

**KNOWLEDGE, ATTITUDE AND PRACTICE OF MARKET WOMEN AT TAKORADI  
MARKET CIRCLE TOWARDS WASTE MANAGEMENT**

**BY**

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## DECLARATION

I hereby declare that except for the references which have been accordingly cited and acknowledged, the work presented was done by me as a Master of Philosophy student in Adult Education, University of Ghana, Legon.

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I dedicate this work to my parent Mr. Lawrence A. Addo and Mrs. Elizabeth Addo, my wonderful Auntie, Mrs Sarah Aba Annan and Dadziban Family.



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## ABSTRACT

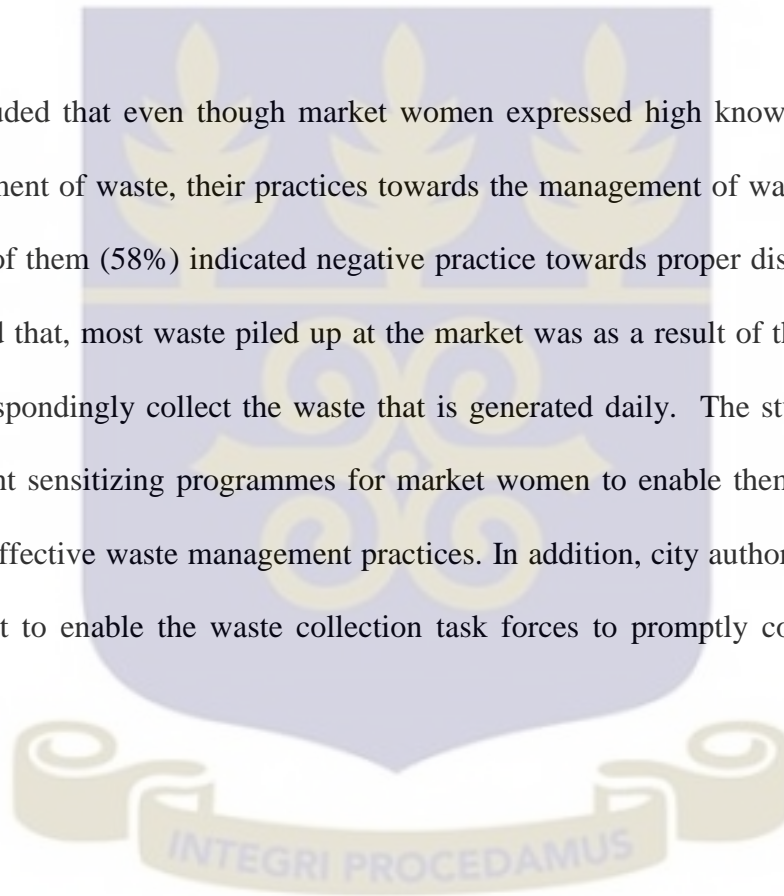
Effective management of waste has globally been a challenge, especially in most developing countries. With a rapid increase in population growth, urbanization, industrialization and change in consumers' pattern of living, waste generation has increased over time with limited resources of most governments to adequately manage such waste effectively. The effects are that waste are left uncollected and not properly disposed of which could breed an outbreak of diseases. The study thus aimed to find out the knowledge, attitude and practices of market women in Takoradi market circle towards management of waste. The study further explored age, educational level and items sold as important variables that affect women's knowledge, attitude and practice towards waste management.

The study was subsumed in the theory of planned behaviour to be able to predict and explain the behavioural patterns of market women towards the management of waste. The study employed the Descriptive Survey Research Design with an integration of quantitative and qualitative data collection tools. A sample size of 150 respondents was selected to represent the total population of 1100. In addition, five market queens and two officials from the waste management services were also interviewed.

The study also employed simple random, purposive, convenience and snowball sampling techniques to select respondents for the study. Moreover, descriptive statistical methods used to analyse the data include chi-square and Pearson correlation to establish the relationship between some background information of the respondents and their knowledge, attitude and practice towards waste management.

The study found out that most women at the Takoradi market circle had knowledge in some aspects of waste management such as proper disposal of waste and waste separation but lacked knowledge on waste reduction. Their knowledge could, however, not be translated into good practices towards waste management as more than half of them admitted they do not separate their waste. The study also revealed that market women had a very positive attitude towards management of waste though their practices showed otherwise.

The study concluded that even though market women expressed high knowledge and attitude towards management of waste, their practices towards the management of waste was low. This is because most of them (58%) indicated negative practice towards proper disposal of waste. It was also revealed that, most waste piled up at the market was as a result of the inability of city officials to correspondingly collect the waste that is generated daily. The study recommended more and frequent sensitizing programmes for market women to enable them to translate their knowledge into effective waste management practices. In addition, city authorities must provide necessary support to enable the waste collection task forces to promptly collect waste at the market circle.



## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

Globally, effective waste management has been a challenge to some developed and developing countries such as Turkey, Mexico, Nigeria, Kenya and Ghana (Huttly, 1990; Agdag, 2008; Adu-Boahen, 2012). This has been a problem due to increase in the waste generated, human attitude and inadequate resources, thus making it difficult for city authorities to handle waste properly in their localities, Takoradi market circle is no exception. This is to say that human beings are bound to produce waste whether in the house, school, market place or work place. Waste is seen by many as something that has lost its value. According to Gourlay (1992), waste is any material thrown away or something which is no longer useful and has been discarded. Kogler viewed waste as unwanted or undesired materials left over after the completion of a process (Kogler, 2007 cited in Agdag, 2008). This waste is generated from street cleaning, hospitals, households, market centres and other institutions.

Increasing waste generated in developing countries and some cities in developed countries is as a result of rapid urbanization, population growth and industrialization (Huttly, 1990). In an effort to seek greener pasture or better livelihoods, rural folks migrate to urban areas. This has caused population in urban centres to increase. Also lack of employment opportunities in rural areas and the availability of many facilities and service centres such as education and health care services in urban centres serve as push and pull factors which attract rural folks to the urban areas. The increase in population results in increase in the quantity of waste generated.

Also, Agdag (2008) emphasized that rapid economic growth and change in standard of living brings about increase in solid waste in the country. He found out that, residents in Turkey use more polythene and paper bags in their daily transactions. This is because of their change in life style and consumers' pattern of living and it has increased waste engendered in the country. These changes in consumer pattern are not different from what pertains in Ghana especially Sekondi-Takoradi.

Adu-Boahen (2012) argued that in Ghana presently, an individual is likely to receive six polythene or paper bags when he/she goes to buy 5 food stuffs at the market. Each item is put in a bag and all is then parcelled in a bigger bag. These polythene and paper bags used to package goods for their customers produce more waste in the system, making it difficult for waste management authorities to handle the volume of waste generated effectively. For instance, waste management services being unable to collect and transport waste to land fill sites regularly, leaving pile of waste around the area. In the light of this, people might be infested with malaria and cholera. The piled waste enters into gutters which causes flood due to chocked gutters. The irregular collection of waste breeds cockroach, mice and other insects. This destroys the beautification of the market centre and the country as a whole (Banga, 2011).

According to a United Nations Development Program (UNDP) survey of 151 Mayors of cities from around the world established that the second most serious problem that city dwellers face after unemployment is insufficient waste disposal sites (Adu-Boahen, 2012). Effective waste management practice is known to provide a better living environment and reduce health hazards. Also, it is an essential contributing factor to productivity and welfare of the populace (Adu-

Boahen, 2012). Ineffective waste management leads to much waste exposed in the environment which then poses health hazards to animals and human resources (Huttly, 1990). Solid waste management starts from waste collection and ends at the disposal site or recycling process. Generally, problems related to solid waste management in Ghana aside population increase are lack of continuity in implementation of government policies, inadequate formulated policies, financial and operational constraints and poor attitude of citizen towards waste management.

Thomas-Hope (1998) argued that ineffective solid waste management in households, market places and industries poses a great challenge to cities in developing countries (for example Ghana). It makes the city dirty and unattractive to foreigners. It also causes diseases that affect people in the country and makes government incur extra cost on health. Ayotamuno and Gobo (2004) cited examples of cities that have problems with waste collection. According to them, in Nigerian, people end up dumping waste in open areas which pose health hazards to them. This negative attitude is not different from cities dwellers in Ghana.

Sekondi - Takoradi is seen as one of the most populated and industrialized cities in Ghana due to the extraction of oil and gas in the region. As a result of the oil discovery, a lot of people have migrated into western region in search of jobs. This has led to population rise in the city thereby increasing solid waste. This situation has affected the traders at Takoradi market circle. Some do not get a place to sell their goods and the waste is chocking them. Takoradi market circle is one of the busiest markets centre at Sekondi- Takoradi. People from neighbouring districts transact their business there. This has increased the population at Takoradi market circle, compounding high waste generation, and accumulate sanitation problem confronting city authorities (Adu–

Boahen, 2012). Cooperative Housing Foundation (CHF) data shows that about 69% of the population (1100) are urban dwellers with 31% rural folks who migrate to the city centre daily for civic services, trading and other purposes (CHF International Ghana, 2012). Problem with regards to waste management facing Takoradi market circle is related to collection of waste. It is reported that, between one-third and one-half of all waste generated in the market remains uncollected (Pacione, 2005).

Adu-Boahen (2012) confirmed that people continue business after normal daily waste collection to the landfill sites. This creates another waste at the market centre after 6pm and deep into the night. Late hour business leads to accumulation of waste and this waste is left uncollected till the next day. He explained further that vantage points where dustbins should be placed are not done. Besides, there are limited waste containers available, causing people at the market centres to indiscriminately litter and dump waste anyhow. Moreover, traders who sell at prohibited places at the market centre tend to produce waste which is not collected. The prohibited selling places are open spaces including pavements, frontage of houses and many of the lorry packs scattered in the municipality. The uncollected waste makes the market centre and the city at large dirty and unattractive to visitors.

Consequently, uncollected waste blocks drainage channels and increases health problems related to stagnant water (Rushbrook and Pugh, 1999). Accumulated waste may cause hazards of injury to people who come closer particularly children. The uncollected waste occupies space, making the market women sit around the pile of waste to sell. This implies that market women would be ‘selling disease to people rather than hygienic food stuff’. A study conducted by Adu-Boahen

(2012) proposes that uncontrolled dumping of waste produces rats, cockroaches and other insects. This can also spread diseases such as typhoid fever, cholera, dysentery and infectious hepatitis. Puopeil (2010) argued that some people do not know the right method of disposing off waste: waste is disposed off at prohibited places such as on the street, market places and even in gutters. Many municipalities, cities and towns in developing countries ponder over waste management problem likewise Takoradi Municipality.

According to Sekondi-Takoradi Metropolitan Assembly (S.T.M.A) annual report (2012), management of waste at Takoradi market circle is in the hands of private waste management services in terms of collection, and transportation of waste generated. Zoom Lion Ghana Limited sweeps around the market every day and keep the place tidy and healthy. The market centre has three waste containers which is emptied twice daily, morning and evening. Agdag (2008) emphasised that sometimes the waste containers become full and overflowing to the extent that some of the waste is seen around the container, influencing other people to dump rubbish around it and into gutters. This brings about flies, mosquitoes, small insects surrounding the container and on food stuffs.

### **1.2 Statement of the Problem**

In recent times, the public outcry on television and radio has been predominantly on environmental hazards associated with irregular collection of solid waste generated in Sekondi-Takoradi metropolis (Adu-Boahen, 2012). He observed in his study that about half of solid waste generated in STMA is not collected regularly due to inadequate dumping site. The inability of the Municipal Assembly to manage waste generated has been the concern among the populace.

Furthermore, assertion that has been made by some government officials including ministers of state and parliamentarians on television station have expressed their concern about the deplorable solid waste disposal situation in the metropolis.

Uncollected solid waste generated at Takoradi market circle has become a problem. This has resulted in piling up of waste and overflowing of rubbish from waste containers; to the extent that people dump refuse around the waste containers and in gutters. This situation is linked with rapid population growth and industrialization in the metropolis that has led to excessive accumulation of waste (Zavochska, 2002 cited in Adu-Boahen, 2012).

Moreover, poor solid waste management is attributed to inadequate staff to sweep, collect and transport the waste to the dumping sites. Inadequate equipment and breakdown of some existing vehicles, has contributed to improper waste management at Takoradi market circle (Adu-Boahen, 2012). Also ineffective management of waste is driven by indiscriminate littering and dumping of waste by some market women at any place, this has serious effects on human health.

Therefore, if the situation is left unchecked, this can result in an outbreak of diseases such as cholera and malaria which could affect people exposed to this unsanitary condition. On the basis of this, the researcher intends to find out, the knowledge, attitude and practice of women who sell at Takoradi market circle towards waste management.

### **1.3 Purpose of the Study**

In order to secure a healthy environment for trading in Sekondi-Takoradi Metropolitan Area, there is need for the people to have a positive attitude towards the environment in which they find themselves. They have to organize and keep the environment clean. The purpose of the study is to find out whether women who sell at Takoradi market circle have adequate knowledge and attitude on waste management and to help provide a better selling environment and reduce risk of environmental hazards.

### **1.4 Objectives of the Study**

The researcher proposes to achieve the following objectives;

1. To find out the knowledge level of women who sell at Takoradi market circle on waste management.
2. To ascertain the attitude of women who sell at Takoradi market circle towards waste management.
3. To find out the waste management practice of women who sell at Takoradi market circle.
4. To examine the relationship between selected background information (age, education and item sold) and knowledge, attitude and practice of women who sell at Takoradi market circle on waste management.

### **1.5 Research Questions**

To achieve the above research objectives, the following research questions will remain the pivot of the study.

1. What is the level of knowledge, attitude and practice of women who sell at Takoradi market circle on waste management?

2. What is the relationship between selected background information (age, education and item sold) and knowledge, attitude and practice of women who sell at Takoradi market circle on waste management?

### **1.6 Significance of the Study**

Solid waste management has become a major developmental problem in Sekondi-Takoradi metropolis. This problem should not be only the concern of the municipal assembly and waste management services but also a worry of corporate entities and individuals to find a lasting solution to the problem. This is because essential human resource could be lost through poor waste management and also affect productivity in the metropolis.

In spite of the vastness of the problem very little study on solid waste management has been conducted in the metropolis. Therefore, the researcher intends to undertake this study to serve as a reference point to the Sekondi-Takoradi Metropolitan Assembly especially for waste management department and waste management institutions as far as waste management at the market place is concerned. Problems relating to poor waste management at Takoradi market circle will be identified and solutions suggested for its minimization.

Also, the study will assist city authorities and environmental protection agencies with strategies to tackle market women's poor attitude towards waste management. Moreover, this study will enhance on the knowledge of practitioners, students and leaders in the field of waste management to help find solution to minimise the issue of poor waste management in Sekondi-Takoradi Metropolitan Area and the country at large. Additionally, this study will contribute to the existing knowledge on solid waste management and encourage further research on this topic in other municipalities and metropolitan areas.

### **1.7 Description of the Study Area**

Geographically, the study area was Takoradi Market Circle, in the Sekondi-Takoradi Metropolis, in the Western Region. This location was chosen because it is one of the busiest market centres in the Sekondi-Takoradi metropolis. As a result of the oil discovery in the Western Region, a lot of companies have been established there and a lot of people are migrating into the town. As a result of this, most people from the metropolis and neighbouring towns visit Takoradi Market Circle to purchase their wares.

Some of the traders use the market circle area as their second home. They spend their whole day at the market. They leave their various homes in the morning and go back in the evening. Moreover, Takoradi is a growing city just like other Metropolitan Assembly in Ghana such as Accra and Kumasi. In the light of this, it also faces bigger challenges of managing solid waste effectively. This is due to the population growth. However, this study tends to focus on solid waste management at the market place. This is because the chunk of waste generated in the metropolis comes from the market centre (Adu-Boahen, 2012).

The study was carried out at Takoradi, a sub metro of Sekondi-Takoradi Metropolitan Assembly (S.T.M.A) in the Western Region. Sekondi-Takoradi is Ghana's third largest city in terms of land size and population. It is located in the south-western part of the country, (CHF Report, 2012). The city authority of the metropolis is S.T.M.A and it is the pivotal administrative and developmental decision making organ of the city. S.T.M.A has a total land area of 49.78km and the population as at 2010 was 559,549 (Ghana Statistical Service, 2010) with estimated floating population of 80,000 made up of people from Shama, Ahanta West and Mpohor Wassa West district. The metropolis is located on the west coast of about 280km west of Accra and 130km east of Ghana- La Cote D'voire border.

Sekondi-Takoradi is bounded to the north by Mpohor-Wassa East, to the south by Gulf of Guinea, west by Ahanta west district and to the east by Shama district. Most of the socio-economic infrastructure is densely concentrated in the core centre of the metropolis such as Takoradi and Sekondi with sparsely distributed facilities at the peri-urban. The focus of the study is geared towards Takoradi market circle which is situated at the centre of the town.

This market is chosen because it is a market place where most dwellers of the metropolis and neighbouring districts visit to purchase their wares. This situation has increased the population in the market centre leading to high waste generated, therefore, causing waste management problem in the municipality.

The age structure of the metropolis is as follows; 37.7% is below the age of 14 with 59% between 15 and 64 while those above 65 are only 3.3%. These figures depict that in the Metropolis the economically active population is about 60% of the entire population, out of which 44.1% are males and 55.9% are females (Ghana Statistical Service, 2010 cited in CHF Report, 2012).

Sekondi-Takoradi is well developed with the best of socio- economic infrastructure and facilities in terms of electricity, water, telecommunication, education, and health. There are industrial set ups and other several economic activities. Also, there are nice cemented houses in the metropolis. The buildings are mostly constructed and owned by individuals and families. By the valuation list of the land valuation division of Lands Commission, S.T.M.A estimated that the housing stock is at 36,079, (Ghana Statistical Service, 2000 cited in S.T.M.A report 2012). The

health facilities in the metropolis are made up of the regional and three other hospitals, two polyclinics, nineteen health centres as well as maternity homes. Most of these are located in Takoradi Sub-metro, (Metro Health Directorate, STMA cited in STMA report 2012).

There are various levels of education in the metropolis, both public and private. The total distribution according to Metro Education Service includes: Nursery-93, Kindergatten-126, Primary-166, Junior High School-146, Senior High School-14, Special school-1, Vocational-Technical-5 and Tertiary-3, (Metro- GES, 2009/2010 cited in STMA Report 2012).

The economic activity of the metropolis is classified into major sectors namely: industry, agriculture and services. The industry consists of the manufacturing and production companies; such as cement, cocoa, timber processing and other small scale industries. There are also individual micro enterprises such as sachet water production, batik, tie and dye, and leather works. The major agro-processed items in the Metropolis are Cassava, Palm Kernel and Smoked Fish.

The most agricultural activities engaged in the Sekondi-Takoradi Metropolis are fish production and crop farming. Here, those citizens engaged in the agriculture are mainly crop farmers. They still remain at subsistence level due to problems of topography negating application of mechanized farming and several challenges that affect production. Fishing is predominant in the metropolis because of the long stretch of coastline. However, it is noted that the production has been decreasing since 2007 due to artisanal fishing, pair trawling by big trawlers and bad fishing practise done overtime.

Additionally, the service sector is seen as the largest employer of the labour force in the metropolis. It employs 59.9% of the active labour force who are mostly employed in white colour jobs in private and public institutions, (STMA Report, 2012). The economy is dominated by service sectors, these include; shipping, Hostel/Hotel, Bulk oil storage and distribution, Transport service, Harbour and Post service, and commerce.

There is no unique tourism attraction site in the metropolis. The fort at Sekondi is being used as lighthouse by the port authority. There is a monkey sanctuary near the central business district. Like most cities along the coastal areas, Sekondi-Takoradi has a long coast line which is being used for development of beaches and resorts for recreational and relaxation purposes. Moreover, there are some entertainment places where pleasure can be sought. These places include; beaches, night clubs and drinking spots.

### **1.8 Definition of Terms**

Solid waste – It is any solid material that is no longer useful to the owner.

Rubbish – This refers to a type of solid waste generated at the market place.

Technical staffs – This refers to staffs that have been trained on management of waste and have the skills on the job.

Waste management refers to the process of handling waste properly.

Attitude refers to individual's positive or negative evaluation of a particular behaviour.

Practice – refers to ways in which individual’s knowledge and attitude on an object is demonstrated through their action.

Market women - women who sell at the market place.

Hawker - A trader who moves around the market and sometimes sits in an open space to sell.

### **Acronyms**

KAP-Knowledge, Attitude and Practice.

