in unison with two other factors; sanitation, health and hygiene. Studies of various health behaviours have found that attitudes, knowledge, and practices have a strong relationship.

Each contributed, in varying combinations of importance, to predicting behaviour and behavioural intent (Eagly and Chaiken, 1993).

DoI with regards to the study refers to how market users in Dome will adopt and practice the sorting, selling or recycling plastic waste, whereas (HBM) is the assumption that if market users believe that they are at risk of contracting sanitation related diseases fatal to them, they are more likely to practice proper waste management. It would be appropriate, therefore, to consider attitudes toward behaviour as one of these three broad classes of psychological determinants of health-related behaviour (Drucker, 1997). One common problem faced in studying attitudes was the fact that attitudes might either influence behaviours or be influenced by behaviours (Eagly and Chaiken, 1993).

2.5.3 General knowledge, Attitude and Practices of people towards sanitation

It is agreed that, source separation and resource recovery is an important method in waste management (Fobil, 2001). This is because there is nothing like waste on this earth. Wastes that are discharged may be of significant value in another setting, but they are of little or no value to the owner who wants to dispose of it. According to Tsiboe and Marbel (2004) Austria, the Netherlands, and Denmark developed a waste management processes to efficiently solve the waste disposal problem by essentially coaxing their citizens to separate their domestic solid waste into glass, paper, plastic categories; thereby enabling easy collection and consequent reuse. As suggested by the three authors, one way of effectively managing solid waste is to minimise solid waste generation through source reduction. Support for behaviour change reduces when it becomes more difficult or costly (O'Connor et al., 2002).

Actions that threaten lifestyle or take up personal time (like spending more time to do sorting of waste could have economic costs on market users and would not be widely supported (Fortner, et al., 2000; O'Connor et al., 2002). Behaviour change strategies that are consistent with the public's awareness and understanding of improved environmental sanitation are therefore necessary in order for sustainable policy to be developed (Plotnikoff, et al., 2004)

People defecate in public if they have poor access to sanitation that would enable them to eliminate their human excrement. According to the latest report on the United Nations Millennium Development Goals, eighteen percent of the world population defecates in the open. This was about 1.2 billion people out of the already 2.5 billion people in the developing countries without access to basic sanitation (UN MDG, 2009). Possible causes of increase in flood severity in Accra ranged from inadequate flood management practices to poor waste management. Urban floods occurred when drainage system, gutters and other storm control devices spilt to its plains and over flow to flood control devices during heavy rains. Drains, as well as rivers and streams near the urban centres were often choked with refuse or silted up. This resulted in reduced capacity of river and stream channels causing flooding (Sam, 2009).

Environmental pollution could be ascribed to the uncontrolled disposal of both industrial and domestic waste which created problems in the collection and disposal of human waste in the metropolis (Domfeh, 1996). The spread of diseases through food was common problem which resulted in appreciable morbidity and occasional mortality. Traders played important roles in ensuring food safety throughout the chain of production, processing, storage and preparation (Abanobi, Dozie, Ukaga et al., 2009). It is the realization of this indispensable role played by market users, in relation to sanitation that the researcher deems it appropriate to conduct the

study at the Dome Market. This was informed by the large number of the population that uses this market and its associated sanitation and health implications for society.

2.5.4 Current Practices to improve Sanitation Conditions.

A landfill site also known as tip, dump or rubbish dump was historically a midden site for the disposal of waste materials by burial. Landfill is the oldest form of waste treatment. Historically, landfills have been the most common methods of organized waste disposal and it has remained so in many places around the world. Landfills may include internal waste disposal sites where a producer of waste carries out their own waste disposal at the place of production as well as sites used by many producers. Many landfills are also used for waste management purposes, such as the temporary storage, consolidation and transfer, or processing of waste material sorting, treatment, or recycling (Hickman and Eldredge, 2005). Landfills are often established in abandoned or unused quarries, mining voids or borrow pits. A properly-designed and well-managed site for landfill can be hygienic and relatively inexpensive method of disposing of materials. Older, poorly-designed or poorly-managed landfills created a number of adverse environmental impacts.

There were number of concepts about waste management which vary in their usage between countries or regions. Some of the most, general, widely used concepts referred to the '3 Rs ', Reduce Reuse and Recycled which classified waste management strategies. Solid wastes included industrial wastes, construction wastes, agriculture wastes, house garbage, sludge, excrements, and medical wastes and so on. These specifications were according to their desirability in terms of waste minimization. The waste hierarchy remained the cornerstone of most waste minimization strategies. The aim of the waste hierarchy was to extract the maximum

practical benefits from products and to generate the minimum amount of waste (WHO, 2002). Existing final disposal sites for municipal solid waste were also not engineered and may be described as crude dumpsites. There was no waste separation (the innovation in this study) at the source of generation and hazardous waste was often handled together with municipal solid waste (UN MDG, 2009).

In Europe and a few other places around the world, a few communities used appropriate collection system known as Envac, which conveyed refuse via underground conduits using a vacuum system. Different definitions were combined in order to ensure the safe and legal disposal of the waste (New York Daily Newspaper, 2007). The European Union started a discussion that would end in an End- of-Waste directive which would clarify the distinction between waste that should be treated for disposal and raw materials that could be reused for the same or other purposes. The packaging of product used has been a major contributor of the waste generated. Therefore buying products with minimal packaging would reduce our waste (New York Daily Newspaper, 2007). Land filling practices in the UK have had to change in recent years to meet the challenges of the European Landfill Directive. The UK imposed landfill tax upon biodegradable waste which was put into landfills. In addition to this Landfill Allowance Trading Scheme was established for local authorities to trade landfill quotas in England.

A different system operated in Wales where local authorities were unable to trade between themselves, but had allowances known as the Landfill Allowance scheme. In recent years, some countries, such as Germany, Australia, Belgium, the Netherlands, and Switzerland, have banned the disposal of untreated waste in landfills. In these countries, only the ashes from incineration or the stabilized output of mechanical biological treatment plants might be deposited (Hickman and Eldredge, 2005). In Canadian urban centres, curb side collection was the most common method

of disposal, whereby the city collected waste and /or organics on a scheduled basis. In rural areas people often disposed of their waste by hauling it to a transfer station. Waste collected was then transported to a regional landfill. In Taipei the city government charged its households and industries for the volume of rubbish they produced. Waste was collected only by the city council if it was disposed in government issued rubbish bags. This policy successfully reduced the amount of waste the city produced and increased the recycling rate (WHO, 2003). In the United State landfills were regulated by the state's environmental agency that established minimum guidelines. However, none of these standards fell below those set by the United States Environmental Protection Agency (EPA). Example was the case of the Fresh Kills Landfill in Staten Island, which was claimed by many not only to be the world's largest landfill, but the world's largest human structure. The landfill had been closed and it is being transformed into a park (Hickman and Eldredge, 2005).

There has been large variety of composting and digestion methods and technologies varying in complexity, from simple home compost to industrial-scale enclosed-vessel digestion of mixed domestic waste for mechanical or biological treatment. Methods of biological decomposition were differential as being aerobic, though hybrids of the two methods also existed (WHO, 2003). A section of a landfill located in Barclay, Ontario has been one of several landfills used by Dryden, Ontario. Typically, in non-hazardous waste landfills, predefined specifications and techniques were applied by which the wastes were:

- Confined to as small as possible area.
- Compacted to reduce their volume.
- Covered usually daily with layers of soil.

During landfill operations the waste collection vehicles were weighed at a weighbridge on arrival and their load is inspected for wastes that do not accord with the landfill's waste acceptance criteria (Noye-Nortey, 2007). Afterward, the waste collection vehicles used the existing road network on their way to the tipping face or working front where they unload the waste. After loads were deposited, compactors or dozers are used to spread and compact the waste on the working face (Hickman and Eldredge, 2005). Before leaving the landfill boundaries, the waste collection vehicles passed through the wheel cleaning facility. If necessary, they returned to the weighbridge in order to be weighed without their load. Through the weighing process, the daily incoming waste tonnage was calculated and listed in databases. In addition to trucks, some landfills might be equipped to handle railroad containers.

The use of rail-haul permitted landfills to be located at more remote sites, without the problems associated with many truck trips (Noye-Nortey, 2007). Typically, in the working face, the compacted waste was covered with soil daily. Alternative waste-cover materials were several sprayed-on foam products and temporary blankets. Blankets were lifted into place with tracked excavators and then removed the following day prior to waste placement. Chipped wood and chemically fixed bio-solids might also be used as an alternate daily cover. The space that was occupied daily by the compacted waste and the cover material was named a daily cell. Waste compaction was critical to extending the life of the landfill. Such factors as waste compatibility, waste layer thickness and the number of passes of the compactor affected the waste densities (Hickman and Eldredge, 2005). Landfill operation in the area being filled was a single, well-defined cell.

A rubberized landfill liner is in place exposed on the left to prevent contamination by leachates (liquid from waste) migrating downward through the underlying geological formation. A large

number of adverse impacts might occur from landfill operations. These impacts could vary ranging from the following:

- Fatal accidents like scavengers buried under piles.
- Infrastructural damage like damage to access roads by heavy vehicles.
- Pollution of the local environment such as contamination of groundwater and /or aquifers by leakage and residual soil contamination during landfill usage, as well as after landfill closure.
- Off gassing of methane generated by decaying organic wastes as methane is a greenhouse gas many times more potent than carbon dioxide which can itself be a danger to inhabitants of an area.
- Harbouring of disease vectors such as rats and flies, particularly from improperly operated landfills, which are common in developing countries cause injuries to wildlife.
- Simple nuisance problems namely; dust, odour, vermin, or noise pollution and dust generated from vehicles that accessed landfill sites as well as from working face operations (Hickman and Eldredge, 2005).

These impacts are best intercepted at the planning stage where access routes and landfill geometrics could be used to mitigate such issues. Vector control was also important, but could be managed reasonably well with the daily cover protocols. Most modern landfills in industrialized countries were operated with controls to attempt to manage problems such as these. Analysis of common landfill operational problems was available. Some local authorities found it difficult to locate new landfills (Noye-Nortey, 2007). Communities might charge a fee or levy in order to

discourage waste and/or recover the costs of site operations. Many landfills were publicly funded, but some were commercial businesses, operated for profit (Hickman and Eldredge, 2005).

In Australia, curb side collection was the method of disposal of waste. Every urban domestic household was provided with three bins: one for recyclables, another for general waste and the other for garden materials. These bins were provided by the municipality if requested. Also, many households had compost bins; but this was not provided by the municipality. To encourage recycling, municipalities provided large recycle bins, which were larger than general waste bins. Municipal, commercial and industrial, construction and demolition waste were dumped at landfills and some were recycled (Noye-Nortey, 2007). Household waste was segregated; recyclables sorted and made into new products, and general waste was dumped in landfill areas. The recycling rate was high and increasing (WHO, 2003).

About ninety-nine percent of households reported that they had recycled or reused some of their waste within the past year up from 85 percent in 1992.This suggested that Australians were in favour of reduced or no landfilling and the recycling of waste. Of the total waste produced between 2002 and 2003, thirty percent was made up of municipal waste, forty percent of commercial and industrial waste and fifty seven percent of construction and demolition waste were recycled. Energy was produced from the waste as well. Some landfill gas was captured for fuel or electricity generation. Households and industries were not charged for the volume of waste they produce (WHO, 2003).

In China, there was no doubt that garbage power had been the major manner for Chinese solid waste disposal. More than sixty percent of Chinese municipal solid wastes were from food

wastes with high water content. They experience low heat and large-scaled investments, garbage power , with preferential electricity price, tax subsidies and free of income tax with decreased capacity of between seventy and ninety percent. These notwithstanding, they received the most popularity (Chen, 2009).

According to Noye-Nortey (2007) as far as the international experiences were concerned, compost technology was the fittest to the disposal of food wastes. Chinese household solid wastes were not strictly classified. There existed odour from compost, low quality compost products, shortage of sale market, low economy problems in the compost technology. In recent years, the market scale of Chinese compost disposal has been cut down. According to the statistics, China produced various solid wastes over six billion tonnes annually. In 2008, the volumes of Chinese municipal solid wastes reached two hundred million tones. The production volumes of crop stalks were about seven hundred million tonnes, 3.5 billion tonnes of dung and 1.9 billion tonnes of industrial wastes (Chen, 2009).

The disposal manners of Chinese industrial solid wastes could be divided into three. First, comprehensive utility extracted from the industrial solid wastes or transferred into resources energy and raw materials for storage. Second was temporary storage of the industrial solid wastes in the special infrastructure or place. The third disposal manners of wastes was by landfill or incineration and non-recycled. The comprehensive utility rate of Chinese industrial solid wastes was only about sixty percent, but the storage volumes were more than two hundred million tonnes. There existed high pressure in the industrial solid waste storage (Research Report on Chinese Solid Waste, 2009). Landfill could be regarded as a viable and abundant source of materials and energy.

