

UNIVERSITY OF GHANA

DEPARTMENT OF GEOGRAPHY AND RESOURCE DEVELOPMENT

**THE EFFECT OF SANITATION ON ECONOMIC ACTIVITIES: THE CASE OF
TEMA NEW TOWN MARKET**



**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON, IN
PARTIAL FULFILLMENT OF THE REQUIRMENT FOR THE AWARD OF
MPHIL GEOGRAPHY DEGREE.**

JULY, 2015

DECLARATION

I, hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere except for the references to the literature which have been duly cited herein, this work is the product of my research. This research was undertaken by me in the University of Ghana, under the august supervision of Professor Paul Yankson and Professor George Owusu. I, therefore, take full responsibility for every aspect of this work.

Candidate's Signature..... Date.....

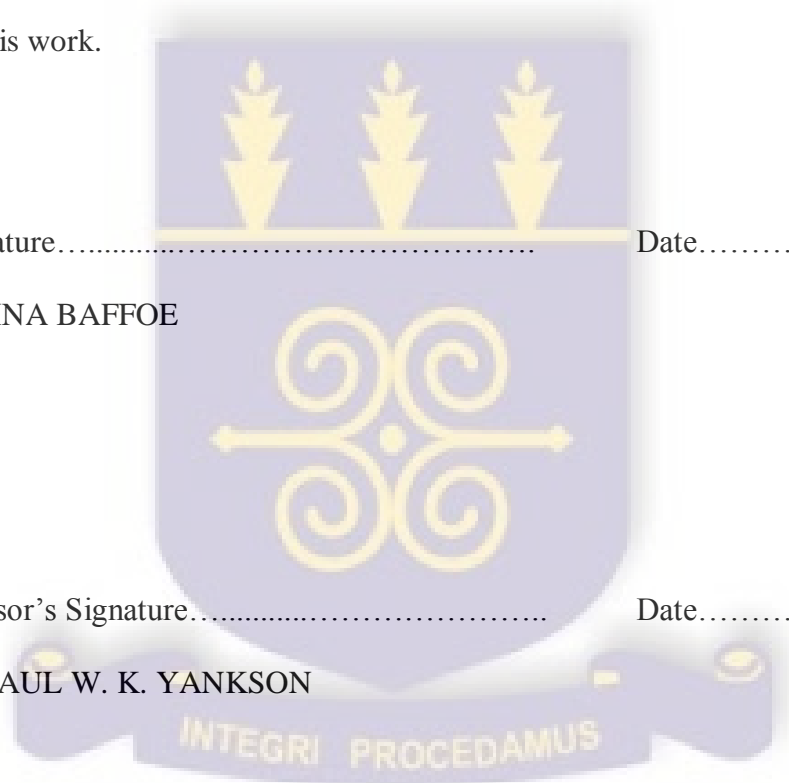
NAME: ANGELINA BAFFOE
(10396551)

Principal Supervisor's Signature..... Date.....

NAME: PROF. PAUL W. K. YANKSON

2nd Supervisor's Signature..... Date.....

NAME: PROF. GEORGE OWUSU



DEDICATION

This work is dedicated to my Husband, Mum and Dad



ABSTRACT

Though it is widely held that sanitation affects public health, more is yet to be known as to how its affect economic activity, especially in developing nations like Ghana. That being so, adequate awareness of the motivators for good sanitation options is yet to be attained. Therefore, this study assesses the effect of sanitation on economic welfare. The study engaged market participants from Tema New Town market in assessing market sanitation situation, factors contributing to poor sanitation, the effects of the sanitation of market on economic welfare using 228 market participants made up of 103 sellers and 125 buyers. Using both quantitative and qualitative the study also garnered views of from 3 Tema Metropolitan Assembly (TMA) officials and 7 market opinion leaders. The findings are that sanitation in the market was not good. Despite the fact that waste collectors were deployed to manage waste on regular basis and communal refuse containers were provided, many sellers still disposed of waste indiscriminately. People were prone to dumping in gutters and drains resulting in choked gutters. There was lack of washrooms and toilet facilities, poor drainage, and waning commitment of waste management agencies to arrest the sanitation problems. The effects of poor sanitation include: reduced patronage of the market leading to low revenue; the sellers lost time in accessing washrooms from distal locations; and some sellers loss their income from trading to illness due to poor sanitation. The study recommends change of behaviour of market participants toward sanitation, effective collaboration of sanitation agencies, public education, participatory hygiene sanitation transformation of the market, and the need for more empirical studies into the indigenous understanding of sanitation and its benefits.

ACKNOWLEDGEMENT

Anyone who has undertaken a research work will attest to the fact that it is a painstaking exercise. I could not have completed work without the Spirit of the Supreme one. My first gratitude goes to the Almighty Father to whom I owe my life in time and eternity.

My profound gratitude goes to my supervisor, Professor Paul W. K. Yankson and Professor George Owusu whose counsel has always been to me a stimulation of ideas, and without whom I could not have seen my way clearer. I am grateful for the timely support and psychological uplifting offered me by my parents, Mr. and Mrs. Baffoe. I am grateful also to Mr. Sylvester Asare for his immense support in the compilation of this work.

Several people have worked in different ways to assist me to complete this work. Mentioning their names would result in an endless list, therefore, it is best to keep them unmentioned. They, however, know themselves.

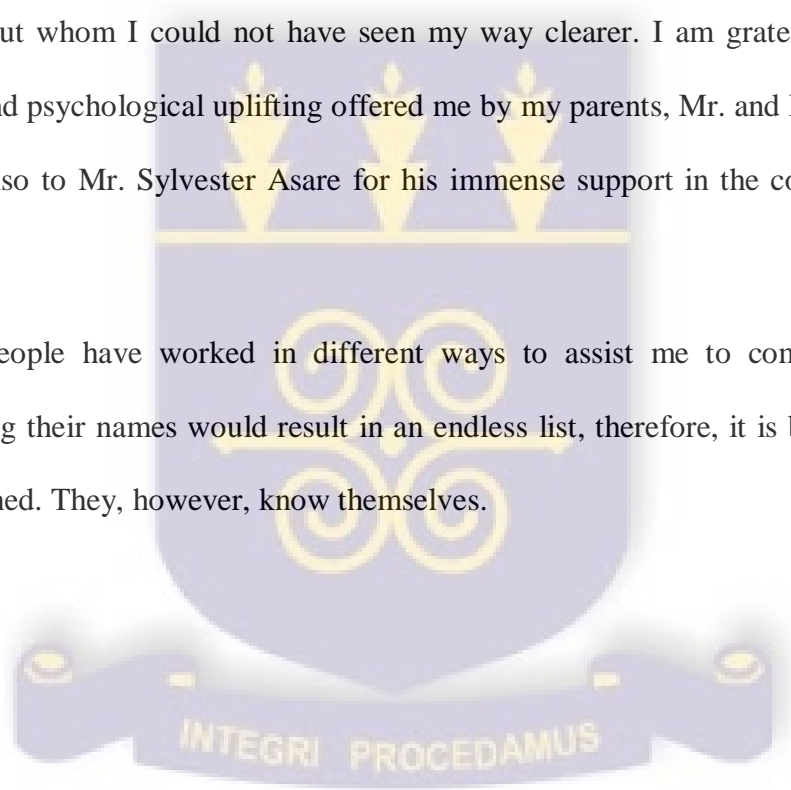


TABLE OF CONTENTS

DECLARATION.....	i
DEDICATION	ii
ABSTRACT.....	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	xi
LIST OF FIGURES	xii
LIST OF PLATES	xiii
LIST OF ACRONYMS.....	xiv
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background to the Study	1
1.2 Statement of the Problem	6
1.3 Objectives of the Study	10
1.4 Scope of the Study.....	10
1.5 Significance of the Study	12
1.6 Organisation of Chapters	13
CHAPTER TWO	15
DEFINITION OF CONCEPTS USED AND LITERATURE REVIEW	15
2.1 Introduction	15
2.2 Sanitation	15

2.3	Environmental Sanitation.....	17
2.4	Sanitation System.....	18
2.5	Economic Activity.....	20
2.6	The Global Sanitation Concern.....	21
2.7	Constraints of sanitation.....	22
2.8	Relevance of Environmental Sanitation.....	23
2.8.1	Sustainable Development.....	26
2.8.2	The Need for improved Environmental Sanitation.....	27
2.9	Effects of Poor Sanitation.....	31
2.10	Policy and Institutional Framework for Environmental Sanitation in Ghana....	32
2.10.1	Toward a New Approach to Environmental Sanitation.....	35
2.10.2	Community Participation in Environmental Sanitation Management.....	36
2.11	Conceptual Framework.....	38
CHAPTER THREE.....		44
METHODOLOGY.....		44
3.1	Introduction.....	44
3.2	Profile of the Study Area.....	44
3.3	Research Design.....	46
3.4	Research Approach.....	47
3.4.1.	The Quantitative Approach.....	47
3.4.2.	The Qualitative Research Approach.....	48
3.5	Target Population and Sampling Technique.....	49
3.6.	Sources of Data.....	53

3.7. Method of Data Collection.....	53
3.7.1. Survey.....	53
3.7.2. Field Notes.....	54
3.7.3 Semi-structured interviews.....	54
3.7.4 Focus Group Discussion.....	55
3.8 Data Collection Procedure.....	56
3.9. Limitations of the Study.....	57
3.10. Ethical Consideration.....	57
3.11. Data Analysis.....	58
3.11.1. Qualitative Data Analysis.....	58
3.11.2. Quantitative Data Analysis.....	59
CHAPTER FOUR.....	61
WASTE MANAGEMENT FROM THE PERSPECTIVE OF SELLERS.....	61
4.1 Introduction.....	61
4.2 Demographic characteristics of the sellers.....	61
4.3 Current sanitation situation at the Tema New Town market.....	66
4.3.1 Waste disposal practices at the market.....	69
4.3.2 Sellers’ contribution to poor sanitation practices.....	71
4.3.3 Frequency of waste collection in the market.....	76
4.3.4 Assessment of the drainage system by sellers.....	78
4.3.5 Availability of toilet facility at the market.....	80
4.4 Sellers’ view of major sanitation problem in the market.....	82

4.5	The effect of sanitation on sellers	85
4.6	Steps toward solving the sanitation challenge.....	90
CHAPTER FIVE.....		91
WASTE MANAGEMENT FROM THE PERSPECTIVE OF BUYERS		91
5.1	Introduction	91
5.2	Demographic characteristics of the buyers.....	91
5.3	The sanitation situation at the market	93
5.4	Sanitation problems at the market.....	97
5.5	Effect of poor sanitation on buyers	99
CHAPTER SIX		106
WASTE MANAGEMENT FROM THE PERSPECTIVE OF WASTE GOVERNANCE INSTITUTION		106
6.1	Introduction	106
6.2	Management of waste in Tema New Town market	106
6.3	The sanitation situation at Tema New Town market and effect on economic activity	109
6.4	Problem areas	114
6.5	The way forward.....	114
CHAPTER SEVEN.....		116
THE SANITATION SITUATION IN THE TEMA NEW TOWN MARKET		116
7.1	Introduction	116
7.2	Waste disposal practices in the market.....	116

7.3	Sanitation facilities in the market	118
7.4	General assessment of sanitation in the market	119
7.5	Factors contributing to poor sanitation on the market	120
7.5.1	Internal factors.....	120
7.5.2	External factors.....	121
7.6	Effect of poor sanitation on trading activities.....	122
CHAPTER EIGHT		125
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....		125
8.1	Introduction	125
8.2	Summary of the key findings.....	125
8.2.1	Current sanitation situation at the Tema New Town market	125
8.2.2	Factors contributing to the sanitation situation at the Tema New Town market	127
8.2.3	The effect of sanitation conditions on economic activity	128
8.2.4	Contributions of key stakeholders in addressing sanitation of the market ..	129
8.3	Policy implications	130
8.4	Conclusions	130
8.5	Recommendations.....	132
8.5.1	Advocacy for change in attitudes and behaviours toward sanitation	133
8.5.2	Collaboration of key stakeholders in environmental sanitation.....	133
8.5.3	Participatory hygiene and sanitation transformation (PHAST)	133
8.5.4	Public education on sanitation.....	134
8.5.5	Suggestions for future studies.....	134

REFERENCES.....	136
APPENDIX A: QUESTIONNAIRE	146
APPENDIX B: QUESTIONNAIRE	151
APPENDIX C: OBSERVATION CHECKLIST	155
APPENDIX D: INTERVIEW GUIDE	156

LIST OF TABLES

Table 3.1: Proposed methodology.....	52
Table 4.1: Gender distribution of the sellers.....	62
Table 4.2: Distribution of sellers by age	62
Table 4.3: Years of trading in the Tema New Town market by the sellers.....	63
Table 4.4: Educational background of market participants	64
Table 4.5: Waste disposal practices by sellers in the market	71
Table 4.6: Category of sellers against practices of waste disposal.....	72
Table 4.7: Poor sanitation practices in terms of traders' point of sale.....	75
Table 4.8: Sanitation problems in the market.....	83
Table 4.9: Progress in sanitation	85
Table 4.10: Ways in which poor drainage at the market affects trading activities	86
Table 4.11: How the absence of washroom facilities affect trading activities.....	87
Table 5.1: Gender distribution of the buyers.....	91
Table 5.2: Distribution of the buyers by age	92
Table 5.3: Years of trading in the New Town market by buyers	93
Table 5.4: Educational background of market participants	93
Table 5.5: Current sanitation conditions at the Tema New Town market	95
Table 5.6: Avenues for waste management and disposal.....	96
Table 5.7: Major sanitation problems facing the market	98
Table 5.8: Correlation between sanitation and patronage of the market	104

LIST OF FIGURES

Figure 2.1: Conceptual framework – effect of sanitation on economic welfare in market centres.....43

Figure 4.1: Commodities offered for sale by sellers.....65

Figure 4.2: Category of traders responsible for indiscriminate dumping of waste76

Figure 4.3: Frequency of waste collection in the New Town market77

Figure 4.4: Proper sanitation and performance of waste collectors.....78

Figure 4.5: Ratings of current situation of drainage system in New Town market.....79

Figure 4.6: Access to washrooms at the market.....81

Figure 4.7: Effect of surrounding conditions on sales.....88

Figure 4.8: Hygiene-related disease contraction89

Figure 5.1: Access to washroom facility on the market97

Figure 5.2: Factors that distract buyers from the market.....100

Figure 5.3: Health risks to buyers101

Figure 5.4: Factors pulling buyers to the market102

Figure 5.5: Frequency of patronage of the market by buyers103

LIST OF PLATES

Plate 1: A snapshot of the Tema New Town market.....65

Plate 2: A waste collector in working gear at the Tema New Town market.....70

Plate 3: A section of the drainage system around the market80

Plate 4: Communal refuse containers and refuse disposal at the market84

Plate 5: A scene depicting indiscriminate dumping at the market99

LIST OF ACRONYMS

CONIWAS	Coalition of NGOs in Water and Sanitation
CSIR	Centre for Scientific and Industrial Research
CWSA	Community Water and Sanitation Agency
DESF	District Environmental Sanitation Fund
DFID	Department for International Development
EPA	Environmental Protection Agency
ESP	Environmental Sanitation Policy
GDP	Gross Domestic Product
GES	Ghana Education Service
GHS	Ghana Health Service
GMA	Ghana Medical Association
IRC	International Rescue Committee
MDG	Millennium Development Goal
MES	Ministry of Environment and Science, Technology and Innovation
MLGRD	Ministry of Local Government and Rural Development
MMDA	Metropolitan, Municipal and District Assembly
MOH	Ministry of Health
MWRWH	Ministry of Water Resources, Works and Housing
NACE	National Association of Catering Executives
NESPoCC	National Environmental Sanitation Policy Coordinating Council
NGO	Non-Governmental Organisation
PHAST	Participatory Hygiene and Sanitation Transformation

SANDEC	Sanitation in Developing Countries
TMA	Tema Metropolitan Assembly
UN	United Nations
UNEP	United Nations Environment Programme
UNICEF	United Nations Children's Education Fund
WHO	World Health Organisation
WSSCC	Water Supply and Sanitation Collaborative Council

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Sanitation in Ghana can be seen as very crucial to meeting the country's Millennium Development Goal. Between 1990 and 2006, the proportion of people across countries without sanitation decreased by an aggregate of only 8 percent (UN-HABITAT, 2009). This represents a poor progress in sanitation globally but implicates an immediate concern for Ghana to be aware of her sanitation target and insulate herself from poor sanitation.

Sanitation, in other words, the provision of facilities and services for the safe disposal of human urine and faeces, and the maintenance of hygienic conditions through services such as garbage collection and wastewater disposal, has occupied a significant attention of the world (WHO, 2010). This derives from the fact that the international community, in the year 2000, committed to halving the proportions of people without access to clean water and basic sanitation by year 2015 through the Millennium Development Goals (United Nations Development Programme, 2006). This move seeks to consolidate nations' preparedness and unbridled efforts to improve sanitation and Ghana is no exception. However, according to year 2006 figures, approximately 2.6 billion people do not use improved sanitation facilities, two-thirds of whom live in Asia and sub-Saharan Africa. Thus, globally, Sub-Saharan Africa is one of the poorest in terms of sanitation (WHO, 2010).

There is no gainsaying the fact that promoting an ecologically sustainable society with a good profile on water, sanitation, hygiene, and health status has attracted the attention of the government of Ghana. A coordinating council (the National Environmental Sanitation Policy Coordinating Council – NESPoCC) comprising the Ghana Health Service/Ministry of Health (GHS/MOH), Ghana Education Service (GES), Ministry of Environment and Science (MES), Environmental Protection Agency (EPA), representatives of Metropolitan, Municipal, and District Assemblies (MMDAs), Council for Scientific and Industrial Research (CSIR), the Private Sector and Non-governmental Organizations, and the like, has been designated since year 2000 to expedite the implementation of the National Sanitation Policy. A report of proceedings of the Mole XIX Conference (2008) held in Ghana by the coalition of NGOs in Water and Sanitation (CONIWAS, 2008) echoes the fact that Ghana's policy position on environmental sanitation emphasizes developing and maintaining a clean, safe and pleasant physical environment in all human settlements in order to promote the social, economic and physical well-being of all. Various sanitation agencies and actors have been assigned the responsibilities that ensure that sanitation services are provided reliably and continuously to mitigate negative social and economic effects. Hence, the trend in curtailing poor sanitation in Ghana has been to promote health, social and economic development.

Adequate sanitation in Ghana is, however, constrained not only by limitations in infrastructure but also behaviour related to sanitary practices, urban planning, waste removal/treatment, and the capacity to monitor private sector sanitation contracts as observed by the World Health Organization (WHO, 2012). The United Nations by officially establishing the United Nations' Millennium Development Goals (MDGs) on

sanitation (as shown by Clemens, Kenny & Moss, 2007) announces its commitment to encourage development efforts in and on behalf of poor countries to solve their sanitation problems (Easterly, 2009). Though it was also projected that investment in sanitation projects by government and various stakeholders would be a panacea to the sanitation problems, the questionable success rate of sanitation projects suggests, according to Stem, Margoluis, Salafsky and Brown (2005), a desperate need for this investments to continue and progress monitored.

There is the view that wide variations in cultural practices, coupled with ineffective resource management, unknown motivators behind sanitation choices and inconsistent implementation of technologies, create many unique challenges, which restrict the improvement of sanitation systems in developing countries like Ghana. There is, thus, the need to seek to know and appreciate the motivators (the negative undesirable outcomes of poor sanitation or the well sanitized and desired environment) behind sanitation choices that would propel stakeholders to consistently implement strategies to improve sanitation.

Apart from health, the relevance of sanitation also lies in several fields of development making it one of the key factors that underpin the MDGs. Sanitation is an important factor in economic development, as it is estimated that every dollar invested in sanitation returns in average nine dollars of economic benefit, mostly by reducing health costs, allowing greater investment in education, and therefore significantly increasing the Gross Domestic Product (Mara et al., 2001). The economic losses of 2% of the total GDP in 4 countries, namely, Cambodia, Indonesia, the Philippines, and Vietnam, represent only the outcomes of poor sanitation on five areas: health, water resources, environment, tourism, and other welfare concerns. Mara et al. (2001) hold that this figure would have been

much greater if other impacts had been included, such as: suffering from disease, aesthetics and user preference, time loss from seeking private places to urinate (especially women), losses from marine fisheries, and the losses to wildlife from polluted water resources and an unclean environment, and so forth. Vulnerable groups such as the poor, children, women, the disabled, and the elderly have suffered the most from the economic impacts of poor sanitation according to various studies (Mara et al., 2001; Wright, 1997; UNICEF, 1999). For example, Mara et al. (2001) showed that, in 2008, diarrhoeal diseases were the leading cause of death among children under age 5 in sub-Saharan Africa, accounting for 19% of all deaths in this age group. In some instances, diseases associated with poor sanitation have been closely correlated with poverty and infancy, and that alone, account for about 10% of the global burden of disease according to Pruss-Ustun et al. (2008).

Widespread economic activities have taken place in the southern part of Ghana over the years along with greater population density compared to the northern part. Therefore, economic losses arising from poor sanitation would affect a large number of people and business activities in the southern part. By economic activity, this work refers to the range of production, distribution, exchange and consumption activities that take place in a merchandizing environment. The Tema New Town market, an area of concern in this study, is an example. It accommodates a varied range of merchandizing activities which include wholesale, retailing, petty trading, food items vending, as well as groups of people who consume commodities. Such business activities create waste as by-products. Bracken et al. (2005) hold the view that a sustainable sanitation system promotes human

health, does not contribute to environmental degradation, is technically and institutionally appropriate, economically viable and socially acceptable.

A market is characterized by business activity. This activity creates by products which introduces the concern for sanitation management systems in a market. This concern is exacerbated because poor sanitation creates public health problems. If this was true, the poor sanitation could cause economic losses associated with the direct costs of treating sanitation-related illnesses and lost income through reduced or lost productivity. Elaborating further, poor sanitation could lead to low quality of market produce resulting from poor unhygienic storage, contamination and faster deterioration of market produce. Poor sanitation could also increase clean-up cost (United Nations, 2010). Thus, poor sanitation in market places could lead to loss of productivity, increased expenditure, reduced income, loss of manpower or productive labour and so forth. The magnitude of economic losses associated with poor sanitation could be substantial.

A recent paper by Isunju et. al. (2011) highlighted a lack of recognition of actual drivers for sanitation improvements. This is because we may not yet have known all the effects of sanitation particularly pertaining to market places which gives reason to management sanitation systems for the better. To add to the motivation and actual drivers for improved sanitation in Ghana this study sets out to assess the effects of sanitary conditions on economic welfare of traders along the coastal settings of Ghana in hope that the outcome would propel deeper discourse and further enhance the resolve to sanitize the market centres.

1.2 Statement of the Problem

Ghana as a country, notably the southern part, is characterized by a lot of economic activities and dense population, and is constantly faced with the challenges of sanitation. This in no small measure goes to affect the growth of the country and increase poverty and insecurity. Aryeetey and Nyanteng (2006) describe Ghana's traditional markets as a designation for increased trading activities. Accordingly, Tema New Town market presents brisk business activities that can be described as economic activities.

Addo (1988) notes that marketplaces in Ghana serve not only as places for commodity exchange, but also centres of information exchange, health delivery, education and entertainment. The markets, according to Good (1975), set the rhythm for the convergence of people and goods. The two studies mentioned emphasize that markets contribute immensely to trading activities and to the livelihoods of the populace but did not explore the issues of market sanitation directly. A recent study, Kankam-Yeboah, Gyau-Boakye, Logah, and Ofori (2010), on Ghana's markets highlights the sanitation challenges most of the markets in Ghana face. The authors' observation was that generation of waste due to operation in market centres leads to pollution. Kankam-Yeboah, et. al. (2010) mainly find that the poor sanitation at market centres have public health consequences – it leads to environmental degradation, increases the rate of infections and disease outbreak, thereby necessitating treatment measures and increasing health cost. Another study by Amoah and Kosoe (2014) indicate that organic waste forms the chunk of wastes that are collected from not only markets but households as well. The study maintains that ineffective waste management was prevalent in several cities of Ghana owing to the fact that less than a half of the tonnes of waste generated per day is

collected, and this poses serious environmental and public health hazards (Amoah & Kosoe, 2014). Whereas several studies primarily focused on the effect of poor sanitation on health or the environment, others note that poor waste management in markets, streets and households does not only cause environmental problems but also cause economic burden (Ministry of Local Government and Rural Development, 2010; Fobil, Kolawole & Hogarth, 2010). The extent to which sanitation affects people's economic lives therefore needs to be clearly established. One is likely not to find any study on how poor sanitation directly affects economic activity, as to confidently show the nature of this effect. That is to say, though sanitation may be regarded as poor with all its public health implications, there is room for people to fail to see how it impacts on their economic livelihood. This 'failure to see' presents a gap in knowledge and would further detract from the motives behind good sanitation choices, particularly, as people are becoming increasingly aware of their needs in life and want to undertake economic activities, through whatever means, that produce the wherewithal to satisfy those needs. Kamkam-Yeboah, et. al. (2010) adds, however, that there is need to understand the linkages between trading activities at market centres and conditions of the environment. This statement puts into perspective the need to be aware of the effect of sanitation in detail. By bringing out the connection between environmental sanitation and economic welfare of market participants, the present study fills a gap in knowledge.