TPB – Theory of Planned Behaviour

S.T.M.A – Sekondi-Takoradi Metropolitan Assembly

### **1.9 Organization of the Study.**

This research work was presented in six (6) chapters. Chapter one focused on introduction of the study, it examined the extent of the problem of poor waste management in Sekondi-Takoradi Metropolis, stated the aim and objectives of the research and addressed the significance of the study in Takoradi Market Circle. Chapter two also reviewed literature. This includes theory on attitude, concepts on solid waste management and other researches that have been undertaken on waste management. Chapter three describes the method, techniques and process that were employed in gathering data from the field; the population, sample size, the sampling technique, the instrument and data analysis. Chapter four focused on presentation of the findings gathered from the field. Chapter five encompasses the discussion of the results. Chapter six summarises the key findings of the study, recommendations on how the problem can be solved and the conclusion.

## CHAPTER TWO

### THEORETICAL FRAMEWORK AND LITERATURE REVIEW

#### 2.1 Introduction.

This chapter focuses on the theoretical framework and literature review essential to the study. The chapter is divided into two sections. Section one examines the theoretical framework which focuses on Ajzen (1985) theory of planned behaviour. Section two reviews related literature, that is, what other researchers have found to be essential issues in waste management. Additionally, this chapter elaborates on the concepts regarding solid waste management which include; sources and components of solid waste, collection and storage of solid waste and contemporary method of waste management process.

#### 2.2 Planned Behaviour: A Theoretical Framework

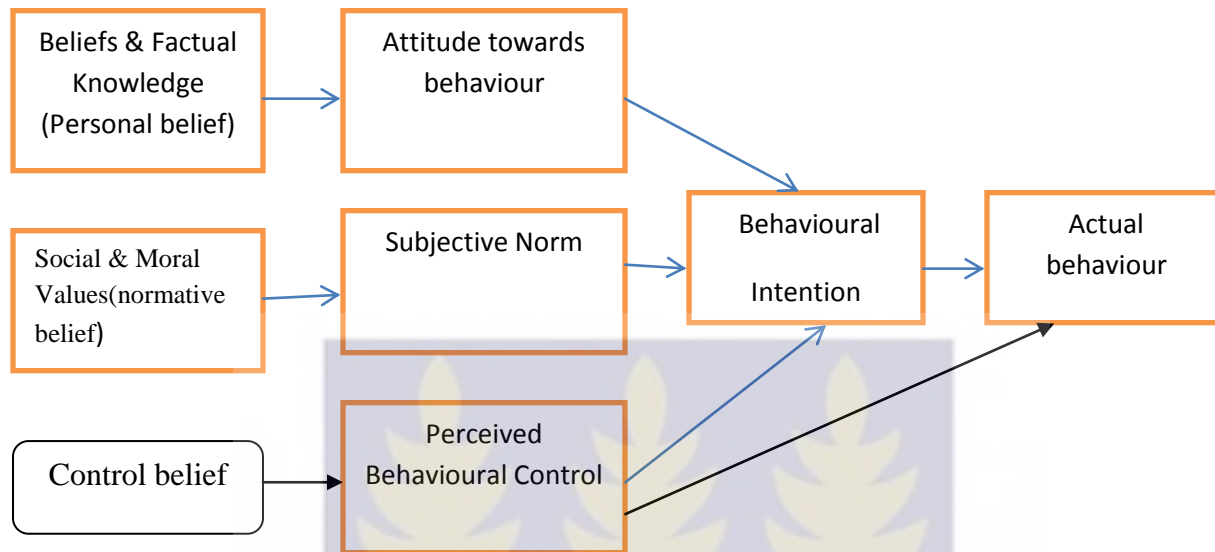
Seeing the trend of waste management crises in some developing countries and observing the inadequacies of local authorities to deal effectively with the situation, it becomes natural for researchers in the field of social science to seek general theoretical explanation to understand people's attitudinal behaviour towards waste management.

The study primarily intends to examine knowledge, attitude and practice of market women at Takoradi Market Circle towards waste management. The Theory of Planned Behaviour (TPB) by Ajzen (1985) was employed to explain and predict human behaviour. The theory was reviewed to support this study. TPB is widely tested and refined providing insight into full range of factors that influence people's behaviour in an environmental context (Teo and Loosemore, 2001). It is an extension of theory of reasoned action by Ajzen and Fishbein (1980) which also

explained human behaviour but what distinguishes between the two theories is the perceived behavioural control. The perceived behavioural control has a direct influence on the actual behaviour.

Ajzen (1985) theory of planned behaviour is basically about a link between belief and behaviour. This theory was design to predict and explain human behaviour. TPB proposes a model which measures human behaviour. It also predicts the occurrence of a particular behaviour provided the behaviour is intentional. The theory states that an individual's behaviour is a direct function of behavioural intention which in turn, is formed by attitude towards behavior, subjective norm and perceived behavioural control. The personal, normative and control beliefs respectively determine individuals' attitude towards a given behaviour, subjective norm and perceived behavioural control which collectively influences the behaviour intention and actual behaviour of the individual when participatory decisions in an action are voluntary and under an individual's control (Ajzen, 1985 cited in Agwu, 2012).

Taylor and Todd (1995) emphasized that in the TPB model, behaviour is a direct function of behavioural intention, which in turn, is formed by attitude towards behaviour, subjective norm and perceived behaviour control. However, the above explanation of this theory shows what an individual does is determined by personal motivation which is determined by these models: Attitude towards Behaviour, Subjective Norm and Perceived Behavioural Control. Figure 2.1 depicts the structure of theory of planned behaviour by Ajzen (1985). This structure will aid readers to get a clearer understanding of the theory

**Figure 2.1: Theory of planned behaviour**

Source: Ajzen, 1993

Figure 2.1 illustrates how the theory of planned behaviour works; to explain and predict human behaviour. The diagram indicates attitude towards behaviour, subjective norm and perceived behaviour control which is determined by individuals' beliefs (personal, normative and control beliefs) which influence a person's behaviour intention to act towards an object or situation. It is explained further in the next section for better understanding and its relation to the study.

### 2.2.1. Behavioural Intention

According to Teo and Loosemore, (2001), Ajzen's TPB states that attitude towards behaviour, subjective norms and perceived behavioural control together shape an individual's behavioural intentions and actual behaviour. It asserts that central to the TPB is the behavioural intention of an individual, which reflects how motivated a person is to behave in a certain way (Ajzen, 1993). The behavioural intentions are assumed to capture the motivational factors that influence

behaviour. It is also an indication of how hard people are willing to try, how much of effort they are planning to exert in order to perform a behaviour, (Ajzen, 1991). He emphasised that there is a general rule which supports this attitude formation that is, the stronger the intention to engage in behaviour, the more likely should be its performance.

Subsequently, behavioural intention is expressed if the behaviour in question is under desirable control i.e. if the person can decide to perform or not perform the behaviour. According to Ajzen, although some behaviour may meet this requirement quite well, the performance of most depends at least to some degree on such non-motivational factors as availability of requisite opportunity and resources (Example, Time, money, skills and cooperation of others) (Ajzen, 1991). Also, it is believed that, these factors represent people's actual control over their behaviour. This behaviour is determined by three factors: attitude, social and perceptual.

### **2.2.2 Attitude towards Behaviour**

The attitude factor of TBP represents an individual's positive or negative evaluation of performing a particular type of behaviour (Ajzen and Fishbein, 1980). It is seen as the best predictor of the behavioural intentions. This model is based upon personal belief and factual knowledge about the outcome flowing from it. According to Ajzen (1991) in this model, attitude develops reasonably from the beliefs and knowledge people hold about the object, (Ajzen, 1991). It is emphasised that beliefs are formed about an object or situation by associating it with certain attributes, i.e. with other object and characteristics or events. In the case of attitude towards behaviour, it is believed that each belief links the behaviour to a certain outcome or to some other attribute such as the cost incurred by performing the behaviour. Again the model asserts

that people's knowledge on an object or situation influences their attitude on performing a particular behaviour (Ajzen, 1991).

As per the theory when market women have knowledge on waste management it might influence their attitude. In that when they have positive attitude towards waste management, they might have more intention to dispose off waste properly. Ayotamuno and Gobo (2004) argued that in Port Harcourt, people's negative attitude towards waste management is due to inadequate knowledge of the public on the need to properly dispose off their waste. This has caused public places to be surrounded with filth.

### **2.2.3 Societal Norm**

According to Ajzen (1991), the social factor concerns an individual's sense of social pressure to behave in a certain way, and it is indicated in this model as subjective norm. This model is determined by social and moral norms or normative belief. That is there are certain social and moral norms that influence people to perform a particular behaviour. Ajzen and Fishbein postulate that the subjective norm have two components which work in collaboration: beliefs about how other people who may be in some way important to the individual would like him/her to behave towards a situation (normative belief) and how motivated the individual is to comply with those people (motivation to comply), (Ajzen and Fishbein, 1980 cited in Zhou, 2010). These social pressures in the market include: city authority, market queens, customers and policies that govern the market centre (no hawking on pavements and parking space around the market. No dumping of solid waste in gutters, dumping of solid waste in waste containers). Scholars such as (Teo and Loosemore 2001; Zhou, 2010) acknowledged that when market

women feel social pressure from others around them about waste management, they are more likely to dispose off waste properly.

At Takoradi market circle, it is assumed that these social pressures will influence market women to dispose off waste properly. These social pressures might influence them to have more behavioural intention to dump waste properly, thereby having good practice and attitude towards waste management.

#### **2.2.4 Perceived Behavioural Control**

The perceptual factor as identified in the model as perceived behaviour control also refers to an individual's perception of the ease or difficulty of performing the behaviour of interest, (Ajzen, 1991). It is also defined as "individuals' personal control over their behaviour and decision making, which also influences the judgement of risks and benefits of them performing the behaviour" (Zhou, 2010: 4). This model depicts that individuals' intention to perform a particular behaviour is based on personal control over their actual behaviour. According Zhou, (2010) perceived control behaviour emphasized on two aspects: how much a person has control over his/her behaviour and how confident a person feels about being able to perform or not perform the behaviour. As per this theory, people's attitude toward waste management may be positive when they have control over effective management of waste.

It is also believed that there are internal and external factors that determine individual's perceived behaviour control. These factors inhibit or facilitate the performing of behaviour. The internal factors include: individual differences, information, skills, abilities and emotion; external

factors include: time, cooperation of others and financial constraint (Ajzen, 1993; Zhou, 2010). Research has indicated that this model is compatible with Bandura's concept of perceived self-efficacy which is "concerned with judgement of how well one can execute courses of action required to deal with prospective situation' (Bandura, 1982, cited in Teo and Loosemore, 2001). This clearly shows that people's behaviour is strongly influenced by their ability to perform it.

Ajzen (1991) argued that people might have a positive attitude towards waste management but they may not have the intention to perform it when faced with perceived barriers. Thus, if a person perceives more challenges in performing behaviour, then his intention to perform will be lower. Its implication to this study, the market women might have positive attitude towards proper disposal of waste but they may face challenges, such as inadequate bin containers provided, no cooperation from others and heap of waste uncollected. These market women's intentions to behave towards effective waste management will be negative, thereby, influencing them to indiscriminately dump rubbish around.

Ajzen's theory of planned behaviour provided organized empirical observation and showed the essential values in the attitude formation process. The three models in this theory has helped to demonstrate how the behavioural intention of market women towards management of waste can be determined, i.e. their proper disposal of waste. This theory has also demonstrated how market women's attitude towards behaviour, subjective norm and perceived control behaviour towards waste management can be determined. Moreover, looking at Ajzen (1985) theory of planned behaviour, this theory has supported the study to understand the knowledge, attitude and practice of Takoradi Market Circle Women towards waste management.

## **2.3 Review of Related Literature**

### **2.3.1. Waste and Types of Solid Waste**

Waste is a human concept: it is seen by people in different ways. Scholars have defined it in diverse ways. The World Health Organisation (WHO) refers to waste as something which the owner no longer wants at a given time and space and has no current or perceived market value. Gourlay, (1992) also recognised waste as something which is no longer useful to the owner or fails to fulfil its purpose. Kogler postulates that waste are unwanted or undesired materials left over after the completion of a process (Kogler, 2007 cited in Agdag, 2008). Adewole (2009: 174) also defines waste as ‘any solid, liquid or gaseous substance or materials which being a scrap or being super flows, refuse or reject, is disposed off or required to be disposed as unwanted’. The above definitions emphasised that waste is basically unwanted material by the owner. However, waste is seen to be in diverse forms or phases (solid, liquid and gas). In this research the attention will be on the solid waste than the liquid and the gaseous waste.

Solid waste is defined as “any general waste that is not liquid or gas, originating from industrial, domestic, commercial or agricultural sources” (Miller, 2002: 518-519). Tchobanoglous et al (1993) argued that solid waste is any material that arises from human and animal activities that are normally discarded as useless or unwanted. Solid waste consists of non-hazardous, industrial, commercial and domestic waste including household organic trash, street sweepings, industrial garbage and construction wastes (Zerbock, 2003). Examples of this solid waste include; ashes, food waste, spoilt food waste, metal waste, aluminium waste, demolishing and constructional debris waste, rubbish and many others. These are different types of solid waste,

which are generated from households, industries, agricultural, commercials, market and on the street.

### **2.3.2 Source and Composition of Solid Waste**

In urban areas, there are several places that waste especially solid ones are generated. MirafTAB (2004) in his study conducted in Cape Town indicated that most waste generated in the city is from places such as household, market, school, hospital, industries and work place. Also, as people gather at a point for a function, they tend to generate waste. These functions include: meetings, parties funerals and so on (Tanaka, 1999). Solid waste consists of different materials: there are some that can be burnt, recycled and others that cannot. Scholars such as (Denison and Ruston, 1990; Kreith, 1994; and Zerbock, 2003) argued that solid waste compose of combustible and non-combustible material. The combustible are materials that can burn easily; these include paper, plastics, wood, textiles and disposable diapers. Whiles non- combustible is the opposite, materials that are difficult to burn, for example, glass, metals, bones and aluminium. Also solid waste can be classified as biodegradable (those that can be recycled) and non- biodegradable (those that cannot be recycled)

### **2.3.3 Collection and Storage of Solid Waste Generated**

Collection of solid waste is seen as an essential part in the process of waste management. It is the transfer of solid waste from the point of use and the disposal to the point of treatment or landfill. According to Kreith (1994), the element of collection includes not only gathering of solid waste, but also the hauling of waste after collection to the location where the collection vehicle is emptied. Waste collection varies from country to country. Adewole (2009) reported that in Lagos, waste collection is done by private waste services; they visit homes and carry away refuse

bags, load them into waiting trucks and cart them to the final disposal site. In Mexico City, it is believed that residents hauled their trash to a waste collection vehicle which makes frequent stops around each neighbourhood. The waste collectors will indicate their readiness by ringing a distinctive bell and possibly shouting to draw the attention of the residents (Teo and Loosemore, 2001). However, in Ghana some residents' waste are collected by private waste management services on door to door basis where, waste collectors visit homes and carry the waste with their truck for a monthly fee. Others also disposed off their waste in a waste container provided by Sekondi-Takoradi Metropolitan Assembly at public places like market.

Storage is the temporary holding of waste before the waste is treated, disposed off or stored somewhere else. According to United States Environmental Protection Agency, it requires household refuse to be stored in durable, easily cleaned containers with tight-fitting covers in order to minimise rodents or insect infestation and offensive odours (USEPA, 1999 cited in Puopeil, 2010). Basically, there are two storage facilities in Ghana. The first is the indoor, where individuals are expected to store the waste in sanitary dustbins with close fitting lids. The second is the outdoor where individuals and households in high density low income areas collect and dispose of their waste in central containers provided by the Metropolitan, Municipal or District Assembly.

#### **2.3.4 Contemporary Solid Waste Management**

Solid waste management is defined in diverse ways by authors. Waste management is the process of promoting waste reuse, reducing, recycling, waste prevention and composting of waste to reduce negative impacts on the environment (Hale, 2007 cited in Adewole, 2009). Tanaka (1999) also argued that solid waste management is all about waste reduction and

recycling. Researches such as (Adewole, 2009; Kreith, 1994; Kumah, 2007) define solid waste management as the administration of activities that provide for the collection, source separation, storage, transportation, transfer, processing, treatment and disposal of waste. Consequently, Tchobanoglous et al (1993:7) proposed a comprehensive definition of solid waste management. According to them, solid waste management is

...that discipline associated with the control of generation, storage, collection, transfer and transport, processing and disposal of solid wastes in a manner that is in accord with the best principles of public health, economics, engineering, conservation, aesthetics and other environmental considerations and that is also responsive to public attitudes.

They continue to argue that if solid waste management is to be accomplished in an efficient and orderly manner, the fundamental aspects and relationships involved must be identified and understood clearly. Hence, solid waste management incorporates the following: source separation, storage, collection, transportation and disposal of solid waste in an environmentally sustainable manner. The above definition given by these scholars, indicate that when waste is generated, it goes through some process before it is finally disposed off.

Puopeil, (2010) explained further that when waste is generated, it is first stored in either dustbins or skips. It is then collected and finally disposed off at landfill sites. Solid waste can be transferred from small collection equipment like tricycles and wheel barrows to bigger trucks for final disposal. The process of waste management will not be explained into detailed in this chapter because the researcher intends to look at the knowledge, attitude and practice of market women but not the technical men who deal directly with the disposal of the waste at the final landfill site.

### *Disposal of Solid Waste*

This is the final step in the process of solid waste management. Waste disposal management continues to be a challenge as population increases in developing countries. The collected solid waste from residential, industrial and commercial areas in urban centres is to be transported to the disposal site. But there is inadequate dumping site to dispose off solid waste. Consequently, this has led to irregular collection of waste from the source, (for example the markets) to the landfill, causing poor management of waste (Adu-Boahen, 2012). This can then result in diseases such as cholera, typhoid, dysentery and malaria leading to loss of human resources needed in the country (Zerbock, 2003). Tchobangolous et al, (1993) argued that, there are several methods of disposing solid waste. These methods vary greatly with types of waste and local conditions. Among the methods include landfill, recycling, incineration, open burning and so on. In Ghana, landfill is what most local authorities use in disposing off waste in the municipalities.

- **Transfer and Transport of Solid Waste**

Transfer and transporting is the process of relocating solid waste from one place to another. Tchobanoglous et al, (1993) and Kreith, (1994) argued that this process involves two steps (1.) The waste is transferred from a smaller collection vehicle to larger transport equipment (2.) The waste is then transported over long distance, to a processing, recycling, treatment or disposal site.

- **Recycling of Solid Waste**

Recycling is a resource recovery method involving the collection and the treatment of waste produced for use as raw material in the manufacturing of the same or another product, (Tchobanoglous et al, 1993). Researchers such as Kreith (1994) and Momoh and Oledobeye (2010) have emphasised that, recycling is the most positively perceived of all the waste

management practises. Momoh and Oledobeye explained the importance of recycling; they stated that recycling has many benefits: firstly, it saves precious finite resources, lessens the need for mining of virgin materials which lowers the environmental impacts for mining and processing and reduces the amount of energy consumed (Momoh and Oledobeye, 2010). Recycling also, improves the efficiency and ash quality of incinerators and composting facilities by removing non-combustible materials such as glass and metal. In addition, recycling is a proper tool in minimising the amount of solid waste that enters dump site. It is seen as the best, efficient and effective method of solid waste management.

The United State Environmental Protection Agency (USEPA), (1999) cited in Puopeil, (2010) has also recommended recycling as the most appropriate waste management technique. It is argued that recycling turns materials that would otherwise become waste into useable resources and it produces environmental, financial and social returns in natural resources conservation, energy conservation, pollution prevention and expansion and competitiveness.

- Landfill

Sanitary landfills are designed to greatly reduce or eliminate the risks that waste disposal pose to public health and environmental quality. This is usually placed in areas where land features act as natural barriers between landfill and the environment (Kreith, 1994). According to Tchobanoglous et al, (2003) landfill site is one form of waste management that nobody wants but everybody needs. He argued that among the four basic waste management methods- recycling, incineration, landfills and composting. Landfill sites are simply management technique that is both necessary and sufficient.

### 2.3.5 Urban Solid Waste Generation

Solid waste is generated at places where human and animal activities are undertaken. There are different sources where solid waste is found. Tchobanoglous et al, (1993) identified eight sources of waste generation in a community like Ghana. This includes: households or residential, commercial, industrial, institutions, construction and demolition, municipal services, treatment plant site, and agricultural source.

Miraftab (2004) argued that when people are gathered at some points for functions, waste is generated, such places include, schools, institutions of higher learning, bus stops, work places, funerals, parties and the market centres. Household waste is waste generated from homes and residential places. This may consist of food and vegetable waste, paper, cardboard, plastics, tin cans, textiles, yard waste, wood, aluminium and so on. Industrial waste as the name implies is waste which comes from industrial processes; construction, fabrication, light and heavy manufacturing and refineries. Examples of this kind of solid waste include, textiles rejects, fish and canning waste, construction and demolition activities, paper, cardboard, etc.