In the developing world, this was widely understood and one might often find waste pickers scavenging for still unusable materials. In a commercial context, landfills sites had also been discovered by companies and many had begun harvesting materials and energy (Noye-Nortey, 2007). Well known examples were gas recovery facilities include fossil fuel power plants and waste incinerators which had built-in material recovery (Hickman and Eldredge, 2005). This material recovery was possible through the use of filters electro filter, active carbon and potassium filter, quench and sulphur IV oxide (SO2) washer. An example is the Waste Fired Power Plant. The waste incinerator recovered a large part of the burnt waste in source materials. Marcel van Berlo who helped build the plant claimed the waste contained higher percentages of source materials than any mine in the world. He also added that when the plant was compared to a Chilean copper mine, the waste fired plant could recover more copper. However, because of the high concentration of gases and the unpredictability of the landfill contents, which often included sharp objects, landfill excavation was generally considered dangerous.

Furthermore, the quality of materials residing within landfills tended to degrade such materials that were thought not worth the risks required to recover them. The alternatives to landfills were waste reduction and recycling strategies. Secondary to not creating waste, there were various alternatives to landfills. In the late 20th century, alternative methods of waste disposal to landfill and incineration had begun to gain acceptance. Anaerobic digestion, composting, mechanical biological treatment, pyrolysis (use of heat to break down complex chemical substances) and plasma gasification all began to establish themselves in the market (Hickman and Eldredge, 2005).

In Ghana, management of waste has been a difficult one for all governments. Several trials have been made by the authorities and stakeholders. The sites where the wastes are being deposited

are apparently too close to residential areas (Accra Planning and Development Programme, 1990). This in effect created more problems for residents living in and around the dumping sites.

The Accra Metropolitan Assembly (AMA) embarked on 'waste energy' programme. The aim of the programme was to transform all waste materials into energy to produce electricity in the capital. The mayor of Accra called for local and foreign expertise to help minimize sanitation problems in Accra and its environs (Iddrisu, 2010). The accelerated urbanization of Accra Metropolitan Assembly brought about problems of disposal of household waste and industrial effluent. This was because the poor infrastructure available over the years had not been able to cope with the waste generated. Solid waste generated by some of the industries was used for landfills, probably without the necessary monitoring network to check the stability of the dumps (APDP, 1990).

2.5.5 Challenges towards improving sanitation conditions

The greatest challenge of improving sanitation lied in the urban areas and informal sector (Dougall and McGahey, 2003). A study performed with stakeholders on sanitation to understand perception of sanitation challenges suggested that stakeholders' perspective was one of the greatest challenges towards the attitude of residents. In their opinion, there was the need to make education and awareness raising paramount, regarding the connection between sanitation, behaviour and health as pertinent actions. Capacity buildings, human resources, competitive involvement of the private sector were also raised. Nostrum was also mentioned as challenging areas that the assembly needed to develop further (Owusu and Roojen, 2008).

It is agreed that, source separation and resource recovery is an important method in waste management. This is because there is nothing like waste on this earth. Wastes that are discharged may be of significant value in another setting, but they are of little or no value to the producer who wants to dispose of it. According to Tsiboe and Marbel (2004), Austria, the Netherlands, and Denmark developed a waste management processes to efficiently resolve the waste disposal problem by essentially coaxing their citizens to separate their domestic solid waste into glass, paper, plastic categories; thereby enabling easy collection and consequently reuse. As suggested by the three authors, one way of effectively managing solid waste is to minimise solid waste generation through source reduction.

Another problem of improving sanitation was that people refused to talk about sanitation as responsibility for all. So what was seen as solely the responsibility of others when it was for all could not be improved upon unless that attitude was altered or changed. Until discussed and personalized we cannot improve it (National Environmental Sanitation Policy Coordination Council NESPoCC, 2008). The open dumping areas could create health problem, as it led to multiplication of rodents and flies. Open dumping might result in the generation of anaerobic gases, which led to creation of bad odour primarily resulting in a variety of diseases. There were persistent complaints from people residing near open dumping areas. Health care establishment premises with poor solid waste management were prone to spreading diseases (ENVIS Centre, 2010).

The World Toilet Organisations (WTO) started the World Toilet Summit, an annual international conference for all people in the toilet and sanitation field to meet in 2008. The purpose was to exchange knowledge and experiences. It was held in 2001 at Singapore, 2002 in Seoul, 2003 in

Taipei, 2004 Beijing, 2005 Belfast, 2006 Moscow, and 2007 New Delhi. Every event was sponsored by the respective local governments as WTO gave them the hosting rights.

People were so inhibited against the subject “sanitation”. Second was inability to develop and use skills in managing waste into useful materials. There was no such thing as human waste. Our excreta are actually nutrients and good fertilizers. The third challenge was government’s inability to provide enough funds for managing waste. The WTO drove a market-based strategy as donors funding were not the long term solution. Inadequate public education was another challenge and need for proper sanitation and how waste could be managed. The filthy condition was a result of ignorance and non-enforcement of the law. Apparently, the laws that govern sanctions on living and working in unsanitary condition were either unknown or not enforced (NESPoCC, 2008).

Solid waste, these rivers that acted as open sewers, posed serious threats to public health in the densely built areas of the urban cities (Sam, 2009).

In developing countries such as Ghana, there were many communities, which were unplanned and were occupied by squatters and illegal settlement. Growth of grass and weeds were common sights in many sections of various river channels. This naturally resulted in retardation of flow and consequent flooding of the banks of the rivers during heavy storm. During dry weather the grass and weeds caused ponding in several sections, which provided breeding grounds for mosquitoes. Accra had many fast-growing, low-income communities with no infrastructure for waste disposal. Waste washed into drainage ways and was hypothesized to cause increase flooding (Sam, 2009).

Eight main drains frequently affected over thousand people within the Accra metropolitant area. This was common in neighbourhoods such as Dome, Mateheko, Sukura, Nima, Tesano, Mukose,

Mpamprom Stream and Dzorwulu. The relative impact was human suffering, diseases epidemic, poor sanitation health, stress, and disruption of commercial activities and normal activities. Clearly, the existing system could not cope with the ever-increasing volume of solid waste being generated in Ghana. Therefore, the public disposed of rubbish indiscriminately especially in watercourses and drainage channels and often through burning. Huge piles of refuge as overflowing refuse containers are seen throughout the urban centres particularly near markets and squatter settlements (Ghana Meteorological Service GMS, 1995)

Forty percent of the world population, 2.5 billion people, had no access to basic sanitation. This post looked at some of the challenges and opportunities that laid them. The vast majority of those without access resided in Asia and sub-Sahara Africa where the regional access rates fell to as low as fifty three percent and thirty one percent respectively (Earth Trends, 2006).

Flooding in Accra had become a perennial phenomenon. Experts had been grappling with ways and means of containing the floods in order to save lives and property. Over the past decade beginning in 1995, floods had claimed several lives, and destroyed public infrastructure and property. Inadequate capacities of some critical culverts, insufficient stream channel capacity and obstruction of flows by buildings across natural stream courses and deposition of garbage into the stream also gave rise to flooding. In Accra as most urban centres in Ghana, provision of infrastructural facilities had substantially lagged behind the rapid rate of housing development. Inadequate storm water drainage was one of the most serious problems facing Accra (GMS, 1995).

Flooding in low-lying areas, erosion of steep slope areas, and pollution of streams by waste discharges, was identified as the major environmental problems facing the city. These problems

were interrelated in that, flooding was caused by insufficient carrying capacities of the respective streams, brought about by the accumulation of silt resulting in erosion blockages caused by solid waste deposited in the streams (Ghana Meteorological Derpartment,1995).

One of the principal flooding types in Greater Accra Metropolitan Assembly was due to the rate and dynamics of urbanization. Floods in this regard could be attributed to the increase of the impermeable areas and inadequate drainage systems such as conduits and channels (White and Hass, 1975).

The land use surface in small urban pocket within Accra Metropolitan Assembly was made of aluminum roofs, untarred streets and other impervious surfaces. Runoff flowed through these surfaces to the storm sewers and low lying areas. It changed the hydrologic cycle, increase the over land flow and decrease the groundwater flow (White and Hass, 1975).

Under these circumstances the peak discharge increases together with the flood frequency. In addition, the wash urban surfaces during rainy days increase the pollution load in urban environment and to downstream rivers. Urban flooding, however, was a natural process in which drainage system spilt to their plains during storms (Gucci et al., 1999).

In Ghana the causes of urban flooding although diverse, were to some extents interrelated. In Accra, low lying areas were subjected to severe perennial flooding, which was generally attributed to inadequately sized culverts and blockage of the major drains by cumulated silt caused by years of neglect and lack of maintenance (Nyamekye, 2002). There was also the effect of tidal variations on rivers and streams leading to flooding. The effects of variations of the hydro climate conditions led to flooding (Wohl, 2002). This could be attributed to the variation

and the spatial context of regional, local, and global atmospheric processes and circulation patterns from which the floods developed (Hirschboeck, 1988). The capacities of most rivers have been greatly reduced by the deposition of silt and garbage and growth in and along the riverbanks (Lavallin, 1996). While existing solid waste disposal facilities were inadequate to deal with the quality and quantity of waste generated, sophisticated systems such as incineration and biogas production were not in use as these entail a high level of technology. Besides maintenance requirements were high. Accra Metropolitan Assembly's urban run-off contained varying quantities of all the following, depending on the location where the runoff was generated. Notably among them were floatable and visual contaminants, degradable organics, suspended solids nutrients, bacteria, and virus toxicants and dissolved solids. Floatable and visual contaminants were for the most part as a result of improper solid waste disposal. Plastic bags and bottles were the commonest items to be found in urban runoffs.

By far the most worrying contaminant of the wastes generated. Indiscriminate defecation in drains, open space water courses and dump sites were common, giving rise to excreta-related diseases, and generally posing a health hazard to the public. During storm events, liquid wasted along by runoffs into areas of human settlements and water sources. At public toilets, holding septic tanks often overflowed during rainy seasons to compound the problem further. The other principal attribute to flooding was illegal settlements and construction of housing structures within flood plain (Tucci, 1999).

2.5.6 Strategies to Improve KAP of Market Participants towards Sanitation.

The range of waste management strategies could be as wide as waste is diverse.

The basic steps included in waste management strategies are:

- Pollution prevention and source reduction through educating and sensitizing.
- Reuse through sorting, recycling and composting.
- Treatment; collection and transport, incineration, chemical and biological treatments.
- Treatment serves two purposes, either reducing waste volume or reducing its toxicity.
- Disposal through open dumps, sanitary landfills, deep-well geological disposals.

These processes also lead to the generation of other form of waste. An example is incineration residues. Sound waste management required a high level of technology and a significant budget. Developing countries, particularly Ghana could learn from the good examples of recycling and reuse levels in developed countries (Marquita, 2004; UNEP/GRID, 2011).

Strategies in improving knowledge levels, attitudes and practices of sanitation needed a holistic approach and this brought the concept of social marketing based on a concept of management which necessitated a change in attitudes and behaviour. Social Marketing remained a useful way of convincing people to adopt practices and change behaviour that would help improve their lives, both health wise and economically. The Social Marketing approach had been successfully used in many sectors. It considered people as customers rather than beneficiaries, and focused on processes that empowered the customer to make informed choices. In the sanitation sector, such processes included awareness building and careful consideration of issues such as health and

hygiene and matching them with viable technical solutions (United Nations Haman Settlements Programme UN-HABITAT, 2006).

One of the main reasons for poor progress in sanitation sector in the past could be attributed to the failure to involve the people in the programme and to create adequate demand for sanitation (Nsiah-Gyabaah, 2004). Improved sanitation had multi-faceted benefits to every human being. In order to improve knowledge level, attitudes and sound practices towards sanitation, appropriate measures for social marketing of sanitation would be the much needed approach to balance between the demand and supply and its acceleration. The social marketing campaign began with beneficiary participating in bringing about the needed behaviour change. Social marketing for sanitation seeks better health through promoting behaviour change. It puts consumers at the helm of the programmes, ensuring participation and partnership in programme development. Social marketing demands that social programmes respond to people's perceptions and aspirations (UN-HABITAT, 2006).

A holistic and integrated management approach must extend over the entire waste cycle from cradle to grave, and should cover the prevention, generation, collection, transportation, treatment and final disposal of waste. Integrated waste management represented a paradigm shift in South Africa's approach to waste management (Beede and Bloom, 2000). It moved away from waste management through impact management and remediation and establishing to waste management system which focused on waste prevention and waste minimization (National Waste Management Strategy, NWMS, 1999).

Hygiene promotion and sanitation promotion were both concerned with facilitating behaviour change and alternative approach to behaviour change. The basic reason for adopting social

marketing approach to the sanitation sector was to encourage the behavioural and attitudinal changes which were practices considered as the key instrument in promoting sanitation and also as products which required persuasion of people (Beede, and Bloom, 2000). The social marketing in the sanitation sector was necessary for demand creation and satisfaction of the intended beneficiaries, particularly the poorest of the poor (UN-HABITAT, 2006).