With regards to the sanitation situation in Tema, a local government, Tema Metropolitan Assembly (TMA) takes full charge of environmental sanitation in the Tema metropolis. Presently, eight sanitation management firms (ZoomLion, John Stanley Owusu, Rural Waste, Terry White, Amanie Waste, Waste Resources, Asadu, and Sadem) have been

contracted by the TMA to augment its own effort to ensure sanity in the metropolis. Interventions such as provision of large waste containers and sewerage management systems have been put in place, but there are pockets of sanitation problems in the metropolis. Sanitation, though, not so great a problem in the Tema Metropolis in general, Tema New Town market is one area that has been beset by a myriad of problems. The market emerged during the era of President Kwame Nkrumah in the 1960s when some traders had been relocated by government to the said market, providing them with free land and other necessary trading conditions such as sheds and a relatively congenial environment. This put a lot of the Tema residents in a liberal disposition, enjoying free services provided by the government. Due to this, the community relied on the central government and created inertia in the way people took responsibility for social concerns such as sanitation. The Tema New Town Market seems to have been given to this inertia and stakeholders may have waned in their efforts to ensure adequate sanitation of the market. Three fundamental questions have been identified in this study:

First, what is the real sanitation situation in Tema New Town market? The market appears engulfed with sanitation problems – the market is, most likely, trailing the rest of the metropolis in terms of quality sanitation. As a semi-structured market approximately half the size of a standard football field, edifices have not been constructed except one at the centre of the market which traders use along with their separated wooden structures to showcase their merchandise and sell. There were choked gutters, stagnant filthy waters, and debris at the market area creating stink or odor. The drainage system is choked with an accompanying repugnant smell; no trash cans to contain units of waste collected,

unavailability of urinal and toilet facility and the narrowness of the alleys in the market make comfort a scarce issue for traders.

Second, what factors account for the sanitation situation? The sanitation problems are seemingly intractable and of a kind that require huge monetary commitment to offset. This may be beyond the capacity of the TMA alone, followed by the fact that, TMA may not be resilient enough in solving the problem entirely. Clearly, some indiscriminate waste disposal practices are also prevalent. These bad practices have been rationalized as consequences of culture, poverty, behavioural factors and illiteracy. The combined effect of these realities exacerbates the sanitation problems in the market.

Third, does the sanitation condition affect economic welfare of the market participants? It is discernible that health-related problems will prevail. The market area is a good breeding ground for mosquitoes – an issue that is thought to be commonplace. What is not yet known is the economic effect that the sanitation problems in the market pose.

Various effects of poor sanitation have been studied which give stakeholders an impetus to improve sanitation. Arno Rosemarin (2008) posits that “sanitation is firstly about human behaviour; and to be successful, systems need to prioritize such things as affordability, comfort, dignity, privacy, odour control, ease of cleaning and user acceptance by men, women, elderly and children. These remarks show that sanitation systems should be people centered. Talking of people centeredness, it seems there is more left to be done as far as the sanitation problem in Tema New Town market is concerned. It is appropriate to look at the effect of sanitation on people’s economic wellbeing. Specific findings of the effects of sanitation at the Tema New Town market

centre could provide motivation to propel individual thinking, government and collective efforts to build sustainable sanitation systems to curtail poor sanitation. The problem of this study is, therefore, to investigate the effects of sanitary conditions on the economic activities of traders (or buyers and sellers) in the Tema New Town market, which could provide knowledge that will engender appropriate thinking necessary for prioritizing sustainable sanitation practices.

1.3 Objectives of the Study

The broad objective of this study is to assess the effect of sanitary conditions on the trading activities in the Tema New Town market. The specific objectives of the study are:

1. To examine the current sanitation situation in Tema New Town market centre.
2. To identify the factors that contributes to the sanitation situation in the market area.
3. To investigate the effects of the sanitary conditions at the market on trading activities and economic wellbeing of traders.
4. To assess the contributions of key stakeholders (individuals, government and NGOs) in addressing the menace of poor sanitation.

1.4 Scope of the Study

This study covers Tema New Town market, a market located in Tema along the coastal belt of the Greater Accra Region of Ghana. The researcher found this market useful for the study because of the unique challenges of sanitation it presents. The market was particularly useful because of its evolution. It is the first to have evolved in the Tema metropolis. Beginning in an open place called Awudum, at a time when the market had

no structures, traders took their wastes; each to his/her house for disposal. But when competition for space and patronage had set in, the market was relocated to a spacious site where it had flourished and expanded to the present day, hence, the name Tema New Town market. Structures began to emerge as the New Town market was burgeoning, but no clear signs of sanitation facilities, like good drainage systems and mass refuse containers, were existent.

Today, however, the Tema New Town market is a fully established market which is governed or administered by the Tema Metropolitan Assembly (TMA). Observably, the level of infrastructure in the market was medium. The market was relatively organised and contained a wide variety of stores and stalls, and open spaces which accommodated petty traders during business days. Certain sections of the aisles in the market were paved with some areas yet to be paved. Gutters or drains have been partly constructed as there were signs of market construction projects yet to be completed. Everyday throughout the week, the market is open for traders. Information obtained from TMA revealed that the market is able to contain on average 750 market participants per day.

There are concerns of users of the market regarding some level of apathy of state sanitation agencies and indiscriminate disposal which make the issue of sanitation in the market a matter of interest. Compared to three other markets of similar size in the Tema metropolis, sanitation at Tema New Town market was weaker; Tema Community Two market is well-structured with wider alleys, toilet facilities and drainage system; Tema Community One market is very big, well-structured with covered sewerage system, mass refuse containers present, but overcrowding is unavoidable immediately outside the

market; Tema Community Seven market less structured, behavioural wise better and cleaner than the others.

The market is also used (excluding any other) in order to enhance in-depth study of the effects of sanitation within the time allotted for completion of this study. Besides the fact that Tema metropolis itself is a city with a lot of brisk business activity and sizeable population, Tema New Town market hosts most of the business activities and people.

1.5 Significance of the Study

The study is significant in a number of ways. First, the study helps to deepen awareness of the sort of social canker that poor sanitation poses. The awareness of the effects of poor sanitation in the market area, for example, would reawaken individual, government and international organizations and NGOs' quest to advance the campaign for good sanitation. This kind of awareness will instill an urgent passion and resilience necessary for change of behaviour and consistent implementation of strategies and regulations that would inure to promote good sanitation within the markets and the country at large.

Secondly, this work gives knowledge that would help stop the negligent attitudes and indiscriminate pollution in the market centre. This is because the study shows the patterns or ways in which negligence, action or inaction revolves to create the sanitation problems that raise the cost of living and being fruitful in the country.

Thirdly, the work provides an additional information and knowledge that will guide researchers and future studies. It provides literature and reliable empirical knowledge that will promote the discourse on the effects of sanitary conditions on trading activities.

1.6 Organisation of Chapters

The study is made up of eight chapters. The first chapter presents the introduction to the study which comprises the background to the study. Furthermore, it identifies the problem of the study, and formulates research objectives and research questions which guide the study. It describes the scope of the study, the significance study, and ends with this section – organisation of chapters.

Chapter Two presents the literature review and conceptual framework. The review is made up of conceptual and empirical literature related to sanitation. It examines the fundamental concepts of sanitation and economic activity and how the former affects the latter.

Chapter three describes and discusses the profile of the study area and the methodology adopted for the study. It describes the research design, profile of the study area, the population, sampling procedure and sample size, and methods of data collection. It gives an overview of the participants in the study and the data analysis procedure.

Waste management from the perspective of sellers is presented in the fourth chapter. The chapter is organized into different sections focusing on understanding the current sanitation situation, the factors of poor sanitation, and the effect of poor sanitation on sellers' activities on the market.

The fifth and sixth chapters deal with waste management from the perspective of buyers and waste management from the perspective of the Tema Metropolitan Assembly respectively. Chapter Seven integrates the information from participants, constructs the current sanitation situation at the Tema New Town Market. Additionally, it highlights the

factors contributing to poor sanitation in the market and further deals with the effect of poor sanitation on economic activity in the market. Finally, Chapter Eight summarises the key findings, draws conclusions and makes recommendations based on the key findings.

CHAPTER TWO

DEFINITION OF CONCEPTS USED AND LITERATURE REVIEW

2.1 Introduction

This chapter elaborates on the concept of economic activity and sanitation to illuminate the central idea of the study. Environmental sanitation as a concept is defined emphasizing on sanitation system and environmental sanitation management. Interconnections between concepts are described and reformulated to present a framework that guides the study. Pertinent information have been reviewed bearing on issues brought out in the background to the study, particularly about global concerns for sanitation, constraints of sanitation, relevance of environmental sanitation, effect of sanitation, as well as approaches to environmental sanitation.

2.2 Sanitation

Sanitation is found to be a broad concept and has been defined by different researchers from varying angles. The World Health Organization (2010) looks at sanitation as the maintenance of hygienic conditions generally by creating physically closer facilities offering less waiting time and safer disposal of excreta. This view beams the searchlight on presence of facilities (here referring to lavatory, washroom, gutters, sewerage systems etc.) that convey faecal matter and waste water effectively and efficiently thereby increasing convenience and comfort. Very closely related to this definition, Schertenleib and Dionys (2002) defined sanitation as interventions to reduce people's exposure to diseases by providing a clean environment for living and with measures to break the cycle of disease. Nyamwaya (1994) also defines sanitation as the proper disposal of

human waste (faeces and urine) as well as keeping the human environment free of harmful substances which can cause diseases.

Basically, these views of sanitation involve the hygienic management of human and animal excreta, refuse and wastewater, provision of washing facilities, the control of disease vectors to prevent diseases and to create a comfortable environment.

Mensah (2002) defines sanitation as the state of cleanliness of a place, community or people particularly in terms of human health including the quality of life determined by physical, biological, social and psychological factors in the environment. The World Bank (2002) also observes that sanitation involves both behaviours and facilities which work together to form a hygienic environment. Two key elements emerge from this view, namely, behaviours and facilities. The elements immediately suggest that sanitation has much to do with behaviour and access to facilities.

What underlies the definitions given is that, sanitation is a concept explaining activities that ensure disposal of excreta, wastes (solid or liquid) and prevention of disease vectors to ensure a hygienic environment. Bearing this conceptual understanding in mind, the term “sanitation”, as a working definition, refers to the proper disposal of excreta (faeces and urine), solid waste and liquid wastes with the aim to protect and promote human health and comfort and provide a clean environment. It also implicates the principles and practices relating to the collection, treatment or disposal of refuse as they affect people and the environment. This presupposes that at all times activities that inure to promote sanitation should not be downplayed. This, therefore, makes proper environmental sanitation a vital activity.

2.3 Environmental Sanitation

According to the International Water and Sanitation Centre, the term ‘environmental sanitation’ is used to cover the wide concept for controlling all the factors in the physical environment which may have an impact on human health and well-being (IRC, 2006, p.7). More specifically, environmental sanitation is seen as the interventions to reduce people’s exposure to disease by providing a clean environment for living, with measures to break the cycle of disease (Simpson-Hebert and Woods, 1998). Sanitation and environmental sanitation in most cases have been used interchangeably. Environmental sanitation also comprises both a change in behaviour and facilities to form a hygienic environment.

It is discernible that proper waste disposal or hygienic management of liquid and solid waste, control of disease vectors, or provision of washing facility in the environment are necessary interventions to ensure environmental sanity. Thus, sanitation has invariably been understood in terms of environmental sanitation. In order to maintain an all-time sanitized environment, environmental sanitation must be managed. Environmental sanitation management is the continual process of allocating resources to ensure a hygienic environment through service and infrastructure provision and proper disposal of waste.

With respect to Ghana, environmental sanitation is well understood in terms of the view above. According to the Ministry of Local Government and Rural Development (1999, p.1), environmental sanitation refers to ‘efforts or activities’ aimed at developing and maintaining a clean, safe and pleasant physical environment in all human settlements. Indeed, these efforts or activities can be found to comprise a number of complementary

activities, including the construction and maintenance of sanitary infrastructure, the provision of services, public education, community and individual action, and regulation and legislation. In developing countries, environmental sanitation normally includes drains, solid waste management, and vector control, in addition to other sanitation activities (DFID, 1998). The efforts and activities implicit in environmental sanitation create a system or a set of interrelated activities that is aimed at improving the quality of life of the individuals and by that process contribute to social development.

2.4 Sanitation System

Wherever humans gather, their waste also accumulates. It is a well-acknowledged fact that many people still have no adequate means of appropriately disposing of their waste. This is a growing nuisance for heavily populated areas and public places such as the markets, as it increases the risk of disease, first to vulnerable groups such as the very young, and the aged. To avert these any negative consequences, some kind of sanitation system need be in place to curtail sanitation problems.

In an attempt to define sanitation system, by Bracken (2005) notes that it comprises the users of the system, infrastructure, collection, transportation, treatment, and management of end products (human excreta, solid waste, grey water, storm water and industrial wastewater etc.). In other words, a sanitation system considers all components needed for proper management of wastes produced. The sanitation system includes activities aimed at improving or maintaining the standard of basic environmental conditions, such as safe water, safe ambient air, safe animal, human and industrial waste disposal, protection of food from contaminants, and housing in clean and safe surroundings which is described

as hygiene (Business Dictionary, 2016). For hygiene to prevail there must be an active sanitation system.

The Ministry of Local Government and Rural Development (1999, p. 1) underpins the view that, activities such as construction and maintenance of sanitary infrastructure, provision of service, public education community and individual action, regulation and legislation come under the umbrella of sanitation system. Sanitation systems ensure standard environmental sanitation. To ensure that there is proper environmental sanitation requires that there is a well-functioning adequate sanitation system. This can be realized by allocating optimum resources to ensure a hygienic environment through service and infrastructure provision.

Environmental sanitation management necessarily involves the assignment of responsibilities to specialized institutions involved in overseeing the use of natural resources. Benneh, Agyapong and Allotey (1990) argue that, the successful management of environmental resources in any country depends to a large extent on the effectiveness of the institutional arrangements put in place by government for environmental management. These institutional arrangements refer to the ministries, agencies, and committees, etc., and their interrelationships, responsibilities and authority for managing the environment. In Ghana, institutional structures (the Ministry of Local Government and Rural Development, Ministry of Water Resources Works and Housing, Ministry of Environment Science and Technology, etc.) which have coordinated responsibilities to sanitation are functionally positioned along with each other with the overarching aim to improve sanitation. For instance, whereas the Ministry of Local Government and Rural Development exists to foster local administration and thus, administer best sanitation

practices, the Ministry of Environment, Science and Technology exists to establish a strong national scientific and technological base for sanitation for accelerated sustainable development of the country.

The establishments and their coordinated responsibilities and activities to ensure accelerated socio-economic development of the nation through the formulation of sound policies and a regulatory framework to promote the use of appropriate environmentally friendly, scientific and technological practices and techniques and the intensification of the application of safe and sound environmental practices is an embodiment of sanitation system.

2.5 Economic Activity

According to the United Nations (UN-HABITAT, 2003), economic activity encompasses a wide range of work and remuneration possibilities which have important implications for the economic and social well-being of a nation. Furthermore, NACE (2006) attested to the fact that economic activities take place when resources such as capital, goods, labour, manufacturing techniques or intermediary products are combined to produce specific goods or services. Thus, economic activity is characterized by an input of resources, a production process and an output of products (goods or services).

Economic activity from the above viewpoints can be seen as a broader concept in which trading of goods or services find expression. For the purpose of this study, economic activity will refer to the cycle that comprises the input of resources, production, distribution/exchange, and consumption activities within the framework of improving standard of living. This definition is primarily because the study focuses on a market

place. At the Tema New Town market, general merchandizing activities take place which encompasses people trading food items, petty vending, and stock trading, to mention a few. It can be realized that in undertaking these activities, resource are inputted in terms of money, time and labour, with an expectation to maximize returns or utility. Market centres are, therefore, important components of economic landscape of communities or people. Trading activities are also important source of generating revenue, both to the traders and to the community. Hence, there is need to pay great attention to the adversities that impact on operation of market centres, as echoed by Kamkam-Yeboah, et. al. (2010).

2.6 The Global Sanitation Concern

The importance of sanitation around the globe has made it attract such audience that it has been captured under the Millennium Development Goals (MDGs) (UN-HABITAT, 2009). Though by year 2006, the proportion of countries without good sanitation decreased by 8%, this progress is was too small. This came at the back of commitments of the international community in year 2000, to achieve sanitation target of providing half or more of the people in the world with access to clean water and basic sanitation to realize the MDG of sanitation by 2015 (UN-HABITAT, 2006).

WHO (2010) report on year 2006 figures, however, suggest that globally, two-thirds of the world's peoples who do not have improved sanitation facilities live in Asia and Sub-Saharan Africa. The DFID (1998) shows that, in developing countries, environmental sanitation normally includes drains, solid waste management, and vector control as well as activities covered by sanitation. Countries in Sub-Saharan Africa are, notably, in the developing countries' bracket. The United Nations by officially establishing the United

Nations' Millennium Development Goals (MDGs) on sanitation (as shown by Clemens, Kenny & Moss, 2007) creates the global awareness of the sanitation deficits to engender efforts in ameliorating it. Easterly (2009) also reports not only on the UN publicity of the need for sanitation but also its commitment to encourage development efforts in and on behalf of poor countries to solve their sanitation problems. The world in seeking to provide solutions to sanitation, have also sought to narrow down the real challenges and findings are pointing to Asia and Sub-Saharan Africa suggesting these continents as the very problematic regions having to deal sanitation challenges.

2.7 Constraints of sanitation

As has mentioned elsewhere, realizing the imminent danger that sanitation poses to human wellbeing, efforts of several interrelated agencies are been harnessed to curtail the sanitation deficit in Ghana. However, these efforts have not come without serious constraints.

According to Vodounhessi (2006), the Environmental Protection Agency is very collaboration-oriented, which weakens its regulatory abilities. There is also, a need to update enforcement procedures for sanitation bye-laws. Some fines are “ridiculously low” and still listed in British currency (Amoaning, 2006). These observations go to strengthen the views across a section of the discourse on sanitation that the systems in charge of environmental sanitation, regulation and enforcement of rules leaves more to be desired.

WHO (2012) also note that, adequate sanitation in Ghana is constrained not only by limitations in infrastructure but also by behaviours relating to sanitation practices, urban

planning, waste removal/treatment, and the capacity to monitor private sector sanitation contracts as observed by the World Health Organization (WHO, 2012). These observations appear to encompass nearly all observable constraints to sanitation in Ghana which can be summarized as infrastructure deficit, unyielding behaviours and practices towards environmental sanitation, failure at country planning, ineffective waste disposal/removal/treatment, and dysfunctional sanitation supervision institutions as well as ineptitude at law enforcement.

2.8 Relevance of Environmental Sanitation

The well-being or quality of life of a populace is an important concern in their economic development. From the literature, it is admitted that many social and economic factors can be used to measure quality of life of a populace. Schnieder (2007) advises that quality of life indicators should be measures that are non-monetary, socially-oriented and qualitative in context. He adds that the indicators should manifest the pervasive agreement or general consensus of a population on what is valued and desired. Furthermore, the indicators should indicate the collective priority concerns and interests of a group of “a specified populace within a defined geographic jurisdiction” (Schnieder, 2007, p.304).

Kekic (2005), as well as an earlier article by Felce and Perry (1995), state that quality of life indicators are varied and extensive and cover the wide range of life domains. These include, for example, material comforts, health conditions, recreational opportunities, social interaction, learning or education status, creative expression and diversity, cultural values, work environment, compensation and finance, professional development, leisure activities, safety, housing, and freedom of expression. However, the Wikipedia (2007)

also shows that standard of living, the amount of money and access to goods and services that a person has, determined his/her quality of life, primarily because, these determinants are fairly easily measured whereas others like freedom, happiness, art, environmental health and innovation are far harder to measure.

The diverse views on what the determinants of quality of life are have created an inevitable imbalance as programs and policies are created to fit the easily available economic variables while ignoring other measures that are very difficult to plan for or access.

It is worth noting that, in the various efforts to determine the factors or indicators of quality of life, certain constructs run through the discourse. These include safety, health conditions/environmental health, access to goods and services, amount of money one has, and even those other socially-oriented factors that express a collective priority concern and interest of a group of people.

Notably, in developing countries sanitation concerns are more commonplace. But the concept of environmental sanitation refers to activities aimed at improving or maintaining the standard of basic environmental conditions affecting the wellbeing of people. Environmental sanitation also refers to hygiene. Gleaning from the Business Dictionary (2016), environmental sanitation comprises: a) clean and safe water supply, b) clean and safe ambient air, c) efficient and safe animal, human, and industrial waste disposal, d) protection of food from biological and chemical contaminants, and e) adequate housing in clean and safe surroundings. The absence of any one of these conditions leads to imbalanced sanitation and, at worse, poor sanitation which gives many infections the

ideal opportunity to spread: plenty of waste and filth for the flies to breed on, and unsafe water to drink, and wash with, hence, disease outbreak (WHO & UNICEF, 2008).

It is also discernible that the poor realization of these conditions would render the environment and people unsafe and impoverished. In other words, poor environmental sanitation will lead to a number of health challenges. WHO and UNICEF (2008), in addition to this, reports that poor environmental sanitation or hygiene has tremendous economic costs. The ramifications of poor environmental sanitation will undeviatingly lead to safety challenges and poverty and quality of life will be negatively affected. Environmental sanitation is, therefore, of crucial substance to quality of life.

Improved environmental sanitation reduces environmental burdens, increases sustainability of environmental resources and allows for a healthier, more secure future for the population.

Literature on significant economic benefits of good environmental sanitation have been found to be not so well developed; the media often emphasize health benefits, but the time savings and opportunity cost are equally important stories. Environmental sanitation management ensures that there is prudent allocation of limited resources tailored to the needs of the people to ensure economic sustainability. Additionally, a healthy people produce more and miss fewer days of work, a healthy community is often a more lucrative market for goods, services and investment (WHO& UNICEF, 2008). It is in the light of filling the gap between the effects of sanitation on economic welfare that this study unfolds, taking into consideration the Tema New Town market. WHO and UNICEF (2008) further estimates that, every dollar spent on improving sanitation

generates economic benefits (about nine times) that far exceed the required sanitation investments. Accordingly, the cost of inaction is enormous, but achieving the MDG for sanitation would result in \$66 billion gained through time, productivity, averted illness and death. This implies that, good sanitation yields productivity, strength and vitality, and it significantly reduces cost which has significant implications on the development of people. Thus, poor sanitation would thwart economic development and cause poor quality of life of the people.

2.8.1 Sustainable Development

Sustainable development has become one of the central themes of social development and of human development and resource use. Although the idea of sustainability has many facets, the central idea is that we should use resources in ways that do not diminish them. Resource and natural amenities, including open spaces and natural beauty should be preserved so that future generations can have lifestyles at least as healthy and happy as ours – or perhaps better.

One of the most important questions in environmental studies is how we can continue improvements in human welfare within the limits of the earth's natural resources. A possible solution to this dilemma is sustainable development, a term popularized in a 1987 report of the World Commission on Environment and Development called "Our Common Future". It defines sustainable development as development that meets the needs of present without compromising the ability of future generations to meet their own needs (Mitchel, 2002, p74). Implicitly, this definition presents a deliberate attempt to preserve and conserve natural resources as to improve human welfare.

This immediately suggests there should be in place mechanisms by which human activity today will be made to consider improving human welfare if sustainable development can ever be achieved. In this arena, environmental sanitation management comes to play to ensure that sanity prevails in the environment.