Commercial waste is solid waste generated from hotels, restaurants, stores, markets etc. This solid waste produced includes: food waste, vegetables, cardboard, packing cases, plastics, glass, scrap metal etc. Municipal service waste consists of waste generated from street cleaning, parks and beaches and other recreational centres. This waste includes: polythene bags, 'pure water sachet', paper, food packs etc. Construction and demolition waste consist of waste generated from new construction site, road repair renovation site and broken pavement. This waste includes: concrete, steel, and wood etc. Institutional waste consists of waste generated at schools,

universities and other institutions. Improper disposal of this solid waste pollutes all the vital components of the living environment (i.e., air, land and water) at local and global levels.

### **2.3.6 Attitude towards Waste Management**

Attitude represents people's evaluations of objects or situations that predispose them to behave in a certain way (Ajzen 1993). Begum et al, (2009) explained attitude as a positive or negative feeling towards specific objects; it exerts specific influence on a person's behaviour to people, objects or situation. According to Gibson et al, (1997) it is widely accepted that attitude has four dimensions, namely, affective (feeling/emotions), behavioural (intentions/actions), cognitive (knowledge/beliefs) and evaluation (values/like or dislike). Affect is emotional segment of an attitude which is learned from various sources such as peers, teachers, parents and leaders. Cognition is the perception, opinion or beliefs segment of an attitude with evaluate belief being the most important element which manifest as favourable or unfavourable impression someone holds towards an object or person. The other component of attitude is behaviour. Behaviour is a person's action towards someone or something in a certain way.

It is argued that people's behaviour is influenced by their attitude. Fabrigar confirmed and stated whether serious or not, behavioural decisions are frequently based on attitude (Fabrigar, 2004 cited in Begum et al, 2009). Olson and Zanna (1993) established that people form attitude because "they help to give structure and priority to a complex world providing a degree of consistency and clarity to an individual's explanation and interpretation of objects and situations. A lot of studies (Adeyemo et. al, 2013; Banga, 2011; Momoh and Oladebeye, 2010; Sichaaza, 2009) have been done on attitude and environmentalism. These studies were mainly focused on households and industries, few studies exist to show on public. Based on this, literature on

households and industries on attitude towards waste management will be used to support the study.

Various empirical results are found in literature on people's attitude towards waste management. It is demonstrated in literature that people have negative attitude towards waste management. For instance, Sichaaza's (2009) study on an assessment of knowledge, attitude and practice towards waste management among Ng'ombe residents indicated negative attitude among the respondents. The study found out that among residents of Ng'ombe 68% feel it is the responsibility of the Lusaka city council to keep the environment clean, and the remaining respondents are of the view that it is the responsibility of the health inspectors. This is because in the first republic, United National Party (UNIP) government under Kenneth Kaunda's presidency, the city council cleans the area and disposed of waste freely ( Sichaaza, 2009) and this has influenced the residents' negative attitude towards waste disposal.

A study conducted by Hassan et al, (2000) in Malaysia revealed that people had negative attitude towards waste management. This is because of their change in life style; shopping and high standard of living. Their consumption pattern has changed; their shopping packages produce a lot of unwanted materials. There is an uncontrollable consumption of Kuala Lumpur citizens and this behaviour has caused increase in waste generation. However, this situation has put pressure on local authorities making them to continually seek new management strategies to deal with the increase in waste generation. Kulatunga et al (2006) stated that for a successful implementation of waste management measures, a collective effort from all involved parties is important. This

means for minimisation of waste at the market place, it involves the local authorities and the market women as well.

Amoah-Alex, (2010) added that, this is because the market women feel reluctant moving from their stall to the waste container. An article by Andoh, (2014) shows that, there are inadequate waste containers at the Kaneshie market in Accra. As a result some women at the Kaneshie market sell around overflowing waste containers. Kapoor (2009) argued that attitude is a major determinant of decision- making behaviour. In his study on public attitude on solid waste management, it was indicated that 92.7 % of respondents felt they had nothing to do with the dirty place, and it is the duty of the municipal authorities to keep the place clean. Likewise, at the Kaneshie market, Andoh (2014) reported that the market women blamed the insanitary condition at the market on the negligence of the waste management company assigned to collect waste at the market. They shared their sentiment that they pay toll every day so the municipal assembly has to make sure the market is kept clean. This implies market women have negative attitude towards waste management based on their belief that is not their duty to keep their environment clean.

Furthermore, a study conducted in Kenya on municipal solid waste management suggests some attitudinal problems facing the public. Henry et al (2006) explained that the people's negative attitude towards waste management in the country is as a result of failure of the local services to provide prompt service. Their study indicated that most dumping sites are not served at all weather climates. For instance, during the raining season, the roads which provide access to the dumpsites are difficult to use. This causes most of waste not transported to the landfill site leading to pile of waste in the area. Moreover, another waste management problem the public

face is the breakdowns of collection trucks in most municipalities which cause most waste not collected to the landfill site. Henry et al (2006) found that in Nairobi, as at 1999 more than 50% of municipal solid waste collection trucks were out of service due to breakdowns. This situation also hinders most waste generated to be collected regularly.

In contrast to this, there are research findings which indicated that respondents had positive attitude towards waste management. Adeyemo et al, (2013) in their study conducted in Ogbomoso, Nigeria found that majority (64%) of residents felt bad on improper disposal of waste and agreed that waste disposed into drains and around the surroundings is bad and unhealthy. The study agreed with that of Kpoor, (2009) which shows that citizens of Yamuna Nagar City also have positive attitude towards proper disposal of waste. It was reported that (72.9%) of the respondents felt bad when they disposed off waste around their surroundings but they are helpless. This is because they lack good waste management facility.

The importance of human factors in the minimisation of waste is a key issue in solid waste management. Scholars have argued that waste can be prevented by changing attitude, (Teo and Loosemore, 2001; Skoyles and Skoyles, 1987 cited in Begum et al, 2009). However, people's attitude can be changed by focusing on what determined their attitude towards a situation. Research on attitude indicates that people's attitude towards an objects or situation influences them to act towards the action positively or negatively.

### **2.3.7 Knowledge of Waste Management**

Knowledge refers to the understanding of subjects and known information related to it. A person gathers knowledge through, past experience, experts, books, research etc. and pass on to others through various medium, (Collins, 1993 cited in Adeyemo et al, 2013). An individual's knowledge on an object influences his/her attitude towards that object. A study conducted by Teo and Loosemore on waste behaviour in the construction industry established that low level of knowledge on waste reduction has negative impact on management of waste. They explained that effective training organized on waste management for the constructors influences their operations positively, (Teo and Loosemore, 2001). This suggests that knowledge on an object or situation serves as a function of attitude. As argued by Maycox that understanding behaviour is critical to minimizing municipal solid waste but there are very significant barriers such as a lack of knowledge among the general public as well as social norms that adversely affect waste practise (Maycox, 2003 cited by Begum et al, 2009).

Begum et al, (2009) in their study conducted in Malaysia on contractors' attitude on waste management revealed that majority (55%) of the respondents knew about waste reduction. This was as a result of their participation in waste management training programmes. This implies that knowledge on waste management influences their positive attitude towards waste management. Ayotamuno and Gobo (2004) found that in Port Harcourt residents have negative knowledge towards waste management. They indicated that respondents were of the view that it is the responsibility of the local authorities to keep the city clean. This is due to inadequate enlightenment of the public on the dangers associated with poor waste management and the need to properly dispose off their waste.

Most citizens in the developing countries lack adequate knowledge on waste management and health implication towards that behaviour. Research has showed that inadequate knowledge on solid waste management in the municipality has negative influence on the way the public dispose off waste (Teo and Loosemore, 2001). Looking at the trend of the reviewed literature it indicates that little research has been done on knowledge of market women towards waste management. However, this problem can be applicable to market women, in that, inadequate knowledge on waste management can be a contributing factor for market women dumping waste in the open.

### **2.3.8 Waste Management Practice**

Many studies (Adeyemo et al, 2013; Banga, 2011 and Agwu, 2012) have been conducted on waste management practice. Waste management practice focuses on people participating in waste management activities such as waste disposal, separation of waste, recycling etc. Proper waste management practice is essential for quality of life. This will avoid dangers associated with improper waste management like flood, diseases etc.

According to Adeyemo et al (2013) in the year 2011, Nigeria witnessed flood disaster as a result of improper disposal of refuse leading to destruction of several houses, loss of lives and destruction of properties. This is a result of the negative waste management practice by Nigeria residents. The department of health in South African emphasised that most of the major consequences of inadequate waste collection and disposal system among urban poor communities in developing countries poses threat of diseases outbreak. For instance, diseases such as malaria and cholera are the commonest diseases suffered in Zambia, Nigeria, Kenya and Zimbabwe (Sichaaza, 2009). It was further argued that in Zambia 767 cases of cholera and 2938 cases of malaria were recorded at Gokwe growth point in 1999. This situation can also be found in Ghana. People get infected due to improper waste management practices.

Banga (2011) and Agwu (2012) explained that instead of waste being perceived as a problem, it could be converted into a positive tool for improvement in people's lives. For example, Banga (2011) observed in Kampala that households recycled waste from metal into charcoal stoves and convert straws into bags and mats. Palczynski also observed in Egypt a large scale of innovative and efficient waste recovery, reuse and recycling operation is run by Zabbalen, a group of over 50,000 people involved in the business of waste collection and processes (Palczynski, 2002 cited in Sichaaza, 2009). He added that 80% of all collected plastics, metals and other component of waste stream are recovered and recycled. This is a sign of good practice that will prevent diseases and bring about economic growth.

Empirical findings found in literature have portrayed people's practice on waste management. For instance, according to Amoah-Alex (2010) a study conducted in some markets in Kumasi such as Adum, Kajetia, Roman hill and Central Market revealed that people's negative practice to waste management is due to some factors inhibiting proper waste management such as inadequate dustbins and lack of education on waste management given to market women. He added that, the few waste containers in the market centres are farther away from the sellers. This makes residents dispose off waste around their surroundings. However, there is the need for adequate dustbins, law enforcement and education to help minimize this problem.

As mention earlier by Maycox (2003) cited by Begum et al (2009) that understanding behaviour is critical to minimising municipal solid waste but there are significant barriers such as lack of knowledge among the general public as well as social norms that adversely affect waste practice. However there is the need for government to ensure that the public receive education on proper waste management practices.

Jamais and Tatlongahar (2010) argued that residents in Sta. Rosa City, Luguna exhibited favourable practice on waste management. It was found that majority (65%) of the respondents segregate, recycle and reuse their waste. Recycling and reuse of waste help reduce the quantity of waste sent to the landfill sites. However, studies in Luguna showed that in Calamba, there is recycling of waste but most of the respondents do not segregate their waste (Cedillo, 1996 cited in Jamias and Tatlongahar, 2010). Residents' actions towards waste management practice indicate that there is inadequate knowledge on recycling. Banga (2011) argued that education on waste management enhances people's knowledge and attitude leading to positive practice on waste management.

#### **2.3.8.1 Challenges on Proper Disposal of Solid Waste**

Many countries especially developing countries face crises on proper dumping of solid waste. Various researches have made it clear that these crises are attributed to some factors that cause people to dump or litter rubbish indiscriminately in public places such as the market. For instance, Gobo (2002) in a study in Nigeria identified that ineffective management of waste is attributed to "the ambiguity in the Nigerian environmental law on the authority vested with the responsibility of collecting and disposing of waste in the state". Additionally, Amoah- Alex (2010) found that indiscriminate dumping of waste in Kumasi is due to lack of enforcement, lack of inadequate technical capacity, inadequate commercial orientation and lack of inter-institutional collaboration. He asserts that people are aware of the problem of intense littering and dumping of solid waste yet it is confirmed by sweepers at various public grounds that it takes thirty minutes for the swept grounds to be littered again. Also, research indicates that people blame the cause of indiscriminate dumping with the institution in charge.

According to Amoah-Alex, (2010) majority (56%) of market women have negative practice towards waste management. He found out that respondents dispose waste around their surroundings and in gutters. This was due to inadequate dustbins, lack of education and lack of law enforcement. This posits that, the citizens are not the only contributing factor but also part of the blame is from the local authority's ineffective solid waste management in the municipality. This is similar to Gobo's (2002) study in Port Harcourt which indicated majority (82%) of the residents' negative practice was as a result of poorly managed and uncoordinated approach to waste management practise, unhealthy cultural attitude and habits.

Ayotamuno and Gobo, (2004) argued that this habit in and around the city is very common and it appears to come from domestic sources and are characterised by household waste. They added that these waste includes food waste, polythene, textiles etc. Moreover, they found that households pay nothing to the local authority for collection of the waste. As a result of this, the state provides the necessary money which is insufficient to effectively fund the work, train skilled labours and even educate the public on the dangers of indiscriminate waste disposal. This brings about the indiscriminate dumping of solid waste around.

### **2.3.9 Socio – Demographic Information and KAP on Waste Management**

Several researches (Raudsepp, 2001; Ifegbesan, 2010; Adeyemo et al, 2013) in the last two decades on biographical characteristics variables and environmental perception have helped in understanding people's opinion and thinking about environment. They have attempted to predict people's knowledge, attitude and practice (KAP) on waste management based on their biographical characteristics. For example, Raudsepp argued that age and education have shown strong and consistent relationship with environmental issues (Raudsepp 2001). Other scholars (Banga, 2011; Yeboah et al, 2012; Momoh and Oladebeye, 2010; Agwu, 2012; Chanda, 1999)

have also attempted to establish the statistical relationship between waste management KAP and biographical characteristics (age, education, occupation and gender).

A study conducted by Banga (2011) on household knowledge, attitude and practice in solid waste separation indicated the relationship between age, education and waste separation practice. It was found that there is no significant relationship between the two variables; age and waste management practice ( $r = .82$   $p < 0.05$ ). This study is in line with Agwu's (2012) findings which indicated that residents in Port Harcourt's waste management practice has no bearing with their age ( $r = .114$ ,  $p = 0.05$ ). In addition, Chanda (1999) asserted in Agwu, (2012) that environmental concerns among residents of Gaborone do not seem to have any significant influence on the socio- demographic variables (age and education).

However, these findings are contrary to other studies (Adu-Boahen, 2012; Ifegbesan, 2010). They documented in their study that there is positive significant relationship between age and waste management practice. They observed that respondents' waste management practice has statistical influences on their age.

General information about individuals (age, gender and education) and attitude are variables that have received consistent attention among researchers. (Momoh & Oladebeye, 2012; Yeboah et al, (2012) found that there is no statistical significant relationship between educational level and respondents' attitude towards waste management. On the other hand, other studies found education as a significant predictor of attitude on waste management. Banga (2011) argued that Kampala residents' level of education has significant influences on their attitude ( $r = .023$ ;  $p < 0.05$ ) than age ( $r = .82$ ,  $p < .05$ ). This correlation corroborates findings by Ekere et al that age has no relationship with attitude (Ekere et al, 2009 cited in Banga, 2011).

Relationship between socio- demographic information and knowledge on waste management issues has been consistent with some researches. Scholars such as (Agwu, 2012; Momoh and Oladebeye (2010) established that there is no significant statistical relationship between age and knowledge on waste management. In a study conducted by Agwu (2012), indicated that in Port Harcourt city residents below 25 years of age has significant higher knowledge on waste management than those above 25 years of age. The study also revealed that even though, the young residents (those below 25 years) had knowledge on waste management, age has no significant relationship with knowledge on waste management. In addition, Jamias and Tatlongahar (2010) observed in their study that age has a weak negative relationship with knowledge ( $r(98) = 0.401, p < .01$ ) which implies that knowledge somehow decreases as age increases. Credillo asserted that knowledge at the local level on environmental problems including garbage was directly and proportionately affected by respondents' age and education.

### **2.3.10 Summary**

In conclusion, this chapter looked at Ajzen's theory of planned behaviour to help explain the knowledge, attitude and practise of market women towards waste management. Under the theory, the researcher explained three models which are determined on behavioural intention. The models include; attitude towards behaviour, subjective norm and perceived control behaviour. This chapter also reviewed some related literature on some concepts in solid waste management. It also examined public knowledge and attitude towards waste management. Moreover, literature was reviewed on relationship between some socio- demographics and KAP on waste management.

## CHAPTER THREE

### METHODOLOGY

#### 3.1 Introduction

This chapter provides information about the methodology and the techniques that were used in this study. The chapter indicates the population from which the sample size was selected. Included in the chapter are research design, data collection techniques, pretesting, data organization, analysis and ethical consideration.

#### 3.2 Research Design

The study adopted descriptive survey research design. It is the most appropriate means of obtaining personal and social facts when studying large population (Kerlinger, 1986). Also descriptive survey research design describes an existing phenomenon by using numbers to characterize individuals or groups and assess the nature of existing conditions (Borg, 1993). It seeks to describe individuals' attitude, intentions and behaviours on particular phenomena, (Burns and Bush, 1995).

Moreover, this design describes the characteristics of a population. According to Fraenkel and Wallen (2003), it enables researchers to find out how members of a population distribute themselves on one or more variables. In the light of this, the researcher employed descriptive survey to find out the knowledge, attitude and practice of Takoradi Market Circle Women towards waste management.

#### 3.3 Population of the Study

The population comprises of market women who sell at Takoradi market circle in the Western Region. The sellers at Takoradi market circle deal in items like food and general goods. The

study is limited to Takoradi market circle because it is seen as the core marketing centre in the Sekondi-Takoradi Metropolis. Also this study was narrowed to this market because of proximity and familiarity to the researcher.

### **3.4 Sample Size**

A sample size of one hundred and fifty (150) respondents was drawn from the population of 1100. This sample size was selected due to time and resources available to the researcher. Five (5) market queens and two (2) officials from the waste management services: one from Sekondi-Takoradi Metropolitan Assembly and the other from Zoom lion waste management services were also interviewed. In addition to this, a structured interview was administered to one hundred and fifty (150) respondents. This was done to ensure detailed responses from the respondents. It also paved way for the researcher to transfer and compare the results of the structured interview with that of the semi-structured interview.

### **3.5 Sampling Techniques**

The sampling techniques used in the selection of respondents were simple random, purposive and convenience sampling. Simple random sampling was used to select respondents for the interview schedule. In the simple random sampling, one of the approaches; lottery method was employed to select the 150 respondents. The stall numbers of the market women aided in his process. The researcher cut pieces of papers with the stall numbers on it. The numbers were placed in a bowl and mixed thoroughly. The researcher then selected 150 papers representing the number of the respondents to be included in the sample. Convenient sampling method allows individuals who are conveniently available for study, (Fraenkel and Wallen, 2003). It also allows a group of people to be chosen because they are available. Based on this, convenient sampling

technique was used because it allowed the researcher to choose market women who were available and willing to participate in the study. This technique made it possible to select respondents from the market.

Fraenkel and Wallen, (2003) emphasised that based on previous knowledge of a population and the specific purpose of the research, investigators can use personal judgement to select a sample size. The researcher therefore used purposive sampling and snowball technique to select five market queens and two waste management officials as respondents in the one-on-one interview. Snowball sampling technique helped the researcher to locate the five queens market. The market queens were selected because they protect the interest of members when they face any challenges while the waste management officials help in the management of waste at the market so they can also provide information which will be essential to the study. Also, it is because of their relevance to the investigation under study. These sampling techniques helped to select respondents who provided the information needed for the research.

### **3.6 Research Instruments**

The researcher employed quantitative and qualitative research instruments. The instruments included: Interview schedule and interview guide. Interview schedule is a quantitative interview instrument and it is also referred to as Interview Protocol (Johnson and Christensen, 2012). It is basically a script written by the researcher and read by the interviewer to the respondents. Also the interviewer records the participants' responses on the script. Interview schedule was used to collect data because some of the respondents have no formal education, they cannot read nor write. Some of the literate also preferred to be interviewed because they felt reluctant to fill the

questionnaires. Therefore, the best way to explore their ideas on the problem was to use interview schedule. This helped the researcher to read the questions to the respondents.

Interview guide was also used to gather ideas on the phenomena from the respondents. This enabled the researcher to access in-depth information about participants' thought, beliefs, knowledge, reasoning, motivations and feeling about the topic (Johnson and Christensen, 2012). In addition, interview guide enables the researcher to enter into the inner world of another person to gain an understanding of that person's perspective (Patton, 1987 cited in Johnson and Christensen, 2012). Interview guide was also used to explore specific topics and to ask specific open ended questions. The interview guide aided the researcher to probe further to obtain clarity on responses and additional information (Creswell, 2003). Also this was used to check consistency of responses. That is, whether, interview schedule responses differ from that of the one - on - one interview. Furthermore, this instrument helped to collect data from respondents who cannot read nor write and those who felt reluctant to write. This helped the researcher to get clearer understanding of the phenomena under study.