Social marketing of sanitation addresses the following:

- Hygiene promotion; encouraging people to adopt safer practices in the household to prevent sanitation related diseases.
- Sanitation promotion; which includes the marketing and promotion of sanitation products and services.

The demand would be created when consumer was motivated and persuaded to have opportunity and resources to procure sanitation technologies that would suit their needs. It was necessary for them to learn the market mechanism and understand the various forms of partnerships that promoted marketing of sanitation. The consumer was also required to learn the impediments, strategies and approaches for obtaining the sanitation technologies. A number of social activists felt that reliance on appropriate technologies alone would not be enough to meet the sanitation target in the Millennium Development Goals (MDGs). As regards enhancement of success, one needed to go to the people to educate and inform them about the innovation, persuade them for its adoption and then keep a watch whether they are being properly used or not. This was really strategic for social marketing. The Voluntary organizations needed to get themselves involved in practical work and not remain dependent on the Government grants/subsides or public donations. There was the need to run it on a no-profit-no-loss basis so as to be fully self-reliant.

Marketing Sanitation was a managerial approach which made the programmes cost effective by creating social and public awareness, satisfied the demands of the users. The quality services needed to be taken into account by cautiously adopting appropriate strategies for social marketing of sanitation (United Nations Human Settlements Programme UN-HABITAT, 2006).

Management of waste has been basic requirement of ecologically sustainable development.

Reducing adverse environmental effects involved waste material: monitoring, collection, transport, processing and disposal (Beede, and Bloom, 2000). Waste materials originated from a variety of sources. They included industrial, agricultural, commercial and domestic activities. Many governments and organizations adopted 'zero waste' policies.

Effective waste management strategies assisted in minimizing or avoiding adverse impacts on the environment and human health, while it enhanced economic development and improvement in the quality of life. This whole-of-system approach aimed at reducing waste at the source through product design and producer responsibility (Commonwealth Scientific and Industrial Research Organization, CSIRO, 2008).

Researchers helped solve waste management challenges by:

- Commercializing innovative technologies and cleaner processes
- Developing new remediation techniques and industries
- Understanding waste stocks and flows (CSIRO, 2008).

The researcher for the purposes of this study has developed a new way to solve the problem of waste, especially plastic through basic sorting and sale of waste material thereby converting

waste into a resource for the benefit of those who generate it. The next chapter of the study deals with the methodology of the study.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter provides information about the research methodology and techniques used in the study. It includes the population of the study, sample, research design, and sampling procedures. The chapter also includes sources of data, instrument for data collection, reliability and validity, ethical considerations fieldwork and administration of instruments as well as data analysis.

3.2 Population

The population of the study consisted of market users in Dome in the Ga East Municipality to whom the research findings would be generalised. Neuman (2007) defines population as the name for the large general group of many cases from which a researcher draws a sample. It is the group that is of interest to the researcher, the group to which the researcher would like to generalise the findings of the study (Fraenkel and Wallen, 2003).

3.3 Sample

The size of the sample was based on total population of market users at Dome Market. The researcher selected a random sample size of 133 respondents (sellers) from the 1,850 target population under study through the use of a table of random numbers and a sample of 23 respondents selected (buyers) using convenience sampling.

3.4 Research Design

The design adopted for the study was descriptive-analytical survey type. The design has a function of ensuring that evidence obtained in a study helps a researcher to answer the initial questions as clearly as possible (De Vaus, 2001). The research design was appropriate because it enabled the researcher to ask questions that concern knowledge, attitudes and practices of sellers and buyers at the Dome market on sanitation.

According to Opoku (2000) a survey research has been one of the most widely used methods of data collection in the social sciences. A descriptive-analytical survey attempts to document current conditions or attitudes, that is, to describe what exists at the moment. Cohen and Manion (1986) assert that most educational research methods are descriptive, that is, they set out to describe and interpret what is; and concerned with conditions or relationships that exist; practices that prevail; beliefs, points of view or attitudes that are held; processes that are going on; effects that are being felt or trends that are developing.

3.5 Sampling Procedures

Market users of Dome formed the sampling units in the design. First, the researcher obtained a list of all the market sellers in Dome from the office of the Market Queen. The researcher then put them into a composite group made up of five groups of market users from the market. The names of the market users (sellers) according to each group were compiled serially on pieces of paper. They were put into a container shuffled and reshuffled. Through proportional sampling as per list provided the researcher randomly selected a number of participants to proportionally represent the groups. Each of the five groups of market users were identified to constitute the

study area because the market users share a common problem, that is, poor sanitation that the researcher wants to solve.

Data obtained from the office of the Market Queen showed that there were a total of 1,850 market users (sellers). The breakdown was as follows: Provisions sellers (300), Drink sellers (350), Foodstuff sellers (700), Clothes and Textiles sellers (400) as well as Beauticians and Dressmakers (100). Thus, 133 market users (sellers) which constituted (7.2) per cent of 1,850 of target population, were selected by means of proportional stratified sampling procedure. Tables 1 and 2 show how the researcher grouped the market users.

Table 3.1: List of market users (sellers) N=1850

Market users	Males	Females	Total
Provisions	40	260	300
Drinks	50	300	350
Foodstuffs	100	600	700
Clothes & Textiles	77	323	400
Beauticians& Dressmakers	25	75	100
Total	292	1558	1850

Source: Field Data March, 2013

In the first place, the researcher used a stratified random sampling procedure to select the target participants of market users, Provisions sellers (300), Drink sellers (350), Foodstuff sellers (700), Clothes and Textiles sellers (400) as well as Beauticians and Dressmakers (100).

The data collected from the office of the Market Queen were used to list market users into each sub-group. That is separate market users from each other sub-group were selected for the study.

As the separate strata are not the same size, a number of market users proportional to their sizes, was allocated to each stratum, thereby giving each user in the market an equal probability of being selected for the final sample of market users in Dome in the Ga East Municipality. The procedure for selecting the proportional sample for each is as follows: a sampling fraction for each stratum is obtained by dividing the number of market users in each stratum by the total number of market users and then multiplied by the sample for the study to obtain the proportionally allocated sample for the five groups of market users in the Ga East Municipality. Through proportional sampling as per list provided the researcher randomly selected 133 participants (sellers) to proportionally represent the groups through the use of table of random numbers. The researcher then used a convenient sampling method to select 23 market users (buyers). With this process at every five minutes time interval, a buyer who was willing and ready was approached and interviewed. The researcher believed that the 133 sellers and 23 buyers sampled market users are manageable number of participants that can be reached and all significant information collected can enrich the study (See Table 2). The formula is: [Stratum÷ Population Size] × Sample for the study.

For example, the sample for the market users (sellers) of Dome is obtained by dividing 300 by 1850 and multiplying the result by 133

$$[300 \div 1850] \times 133 = 22$$

Table 2 shows the market users in the Dome market stratified according to the five sub-groups.

Table3. 2: Stratified Sample of Market Users-sellers (N=133)

Market Users	No. of Market Users	Proportionally Allocated Sample of Market Users	Percentage
Provisions	300	22	16
Drinks	350	25	19
Foodstuffs	700	50	38
Clothes & Textiles	400	29	22
Beauticians & Dressmakers	100	7	5
Total	1,850	133	100

Source: Field Data March, 2013

It could be observed from Tables 1 and 2 that there are indications that all the market users (sellers) were represented in the sample proportionally as they were represented in the population. The researcher used a convenience sampling to sample (23) market users (buyers) by administering a 15-item interview guide to sample buyers who are available and willing to participate in the study.

3.6 Sources of Data

The researcher, being conscious of the exploratory and analytical nature of the study, used data from primary and secondary sources respectively. Indeed, the primary data came from information that participants (market users) - operating in the study area, provided the researcher.

The researcher, further made extensive use of information through searching the World-Wide-Web (WWW) for significant and relevant information to enrich the study.

3.7 Research Instruments

To collect the data necessary for the study, structured interview, also referred to as standardized interview was used. Face-to-face structured interview was used, and the reason for this choice was that the researcher anticipated that the literacy levels of the potential respondents would vary.

Not all the potential respondents were expected to possess the skills of reading and writing. Interview guide for Market Users 'sellers and buyers': A 30-item interview guide was developed and administered to randomly selected Market Users (sellers). Another 15-item interview guide was developed and administered to purposively selected market users (buyers) participating in the study. The 30-item and 15-item interview guides were organized into three sections- A through C taking into consideration the specific objectives of the study. The interview guide consisted of both closed and open-ended questions.

In section A of the guides, questions were structured to identify specific issues on the influence of knowledge based on education and age of market users with regards to sanitation in the Dome market. Factors like ignorance, uneven involvement in decision making and lack of motivation to learn new skill were probed into. Some of the key issues include; "Can plastic waste degrade naturally?" "Is education an influencing factor in engaging in improved sanitation?" "Are educated people more inclined to participating in hygiene enhancing activities?"

Section B of the guide, sought to deal with dispositional factors that influence market users regarding the issue of improved sanitation. The dispositional factors include, lack of confidence to take up the challenge of proper sanitation, skepticism, the feeling that is always "this way"

"Do you feel good about the way wastes, especially plastic waste, is managed in the market?"

In section C of the guide, questions were structured to deal with situational factors that influence market users with respect to improved sanitation. In the study, situational factors include lack of resources as refuse containers, lack of time among others. Examples of questions posed to the respondents included the following; "Do you separate waste (plastic, wood, metal, glass, food waste, others) before disposal?" "Do you think sorting waste is wasting the time in the market place?"

The sections were structured in such a way that they helped to bring out reliable findings to the topic under study. The closed-ended questions eased scoring and quantification of responses. The use of open-ended questions allowed respondents to have control over their responses rather than agreeing or disagreeing with questions posed by the researcher. This helped respondents to freely express their views and opinions on the questions. The researcher treated both open-ended and closed-ended questions with equal importance and the major tools for analysis of the data were both quantitative and qualitative in nature.

To enable the researcher achieve high 'response rate' from the respondents, three undergraduate students were hired, trained with the administration of interviewing skills to assist in administering, collecting and conducting relevant, valid and reliable data-collection exercise.

This helped the researcher to cut down time and financial cost and allowed the researcher the space to record responses promptly.

Focus Group Discussion

One Focus Group Discussion (FGD) session centred on the topic understudy, was held for market users who were new and not part of the earlier respondents, in the Dome Market. The group was made up of 12 members. The discussion session lasted averagely about one hour. The Focus Group Discussion elicited qualitative data to supplement and complement both quantitative and qualitative information provided by the two interview guides. Indeed, the Focus Group Discussion enabled the researcher to understand what really the market users thought about the issue of poor sanitation. It also informed them adequately on the issues involved as they heard the views of other market users, and, therefore, considered their own views accordingly.

3.8 Pre-test, Reliability and Validity of the Instruments

3.8.1 Pre-test

The researcher ensured that instrument developed was reliable and valid by the following means. Firstly, the researcher pre-tested the questions on 15 respondents in the Madina Market with similar characteristics of market users at Dome. This exercise enabled the researcher to identify the ambiguous, unrealistic, and a wrong question which emanated from the responses and corrected them before the actual fieldwork. The pre-testing helped to update the instrument as well as gave a clue to the researcher as to the length of time the data collection is likely to take and this helped in drawing up a proper schedule for the main data collection activity.

3.8.2 Reliability

To ensure the reliability of the instrument the test-retest method was used. The researcher administered the interview guide randomly and purposively to respondents in another market outside the study area. A second set was administered to different respondents in different market after an interval of two weeks with the same interview guide having a different numbering pattern. The test was reliable when basically the result showed consistency in the instrument since very similar responses were given. Reliability was established through simple correlation co-efficient for analysis to lend the instrument to repeatability. Cohen and Manion (1996) explain that reliability is essentially a synonym for consistency and replicability of instruments and group of respondents, over time.

3.8.3 Validity

To ensure validity of the instrument, the interview guide was given to two lecturers with expertise in the field of methodology in the Institute of Continuing and Distance Education, University of Ghana, Legon. The researcher also sought positive suggestions from senior colleagues who finished their MPhil thesis at the Institute of Continuing and Distance Education. This helped the researcher to re-examine the content, arrangement, logical sequence and the wording of the questions. Kreuger and Neuman (2006) put forward that validity suggests truthfulness or accuracy and refers to the match between a construct or the way a researcher conceptualizes the idea in a conceptual definition – and a measure. Construct Validity was used to ensure that the measure was essentially measuring what it was intended to measure, and no other variable.

3.9 Ethical Considerations

The researcher assured the respondents that whatever they would say by way of information would remain confidential. The researcher explained the purpose of the study to the respondents. This was done to avoid deception. Not only the above, the researcher also sought consent of the Market Queen before collecting the data. All respondents gave out information voluntarily for the study. The goal of ethics in research is to ensure that no one is harmed or suffered adverse consequences from participating in research activities (Cooper and Schindler, 2007).