In the quest to live a quality life; be economically self-reliant, and have the ability to develop oneself through the changing times, people have resorted to different activities that generate the wherewithal to undergo this life. In other words, people seek sustainable development by undertaking certain economic activities. Trading in market places is a typical example of such economic activities. But from Mitchel's (2002) view, this presents only one leg of the concept of sustainable development. There would be left the second leg which entreats people to meet their own needs without compromising the ability of future generations to meet their own needs. Again, this arena suggests environmental sanitation management comes to play to preserve and conserve the environment for the future while making the most use of it in the present.

2.8.2 The Need for improved Environmental Sanitation

Sanitation is considered one of the fundamental conditions of human existence. This is because, reports that have shown that sanitation deprived people are confronted with dwindling opportunities to realizing their potential as human beings abound. Poor sanitation, or the inadequacy of it, has great consequences on the day to day activities of people especially with respect to their health and socio-economic development. At the last analysis, poor sanitation is among the global impoverishment, inequality and insecurity (WHO & UNICEF, 2006). Realizing the potential canker of poor sanitation, there has been reaffirmation of commitment by the international community towards

achieving the Millennium Development Goals (MDGs). More significant of which is the resolve to half the proportion of people without access to safe drinking water and basic sanitation by 2015. Projection by WHO (2006), however, shows that while the provision of improved water could be met by 2015 the goal of improved basic sanitation will be missed narrowly. While most places without improved drinking water are rural, lack of sanitation facilities affects both urban and rural areas (WHO & UNICEF, 2006).

In Ghana, people are moving to the cities, particularly, Accra at an alarming rate in search of economic livelihood. This increase in population of the city is likely to put pressure on infrastructure. In the current situation where many areas lack adequate sanitation facilities, the question is, to where will the overflow turn to dispose of waste? There may have been many contingency solutions to many of these challenges but this study seeks to come to terms with the effects of poor sanitation on the economic welfare of people.

There are of course many different reasons why so many people around the world still have no access to environmental sanitation services: lack of political will; low prestige and recognition of the importance of sanitation; poor policy at all levels; poor institutional frameworks; inadequate and poorly-used resources; neglect of consumer preferences; ineffective promotion and low public awareness; neglect of the importance of women and children (Simpson-Hebert & Wood, 1998).

It is becoming more and more evident that the conventional approaches to environmental sanitation are unable to make a significant dent in the service backlog which still exists as confirmed by WHO/UNICEF/WSSCC (2000). This was also the conclusion of a group of

experts which met in 2000 at Bellagio, Italy, to review the present situation and to identify ways to overcome barriers to progress in sanitation (SANDEC/WSSCC, 2000). All participants accepted the need to challenge conventional thinking, and to do so persuasively to the wider international water resources and waste management community, public and private, as well as among the broader community of economic, social, and urban policymakers (SANDEC/WSSCC, 2000). Some relevant basis for this need is as follows:

- a. Centralized systems designed and implemented without consultation with, and the participation of, stakeholders at all levels are outdated responses to public health and environmental problems, and are ineffective in today's world. Stakeholders' participation is vital.
- b. There is a lack of integration between excreta disposal, wastewater disposal, solid waste disposal, and storm drainage. Many problems would be resolved by a new paradigm which placed all aspects of water and waste within an integrated service delivery framework.
- c. The under-utilization of organic residues is economically wasteful, and belongs to a distorted view of waste management as confined to issues of disposal as opposed to resource utilization.
- d. The pressure of humanity on a fragile water resource base, and the corresponding need for environmental protection and freshwater savings, require that wastewater and wastes be recycled and used as a resource, within a circular system based on the community and municipality, rather than a linear system.

- e. The export of industrialized world models of sanitation to environments characterized by water and resource scarcity is inappropriate, and amounts to an amoral continuation of wrong solutions.

What is notable about the observations above includes that there is the need for environmental sanitation approaches to consider consultation with, and participation of stakeholders from the grass roots upstream to waste management services to ensure that there is high integration in the delivery of waste management service. Another important point is the promotion of ways to recycle certain waste products and to treat them as resources for utilization as opposed to disposal. There is also the need to ensure that models of sanitation are suitable, home-made models carefully crafted to address sanitation challenges under the prevailing circumstances which may not be applicable to other geographical places with different economic characteristics. In a nutshell, there is the need to fashion out environmental sanitation system which is understood by the people, for the people, and is owned by the people.

The goal of environmental sanitation is to contribute to the improvement of quality of life and the achievement of social development. Environmental sanitation should create and maintain conditions whereby not only people can lead healthy and productive lives, but also where the natural environment is protected and enhanced. To achieve these twin objectives, the universal goal of environmental sanitation can be stated as follows: Water and sanitation for all within a framework which balances the needs of people with those of the environment to support healthy life on earth. This requires the promotion of services which SANDEC/WSSCC (2000) describes:

- a. are people-centered;
- b. meet basic needs;
- c. serve the un-served;
- d. improve public health;
- e. reduce impact of poverty;
- f. are sustainable environmentally, socially, institutionally, economically and financially;
- g. respond to demand;
- h. respect the need to preserve and protect the resource base; and
- i. protect/enhance ecological integrity.

2.9 Effects of Poor Sanitation

A World Bank country environmental analysis conducted in Ghana showed that health cost resulting from poor water, sanitation and hygiene, for instance, is equivalent to 2.1% of Annual Gross Domestic Product (GDP) (UNICEF, 2008).

Poor environmental sanitation practices also affect the environment in diverse ways. In regions where a large proportion of the population are not served with adequate water supply and sanitation facilities, sewage flows directly into streams, rivers, lakes and wetlands, affecting coastal and marine ecosystems, fouling the environment and exposing millions of children to disease. Particularly in the context of urbanization, indiscriminate littering, domestic wastewater, sewage and solid waste improperly discharged presents a variety of concerns as these promote the breeding of communicable disease vectors as a result of air, water and soil pollution, all of which are inimical to the smooth carrying out of day-to-day activities.

2.10 Policy and Institutional Framework for Environmental Sanitation in Ghana

In consultation with a variety of stakeholders, the Ghana's National Environmental Sanitation Policy (ESP) was developed in 1999 and covers the broad spectrum of environmental sanitation including solid and liquid waste, industrial and hazardous waste, storm water drainage, environmental and hygiene education, vectors of disease, and disposal of the dead (Ministry of Local Government and Rural Development, 1999). The policy was developed by the Ministry of Local Government and Rural Development (MLGRD). It is a fairly concise document that sets out basic principles and objectives, identifies roles and responsibilities and also covers environmental management and protection, legislation and funding among others.

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

The policy identifies many of the major problems and constraints in environmental sanitation, including the lack of assigned roles for governmental bodies, the lack of capacity and skilled professionals at all levels, and the problems associated with the transfer of responsibilities for environmental sanitation without the corresponding budget, personnel, and equipment transfers. The policy then lays out its strategy to deal with these problems. Key items in the strategy include:

- a. Defining the roles and responsibilities related to environmental sanitation of institutions from the national ministries down to unit committees, community organizations, and the individual;
- b. The privatization of environmental sanitation services;
- c. The creation of a National Environmental Sanitation Policy Coordinating Council (NESPoCC) and a District Environmental Sanitation Fund (DESF) and;
- d. The phasing out of pan latrines (by 2010). Targets were set for 2020 (except for the phasing-out of pan latrines, which was targeted for 2010).

This has allowed the government a lot of flexibility. Each of the above components is discussed below.

- a. Roles and responsibilities: The policy clearly states the role of actors at a variety of levels of government. Evaluations of Ghanaian sanitation policy and governance conducted by Salifu and Tayler (2005) identified loopholes in the activities and coordination between some ministries and institutions and thus recommended an update to include the roles of the MWRWH and Community Water and Sanitation Agency (CWSA), and to clarify the roles of some other institutions and ministries (e.g., Ministry of Health).
- b. The Policy also outlines the roles and responsibilities of the Community and Individuals. Ensuring good environmental sanitation is the responsibility of all citizens, communities, private sector, enterprises, NGOs and government institutions. All these actors have an essential part to play in maintaining a

high standard of environmental sanitation. The policy indicates that, every individual, establishment or institution shall be responsible for:

- Cleansing within and in the immediate environs of the property they occupy, including access ways and the drains and roads abutting the property;
- Temporary storage of wastes within the property and disposal thereof outside the property, as may be directed by the competent authority;
- Taking measures to prevent the breeding of disease vectors within and in the immediate environs of the property they occupy;
- Ensuring that the wider environment is not polluted or otherwise adversely affected by their activities;
- Hygienically disposing of all wastes they generate in public areas by use of an authorized public toilet or solid waste container as appropriate;
- Participating in all communal environmental sanitation exercises organized by the community or its representatives (Ministry of Local Government and Rural Development, 1999, p. 6).

The policy also entrusts in the Assemblies the power to promulgate bye-laws and regulations to help in their environmental sanitation management process. To complement these efforts, the Judiciary is expected to establish and empower Community Tribunals to prosecute offenders against environmental sanitation bye-laws and regulations (Ministry of Local Government and Rural Development, 1999, p19). This is a clear opportunity for metropolis like Tema to make the city inhabitants responsible for

environmental sanitation and to ensure good environmental sanitation practices. Several studies have, thus, looked at community participation in environmental sanitation as the way forward.

2.10.1 Toward a New Approach to Environmental Sanitation

Based on the goals and objectives of environmental sanitation and in the light of the compelling arguments for radical re-thinking, the Bellagio group proposed the following principles as the underpinning basis for a new approach (SANDEC/WSSCC, 2000):

- a. Human dignity, quality of life and environmental security at household level should be at the center of the new approach, which should be responsive and accountable to needs and demands in the local and national setting.
 - Solutions should be tailored to the full spectrum of social, economic health and environmental concerns.
 - The household and community environment should be protected.
 - The economic opportunities of waste recovery and use should be harnessed
- b. In line with good governance principles, decision-making should involve participation of all stakeholders, especially the consumers and providers of services.
 - Decision-making at all levels should be based on informed choices.
 - Incentives for provision and consumption of services and facilities should be consistent with the overall goal and objective.
 - Rights of consumers and providers should be balanced by responsibilities to the wider human community and environment.

- c. Waste should be considered a resource, and its management should be holistic and form part of integrated water resources, nutrient flows and waste management processes.
- Inputs should be reduced so as to promote efficiency and water and environmental security.
 - Exports of waste should be minimized to promote efficiency and reduce the spread of pollution.
 - Wastewater should be recycled and added to the water budget.

2.10.2 Community Participation in Environmental Sanitation Management

As part of the governance debate concerning participation, participatory governance and participatory approaches have been investigated. From a normative perspective, a core argument is that more inclusive forms of (local) government constitute approaches to ensure broader participation in urban environment initiatives which in turn will lead to better results in implementation (Menegat, 2002).

According to Hueting (1980) and Blaikie and Brookfield (1987), the issues related to environmental degradation is not only technical or engineering ones, but more socio-economic. Thus, the understanding of such factors affecting the community's collective action is crucial to any efforts aimed at championing people's participation of such resources.

The UNEP (2000) recommends community participation in environmental sanitation problem-solving using the Participatory Hygiene and Sanitation Transformation (PHAST) approach. The PHAST approach encourages local participation in defining

problems and solutions related to water, sanitation and disease control. The community itself analyses its own beliefs and practices and then decides what needs to be changed. Outside experts, such as local health personnel, water and sanitation engineers and social scientists also participate and share information with the community. This is based on the principles that; Communities can and should determine their own priorities for disease prevention. When people understand why improved sanitation is to their advantage, they will act. Also all people, regardless of their educational backgrounds, are capable of understanding that poor environmental sanitation promotes diseases and can be harmful, and can learn to trace and describe the faecal-oral route of disease transmission in their own environment. Communities can identify appropriate barriers to block disease transmission.

Commitment from the local government to improve environment performance and establish policies for the purpose is very important. A strong commitment from the local government to be inclusive, develop political support, or show leadership will necessitate the involvement of the community. A prudent local government will involve the community in order to ensure broad commitment from all residents of the city. This will also ensure acceptance and ownership of its policies and programmes with the community. The local government has to develop and implement the necessary measures to enable various urban stakeholders to perform their tasks and implement their programmes/projects on the environment (This is a departure from the usual position of a local government as a 'provider' of services to a 'facilitator' of action).

Community participation calls for people to participate in planning, implementing and managing their local environment. Community participation means a readiness on the

part of both local governments and the citizens to accept equal responsibilities and activities in managing their surroundings (UNEP, 2005).

2.11 Conceptual Framework

The conceptual framework for this study is based on the Participatory Hygiene and Sanitation (PHAST) theory that looks at sanitation as a community or a collective approach to deal with sanitation problems. It addresses the concern that communities can and should determine their own priorities for sanitation. When people understand why improved sanitation is to their advantage, they will act. Also, people, regardless of their educational backgrounds, are capable of understanding that poor environmental sanitation promotes diseases and can be harmful, and can learn to trace and describe the faecal-oral route of disease transmission in their own environment. The logical conclusion is that people and systems together form the solution to sanitation problems, by the PHAST theory.

From that background, the interactivity between market participants and environmental sanitation management agents, i.e. the local authority in charge of sanitation, and the avenues available for waste disposal have been looked at to extrapolate the choices and effects of sanitation at the Tema New Town market.

Literature mainly highlights the effects of sanitation in the light of health and environmental condition, and inadvertently, does not explore in detail the relationship between sanitation and economic activity. Albeit the effect of sanitation on health insinuates some effect on economic wellbeing of people, it is difficult to grasp confidently that sanitation has significant effect on economic wellbeing of the ordinary

people – this in most cases, is indirectly presented. As have been mentioned elsewhere, though sanitation may be regarded as poor with all its public health implications, there is room for people to fail to grasp how it impacts on their economic livelihood. This implies that there would be failure to significantly associate economic wellbeing to proper or improper sanitation, particularly, where trading activity is concerned. This is mainly because there is yet to be carried out empirical studies that look specifically (and directly) at the effect of sanitation on economic wellbeing of market participants. As far as this disconnect lingers, sanitation concerns would be negligible when it comes to economic life. And from other well established effects of sanitation such as effects of sanitation on health; environmental degradation; and on pollution, it would remain more (or less) an abstract inference that, therefore, sanitation affects economic wellbeing of market participants. The gap in knowledge that is presented by this, as have been stated in the statement of the problem in the introductory chapter of this research, is that of a weak illumination of the effect of sanitation on economic wellbeing of a populace. Acknowledging that market centres are places of brisk business and trading activities, and that they are a source of economic livelihood to people, this study fills this gap by using a market centre as a case in studying the effects of sanitation on economic wellbeing.

In the framework of this study, market participants are regarded subjects to waste generation; they are responsible for their actions and inactions with regards to sanitation in the market; they are not impervious to sanitation impacts on the market once they are market participants. The market participants constitute the actors who generate and accumulate waste largely due to their trading activities. They input resources such as

money, labour and time into their businesses and are held responsible to commit some of these resources into sanitation. At the helm of managing sanitation in the market place is the Ministry of Local Government which controls affairs through its local government agency or unit. In accordance with the national sanitation policy, which aims to define roles and responsibilities of institutions, community organizations and individuals, oversee the activities of private environmental sanitation services, and provide an overall framework to ensure good environmental sanitation, the Tema Metropolitan Assembly (TMA), as a local government agency, has the power to promulgate bye-laws and regulations as well as provide educative opportunities that make market participants responsible for environmental sanitation, coordinate and control environmental sanitation agencies (private or public), provide facilities that would inure to good sanitation. The assembly also levies the market participants in small amounts to raise funds to cover sanitation of the market.

As stated elsewhere, environmental sanitation management is the continual process of allocating resources to ensure hygienic environment through service and infrastructure provision and proper disposal. The environmental sanitation management field comprises sanitation agencies and establishments including concerned groups and active citizens providing various measures like refuse containers, trucks, sweeping and washing services and so forth for the purpose of maintaining sanity in the market. The tasks in the management of waste and sanitation are crucial for evolving a sanitized environment.

Sanitation system represents the channels or lines (good or bad) by which waste is managed. Sanitation system involves the sanitation practices, behaviours, and waste disposal practices. Waste can be handled through the market participants' own instincts

and disposal channels (whether good or poor). Waste management can also be left in the purview of environmental sanitation management agencies. Figure 2.1 presents a graphical view of the framework elaborated on thus far.

In Figure 2.1, market participants generate waste and expend resources and efforts to dispose of it either through environmental sanitation agencies and sanitation facilities or by their own instincts and practices. Their sanitation practices or instincts can be good or poor depending on how waste is disposed of (whether discriminately or indiscriminately, appropriately or inappropriately). On the other hand, services of environmental sanitation agencies or establishments can be employed, with the market participants committing monetary resources to their smooth functioning. Here again, sanitation services can be good or poor depending on practices and behaviours towards sanitation. Hence, the application of best practices to environmental sanitation management, and good behaviour towards sanitation would lead to good environmental sanitation. It is also well acknowledged that poor sanitation breeds environmental health challenges. A case in point is the cholera outbreak in Ghana which was heavily reported in Accra. As the country entered its rainy season in June, 2014, the insanitary conditions in communities and market centres were observed to have worsened. During that period, the Ghana Health Service had recorded over 10,000 cholera cases across the country which had resulted in more than 100 deaths. According to the Graphic Communications Group (2014), the Ghana Medical Association (GMA) had called on the government to put in place more pragmatic measures to halt the spread of cholera in the country. The common thread that ran through the recommendations advanced by the GMA is the observation of proper hygiene while it reminded the Ministry of Local Government of fulfilling its

mandate to promote proper sanitation. The report cited that 50% of Ghanaians did not have access to proper toilet facility while 23% were said to be practicing open defecation. There is clear indication that diseases such as cholera, diarrhoea, typhoid, hepatitis, polio and so on that come as a result of poor sanitation bring public health challenges – more funds to allocate for procuring drugs, providing health staffs to contain the challenge, establishing health facilities like the hospitals and clinic not to talk of beds and other health equipment. Considerations of this nature represent health cost to the individual as well as to the public or government.

It is deducible from the above that the application of best practices to environmental sanitation management, and good behaviour towards sanitation would lead to good environmental sanitation. This should result in reducing health cost, reducing sanitation management cost, promoting conditions conducive to the environment, and freeing up funds for other pressing needs, etc. On the contrary, ineffective waste management services, indiscriminate waste disposal practices, and unyielding behaviour towards sanitation would lead to poor environmental sanitation. This would also culminate into increasing health cost, increasing sanitation management cost, loss of manpower or productive labour, and create an environment repulsive to trading activities, as well as constrain funds for other pressing needs, etc., and create burden for market participants and environmental sanitation services.

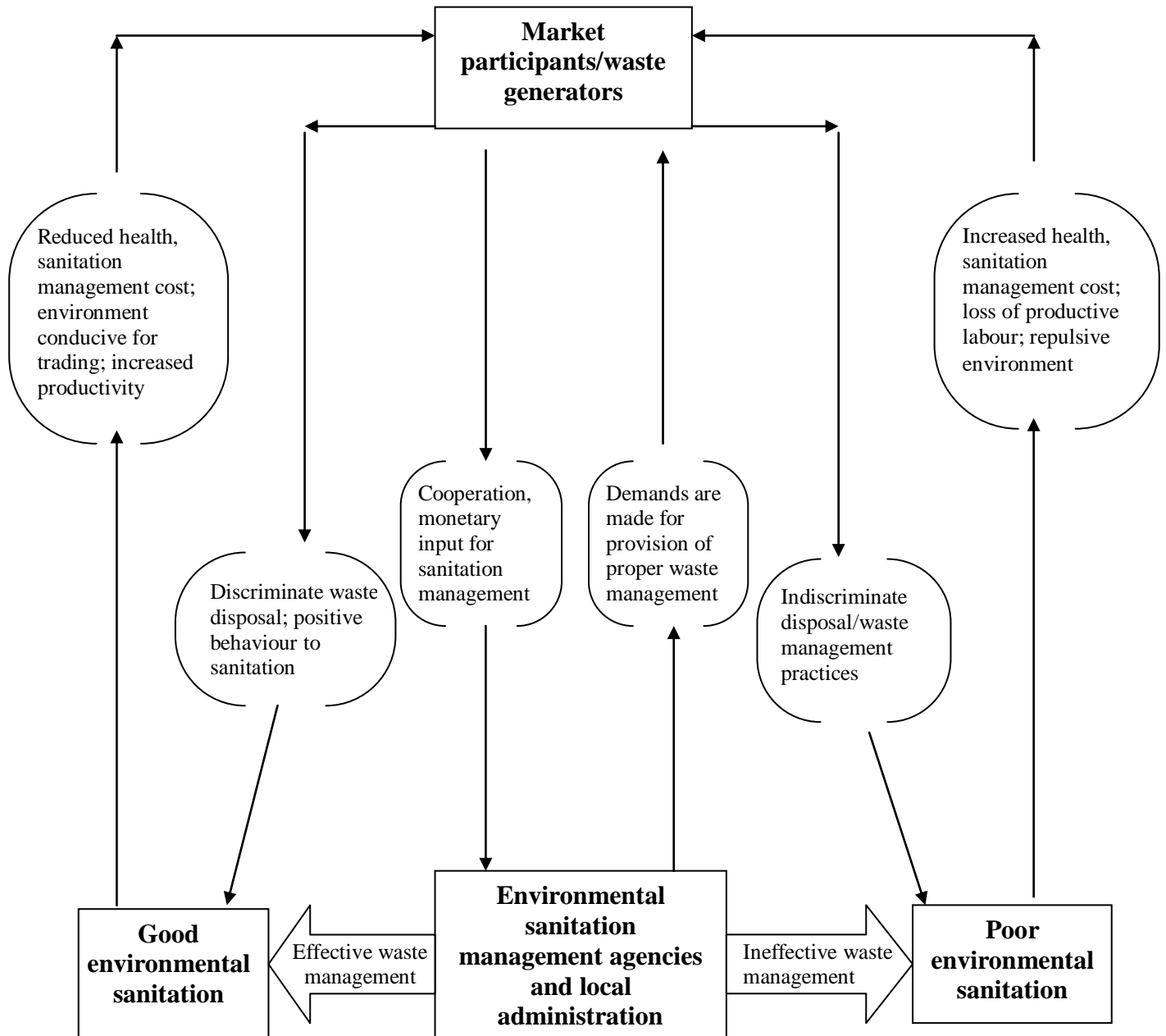


Figure 2.1: Conceptual framework – effect of sanitation on economic welfare in market centres

Source: Author's Construct, March, 2014

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses the research methods that were used in the study. The discussion includes study area, the research design, research approach, the target population, sample size, data collection and data analysis. McMillan and Schumacher (2006) define research methodology as the way in which one collects and analyses data. Data may be collected using different measurement techniques, extensive interviews, observations and or through review of set of documents. The authors noted that research methodology is systematic and purposeful, meaning the procedures are not haphazard but are planned to yield data on a particular problem. The term methodology therefore refers to a design wherein the researcher selects a form of data collection method and then analyses the data in order to find answers into a specific research problem. This study employs an explorative case study design, using the mixed method approach to obtain and analyse data on the effect of sanitation on economic activities in Charway-Naa Market (Tema New Town).

3.2 Profile of the Study Area

Tema, the city in which lies the Tema New Town market, can be found on the Gulf of Guinea and Atlantic coast of Ghana. It is located about 25 kilometres east of the Capital City; Accra, in the Greater Accra Region. By 2013, Tema had become known as the eleventh most populous settlement in Ghana, with a population 161,612. As at 2014, the population of the Tema Metropolitan area stood at approximately 215,000, according to

the Ghana Statistical Service (Ghana Statistical Service, 2012). The Greenwich Meridian (0°0 Longitude) passes directly through the city (GhanaDistricts.com, 2013). Tema is locally nicknamed the “Harbour Town” because of its status as Ghana’s largest seaport.

The city of Tema was constructed on a site of a small fishing village during which Ghana’s first President, Dr. Kwame Nkrumah, commissioned it. Following the construction of a large harbor in 1961, the city grew rapidly. Presently, it has become a major trading centre, home to an oil refinery and numerous factories with a highway and railway that links Accra.

Before Ghana’s independence, the government identified a small fishing village and in 1952, acquired 166 square kilometres of land north of the harbour, and entrusted it to the Tema Development Corporation. The “New Town” that was subsequently built on the site was planned as an industrial and residential complex. The villagers at the time were ejected to make way for the project, and migrated to a new fishing ground around 3 kilometres (Ghanaweb.com, 2013).

The main Tema Township was constructed, and the Tema Harbour officially opened, in 1962. Over the following decades, Tema grew into the industrial hub of Ghana and one of the best-planned cities in West Africa, with a carefully constructed road layout featuring landscaping and street lights. It boasted of modern recreational centers and other social amenities rare among African cities at the time (Ghanaweb.com, 2013).