### **3.7 Administration and Collection of Data**

First of all, a visit was made to waste management department office at S.T.M.A to seek the consent to undertake this study at Takoradi market circle. Also, before moving to the field, the researcher recruited and trained two research assistants to assist in the administration and data collection. Moreover, contact was made to the president of the Market Women's Association to seek for their consent and to assist in contacting the market queens.

All the instruments used were administered by the researcher and supported by the research assistants. The interview schedule was administered to one hundred and fifty market women. The researcher assisted the respondents to fill the script; the questions were read to the respondents and also recorded the responses on the script. The conduct of the one on one interviews with the market queens and the waste management officers as well as the structured interview lasted three weeks. Averagely, every interview lasted between thirty minutes and one hour. This was because trading was still in progress. The interview was conducted at their various stalls or stores

One-on-one interview was conducted with five market queens and two officials from the waste management services in charge of managing waste at Takoradi market circle: Sekondi- Takoradi metropolitan assembly and Zoom Lion Waste Management Service. The interview helped the researcher get additional information to support the data from the market women and confirm issues raised by them. Moreover, one-on-one interview helped to verify and compare data obtained from the interview schedule for the study. In-depth and rich information were gathered for better analysis and generation of the findings with specific reference to the research objectives.

### **3.8 Reliability and Validity of the Research Instrument**

It is necessary for every researcher to embark on pre-test before the actual data collection. Pre-test determines the respondents' understanding of the questions and whether the questions exhibit the type of responses related to the research questions. After the interview schedule had been prepared, a pre-test was conducted on market women at Sekondi market. This market is also located in Sekondi-Takoradi metropolis in the Western Region. The pre-test helped to reveal ambiguities, poorly worded questions, questions that were not understood, and unclear questions

(Fraenkel and Wallen, 2003). In addition, this helped the researcher to know the sequence of the questions; time to complete, difficulties and the nature of the responses. The pre-test also aided the researcher to determine the reliability of the instruments.

The validity of the instruments were also ensured by employing multiple data collection tools (interview guide and non-participant observation) to serve as complement to the interview schedule thereby, ensuring truth in the data collection tools. In addition, the questions were simplified for easy understanding. The interview schedule was thoroughly examined, critiqued and reorganized by research peers at MPhil level and the two supervisors.

### **3.9 Data Analysis**

After the collection of the data, the researcher organized and analysed them to bring out the findings of the study. The data collected included both closed ended and open ended questions. The data were edited for consistency and coherency of responses. The researcher coded the quantitative data and employed the use of computer software Statistical Package for Social Science (SPSS) to analyse these data.

The researcher used descriptive statistics to analyse the data. Descriptive statistical methods employed include chi-square and Pearson correlation in order to determine the statistical significant difference or relationship between some background information of the respondents and their knowledge, attitude and practice towards waste management. The results were then presented in charts and tables, showing frequency distributions and percentages.

The qualitative data and open ended responses were put into themes and patterns which are ideas, concepts, opinions and behaviours, and organized into coherent categories that summarized and brought meaning to the study through narration.

### **3.10 Ethical Consideration**

To ensure researcher's ethical responsibility, the following precautions were taken: in the construction of the instrument for data collection, the researcher did not include items demanding personal identity of respondents such as names and contacts. Anonymity and confidentiality of the respondents were highly paramount hence protected in the instrument. In furtherance to the ethics applied in this study, permission was obtained from the waste management director at Sekondi-Takoradi Metropolitan Assembly before the study was carried out.

In addition, consent of respondents were sought to freely participate in the research after the purpose of the study had been communicated to them in simple language as a preamble to the structured interview schedule. Those who were not willing, the researcher selected new people to replace them in the sample. Respondents were also assured of confidentiality and anonymity in the reportage of the findings. Fraenkel and Wallen (2003) suggest that a responsible researcher should be considerate, should not injure or harm the participants of the research, keep data confidential and record information accurately. These standards were therefore adhered to in keeping of research standards.

### 3.11 Summary

In summary, this chapter focused on the population and sample size of the study. It also included data collection instruments, procedures to obtain the data and how the data was analysed.



## CHAPTER FOUR

### ANALYSIS OF DATA AND PRESENTATION OF RESULTS

#### 4.1 Introduction

The chapter presents the results of the analysis made on the knowledge, attitude and practice of market women on waste management in Takoradi market circle in Sekondi-Takoradi Metropolis in the Western Region. The results were presented descriptively as well as narratively due to the quantitative and qualitative nature of the study.

#### 4.2 Background Information of Respondents

This section shows distribution of selected variables describing the general information about the respondents. The general background of the respondents collected included the following variables: age, marital status, educational level and item sold. This was to help establish the relationship with the dependent variables in the study.

##### 4.2.1 Age of Respondents

To ascertain the age of respondents, market women were asked to indicate their age. This was used to establish relationship with the dependent variables in the study. The age distribution of respondents is illustrated in Table 4.1.

**Table 4.1: Age Distribution of Respondents**

Age Range	Frequency	Percentage (%)
18- 25	25	16.7
26-30	27	18.0
31-40	48	32.0
41+	50	33.3
Total	150	100.0

Source: Field data, 2014

Table 4.1 reveals that about a third (33.3%) of the market women who participated in the study were over 40 years. Market women within the age group 18-25 represented the least group (16.7%).

#### **4.2.2 Educational level of Respondents**

To explore the educational level of the respondents, market women were asked to indicate their highest educational level attained. This was also used to establish relationship with the dependent variables in the study. Table 4.2 indicates the results.

**Table 4.2: Educational Level of Respondents**

<b>Educational level</b>	<b>Frequency</b>	<b>Percentage (%)</b>
No formal education	41	27.3
Primary	38	25.3
Secondary	48	32.0
Tertiary	23	15.4
Total	150	100

Source: Field data, 2014

The results in Table 4.2 show that majority of the respondents (52.6%) had education below secondary level. Even though, more than half of the respondents had attained below secondary education level, there were 32% and 15.4% of the market women who had attained secondary level and tertiary level respectively. This indicates that majority of the market women at Takoradi market circle have low level of education.

#### **4.2.3: Marital Status of Respondents**

The third background information gathered from the respondents was their marital status. Table 4.3 shows the distribution of the marital status of respondents at the time of the survey.

**Table 4.3: Marital Status of Respondents**

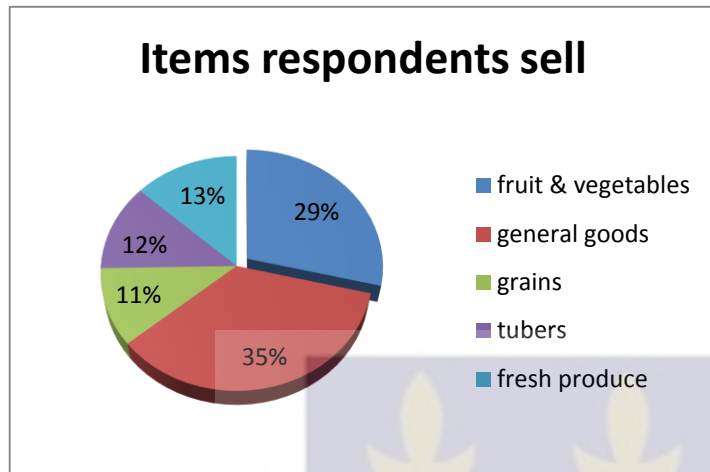
<b>Marital Status</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Single	49	32.7
Married	79	52.7
Divorced	9	6.0
Separated	10	6.7
Widow	3	2.0
Total	150	100

Source: Field data (2014)

The results indicated that majority of the market women (52.7%) who participated in the study were married while 32.7 % were single as at the time of the study. Some divorcees, widowed and separated also took part in the study with widowed women being the least participants (2.0%).

#### **4.2.4 Item Sold by Respondents**

Information on item sold by market women was collected to find out whether there is significant relationship between respondents items sold and their knowledge, attitude and practice towards waste management. Figure 4.1 illustrates the item sold by the market women.

**Figure 4.1: Item sold by Respondents**

Source: Field data (2014)

Figure 4.1 shows that 29% of the market women who participated in the survey sell vegetables and fruits (orange, mango, lettuce, tomatoes, etc.). There were also 35% of the respondents who dealt in general goods (clothes, shoes, hair extension, provisions etc.). In addition, 11% of them sold grains (rice, maize, etc.). 12 percent sell tubers (yam, cassava etc.) and 13% of the respondents sell fresh produce (fish, chicken, pork, etc.). This show a few of goods sold at Takoradi market circle and more than a third sell general goods.

### 4.3 Knowledge of Market Women on Waste Management

Waste management is defined in diverse ways as outlined in literature. Waste management starts from waste collection and ends at the processing or landfill sites. The understanding of waste management differs from one person to the other. Based on this, the study sought to explore the knowledge of Takoradi market women on waste management.

Respondents' understanding of waste recycling, disposal, collection and transportation of waste were some of the main issues that were central to the study. To ascertain participants

understanding of those issues, these were divergent views expressed. With regards to recycling of waste, three market queens who were interviewed had this to say:

...Waste management is conversion of rubbish/waste generated into polythene bags and other products now being sold (**Queen of Cassava Sellers, 15/06/2014**).

Use of machines to convert rubber bags and paper products to goods such as tissues (**Queen of Vegetables Sellers, 15/06/2014**)

Most of the produce that we sell can be transformed into other products. It is therefore necessary to manage the waste well. All that I want to say is that waste management is the process where left over or unwanted produce are converted into other products instead of just gathering them and heaping them in waste containers (**Queen of Textiles Sellers, 17/06/2014**)

In addition, respondents were of the view that waste management involves collection and disposing of waste generated. They held the view that most of such activities are done on daily basis. Respondents indicated that they saw it as the best practice since most of the heaped waste is not collected by officials in charge of waste management in the metropolis. Sellers at the market commented during an interview that:

Waste management involves disposal of refuse properly by gathering and dumping them into waste containers (**Pepper Seller, 18/05/2014**)

We manage waste on daily basis or else we will all fall sick. We sweep and tie waste into rubber bags and disposed it off into the waste container and wait for the waste services to transport them (**Seller of vegetable, 18/05/2014**).

Waste management is collection and transportation of waste to the landfill sites (**Queen of Plantain Sellers, 16/5/14**)

Similarly, a section of respondents stated that waste management means transportation of waste from centres which included market centres, industries and homes to landfill sites. They saw it as a responsibility of waste collectors. Respondents however, related waste management to Zoom Lion (One of the well acclaimed waste management organizations in Ghana) operations. This is

what a seamstress who has operated at the market circle for the past 20 years had to say “Waste management is activities undertaken by Zoom Lion”.

An interview with the official from S.T.M.A Waste Management Department defined waste management as:

...the systematic way of waste storage, collection, transportation, disposal and management of same in a hygienic manner so that it does not have a negative impact on public health and the environment

The definition stated by the official clearly indicates that market women at Takoradi market circle understand what waste management is (some aspects of waste management), even though they do not know technically what waste management really entails.

In ascertaining, respondents’ knowledge on waste managers at the market, they were examined on those organizations in charge of managing waste at the market. In all, 47% stated that S.T.M.A is in charge of managing waste in the market, 28% of the respondents claimed Zoom Lion Services are in charge and 25% of the respondents said the market women are in charge of managing waste. The results show that respondents were not clear with the waste managers. This is because the market women see different waste management services handling waste at the market.

The market queens indicated that the market women clean around their store every day whiles the Town Councils who are under S.T.M.A distil the gutters. This is what one of the market queens said to buttress this point.

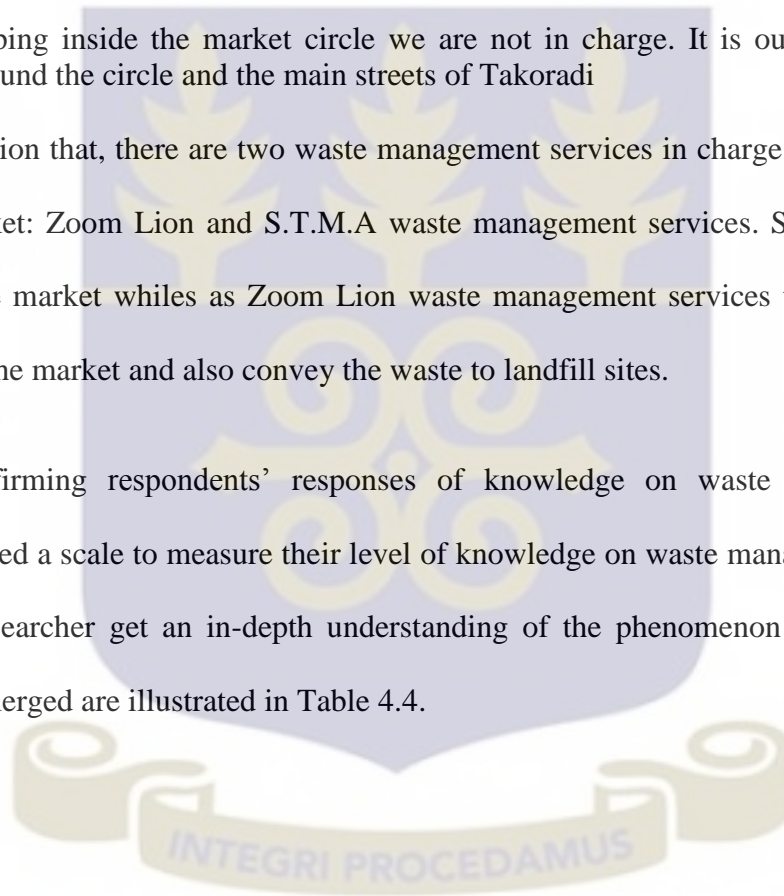
Oh! Initially it was the Town Council who sweeps the market and distils the gutters, morning and evening. Madam, (referring to the researcher) nowadays they have stopped. We the market women have to sweep when we come to the market and they will sweep the gutter. Even that, they don’t work every day. They sweep the gutters once a week **(Queen of Plantain Sellers 16/5/ 2014)**

In addition, it was revealed that those in charge of managing waste in the market were different from those in charge of collection and transportation of waste to landfill sites. It was interesting to find out that majority (74%) of the respondents stated it was Zoom Lion and 26% of them said S.T.M. A were in charge of the collection and transportation of waste to the landfill Site. The official from Zoom Lion confirmed that they are only in charge of the conveyance of the waste to the landfill site. He explained that:

For sweeping inside the market circle we are not in charge. It is our responsibility to sweep around the circle and the main streets of Takoradi

This is an indication that, there are two waste management services in charge of handling waste at Takoradi market: Zoom Lion and S.T.M.A waste management services. S.T.M.A distils the gutters inside the market whiles as Zoom Lion waste management services take charge of the surroundings of the market and also convey the waste to landfill sites.

However, in affirming respondents' responses of knowledge on waste management, the researcher designed a scale to measure their level of knowledge on waste management. This was to enable the researcher get an in-depth understanding of the phenomenon under study. The responses that emerged are illustrated in Table 4.4.



**Table 4.4: Market Women's Knowledge on Waste Management**

<b>Knowledge on waste management questions</b>	<b>Yes (%)</b>	<b>No (%)</b>
Waste must be disposed off properly?	100	-
Rubbish must be separated before disposal?	76.7	23.3
Dustbins must be provided as vantage point?	96.0	4.0
The waste container must be emptied every day?	98.0	2.0
The waste management officials must wait till the container is full before emptying?	15.3	84.7
Waste must be collected at point of trading?	81.3	18.7
Is provision of education on waste separation important?	88.7	11.3
Are waste containers at the market centre?	100	-

Source: Field Data (2014) n= 150

The results showed in Table 4.4 reveal that most of the market women know that waste must be disposed off properly. The respondents indicated that when the waste is disposed off improperly, there are dangers associated with it. To explain this, two respondents commented that:

As a market woman, you need to make sure where you sell is clean and neat. It may be that you are a food vendor; people will not buy your food when the place is unattractive. Also it might be the clean surroundings that will attract the person to come and buy your food but not the taste of the food. So if you don't clean where you sell, it drives away potential customers **(Maize Seller, 16/05/ 2014)**

If we don't dispose off our waste well, it will bring about flood. This is because when it rains it pushes all the rubbish into the gutters and chokes it at the point where water cannot flow again **(Hair extension seller, 14/5/14)**

Also, interview with the Queen of Plantain Sellers, she indicated that:

If we don't manage waste in the market properly, we cannot face the outcome. Spiritually and physically it makes the surroundings look dim, it does not bright. It also brings about disease; when there is heap of waste, it will generate flies and other insects. These insects will be flying on the food stuff and infest people with malaria. Also it makes the surroundings dirty and unattractive

It can be inferred from the responses that respondents knew about proper waste disposal and the hazards associated with poor waste disposal.

Waste separation is the sorting of various materials from the waste stream at the point of generation for recycling or composting (Kreith, 1994). An example is market women separating papers, polythene bags from the rest of their waste. This helps to reduce the quantity of waste to be sent to the landfill sites. In the light of this, the researcher sought to find out respondents knowledge on separation of waste. It was found out that majority (76.7%) of the respondents knew about separation of waste.

The result indicated in Table 4.4 also reveals that all the market women who participated in the study were aware of the waste containers in the market centre. Respondents were asked to state the quantity of waste containers provided in the market. The study found out that 36.7% of the respondents stated that there were two waste containers in the market. Also, 25.3% of the respondents indicated that the waste containers available in the market are three. In addition, 19.3 % of the respondents stated there were four waste containers; 3.3% said there is only one waste container while 15.3% said that they have no idea about the total number of waste containers at Takoradi market circle.

However, from the observation by the researcher, it was found that there were four waste containers at the market as at the time of gathering the data: One at the north side of the market (opposite. AAA Mensah herbal shop) and three at the southern direction of the market (near Hannah Newman cold store). This is an indication that some the respondents are aware of the waste containers but do not take in consideration the quantity available. Figure 2 is a picture of the waste containers near Hannah Newman cold store.

Figure 4.2: Waste Containers at Takoradi Market Circle



Moreover, the study found out from the respondents the number of times the waste container is emptied. About 22% of respondents stated that it is emptied once a week. Also, 24% of respondents indicated twice a week, 10.7% said thrice a week. Only 22.7% stated that, it is emptied every day and the remaining respondents 22.7% argued that the emptying of the waste container is not regular.

The responses from the interview with the market queens supported this finding. They also emphasized that the waste containers are not emptied regularly: it is not collected and conveyed to the landfill site. The market queens had this to say:

Eei sister (referring to the researcher) the waste container is always overflowing, they do not collect them. Some times in a month the waste will be sitting there breeding insects. You go to the market gate where the cassava sellers are, you will see what am talking about. They do not empty the container regularly. The waste has occupied part of the

road. Some market women are also sitting there selling (**Queen of Textiles Sellers, 15/5/2014**)

The Queen of Vegetables Sellers also had this to say:

Hmm, the thing is they don't collect them regularly. Some of the waste is on the floor and people are sitting around selling. Instead of them collecting and transporting the waste to landfill to make the area clean, there is delay: today the vehicle has broken down, tomorrow, they do not know who is to collect the waste. First where we were not paying, they worked well but now that we pay the waste are not regularly collected

In addition, the queen who sells plantain emphasized that:

Well, they don't collect the waste every day, three days or about a week the waste will be sitting there. When it happens that way, it generates some bad odour in the market

The result has become evident that respondent have knowledge on waste management.

Even though generally, respondents had knowledge on waste management, it was interesting to found out that the market women did not have much knowledge in the area of waste reduction, they do not know how waste can be reduced or minimized in the market. Waste reduction refers to reducing the amount of waste generated that might be eventually discarded. The responses given on how waste can be reduced were put into themes: regular collection and transportation of waste container to landfill site, to avoid indiscriminate dumping, strict supervision and law enforcement, motivating workers, provision of education to market women on waste management, organization of clean -up exercise. One of the respondents emphasized that waste in the market cannot be reduced and that this can be possible if there is regular emptying of waste containers. This is what she had to say:

Eei reducing waste in the market is impossible. Because every day we eat, drink water and open boxes. So the only thing that can be done is to empty the waste container regularly (**Wig Seller, 14/5/ 2014**)

The Queen of Maize Sellers also explained that:

All the waste is not generated from the market; some is coming from the households around the market circle. When it is 4:00- 6:30pm, people bring their waste in their cars and others in truck to come and disposed them off in the waste container at the market. So it can be reduced if the waste container is emptied daily

Moreover, some of the market women were of the view that waste can be reduced in the market when there is strict supervision and law enforcement by the waste management officials. A Tomatoes Seller had this to say: “It’s all in the hands of the waste management officials to see to it that their workers collect the waste every day to reduce waste in the market”

However, a yam seller who participated in the study opined that:

There should be strict supervision and law enforcement by city authority to ensure that people don’t dump waste on the floor. Also there should be provision of dustbins at vantage points. This will help reduce waste in the market and the country as well

However, some of the respondents echoed their sentiment that, waste reduction in the market can be done through education. The Queen of Plantain Sellers said this: “We have to be educated on how to reduce waste, some of us don’t know” it can be deduced from the response that most women who sell at Takoradi market do not know how waste can be reduced.