3.9.0 Fieldwork and Administration of Instruments

The fieldwork was conducted between 8th February and 22nd February, 2013. In the administration of the research instrument, three undergraduates were carefully selected, trained and engaged as research assistants. The researcher held a day's training for the research assistants before the start of work. While the researcher with one research assistant interviewed the sellers in the Dome Market, the other research assistants interviewed the buyers. The researcher in addition played the role of a moderator and the three research assistants served as note takers and tape recorder respectively in conducting the Focus Group Discussion.

Two separate interview guides designed to solicit data from 133 sellers and 23 buyers slated for responding to the guides, of which 100% in all were analysed. Responses from the focus group discussion of which 12 (males 4 and females 8) of market users, selected outside the 133 sellers, randomly picked to participate in the study were also analysed. The responses from the interview guides and focus group discussion were checked for correctness and completeness.

3.9.1 Data Analysis

The guides were numbered serially, edited, collated, coded and fed into the computer. The nature of the interview guides and focus group discussion constructed demanded the use of the quantitative and qualitative process of analyzing the data obtained.

To ensure accuracy of the data, it was checked carefully to avoid errors which might affect the validity of the work. Firstly, the researcher pre-tested the questions on 15 respondents in the Madina Market with similar characteristics of market users at Dome. This exercise enabled the researcher to identify the ambiguous, unrealistic, and a wrong question which emanated from the responses and corrected them before the actual fieldwork. Descriptive statistics was used in the data analysis since it describes numerical data and gives meaning to data collected. Indeed, all the three types of data collected were edited for consistency of responses. Simple descriptive statistics was adopted to analyse the data. This involved the percentages by way of frequency tables and graphs. Firstly, the quantitative data which resulted from the closed-ended questions were edited; coded and later analysed using the computer software Statistical Package for the Social Sciences (SPSS) which could be communicated easily and understandably. The data from focus group discussion were guided and the responses were recorded using tape recorder and the researcher's field note. They were transcribed and translated into English in the respondents' own words as closely as possible. Efforts were made to ensure uniformity in responses by making sure that respondents agree so that what was recorded was one on which a consensus has been reached.

Finally, this process of data collection at the focus group discussion, made it possible to compare and contrast responses from the market users under study with which discussions were held. This, therefore, made it possible to use descriptive-narrative methods to analyse responses from

the focus group discussion. Indeed, the new ideas and insightful findings gathered were used as anecdotal evidence to triangulate responses gathered from the interview guides.

3.9.2 Scoring and its Classification

Knowledge about market sanitation among market users

- The correct answer gets: 2 score
- The not sure answer gets: 1 score
- The wrong answer gets :0 score

The possible scores for sellers ranged from 20 to 0 and respondents' knowledge was classified into three levels. The cut-off point for 'high knowledge': greater than 70% of 20 scores 'moderate knowledge': from 50% to 70% of 20 scores, 'low knowledge': less than 50% of 20 scores. For buyers the possible scores ranged from10 to 0 and respondent's knowledge was classified into three levels. The cut-off point for 'high knowledge': greater than 70% of 10 scores 'moderate knowledge': from 50% to 70% of 10 scores, 'low knowledge': less than 50% of 10 scores.

Attitudes towards market sanitation among market users

The answers were categorized into five levels; strongly agree, agree, not sure, disagree and strongly disagree. For positive items, the scores were scaled as follows:

Strongly agree response gets 5 score, agree response gets 4 score, not sure response gets 3 score, disagree response gets 2 score and strongly disagree response gets 1 score. The opposite holds for negative items.

Respondents' attitude was classified into three levels. The cut-off point for sellers: 'good attitude: greater than 70% of 50 scores, 'moderate attitude': from 50% to 70% of 50 scores and 'bad attitude': less than 50% of 50 scores. For buyers the cut-off point was 'good attitude': greater than 70% of 25 scores, 'moderate attitude': from 50% to70% of 25 scores and 'bad attitude': less than 50% of 25 scores.

Practices of market sanitation among market users

The answers were categorized into four levels-(All the times, Most of the times, Sometimes and Never). Scores were; All the times 3 score, Most of the times 2 score, Sometimes 1 score and Never 0 score. The possible scores for sellers ranged from 30 to 0 and respondents' practice was classified into three levels 'good practice': greater than 70% of 30 scores, 'moderate practice': from 50% to 70% of 30 scores and 'poor practice': less than 50% of 30 scores. Buyers' possible scores ranged from 15 to 0 and respondents' practice was classified into three levels 'good practice': greater than 70% of 15 scores, 'moderate practice': from 50% to 70% of 15 scores and 'poor practice': less than 50% of 15 scores.

CHAPTER FOUR

PRESENTATION OF RESULTS

Introduction

The results presented start with the description of the educational factors that influenced improved sanitation among market users, and provide information and measurement of knowledge as well as attitudes that influenced improved sanitation in the market. The chapter presented results of analysed data on practices as a result of education for improved sanitation among market users. Conclusions were drawn for each of the specific objectives of the study. The first part of the results presented is the view of market users (sellers) on factors that influenced improved sanitation in the market. The second part of results presented is the views of market users (buyers) on factors that influenced their desire to buy from improved market environment. Results of focus group discussion are used to confirm or disconfirm the other results. After presenting the results on the basis of the specific objectives of the study, the summary of the major results of the study is presented.

4.1 Demographic Information

These information deal with the influence of key demographic data of the market users such as age, education, gender among others in relation to proper practice of sanitation.

4.2 Educational factors

In health education and promotion, educating means taking action in partnership with individuals or groups to empower them. This is done through the mobilization of human and material resources to offer people protection from threats to health, and enable people to expand their capabilities and develop self-reliance in health, especially for vulnerable and marginalized people like market users in Dome (WHO, 1998).

Educational factors include source of market waste management information and availability of public trash bins. For this study, availability of market waste information simply means the access and frequency in all information about market waste as a resource rather than mere waste. This information can come from Television, radio, verbal communication, posters in the Ghanaian languages and newspapers by seeing, listening, talking and reading.

Table 4.1 presents results on data analysed for educational factors of both market sellers and buyers at the Dome Market. Data was gathered, analyzed and results presented in well elaborate table to enable the researcher have better background information of educational factors of the market users at the Dome market. The variables on which results are presented include sex, age, occupation and educational level attained. Table 4.1 below presents a summary of the results.

Table 4.1: Results for bio-data (n=156)

Variables	Sellers		Buyers	
	Frequency	Percentage	Frequency	Percentage
Sex				
Male	47	35.3	8	34.8
Female	86	64.7	15	65.2
Total	133	100	23	100
Age				
18-35	42	31.6	5	21.7
36-45	53	39.8	14	60.9
46-60	38	28.6	4	17.4
Total	133	100	23	100
Occupation				
Formal	-	-	5	21.74
Informal	133	100	13	56.52
Unemployed	-	-	5	21.74
Total	133	100	23	100
Educational level Attained				
Never Attended School	43	32.3	-	-
Basic School	49	36.8	6	26.1
Secondary School	33	24.8	15	65.2
Tertiary	8	6.01	2	8.7
Total	133	100	23	100

N=156

Source: Field Data, 2013

Table 4.1 shows results of sellers (females and males) in the market. The results on sellers in the market indicate that (65.22%) females engaged themselves more in the informal sectors as against (34.78%) males. The table 4.1 also gives results on buyers who patronize the market and similar results were obtained just as with sellers where females are more.

With regards to age as indicated in table 4.1, the results show that the number (39.80%) is in the age group between 36 and 45years. The numbers (31.60%) is in the age group between 18 and 35 years. Also the number (28.60%) of market sellers is in the age group between 46 and 60 years and also the smallest. Results for buyers in the age group of 36 and 45 years is (60.90%) of

total of buyers. The numbers (21.70% and 17. 40%) of buyers are in the age groups of 18 and 35 and 46 and 60 respectively.

Another variable on demographics that results were presented is the occupation of respondents. The results in Table 4.1 indicate that (100%) of sellers are in the informal sector. With regards to buyers, (56.50%) are in the informal sector. The number (21.70%) is unemployed and these are for the most part housewives. The remaining (21.70%) are in the formal sector. Analysis of the educational level shows that (32.30%) of sellers had never attended any school, 61.6 percent had either basic or second cycle education, while only six percent attained tertiary education. With respect to buyers, 91.3 percent had either basic or second cycle education, and only (8.7%) had tertiary education.

4.3 Knowledge of market users about market sanitation

Questions were asked to explore the respondents' knowledge about market sanitation. The results presented are the views of market users (sellers) at Dome market on sanitation. The Tables 4.1and 4.2 provide results as obtained on questions posed to market users at Dome.

Table 4.2 Results on Knowledge of respondents (Market Users) about Sanitation (n=133)

Statement	No	Not Sure	Yes	Mean	Standard Deviation
The unwanted parts of items such as (waste papers, plastic bags, cloths and nappies, a piece of metal and wood, scrap iron and scrap can) are rubbish.	-	-	133(100%)	2.00	0.00
Left over items in the market place such as (left over foods, vegetables and fruits) are garbage.	-	-	133(100%)	2.00	0.00
Plastic wastes pollute the market environment.	6(4.5%)	1(0.8%)	126(94.7%)	1.90	0.42
Burning is the best way to dispose of plastic waste in the market place.	29(21.8%)	11(8.3%)	93(96.9%)	1.48	0.83
Dropping leftover foodstuff and plastic into gutters can cause flooding in the market place.	2(1.5%)	6(4.5%)	125(94.0%)	1.92	0.32
Plastic bags and plastic bottles can decompose naturally.	71(53.4%)	4(3.0%)	58(43.6%)	0.90	0.98
Food, vegetables and fruits wastes can decompose naturally.	5(3.8%)	5(3.8%)	123(92.5%)	1.89	0.42
Reusing plastic bags, bottles and paper etc. can reduce waste and solve waste problem at source.	12(9.0%)	23(17.35%)	98(73.7%)	1.65	0.64
Every kind of waste can be disposed by burning without any effect on the environment.	39(29.3%)	30(22.6%)	64(48.12%)	1.19	0.86
I am aware that one of the benefits of sorting plastic wastes is that it reduces the market wastes.	23(17.3%)	6(4.5%)	104(78.2%)	1.61	0.77

Source: Field Data, 2013

To summarize the knowledge about market sanitation, level of knowledge about sanitation among market users (sellers) at Dome was shown in Table 4.2. A significant number of respondents (72.9%) with (M=1.28; SD=0.47) had high knowledge and (26.3%) demonstrated moderate knowledge. Only little percentage, of 0.8% showed low knowledge about market sanitation.

Table 4.3 Summary of results on knowledge about sanitation in the market (n=133)

Knowledge level	Frequency	Percent
High (>14)	97	72.9
Moderate (14>=v>10	35	26.3
Low (<=10)	1	.8
Mean	1.28	
Standard Deviation	0.47	

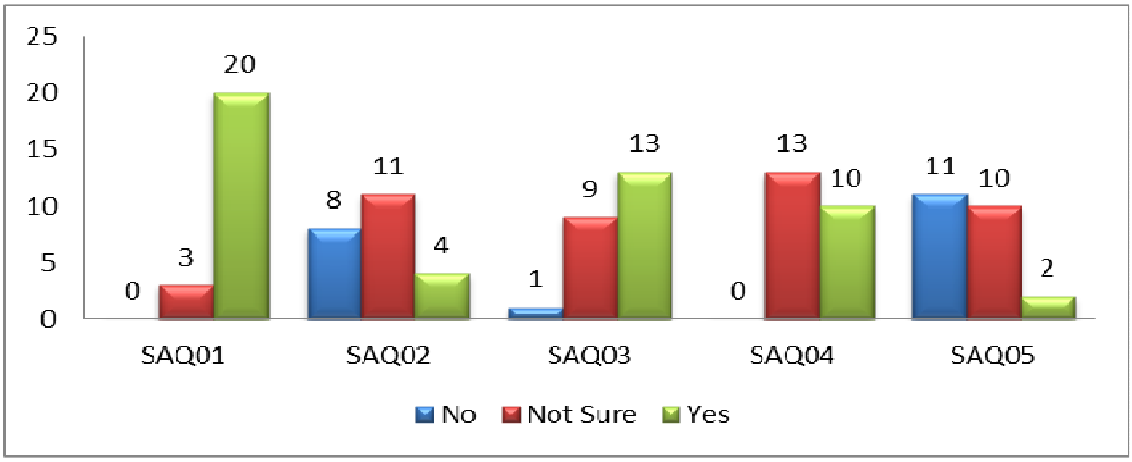
Source: Field Data, 2013

From the Table only few respondents exhibited low level of awareness about sanitation. The majority seems to have high awareness level but whether that will translate into improved sanitation practices will be seen in the subsequent sessions.