A large population influx began in the 1960s owing to the town's employment opportunities, but the Tema Development Corporation was unable to construct housing and provide other services to meet the needs of this migration. The Tema New Town

district was overwhelmed by the sudden population growth, and became the poor cousin of Tema Township, receiving none of the latter's improved housing, geometrically laid roads, or social amenities. Due to chieftaincy disputes, the royalties paid by Tema New Town's companies to evicted villagers have not been used profitably and the area's occupation and fishing potential was thus not fully explored (Ghanaweb.com, 2013). The dry equatorial climate is characteristic of Tema which lies in the driest part of southern Ghana. The city experiences average annual rainfall of about 750 millimetres with average temperatures high year-round and often exceeding 30° Celsius (GhanaDistricts.com, 2013).

3.3 Research Design

A research design provides the basic strategies that are necessary for the development of empirical evidence (Polit & Beck, 2008). A research design can also be defined as a blueprint that guides the research process to ensure that there is maximum control over factors that could adversely affect the validity of the research results (Burns & Grove, 2005). The study employs the use of an explorative case study design.

Exploratory research is used to develop a better understanding of the research (Hair, Babin, Money & Samuel, 2003). Exploratory studies serves as an available means of finding out what is happening, to seek new insight, to ask questions and to assess phenomena in a new light. It is particularly useful if a researcher wish to clarify the understanding of a problem. Gillham (2000) defines a case study as an investigation to answer specific research questions which seeks a range of different evidences from the case setting. On the other hand, Yin (2003) defines a case study as an empirical inquiry that investigates a contemporary phenomenon within its real-life context. The rationale

for using the explorative case study design is to gain an in-depth and a contextual knowledge of the research problem.

3.4 Research Approach

In this study, both quantitative and qualitative approaches were employed to develop a conceptual framework for establishing the link between sanitation and economic activities. Rationale for using both quantitative and qualitative approaches is to provide a more comprehensive evidence for studying the research problem than either quantitative or qualitative. Also, both approaches enables the researcher to collaborate across the sometimes adversary relationship between quantitative and qualitative hence checking for the consistency and validity of responses. According to Hittleman and Simon (2002) the use of both methods in a research project can incorporate the strengths of both research methods. The use of both qualitative and quantitative approaches in a single study is referred to as mixed methods. Mixed methods combine methods of data collection and analysis from both qualitative and quantitative traditions (McMillan & Schumacher, 2006). Fraenkel and Wallen (2008) state that the advantage of using multiple methods is that researchers are able to gather and analyse more and use different kinds of data than they would if they had used only one method in their study. Despite its value, conducting mixed methods research is not easy. It takes time and resources to collect and analyse both quantitative and qualitative data.

3.4.1. The Quantitative Approach

Quantitative research, according to Hittleman and Simon (2002), is characterized by the use of statistical analysis to describe, compare and attribute causality. Generally, quantitative research is considered to be objective. It utilizes numerical data to obtain

information about the world. McMillan and Schumacher (2006) add that this research approach maximizes objectivity by using numbers, statistics, structure and control. Quantitative researchers believe that the best way of measuring the properties of a phenomenon (e.g. the attitudes of individuals towards certain topics) is through quantitative measurements, because quantification makes the observation more explicit (Babbie & Mouton, 2001). In this study, questionnaires were used to quantify the views of traders on the effects of sanitation on economic activities in the Tema New Town market.

3.4.2. The Qualitative Research Approach

According to Lofland and Lofland (1995) qualitative research involves methods of data collection that are non-quantitative. In the qualitative research approach, observations are collected and reported in everyday language. Shank and Brown (2007) list the following as the basic tools and procedures used to gather qualitative data: observation, interviews, focus groups, material analysis, archive and historical records analysis, interpretive analysis and participant analysis.

Hittleman and Simon (2002) report that some researchers prefer to refer to qualitative research as *interpretative research* to avoid the connotation of defining this research approach as *non-quantitative* since some sort of quantification can be used. They further argued that most qualitative research is descriptive; many of its data collection procedures are similar to those found in quantitative descriptive research.

According to Neuman (1997) interpretive methodology is the systematic analysis of socially meaningful action through the direct detailed analysis of people in natural

settings in order to arrive at understandings and interpretations of how they create and maintain their social worlds. Interpretative researchers hold the view that social reality is based on peoples' definition thereof. They see social reality as consisting of people who construct and create interpretations through their daily social interaction.

Neuman (1997) argues that the interpretive methodology is the basis for social research techniques that are sensitive to contexts. According to Gultig, Lubisi, Parker and Wedekind (1999), interpretivism has a local rather than global orientation that is concerned more with the frameworks of particular institutions and the ways individuals understand and act in particular social contexts.

For Swann and Pratt (2003), interpretivism is often contrasted with positivism which involves the study of physical entities. Interpretivism on the other hand involves the study of social phenomena by social scientists who study a world that is interpreted by the actors within it. Shank and Brown (2007) point out that interpretive analysis seeks to provide an explicit framework so that researchers and readers are both clear on the perspectives and frameworks being employed.

3.5 Target Population and Sampling Technique

Target population for the study includes officials from TMA; market leaders and market participants (sellers and buyers) in Charway-Naa (Tema New Town Market). Familiarisation visits were made by the researcher to the New Town Market prior to the data collection. Through the visits, the market structures were observed. Again, the visits provided the researcher with insight into the stakeholders of the New Town Market. It is the view of the researcher that the market participants, along with the officials of TMA

who have responsibility to maintain sanitation, are directly relevant to the subject matter of this study. The sellers in the market targeted were essentially those who have permanent or semi-permanent structures or sheds. From the observations of the researcher, permanent structures are the stores, stalls, fixed tables and sheds from where sellers conducted their businesses. It is the users of those structures that were targeted to constitute the population of the study.

The calculation of sample size for market participant at the Tema New Town market was based on the mathematical formula by Yamane (1967).

$$n = \frac{N}{1 + Ne^2}$$

Where n is the sample size, N is the sampling frame (total number of traders in the market), and e is the margin of error. The total number of traders is estimated at 750. This estimate was provided by the TMA as the average number of people which the market area is able to accommodate in a given day. Observing how people populated the market in the course of the study, this average estimate was plausible. There was a wide variety of stores which counted approximately 104. There were also several stalls; long and short ones, running over 100. Brisk business took place where one could spot about 5 to 10 people attempting to purchase a commodity from a vendor. The standard margin of error of 5 percent was used and put into the formula to calculate the sample size.

$$\text{Therefore, } n = \frac{750}{1 + 750(0.05)^2} = 261.11 \text{ (Yamane, 1967)}$$

Based on the formula, the sample size for market participants was approximated to 261. This represents both sellers and buyers. The total sample size was divided proportionately between the two groups.

In addition to the market participants, the study was designed to obtain qualitative insight on sanitation at the Tema New Town market from officials and leaders of the market. For this reason, ten (10) members consisting of officials of TMA and market opinion leaders were engaged in interview and focus group discussion.

Purposive sampling and convenience sampling techniques were employed to select respondents. Purposive sampling technique was applied to select 3 officials of TMA and 7 market leaders (summing up to 10) for interview and focused group discussion respectively. These respondents were purposively selected because they represent information-rich cases that would give rich insight to the study.

With respect to the market participants (sellers and buyers), the convenience sampling technique was used. This allowed the researcher the opportunity to engage respondents by approaching them in the market area and administering the questionnaire. Table 3.1 outlines the samples and the approaches used for data collection. At the end of data collection, 103 sellers and 125 buyers were covered amounting to 128 respondents.

Table 3.1: Proposed methodology

Qualitative Method				
Objectives	Data collection method	Sample	Sampling technique	Respondents
Examine the current sanitation in Tema New Town market	Focus group discussion	7	Purposive sampling	Market leaders
	Key informant Interview	3		TMA Waste Management Officer, Metro Public Health Officer, Tema East Sub-Metro Officer
Identify the factors that contribute to the sanitation situation in the market	Focus group discussion	7	Purposive sampling	Market leaders
	Key informant Interview	3		TMA Waste Management Officer, Metro Public Health Officer, Tema East Sub-Metro Officer
Effects of the sanitary conditions on trading activities	Focus group discussion	7	Purposive sampling	Market leaders
	Key informant Interview	3		TMA Waste Management Officer, Metro Public Health Officer, Tema East Sub-Metro Officer
Assess the contributions of key stakeholders in addressing the poor sanitation	Focus group discussion	7	Purposive sampling	Market leaders
	Key informant Interview	3		TMA Waste Management Officer, Metro Public Health Officer, Tema East Sub-Metro Officer
Quantitative Method				
Objectives	Data collection	Respondents	Sample	Sampling technique
Examine the current sanitation in Tema New Town market	Structured questionnaire	Sellers	103	Convenience sampling
		Buyers	125	
Identify the factors that contribute to the sanitation situation in the market	Structured questionnaire	Sellers	103	Convenience sampling
		Buyers	125	
Effects of the sanitary conditions on trading activities	Structured questionnaire	Sellers	103	Convenience sampling
		Buyers	125	

3.6. Sources of Data

The study makes use of both the primary and secondary sources of data collection. Primary sources of data are originated by the researcher especially to address the research problem (Malhotra & Birks, 2007). Primary data are first-hand information gotten for a research. This was in the form of responses gotten from respondents through the use of an interview guide and a questionnaire. A sample of the data collection instrument which shows the primary data collection is given by Appendixes A, B, C, and D. Secondary sources of data is referred to as data already collected and documented in books, progress reports, annual reports, financial records, electronic formats and other relevant medium which are normally stored in libraries and archives (Bryman, 2008). Secondary sources of data for the purpose of this study derived from books, articles, and journals which relate to the topic under consideration. Finally, other relevant and credible online sources such as Sage, Emerald, and EBSCOhost were accessed to derive data.

3.7. Method of Data Collection

Data collection methods for the purpose of this study include survey, field notes and semi-structured interviews. The combination of different data collection methods is to enable the researcher get a holistic picture of the subject matter under consideration (Matthews & Ross, 2010).

3.7.1. Survey

This entails the collection of data using a questionnaire to discover the opinions of a population, based on a sample of the population (Creswell, 2009). Surveys are usually used to collect quantifiable data from respondents to measure, examine, analyse and generalize the findings. Furthermore, it has become accepted as a scientific and accurate

way of collecting data to quantify gathered information, even though some aspects of the survey might be qualitative (Zikmund, 2003). This study used a cross-sectional survey to gather data from traders in the Tema New Town market.

3.7.2. Field Notes

Taking field notes is a primary feature of the field work. As Bryman (2008) stated, due to the fallibility of human memory, it is important to take notes of information gathered through observation in the research process. Such field notes basically contain concise and accurate accounts of events and experiences as well as the researcher's reflection of such events (Bryman, 2008). In the course of the field work, the researcher took brief notes of the research respondents, notably the traders, leaders of the Tema New Town market and departmental officers of Tema Metropolitan Assembly. The field notes provide a holistic picture of the research setting and the experiences of the respondents.

3.7.3 Semi-structured interviews

In research, interviews enable the interviewer to get the experiences and views of the person being interviewed through a dialogue (Matthews & Ross, 2010). According to Macions and Plummer (2002) "an interview is a series of questions a researcher address personally to respondents". Corbetta (2003) explains semi-structured interview as the order in which the various topics are dealt with and the wording of the questions are left to the interviewer's discretion. The strength of this type of interview is that, it allows the researcher to probe for views and opinions of the interviewee. Gray (2004) explicitly stated that probing is a way for the interviewer to explore new paths which are not initially considered. To add to the strength, Kajornboon (2004) stated that conducting semi-structured interview is freer than conducting a structured interview because the

research does not adhere to detailed interview guide. For the purpose of this study, a semi-structured interview was employed to gather data from departmental officers of Tema Metropolitan Assembly on the sanitation situation in the metropolis.

3.7.4 Focus Group Discussion

Focus group discussion (FGD) is a qualitative data collection technique which makes use of group interviews rather than single interviews with the aid of a facilitator. FGD enables the researcher to interview groups of people who share a common affinity to the topic under consideration (Matthews & Ross, 2010). It also affords the researcher the chance to solicit for varied opinions and explore the different perspectives and experiences of participants on the same topic. Patton (2002) described the focus group as a form of interview process with a small group of people who share characteristics and discuss a specific topic for an hour or so. The main objective of a focus group is to explore and gain a greater understanding of the target group's perspectives and opinions on the specific phenomena or topic under investigation (Domegan & Fleming, 2007).

The main advantage associated with focus group is their efficiency and the generation of in-depth information on the specific topic of discussion. According to Krueger (1994), focus group sessions produce more in-depth information in two hours than would be gathered from an individual interview over a much longer time frame, hence focus group reduce cost. There are limitations or weakness embedded in focus group discussion, on weakness associated with conducting focus group is the skill required by the moderator to ensure all participants have equal opportunity to respond, and that the group is not controlled by one or two participants. Confidentiality is also a mind boggling issue in focus group sessions due to the amount of participants (Krueger & Casey, 2000). For the

purpose of this study, a focus group discussion was conducted for leaders of the Tema New Town market.

3.8 Data Collection Procedure

A protocol attached with an official letter from the researcher's department was issued to all respondents especially market leaders and officials from TMA for their consent. The protocol answered the following proposed questions; (a) What does the research entail? (b) Will a participant's anonymity be maintained? (c) Is information confidential? (d) What are the benefits to the information and to the researcher? (e) What would be a rough estimate of the time span for the interview?

The researcher conducted an in-depth interview with three officials (Waste management officer, Metro public health officer, and Tema East sub-metro officer) from the TMA. This was done on an individual base. Although hand written notes were made by the researcher, a tape recorder was used. The rationale for using the tape record was to allow the researcher a second chance to go through the interview over and over again to gain more understanding. The interview was held in English and each interviewee was interviewed on separate days.

Focus group discussion was conducted by the researcher with the help of a facilitator or a moderator. Seven respondents (Market Leaders) made up the group. In order to gain an interactive discussion, sitting arrangement was in an oval form. Discussions were held in English. A maximum of one hour thirty minutes was used in order to avoid fatigue among the respondents. A tape recorder and a notepad aided the researcher in taking notes during the discussion.

Using the simple random sampling and convenience sampling technique, the researcher selected both sellers and buyers. The researcher briefed respondents about the research and assured them of confidentiality. The researcher with the help of a facilitator handed over the questionnaires to both sellers and buyers and guided them as to how to fill the questionnaire. The questionnaires were filled and collected over a maximum period of five days.

3.9. Limitations of the Study

Undertaking this study has not gone without limitations. First, owing to the fact that the buyers are made up of a lot of people and their number is so imprecise and diversified to understand their distinct categorization into new comers, consistent buyers, etc., those with relevant experience about sanitation could not be specified. Using 125 buyers also meant that the sample size is confined to a small number of the buyers. Second, there had been incidence of lack of interest of some respondents in the study on the pretext that, regardless of what information is given out, the leaders or authorities have simply failed them in most facets of nation building including sanitation. This was particularly the case among some traders making them reluctant to partake in the data collection, hence, reducing the actual data gathered for the study.

3.10. Ethical Consideration

In doing research one has to consider ethical issues. According to Burnham (2008), research needs to be sensitive to the rights of participants. This study considered the needs and concerns of participants so as to ensure their safety and protect their dignity and privacy. Subsequently, informant consent was sought from participants before data was collected.

With regards to confidentiality, in order to avoid the identification of research participants, information recorded was kept confidential. According to Kvale and Brinkman (2009) confidentiality refers to the prevention of disclosure of data that revealed the identity of participants. Therefore, attempt was made to keep the identities and records of participants confidential and not accessible to any third party. Assurances were given to each participant that their identity was protected.

In seeking to protect the identity of participants, the researcher did not record names of the respondents so as to keep them anonymous. The need for confidentiality and respect for ethical principles for all interview records and data collected was kept safely. Finally, ideas which were not of the researcher were dully acknowledged through in-text citation and referencing.

3.11. Data Analysis

A sequential explorative strategy was employed for the analysis of both qualitative and quantitative data. In this strategy, both qualitative and quantitative data was analysed sequentially. Priority was given to the qualitative data, and then supported by the quantitative data in the integration stage of the analysis.

3.11.1. Qualitative Data Analysis

According to Neuman (1997), social researchers systematically collect and analyse empirical evidence to understand and explain social life. He goes on to say that when data are in the form of words, sentences and paragraphs rather than numbers, researchers need to use different research strategies and data collection techniques. Data analysis, according to Neuman (1997) will therefore involve examining, sorting, categorizing,

evaluating, comparing, synthesizing, and contemplating the coded data as well as the raw data. According to McMillan and Shumacher (2006) qualitative data analysis entails three steps: Organisation of data, summarizing the data and interpreting the data. Data organisation entails separating data into workable units while looking for categories, concepts and themes.

In this study, tape recorded interview supported by hand written notes was transcribed verbatim and analyzed manually using the principle of systematic text condensation as described by Malterud (1993). Transcripts were reviewed repeatedly to gain thorough sense of the overall content in the texts, identifying central meaningful units in the material, condensation of the content through a coding of the text, and finally creating categories that contain the condensed meaning of the main themes in the material. The data was then sorted according to emerging themes. Sections of the interviews were quoted verbatim, and some modified to enhanced readability.

3.11.2. Quantitative Data Analysis

Neuman (1991) asserts that researchers use tables, graphs and charts to give the reader a condensed picture of the data. He further states that in the analysis of quantitative data, the researcher needs to organize and manipulate the quantitative data to get them to reveal things of interest about the social environment. This study used tables and diagrams to present data. Data was coded before computing them. According to Neuman (1991), coding data means organizing data systematically so that the computer can read them. He further explains that coding involves a set of rules stating that certain numbers are assigned to variable attributes. In this study, the Statistical Package for Social Science (SPSS) version 16 was used to analyze data from respondents. Data editing, checking,

coding and entry were done during the process of data analysis. To describe the results of the questionnaire, descriptive statistics: mean, standard deviation, frequencies and percentages were used.

In this study, the quantitative data was obtained from market participants. For the purpose of this study, the term ‘market participants’ was used to represent both sellers and buyers. To comprehend the data from market participants, frequencies and percentages were tabulated or presented in graphs. Tests of correlation between sanitation practices and effects on economic activity were also conducted with the quantitative data. The results were compared with qualitative data for a better understanding of the findings.

CHAPTER FOUR

WASTE MANAGEMENT FROM THE PERSPECTIVE OF SELLERS

4.1 Introduction

This chapter presents the analysis of data obtained from the sellers in the Tema New Town market. There were 103 sellers from whom the study obtained data. The analysis looks at the current sanitation situation in the Tema New Town market, factors contributing to the sanitation situation in the market area, and effects of the sanitation conditions at the market on trading activities and economic wellbeing of traders. First, the demographic characteristics of the sellers are presented.

4.2 Demographic characteristics of the sellers

The demographic characteristics of the sellers solicited include their gender and age distribution, period of activity on the market, and their educational levels.

Distribution of sellers by gender

Majority of the sellers who willingly accepted to take part in this study were females; 92 (89.3%), whereas males constituted a very small fraction; 11 (10.7%). The results give the impression that females were predominant participants of sellers in the market. This finding is in conformity with a convention held in Ghana that women play active role in traditional trade and in marketing activities, particularly, in local marketplaces. Table 4.1 presents the results.

Table 4.1: Gender distribution of the sellers

Gender	Frequency	Percent
Female	92	89.3
Male	11	10.7
Total	103	100.0

Source: Field data, 2014

Distribution of the sellers by age

Data obtained on the ages of the respondents indicates that sellers on the market increased steadily with increments in age. Specifically, Table 4.2 shows that none of the sellers was below age 18. About 12.6% of sellers were between age 18 and 29, increasing progressively to 16.5%, 33%, and 37.9% between the ages of 30 and 39, 40 and 49, and 50 years and above respectively. Thus, the sellers were dominated by older folks. This gives the study a good chance of representation the views older sellers in the Tema New Town market. Table 4.2 presents the results.

Table 4.2: Distribution of sellers by age

Age (years)	Frequency	Percent
Below 18	--	--
18-29	13	12.6
30-39	17	16.5
40-49	34	33.0
50 and above	39	37.9
Total	103	100.0

Source: Field data, 2014

Period of activity on the market by the sellers

Probing into the time span within which the sellers have engaged in selling in the New Town market, majority of them; 53 (60.2%), were found to have traded in the market for more than 6 years. Less than one-quarter of the sellers; 20 (22.7%) indicated that they have traded in the market for 1 to 3 years. The rest had traded in the market from 4 to 6 years (17.1%).

This finding gives an indication that most of the sellers have had long years of experience with activities on the market and therefore can provide reliable information on the subject to add to the general findings on the market. Table 4.3 presents the results.

Table 4.3: Years of trading in the Tema New Town market by the sellers

Years of trading	Frequency	Percent
< 1 year	--	--
1-3 years	20	22.7
4-6 years	15	17.1
> 6 years	53	60.2
Total	88	100.0

Source: Field data, 2014

Educational levels of the sellers

In general, educational level was low among the sellers. Majority of them; 45 (51.1%), had attained a basic education. This implies that, these respondents had not more than a Junior High School education, or its equivalent. As much as 19 (21.6%) respondents had no formal education at all. This left 18 (20.5%) and 6 (6.8%) who had secondary education (equivalent to Senior High School) and tertiary education respectively.

Educational level was, thus, lower among the sellers. Table 4.4 presents a detailed tabulation of the results.

Table 4.4: Educational background of market participants

Educational background	Frequency	Percent
No formal education at all	19	21.6
Basic education	45	51.1
Secondary education	18	20.5
Tertiary/Higher education	6	6.8
Total	88	100.0

Source: Field data, 2014

Commodities offered for sale by the sellers

It was noticed that some of the sellers sold more than one commodity. The varying commodities that the sellers traded in include canned/smoked/fresh fish, dried/fresh pepper, tinned/fresh tomato, spices, plantain, cassava, rice, yam, onion, ‘gari’, sugar, beans, maize, rubber bags, plates/utensils, lime/lemon, and cooking oil. The representation of these commodities on the market is illustrated in Figure 4.1 which projects fish as mostly offered for sale by the sellers with cassava being the offered for sale in the smallest quantity.

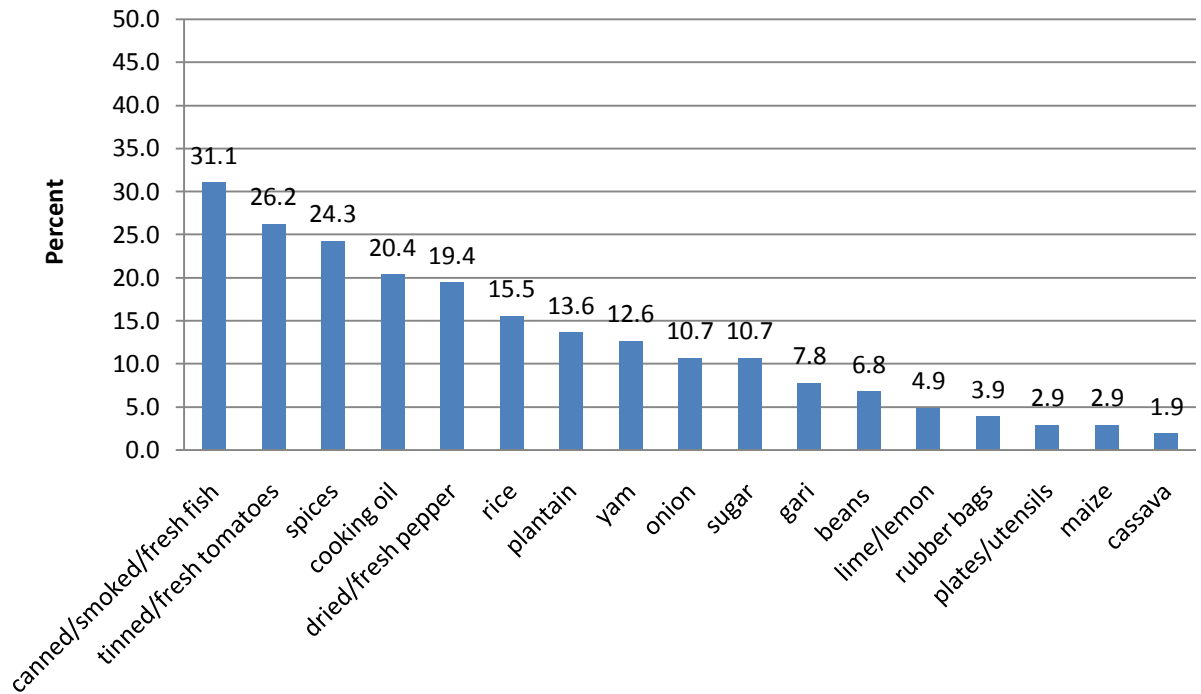


Figure 4.1: Commodities offered for sale by sellers

Source: Field data, 2014

The image in Plate 1 presents a pictorial view of a section of the market and a few of the commodities that one can find on the market.