In summary, it can be concluded that the market women have high knowledge on waste management, although they were deficient in ways of reducing waste. Therefore, there is the need for the waste management service to organize educational programmes on waste management to enhance their knowledge.

#### **4.3.1 Age and Knowledge on Waste Management**

The study sought to find out whether market women’s age has any significant relationship with their knowledge on waste management. Age distribution of the respondents was re-coded into young adulthood (18-30) and middle adulthood (31-60) using the life development stages (Wolf

et al, 1983 cited in Jamias and Tatlonghari, 2010). This allowed for better testing of the variables. The details of the results are provided in Table 4.5.

**Table 4.5: Age and Knowledge on Separation of Waste.**

Age	Waste must be separated before disposing them off.		
	Yes (%)	No (%)	Total (%)
18-30	82.7	17.3	100
31- 60	73.5	26.5	100
Total	76.7	23.3	100

Source: Field data (2014) ( $\chi^2 = 4.634$   $\alpha = .05$   $df = 3$   $P \text{ value} = .203$ )  $n = 150$

Considering the relationship between respondents' age and knowledge on separation of waste, the Pearson's (r) correlation used for the study indicates that although knowledge on separation of waste increases with age there was no significant relationship between age and knowledge on separation of waste ( $\chi^2 = 4.634$ ,  $df = 3$ ,  $p \text{ value} = 0.203 > .05$ ). Also, the results revealed that market women within the middle adult age group (31-60 years) who said waste must not be separated before disposing them off were more (26.5%) than those within 18-30 years (17.3%). This implies that the youthful adult market women (18-30 years) had knowledge on waste separation than those middle age market women.

### 4.3.2 Education and Knowledge on Waste Management

This section presents the result of a cross-tabulation which was done to ascertain the statistical relationship between respondents' educational level and their knowledge on waste management.

The details of the result are indicated in Table 4.6.

**Table 4.6: Educational Level and Knowledge on Waste Separation.**

Educational level	Waste must be separated before disposing them off.		
	Yes (%)	No (%)	Total (%)
No formal education	74.0	26.0	100
Primary	76.3	23.7	100
Secondary	77.0	23.0	100
Tertiary	78.0	22.0	100

Source: Field data, 2014 ( $\chi^2 = .149$   $df = 3$   $p$  value = 0.02)  $n=150$

Table 4.6 shows cross-tabulation of educational level by the knowledge market women have on waste management. The results indicate that the respondents with tertiary education who knew of waste separation were the highest (78%) followed by those with secondary education. The study also found out that those with no formal education who knew of the waste separation were the least (74%). Therefore, this could mean respondents with higher educational level know about waste separation. Moreover, there was statistical significant relationship between educational level and knowledge on waste separation ( $\chi^2 = .149$ ,  $df = 3$ ,  $p$  value < 0.05). This implies respondents' educational level determine their knowledge on waste management.

#### 4.3.4 Item sold by respondents and Knowledge on Separation of Waste

Considering the relationship between market women's items sold and their knowledge on Waste Management, the study sought to find out whether respondents' knowledge on waste separation is determined by item they sell. The result that emerged is represented in Table 4.7

**Table 4.7: Item sold and Knowledge on separation of waste**

Item sold	Waste must be separated before disposing them off.		
	Yes (%)	No (%)	Total (%)
Fruits and vegetables	93.0	7.0	100
General goods	71.7	28.3	100
Grains	43.8	56.2	100
Tubers	66.7	33.3	100
Fresh produce	90.0	10.0	100

Source: Field data, 2014 ( $\chi^2 = 19.847$   $df = 4$   $p$ -value = 0.01  $\alpha = .05$ )  $n=150$

Table 4.7 shows that market women who sell fruits and vegetables had higher knowledge in waste separation (93%) than other market women. Market women who sell fruits and vegetables generate more waste. Therefore, they might know more about waste separation as compared to those who sell clothes or textiles, grains and fresh produce. The study also indicates that, there is a significant positive relationship between item sold and knowledge on separation of waste ( $\chi^2 = 19.847$   $df = 4$   $p$ -value = 0.01 < 0.05). This implies that item sold by market women influences their knowledge on waste management.

#### 4.4 Attitude of Market Women towards Waste Management

Attitude refers to individuals' positive or negative feeling towards waste management (Ajzen, 1991). Positive attitude can enhance waste management and negative attitude can hinder waste

management. In the light of this, the researcher sought to find out the attitude of market women on waste management. The responses on attitude are illustrated in Table 4.8

**Table 4.8: Market Women's Attitude on Waste Management**

Attitude on Waste Management	Percentage				
	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Total (%)
I feel the market is surrounded with filth	71.3	16.0	12.7	-	100
I pay as I throw away the rubbish	82.0	18.0	-	-	100
I feel bad when I dump rubbish on the floor	67.3	32.7	-	-	100
I feel bad when others throw rubbish on the floor	72.0	26.7	1.3	-	100
I should pay fine if waste is found at my store after 6:00pm	56.0	14.7	20.7	8.6	100
I feel the distance between the waste container and my store is far	29.3	30.0	38.7	2.0	100
I believe the performance of the waste management service in charge of the market is good	20	13.3	26	40.7	100

**Source: Field Data, 2014. N=150**

It is manifested in Table 4.8 that 87.3% of the respondents agreed that the market was really surrounded with filth. One of the market queens interviewed also stated that the market is dirty.

This is what she had to say:

The market is surrounded with filth, even where we are, you can't see it well, madam move to the other end and see. You will not feel comfortable to sit. You can't even spend 10 minutes there (**Queen of Textiles, 16/5/2014**)

In contrast, the study found out that 12.7% of the respondents disagree that the market is dirty.

They were of the view that inside the market is not dirty but the gutters and the parking spaces are dirty. The Queen of Plantain Sellers confirmed and said: "Inside the market is not all that dirty but the gutters and around the circle especially where the waste containers are dirty" As to whether payment is made before waste is disposed off, it became evident that all the respondents pay a fee before they disposed their waste into the waste containers. Four market queens responses were:

I pay as I dump waste into the waste container. The minimum fee is twenty pesewas. This payment makes people dump waste anyhow. Some market women sweep and send their children to dispose off the waste. The child will hide the waste behind someone's store and spend the money. This morning for instance, when I came to store, I saw a box filled with rubbish in front of my store. Emm, if this was to be free people will just send the waste to the waste container without hesitating (**Queen of Vegetable Sellers, 2014**)

The Queen of Textiles Sellers also made this assertion: "We pay; sometimes people do not have coins to pay so they leave the waste anywhere and go"

In addition, the Queen of Maize Sellers indicated that:

Oh we pay, initially when we were not paying, they made sure the waste was collected and transported to the landfill but now that we pay 20p and 50p the waste will be sitting there for weeks breeding insects and bad odour. At Takoradi market circle they (referring to waste services) are killing us oo.

On the contrary, in an interview with S.T.M.A, officials, they disagreed to the idea that market women pay when waste is disposed off. He explained that:

We don't charge them. We have introduced a 'political pay system' 'pay as you throw'. The minimum is 0.20 pesewes and 0.30pesewes. That is not money.

Table 4.8 in page 63 revealed that all respondents felt bad when they dump waste on the floor. Comments made by some market queens indicated that they show concern about the indiscriminate way in which waste is dumped around the market. The Queen of the vegetable sellers indicated that: "I don't put rubbish on the floor; I put them in polythene bags and dispose them into the waste container after closing".

The queen of textiles sellers also said that: 'I feel bad when I put rubbish on the floor, I cannot do that but some market women feel normal about that' The researcher enquires from the market queens the reason why waste is indiscriminately dumped on the floor and whether it is about the payment of money. The Queen of vegetable sellers had this to say:

It is not about the money. This happens when the person is in a hurry to pack her things before they close the gate at 6:00pm. So they leave it in front of their store and dispose it off the next day.

In addition, the study sought to find out from the respondents whether they feel bad when others dump waste on the floor. Majority (98.7%) of them agreed to the statement. Market queens were asked their reaction towards those who dump waste on the floor. The Queen of Textiles Sellers said: "I see a person who dumps waste on the floor as a dirty person. I make sure the person pick it up. The educated ones will pick it up. Others too will insult you: 'aha na wo daa' (literally meaning, is here your sleeping place).

Table 4.8 shows that a greater number (70.7%) of the respondents agreed they must pay fine when waste is found at their store after 6:00 pm. About 29.3% disagreed with that statement.

Some of the queen mothers who disagreed to the statement presented their sentiment in the following comment:

Eei me, I will not allow that. If I sweep my store after closing and a bad person comes to leave rubbish in front of my shop, how will I know? So if I come back and you tell me to pay a fine I won't agree (**Queen of Maize Sellers, 17/5/2014**).

This is because there are some market women who do not own a store, but sell after the store owners have close for the day. They are termed as night sellers. They also generate waste after selling and leave it till morning.

The study also sought to find out respondents' opinion on the distance between where the waste container is situated and where their store is located. The results in Table 4.8 indicated that majority (59.3%) of the respondents assert that the distance between their store and the waste container is far. About 40.7 percent disagree.

Respondents' opinion on the performance of the waste management organization in charge of the market was sought. They were asked to indicate their level of agreement to the statement that the performance of the waste services in charge is good. Table 4.8 on page 66 revealed that 66.7% of the market women disagree with the statement. Whiles 33.3% emphasized that the performance is good. The comments received on the waste management services performance by the market queens are as follows:

According to the queen of vegetable sellers, "Zoom lion workers' performance is good and it can be seen from their daily activities. Every day you see them around collecting the waste". The Queen of Maize Sellers also made a similar statement in support of the queen of vegetable sellers' assertion. She said:

Hmm, the Zoom Lion's performance at the market is good. They collect the waste every day. You know we are human, as they are trying to keep the place neat, others will be throwing the rubbish around the waste container and runaway.

These comments show that some of the market women as well as the market queens are of opinion that the waste management service's performance is good. However, others had different opinion. The queens of textiles, yam and plantain sellers were of view that the performance of waste management services in charge of the market is not good. Their opinions were presented accordingly. Queen of textiles Sellers asserts that:

The Town Council workers' performance is bad. They went to labour office in Sekondi and requested for job and were told the only job at the market left is sweeping and cleaning of gutter. They agreed to do. Now they don't do the work well. The workers want bribe: we have to give them money before they sweep the gutters. Nowadays we have stopped giving them money so they have also stopped working. Their performance is bad.

Another interviewee who also had a similar view explained the performance of the waste management services. She said that:

Their performance is not good at all. Initially, even where we were not paying for dumping of waste, they used to collect and transport the waste to landfill sites every day. Now that we pay, they let the waste sit there for three days or a week before they come for them (**Queen of Plantain Sellers**).

Moreover, queen of yam sellers affirmed that:

The Town Council workers' performance is not good at all. Initially, they swept and cleaned the gutters twice a day: morning and evening but now they have stopped. They claim the officials don't pay them well. So they sweep once a week. These choke gutters leading to flooding in the market when it rains.

Comments and results from the study suggest that significant number of the respondents disagree with the statement that the waste management organization in charge of the market is good. This implies that the market women might have negative attitude towards the performance of the

waste management services since, the performance of the waste management services is not good to their satisfaction.

To affirm the responses of the respondents' attitude on waste management, the study assessed respondents' opinion on who was responsible for keeping the market clean. The findings revealed that more than half (73.3%) of the respondents perceived the cleaning of the market to be the responsibility of the Town Council. The remaining respondents (26.7%) were of the view that it should be the responsibility of the market women. Aside these responses, there were some comments made by the market queens. For instance, the Queen of Yam Sellers made this assertion:

Well, Town Council, Market Queens and market women manage waste in the market but I think it is the responsibility of the Town Council to sweep and keep the market clean.

In an interview with the Queen of Plantain Sellers on this issue: whose responsibility is to clean the market? She had this to say:

Madam, (referring to the researcher) we pay tickets and money for the store. The officials use it to pay the town council workers. So therefore it is the responsibility of Town Council to sweep, clean and manage waste in the market.

The results and comments made on this issue indicate the market women believe that it is the responsibility of the town council to keep the market clean. They based their responses on the fact that payment of market tolls are made to city authorities.

The study again, sought respondents' perception on measures to be used to prevent indiscriminate dumping of waste in the market. The findings revealed that 50.7% of the respondents were of the view that culprits can be punished by paying a fine; 44% of the respondents stated that culprits should be made to pick up their waste and 5.3% share the view that culprits should be made to sweep where they dump their rubbish.

Provision of dustbins in the street and public places has been a major concern to the public. It is believed that this encourage people to manage their waste properly in the country and keep the environment clean (Adu-Boahen, 2012). Based on this assertion, the researcher sought to find out the perception of market women on provision of dustbins at vantage points around the market and how it can help in the management of waste at Takoradi market circle. The findings indicate that majority (96%) of the respondents stated that there must be provision of dustbins at vantage points and that would ease the disposal of rubbish and will also avoid indiscriminate littering. Only 4% of the respondents said otherwise; to them, there is no need for that. It is a bad idea. They suggested that where the waste container is located at the moment is okay. Comments made by one of the market queens concerning the dustbins are that:

Hmm, if the officials put dustbins inside the market, it will be a bad idea in the sense that the dustbin will be full and overflowing. They won't collect them regularly and the place will be dirty. So where it is now I think it is okay because when it is full the official when passing by will notice (**Queen of Vegetables Sellers, 2014**).

The Queen of Maize Sellers also had this to say:

I think government should provide dustbins at vantage point to make it easy for us to dispose of the waste. Look at the distance between my store and where the waste container is, I cannot leave my wares around to dump the rubbish into the waste container unless closing. Sometimes I forget to send the waste because I have to hurry before they close the market gate

These comments by the market queens show that some of them believe that dustbins must be put at vantage points around the market to serve as an easy way to dispose off waste. However, others think otherwise. They are of the view that putting dustbins at vantage point will even worsen the situation because those in charge will not be readily available to convey the waste.

In summary, the study found out that market women's attitude towards waste management was positive, although they believed it is the responsibility of the Town Council to sweep the market because they pay market toll.

#### 4.4.1: Age and Attitude towards Waste Management

A further inquiry was to find out whether there is a significant relationship between respondents' age and attitude towards waste management. The details of the results are indicated in Table 4.9.

**Table 4.9: Respondents' Age and Attitude on waste management**

Age	Attitude on waste management (payment of fine on improper waste disposal)				
	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly disagree (%)	Total (%)
18-30	42.3	21.2	21.1	15.4	100
31- 60	63.3	11.2	20.4	5.1	100

Source: Field data, 2014 ( $\chi^2 = 14.976$   $df = 9$   $p\text{-value} = 0.092$   $\alpha = 0.05$ )  $n = 150$

In the cross tabulation of age by attitude on Waste Management (payment of fine on improper waste disposal), the results indicate that market women who agreed to pay for improper waste disposal were higher for the middle adult group 74.5% than those within youth age group (63.5%). The study also indicate that there is no significant relationship between respondents age and their attitude towards waste management ( $\chi^2 = 14.976$ ,  $df = 9$ ,  $p\text{-value} = .092 > 0.05$ ). Thus, market women's age has no significant relationship on their attitude on waste management.

#### 4.4.2 Educational Level and Attitude towards Waste Management

The study measured the educational level of the respondents against respondents' attitude towards waste management. Table 4.10 summarizes the results.

**Table 4.10: Educational Level and Attitude on payment of fine on improper waste disposal**

Educational level	Attitude (I should pay fine if waste is found at my store after 6:00pm)				
	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Total (%)
No formal education	61.0	-	31.7	7.3	100
Primary	76.3	13.2	-	10.5	100
Secondary	45.8	16.7	31.2	6.3	100
Tertiary	34.8	39.2	13.0	13.0	100

Source: Field data, 2014 ( $\chi^2 = 35.895$ ,  $df = 9$ ,  $p\text{-value} = 0.01$ ,  $\alpha = 0.05$ )  $n=150$

Table.4.10 illustrates a relationship between respondents' educational level and their attitude towards waste management (payment of fine on improper waste disposal). The results indicate that the least respondents who disagreed to pay fine on improper waste disposal practice are those with primary educational level (10.5%), followed by those with Tertiary level (26%). The highest respondents who disagreed to the payment of fine had no formal education. Also, using the Pearson correlation coefficient test, the result depicts that there was a strong significant relationship between respondents' education and their attitude on payment of fine on improper waste disposal practice ( $\chi^2 = 35.895$ ,  $df = 9$ ,  $p\text{-value} = 0.01 < 0.05$ ). Thus educational level has influences on respondents' attitude towards payment on fine on improper waste disposal practice. This implies market women's education influences their attitude on payment of fine on improper waste disposal.

#### 4.4.3 Items Sold by respondents and Attitude on payment of fine on Improper Waste Disposal

This section sought to analysis the relationship between items sold by respondents and their attitude towards payment of fine on improper disposal of waste. The results are presented in Table 4.11.

**Table 4.11: Items sold by respondents and Attitude on payment of Fine on Improper Disposal of Waste**

Item sold	Attitude (I should pay fine if waste is found at my store after 6:00pm)				
	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Total (%)
Fruit and Vegetables	62.8	4.7	23.2	9.3	100
General Goods	60.4	5.6	22.7	11.3	100
Grains	43.8	-	37.5	18.7	100
Tubers	33.3	50.0	16.7	-	100
Fresh Produce	60.0	40.0	-	-	100

Source: Field data, 2014 ( $\chi^2 = 47.929$ ,  $df = 12$ ,  $p\text{-value} = 0.01$ ,  $\alpha = 0.05$ )  $n=150$

According to Table 4.11, majority of the market women agreed that they should pay fine if waste is found at their stores after 6:00pm. It was interesting to find that respondents who sell grains had a different opinion. They disagreed to the statement that was posed. This was represented by 56.2% of the respondents. The study found out that, there is positive significant relationship between item sold and attitude on payment of fine on improper waste disposal ( $\chi^2 = 47.929$ ,  $df = 12$ ,  $p\text{-value} = 0.01 < 0.05$ ). Thus item sold influences market women's attitude on payment of fine.

Even though, some of the respondents' attitude on waste management was not good, most of the results gathered are quite encouraging in terms of their attitude towards waste management. Therefore, it can be deduced that market women at Takoradi market circle have positive attitude towards waste management.

#### **4.5 Market Women and Waste Management Practice**

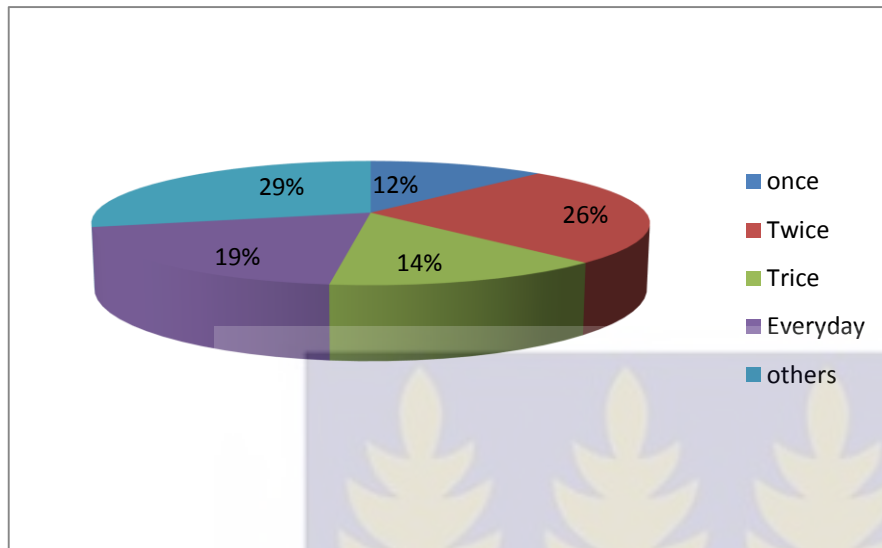
Waste management practice involves the participation in the management of waste activity in a particular location especially in the market. Waste management practice is one of the issues that were looked at in this section.