4.3.1 Knowledge about Market Sanitation

Questions were asked to explore the respondents' knowledge about market sanitation. The results presented are the views of market users (buyers) at Dome market on sanitation. The Figure 4.1and Table 4.4 provide results as obtained on questions posed to market users at Dome.

Figure 4.1 Results on Knowledge of respondents (market users) (n=23)



Source: Field Data, 2013

The results on the knowledge about market sanitation among market users (buyers), was summarised into three levels of knowledge about sanitation among market users (buyers) at Dome as shown in Table 4.4. A significant number of respondents (65.2%) with (M=2.09; SD=0.60) had moderate knowledge and (21.7%) demonstrated low knowledge. Only little percentage, of 13% showed high knowledge about market sanitation.

Table 4.4 Summary of results on knowledge about sanitation in the market (n=23)

Knowledge level	Frequency	Percentage
High (>7)	3	13
Moderate (7>=v>5)	15	65.2
Low (<=5)	5	21.7
Mean	2.09	
Standard Deviation	0.60	

Source: Field Data, 2013

The result presented of knowledge about sanitation in terms of educational level showed that a high number (72.9%) sellers have high knowledge about improved sanitation, buyers result from the field data showed that only 13% showed high knowledge about sanitation.

The response below shed further light on the misconception just shown:

"It is clear that if plastic forms only that proportion of waste in the waste stream then it is not a big problem like the high proportion ones."

4.4 Attitudes of Market users towards Sanitation

Questions were asked to explore the respondents' attitude towards market sanitation. The results presented are the views of market users (sellers) at Dome market on sanitation. Table 5 provides results as obtained on questions posed to market users at Dome.

Table 4.5 Results on Attitudes of respondents (sellers) about Sanitation (n=133)

Statement	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Standard Deviation
Waste is anything without value and one of the environmental problems that needs to be solved urgently.	-	3(2.3%)	-	58(43.6%)	72(54.1%)	4.50	0.62
I care about the market waste management (reduce, reuse, and recycle) for e.g. sorting the plastic bags.	3(2.3%)	2(1.5%)	2(1.5%)	81(60.9%)	45(33.8%)	4.23	0.76
I feel good about the way waste especially, plastic waste is managed/disposed in the market.	21(15.8%)	42(31.6%)	2(1.5%)	53(39.8%)	15(11.3%)	2.99	1.35
I think putting wastes into garbage containers is the responsibility of everybody at every market centre.	1(0.8%)	4(0.8%)	3(3.2%)	4(40.6%)	71(53.4%)	4.43	0.75
Practice of market centre waste management is not important to me.	20(15%)	42(31.6%)	593.8%)	53(39.8%)	13(9.8%)	2.98	1.31
Buying fruits and vegetables without plastic packaging are necessary to me.	3(2.3%)	48(36.1%)	6(4.5%)	54(40.6%)	22(16.5%)	3.33	1.19
Taking old plastic bags for shopping, rather than using new ones is good for reducing the market centre waste stream.	2(1.5%)	31(23.3%)	4(3%)	74(55.6%)	22(16.5%)	3.62	1.06
Looking for packaging that can be easily re-used or recycled is wasting the time.	4(3%)	45(33.8%)	7(5.3%)	56(42.1%)	21(15.8%)	3.34	1.19
Making use of old plastic bottles as drinking water bottle can reduce waste in the market.	6(4.5%)	32(24.1%)	6(4.5%)	70(52.6%)	14.3(19)	3.48	1.14
Picking plastic waste to sell can help to manage plastic waste in the market centre.	4(3%)	8(6%)	3(2.3%)	29(21.8%)	89(66.9%)	4.57	1.75

Source: Field Data, 2013

To summarize the attitude towards market sanitation, level of attitude towards sanitation among market users (sellers) at Dome was shown in Table 4.5. A significant number of respondents (75.9%) with (M=1.25; SD=0.45) had good attitude and (23.3%) demonstrated moderate attitude. Only little percentage, of 0.8% showed bad attitude towards market sanitation.

Table 4.6 Summary of results on attitude of respondents towards sanitation (n=133)

Attitude	Frequency	Percent
Good (>35)	101	75.9
Moderate(35>=v>25)	31	23.3
Bad (<=25)	1	0.8
Mean	1.25	
Standard Deviation	0.45	

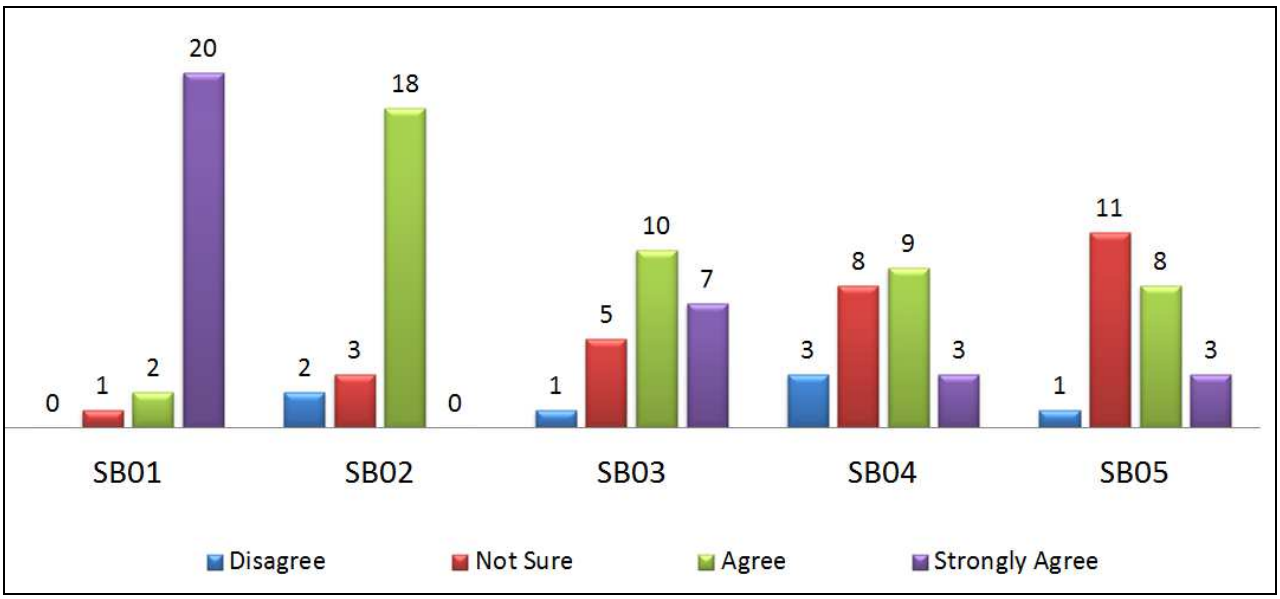
Source: Field Data, 2013

From the Table, similar responses of few respondents have bad attitudes toward sanitation just as it was with knowledge, while a good percentage (76%) showed good attitudes in relation to environmental sanitation.

4.4.1 Attitudes of Market users towards Sanitation

Questions were asked to explore the respondents' attitude towards market sanitation. The results presented are the views of market users (buyers) at Dome market on sanitation. The Figure 4.2 and Table 4.6 provide results and summary as obtained on questions posed to market users (buyers) at Dome.

Figure 4.2 Results of respondents (attitude towards market sanitation) (n=23)



Source: Field Data, 2013

The results on attitude towards market sanitation among market users (buyers), was summarised into three levels of attitude towards sanitation among market users (buyers) at Dome as shown in T able 4.7. A significant number of respondents (87%) with (M=1.13; SD=0.34) had good attitude and (13%) demonstrated moderate attitude towards market sanitation.

Table 4.7 Summary of results on respondents attitude towards sanitation (n=23)

Attitude	Frequency	Percent
Good (>17.5)	20	87
Moderate (17.5>=v>12.5)	3	13
Mean	1.13	
Standard Deviation	0.34	

Source: Field Data, 2013

Results based on attitudes and educational level showed that for sellers more than three-fourths (75.9%) demonstrated good attitude towards sanitation while significant number of buyers (87%) showed a good attitude towards proper sanitation. Results from the interview guide were triangulated with evidence from the question based on the focus group discussion. Anecdotal summary based on FGD question posed to the market users revealed this response from a respondent;

> *"If that is the case then, sanitation cannot be compared with any of the problems we discussed because although we do not have money each time we come here, we get what we will eat the next day. As such we need to look at the issue of sanitation in the market again before we are thrown out of business".*

The point to note here is whether or not the high knowledge level coupled with good attitude towards sanitation will translate into proper practice of sanitation. Results in the next section will lay bare any doubt in anybody's mind as far as the relationship between knowledge, attitude and practice towards sanitation among market users at Dome Market is concerned.

4.5 Practices of market Sanitation

Questions were asked to explore the respondents' practice of market sanitation. The results presented are the views of market users (sellers) at Dome market on sanitation. The Tables 4.8 and 4.8.1 provide results as obtained on questions posed to market users at Dome.

Table 4.8 Results on respondents (market users) Practices of Sanitation (n=133)

Statement	Never	Sometimes	Most of the times	All the times	Mean	Standard Deviation
I buy packaged fruits and vegetables from the market place.	1(0.8%)	75(56.4%)	22(16.5%)	35(26.3%)	1.68	0.87
I carry my waste and drop it in the trash bin in the market place.	2(1.5%)	56(42.1%)	18(13.5%)	57(42.9%)	1.98	0.96
I dispose of my waste into garbage bags throw it into gutter before I leave the market place.	74(55.6%)	42(31.6%)	7(5.3%)	10(7.5%)	0.65	0.89
I collect waste such as vegetables and fruits in a trash bag before disposing of it.	3(2.3%)	69(51.9%)	19(14.3%)	42(31.6%)	1.75	0.93
I wrap leftover foodstuffs such as tomatoes, cassava, banana etc. tightly in plastic bag and throw away.	4(3%)	72(54.1%)	17(12.8%)	40(30.1%)	1.70	0.94
I leave old plastic bag, unused paper and foam into trash bag.	6(4.5%)	81(60.9%)	24(18%)	22(16.55%)	1.47	0.82
I use the old plastic rather than buying new ones to reduce the market place waste.	16(12%)	75(56.4%)	18(13.5%)	24(18%)	1.38	0.92
I take old plastic bags to wrap / package, rather than using new ones, or take a durable bag.	17(12.8%)	89(66.9%)	16(12%)	11(8.3%)	1.16	0.75
I give my customers (buyers/sellers) a piece of advice on how to manage plastic waste.	75(56.4%)	43(32.3%)	10(7.5%)	5(3.8%)	0.59	0.79
I separate waste (plastic, wood, metal, glass, food waste, others) before disposal	65(48.9%)	43(32.3%)	10(7.5%)	15(11.3%)	0.81	0.99

Source: Field Data, 2013

The results of practice of market sanitation among market users (sellers), was summarised into three levels of practice of sanitation among market users (sellers) at Dome as shown in Table 4.8.1. A significant number of respondents (75.2%) with (M=2.71; SD=0.55) had poor practice and (20.3%) demonstrated moderate practice. Only four and a half per cent of respondents showed good practice of market sanitation.

Table 4. 8.1 Summary of results on practice of sanitation in the market (n=133)

Practice	Frequency	Percent
Good (>21)	6	4.5
Moderate (21>=v>15)	27	20.3
Poor (<=15)	100	75.2
Mean	2.71	
Standard Deviation	0.55	

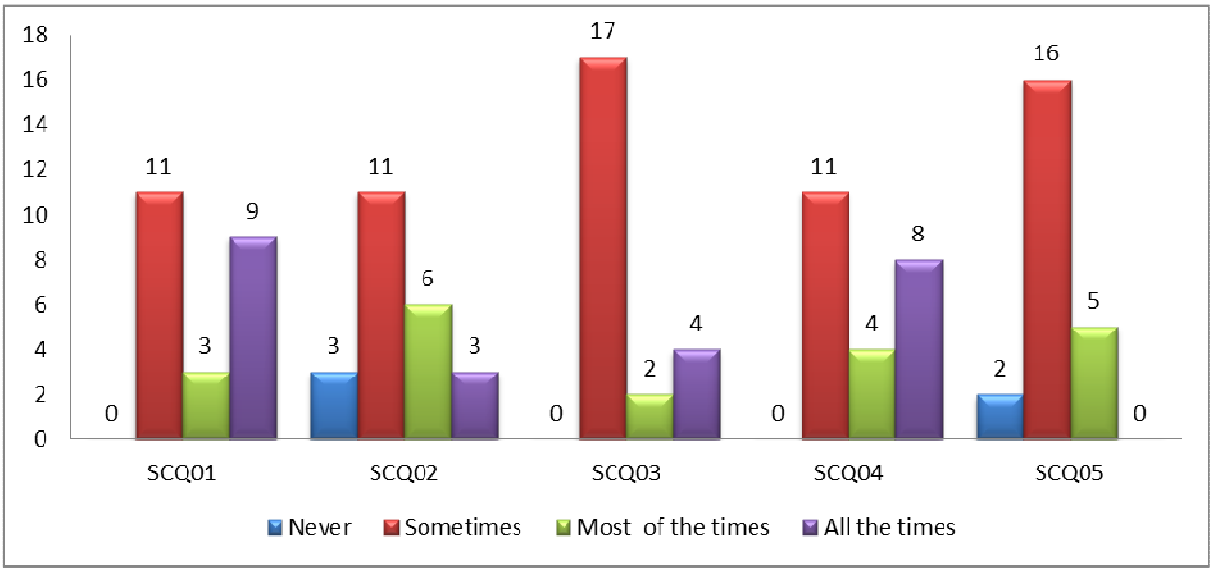
Source: Field Data, 2013

Results based on practices showed that for sellers more than three-fourths (75.2%) demonstrated poor practice of sanitation while insignificant percentage (4.5%) showed a good practice of proper sanitation. The point to note here is that the high knowledge level coupled with good attitude towards sanitation seems not to translate into proper practice of sanitation.