Plate 1: A snapshot of the Tema New Town Market

Source: Field data, 2014

Attempt is made in this chapter to assess the manner in which sanitation is dealt with in the market from the viewpoint of the sellers in the Tema New Town market. It is tenable that waste management concerns the activities involved in planning for sanitation, controlling of waste management practices and disposal of waste. Bringing waste management into perspective, this chapter is to find out the sanitation condition at the market, the waste disposal practices, and the avenues for waste disposal on the market from the perspective of sellers.

4.3 Current sanitation situation at the Tema New Town market

The current sanitation situation at the Tema New Town market has been inferred from specific conditions in the market and it gives a general insight on the market's waste management approach. The searchlight was beamed on sellers in the market who provided facts that illuminate varying avenues and practices of disposing waste in the market. It is no gainsaying that markets are one of such environments where waste is generated at a high rate.

In examining the current sanitation situation at the Tema New Town Market from the perspective of the market leadership, seven (7) members were set by the researcher to deliberate on the subject matter of the study. There was a unanimous agreement among the market leaders that sanitation at the market is poor. The poor sanitation at the market has been a constant challenge to the market leaders over a long period of time. This, some of them feared, was due to the neglect by officials to improve sanitation at the market. Below were the significant thoughts expressing the responses of four respondents:

“Poor sanitation, in fact is a constant challenge to the activities in the market.”

“It becomes very difficult sometimes to describe the state of sanitation at the market, especially to outsiders because it is too bad to the extent that you get puzzled. My concern is that, public awareness of the market may prevent many people from coming to buy from the market and as you can see this is where we all get our livelihood.”

“It is a heart breaking to learn that some people have nicked this market “a borler market.”

“The state of the market is best described as ‘wicked’ looking at the span of the market and the amount of revenue we avail to the assembly. It is sad to reason that the market seems to have been abandoned by authorities in terms of sanitation. We have no toilet and washroom facilities; bins for waste deposit are not available; the gutters are choked and no attempt has been made to clean up. In fact, the story is never a pleasant one.”

The market leaders identified varied factors that are inspiring the constant sanitation problem at the market but pointed fingers at the Metropolitan Assembly for not performing their duties satisfactorily and charged them with failure in sanitizing the market. The assembly was criticized for bringing up several measures to collect money

from the market operators while it has been unable to develop a single sustainable measure to curb the sanitation challenge confronting the market.

In addition, poor individual attitude towards sanitation, poor architectural design of the market, lack of involvement of the market operators and its leadership in finding solution to sanitation problems were found among the causal factors leading to poor sanitation at the market. Reported below are the some submissions on factors leading to the poor market sanitation:

“We are always taxed and several moneys are taken from us in the of keeping the market place clean and neat but the problem always persist and even worsen overtime”

“The problem of sanitation is indeed a big one to us the market women. But to ask who is to blame, I think the assembly should take the greatest portion of blame. We pay levy on waste and sanitation on daily basis but they have failed to give us corresponding services commensurate to our money inputs; no waste bins let alone to talk about providing us with washrooms and de-silting the gutters. Though the attitudes of some market users towards sanitation are unruly, you hardly can blame them much because they are humans and react based on their environment and surroundings.”

“The whole design and structure of the market does not show adherence to any proper planning. Trading activity is so

unorganized. There are little clues to show people where to dispose refuse. The officials in charge of the market do not seem to care much and the market leaders have not made much input to as to meet the real needs of the market. If care was taken to address issues in this way the cause of poor sanitation could have been reduced.”

4.3.1 Waste disposal practices at the market

Looking at the waste disposal practices, some can be thought to be conventional or acceptable, others unacceptable or crude. The statistics displayed in Table 4.5 indicate that a greater fraction of the sellers; 47 (46.5%) dispose of waste by dumping them in containers placed at vantage positions in the market. About thirty-three sellers (32.7%) reported that their wastes are collected by “borler” boys. In other words, men (personnel) who are specialized in collecting waste come around to collect the waste for disposal. These early findings support a budding phenomenon in Ghana in which refuse management agents go around to collect and dispose of waste, normally at a fee charged against the generators of the waste – these refuse management agents in some local settings are referred to as ‘borler boys’. Evidently, waste disposal into containers at vantage positions and waste collection by refuse management agents seem to be appropriate and acceptable unless the workflow of the refuse management agent is interrupted or there is backlog. It can be inferred from the findings that around three-quarters (79.2%) of the sellers had resorted to appropriate means of waste disposal in the market. Figure 4.1 depicts a waste collector (“borler boys”) and the equipment with which he works.



Plate 2: A waste collector in working gear at the Tema New Town market

Source: Field data, 2014

Meanwhile, surprisingly, there exist as many as 11.9% of the sellers who dumped their waste generated on the market in gutters or the drainages. About one in ten (8.9%) of the sellers also, probably because of their good intention to keep the market sanitized or to avoid any troubles, resolved to keep their waste and later send it home for disposal. What remains uncertain is whether or not the sellers in this category appropriately dispose of their waste if they sent it home. Collectively, sellers who lie prone to poor waste disposal practices in the market constitutes close to one in five sellers (20.8%).

Table 4.5: Waste disposal practices by sellers in the market

Methods of Waste Disposal	Frequency	Percent
Dumping in container at vantage points	47	46.5
Collection by "borler" boys	33	32.7
Keep the refuse and send it home for disposal	9	8.9
Dumping the refuse in the gutters/drainages	12	11.9
Total	101	100.0

Source: Field data, 2014

In a separate observation conducted by the researcher at the market, the facts surrounding the presence of waste container in the market was verified. The observation verifies that there were two (2) large size waste containers (communal waste containers) located about 150 metres apart from each other. There were no other refuse containers for general use apart from these two.

4.3.2 Sellers' contribution to poor sanitation practices

Notably, out of 47 sellers who dumped refuse into containers provided at vantage points in the market, tomato sellers in the market (tinned/fresh tomato sellers) constituted the majority with 12.7% lead in this practice. Fish sellers (canned/smoked/fresh fish sellers) and cassava sellers were next, representing 10.6% apiece who disposed of their waste into containers placed at vantage points on the market as indicated in Table 4.6. Cooking oil sellers, sugar sellers, and plates/utensil sellers, who used the refuse containers constituted 2.1% each, represented the smallest category of seller who dumped refuse in containers at vantage points in the market.

Also, regarding sellers who kept their refuse and sent it home for later disposal, fish sellers (canned/smoked/fresh fish sellers) constituted the greatest part; 5 (55.6%). Others

who did same were three (3) maize sellers representing (33.3%), and lastly, a spices seller representing 11.1%. The results are presented in Table 4.6.

Meanwhile, tomato sellers (tinned/fresh tomato sellers) represented the largest category of sellers who dumped their waste in the gutter/drainages (66.7%). Lime/lemon sellers represented the second largest category of sellers who dumped waste in gutters/drainages on the market (16.7%) whereas fish and spices sellers represent the least of sellers who dumped in gutters/drainages (8.3%). Table 4.6 gives the broad overview of the results.

Table 4.6: Category of sellers against practices of waste disposal

Category of sellers	Dumping in containers at vantage points		Keep the refuse and send it home for disposal		Dumping the refuse in the gutters/drainages	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
canned/smoked/fresh fish	5	10.6	5	55.6	1	8.3
tinned/fresh tomatoes	6	12.7	-	0.0	8	66.7
Spices	2	4.3	1	11.1	1	8.3
cooking oil	1	2.1	-	0.0	-	0.0
dried/fresh pepper	4	8.4	-	0.0	-	0.0
Rice	2	4.3	-	0.0	-	0.0
Plantain	3	6.4	-	0.0	-	0.0
Yam	2	4.3	-	0.0	-	0.0
Onion	3	6.4	-	0.0	-	0.0
Sugar	1	2.1	-	0.0	-	0.0
Gari	2	4.3	-	0.0	-	0.0
beans	3	6.4	-	0.0	-	0.0
lime/lemon	2	4.3	-	0.0	2	16.7
rubber bags	3	6.4	-	0.0	-	0.0
plates/utensils	1	2.1	-	0.0	-	0.0
Maize	2	4.3	3	33.3	-	0.0
Cassava	5	10.6	-	0.0	-	0.0
Total	47	100.0	9	100.0	12	100.0

Source: Field data, 2014

In an inquiry into why the sellers chose to dispose of refuse the way they did, a fish seller, aged 42, and trading on the market for 6 years, reasoned that, disposing waste into refuse containers in the market presented a safer option for her, and several other responses corroborated this view. She stated:

“I dispose refuse in the container here because that is the right way we have been provided to dispose our refuse. If I use that, nobody will come and give me trouble because it is the right way.”

Notably, another fish monger, aged 25 years, trading on the market for 2 years, and educated to secondary level, indicated that whiles she is on the market she owes an obligation to keep the market clean, and disposing waste in the container is one way to keep her obligation. She stated:

“In the market, I have to keep the place clean. If I put my waste in the container, it ensures that I keep the market clean so I do it that way so that I will help to keep the market clean.”

The response given by a cassava seller (aged 51 years, trading on the market for 17 years), which was corroborated by other respondents, brings a new insight to the findings. She argued, essentially, that if she pays tolls in the market for the upkeep and sanitation of the market, then there was no reason: a) for her not to use the refuse container provided the market for disposal of her waste and b) for her to worry about a different way to dispose her refuse. She stated:

“I pay tax to the local authority, and they have brought a big waste container to help us dispose our waste, why won't I use it? So I use it and this lessens my worry about how to dispose my waste.”

Meanwhile, on why they dispose of refuse in the gutter/drainage in the market, response seemed to suggest that some people who did that had good intentions. Notably, a fresh tomato seller, aged 47 years, and trading on the market for 8 years, indicated that she usually disposed of waste water away into the gutter and, sometimes, the water had seeds of tomatoes or waste tomatoes in it. It becomes extremely difficult to separate the solids from the liquid and usually, she pours everything out into the gutter, which for her, does not mean she had done anything wrong. For her, those who should take care of the gutters should be seen to be doing their work, which is not the case. Otherwise, everything would have been excellent with the gutters. She stated:

“I normally pour waste water out into the gutter. I find it very difficult to separate the seeds and the very soft part of the tomatoes that get into the waste water before I am able to dispose of the waste water. So I pour everything out into the gutter. I don't think there is anything wrong with that. Once a while, every gutter must be de-silted or drained when it is choked, and which is a whole job to be done by sanitation managers of the market. There would have been no problems at all with our gutters if those meant to take care of our gutters are doing their work as is supposed to be done.”

A comparison of data was made to find out whether occupants of market stalls, sellers operating in the open or petty traders and hawkers in/around the market were responsible for indiscriminate dumping or over generation of waste in the market area. The results, as illustrated in Table 4.7, show a significant trend where sellers operating in the open were seen as most responsible for indiscriminate dumping and over generation of waste in the market area.

Table 4.7: Poor sanitation practices in terms of traders' point of sale

Variables	Indiscriminate dumping of refuse		Over generation of waste	
	Frequency	Percent	Frequency	Percent
Occupants of market stalls	42	26.9	9	30.0
Sellers operating in the open	59	37.8	14	46.7
Petty traders/hawkers	55	35.3	7	23.3
Total	156	100.0	30	100.0

Source: Field data, 2014

Close attention was paid to the sellers to find out which category of sellers has had to grapple with the challenge of indiscriminate dumping at the market. The data presented in Figure 4.2 illustrates the categories of sellers and the rate at which they are perceived to indulge in indiscriminate dumping at the market. Overall perceived rate of indiscriminate dumping among the sellers is 7.48%. Sellers of rice/beans/maize, rubber/polythene bag, 'gari'/sugar, spices, and cooking oil were rated below 7.48%; an indication that they may not be responsible for the indiscriminate dumping of waste.

However, vegetable sellers rated the highest at 15.44% above the average rate. They may be seen as the category of traders mainly responsible for indiscriminate dumping. The

second and third responsible groups are sellers of ‘meat/fish’ and ‘yam/cassava/plantain’ rating 12.04% and 9.42% respectively. Yoghurt/ice cream sellers also rated above the average and represent a category that has had to deal with indiscriminate dumping.

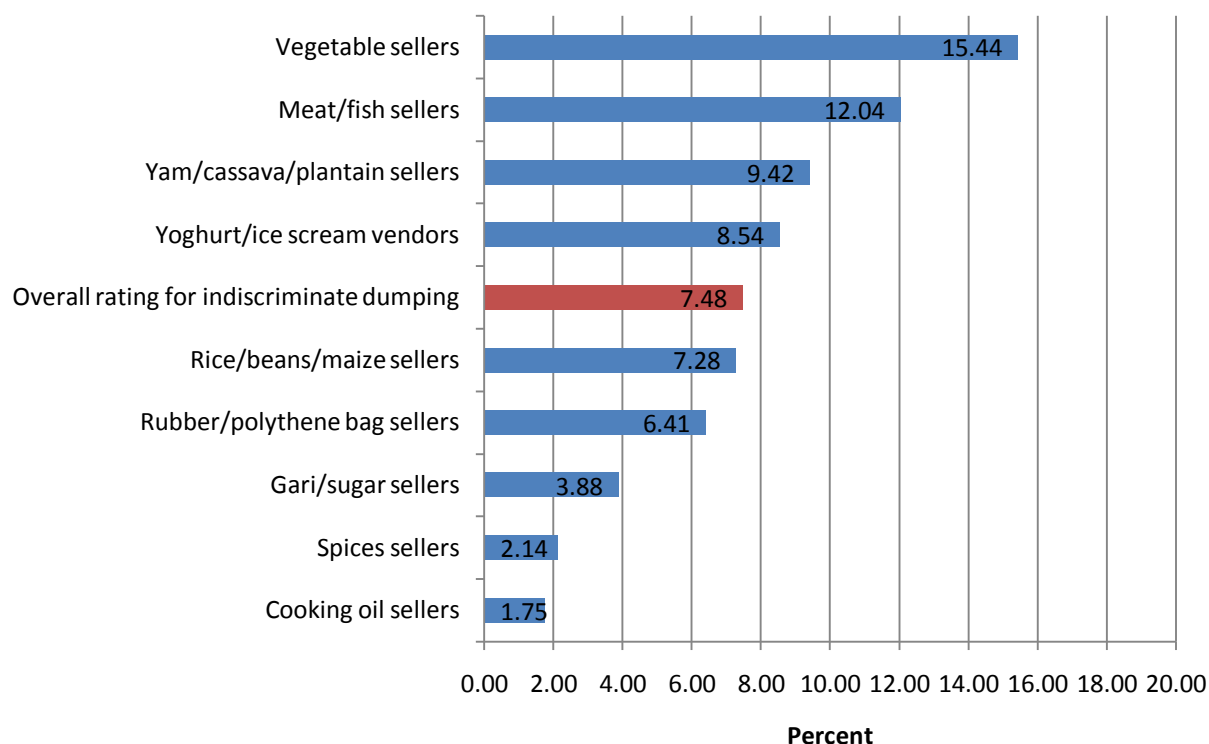


Figure 4.2: Category of traders responsible for indiscriminate dumping of waste

Source: Field data, 2014

4.3.3 Frequency of waste collection in the market

In furtherance of the practices of waste disposal in the market, data reveals that waste collectors (popularly referred to as “borler boys”) do collect waste from the market on daily basis as reported by 93% of the sellers in the study. Waste collection on the market by waste collectors, thus, appears a common practice in disposing of waste. Only 7% of the respondents claimed that waste is collected from the market some few times in a week, that is, not on daily basis as Figure 4.3 illustrates.

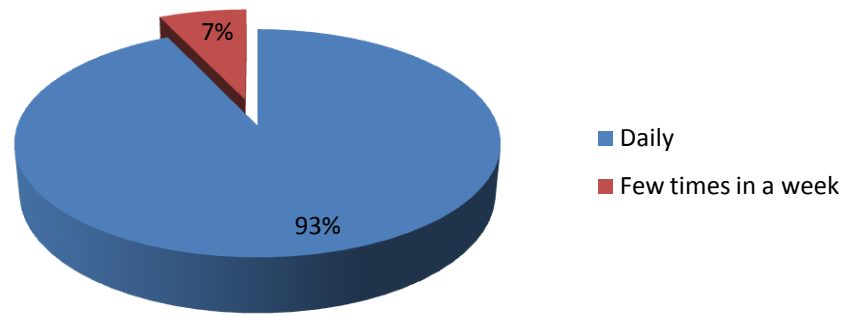


Figure 4.3: Frequency of waste collection in the New Town market

Source: Field data, 2014

Figure 4.4 presents respondents' opinions on performance of waste collectors operating in the market to show whether or not it is good.

From the respondents' ratings of the performance of waste collectors, it was revealed that majority (51.3%) of the respondents referred to the waste collectors' performance as "poor", and this was followed by 26.3% of respondents who rated it to be "very poor". Only 14.1% of the respondents rated the waste collectors' performance as "good". Yet again, only 8.3% considered the performance of the waste collectors as "very good".

These findings call for more effort to enhance the inputs of TMA and augment the efficiency and effectiveness of waste collection agents as they are being considered to lack the level of performance required for sanitation to be properly dealt with in the market space.

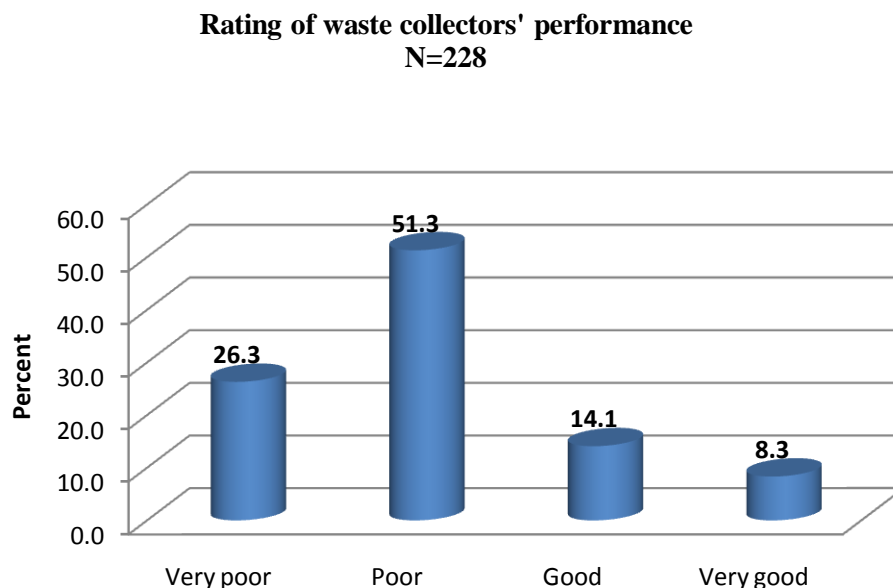


Figure 4.4: Proper sanitation and performance of waste collectors

Source: Field data, 2014

4.3.4 Assessment of the drainage system by sellers

Consequently, the sellers were made to assess, in general, the current situation of drainage system in the market using a situation rating scale anchored on: very good, good, normal, bad, and very bad. In their responses, it was recorded that majority of the sampled sellers; 43 (41.8%), considered the drainage system to be in a “very bad” state. This was followed by those who considered the drainage system at the market to be in a “bad state”; 31 (30.1%), while 20 (19.4%) respondents observed that it is in a “normal state”. Only 9 (8.7%) of the respondents described the drainage system in the market as “good”. These results, on the whole, point to the view that the drainage condition in the market, far from good, is unfitting with none of the sellers showing that it was ‘very

good'. See in Figure 4.5 the graphical presentation on ratings of drainage system in the market.

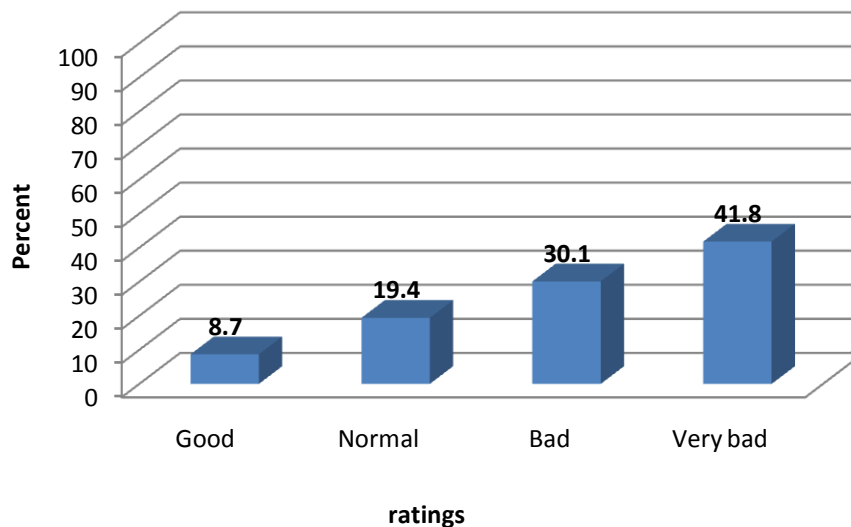


Figure 4.5: Ratings of current situation of drainage system in New Town market

Source: Field data, 2014

This finding brings into mind the consequential aspect of dumping refuse in gutters and drainages which emerged in the previous findings as perpetrated by some sellers in waste disposal in the market. Poor drainage system occurs concomitantly with choking of gutters. This, therefore, strengthens the view that dumping of refuse into gutters and drainages, giving birth to choked gutters, is sufficient to bring about poor drainage system. The findings concerning the bad state of drainage system in the market appears to be the outcome so far as sellers dump refuse in gutters.

From an individual observation conducted by the researcher, the study verifies that there were gutters or drains to convey waste water away from the market. Apart from gutters with concreted walls and around stores or cement block buildings in the market, the

gutters either had small width or were shallow-dug trenches with few incidences of truncated gutters. The significant aspect of this observation was that, some gutters were choked with a mixture of waste water, debris and silt. Plate 3 presents a picture of a section of the drainage system around the market which highlights the latter finding.



Plate 3: A section of the drainage system around the market

Source: Field data, 2014

4.3.5 Availability of toilet facility at the market

An important aspect of sanitation is the availability of toilet facility which serves to significantly reduce disease causing vectors. Figure 4.6 presents the percentages regarding access to washroom at the market by the sellers in the market.

About six in ten (63%) of the sellers disclosed that they have no access to washroom facility while in the market. It may be rightly recounted here that, access to washrooms may concern a number of issues. Proximity, structure and convenience are some of those

issues. And in Ghana, quite normally, public spaces which do not have toilet facility provided by government are taken advantage of by private people. Private people establish and run toilet facility with the view to raise revenue by levying a fee per use. This fee is sometimes costly to ordinary people and hence limits access to the facility. A notable aspect of follow-up responses obtained from the remaining 37% who reported they have access to washrooms is that the facility is in a deplorable state and located a little far away from the central market place. The finding suggests that access to washroom facility poses a challenge to many sellers.

Do you have access to washrooms?

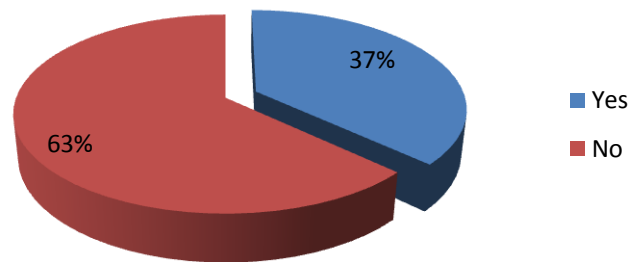


Figure 4.6: Access to washrooms at the market

Source: Field data, 2014

An observation conducted by the researcher regarding washrooms in the market verifies that there was only one washroom located in a corner of the market area. The washroom was made partly of cement wall and wood, with compartments distributed by gender. In each compartment were a urinal and three lavatory units fixed with a semi-functional water closet. In ten (10) minutes, six (6) people; four (4) females and two (2) males

accessed the washroom. It was quite clear that one washroom is not adequate to serve the population in the market.