##### **4.5.1. Waste Disposal Practice**

Proper waste disposal practice is an important concern among people in the community; it helps keep the environment clean and free from any diseases. On this basis, respondents were asked to indicate how they normally disposed off their waste at the market. The results reveal that all the respondents dispose off their waste into the waste containers provided by Zoom Lion Waste Management Service. They believed that waste must be disposed off properly.

Clean-up activity is one way of managing waste effectively in a community. In the light of this, respondents were asked whether they undertake clean- up activities in the market. The results show that majority (80%) of the respondents indicated that they organize clean-up activity in the market.

As to the number of times clean-up activities are organized in a year at the market, figure 4.3 shows the responses they provided.

**Figure 4.3: Pie chart showing Market women clean-up activities.**

Source: Field data, 2014

With reference to Figure 4.3, 12% of the respondents stated that clean-up activity organized at the market is once a year, 26% of them stated it is organised twice a year. The study also found that 14% indicated trice within a year, 19 % stated it is done every day. The remaining 29% gave other responses which include: monthly, not as stated, quarterly; and other respondents indicated they had no idea about it. These results indicate that the market women are aware that clean-up activity is undertaken in the market but they are not sure of the number of times it is organized within a year. This implies that they do not keep records of the periods the clean-up exercise is organized.

On whether respondents participate in the clean-up exercise organized in the market, 65% answered in the affirmative. Respondents said they do participate in clean-up exercise and that when one absents herself, it will attract a fine. An interview with the market queens confirmed that they participate in the clean- up activity.

The Queen of Plantain Sellers had this to say:

Yes we do clean – up activities in the market. The market leaders announce it and we all close our shops till 12:00 noon. We collect water from fire service officers to aid us in the clean- up exercise. Each person is mandated to clean in front of their store.

An interview with the Queen of Vegetables Sellers further explained that refusal to participate in clean up exercise attracts a penalty. This is what she had to say: “We do participate in the clean-up exercise, if you don’t, you would be made to pay fine”. The assertion made by the market women implies that, it is mandatory for all the traders in the market to participate in clean-up activity, refusing to participate will attract payment of fine. Thirty five percent of the respondents stated they do not participate in the activity, their reason is that they often come late due to traffic on their way to the market so they come to meet the close of the action (clean-up exercise).

In further assessing market women’s waste management practice, the study sought to find out from respondents their practice on segregation of waste. The findings revealed that 89% of the respondents do not separate their waste. They dispose off all the waste together into the waste container. One of the market queens who does not separate her waste had this to say:

Oh we put all the waste generated together and disposed them off. Some people use the rubbers for recycling so they come round and pick them but here (market circle) we put them together (**Queen of Plantain Sellers, 15/5/14**).

The remaining eleven percent who indicated they segregate their waste is mostly the empty sachet water, rubbers and black polythene bags. The black polythene bags are mostly used to set fire with charcoal and the empty sachet water is sent for recycling.

#### 4.5.2 Age and Waste Management Practice

This section presents a cross-tabulation which was done to determine the statistical significant relationship between respondents' age and their waste management practice: participation in clean-up exercise and separation of waste.

The cross tabulation results revealed that market women who were within the middle adult (31-60) group and participated in the clean-up exercise were more (69.4%) than those within the young adults group (55.8%). Using Pearson's correlation coefficient test it became evident that although market women's participation in the clean-up activity increases with age, there is no significant relationship between age and participation in clean-up activity. ( $\chi^2 = 35.895$ ,  $df = 9$ ,  $p\text{-value} = .359 > 0.05$ ). This implies respondent participation in clean-up activity has no important relationship on their age difference. As to find out the relationship between respondents' age and their waste separation practices, Table 4.12 illustrates the results.

**Table 4.12: Age and Practice of Waste Management (Separation of Waste)**

Age	Do you separate your waste before final disposal?		
	Yes (%)	No (%)	Total (%)
18-30	14.5	85.5	100
31-60	26.5	73.5	100
Total	23.3	76.7	100

Source: Field data, 2014 ( $\chi^2 = 4.634$ ,  $df = 3$ ,  $p\text{-value} = 0.201$ ,  $\alpha = 0.05$ )  $n=150$

The cross tabulation results in Table 4.12 show that market women within the middle adult group (31-60) were more (26.5%) than those within the youth adult group (18-30) who separate their waste. Using Pearson correlation coefficient test it became evident that although respondents' waste separation practices increases with age, there is no statistical significant relationship

between the two variables ( $\chi^2 = 4.634$ ,  $df = 3$ ,  $p\text{-value} = 0.201 > 0.05$ ). This implies that respondents' age has no relationship with their waste separation practice.

#### 4.5.3 Educational levels and Participation in clean-up exercise

The study also aimed at assessing how education influences market women's participation in clean-up activity and waste segregation practice.

The result displayed that participation in the clean-up exercise was higher among respondents with primary education (81.6%) than all other respondents. In addition, the analysis revealed that more than half of the respondents in each educational level participate in the clean-up exercise. The study deduced that there is significant positive relationship between educational level and participation in the clean-up exercise ( $\chi^2 = 9.251$ ,  $df = 3$ ,  $p\text{-value} = 0.026 < 0.05$ ). Thus, respondents' educational level influences their participation in clean-up activity. As to find out the relationship between respondents' educational level and their waste separation practices, Table 4.13 illustrates the results.

**Table 4.13 Educational Level and Waste Separation Practice**

Educational level	Do you separate your waste before final disposal?		
	Yes (%)	No (%)	Total (%)
No formal education	22.0	78.0	100
Primary	23.7	76.3	100
Secondary	23.0	77.0	100
Tertiary	26.0	74.0	100

Source: Field data, 2014 ( $\chi^2 = 0.149$ ,  $df = 3$ ,  $p\text{-value} = 0.985$ ,  $\alpha = 0.05$ )  $n=150$

The results in Table 4.13 show that waste separation practices among market women with tertiary education level is higher (26%) than the other respondents. In addition, the analysis reveals that market women with no formal education were the highest (78%) who do not separate

their waste before disposing them. The study observed that there is no significant relationship between educational level and waste separation practice ( $\chi^2 = 0.149$ ,  $df = 3$ ,  $p\text{-value} = 0.985 > 0.05$ ). Thus respondents' educational level did not determine their waste separation practice.

#### 4.5.4 Item sold by respondents and Waste Management Practice

This section aimed to explore whether there is a significant relationship between item sold by respondents and their participation in clean-up activity and separation of waste.

The result shows that, 81.3% of the market women who sell grains participate in the clean-up exercise than the other sellers. The results also indicate that market women who did not participate in the clean-up exercise are found more (40%) among those who sell fresh produce. There was no significant relationship between the item sold and participation in clean-up activity ( $\chi^2 = 2.486$ ,  $df = 4$ ,  $p\text{-value} = 0.647 > 0.05$ ). Thus item sold by market women has no relationship in their participation in clean-up exercise. Table 4.14 shows the details of the result on item sold and waste separation practice of the respondents.

**Table 4.14: Respondents' Item sold and Separation of waste Practice**

Item sold	Do you separate your waste in the market?		
	No (%)	Yes (%)	Total (%)
Fruit and vegetables	93.0	7.0	100
General goods	71.7	28.3	100
Grains	43.8	56.2	100
Tubers	66.7	33.3	100
Fresh produce	90.0	10.0	100

Source: Field data, 2014 ( $\chi^2 = 19.847$ ,  $df = 4$ ,  $p\text{-value} = 0.01$ ,  $\alpha = 0.05$ )  $n=150$

According to Table 4.14, majority (93%) of market women who sell fruit and vegetables do not separate their waste. These sellers according to S.T.M.A report (2012) generate more waste than the others and if they do not separate their waste, then it can be argued that they cause the increase in the waste being produced at the market. The findings also indicate a positive significant relationship between the two variables. ( $\chi^2 = 19.847$ ,  $df = 4$ ,  $p\text{-value} = 0.01 < 0.05$ ) Thus, item sold by market women has an influence in their separation of waste practice.

#### **4.6. Challenges in Managing Waste in the Market**

Proper management of waste in a community comes with some challenges. It is believed that challenges faced by waste management service officials in their management process makes them inefficient and ineffective in their work. According to Teo and Loosemore (2001) challenges faced by individuals influence their practice towards waste management. The findings indicate that, there are challenges that hinder the management of waste at the market. The responses gathered from the market women includes: Low participation from others, provision of inadequate waste containers, insults from other market women, indiscriminate dumping, irregular collection of waste container, poor management system, and inadequate equipment for clean-up activity.

With regards to the challenges faced by market women in waste management, this is what a hair extension seller had to say:

We do clean- up exercise here but the equipment that enables us to embark on the clean-up exercise well is inadequate. Such equipment include: wheel barrow and dustbins. Also, the town council workers who support us in the activity are not enough

A tomatoes seller also had this to say concerning inadequate waste containers:

We don't have enough dustbins or waste containers that can contain enough waste produced in the market. This makes people heap their waste at certain corners of the market

An interview with the queen of maize sellers also commented on the challenges they face in the market in terms of waste disposal practice. She had this to say:

The problem is that some of the market women send their young children to dispose off their waste. The child may leave the waste somewhere and spend the money. Those who will send it may not reach the waste container, in the attempt of pouring the waste it falls on the ground and they do not collect them

In addition, in interviews with the officials of the waste management service in charge of the market, they asserted that they also face certain challenges. According to the S.T.M.A official, they face a lot of challenges. When asked to explain the challenges he talked about, he said:

Why not, we face so many challenges: finance, human attitude and technical staff. We need enough money for fuel, payment of workers, to repair worn out parts and broken down vehicles. Also, the public are not paying the economic rate to the assembly, so we leave the assembly with serious financial constraint. This is so because the service fee the public pay is not economical: 20p & 30p. With the human attitude, when we try to keep the place neat they tend to destroy it. Even when there is waste container, the market women put the waste on the floor i.e. around the container. Moreover, we need a lot of technical men to do the job

The interview also revealed that the market women make it difficult for the conveyance of the waste containers to the landfill sites by the Zoom Lion workers. This is seen what the Zoom Lion official had to say:

One of the challenges we face is that, the market women occupy the whole parking space around the circle so it becomes difficult for us to go for the waste container. They will be selling around the waste container, that waste much of our time so we are not able to transport the quantity we planned to send.

The comments given by the officials show that there are a lot of challenges they face in managing waste at Takoradi market circle. However, there should be measures to help curb these challenges. The researcher confirmed what was said through observation. Figure 4 confirms

some of the challenges faced by the waste management service in transporting the waste container to the landfill sites.

**Figure 4.4: Market Women occupying the Parking space.**



Figure 4.4 shows waste management situation at Takoradi market circle; market women selling around the parking space which make it difficult for waste management service provider to transport the waste. The picture also illustrates some market women selling around an overflowing waste container. It also shows how dirty the market is. Looking at the picture, it becomes evident that there is one container for all kinds of waste, no provision has been for separation of waste.

#### 4.7. General Recommendation on Waste Management Issues

Respondents were asked to state their general views concerning management of waste at Takoradi market circle. The comments made by the market women are as follows: one of the clothes sellers asserted that:

what I will add to this waste management issue is that, if the officials want the market to be clean and healthy to prevent any diseases then the waste containers should be adequate, the workers should be paid well and provided with adequate equipment to ease the clean-up exercise

A Yam seller explained that:

Since those market women who sell around the bins cannot be relocated, the waste collectors should make sure they empty the waste containers every day to keep the place healthy for them

The researcher interviewed some of the market queens and enquires from them their general sentiment on waste management issues at the market. The Queen of Plantain Sellers made this assertion: “There should be strict supervision and law enforcement to ensure that people do not dump waste anyhow”. The Queen of Vegetable Sellers also had this to say: “The town council should sweep the gutters every day, because when it rains, the whole market floods due to the choked gutters”.

From the responses gathered it could be deduced that market women’s concern about waste management is that the officials have to ensure that the market centre is clean by ensuring strict supervision and law enforcement. This will help prevent people dumping waste indiscriminately in the market. Also, the respondents were of the opinion that there should be adequate waste containers for the waste generated.

#### 4.8 Summary of Results

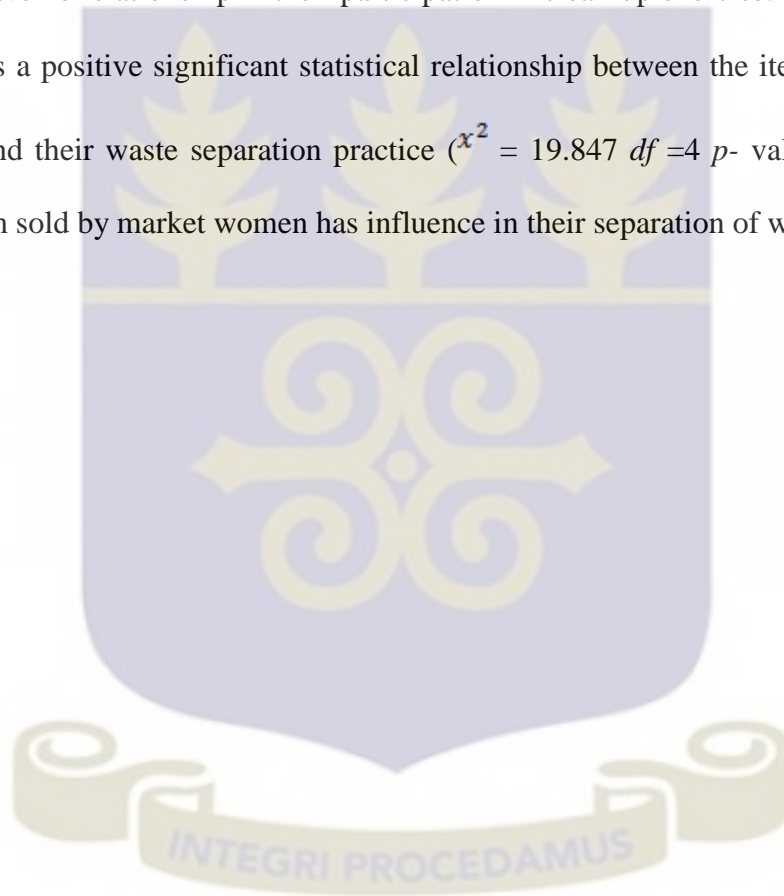
- The study revealed that all the respondents knew about proper disposal of waste.
- Seventy- seven percent (77%) of the respondent knew about segregation of waste whiles twenty three percent had no idea about it.
- Most of the market women had inadequate knowledge on source reduction or minimization of waste in the market.
- There was no significant relationship between respondents' age and knowledge on waste management ( $\chi^2 = 4.634$ ,  $df= 3$ ,  $P$  value =  $.203 > .05$ ). This implies that age has a relationship with knowledge on waste management but the relationship is not significant.
- Respondents' educational level and knowledge on waste management had significant relationship between them ( $\chi^2 = .149$ ,  $df=3$   $p$  value  $.02 < 0.05$ ).
- This means the market women's educational differences had significant influence on their knowledge on waste management.
- There was a positive significant relationship between item sold and knowledge on waste management ( $\chi^2 = 19.847$   $df =4$   $p$ - value =  $0.01 < 0.05$ ). That is, item sold by market women significant influences their knowledge on waste management.
- The study revealed that 87.3% of market women agreed that the market is surrounded with filth whiles the remaining thirteen percent disagreed with the statement.
- The findings reveal that almost all (99%) the respondents felt bad when they dump waste on the floor.

- Seventy-one percent (71%) agreed that culprit must pay fine when waste is found at their stall after 6:00pm.
- 59 % of the market women indicated that the distance between their stall and the waste container is far.
- 67 % of the market women were of the view that the performance of the waste services in charge of the market is poor.
- More than two thirds (73%) of the respondents perceived the cleaning of the market to be the responsibility of the Town Council, whiles twenty- seven think it is the responsibility of the market women.
- Forty-four percent (44%) of the respondents assert that culprit who indiscriminately dump waste in the open must be made to pick up their waste, 51% said they must be made to pay fine and 5% are of the view that culprits must be made to sweep the area.
- Almost all the respondents (96%) stated that there must be provision of dustbins at vantage points to ease waste disposal. Four percent think it is a bad idea to put dustbins at vantage point and that where the waste container is located is okay.
- There is no significant statistical relationship between age and attitude towards payment of fine on improper waste disposal ( $\chi^2 = 14.976, df = 9, p\text{-value} = 0.092 > 0.05$ ). Thus, market women's age has no relations on their attitude on waste management.
- There was a strong statistical relationship between respondents' educational level and attitude on payment of fine on improper waste disposal practice ( $\chi^2 = 35.895, df = 9, p\text{-value} < 0.05$ ).

value =  $0.01 < 0.05$ ). Thus, educational level influences attitude on payment on fine on improper waste disposal practice.

- There was a positive statistical relationship between item sold and attitude on payment of fine on improper waste disposal practice ( $\chi^2 = 47.929$ ,  $df = 12$   $p$ - value =  $0.01 < 0.05$ ). Thus, item sold influences market women's attitude on payment of fine.
- The result displayed that clean up activity is organized in the market. It was found that 65% of the respondents answered in affirmative that they participate in the clean-up activity. Thirty- five percent stated they do not participate in the activity because they often meet the close of the action.
- There was no statistical relationship between age and market women participation in clean-up activity ( $\chi^2 = 3.221$ ,  $df = 3$ ,  $p$ - value =  $0.359 > 0.05$ ). This implies that respondent's age has no important influence on their participation in clean up activity.
- The analysis reveal that there is significant positive statistical relationship between educational level and participation in clean-up activity ( $\chi^2 = 9.251$ ,  $df = 3$   $p$ - value =  $0.026 < 0.05$ ). This means difference in respondents' educational level has significant effect on their participation in clean-up activity.
- There was no significant statistical relationship between age and respondents' waste separation practice ( $\chi^2 = 4.634$ ,  $df = 3$   $p$ - value =  $0.201 > 0.05$ ). This implies respondent age has no important influence on their waste separation practice.

- There was no significant statistical relationship between educational level and respondents' waste separation practice ( $\chi^2 = 1.149$   $df = 3$   $p$ -value = 0.984 > 0.05). Thus respondents' educational level did not determine their waste separation practice.
- There is no significant relationship between respondents' item sold and participation in clean-up activity. ( $\chi^2 = 2.486$   $df = 4$   $p$ -value = 0.647 > 0.05). Thus, item sold by market women have no relationship in their participation in clean-up exercise.
- There was a positive significant statistical relationship between the item sold by market women and their waste separation practice ( $\chi^2 = 19.847$   $df = 4$   $p$ -value = 0.01 < 0.05). Thus, item sold by market women has influence in their separation of waste.



## CHAPTER FIVE

### DISCUSSION OF RESULTS

#### 5.1 Introduction

This chapter discusses the results in chapter four in relation to the stated objectives, issues raised in the literature review and theoretical framework.

#### 5.2 Knowledge of Market Women on Waste Management

This section discusses results on knowledge of market women at Takoradi market circle. The study found out that majority of the respondents knew about waste management as well as related dangers associated with poor management of waste such as flooding, pollution, unpleasant odour and diseases, such as cholera, malaria and dysentery. Respondents' understanding of proper waste disposal, separation and reduction, were some of the main issues central to the study. With reference to respondents' understanding of waste management, a tomato seller explained during the study that: 'waste management involves disposing waste properly by means of gathering and dumping them into waste container'. The explanation shows that the respondent understands waste management. This presupposes that some of the respondents have basic knowledge about how waste must be managed in terms of proper disposal and use of waste containers at designated dumping sites. This is a good waste management practice that was expressed by some of the sellers in the market.

Table 4.4, page 55, sought to find out respondents knowledge on proper disposal of waste. The results also revealed that all the respondents know that waste must be disposed off properly. They also stated the dangers associated with improper waste disposal. To explain this, one of the respondents who sells clothes commented on the dangers of improper waste disposal as follows;

“if we don’t dispose off our waste well, it will bring about flood. This is because when it rains it pushes all the rubbish into the gutters and chokes it at the point where water cannot flow again”.

It is evident from the table that all the respondents are aware of how to handle their waste, an indication that the women are much aware of the dangers associated with improper management or handling of waste. The market women’s knowledge on waste management can be attributed to the general education given to the public on waste management as there are a lot of campaigns in the media on sanitation and effective waste management systems.

In addition, government as well as non-governmental organisations and private individuals have all advocated for proper disposal of waste especially in market places as these could lead to the reduction of outbreak of diseases. It was apparently not surprising that most market women expressed a high knowledge on waste management. The respondents attributed this to general public education they receive, even though little can be said about that because respondents were not asked whether they had been given education or they received education regularly on proper disposal of waste.