4.5.1 Practices of market Sanitation

Questions were asked to explore the respondents' practice of market sanitation. The results presented are the views of market users (buyers) at Dome market on sanitation. The Figure 4.3 and Table 4.8.2 provide results and summary as obtained on questions posed to market users (buyers) at Dome.

Figure 4.3 Results of respondents (practice of market sanitation) (n=23)



Source: Field Data, 2013

The results of practice of market sanitation among market users (buyers), was summarised into three levels of practice of sanitation among market users (buyers) at Dome as shown in Table 4.8.2. More than half of the number of respondents (52.2%) with (M=2.17; SD=0.94) had poor practice and (34.8%) demonstrated good practice. Only thirteen per cent of respondents showed moderate practice of market sanitation.

Table 4.8.2 Summary of results on practice of sanitation in the market (n=23)

Practice	Frequency	Percent
Good (>10.5)	8	34.8
Moderate (10.5>=v>7.5)	3	13
Poor (<=7.5)	12	52.2
Mean	2.17	
Standard Deviation	0.94	

Source: Field Data, 2013

Results for sellers in both knowledge (72.9%) and attitude (75.9%) were good indicating positive responses towards sanitation; however, in terms of practice only 4.5% had good practice. For buyers even though the good sanitation practice percent is not that significant, the percentage compared to sellers' percentage is comparatively significant.

Table 4.8.3 Results on cross tabulation of market users on knowledge and sanitation

RESPONSE	MARKET USERS			
	SELLERS		BUYERS	
	Frequency	Percentage	Frequency	Percentage
No	6	4.51	1	4.3
Not Sure	1	0.75	9	39.2
Yes	126	94.74	13	56.5
TOTAL	133	100	23	100

N=156

Source: Field Data, 2013

According to the table 4.8.3, 94.74% sellers are aware that plastic waste pollutes the market environment while more than half of the buyers 56.5% know that the market environment is polluted by mostly plastic waste. These results demonstrate that at least the market users have both identified one major environmental problem that they both see as a threat to the beauty and health of the market place. Anecdotal evidence from the FGD seems to support wholly the result, particularly in terms of pollution and its effects on sales in the market. The example below aptly explains the assertion just made:

> *"As sellers one of our main aims is to make profit on what we sell here, however, due to the poor sanitation many people who patronize the market are complaining and threatening to stop coming if nothing is done about the problem and it will*

affect some of us because we took loans which attract interest so the longer our wares stay with us the more our losses".

Apart from the high knowledge that both market users demonstrated about how plastic waste contributes to poor sanitation in the Dome Market, a somewhat surprising percent (39.2%) showed that they were not sure whether or not plastic waste contributed in any way to the poor sanitary situation in the market.

Table 4.8.4 Results on cross tabulation of market users on attitudes and sanitation

RESPONSE	MARKET USERS			
	SELLERS		BUYERS	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
Strongly Disagree	1	0.7	-	-
Disagree	4	3.1	-	-
Not Sure	3	2.2	1	4.5
Agree	54	41	2	9
Strongly Agree	71	53	20	86.5
TOTAL	133	100	23	100

N=156

Source: Field Data, 2013

From the results of the Table, nearly all (94%) of sellers agree that every individual owes it a duty to properly dispose of waste in the market instead of looking up to somebody to do same. This can mean that sellers, in spite of the waste problem they are battling, still keep a positive self-image and have good attitudes to life (that is, happy and content). An even more yet similar result came from buyers (95.5%) who were emphatic in their agreement that every individual has a major role to play in order to win the war against poor sanitation in Dome market.

Only 3.8% seem to disagree with the fact that the individual has it as a duty to keep proper environmental sanitation including market places. Sometimes one can still see some point in their disagreement because decision makers do not see the need to include ordinary people like market users in such important decision that ultimately affect them directly and others indirectly. Another argument that one can advance is that some people are simply too lazy to dispose of trash properly.

Table 4.8.5 Results on cross tabulation of market users on practice of sanitation

I give my customers (buyers/sellers) a piece of advice on how to manage plastic waste.				
RESPONSE	MARKET USERS			
	SELLERS		BUYERS	
	Frequency	Percentage	Frequency	Percentage
Never	75	56.3	-	-
Sometimes	43	32.2	17	74
Most of the times	10	7.5	2	9
All the times	5	4.0	4	17
TOTAL	133	100	23	100

N=156

Source: Field Data, 2013

According to Table 4.8.5, more than half the number of sellers (56.3%) never educated other market users that is, either their colleague traders or their customers on proper waste management for improved sanitation, especially the problematic plastic waste in the market by way of sorting. Almost three-fourths (74%) of buyers on the other hand sometimes do either give advice or complain about the poor sanitation situation to the sellers.

This is very important because buyers might have seen from their observation that some sanitation related diseases worry them and they cannot rule out where they get their basic

necessities of life from like food among others because there is a direct correlation between one's health condition and what one eats.

4.6.1 Individual's role in ensuring improved sanitation in Dome Market

The researcher also gathered data on individual's responsibility in ensuring proper sanitation between market users (sellers and buyers) at the Dome Market. Results from questions on individual responsibility show respondents' responses both for sellers and buyers are in agreement sellers (94%) and buyers) (96%) that they need to keep their surroundings clean. Also (56.4%) of sellers never made the attempt to take that responsibility. On the contrary, (73.9%) of buyers do sometimes perform their responsibility by giving advice as to improved sanitation at the Dome market. Anecdotal evidence from the FGD seems to support wholly the result, especially in terms of individual responsibility in keeping proper sanitation in the market. For example below succinctly highlights the view as expressed by some respondent:

> *"The individual has to take responsibility for the cleanliness of their surroundings, especially since the market is a place where many users come and the impressions they have about the area, destruction of the market's scenic beauty, and the choking of drainage channels by careless dumping will lead to flooding resulting in loss of property, lives and environmental population that affect others as well".*

Besides the above reasons given by the respondents that individuals should take responsibility for the cleanliness of their surroundings, there are others reasons. These reasons include the impressions of visitors to the area, destruction of the area's scenic beauty, and the choking of drainage channels that will lead to flooding and environmental pollutions.

4.6.2 Basic Sorting of waste as a way of reducing plastic waste in the Dome Market.

The study sought the views of market users on how sorting of waste can help improve sanitation at the Dome Market. When market users were asked of their opinion about which waste they think is more problematic, responses from market users (sellers) show (53.4%) and (buyers) (43.5%) indicating that plastic waste poses the most difficulty.

The results indicate that (78.2%) of sellers are aware that sorting and self-help action like offering advice to other users can help reduce waste at source but almost about half of them never tried to sort their waste. Results of buyers however show that a number (74%) sometimes practice sorting waste. This point is supported by evidence from response from FGD:

> *"Sometimes you wish to sort the waste but people are on you to buy so you do not get time and you cannot do the two at the same time. The plastic waste buyers also offer small price for the sorted waste that does not encourage one waste time to do that. Besides, l find it difficult to put my hand in the Waste"*

CHAPTER FIVE

DISCUSSION OF RESULTS

Introduction

The study was descriptive-analytical survey type to explore the knowledge, attitudes and practices towards sanitation among market users at Dome in the GA East Municipality. Data was collected using interview guides (schedules) and focus group discussion on educational factors and age with regard to knowledge, and attitudes as well as practices of Market Users towards proper sanitation at the Dome Market.

The results presented comprise: influence of educational factors and age in relation to improved sanitation practice. The results presented start with the description of educational factors and age that influenced improved sanitation among market users, and provide information and measurement of knowledge as well as attitude that influenced improved sanitation in the market. The chapter presented results of analysed data on practice as a result of education for improved sanitation among market users. Conclusion was drawn for each of the specific objectives of the study.

The first part of the results presented is the view of market users (sellers) on factors that influenced improved sanitation in the market. The second part of results presented is the views of market users (buyers) on factors that influenced their desire to buy from improved market environment. After presenting the results on the basis of the specific objectives of the study, the summary of the major results of the study is presented.

All of the respondents (100%) were from the ages of 18 to 60. Ghana's constitution can classify them as adults as well as United Nations Education, Scientific and Cultural Organization (UNESCO, 1976) definition of an adult as someone regarded as an adult by the society. This age group was significant to the study because to keep a good sanitation at the market is the duty of the adult. It was also the belief of the researcher that adults had wide store of knowledge to inform good attitude towards proper practice of sanitation at the Dome Market. The researcher targeted them since they were old enough to give out rich information about sanitation at the market which the researcher wanted to find out.

5.1 Demographic factors

The respondents (64.70%) who sell at the market were females. This was as against respondents (35.30%) males who sell at the market. These results may not surprise since most females work in the informal sector than they do in the formal sector, which for the most part is dominated by the males. It could also be the fact that discrimination against women deprives them of the right and opportunity to go to school. These setbacks serve as a motivation for them to take their destiny into their own hands hence became managers of their own private business at places like the Dome Market. The deduction could be that one requires a higher formal education to be employed in the formal sector which for the most part, the female are not given the opportunity.

This goes to support an earlier study by Bortei-Doku et al, (1990) as cited in (Adoo-Adeku, 2004), that women made up of about 51% of the labour force in Ghana but because they had low level of education and lack professional qualification and skills, they were usually self-employed and were found mostly operating in the informal sector. In a similar vein, just as it is

with sellers, more than half (65.22%) of the respondents who buy at the market were females, and (34.78%) who buy at the market were males.

Apparently, it is obvious that men are more qualified because they have more opportunities available to them, and the fact that the house chores is meant for the woman who typically has to visit the market to buy items for the house. This is congruent with the literature (Raudsepp, 2001; Diamontopoulos, et al., 2003) advanced for gender differences in the different socialization patterns between boys and girls. More often than not, girls are made to carry out most of all the errands, sweeping and cleaning activities; they are called upon more than their male counterparts to perform maintenance tasks at home or in market centres. This could be as a result that a typical Ghanaian expects that a woman had to be in the house and keep the kitchen rather than to go to school, but this trend at present is gradually changing.

The results of age show that more of the respondents (39.80%) fall within the age group 36 and 45 years while respondents in the age groups18 and 35 years and 46 and 60 years have (31.60%) and (28.60%) respectively. The respondents (39.80%) of sellers in this age group seem to be the active workforce in the market. The low and close percentages of the other two age groups may be due to people considered to be still in school or finish and searching to land a job that is the age group 18 and 35 years. Respondents in the age group 46 and 60 with the smallest percent may be that at that age most sellers are aging and suffer from age related health conditions whereas others may have children to run errands for them.

A significant number (60.90%) of buyers is in the age group of 36 and 45 years, who are probably housekeepers. The numbers (21.70% and 17. 40%) of buyers are in the age groups of 18 and 35 and 46 and 60 respectively. These two age groups are either considered to be students

or people leaving the active workforce bracket and probably at that age may have people to run errands for them.

Results on occupation indicate that (100%) of sellers are in the informal sector. This high result revealed that one did not require high formal education to sell in the market. Besides, unemployment drives the majority to the informal sector as observed in the Dome market where people with secondary and tertiary level education have had to sell under very disturbing sanitation condition just so they can survive. With regards to buyers, a significant number (56.50%) are in the informal sector mostly petty traders. The number (21.70%) is unemployed and these are for the most part people who are caretakers in the house. The remaining (21.70%) are in the formal sector that does not get the chance to patronize the markets since they are engaged for official work as most market days normally fall on week days a time the market also operates. This is consistent with an earlier study by Bortei-Doku, et al., 1990 as cited in (Adoo-Adeku, 2004), that women made up of about 51% of the labour force in Ghana but because they had low level of education and lack professional qualification and skills, they were usually self-employed and were found mostly operating in the informal sector.