4.4 Sellers' view of major sanitation problem in the market

When asked to indicate what is/are the major sanitation problem(s) faced at the market, the sellers showed that refuse bins together with the activity of waste collectors were not in adequate supply. The absence of refuse bins and waste collectors, polling the highest percentage of 82.3%, emerged the major sanitation challenge. So, though refuse containers and waste management personnel were relied heavily upon, provision of these support systems can be inferred to be woefully inadequate. Following suite was the problem of indiscriminate dumping of refuse attracting a percentage of 71.8%, while lack of washrooms within the market area was also a challenge to more than half (55.8%) of the sellers. Unwillingness to pay for cost of waste generated, excessive generation of waste, and poor drainage system, respectively, were relatively least problematic.

It is clear that the most common challenge of sanitation at the market is how to dispose of generated waste. This is evidenced by the fact that absence of bins and waste collectors and indiscriminate dumping coupled with the lack or inadequacy of washrooms are serious sanitation problems. By inference, the reason poor drainage systems can be seen as a mild problem in the market space is that it is a problem which derives from, and is exacerbated by, the indiscriminate dumping of waste in gutters and drainages. But indiscriminate dumping is erroneously a convenience-seeking approach to waste disposal, especially, when there is lack of proper waste disposal avenues such as refuse bins or the services of waste collectors. Upon gathering waste, people are compelled to find ways and means to dispose of it, and dumping in gutters and drainages results. The problem of

poor drainage systems in the market may be thought to derive from indiscriminate disposal of refuse which tends to make the former less superimposing than the absence of refuse bins and waste collectors in an attempt to seek remedy. Table 4.8 presents a tabulated view of the results on the major sanitation problems in the market space.

Table 4.8: Sanitation problems in the market

Sanitation problems	Frequency	Percentage of cases
Poor drainage system	45	46.4
Absence of bins and waste collectors	80	82.3
Lack of washrooms within the market area	54	55.8
Indiscriminate dumping of refuse	74	71.8
Excessive generation of waste	42	40.8
Unwillingness to pay for cost of collecting generated waste	31	30.1

Note: Sum of percentages exceeds 100% due to multiple responses

Source: Field data, 2014

In the observation conducted by the researcher, the issue of indiscriminate dumping is verified by the fact that drops of polythene bags, rubber bags and paper waste on the ground and in the aisles were seen. Close to two refuse containers that can be found in the market area, there were organic and inorganic waste litters that hints of an inadequacy in supply of waste containers. Plate 4 presents a scene of how this situation looks like in the market.



Plate 4: Communal refuse containers and refuse disposal at the market

Source: Field data, 2014

The sellers were, subsequently, asked to think through the sanitation situation at the market and evaluate it over the past one year to show what condition best describes the current sanitation situation. As the results in Table 4.9 show, 46 (47.4%) sellers viewed the sanitation condition at the market to have been in the same status over a year ago – sanitation remains the same. Twenty-six sellers, representing 26.8% considered sanitation to have worsened over the past one year while 25 sellers, representing 25.8% considered it to have seen improvement over the one year period.

The results draw more closely to the view that no significant measures have been taken to remedy defective sanitation conditions at the market and if any such measure has been taken, it has not yielded positive and obvious results that are perceivable to majority of the sellers.

Table 4.9: Progress in sanitation

Progress	Frequency	Percent
Improving	25	25.8
Remains the same	46	47.4
Worsening	26	26.8
Total	97	100.0

Source: Field data, 2014

4.5 The effect of sanitation on sellers

To investigate the effect of sanitary conditions at the market on trading activities and economic welfare of traders, the sellers were asked to indicate how poor drainage system at the market affects their trading activities.

Notable aspects of the responses obtained from the sellers fundamentally emphasized the fact that the drains get choked resulting in debris accumulation and repugnant odour at different sections of the market. Also, when this happens, buyers hesitate, if they are not precluded, to obtain commodities from the affected sections.

The inconvenience and discomfort made it extremely difficult for many buyers to obtain commodities from the market, especially, in times of rain. Those who would not compromise their health concerns hasten to obtain their commodities from other markets that are comparatively better.

All the sellers in this study, however, unanimously conceived of the fact that poor drainage systems at the market caused an unfriendly atmosphere to both customers and suppliers and often times served as hindrance to customers coming to the market.

Additionally, it was their remarkably considered opinion that poor drainage systems at the market drives away potential customers to other competing markets – a view representing 60.3% of the response set obtained from the sellers as can be referred from Table 4.10. Also, constant flooding at the market during raining season poses a challenge with this view weighing more than half (57.5%) of the response set obtained.

Table 4.10: Ways in which poor drainage at the market affects trading activities

*Views of the sellers at the Market	Percent of Cases
By driving potential customers away to other markets	60.3%
Causes flood in the market during raining season	57.5%
Creates an atmosphere not conducive for both customers and traders	100.0%

(*) *Multiple Response*

Source: Field data, 2014

Putting these views in the detailed perspectives of the sellers, the study revealed that poor drainage affects patronage and potential customers are compelled to divert because of repugnant smell and flooding with a small amount of rain. One respondent, for example, emphasized that:

“The poor drainage system affects our trading by driving away potential customers, who otherwise would have traded from our market, to other sister markets which have better sanitation conditions thereby reducing our expected sales.”

Another respondent echoed the point that:

“Constant [persistent] flooding during rainy season prevents both sellers and buyers from engaging in trading. And there is not conducive

atmosphere for trading; bad odour and filthy surroundings are ways in which poor drainage at the market affect trading activities.”

Furthermore, an enquiry by the researcher into the effect of poor sanitation on trading activities led to an investigation into how the absence of washrooms affects trading activities in the market from the perspective of the sellers.

Expressed numerically, 68 (66%) of the sellers in the study identified economic time wastage in visiting washrooms outside the market space. Twenty-four respondents (23.3%) observed that absence of washrooms and toilet facilities has predisposed the market as unfriendly to buyers or customers and, therefore, sub-consciously driving them away to other competing markets resulting in the reduction in expected sales.

A small portion of the sellers; 11 (10.7%), disclosed the fact that the absence of washroom causes hygienic challenges. When care is not taken hygienic challenges could degenerate into sicknesses, thereby preventing the traders from undertaking brisk businesses to develop their economic livelihoods. Some hygienic challenges mentioned by some respondents include an overwhelming unscrupulous urination in the market corners, open defecation and repugnant odour. See an overview of the results in Table 4.11.

Table 4.11: How the absence of washroom facilities affect trading activities

Variable	Freq.	Percent
By driving potential customers away to other markets	24	23.3
Waste of huge economic-time to visit washrooms outside the market	68	66.0
Causes hygienic challenges to the people in the market	11	10.7
Total	103	100.0

Source: Field data, 2014

In corroboration with the findings above, a rice vendor indicated that, the absence of washrooms at the market drives potential customers to other competing sister markets who have such facilities, consequently, making trading activity in those markets comparatively more rigorous. Again, there is wasting of time due to the fact that when market participant want to use toilet facilities, they have had to travel some distance away from the market space because there is only one facility that serves the market and, sometimes, it is very uncomfortable to join long queues. Amidst the inconvenience and discomfort that this brings, there is loss of time which could have been put into trading and money generation.

Respondents were asked to share their thoughts on the validity of the statement that “traders’ surrounding conditions affect their sales”. On this instance, majority of the sellers (82%) admitted that, individual traders’ surrounding conditions promote or reduce their sales. On the other hand there were some 18% of the respondents who denied that surrounding condition has any significant consequences on sales. Figure 4.7 presents a graphical view of the finding.

Do traders' surrounding conditions affect sales?
N=103

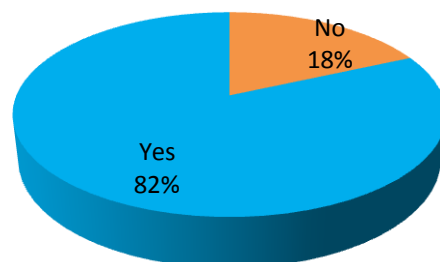


Figure 4.7: Effect of surrounding conditions on sales

Source: Field data, 2014

However, from Figure 4.8, it can be noted that majority of the sellers (66%) reported that they have been attacked by hygiene-related diseases within the past year. They indicated that those instances affected their trading activities by preventing them from going to the market or missing some hours of trading in order to attend treatment. The hygiene-related diseases mentioned were “malaria” and “stomach-ache”.

Attacked by hygiene-related diseases within the past year?
N=103

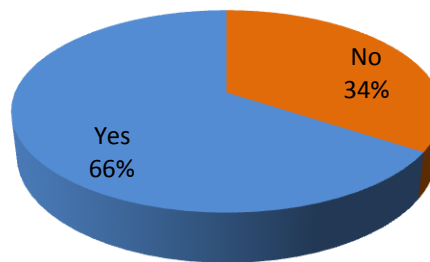


Figure 4. 8: Hygiene-related disease contraction

Source: Field data, 2014

The market leaders, in the focus group discussions, admitted that poor sanitation at the market has a great deal of negative consequences on their business activities. They noted that many potential buyers in the community either go to super markets or visit other local markets situated at distant locations believed to have better sanitation conditions. In their view, sometimes this happens irrespective of whether buying from the Tema New Town market is economically wise or cost effective. Thus poor sanitation at the Tema New Town market causes sellers to lose their revenue and consequently reduce their income or profits. It was also noted that poor sanitation at the market does not create an

atmosphere conducive for the market women to operate in and many a times this results in various kinds of sanitation-related diseases attacking them, thereby spending economic time and huge sums of money on treatment.

4.6 Steps toward solving the sanitation challenge

The market leaders explained that as the leadership of the market, they are doing their best to find lasting solution to end the problem and indicated that they have been organizing series of clean up exercises. They noted however that, the clean-up exercises cannot be enough and they cannot do it alone considering the magnitude of the problem. Therefore, they called on the Metropolitan Assembly, concerned government agencies, NGOs and other interested groups to come on board in finding solution to the problem.

CHAPTER FIVE

WASTE MANAGEMENT FROM THE PERSPECTIVE OF BUYERS

5.1 Introduction

This chapter interrogates the issues of sanitation of the New Town Market from the perspective of buyers. The issues include the current sanitation situation at the market, the methods of waste disposal in the market. Preceding this is a presentation of the demographic characteristics of the buyers engaged in the study.

5.2 Demographic characteristics of the buyers

A total of 125 buyers participated in the study. The demographic characteristics of the buyers solicited include their gender and age distribution, period of activity on the market, and their educational levels.

Distribution of the sellers by gender

Majority of the buyers who willingly accepted to take part in this study were females; 107 (85.6%), whereas males constituted a very small fraction; 18 (14.4%). The results give the impression that females are predominant participants of buyers in the Tema New Town Market. This finding is almost parallel with that of the sellers which, altogether, confirms the convention in Ghana that, the local marketplace is predominantly run by women. Table 5.1 presents the results.

Table 5.1: Gender distribution of the buyers

Gender	Frequency	Percent
Female	107	85.6
Male	18	14.4
Total	125	100.0

Source: Field data, 2014

Distribution of the buyers by age

Table 5.2 shows that a number of the buyers; 6(4.8%) were below 18 years. This was different from that of the sellers who had none below that age. Unlike the sellers whose number increased as age increased, the buyers were dominated by young people mostly aged between 18 and 29 (37.6%). Those aged 30 to 39 constituted 32.8%, whereas 40 to 49 represented 15.2% and those 50 years and above made up only 9.6% of the respondents.

The findings notably show that, whereas the elderly engaged more in selling, several young folks (especially, between 18 and 29 years) trooped the market to purchase items.

Table 5.2: Distribution of the buyers by age

Age (years)	Frequency	Percent
Below 18	6	4.8
18-29	47	37.6
30-39	41	32.8
40-49	19	15.2
50 and above	12	9.6
Total	125	100.0

Source: Field data, 2014

Period of activity on the market by the buyers

Majority of the buyers; 51 (43.6%) had traded in the market for fewer years ranging from 1 to 3 years. This was not similar to that of the sellers who had most of them engaging in trading for 6 years or more. This is an indication that the activities of buyers on the market are relatively temporary as compared to sellers. As far as these buyers are concerned, the appropriateness of relatively temporary sanitation management measures, or immediate importance of sanitation controls on the market would be very important.

Table 5.3 presents the results.

Table 5.3: Years of trading in the New Town Market by buyers

Years of trading	Frequency	Percent
< 1 year	5	4.3
1-3 years	51	43.6
4-6 years	39	33.3
> 6 years	22	18.8
Total	117	100.0

Source: Field data, 2014

Educational Levels of market participants

Majority of the buyers, 52 (44.8%), had a secondary education. A notable percentage of the buyers (17.2%) had a tertiary or a higher education putting them ahead of the sellers in terms of educational levels. The buyers had only 6.9% of them with no formal education. Educational level was, thus, lower among the sellers than the buyers. Table 5.4 presents a detailed tabulation of the results.

Table 5.4: Educational background of market participants

Educational background	Frequency	Percent
No formal education at all	8	6.9
Basic education	27	23.3
Secondary education	52	44.8
Tertiary/Higher education	29	25.0
Total	116	100.0

Source: Field data, 2014

5.3 The sanitation situation at the market

On the current sanitation situation at the Tema New Town market, assessment was made from responses of buyers who participated in this study. The buyers' perspectives on various market sanitation issues were ranked using the scale: 1 – Strongly disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, and 5 – Strongly Agree. There were 5 statements

concerning the sanitation condition at the market which the buyers had to agree or disagree with. Strong agreements to the statements indicate that the buyers approve of the sanitation conditions in the market whereas strong disagreements indicate the otherwise.

In general, the buyers in the study had neutral feelings about the current sanitation condition at the New Town market. In Table 4.5, an overall ranking of 2.6 (close to 3 – Neutral) obtained for the current sanitation condition in the market sends the signal that the buyers had a moderate regard for sanitation at the market. In other words, sanitation has neither been too good nor too bad. The buyers in the study were close to accepting the fact that there are observable hints of conscious attempt to keep the market sanitized – the buyers seemed to agree (3.6 – close to Agree) with the view that one can observe a conscious attempt to keep the market sanitized. Meanwhile, they had moderate regards (3.2 – close to Neutral) for the fact that sheds and stores in the market were always kept free of filth.

The buyers disagreed with views that unused polythene bags, water sachet and food wastes are barely found on the ground; that the aisles in the market are usually not littered with filth; and that the market's sanitation is environmentally friendly. The buyers shared most similar opinions about the view that the aisles in the market are usually littered with filth (due to the lowest standard deviation of 0.81).

The results show that though there are some attempts to keep the market clean, it has not met the standard of making the traders feel welcome or even freed the market aisles from litter. The details are presented in Table 5.5.

Table 5.5: Current sanitation conditions at the Tema New Town Market

Current sanitation conditions at the market	N	Mean on scale 1-5	Standard Dev.
The market's sanitation is environmentally friendly	124	2.3	1.10
The aisles in the market are usually not littered with filth	123	2.1	0.81
Unused polythene bags, water sachet and food wastes are barely found on the ground	125	2.0	1.15
The sheds and stores in the market are always kept free of filth	123	3.2	0.96
One can observe that there is conscious attempt to keep the market sanitized	125	3.6	1.18
Overall		2.6	1.0

Source: Field data, 2014

An enquiry into the avenues for waste management and disposal in the market from buyer perspective similarly employed a 5-point approval response format for 5 statements. Agreements or disagreements with statements show how acceptable or unacceptable the buyers consider waste management practices and waste disposal avenues in the market.

As shown in Table 5.6, the buyers 'disagree' (mean = 1.9) with the fact that there are visible refuse bins at vantage points in the market. They also 'disagree' (mean = 2.4 – close to disagree) with the view that it is less strenuous for buyers to dispose of their waste using appropriate means while on the market. These positions suggest that refuse bins are far from being visible in the market to encourage their usage. That being so, it follows that it would be more difficult for the people to dispose of their waste through appropriate means in the market.

As can be read from Table 5.6, the buyers had only a moderate regard for the fact that refuse gathered or collected at different points in the market are disposed of timely, and that, waste containers in the market are often emptied to prevent spillovers (means approximately 3).

Meanwhile, it seems that waste management services' activities have been conspicuous since the buyers most strongly agree with the view that waste management services can be seen working around the clock to sanitize the market (mean = 3.8, approximately 4). The overall rating of 2.8 (approximately 3 on a maximum scale of 5) shown in Table 5.6, paints the picture that the buyers see a moderate usage of best waste management and disposal practices in the market.

Table 5.6: Avenues for waste management and disposal

Avenues for waste management and disposal	N	Mean on scale 1-5	Standard Dev.
There are visible refuse bins at vantage points around the market square	122	1.9	0.81
Refuse gathered or collected at different points in the market are disposed of timely	125	2.7	0.41
It is less strenuous for buyers to dispose of their waste using appropriate means while on the market	121	2.4	1.21
Waste containers in the market are often emptied to prevent spill over	124	3.1	0.81
Waste management services can be seen working around the clock to sanitize the market	124	3.8	0.41
Overall		2.8	0.7

Source: Field data, 2014

Access to washroom facility was necessary to understand the sanitation condition at the market. About nine in ten (90%) of the buyers claimed that they have no access to washroom facility while in the market. Particularly, this claim must be cogent when there are no clues to identify a washroom on the market. Several buyers would use other means when they have need of a washroom. Only 10% of the buyers felt they had access to washroom facility as is illustrated in Figure 5.1.

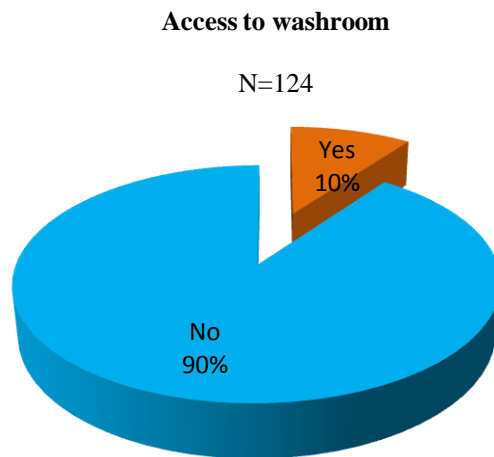


Figure 5.1: Access to washroom facility on the market

Source: Field data, 2014

5.4 Sanitation problems at the market

In the perspective of the buyer in the study, the areas that posed problems for sanitation in the Tema New Town Market notably identifies with the list in Table 5.7.

The issue of indiscriminate dumping of refuse, to majority of the buyers (74.4%), posed the main problem for sanitation in the market. The problem of poor drainage system was identified as the next sanitation problem in the market to 61.6% of the buyers. In addition to absences of bins and waste collectors, indicated by 52.8% of the buyers, the three major sanitation problems confronting the market from the perspective of the buyers are:

indiscriminate dumping, poor drainage, and absence of bins and waste collectors respectively.

Table 5.7: Major sanitation problems facing the market

Sanitation problems	Frequency	Percentage of cases
Poor drainage system	77	61.6
Absence of bins and waste collectors	66	52.8
Lack of washrooms within the market area	45	36.0
Indiscriminate dumping of refuse	93	74.4
Excessive generation of waste	33	26.4
Unwillingness to pay for cost of collecting generated waste	24	19.2

Source: Field data, 2014

The notion of indiscriminate dumping seems to be informed by incidences such as is depicted in Plate 5 where litters are found on the floors of the market and around the market.



Plate 5: A scene depicting indiscriminate dumping at the market

Source: Field data, 2014

5.5 Effect of poor sanitation on buyers

From the perspective of the buyers in this study, it was gleaned from data obtained that notably, the buyers have ever been distracted from the market by a number of considerations beginning with health risks on the market (93.6%), followed by uncleanness in the market (76.8%), lack of comfort (73.6%), overcrowding (60.8%) and poor drainage and muddy market floors in the Tema New Town market (51.2%). Figure 5.2 presents the graphical view of the findings.

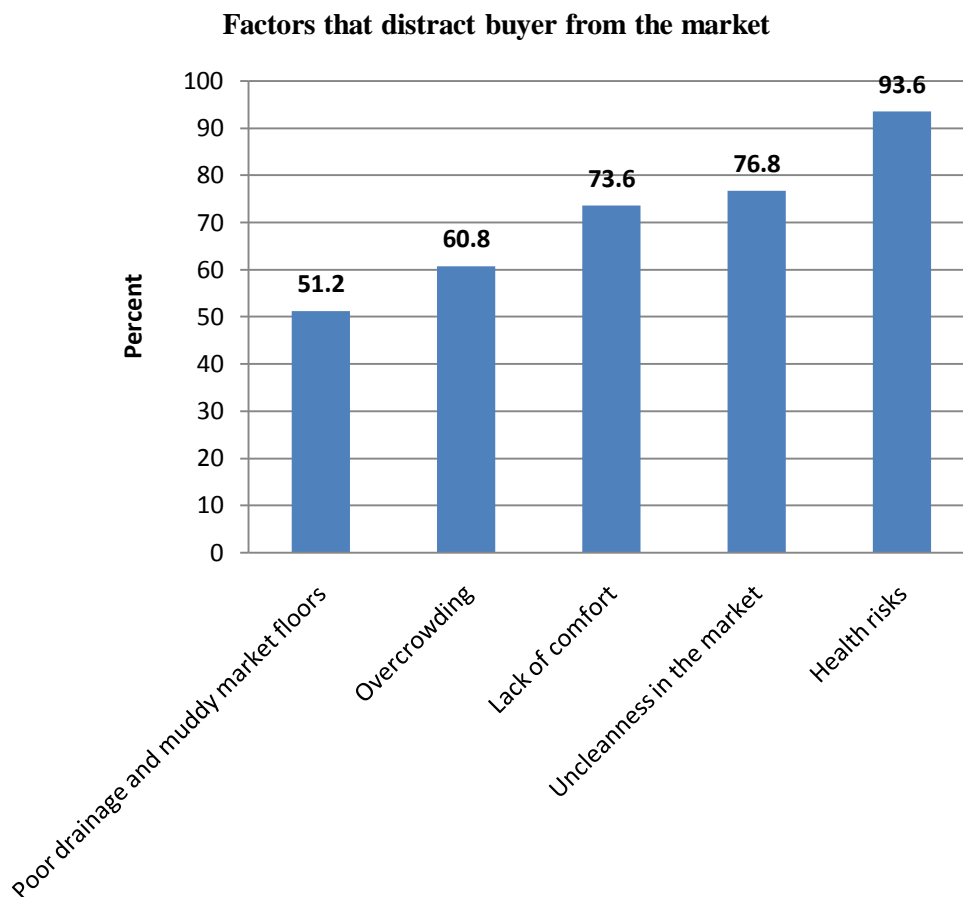


Figure 5.2: Factors that distract buyers from the market

Source: Field data, 2014

When asked what kinds of health risks there are that make them cautious or avoid going to the market, majority of the buyers (74.4%) mentioned “cholera”. About six in ten mentioned “malaria” (56.8%) whereas “food poisoning” was stated by 17.6%. A few respondents (10.4%) were cautious of “typhoid fever”. It is interesting to note that some of the buyers were weary of two or more of these health concerns.

Generally, the health risk making buyers avoid accessing the market rated at an average of 39.8%. Cholera and malaria fell high above the average health risk of 39.8%. This

makes the risk of cholera or malaria to strongly dissuade buyers from patronizing the market for fear of being infected with them. Figure 5.3 paints the picture of the findings.

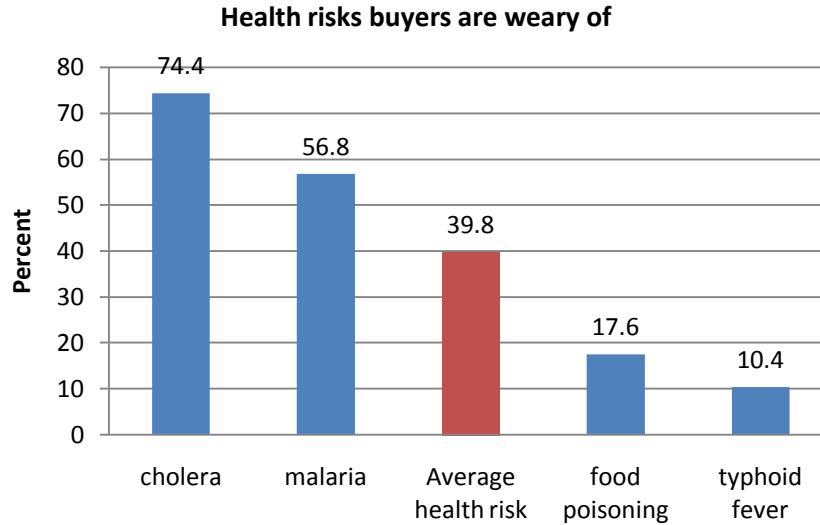


Figure 5.3: Health risks to buyers

Source: Field data, 2014

The fact that the market usually holds stocks of assorted commodities, however, emerged the pulling factor that attracts the buyers. Specifically, most of the buyers; 97 (79.5%), patronized the market because of the availability of commodities in the market, as against 16 (13.1%) and 9 (7.4%) who indicated congenial marketing space and well sanitized environment, respectively, attracted them to the market. Figure 5.4 gives a graphical presentation of the findings.