In line with this finding, a study conducted by Adeyemo et al (2013) found out that 91.7% residents of Ogbomosho, in Nigeria had knowledge about proper disposal of waste and also indicated that improper management of waste could bring about diseases. This finding confirms Sichaaza’s (2009) study that 60% of residents in Ng’ombe, Zambia, had knowledge on how to manage waste properly and also knew about the dangers of having waste in their surroundings. Managing waste properly is an essential thing in one’s life. It helps prevent diseases and other dangers associated with it and help the country to develop, since much of the financial resources could be channelled to other sectors than focusing it on health and sanitation issues.

Knowledge about sorting out waste is very critical in waste management because it is a starting point for waste reduction in the environment. Separation or sorting out waste is the segregation of various materials from the waste stream at the point of generation for recycling or composting (Tchobanoglous, 2009). This enables one to identify items that can be recycled and help to recover usable items. In line with this, the study revealed that majority of respondents (76.7%) knew about separation of waste that is segregating rubbers and papers from the rest of the waste. The respondents' knowledge on waste separation is due to the public education they receive on reuse and recycling of some waste. In Ghana, no formal education is given to the public on waste management by waste management department as it is done in other countries like Uganda. Also, there is no provision made available for the public to know and practice separation of waste.

Banga (2011) emphasised that in Uganda, education on proper waste management is given to residents by waste management organizations. It was exhibited in his study that majority (60%) of residents in Kampala stated they had knowledge about it as a result of the education received from waste management organizations. Waste management education helps individuals to understand the importance and the harm improper waste management can cause. The market women through organization of clean-up exercise also get to know about effective waste management practice. After clean-up activities, the queens mobilize and educate them on how best the market place can be kept clean. Through an informal means market women in Takoradi market circle have had some basic knowledge on waste management, so if it is supplemented with public education from STMA waste management department and Zoom Lion Waste Management Services, it will go a long way to enhance their already existing knowledge. Also respondents' knowledge on waste separation can be attributed to the awareness creation by some

non-governmental organizations (NGOs) like Daasgift in the metropolis that buys empty water sachet for recycling (CHF International Report, 2012). The results obtained is also in line with Jamias and Tatlonghar's (2010) findings which indicated that there is high awareness among citizens of Sta. Rosa city, Luguna, Philippines, in separation of waste due to public education on waste management. Lubag (2005) cited by Jamias and Tatlonghar (2010) affirmed in his study conducted in Los Banos, Luguna that there is high awareness among household on separation of waste.

Even though generally, respondents had knowledge on waste management, it was interesting to note that the market women did not have much knowledge in the area of waste reduction. Respondents were asked to state how waste can be reduced in the market. The responses demonstrated that they had no knowledge in waste reduction. A yam seller who participated in the study explained that the waste can be reduced when there is strict supervision and law enforcement by the city authorities to ensure that people do not dump waste on the floor and dustbins are provided at vantage points. This explanation made by the respondent is not how waste can be reduced in the market. This is evident that they do not know how waste can be reduced. The study found out that respondents do not receive education from any waste management organization on waste reduction. In the light of this, inadequate knowledge on waste reduction could be due to lack of education received from the waste management organization in charge of managing waste. Also, it can be attributed to the fact that market women have the belief that waste is inevitable. According to the market women waste cannot be prevented or reduced as far as they are in the market because all their activities generate waste. As Ajzen's (1999) theory of planned behaviour explains, a person's belief on an objects or situation influences his/her attitude towards behaviour and their intention to behave. Hence, their

beliefs on waste will prevent them from knowing how to reduce waste. This implies that market women's belief that waste is inevitable, will determine their attitude negatively towards waste management, thereby influencing their intention to reduce waste at the market centre. This result agrees with the study conducted by Teo and Loosemore's (2001) and Jurzack (1997) cited in Sichaaza (2009) that lack of knowledge on waste reduction affects individuals' understanding on waste prevention. Teo and Loosemore's study conducted among operatives at construction sites established that respondents lacked knowledge on reduction of waste and that had an influence on their negative attitude towards waste reduction. In that, respondents did not know how to manage the construction materials to reduce waste.

Likewise, Sichaaza's (2009) study on assessment of knowledge, attitude and practice towards waste management among Ng'ombe residents emphasised that respondents were not undertaking activities that will decrease their waste because they had inadequate knowledge on waste reduction. It is not surprising that Kreith (1994) concluded that most developing countries do not practice waste reduction, rather all the waste are put together and sent to landfill sites. She shed more light on the importance of waste reduction. She indicated that waste reduction helps in minimizing the quantity of waste that is generated and also few resources will be allocated to its management. As indicated earlier, in Ghana, little education is given to the public on waste management, so generators of waste do not know the activities that can be undertaken to reduce waste in the country. Therefore, government should collaborate with waste management organizations to ensure the public receive education on waste reduction.

Knowledge about waste reduction is very essential in human life. It enables the public to undertake activities that decrease any source of waste by either recycling or composting and sorting out waste. Begum et al, (2009) found in their study conducted in Malaysia on

contractors' attitude on waste management that, 55% of the respondents knew about waste reduction. This was as a result of their participation in waste management training programmes organized by management. This highlights the importance of education which was lacking among market women in the case of Takoradi market circle since respondents indicated that there was inadequate education on waste reduction.

Aside this, Tchobanoglous et al (1993: 764) emphasized that waste reduction or source reduction can be practiced by everybody. He stated that: "waste reduction includes the switch to reusable products and packing, the most familiar example being returnable bottles". In addition, he was of the opinion that consumers can participate in waste reduction by buying less or using products more efficiently and also cut down the purchase and use of disposable products. This can be applicable in the case of market women who sell at Takoradi market circle; they have to ensure that they use less polythene or paper bags to wrap goods for customers. This in a long run can help reduce waste at the market centre.

Although, it was observed in this study that the market women lack knowledge on waste reduction, this however does not mean that they lack knowledge on waste management in general. What can be deduced from this study is that market women at Takoradi market circle have inadequate knowledge on management of waste. Therefore, promotion of educational programmes on waste reduction at the market could help solve this problem. For example, the waste management organizations could educate the market women and the public to use baskets to carry items from shops and using less polythene bags or disposal bags. Also, the waste management officials should educate market women on how to store their perishable goods to avoid spoilage. This exercise will also help reduce the waste generated.

### 5.3 Attitude of Market Women towards Waste Management

Attitude presents individuals' positive or negative evaluation of objects or situation that predisposes them to behave in a certain way (Ajzen, 1991). Ajzen (1991) further established that, people's positive or negative attitude towards waste management influence their behaviour towards waste management. The study observed that most of the responses on the market women's attitude towards waste management were positive.

For instance, in examining market women's attitude towards proper disposal of waste, it was found out from the study that they have positive attitude towards waste management. It was established that the market women were concerned about their environment. This was manifested in Table 4.8 at page 63 which indicates that majority of the respondents feel bad when others throw rubbish on the floor. The market women were of the view that they do not feel comfortable when they themselves or others put waste on the floor. This can be attributed to the trait of a traditional Ghanaian woman who wants her surroundings to be neat and clean always.

In an interview with one of the market queens who sell Textiles, she asserted that she feels bad when waste is put on the floor and that she cannot do that but some market women feel normal about that. This is an indication of positive attitude towards waste management. This means that respondents are concerned about proper waste disposal and clean environment. Thus, they are not comfortable when they and others dump waste around the market. The study confirms other research findings which indicated that respondents have positive attitude towards waste management. According to Adeyemo et al (2013) people feel bad on improper disposal of waste. They also asserted that waste disposed into drains and around the surroundings is bad and unhealthy. This confirms the study of Kpoor (2009) that the public have positive attitude towards

proper disposal of waste. He established that some people feel bad when they disposed off waste around their surroundings but they are helpless. This is because they lacked good waste management facilities.

Another positive attitude respondent portrayed towards waste management is on payment of fine on improper waste disposal practices. The results in Table 4.8 on page 63 revealed that more than half (70.7%) of market women agreed with the statement “I should pay fine if waste is found at my store after 6:00pm (close of day)”. This is an indication that the market women agreed to the fact that culprits must be made to pay a fee if waste is seen around where they sell. They believed it was important and that, it will deter those who do that to stop. It also implies that most of the market women do not want refuse around their stall. This is because dirty selling environment drives potential customers away. This supports Kpoor’s (2009) view that it is essential to punish individuals who indiscriminately dump waste in the city. He emphasized that sanctions enable the public to be alert and engage in proper waste disposal practice.

However, the study established that those who disagreed with this claim shared their sentiments that waste seen around their shops could not be their faults. This means there are other people who have to be blamed. An interview with the queen of textiles sellers made this assertion:

Madam, look at where my store is, we are selling around the circle. After closing other market women come and sell at night so when such things happen and the officials come and charge me for leaving waste in front of my store, sister, do you think it is fair? I will not agree to that.

This indicates that some of the market women disagree because they are not only people who sell at that place. The respondents believe that market women who do not own permanent shops also sell in front of other people’s shops after they have closed for the day. These people might leave the waste there and this cannot be the fault of the shop owners. This is laudable; most markets in

Ghana, hawkers sell at any open space they get without collecting waste generated. Even though some of the respondents disagreed with the statement, it gives the impression that they have good attitude on clean environments. Therefore, market women at Takoradi market circle have positive attitude towards punishing culprit on improper disposal practices.

The study further assessed respondents' opinion on who is responsible for keeping the market clean. The results demonstrated that more than half (73.3%) of the respondents perceive cleaning of the market centre to be the responsibility of the Town Council. This is based on the idea that in public places, the cleaning and sweeping is the responsibility of people who are hired and paid to do so, such as Zoom Lion sweepers or Town Council sweepers. Similarly, Sichaaza (2009) established in his study that the populace believed it is the responsibility of Lusaka City Council and health inspectors to keep the environment clean. This is an indication that respondents believed that keeping the market clean was the responsibility of the Takoradi City Council. This is as a result of market tolls they pay. Also, they were of the opinion that the money generated is used to pay the workers (Town Council). Therefore, it is the responsibility of the City Council to keep the market clean.

Aside these responses, the study revealed that comments made by the market queens supported this assertion. There is a clear indication that respondents have negative attitude with regards to whose responsibility it is to manage waste at the market. Teo and Loosemore (2001) emphasised that negative attitude towards waste management inevitably manifests itself in poor practices. Nonetheless, respondents' negative attitude towards who was responsible for managing waste at the market influences their poor practice of waste disposal. It is not surprising that market

women indiscriminately dispose off their waste in the market: around the waste container, open spaces, into gutters and leave piles of waste on the pavements and around the parking spaces.

As emphasized by Ajzen (1991) in his Theory of Planned Behaviour, individual's behavioural intention is determined by beliefs on an objects or subject, thus, respondents' belief that keeping the market clean is the responsibility of the Town Council can influence their attitude towards proper management of waste. Even though, respondents are of the opinion that Town council should sweep the market, which is seen as a negative attitude, it can be inferred from all the results and responses under attitude (Respondent are the view the market is surrounded with filth; they feel bad when others and themselves dump waste on the floor; they are of the opinion that there must be payment of fine on improper waste disposal practices) that market women have positive attitude towards waste management. The study found that market women at Takoradi market circle had positive attitude towards waste management.

#### **5.4 Waste Management Practice by Market Women**

Effective waste management practice is essential in humans' life. It makes individuals live a healthy life; they will be free from dangers associated with improper waste management practices such as flood, pollution and diseases (Kpoor, 2009). It also makes the environment favourable to attract foreign investors and tourists. With reference to this, the study sought to find out respondent waste disposal practices. It was shown that market women had positive waste disposal practice: The study established that majority of the market women disposed off their refuse in waste containers provided by Zoom Lion waste management services.

Clean-up exercise is another aspect used in assessing respondents' waste management practice. In Ghana, most clean-up activities undertaken by market women are organized by the city

authority to ensure healthy environment for selling. Throughout the study, it was revealed that 65% of respondents participated in clean-up exercises organized by city authorities in the market. This means not all market women participate in the clean-up exercises. Clean - up exercises are very essential in the sense that, it is an opportunity for market women to receive non-formal education on proper management of waste. It also encourages people who are reluctant to clean their environment to do so (Kreith, 1994). The clean-up exercise is embarked on to ensure that all waste in the market is collected and sent to landfill sites. It also, makes the environment clean and healthy for selling.

Moreover, the study revealed that respondents participated in the clean - up exercises so as to prevent dangers associated with poor waste management. Proper waste disposal practices prevent flood and diseases such as malaria and cholera. Adeyemo et al (2013) confirmed that in the year 2011, Nigeria witnessed a flood disaster as a result of improper disposal of refuse leading to destruction of several houses, loss of lives and destruction of properties. This is a result of the negative waste management practice by Nigerian residents. The Department of Health (1999) cited by Sichaaza, (2009) in South African argued that most of the major consequences of inadequate waste collection and disposal system among urban poor communities in developing countries pose a threat of diseases outbreak. For instance, diseases such as malaria and cholera are the commonest diseases suffered in Zambia, Nigeria, Kenya and Zimbabwe (Sichaaza, 2009).

In terms of waste separation practices, the study indicated that almost all (97%) the respondents do not separate their waste. This means market women dispose off all the waste together into the waste container. It is not surprising because in Ghana there is no policy enforcing the public to separate their waste. Also, there is no provision made to separate garbage into different groups, there is only one waste container for all the waste. One of the market queens interviewed who

does not separate her waste pointed out that: *We do not separate our wastes. We throw all garbage together into one container. This is because there is no different containers to enable us sort our waste.* This implies that most market women at Takoradi market circle do not separate their waste even though they know about waste separation. They do not see the essence of separating their waste since it is disposed off into one waste container. In some developed countries like United Kingdom and Germany, policies are formulated and provisions are made to ensure people sort out waste. The waste separation is focusses on four main categories; glass, paper, plastic and metal cans. Respondents who try to segregate their waste mostly separate empty water sachet rubbers and black polythene bags. They indicated that the black polythene bags are used to set fire with charcoal and the empty sachet water is sent for recycling.

According to Jamias and Tatlonghar (2010) and Banga (2011) residents engage in waste separation because it generates income for them. This positive practice might be as a result provision of adequate education to the public on waste separation. As mention earlier, Tchobanglous et al (2003) emphasized that waste segregation encourages recycling habit. In effect, the waste management practice of market women at Takoradi market circle was poor. It can be enhance when they receive intensive education on waste management. Also, when there are enough dustbins provided for waste separation.

## **5.5 Age and Waste Management**

### **5.5.1: Age, Knowledge and Waste Separation**

Age is widely acknowledged as a significant predictor of environmental concerns. According to Agwu (2012) a person's age can determine his/her knowledge on waste management through personal experiences. This assertion was established in his study. It was found out that in Port Harcourt, residents below 25 years of age had adequate knowledge on waste management

(60%) relatively to those above 25 years of age (52%) because they do the cleaning in the house. As a matter of fact, they might have more knowledge in the area of waste management than middle adult group. This notion was confirmed in the study.

It was revealed in Table 4.5, page 60, that majority (82.7%) of the market women within the young adult group (18-30years) knew about waste separation than those within the middle adult group (31-60). This is likely, when one considers the fact that in most households in Ghana, it is the young adult female who does the cleaning and sweeping activities.

With reference to the analysis in table 4.5, it is tenable to say that there is no significant relationship between market women's age and their knowledge on waste segregation. Thus, market women's age has no significant relationship with their knowledge on waste management. This is contrary to Jamias and Tatlonghar's (2010) assertion that age has significant relationship with individuals' knowledge on waste management ( $r(98) = -0.401, p < .01$ ) which implies that an individual's knowledge somehow decreases as age increases. This is because of the experience the person might have as she continues to do the cleaning or sweeping activities. Therefore, the study indicate that the age of market women who sell at Takoradi market circle does not determine their knowledge on waste separation

### **5.5.2 Age and Attitude towards Waste Management**

This study sought to find out the relationship between market women's age and their attitude towards waste management. The results revealed that, there is no significant relationship between respondents' age and their attitude towards payment of fine for improper disposal ( $\chi^2 = 14.976, df = 9, p\text{-value} = 0.092 > 0.05$ ). This means respondents' age has no relationship with their attitude towards waste management.

Even though the results indicate that more of the market women within middle adult group (31-60) agreed to pay fine on improper waste disposal, this did not show any significance relationship in their attitude towards waste management. This means a person's positive or negative attitude towards waste management could not be as a result of her age. The study confirms what Banga (2011) and Ekere et al (2009) established in their study that there is no significant relationship between age and people's attitude towards waste management.

### **5.5.3 Age and Waste Management Practice**

Evidence from the analysed results shows that there is no statistical relationship between age and waste management practices considering the values of the finding ( $\chi^2 = 4.634$ ,  $df = 4$   $p$ -value =  $0.201 > 0.05$ ). The implication of the results indicates that age of respondents has no relationship with their practice of waste separation. Thus, no matter the age (young adulthood or middle adulthood), they have similar practices when it comes to waste management.

This is contrary to expectation because Adu-Boahen (2010), Raudsepp (2001) and Banga (2011) asserted in their studies that there is positive significant relationship between age and waste management practice. They explained that respondents waste management practices are determine by people's age. However, it agrees with Agwu's (2012) study on issues and challenges of solid waste practice in Port Harcourt which discovered that respondents age and waste management practice has no significant relationship ( $p$ -value =  $.114 > 0.05$ ). In addition, Chanda (1999) asserted that environmental concerns among residents of Gaborone do not seem to have any significant influence on their age (Chanda, 1999 cited in Agwu, 2012).

## 5.6 Education and Waste Management

### 5.6.1 Educational Level and Knowledge on Waste Management

Education serves as a tool which enhances one's knowledge, attitude and skills in a community. It also influences people's behaviour positively. According to Banga, (2011) it is seen as a possible determinant of environmental issues. In assessing the relationship between education and knowledge on waste management, the study noted positive significant relationship between respondents' educational level and knowledge on waste separation ( $\chi^2 = 0.149$ ,  $df = 3$ ,  $p$  value =  $0.02 < .05$ ). This implies that respondents' educational level determines their knowledge on waste management.

The study also revealed that majority of respondents who have had formal education knew about waste separation. Thus, the higher the educational level attained, the higher the knowledge on waste management. The observation supports that of Jamias and Tatlonghar (2010). This implies that education is very important in the lives of individuals. Education helps individuals to get better understanding on how and why waste must be managed in the environment properly. This is an indication why majority of the market women with formal education knew about waste management.

### 5.6.2 Educational level and Attitude towards waste management

Education also shapes individual's attitude towards environmental issues. Education one acquires influences their attitude on an object or subject. The study found out that there is a strong significant relationship between respondents' educational level and their attitude towards waste management ( $\chi^2 = 35.895$ ,  $df = 4$   $p$ - value =  $0.01 < 0.05$ ). This implies that educational level has positive effect on respondents' attitude towards waste management. The study however is contrary to the assertion of Momoh & Oladebeye (2012) and Yeboah et al, (2012). They

argued that educational level attained by individuals does not necessary have significant relationship with their attitude on proper waste management.

As revealed in the study in Table 4.10 page 71 more (74%) respondents with tertiary education agreed to the payment of fine on improper waste disposal practice as compared to those with no formal education (61%). This indicates that respondents with higher or formal educational level are more likely to have positive attitude towards waste management than those with lower or no formal level of education. This implies that education plays a key role in people's attitude towards waste management. Banga's (2011) findings support this study. That is, educational level attained by market women at Takoradi market circle determines their attitude on waste management.

### **5.6.3 Education and Waste Management Practice**

Education is a variable that has received consistent attention among some researchers (Banga, 2011; Adu-Boahen, 2010, Raudsepp, 2001 and Agwu, 2012). Considering the relationship between education and waste management practice, the result revealed that ( $\chi^2 = 9.251, df=3$   $p$ -value =  $0.026 < 0.05$ ), the  $p$ -value 0.026 is less than the asymptotic value of 0.05. This attests that there is significant relationship between education and participation in clean-up activity. It is therefore imperative to note that differences in educational levels determine waste management practice. It could therefore be inferred that respondents with formal education are more likely to participate in the clean-up activity as compared to those with no formal education. In effect, the findings portray that participation in the clean-up exercise is higher among respondents with formal education (81.6%) than those with no formal education (56.1%).

The results also showed that there is no significant relation between education and waste separation practice ( $\chi^2 = 0.149$ ,  $df = 4$   $p$ -value =  $0.985 > 0.05$ ). The implication of the analysed results revealed that educational level of respondents has no influence on waste separation practice. Thus, no matter the education level of respondents (high or low), it does not affect their waste separation practices. In addition, the study indicated that market women with no formal education were the highest (78%) among those who do not separate their waste before disposing them off than those with tertiary education 74%. This is contrary with Banga's (2011) study which found that respondents with lowest education (no formal and primary educational level) were more likely to separate their waste than those with tertiary education.