Analysis of the educational level shows that (32.30%) of sellers had never attended any school, 61.6 percent had either basic or second cycle education, while only six percent attained tertiary education. With respect to buyers, a significant number 91.3 percent had either basic or second cycle education, and only (8.7%) had tertiary education. This result on the educational level shows that while one needs no certificate to work in the market, one requires at least basic education for employment in the formal sector.

This clearly demonstrates that most of the market users operating in the filthy market had low level of education. From this analysis, the problem of sanitation management and people's knowledge, attitude and practice in the study area can be linked to the levels of formal or adult education. Holistic education about issues of sanitation in all public and private places of work could help improve the general sanitation in the country including markets. As pointed out by Oduro-Mensah (2004) education can end in a product but has to go through a process. The more educated people become in a society the better their quality of life. The role of the individual therefore, is to use the needed skills to identify opportunities in society and work towards its realization for progress.

This supports the suggestion of Agbola (1993) that perceptions and attitudes are learned response sets and can therefore be modified or changed through education. Hence, continuous public education of the market users at Dome about proper waste sorting may help improve the sanitation in the area. From this analysis, the problem of solid waste management and people's attitude and perceptions in the study area can be linked to the levels of formal education. This is consistent with the literature and confirms the findings of Pacey (1990) that formal education for women in particular is a prerequisite for change in sanitation behaviour. Improved teaching and learning of issues on sanitation in all levels of education could help improve the general sanitation in the market places.

The study showed that as high as about 56.3% of the respondents do not educate either their colleague sellers or customers on the need to clean the surroundings while about 11.5% do. The implications of having more people who do not care to educate their other market users on making their surroundings clean could mean that the society will translate it into acceptable

behaviour in relation to solid waste management, and especially the children will not develop the right knowledge and attitudes for proper practice of sanitation at an early stage in life. This is likely to impact negatively on how the next generation would handle sanitation in general and solid waste, especially plastic in particular.

5.2 General Knowledge of Market Users about Sanitation

The enabling knowledge of market users about sanitation indicated that both users (seller and buyers) have high level of awareness about sanitation. This was shown in the number (72.9%) sellers and buyers equally demonstrated moderate level knowledge and (65.2%) indicate quite a high level knowledge about issues of sanitation.

When asked about sanitation in relation to waste (plastic bags, waste paper, food leftover and a piece of metal and wood), there was a high level of awareness among market users. This level of awareness is consistent with other literature related to respondents' knowledge and practices of environmental sanitation (Raudsepp, 2001). This was supported by Duan and Fortner (2005) who observed that people possessed high environmental awareness and knowledge of local environmental issues than global environmental issues. The knowledge a community possess refers to the understanding of any given phenomenon (Kaliyapermal, 2004)), and so is the issue of sanitation at Dome Market.

General awareness of environmental issues, specifically sanitation in Ghanaian markets, and continuing reputation of poor environmental sanitation in the market areas is of great concern. Consistent with the literature (Aljaradin et al., 2011), understanding of the causes and impacts of poor sanitation was lower than the level of knowledge of people on source reduction of waste, particularly plastic waste.

The inability of the majority of respondents to explain the causes and impacts of environmental sanitation in extended detail illustrates the lack of basic relevant knowledge related to waste management and improved sanitation in the lay population. The global anxiety about high rate of waste generation has put waste prevention as a high priority on the waste management hierarchy. Consistent with the literature Medina (2002) posits that this relevant knowledge will lead to a drastic decrease in related environmental problems that confront developing countries including Ghana.

However, waste reduction seems to be very difficult to achieve because it is much associated with changing people's knowledge level and attitude (Mosse, 2001). Misconceptions were also evident throughout the FGD, further indicating a general lack of knowledge. In the waste stream in Accra plastic waste constitutes only 3.5% so it is expected to pose the least challenge to the sanitation situation as compared to 65% organic waste. This assertion is at the heart of how the level of people's knowledge does not necessarily lead to their practice of environmental sanitation. Anecdotal evidence from the FGD seems not support the result, particularly in terms of types of waste and its impacts on sanitation in the market.

This lack of knowledge was further demonstrated when some participants think plastic can degrade just like banana or cassava peels do. While others know there was a difference, but could not articulate it. This small percentage of buyers demonstrating high knowledge about sanitation could be the fact that the majority of them do not have formal education hence does not have the requisite knowledge to help manage problematic waste like plastic. Results from buyers indicate high awareness about sanitation but this does not translate into their buying behavior. This could mean that either these respondents were not particular about place they buy

from or consider a different waste material other than plastic as a cause of the sanitation problem that plagued the Dome Market.

5.3 General Attitudes of Market Users towards Sanitation

The attitude of market users showed that most of the males did not take active part in cleaning exercises at the market. Some of them saw cleaning as chores for women. This attitude might presumably be due to the socio-cultural upbringing of African and Ghanaian where the female is trained to do the house chores like cleaning whereas the male played around.

This is congruent with other literature related to gender and environmental sanitation (Raudsepp, 2001) found that women were significantly more likely than men to be concerned with environmental problems. Females have been consistently shown to have higher environmentally conscious attitudes and practices than men.

The common reason advanced for gender differences is the different socialization patterns between boys and girls (Raudsepp, 2001; Diamontopoulos, Schlegelmilch, Sinkovics, and Bohlen, 2003). This is consistent with the literature of studies on knowledge and attitudes (Raudsepp, 2001) have found a positive and often significant relationship between the two variables.

Further consistency was established in raising levels of knowledge and attitudes toward nature conservation, Olson, Bowman and Roth (1984) found a positive relationship between scores on the knowledge test and scores on the attitude test for all concepts measured. Similarly, Armstrong & Impara (1991) found that positive attitudes followed exposure to environmental education publication on knowledge and attitudes about the environment. It is therefore,

imperative that market users should possess not only proper knowledge and skills of keeping proper sanitation, but they must also have the right attitudes towards it (Wong, 2002).

An individual's knowledge about an innovation shapes his or her attitude towards an innovation. Pertaining to this study, Dome market users are made to know that they can generate an income by selling the sorted waste to prospective users for example sorted plastic waste can be sold to "Buy plastic bag companies", the bottles, glasses and ceramics to bead makers foodstuff waste to livestock owners and for manure and so on.

Rogers (2003) says while the knowledge stage is cognitive (knowing) centred, the attitude stage is more affective (feeling) centered. This requires that, after an individual has acquired knowledge on the "what", "how" and "why" of an innovation, the individual's attitude towards the use of the new idea also affects his or her adoption and rejection of the innovation. As a confirmation it should however be noted that, the formation of a favourable or unfavourable attitude towards an innovation, however, does not always lead directly or indirectly to an adoption or rejection of a novelty (Rogers, 2003). This is consistent with results from the study where high knowledge (72.9%) correlates to good attitude (75.9%) and low knowledge (0.8%) is directly equal to bad attitude (0.8%) but in practice of sanitation results differ.

Consistent with the literature perceived severity (Lorenzoni et al., 2007), this research found that participants did not perceive poor sanitation as a direct risk within the context of their daily lives, and felt that impacts will be temporally and spatially distant. Redding et al., (2000) agreed that concern for environmental issues was high when they were perceived as local threats just like poor sanitation in the market at Dome. This was particularly true when they could be

contextualised in their own surroundings (Lorenzoni et al., 2007) (like flooding as a result improper waste disposal into gutters around the market).

Interestingly, it has been shown that although environmental issues like waste and poor sanitation are often not considered current problems (especially when compared with the economy or unemployment), when asked about serious future environmental issues, waste and poor sanitation came out as much more worrying as exemplified by the result from FGD.

Anecdotal evidence from the FGD question: Do you know that if the current sanitation situation continues unchecked, very soon there would be no market here because floods would take it over. Responses from respondents demonstrate that although the market users are not currently concerned about the impact of poor sanitation, their anxiety could be affected with a temporally accurate understanding of sanitation issues.

Another common perception amongst participants was that poor market environment and waste problems are failures of local authority and waste companies. Although market users' show a good attitude towards sanitation based on scores, practice of same leaves much to be desired. Also consistent with results from Campbell (1963) in an earlier study on attitude which he pointed out that ever since the beginning of attitude research, investigators get puzzled over the relationship between attitudes and practice. They wondered why people sometimes said they liked something and then acted as if they did not. Participants distanced themselves from personal responsibility. Other studies have found the same removal of individual accountability (Leaman, 2004) but this evidence from the FGD does not support results from the qualitative analysis. The researcher thinks that the gap at this stage will be bridged in the next chapter with relevant and context-specific policy put in place.

5.4 Current Practices to Improve Sanitation Situation at the Market

Concerning the responses on existing practices to improve sanitation, various aspects were looked at and the responses of market users also varied. The practice of basic sorting and individual responsibility to reduce indiscriminate disposal of waste, the researcher elicited varied responses from respondents consistent with literature in previous research (Lapidos, 2007). The results indicated that a significant percentage (78.2%) of sellers are aware that this practice of basic sorting can help reduce waste at source but almost about half of them never tried to sort their waste. Results of buyers, however, show that a significant percentage (74%) sometimes practices sorting of waste but interestingly, not those who live in the market place with the waste. Individual's responsibility includes, advising other market users on proper sanitation, avoid inordinate use of non-degradable packaging materials among others. One observation to note is that the number of educated buyers is significant as compared to those of sellers. The conclusion could be that education played a key role in the difference in practice while it should be noted besides that other factors including experience can equally play some role.

These crucial measures to reduce poor sanitation did not receive the same efforts from market users. The results for practice of proper sanitation indicate rather discouraging numbers. The results indicated that a significant percentage (78.2%) of sellers are aware that these waste mitigating practices including basic sorting and self-help (offering advice to other users) can help reduce waste at source but almost about half of respondents never tried to practice these measures to reduce waste.

Results of buyers however show that a significant percentage (74%) sometimes practice sorting waste. This result is consistent with the literature Mosse (2000) as it is assumed that the

preventive action will be taken only if the expected benefits outweigh the expected costs. Participants described a variety of improved sanitation enhancing behaviour that can be pursued at the individual level. Frequently identified behaviour include basic sorting of waste , engage the services of waste pickers, communal labour to clean the market, packaging with waste mitigating materials, using waste food items and peels for animal feed and sell to scrap buyers materials they buy and engaging other users to see the need for proper sanitation.

Although identified, not all participants engage in these behaviours. Reasons included inconvenience, cost, time and discomfort.

These potential barriers were especially prominent related to packaging and sorting activities as participants seemed reluctant to change their current way of packaging and waste disposal for more sustainable waste management behaviours like basic sorting and proper waste disposal as observed in previous research (IRIN, 2006)

Although some of these behaviours are not perceived as attractive alternatives, many actions to reduce waste and sanitation provide direct societal benefits. These include health benefits from (preventing the breeding of mosquitoes, typhoid, cholera, diarrhoea), economic benefits from (clean selling environment, continues attendance at work because of good health) and psychological benefits of positive self-image as a result of selling and buying in hygienic environment. This is particularly important when discussion behaviour change incentives, as participants described decreasing cost, and increasing inconvenience and time as potential behaviour change mechanisms.

Discussion of barriers with participants uncovered numerous reasons why they are not prepared to change. This is congruent with previous research (Lorenzoni, et al., 2007) where individual

and social level barriers to engaging with sanitation have been identified. Individual barriers include a lack of knowledge consistent with the literature where communities are looked at as passive recipients of government services and are disregarded in local decision making resulting in people failing to know the role they can play in the process (Tadesse, 2006, Nsiah-Gyabaah, 2004), skepticism, distrust in information sources, perceiving poor sanitation as a distant threat, not considering the environment as a priority, reluctance to change lifestyles and individual helplessness (Lorenzoni, et al., 2007). The perpetual creation of the awareness on the need for market queens and well informed members to educate their colleagues on basic issues on sanitation may help curb the problem.

List of findings from the study

1. They do not have the requisite knowledge on maintenance of good hygiene and improved sanitation practices.
2. It has been shown that waste and poor sanitation are often not considered current problems (especially when compared with the economy or unemployment).
3. They are reluctant to change lifestyles due to individual helplessness as they get used to the situation.
4. They put both biodegradable and non-biodegradable wastes into the same waste bin.
5. It has been found that there was removal of individual accountability where market users claimed cleaning the market was the duty of Local Authority.
6. They put both biodegradable and non-biodegradable wastes in same bin due to its unavailability.

CHAPTER SIX

Summary, Conclusion and Recommendations

Introduction

The study explored knowledge, attitudes and practices towards sanitation among market users at Dome in the Ga East Municipality. It provided a summary of the study and highlighted the conclusion that was arrived at. Based on the findings, recommendations were made.