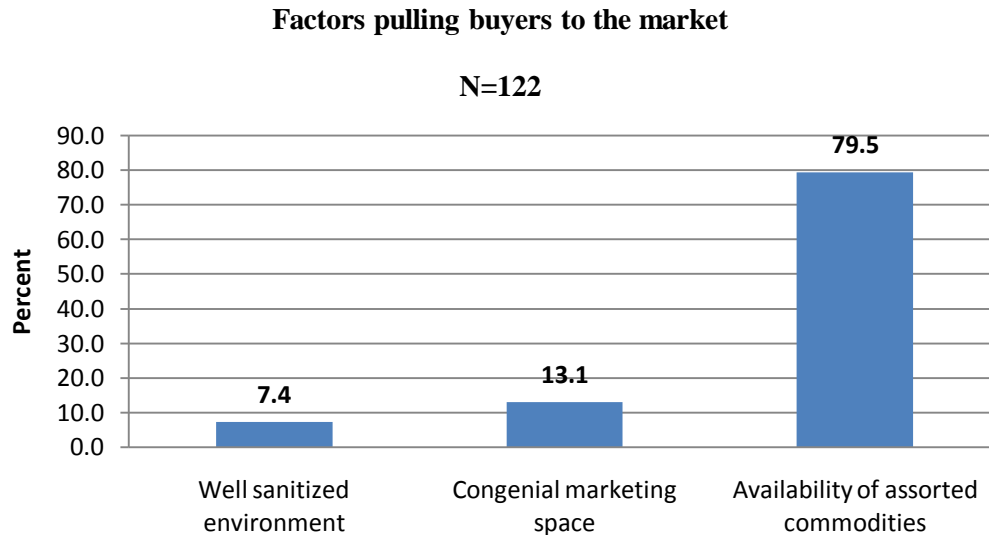


Figure 5.4: Factors pulling buyers to the market

Source: Field data, 2014

These findings show that the buyers are attracted to the Tema New Town market not so much by any good sanitary conditions but by the fact that assorted commodities that meet varied customer demands were available in the market. Sanitary condition of the market is, therefore, not a thing that can be said to induce customer patronage of the market.

From previous findings, the sanitary condition of the Tema New Town market rather distracts buyers from patronizing the market. The frequency of patronage made by the buyers to the Tema New Town market was constructed using a months' patronage pattern wherein patronage over 'every market opening day' was regarded as 'Very Frequent', patronage from 4 to 6 days a month was regarded as 'Frequent', patronage for 3 days in a month was considered 'Moderate', patronage for 2 days in a month was seen as 'Infrequent', and patronage once in a month was counted as 'Very Infrequent'.

Results showed that, averagely, majority of the buyers patronized the market frequently (38.5%). This implies that they patronized the market from about 4 to 6 days in a month. This was followed by 17.2% of the buyers who patronized the market moderately, implying that they did so for 3 days monthly whereas 31.2% showed that they patronized very frequently, suggesting that they did so every other market opening day. The rest of the buyers are distributed over those who patronized the market infrequently (9%) and those who did that very infrequently (4.1%). As illustrated in Figure 5.5, the results are skewed toward the right giving indication that more of the buyers patronized the market frequently than those who did that infrequently.

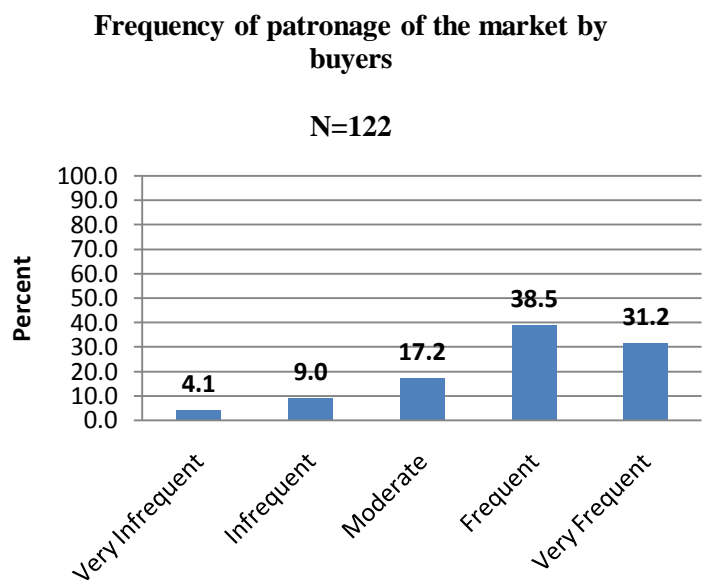


Figure 5.5: Frequency of patronage of the market by buyers

Source: Field data, 2014

In order to explore the effect of sanitary condition of the Tema New Town market on the extent of patronage of buyers, the Pearson’s correlation analysis was conducted between frequency of patronage and perspectives on sanitation conditions at the market. The study

found there exist a strong positive correlation between the perspectives on sanitary condition in Tema New Town market and the extent to which the buyers patronized the market ($r=0.74$ and $p<0.05$). This implies that the condition of sanitation in recent times can be found to be positively correlated with the extent to which buyers patronized the market. Narrowing further down, the result shows that at any given point that sanitary condition retrogressed; patronage of the market by the buyers experienced a proportionate decrease about the same point in time. Table 5.8 presents the mean (on a maximum scale of 5) and standard deviation indicating the condition of sanitation at the market and level of patronage with their correlation statistics.

Table 5.8: Correlation between sanitation and patronage of the market

Items	Mean	S.D.	Pearson's Correlation (r)	Sig. (p)
Current sanitation condition	2.6	1.04	0.74	0.02*
Buyers' patronage of the market	4.4	0.91		

* Note: Significant at $p<0.05$

Source: Field data, 2014

The findings above give the impression that sanitation has a significant influence on the level of patronage of buyers. This implies that but for the sanitation challenges besieging the market, more of the buyers would be attracted to the market. In other words, patronage of the market would have been significantly enhanced had there been well-improved sanitation conditions in the market. Specifically, there have been problems of inadequate provision of refuse containers leading to indiscriminate disposal of refuse, apathy on the part of waste management agencies, absence of washroom and toilet

facilities, lack of funds for effective management of waste, poor drainage, and health risks. All these together, culminated into a generally low regard for sanitation of the market and posed significant problems for patronage of the market. Otherwise, in addition to availability of assorted commodities, a well-sanitized market would have attracted far greater number of buyers on a more regular basis.

CHAPTER SIX

WASTE MANAGEMENT FROM THE PERSPECTIVE OF WASTE

GOVERNANCE INSTITUTION

6.1 Introduction

This part of the chapter presents the qualitative data elicited from a total of ten (10) respondents through interviews conducted by the researcher. For in-depth understanding of the sanitation issue at the market, the respondents, comprising the Head of Waste Management Department under the Tema Metropolitan Assembly (TMA), the Tema East Sub-Metro Director and a key market leader, were purposively selected for interview. The interview report has been organized under the following headlines: management of waste in Tema New Town, sanitation situation at the Tema New Town market, its effects on economic activity, and the way forward.

6.2 Management of waste in Tema New Town market

Insight into the way in which waste is disposed within the Tema Metropolis is obtained from the in-depth interview of the Head of Waste Management Department under the TMA as follows:

“In principle, waste management encompasses all the activities involved in handling waste – from gathering, aggregating, collecting, down to the final disposal action. ...every zone is given to a contractor to take care of and the assembly supervises and monitors their activities to ensure that they perform creditably in line with standards agreed upon between them and the Assembly. The service providers provide logistics to store waste,

collect, and transport the waste to the landfill site (an engineered site designed and constructed for purposes of waste disposal). The assembly has again contracted a service provider who is managing the operation of the site, in the sense that the service provider has the logistics to spread, compact and cover the waste.”

According to the Tema East Sub-Metro Director,

“Waste management in the metropolis is administered by the local authority, that is, the TMA. The TMA contracts several waste management services as they have the capacity to do the work since TMA alone could not do all the work. TMA facilitates the operations of the waste contractors who are tasked to gather and move waste away from the city to the landfill site for disposal.”

The market leader gave his rendition of how waste is disposed within the market in the following:

“The market is swept clean and tidied by traders and some waste management services such as the Zoomlion and some other private agencies. Rubbish is supposed to be dumped into big waste containers that are provided in the market by TMA. Though some people have hired private agencies who dispose of their rubbish, the TMA provides the facilities and equipments to transport rubbish in the large containers away from the market area for disposal.”

In responding to a question regarding the condition of the drainage system in the metropolis or the Tema New Town market, the responses tended to paint the picture that the drainage system was not the best that can be expected. The Head of Waste Management Department under the TMA threw light on the facts of the case saying:

“In general, drainage within the metropolis is working well. The New Town drainage system relies on a ‘sewer’ [a network of sewage systems] which drains waste water. Except for small drains that are not linked to the sewer, the sewer generally works well. The main problem is the indiscriminate dumping of solid waste into the drains. This has made some parts of the sewer choked resulting in incidences of backflow and spillover.”

The Tema East Sub-Metro director spoke about condition of drainage in the metropolis in the following terms:

“I cannot describe the condition of drainage system in the metropolis as excellent because of the attitude of some people. I mean they dump rubbish anywhere; they choke the drainage system with rubbish making it impossible for waste water to flow away in certain areas of the metropolis.”

The market leader also mentioned:

“The condition of drainage system in the market is not the best. Some sections of the market do not have well-laid gutters or they are too small to accommodate liquid waste. Due to inability to de-silt the gutters

coupled with indiscriminate dumping in the gutters some sections of the market experience choked gutters impeding the smooth functioning of the drainage system.”

In responding to a question on how often waste is collected from the Tema New Town market, except the challenge with waste collection practices mentioned by the market leader, there seem to be a general view among the authorities that waste collection was being managed well.

The Head of Waste Management Department of TMA thought:

“Waste is collected in the market on regular basis. The Assembly has contracted waste management agencies which are accountable to the assembly what they do concerning waste collection. Waste management is a general problem all over the country and the Tema metropolis, as well as Tema New Town market, is no exception. Though the Metropolitan Assembly is currently on track, doing all it can to have the situation improved, so there is room for improvement. The Assembly is engaging stakeholders, waste collection agencies, and individuals to create interests in proper waste management.”

6.3 The sanitation situation at Tema New Town market and effect on economic activity

Looking specifically at the New Town market centre, all the respondents appeared to converge on the fact that the Tema Metropolitan Assembly (TMA) has a parent responsibility for the collection of waste at designated points within the market. And in

joint effort with the service providers, waste containers are emptied by the service providers responsible for the management of waste in the said area. The Head of Waste Management Department of TMA said:

“The TMA is held responsible to ensure sanitation of the market. It also enforces laws on sanitation to ensure that individual marketers observe some level of sanity in the market. The TMA has sub-divided the whole of Tema New Town into zones and the market is part of one zone which is given to a contractor to take care of its sanitation. The assembly facilitates procurement of logistics with which the sanitation agency operates.”

The market leader emphasized that:

“The Assembly has provided a container (communal container) at a designated point in the Tema New Town market where all waste is being deposited into. When the container is full, it is the responsibility of the service provider manning that area to lift the container to the landfill site for disposal.”

The respondents lamented on current sanitation situation at the Tema New Town market as “not the best”, put in the plain words of one respondent (the market leader). The respondent noted that:

“The market has its own share of problems with waste collection and disposal. Sometimes waste gather could be kept for long days before waste collectors would come to salvage the situation. Refuse containers experience spillovers and it is as if moneys collected for the proper

administration of the market is not being used for that purpose. The market centre, sometimes, gets flooded to the extent that entry and exit points of the market get blocked preventing free flow of trading activities.”

“...in the market, there is a problem of inadequate washrooms. There is only one old washroom to serve the public, sellers and buyers and this poses strong sanitation challenge.”

“...the problem with drainage system is great because a larger part of the market is not floored with concrete. The bare ground is always at the mercy of flood in times of rain. Besides, there are no well-laid gutters at some of these areas. The good gutters have too many rubbish in them and it is choking the drainage and producing bad smell at some points in the market.”

The Head of Waste Management Department of TMA mentioned that there is problem with drainage system coupled with indiscriminate dumping within and around the market area:

“Poor drainage system and waste generated from trading activities which is dumped indiscriminately within and around the market centre throw a challenge to the assembly in its attempt to bring immaculate sanitation to the market... As far as sanitation is concerned, the major challenge to the Assembly is indiscriminate waste disposal which has become rampant within the market. Foreign materials are been dumped into the ‘Sewer’ [a

network of sewage systems] which impedes the flow of sewerage and in turn causes a back flow and finally spillover.”

This quickly introduces or lends support to an earlier finding that poor drainage system in the Tema New Town market is fuelled by incidence of inconsiderate or indiscriminate dumping of refuse into gutters and drains. In his view, the Head of Waste Management Department of TMA identified factors such as poor planning in putting up the market, unyielding behaviours and attitudes of market participants or the traders towards sanitation, and absence of enforcement of sanitation related policies, regulations and by-laws. He expressed it as follows:

“There is a big problem with the architecture of the market, I think the market was poorly planned and poorly built. Looking at the size of the market and the important place it occupies in the economic milieu within the metropolis, no one can convince me that there is nothing wrong with the architectural design of the market. Who can answer why there is no lavatory in the market to serve the market women and the general public who come there for varied activities? Again, looking at the drainage and the gutters, you could see they are too small than you would expect, and you will marvel whether they were made to serve the public or a household? In fact these things have significant importance in talking of the sanitation at the market centre.”

On behaviours and attitudes towards sanitation in the market, the Tema East-Sub Metro Director reasoned that:

“It is too common to see people dumping their refuse and unwanted remains into gutters and some unauthorized places other than into refuse bins provided and this attitude can be blamed on the market participants. The District Assembly also stands to blame because there is a too-lenient disposition from the Assembly’s taskforce to enforce by-laws. More so, the assembly is not seen to be active at implementing policies set to control negative behaviours and attitudes concerning sanitation.”

Finally, respondents were asked to share with the researcher how sanitation affects economic activities based on experience. The notable views that were gleaned from the response set indicate that the Ghanaian populace is becoming highly conscious of commodities they use. There is a general phenomenon ensuing which is that buyers buy not only because they are in need of a product.

One respondent (the market leader) raised the idea that, there is now a strong relationship between proper sanitation or adherence to hygienic standards and sales margins. More and more customers, like other rational humans, look out for neat environment from where to buy, especially, but not limited to, food items.

This assumes a direct positive correlation between purchase and cleanliness that goes to suggest that the well sanitized the merchandizing environment, the more likely it is to attract purchases, the higher the sales margin and the financially well levered the economic activity in question will be, culminating into an enhanced economic life of seller.

6.4 Problem areas

Poor sanitation in the market was thought to be due to the following factors:

1. Financial constraints;
2. Poor sanitation education to sensitize the traders on the need to keep proper sanitation;
3. Backward attitude towards sanitation and lack of collaboration among stakeholders to find a common workable solution to the sanitation challenge at the market.

Specifically, the most disturbing constraint emerged as the lack of funds or financial constraints on the side of the TMA to provide what is needed to ensure decent sanitation. Closely following that is the lack of sanitation education that helps to sensitize the traders on the need to keep proper sanitation whereas lack of unity and collaboration between stakeholders to identify common workable solution to the problem also poses vicious defect to sanitation.

6.5 The way forward

An insightful view toward curtailing the negative behaviours about sanitation mentioned by the Tema East Sub-Metro Director is that public education was very important to create awareness of the sanitation challenge and its effect on our environment. This idea was expressed in the following words:

“...public education to conscientiously improve the thinking of the market women on the need for proper sanitation has been a missing link, reducing the urge among the traders to adhere to proper sanitation keeping principles.”

Inquiring about how stakeholders have collaborated to find lasting solution to the sanitation problem within the market centre, there was the view that there exists a working collaboration among the Metropolitan Assembly, sanitation service providers, and some concerned residents aimed at working out ways to raise funds to improve sanitation in the area. The Tema East Sub-Metro Director revealed this in the following statement:

“The Assembly has collaborated with key stakeholders such as the sanitary control agencies and traders concerned, and has been seeking funds from the government to enhance the state of sanitation in the market centre. The Assembly is making effort to deepen this collaboration so that all stakeholders could come to consensus on how to raise funds to support sanitation. The Assembly is encouraging cleanup exercise and advocacy to make sanitation a matter of concern to all market women.”

He further notes that the Assembly has not achieved enough by way of actively involving traders in its many attempts to provide solution to sanitation problems confronting the Tema New Town market and this has resulted in less fruitful achievement. There is more for the Assembly to do to bring the market women to join the market sanitation campaign. Thus, the involvement of the market participants themselves in the formulation of ideas and strategies to deal with sanitation is a worthwhile consideration.

CHAPTER SEVEN

THE SANITATION SITUATION IN THE TEMA NEW TOWN MARKET

7.1 Introduction

This chapter discusses the findings regarding the sanitation situation of the market from. To achieve this objective, result obtained from the sellers, buyers, and waste governance institution is integrated to draw out what is important. The issues that emerged from the analysis of data touched on waste disposal practices, sanitation facilities in the market, as well as a general assessment of sanitation in the Tema New Town Market. Finally, it discusses the effect of poor sanitation on trading activities in view of the Tema New Town Market.

7.2 Waste disposal practices in the market

The common avenue by which waste was disposed of in the market was dumping in refuse containers or patronizing waste collection services where waste collection agents take charge of disposing the waste of individual traders, albeit at a fee. The study observed that apart from two communal refuse containers present, which were located about 150 metres apart from each other in the market area, there were no other refuse containers.

About 79% of sellers disposed of refuse through appropriate and acceptable means whereas the remaining 21% were found to be prone to using unacceptable waste disposal methods. These unacceptable waste disposal methods include indiscriminate dumping of refuse as into the gutters and drains. Also in that category were those who sent their refuse home for disposal later. According to the World Bank (2002), sanitation involves

both behaviours and facilities which work together to form a hygienic environment. This implies that much as individual behaviours must be favourable to sanitation, facilities must also be supplied to enhance sanitation. Any imbalance in either one of these two considerations would compromise on sanitation. Though there were large refuse containers in the market area, sellers who carried their wastes home for disposal may have found the refuse containers either inaccessible or insufficient given that there were only two of such containers. Sellers of vegetables, particularly tomato sellers, seemed to have more challenge with how they disposed refuse. They disposed of refuse mostly indiscriminately. Though some tomato sellers used refuse containers, a considerable fraction also constituted the sellers who dumped refuse indiscriminately into gutters.

Incidentally, the sellers are capable of exhibiting good knowledge and will to dispose of refuse through acceptable means saying that, it ensures that they keep the market clean, or that they had contributed money for such appropriate disposal means to be provided on the market, hence, 'why would they not use that?'. This is, however, not to rule out the fact that there are some who would ignore good sanitary practices erroneously for their own convenience-seeking approach to disposing of waste.

Waste collection in the market was found to be on regular basis by sellers. But sellers were not impressed as they regarded waste collection to be only moderate. According to the buyers, there were no visible refuse containers within the market making it strenuous for them to dispose of their waste or even give them any reason to use refuse containers. Waste management agents have, however, been noticed working in the market area by the buyers. It is discernible that waste collection was done mainly by the waste management agents of the market. The findings revealed that though refuse containers

and waste management agents were heavily relied upon, provision of these support systems was woefully inadequate. This may have contributed to dumping of waste in gutters and using crude methods of waste disposal by the market participants.

7.3 Sanitation facilities in the market

Sanitation facilities can be seen as the structures and equipment that allow for sanity to be maintained. These include waste containers, toilet facility, waste dump site, etc. Presence of waste containers, drainage system, toilet facility, and waste collection agency (borler boys) at the Tema New Town market is supported by data in this study.

Findings concerning sanitation facilities in the market support the claim that these facilities have been in short supply. For example, a greater fraction of market participants, notably, the buyers had limited access to washrooms/toilet facility. It emerged from an observation that there was only one washroom in the market area to serve the population in the market. Any such facility may only be found distance away from the market area. There is remarkable evidence that sections of the drains in the market are choked with a mixture of water, debris and silt. This also happens to be the result of indiscriminate dumping of waste. Waste collection agents have not yet been able to contain the amount of waste generated on the market rendering their services inadequate. Concerns such as these leave several questions for waste management institutions, especially, government institutions in charge of managing waste to answer. Unfortunately, the answer to these questions is often rooted in financing of sanitation initiatives, and due to financial constraints the issues are not well tackled and the problem continues to loom. Again, unfortunately, there cannot be any meaningful sanitation

achievement is sanitation facilities are not adequately provided alongside attitudinal change (World Bank, 2002).

7.4 General assessment of sanitation in the market

The aspects of sanitation of the market that can be looked at include waste disposal, drainage system, and access to washroom facility. Drainage system within the market was found to be poor as was remarkably indicated by sellers. Linking the bad state of drainage system to dumping of waste into gutters and other indiscriminate dumping practices that took place on the market, the exposition that poor drainage occurs concomitantly with accumulation of waste in gutters is sustained. Dumping refuse into gutters gives rise to choked gutters which strengthens bad drainage system. The observations made by the researcher regarding drainage system in the market provide a corroborating insight to the findings. Concerning drainage system it was observed that apart from gutters along concreted areas and around stores or cement block buildings in the market, the gutters either had small width or were shallow-dug trenches, with few incidences of truncated gutters. Some gutters were choked.

Generally, buyers had moderate regard for the sanitation condition at the Tema New Town market. The buyers agree with the fact that there are observable traces of conscious attempts to keep the market well sanitized. However, as can be said of several other market places in Ghana, the incidence of unused polythene bags, water sachet, and food wastes littered on floors of the Tema New Town market could not escape the sight of visitors to the market. This accounted for a moderate regard for waste management practices and waste collection in the Tema New Town market, in the view of buyers to the market.

Access to washroom was found to be another challenging aspect of sanitation facilities in the Tema New Town market. This facility is equally essential for sellers and buyers in the market. Majority of the market participants did not have access to proper washroom or toilet facility in the market. The status of sanitation was found to be the same over the past year which sends the indication that no significant measures have been taken to remedy defective conditions at the market and if any measure has been taken, then it has not yielded positive and obvious result yet.

The picture that emerges is that, it is difficult to discern any working sanitation plan by the District Assembly or any stakeholder that seeks to address the core sanitation issues confronting the market. Hence, the Tema New Town market fails to attract a favourable assessment in terms of meeting its sanitation challenges.

7.5 Factors contributing to poor sanitation on the market

The factors gleaned out from the data call for consideration of two dimensions of factors: internal factors and external factors.

7.5.1 Internal factors

The term ‘internal factors’ of poor sanitation in the market is used to refer to factors that derive from and are part of activities within/inside the Tema New Town Market. It is relevant to note that, aspects of the views expressed by respondents regarding the current sanitation situation in the market reflect major sanitation problems in the name of failure in provision of refuse bins and a defect in deployment of waste collectors to the market. It is also important to mention that, lack of washrooms was profound in the views of the respondents and also calls out for remedy. Poor drainage system was relatively less

problematic in the major sanitation challenges simply because it derives from indiscriminate refuse dumping and, obviously, can be dealt with by undertaking good waste disposal practices.

The category of sellers in the market who engaged more in indiscriminate dumping were vegetable sellers, meat/fish sellers, yam/cassava/plantain sellers, and yoghurt/ice cream sellers respectively. There was found a significant trend wherein sellers operating in the open were seen to be most responsible for indiscriminate dumping and over generation of waste in the market area.

The internal factors that can be gleaned out include:

- a. Indiscriminate dumping of waste;
- b. Absence of refuse bins and waste collectors;
- c. Poor individual attitude toward proper sanitation; and
- d. Lack of washroom facility within the market centre.

7.5.2 External factors

The term ‘external factor’ on the other hand is used to refer to factors of poor sanitation of the market that derive from forces outside of activities in the market. Investigation into external factors of poor sanitation in the market brings to light the following:

- a. Financial constraints;
- b. Poor sanitation education to sensitize the traders on the need to keep proper sanitation;
- c. Lack of collaboration among stakeholders to agree upon a workable solution

Lack of funds or financial constraints comes at the back of the District Assembly which is the government institution to administer sanitation at the market; theirs is to provide what is needed to ensure decent sanitation. When the dangers of poor sanitation are not known due to lack of information, but there is no sensitization of traders, this factors into poor sanitation. Also, the lack of collaboration among stakeholders to solve sanitation challenge is a factor of poor sanitation.