## **5.7 Item Sold and Waste Management**

### **5.7.1 Item Sold and Knowledge on Waste Management**

Item sold by market women forms an important aspect in examining their knowledge on waste management. Goods sold by people can influence their knowledge on waste management in the sense that the item one sells can help her understand better how to manage their waste properly, for instance, those who sell perishable goods are likely to have better understanding on how to manage waste properly because they are more likely to generate more waste.

It came to light from the study that majority (93%) of the respondents who sell fruits and vegetables know about waste separation compared to other sellers (general goods, tubers, fresh produce). This is because those who sell fruits and vegetables according to an S.T.M.A Report (2012) generate more waste than those who sell non-perishable goods because perishable goods get spoilt easily and generates more waste. Therefore, it is likely that they would have much knowledge on how to separate waste.

The study also revealed that, there is a significant positive relationship between item sold and knowledge on separation of waste ( $\chi^2 = 19.847$   $df = 4$   $p$ -value = 0.01). It can be inferred that items sold by respondents are likely to determine their knowledge on waste separation. Thus, the items one sells could enable her to know about waste separation.

### **5.7.2 Items Sold and Attitude towards Waste Management**

Like knowledge on waste management, items sold by respondents equally determines attitude towards waste management. The study revealed a positive significant relationship between item sold and attitude on payment of fine for improper waste disposal practice ( $\chi^2 = 47.929$ ,  $df = 12$ ,  $p$ -value =  $0.01 < 0.05$ ). This attests to the fact that there is significant relationship between items sold and attitude towards waste management. It is therefore important to note that the kind of items sold determines the attitude on waste management.

Even though, most of the market women who participated in the study were of the view that culprits with waste found in front of their stores must pay fine, more than half of market women who sell grains opposed to that. This is because the item they sell (grains) do not generate a lot of waste as compared with fruit, vegetables and cassava sellers. This could be the reason they opposed to the payment of fine.

The result also revealed that apart from the grains sellers, most of the sellers had positive attitude towards waste management. This is because most of the sellers generate a lot of waste as a result of the easily perishable nature of their goods (fruit and vegetable sellers). They are careful on how to manage waste properly to prevent it from surrounding their stall.

### 5.7.3 Item Sold and Waste Management Practice

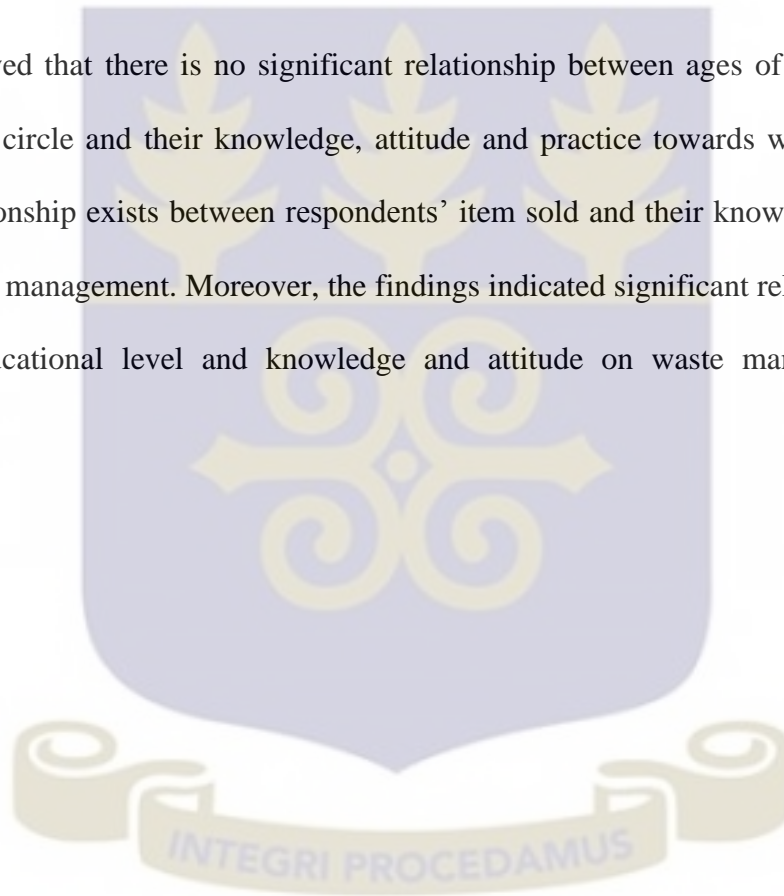
The study established that there is no significant relationship between item sold and participation in clean-up activity ( $\chi^2 = 2.486$   $df = 4$   $p$ -value =  $0.647 > 0.05$ ). The implication of the analysed results indicates that item sold by market women have no relationship with their participation in clean-up exercise. Thus, no matter what they sell (fruit and vegetables or general goods), they have similar waste management practice.

Considering the relationship between items sold and waste separation practice, the result showed majority (93%) of market women who sell fruit and vegetables do not separate their waste. This implies that most of the sellers who generate more waste in the market do not separate their waste. This is because there is no avenue to send their waste to be used as compost. It could be inferred that these sellers cause the increase in the waste being produced at the market. However, the study revealed that there is a positive significant relationship between items sold and waste separation practice ( $\chi^2 = 3.486$   $df = 3$   $p$ -value =  $0.01 < 0.05$ ). It is therefore imperative to note that the type of items market women sell at Takoradi market circle determines their waste management practice.

In conclusion, the research aimed to find out the knowledge, attitude and practice of market women at Takoradi market circle towards waste management. The findings revealed that market women at Takoradi market circle have knowledge in some aspects of waste management such as waste disposal and waste separation. This is due to the general public education on waste management but lacked knowledge on reducing of waste. This is because market women do not receive education from the waste management organizations. The findings also indicated that

respondents have positive attitude towards waste management. This is because most of the responses on attitude towards waste management were positive. Although, respondents had some knowledge on waste management, it did not reflect on their waste management practices. For instance, more than half of the respondents did not separate their waste. This could be attributed to lack of avenues to send their waste for recycling or compost (Adu-Boahen, 2012). There is no provision made and policy formulation to enforce them to embark on this activity.

The study observed that there is no significant relationship between ages of market women at Takoradi market circle and their knowledge, attitude and practice towards waste management. Significant relationship exists between respondents' item sold and their knowledge, attitude and practice on waste management. Moreover, the findings indicated significant relationship between respondents' educational level and knowledge and attitude on waste management but not practice.



## CHAPTER SIX

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 6.1 Introduction

The chapter focuses on summary, conclusion and recommendations of the study. The chapter captures the overview to the study, findings of the study and implications of the findings to adult education policy and practice.

#### 6.2 Summary

Effective waste management has been a challenge to some developed and developing countries especially Ghana due to the large quantity of waste generated and inadequate resources such as finance, human and equipment to ease city authorities' strategies to manage waste. Agdag (2008); Adu-Boahen (2012) and Huttly (1990) argued that increase in waste generation in developing countries and some cities in developed countries is as a result of rapid urbanization, population growth, industrialization, economic growth and change in standard of living and human attitude. Sekondi-Takoradi metropolis is no exception. Takoradi market circle faces challenges of effective management of waste. Even though there is overflow of waste from waste containers, market women sit around to do their daily business. This has negative implications which is worth studying.

In the light of this, the study sought to find out the knowledge, attitude and practice of market women at Takoradi market circle towards waste management. The study specifically set out to achieve the following objectives:

- To find out the knowledge level of women who sell at Takoradi market circle on waste management.

- To ascertain the attitude of women who sell at Takoradi market circle towards waste management.
- To examine the practice of women who sell at Takoradi market circle on waste management
- To find out the relationship between selected background information (Age, education and item sold) and knowledge, attitude and practice of women who sell at Takoradi market circle on waste management.

The study reviewed literature which was most central to the problem under study. These include: waste and types of solid waste, contemporary solid waste management and urban solid waste generation, Knowledge, Attitude and Practice on waste management. The study also reviewed theoretical framework based on Ajzen's (1985) theory of planned behaviour.

The study further employed a descriptive survey research design. The study employed both probability (simple random sampling) and non-probability (snowball, purposive and convenience sampling) sampling techniques to select market women. Also, the data collection instruments used were interview schedule and semi-structured interview guide. The data were analysed in line with the research objectives, the closed ended questions were analysed using Statistical Package for Social Science (SPSS). The open ended questions were analysed qualitatively, put into themes and pattern to get the understanding of the phenomena.

The following findings emanated from the study:

- Market women had positive knowledge on waste management. Majority (82%) of market women at Takoradi market circle knew about proper disposal of waste, and separation of waste.
- Market women had inadequate knowledge on waste reduction or minimization of waste in the market. This is attributed to the lack education provided to them by waste management department on proper waste management.
- The study observed no significant relationship between respondents' age and their knowledge, attitude and practice on waste management. This implies that age has no significant influence on knowledge, attitude and practice towards waste management.
- Market women at Takoradi market circle had positive attitude towards waste management. The findings depicts that 78.5% of the respondents had positive attitude towards waste management in the study. This is because they reacted positively to most of the attitude items gathered from them.
- There was a strong positive significant relationship between respondents' educational level and their knowledge, attitude towards waste management but not practice. This is an implication that market women's level of education has no relations on their practice on waste management but has significant influence on their knowledge and attitude.
- There was a statistical significant relationship between respondents' item sold and their knowledge, attitude and practice towards waste management. Thus, items respondents

sell has relationship with their knowledge, attitude and practice towards waste management.

- Market women at Takoradi market circle that had poor waste management practice. Most of them (58%) indicated negative practice towards proper disposal of waste.

### **6.3 Implications of the Study to Adult Education Policy and Practice**

Adult educators use education to carry out their functions. It is within this context that the adult educator has a crucial role to play in enhancing the knowledge, attitude and practice of market women. This study provides adequate information on how to address environmental issues and highlights the needed ways for enhancing knowledge, attitude and skill of market women towards waste management. The study found out that most market women at the Takoradi market circle (82%) had knowledge about proper disposal of waste. However, such knowledge could not be translated into good practices towards waste management as only 42% of respondents admitted having practiced proper disposal of their waste. This implies that adult education organizations such as the Institute of Local Government, School of Continuing and Distance Education and University of Ghana among others have the responsibility of designing and implementing programmes targeted towards effective waste management practices.

For policy makers, the results of the study would help assist city authorities and environmental protection agencies with strategies to tackle the negative attitude and practice by market women on waste disposal. In addition, the results will aid policy makers to formulate policies that will ensure strict supervision of market women and the public's waste disposal practice.

#### **6.4 Conclusion**

The study sought to find out the knowledge, attitude and practice of women who sell at Takoradi market circle towards waste management. The study revealed that most market women at the Takoradi market circle (82%) had knowledge about proper waste disposal and separation of waste but lack knowledge on waste reduction. They also had positive attitude towards waste management. However, such knowledge and attitude could not be translated into good practices towards waste management as majority (89%) of them admitted do not separate their waste. This can be attributed to inadequate education received by the market women concerning waste management issues by waste management services. Therefore, there is the need for adequate education and policy formulation on proper waste management practices at Takoradi market circle.

#### **6.5 Recommendations**

Although, it was observed in the study that most of the market women had positive knowledge and attitude towards waste management, there are certain issues that are needed to be addressed at Takoradi market circle to help minimize waste generated and help improve management of waste effectively. The researcher therefore recommends these activities:

- Government should collaborate with adult education institutions to design non-formal education on waste management for market women in Sekondi-Takoradi Metropolis. In a form of workshop and seminar for market women to sensitize and conscientize them on waste management problem and consequences. This will help enhance market women's knowledge, attitude and skills needed for positive practice on waste management. Also,

this will help empower market women on the dangers of improper waste disposal practice and on how best their environment can be kept clean and healthy.

- There must be law enforcement and strict supervision by city authorities to ensure that market women and the public undertake proper waste management practice. This will help minimize indiscriminate dumping of waste at the market centre.
- The waste management organization in charge of Takoradi market circle should ensure regular collection and transportation of waste to the landfill site. This will prevent overflowing of waste from the waste containers, bad odour and insects in the market. This will also make the market surroundings clean and healthy for business.
- There must be provisions made available for market women to separate their waste. The waste management services in charge of the market centre should provide more waste containers to enable market women divide waste into different category such as paper, plastic and metal cans instead of throwing everything into the same bin.

### **6.6 Suggestions for Further Studies**

The study was limited in some areas due to time and financial constraints. The researcher however suggests the following areas for future research work:

- Challenges facing city authorities in effective management of solid waste in Sekondi-Takoradi metropolis in the Western Region.
- Assessing the role of S.T.M.A waste management service in management of waste in the metropolis.

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## APPENDIX 1

University Of Ghana  
School of Continuing and Distance Education

### A STRUCTURED INTERVIEW SCHEDULE FOR MARKET WOMEN AT TAKORADI MARKET CIRCLE

This is an academic research being carried out as part of my work towards fulfilling the requirement for the award of Masters of Philosophy degree in Adult Education. This study is intended to solicit the views and opinion on market women's **Knowledge, Attitude and Practice towards waste management**. Answers and views to questions in this interview schedule will be used together with other information to determine the level and associated factors that influence market women behaviour on waste management at Takoradi market circle.

Please this research is solely for academic purposes; therefore, you are encouraged to answer the questions as truthfully as possible. Your responses will be held in strict confidence. Thank you.

#### Section A- Demographic data

1. Age
  - A. 18- 25 { }
  - B. 26- 30 { }
  - C. 31- 40 { }
  - D. 41 and Above { }
  
2. Educational level
  - A. No Formal Education { }
  - B. Primary { }
  - C. Secondary { }
  - D. Tertiary { }
  
3. Marital status:
  - A. Single { }
  - B. Married { }
  - C. Divorced { }

D. Separated { }

4. What items do you sell? .....

5. How long have you been selling in this market? .....

**Section B. Knowledge of Market Women on Waste Management**

6. What do you understand by waste management?

.....  
.....  
.....

7. Mention 3 effects of poor waste management in the market?

.....  
.....  
.....

8. Have you had any education on waste management?

A. Yes { }

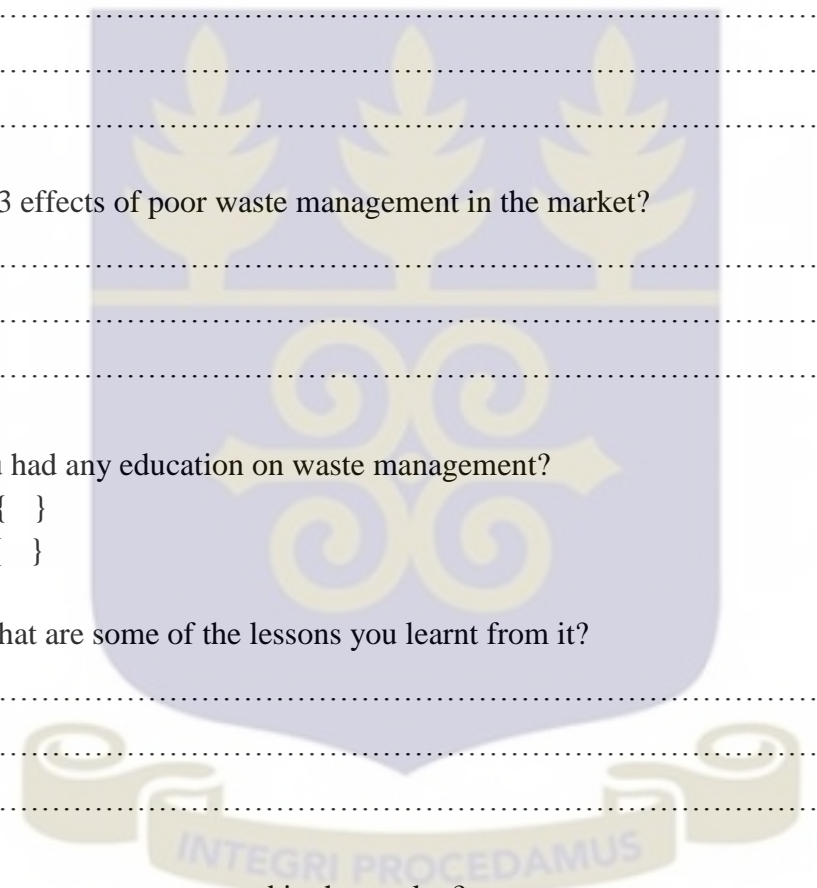
B. NO { }

9. IF yes, what are some of the lessons you learnt from it?

.....  
.....  
.....

10. Who manages waste generated in the market?

.....



Items	Tick $\checkmark$	
	Yes	No
Please select your answer in agreement to the question		
11. Waste must be disposed off properly		
12. Waste must be disposed off anywhere and anyhow		
13. Rubbish must be separated before disposal		
14. Waste containers must be provided at vantage point		
15. Are there enough waste containers in the market centre		
16. Waste must be put in waste containers		
17. Waste containers must be emptied every day		
18. Waste must be collected at point of trading		
19. Garbage must be gathered and put into polythene bags		
20. Provision of education on waste separation is important		

21. Who is in charge of collecting and transporting the waste from the market?

.....

.....

.....

22. How can waste generated in the market be reduced?

.....

.....

.....

23. How many waste containers are available at the market circle?

- A. 1 { }
- B. 2 { }
- C. 3 { }
- D. 4 { }

24. How often are the waste containers emptied? Please tick one.

- A. Once a week { }
- B. Twice a week { }
- C. Thrice a week { }
- D. Everyday { }
- E. Other, Please specify .....

**Section C: Attitude of Market Women towards Waste Management**

Responses	Tick one which is applicable {√}			
Please indicate your level of understanding of agreement to the following statement.	Strongly agree	Agree	Disagree	Strongly disagree
25. I feel the market is surrounded with filth	{ }	{ }	{ }	{ }
26. I pay as I throw away the rubbish	{ }	{ }	{ }	{ }
27. I feel bad when I dump rubbish on the floor	{ }	{ }	{ }	{ }
28. I feel bad when others throw rubbish on the floor	{ }	{ }	{ }	{ }
29. I should pay fine if waste is found at my stall after 6:00pm	{ }	{ }	{ }	{ }
30. I feel the distance between the waste container and my store is far	{ }	{ }	{ }	{ }
31. I believe the performance of the waste management service in charge of the market is good	{ }	{ }	{ }	{ }
32. I feel it is the responsibility of the officials to sweep and keep the market clean.	{ }	{ }	{ }	{ }

**Section D: Waste Management Practice by Market Women.**

33. How do you normally disposed off waste you generate?

.....  
.....  
.....

34. Do you separate your waste before disposing them off?

- A. Yes { }
- B. No. { }

35. Do you organize clean-up activities in the market?

- A. Yes { }
- B. No. { }

36. How often do you undertake clean- up activities within a year?

- A. Once { }
- B. Twice { }
- C. Thrice { }
- D. Everyday { }
- E. Other, Please specify .....

37. Do you all participate in the clean-up activities?

- A. Yes { }
- B. No. { }

38. What measures can be put in place to prevent littering and indiscriminate dumping of refuse in the market? The culprit should be made to;

- A. Pay a fine { }
- B. Pick it up { }
- C. Sweep the place { }

39. What challenges do you face in keeping the market clean?

.....  
.....  
.....

40. Do you have any information to add concerning waste management at the market?

.....  
.....  
.....

## APPENDIX II

University Of Ghana  
School of Continuing and Distance Education

### SEMI- STRUCTURED INTERVIEW GUIDE FOR MARKET QUEENS AT TAKORADI MARKET CIRCLE

#### Section A: Market women's knowledge on waste management

1. What do you understand by waste management?
2. Have you had any education on waste management?
3. How can waste be reduced in the market?
4. Who manages waste generated in the market?

#### Section B: Market women's Attitude on Waste management

5. How do you feel when you throw rubbish on the floor?
6. How do you feel when others litter the market?
7. What measures should be taken to prevent indiscriminate littering and dumping of waste in the market?

#### Section C: Waste Management Practice by Market Women

8. Do you organize clean- up activities in the market?
9. How do you normally dispose off waste?
10. Do you separate your waste before disposing them off?
11. What challenges do you face in keeping the market clean?

**APPENDIX III**

**University Of Ghana  
School of Continuing and Distance Education**

**SEMI-STRUCTURED INTERVIEW GUIDE FOR WASTE MANAGEMENT  
OFFICIALS IN SEKONDI-TAKORADI METROPOLIS.**

1. What is waste management?
2. Who is in charge of management of waste at Takoradi market circle?
3. Do you organize educational programmes on waste management for the market women?
4. How many waste containers do you have in the market?
5. What is your perception on market women attitude towards waste management?
6. What is your opinion on waste management practice by market women?
7. What challenges do you face in managing waste at the market?