6.2 Overview of the Study

Sanitation has become an increasing concern for both government and the citizens. As people became more educated and enlightened, they turned to generate more waste as a result of access to variety of consumables. The city of Accra has been plagued with sanitation problems due to poor waste handling. The waste situation, especially the plastic waste, has become so much so that it is difficult if not impossible, for local authorities to cope with its attendant sanitation challenges. As a result of this, the Ga East Municipality spent a good sum of money which otherwise would have been used for other pressing development projects to clear the market of filth.

Be that as it may, the sanitation situation gets worsening by the day as a result of low relevant knowledge, bad attitudes and poor practices among users of the market towards improved sanitation in the Dome Market in the Ga East Municipality. Also, this waste menace if left in its current state would have a negative impact on the health of users and others who partake of the market chain. This has implication for the National Health Insurance Scheme (NHIS) since the

scheme will be inundated with poor sanitation related diseases such as typhoid, diarrhoea, cholera among others.

It has, therefore, become necessary for market users to develop appropriate measures that would help keep the market of filth to ensure improved sanitation in the Dome Market. The study therefore, sought to find out knowledge, attitudes and practices of market users towards sanitation in the Dome Market under the following specific objectives;

1. The knowledge level of market users about sanitation in terms of;
    I. Educational factors II. Age factors.
2. The attitudes of market users towards sanitation.
3. Kind of environmental sanitation practices that market users engage in.

The study was grounded on two main theories namely; Health Belief Model and Diffusion of Innovation theory. The two theories seek to achieve improved market sanitation in the Dome Market. However, the overarching theory was the Health Belief Model which related to health behaviour application and allowed for better knowledge, attitudes and practices towards proper sanitation. The Diffusion of Innovation theory which related to disease prevention behaviour also ensured that users demonstrated good knowledge level, attitudes and practices towards sanitation.

Methodology adopted for the study was descriptive-analytical survey type. Interview guides were administered to market users because the researcher expected that not every user would possess the skills of reading and writing or too busy to do so. Then a Focus Group Discussion session was held for users (sellers) centred on the topic under study.

The interview guides covered the questions on the objectives as follows:

I. What is the knowledge level of market users about improved sanitation based on

II. (I) educational factors (II) age factors?

III. What are the attitudes of market users toward sanitation?

IV. What environmental sanitation practices do market users engage in?

Data collected was checked to ensure that all questions were answered, coded and typed into the computer for Statistical Package for Social Sciences (SPSS) worksheet which was used for the analysis to generate frequency tables, percentages and bar-charts.

6.3 Major Findings of the study

The following were the major findings of the study.

On the issue of knowledge and attitudes towards practice of improved sanitation, a few of the market users showed concern in keeping proper hygiene but other users were not concerned because:

1. They do not have the requisite knowledge on maintenance of good hygiene and improved sanitation practices.

2. It has been shown that waste and poor sanitation are often not considered current problems (especially when compared with the economy or unemployment).

3. They are reluctant to change lifestyles due to individual helplessness as they become used to the situation.

4. They put both biodegradable and non-biodegradable wastes into the same waste bin.

Some of the difficulties that market users face were the following:

1. Absence of waste bins at vantage points for waste disposal.

2. One waste bin to collect all kinds of waste and delay in evacuating waste for final disposal sites.

The study also uncovered some measures that market users believed would help solve the poor sanitation in the market including:

1. Educating market users on good hygiene and improved sanitation.

2. Organizing routine clean ups at the market.

3. Supplying enough waste bins for proper sorting of waste.

4. Putting in place measures to correct sanitation related offences.

6.4 Conclusion

The findings were based on a study conducted to find out knowledge, attitudes and practices of sanitation among market users at Dome Market in the Ga East Municipality. The study revealed that market users lack the requisite knowledge on good hygiene and improved sanitation practices. As a result, they do not see the issue of improved sanitation as a current priority. They also failed to change their current lifestyles that seemed to worsen the sanitation situation. Besides, they do not seem accountable for keeping a clean market environment.

Absence of adequate litter bins at the market for possible sorting and easy disposal of waste led to high level of indiscriminate littering of waste. Untimely lifting of waste bins was a concern

since this becomes a source of stench and a lot of houseflies that transmitted disease including the attraction of rodents to the market. There is, therefore, the urgent need to educate market users to have the necessary information that will enable them change their current bad attitudes for effective and efficient practices toward improved sanitation. Measures must also be put in place by the Local Authority to provide basic waste collection bins to ensure clean market for good revenue generation.

6.5 Recommendations

In view of the research findings and conclusion drawn, the following recommendations have been made:

1. Ga East Municipal Assembly and Management of Accra Markets need to liaise with adult education institutions to develop and implement periodic public education programmes to inform market users about waste segregation in order to change their attitudes toward the maintenance of proper sanitary situation in the markets.

2. The government should put waste management and sanitation under the Ministry of Health so that a close eye would be kept on it by experts who are able to cost their operations and sufficient budget provided for that rather than leaving it in the hands of Local Authorities that for the most part, do not have the expertise to handle the issue of improved sanitation in relation to health and other environmental implications.

3. Government should encourage public involvement in policy making about sanitation. People are the hosts of indigenous knowledge and they can come up with various innovations in the management of solid waste (plastics) in a sustainable way as openness from government in

addressing poor environmental sanitation could be an effective method to reduce distrust and the removal of individual responsibility.

4. As a way to sustain the proper practice of sanitation, there should be a system in place (courts) to deter people who will try to sabotage the drive for improved sanitation by imposing some form of sanction commensurate with the offence, ideally a reasonable fine to maintain public order.

5. In order to improve current practices at the market; the Ga East Municipality has to provide bins separately for biodegradable and non-biodegradable wastes in order to encourage basic sorting for improved sanitation at the market.

6.6 Area for Further Research

This research has confirmed most of the findings of previous studies in the field of knowledge, attitudes and practices toward sanitation. However, it also raises relevant questions which provide the need for further research. For instance, it was observed that:

1. Market users have not been actively involved in sanitation related issues in order to reduce waste they generate.

2. Also basic sorting of waste was not in use to recover useful material from the waste.

3. In the light of this, it is suggested that studies could be conducted on how market users can be co-opted into reducing waste at the market.

4. Plastics producers should also be involved since it contributes significantly to the sanitation problem so that a better environmentally sustainable and sanitation enhancing products would be produced for sustainable waste management practices in the market.

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APPENDIX A

INTERVIEW GUIDE FOR SELLERS

An interview guide for data collection on the Knowledge, Attitudes and Practices among market users regarding sanitation at Dome in the Ga East Municipality.

INTRODUCTION:

This is a study being conducted by an M.Phil. student of the University of Ghana to collate the views of market users between the ages of under 20 and 60 on their Knowledge, Attitudes and Practices towards sanitation. The researcher is conducting this study as part of the requirements for the award of an M.Phil. Degree at the University of Ghana. All respondents are therefore assured that any information they provide in this interview will be held confidential.

Bio-Data

1. Gender
Male [ ] Female [ ]

2. Age (Last birthday)
Under 20 [ ]

21-30 [ ]
31- 40 [ ]
41- 50 [ ]
51- 6 [ ]

3. Occupation…….

4. Educational level attained:

Primary [ ]
JHS [ ]
SHS [ ]
Tertiary [ ]
Others, (please specify).....

5. Marital Status (please tick one)

a) Married [ ] b) Single [ ] c) Divorced [ ] d) Widowed [ ] e) Separated [ ]

f) Any other, please specify…….

SECION A: KNOWLEDGE OF MARKET SANITATION

Please, tick the appropriate column

No.	Statement	Yes	Not sure	No
1	Waste papers, plastic bags, cloths and nappies, a piece of metal and wood, scrap iron and scrap can are not rubbish.			
2	Left over foods, vegetables and fruits are garbage.			
3	Plastic wastes pollute the market environment.			
4	Burning is the best way to dispose of plastic waste.			
5	Dropping leftover foodstuff and plastic into gutters can cause flooding in the market.			
6	Plastic bags and plastic bottles can decompose naturally.			
7	Food, vegetables and fruits wastes can decompose naturally.			
8	Reusing plastic bags, bottles and paper etc. can reduce waste and solve waste problem at source.			
9	Every kind of waste can be disposed by burning without any effect on the environment.			
10	I am aware that one of the benefits of sorting plastic wastes is that it reduces the market wastes.			

SECTION B: ATTITUDES TOWARDS MARKET SANITATION

Please, tick the appropriate column

No.	Statement	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
1	Waste is anything without value and one of the environmental problems that needs to be solved urgently.					
2	I care about the market waste management (reduce, reuse, and recycle) for e.g. sorting the plastic bags.					
3	I feel good about the way plastic waste is managed in the market.					
4	I think putting wastes into garbage containers is the responsibility of everybody at every market center.					
5	Practice of market center waste management is not important to me.					
6	Buying fruits and vegetables without plastic packaging is necessary to me.					
7	Taking old plastic bags for shopping, rather than using new ones is good for reducing the market center waste stream.					
8	Looking for packaging that can be easily re-used or recycled is wasting the time.					
9	Making use of old plastic bottles as drinking water bottle can reduce waste in the market.					
10	Picking plastic waste to sell can help to manage plastic waste in the market centre.					

SECTION C: PRACTICES TOWARDS MARKET SANITATION

Please, tick the appropriate column

No.	Questions	All the times	Most of the times	Sometimes	Never
1	I buy packaged fruits and vegetables from the market place.				
2	I provide my own trash bin for my use in the market place.				
3	I dispose of my waste into garbage bags				
4	I collect waste such as vegetables and fruits in a trash bag before disposing of it.				
5	I wrap leftover foodstuffs tightly in plastic bag and throw away.				
6	I leave old plastic bag, unused paper and foam into trash bag.				
7	I use the old plastic rather than buying new to reduce the market place waste.				
8	I take old plastic bags to wrap / package, rather than using new ones, or take a durable bag.				
9	I give my customers a piece of advice how to manage plastic waste.				
10	Do you separate the waste (plastic, wood, metal, glass, food waste, others) before disposal?				

APPENDIX B

INTERVIEW GUIDE FOR BUYERS.

An interview guide for data collection on the Knowledge, Attitudes and Practices among market users regarding sanitation at Dome in the Ga East Municipality.

INTRODUCTION:

This is a study being conducted by an M.Phil. student of the university of Ghana to collate the views of market users between the ages of under 20 and 60 on their Knowledge, Attitudes and Practices towards sanitation.

The researcher is conducting this study as part of the requirements for the award of an M.Phil. degree at the University of Ghana. All respondents are therefore assured that any information they provide in this interview will be held confidential.

PREDISPOSING FACTORS

1. Gender
   a) Male [ ]
   b) Female [ ]

2. Age (Last birthday)
   a) 18-35 [ ]
   b) 36-45 [ ]
   c) 46- 60 [ ]

3. Occupation…….

4. Educational level attained:
   a) Basic School [ ]
   b) Secondary school [ ]
   c) Tertiary [ ]
   d) Others, (please specify).....

SECION A: KNOWLEDGE ABOUT MARKET SANITATION

Please, tick the appropriate column with regards to your response to the statements below.

No	Statement	Yes	Not Sure	No
1	Waste generated in the market place can cause some diseases such as diarrhoea,typhoid,cholera etc.			
2	Adequate measures are put in place to check waste issues in the market place.			
3	The environment in which commodities are sold is a factor to consider before one decides to patronize same.			
4	Some types of waste are more difficult to handle than others for example plastic waste.			
5	The individual's role in handling sanitation related issues is not significant.			

SECTION B: ATTITUDES TOWARDS MARKET SANITATION

Please, tick the appropriate column with regards to your response to the statements below.

No	Statement	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1	I think I can help in keeping the market place clean					
2	The market place appearance in terms of sanitation adds to the appeal to shop from there.					
3	I think what I buy from the market place can make me ill if it is not kept in a clean place.					
4	The use of biodegradable/environmentally friendly packaging can help to reduce plastic waste in the market place.					
5	Siting and storage of products for sale is worth considering in order to reducing waste generation the market place.					

SECTION C: PRACTICES OF MARKET SANITATION

Please, tick the appropriate column with regards to your response to the statements below.

No	Statement	All the times	Most of the times	Sometimes	Never
1	I do question the way commodities are displayed, stored and used by sellers that have the propensity to cause sanitation problem in the market place.				
2	I litter the market place with the waste l generate before I go home.				
3	I offer a piece of advice to the sellers of product in the market on how to store their wares to avoid generation of waste.				
4	I buy items from sellers who keep their surroundings clean.				
5	I use durable packages to prevent frequent use of disposable plastic.				

APPENDIX C

Focus Group Discussion Guide on Knowledge, Attitudes and Practices for Sellers towards Sanitation

1. What do you know about sanitation?
2. How did you know about sanitation?
3. Why did you think it is important to keep proper sanitation?
4. What did you think can come from good sanitation?
5. What were your attitudes toward sanitation?
6. What has been the commitment of the users to keep proper sanitation so far?
7. How can the difficulties encountered in keeping proper sanitation be addressed?
8. What suggestions do you offer for improvement in sanitation?