Furthermore, investigation into factors of poor sanitation in the market brought to light the following factors:

- a. Financial constraints,
- b. Poor sanitation education to sensitize the traders on the need to keep proper sanitation,
- c. Backward individual attitude towards sanitation and lack of collaboration among stakeholders to find a common workable solution to the sanitation challenge at the market.

7.6 Effect of poor sanitation on trading activities

The effect of poor sanitation is discussed in terms of health concern and business outcomes. From the sellers' perspectives, poor sanitation of the market has created conditions that propel buyers or customers away from the market to other relatively well-sanitised markets. Poor sanitation brought bad odour, discomfort, and concern for health which militates against buyers' interest to patronise the market. In this study, buyers had been compelled to reduce patronage of the New Town Market following these considerations: health risks, uncleanness, lack of comfort, overcrowding, and poor

drainage and muddy floors in the market respectively. The health risks that buyers were weary of include 'cholera' and 'malaria', while 'food poisoning' and 'typhoid fever' brought lower risk.

What attracted buyers to the market was the availability of commodities other than sanitation condition of the market. Though buyers' patronage of the market was high, there was a positive correlation between patronage and sanitary condition of the market. Sanitation was found to have significant effect on level of patronage of the market. Therefore, if sanitation was enhanced, more buyers would be attracted to the market. In other words, patronage of the market would have been significantly enhanced had there been well-improved sanitation conditions in the market. The lower the patronage, or the higher the tendency of buyers to divert to other markets, the lower the sales margin, and this leads to low revenue for sellers.

The Tema Metropolitan Assembly (TMA) has the oversight responsibility of sanitation management not only in the market but the whole of the metropolis. It contracts waste management services and facilitates the proper disposal of waste from the market. There was the fact that the assembly engaged with key stakeholders such as the sanitation management services and the traders to seek collaborative efforts for the up keep of the market. But the level of involvement of the traders is not so encouraging to produce desired results. In the event of poor sanitation, the TMA, would, thus, exert more control and apply more rigid rules of sellers, in the process demanding levies to be paid or applied sanctions. Some business will suffocate under this pressure presenting a cost to their owners.

Apart from the fact that poor sanitation compromises on health of traders, it also leads to loss of economic time each period the seller is unable to attend to business due to ill health. Some hygienic challenges mentioned by some respondents include unscrupulous urination in the market corners, open defecation and repugnant odour. The hygiene-related diseases mentioned were “malaria” and “stomach-ache” and when this happened care was taken to attend treatment which accounted for missing hours of sellers on the market.

Putting together the results obtained on the effect of sanitation on the trading activities in the market, one can discern a cause-and-effect between poor sanitation and retarded trading activity from a multidimensional viewpoint. Fundamentally, inability to provide, in the words of Schertenlieb et al. (2002), a clean environment for living and with measures to break the cycle of disease, as is becoming more the case in this study, has not only health-related consequences but economic consequences too. The discomforts and inconveniences posed by poor sanitation in the market have been found to be capable of making the market space unwelcome to market participants. Buyers divert to other places to buy commodities as a result. This is the situation that besets the Tema New Town market which effectively leads to less bustling market. Reduction in trading activity in the market will inevitably culminate into reduced sales and low revenue to sellers. This then reduces the economic affluence of sellers in the market.

CHAPTER EIGHT

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

This chapter presents the summary of key findings and implications to policy, the conclusions and recommendations based on the findings of the study.

8.2 Summary of the key findings

The study set out, mainly, to assess the effect of sanitary conditions on trading activities, specifically, in the area of economic welfare of the traders in the Tema New Town market. The objectives of the study were: to examine the current sanitation situation of the market space, identify the factors that contribute to the sanitation situation, investigate the effect of sanitation on trading activities and economic welfare, and assess the contribution of stakeholders in the quest for improving sanitation. Each of these objective were responded to in the study, and the key findings have been presented under each of the following corresponding themes: current sanitation situation at the Tema New Town Market; factors contributing to the sanitation situation at the Tema New Town Market; the effect of sanitation conditions on economic activity; and contributions of key stakeholders in addressing sanitation of the market.

8.2.1 Current sanitation situation at the Tema New Town market

The key findings are that, the current sanitation situation in the Tema New Town Market portrays dumping in waste containers and enlisting the service of waste collectors (borler boys) as the main practice of waste disposal at the Tema New Town Market. In spite of these disposal practices mentioned above, there is the incidence where a fraction of

market participants resort to indiscriminate dumping. This is fueled by the fact that facilities to aid the appropriate waste disposal practices are inadequate in supply. In seeking convenient way to dispose their waste they erroneously dump indiscriminately in gutters/drainages.

The incidence of indiscriminate dumping has marred the sanitation of the market creating choked drains and consequently, poor drainage system. The incidence of indiscriminate dumping and absence of refuse bins and waste collectors were often found to run concurrently, giving evidence to the fact that, in the absence of refuse bins or inadequate supply of waste collectors, indiscriminate dumping results. Vegetable sellers, meat/fish sellers, and yam/cassava/plantain sellers contributed heavily to indiscriminate dumping in the market. Sanitation of the market, in general, was seen as poor. At best it has remained the same over the past year. Limited access to washroom facility was found.

The findings largely confirms the finding of Amoah and Kosoe (2014), who concluded that, markets in Ghana generate a lot of organic wastes but, unfortunately, sanitation management agencies are only able to deal with less than half of the bulk of waste generated per day. This creates a huge backlog all the time which saddles the nation into sanitation problems. This study is also consistent with Kankam-Yeboah, et. al. (2010) who also found that sanitation of market places in the country is largely poor. In both studies, the effect of poor sanitation was endangering public health.

8.2.2 Factors contributing to the sanitation situation at the Tema New Town market

The leading factors poor sanitation in the market include indiscriminate dumping, absence of refuse bins and waste collectors, financial constraints, bad attitudes towards proper sanitation, and lack of collaboration among stakeholders to find a lasting solution to the problem.

These findings further mar the dirty waters regarding claims that, poor sanitation is encouraged by inadequate supply of facilities such as waste containers and timely disposal of waste by sanitation management agencies (Amoah & Kosoe, 2014). The findings run contrary to Bracken's (2005) view that sanitation system comprises the users of the system, infrastructure, collection, transportation, treatment, and management of end products. Whereas the users are often present and generate waste in the market, the infrastructure and logistical support that are needed to ensure that there is proper disposal of waste and maintenance of environmental sanitation is often lacking. Local authorities, such as the Ministry of Local Government and Rural Development, are aware of activities such as construction and maintenance of sanitary infrastructure, provision of service, public education community and individual action, regulation and legislation come under the umbrella of sanitation system needed to curtail poor sanitation as well as the sanitation systems to ensure standard environmental sanitation (Ministry of Local Government and Rural Development, 1999). This study found that a lot of these facilities and logistical support have not been met.

8.2.3 The effect of sanitation conditions on economic activity

Poor sanitation was found to significantly affect the way buyers patronize the market. Poor sanitation creates unfriendly atmosphere, discomfort, and most disturbing health risks. Though abovementioned issues affected the sellers, the buyers easily responded to stimuli caused by the issues; buyers moved away to places where they were more comfortable and felt protected from poor sanitation. This moving away of buyers represented a loss to the sellers in the market, or reduced the fluidity of business in the market. Economic activity is, therefore, stifled. Poor sanitation was also costly to the sellers when they fell ill. Majority of the sellers had suspected falling sick due to poor sanitation at the market. The cumulative impact of these sanitation issues was that, in the wake of these sanitation issues, buying and selling in the Tema New Town Market was rendered less active, and this reflected the incomes that the sellers made from selling in the market. Statistical regression analysis revealed that, patronage of the Tema New Town Market regressed on the condition of sanitation in the market. Patronage of the Tema New Town Market would have increased a notch upward if the poor sanitation issues in the market were properly addressed. All of these confirmed the inquiry of the relationship between sanitation and economic activity. Poor sanitation negatively affected economic activity in the Tema New Town Market in a significant way.

This finding stretches further the claims about the effect of poor sanitation which various studies have proved is inimical to public health (Amoah & Kosoe, 2014; Kamkam, et. al., 2010), and create financial burden (Ministry of Local Government and Rural Development, 2010; Fobil, Kolawole & Hogarh, 2010; UNICEF, 2008). This finding

significantly confirmed that poor sanitation affects economic activity in the Tema New Town Market.

This finding also goes to show that the conceptual framework adopted has assisted the study and the model is supported. Sanitation actors (waste generators and waste managers) working together should produce some sanitation results. Low patronage or the market, low revenues of sellers and ill-health are concomitant with low economic activity which affects the sellers most.

8.2.4 Contributions of key stakeholders in addressing sanitation of the market

In terms of contributions from stakeholders to the sanitation of the Tema New Town Market, market leaders were found to have been resolute in finding solutions to the sanitation challenges. They have organised cleanup activities on the market for sellers to partake in the cleaning of the market. However, this was thought to be inadequate to the sanitation task, and so, the market leaders were enlisting the help of NGOs and civil society groups to assist in the sanitation process. The market leaders felt there was a general apathy on the part of waste management services in collecting waste away from the market. This apathy, coupled with the inability of TMA to properly coordinate the sanitation traders and sanitation managers' activities on the market, did not promote proper sanitation. Consequently, correct behaviour and attitudes towards sanitation diminished, or was negatively affected. This study brought to dawn the interests of these stakeholders in beginning a new path of collaborating to ensure a lasting solution to the sanitation challenge is achieved.

8.3 Policy implications

The findings of this study may have several implications on policy. First, the realization that the sanitation situation of the Tema New Town Market leaves a lot to be desired itself is a wakeup call on stakeholders to take action. In particular, this is a wakeup call for the Tema Metropolitan Assembly which is the local authority to administer sanitation concerns in the market. Secondly, the sanitation problems have prevailed because of the lack of collaboration among stakeholders or interested parties. From the interview, there was lack of collaboration among stakeholders to find a common workable solution to the sanitation challenge at the market. This implies that, it is time to strategize with consensus from all relevant stakeholders. This would provide more avenues for the local authorities in charge of sanitation to iron out a workable plan for improving and sustaining sanitation.

In recent times, particularly in the wake of several hygiene-related diseases, there are campaigns across the media landscape in support of keeping hygiene. This study provides a paradigm shift to focus on the real issues such as sanitation in our markets. The findings also call for closer engagement between sanitation agencies and market women or to understand their needs and take steps to contribute to finding a sustainable solution to the sanitation challenge in our markets.

8.4 Conclusions

This study has been an attempt to examine the effect of poor environmental sanitation on economic welfare of people. The study takes into consideration the Tema New Town market realizing the somewhat unique sanitation challenges it has and the fact that it is a location for brisk business activity. This study acknowledges the fact that poor

environmental sanitation has far-reaching consequences, obviously on health. But an area which was explored in this study is the effect of poor sanitation on economic welfare. Hence, market participants and high ranking officials of the TMA, Tema East Sub-Metro Assembly, and market leaders were engaged in the study.

The important information in this study provides the realization that, apart from consequences on health, sanitation has a causal relationship with economic welfare of people. As in the case of the Tema New Town market, sanitation posed serious challenge to the market participants; there was sanitation problem in relation to indiscriminate disposal of waste, filthy gutters and drainages contributing to poor drainage systems, and absence of washrooms and toilet facility. Notwithstanding the fact that some traders used the communal refuse bins and the services of waste collectors or waste management service providers, the sanitation problems cast a heavy toll and made sanitation a scarce commodity on the market. The claim in this study is that time loss as a result of accessing distal washroom and toilet facilities, diversion of traders from the market to other trading points due to sanitation difficulties, resources lost to inadequate and fruitless attempt to curb poor sanitation, time and resource expended in treatment of hygiene-related illness go to reduce the economic returns of traders in the market. In other words, poor sanitation negatively affects economic activity and economic welfare of people.

Indiscriminate dumping of waste into gutters and drainages is sufficient ground for poor drainage system. And dysfunctional communal waste containers and waste management service providers are a good starting point for indiscriminate waste disposal. Bad attitudes and behaviours towards waste disposal are, therefore, reinforced in the absence of waste management systems giving rise to poor sanitation. The factors leading to poor

sanitation in the Tema New Town market were both internal – coming from indiscriminate dumping by traders, unwillingness to pay for cost of waste collection, and excessive generation of waste – and external – emanating from financial constraints, neglect of education on sanitation, lack of collaboration among stakeholders such as TMA and waste management service providers. TMA, the primary state institution to take responsibility of waste management in the Tema Metropolis including the market leadership, therefore, have to stamp their feet on the ground and set standards and implement plans to curb the sanitation difficulty in the market.

Situating the findings of the study in the context of the conceptual framework, it can be concluded that a poor sanitation management practice was prevailing in the market instead of a good sanitation option that embodies discriminate waste disposal practices, positive behavior towards sanitation and cooperation with sanitation management agencies which produce good environmental sanitation, thereby curtailing the problems associated with poor sanitation. Poor sanitation affects economic activity. The indiscriminate dumping, poor waste collection and disposal practices, and absence of urinal all fed into poor sanitation at the Tema New Town Market. These culminate not only into health challenges, but reduced economic activity on the market.

8.5 Recommendations

The recommendation put forward based on the discussions of the implications of the key findings for policy are as follows:

8.5.1 Advocacy for change in attitudes and behaviours toward sanitation

There is need for individuals, government organizations and civil society organizations to embark on a comprehensive advocacy on the need for everybody to look at hygiene and sanitation as a collection of individual efforts. Therefore, it should be stressed that sanitation begins with each individual. The motive behind this advocacy is to send the message that whatever filth is created affects none other than ourselves; our society; our own relatives; and our economic livelihoods will be hugely affected in compensation for the problems. Hence, there is need for positive change of behaviour concerning the disposal of refuse.

8.5.2 Collaboration of key stakeholders in environmental sanitation

The fact that environmental sanitation is not a one-man endeavour should be given cognizance to, and hence, there should be collaboration between key stakeholders to manage the environment. The TMA needs a closer collaboration with the Environmental Protection Agency (EPA) and waste management service providers which it hires to ensure that there is a consistent workflow and that every entity knows where it fits in and the relevance of its contribution.

8.5.3 Participatory hygiene and sanitation transformation (PHAST)

Above all, there is the need to try a workable model of the recommendation made by the UNEP (2005) on Participatory Hygiene and Sanitation Transformation (PHAST). This model should essentially be to encourage local participation in solving the problems of sanitation in the society. The communal labour approach finds expression in the PHAST which can be refined and adopted in the market places.

It must be emphasised here that, the National Sanitation Day, which is observed every first Saturday of the month, and was initiated by the Ministry of Local Government and Rural Development, serves both an advocacy and collaborative purpose toward fighting poor sanitation in markets and Ghana at large. It must therefore be encouraged. The principle, being to have as many people who use the streets and market places to pour out in their numbers to clean gutters and sweep the surroundings, should be extended by decentralising it for the various District Assemblies to administer the exercise within their jurisdiction. When this is done, the National Sanitation Day can be observed in two days within the month. Award system could be introduced as ‘Now Clean District’, to be given when Districts have emerged victorious after a sanitation assessment of the country quarterly.

8.5.4 Public education on sanitation

Education is necessary for development. Along with advocacy for change of behaviour toward sanitation, there is the need for public education to conscientiously improve the thinking of the public, beginning with the market centres. The education should be directed at relaying and demystifying the consequence of poor sanitation in the matter of cause and effect from researches and observations.

8.5.5 Suggestions for future studies

The researcher is not oblivious of the fact that this study alone could not have studied all the aspects of environmental sanitation within the time frame and resources available for the work – this study is restricted to build understanding in the area of poor sanitation and effects on economic activity. The researcher, therefore, recommends that there is need for more studies exploring the indigenous understanding of environmental sanitation and

demystifying its benefits with the aim to highlight the motivators of good sanitation options.

REFERENCES

- Addo, S. T. (1988). Traditional markets in the development process in Manya Krobo in Ghana. *Singapore Journal of Tropical Geography* 9 (1): 1-7.
- Amoah, T. S. & Kosoe, A. E. (2014). Solid waste management in urban areas of Ghana: Issues and experiences from Wa. *Journal of Environment Pollution and Human Health*, 2 (5), 1100117. Available at <http://pubs.sciepub.com/jephh/2/5/3>
Retrieved 13th May, 2016
- Amoaning, R. (2006). Sanitation - Our Collective Responsibility. Presentation at CONIWAS-DANIDA. Workshop November 16, 2006. Kumasi, Ghana.
- Aryeetey, E. & Nyanteng, V. (2006). Agricultural market access in Ghana. *Discussion Paper No. 30*. ISSER, Legon.
- Babbie, E. & Mouton, J. (2001). *The practice of social research*. Oxford: Oxford University Press.
- Benneh, G., Agyepong, G.T. & Allotey, J.A. (1990). Land degradation in Ghana. Commonwealth Secretariat, London and University of Ghana. Legon.
- Blaikie, P. & Brookfield, H. C. (1987), *Land degradation and society*, Methuen, London.
- Bracken P, Kvarnström E, Ysunza A, Kärrman E, Finnson A. & Saywell D. (2005). Making sustainable choices: Development and use of sustainability oriented criteria in sanitary decision making. *Proceedings of the 3rd International Ecological Sanitation Conference* (pp.486-494)
- Bracken, L. (2005). *Sustainable Sanitation*. [<http://www.NETSSAF.net>]. (accessed 2010 March 11).

Bryman, A. (2008). *Social research methods* (3rd ed.). Oxford: Oxford University Press.

Burnham, P. (2008). *Research Methods in Politics*. Second Edition, Comprehensively Revised and Updated, first edition 2004. Hampshire: Palgrave MacMillan

Burns N. & Grove S.K. (2005) *The Practice of Nursing Research: Conduct, Critique & Utilization*. Elsevier Saunders, St Louis.

Business Dictionary (2016). Environmental sanitation: definition. Available at

<http://www.businessdictionary.com/definition/environmental-sanitation.html>

Retrieved, 13th May, 2016.

Clemens, M. A., Kenny, C. J., & Moss, T. J. (2007). The trouble with the Millennium Development Goals: confronting expectations of aid and development success. *World Development* 35(5):735-751

CONIWAS (2008) Report of Proceedings of the Mole XIX Conference on “Reaching the MDGs for Sanitation: Options to expand and accelerate coverage” Koforidua, Ghana.

Corbetta, P. (2003). *Social Research Theory, Methods and Techniques*. London: SAGE Publications.

Creswell, W. J. (2009). *Research design: Qualitative, Quantitative and Mixed Methods Approaches*. California, Sage Publications, Inc. pp 218-223

DFID (1998). *DFID Guidance Manual on Water Supply and Sanitation Programmes*. London, UK.

- Domegan, C. & Fleming, D. (2007). *Market Research in Ireland*, (3rd ed). Gill and
McCmillan Ltd, Dublin
- Easterly, W. (2009). How the Millennium development goals are unfair to Africa. *World
Development* 37(1):26-35.
- Felce, D. & Perry, J. (1995). Quality of life: its definition and measurement. *Research in
Developmental Disabilities*, 16 (1), pp. 51-74.
- Fobil, J., Kolawole O. & Hogarth J. (2010). Waste Management Financing in Ghana and
Nigeria - How can the concept of polluter-pay-principles work in both countries?
International Journal of Academic Research, 2 (3).
- Fraenkel, J. R. & Wallen, N. E. (2008). *How to design and evaluate research in
education*. New York, NY: McGraw-Hill
- Ghana Statistical Service (2012). 2010 Population and Housing Census: Summary Report
of Final Results. Ghana, Sakoa Press Limited.
- GhanaDistricts.com (2013). *Greater Accra: Tema Metropolitan*. Retrieved: 9th March,
2014. Available at [www.http://ghanadistricts.com.gh](http://ghanadistricts.com.gh)
- Ghanaweb.com(2013). *Tema*. Retrieved 9th March 2014. Available at
[www.http://ghanaweb.com.gh](http://ghanaweb.com.gh)
- Gillham, Bill (2000). *Case study research methods*. London: Continuum.
- Good, C. M. (1975). Periodic markets and travelling traders in Uganda. *Geographical
Review* 65 (1): 49-72.
- Gray, D. E. (2004). *Doing Research in the Real World*. London: SAGE Publications

- Gultig, J. Lubisi, C. Parker, B. & Wedekind, V. (1999). *Understanding Outcomes –based Education. Teaching and Assessment in South Africa*. Cape Town: SAIDE/Oxford
- Hair Jr, J. F., Babin, B., Money, A. H. & Samuel, P. (2003). *Essentials of business research methods*. New Jersey: John Wiley and Sons.
- Hittleman, D. & Simon, A. (2002). *Interpreting educational research: An introduction for consumers of research*. Upper Saddle, NJ: Pearson Education.
- Huetting, R (1980). *New Scarcity and Economic Growth*. Amsterdam. North Holland Publishers.
- IRC (2006). *The Value of Environmental Sanitation – Case Studies*. International Water and Sanitation Centre. Delft, The Netherlands.
- Isunju, J. B., Schwartz, K., Schouten, M. A., Johnson, W. P., & van Dijk, M. P. (2011). Socio-economic aspects of improved sanitation in slums: A review; *Public Health* 125(6):368–76.
- Kajornboon, A. B. (2004). *Creating Useful Knowledge: A Case Study of Policy Development in E-learning at Chulalongkorn University Language Institute*. University of Melbourne: Australia.
- Kankam-Yeboah, K., Gyau-Boakye, P. Logah, F. & Ofori, D. (2010). *Prevention of Hydro-Hazard (Flood) Disasters in Ghana*, UNESCO Accra Cluster Office, CSIR-WRI, Accra.
- Kekic, L. (2005). The world’s best country. *The Economist*. Printed in The World in 2005. Retrieved November 29, 2007 from

<http://www.economist.com/theWorldIn/international/displayStory.cfm?story%20id=3372495&d=2005.9>

Krueger, R. A. & Casey, M. A. (2000). *Focus Groups: A Practical Guide for Applied Research*, (3rd ed). Thousand Oaks, Sage Publication

Krueger, R. A. (1994). *Moderating focus groups, Focus group kit*, Thousand Oaks, Sage Publication.

Kvale, S. & Brinkmann, S. (2009). *Interviews: Learning the Craft of Qualitative Research Interviewing*. London: Sage.

Lofland, J. & Lofland, L. (1995). *Analyzing social settings: A guide to qualitative observation and analysis* (3rd ed.). Boston: Wadsworth

Macions, J. & Plummer, K. (2002). *Sociology. A General Introduction*, Prentice Hall Inc, New Jersey.

Malhotra, N. K. & Birks, D.F. (2007). *Marketing Research. An Applied Approach*. (2nd ed). Harlow, UK: Prentice.

Malterud, K. (1993). *Shared understanding of the qualitative research process: Guidelines for the medical researcher*. Family Practice, Oxford University Press, 10(2), 201–207.

Mara, D.D., Sleigh, A & Tayler, K. (2001), PC-based simplified sewer design, University of Leeds, Leeds, UK. Available at:

http://www.efm.leeds.ac.uk/CIVE/Sewerage/manual/pdf/simplified_sewerage_manual_full.pdf

Matthews, B. & Ross, L. (2010). *Research Methods*. Harlow: Pearson Education Limited.

- McMillan, J. H. & Schumacher, S. (2006). Research in education: evidence –based inquiry, 6th ed. Boston: Pearson
- Menegat, R. (2002) Public Environmental Management. Porto Alegre
- Mensah, M. (2002). The State of Environmental Sanitation in Accra Metropolitan Area. Pentecost Press. Accra, Ghana.
- Ministry of Local Government and Rural Development (2010). Environmental Sanitation Policy 2009. Government of Ghana.
- Ministry of Local Government and Rural Development. (1999). Ghana Environmental Sanitation Policy. Accra. Ghana.
- Mitchell, B. (2002). Resource and Environment Management. Singapore. 2nd Edition. Pearson Education Publishers. Edinburgh, UK
- NACE (2006). Introductory guidelines. Statistical Office of the European Communities. Retrieved at:
<http://ec.europa.eu/eurostat/documents/1965800/1978839/NACEREV.2INTRODUCTORYGUIDELINESEN.pdf/f48c8a50-feb1-4227-8fe0-935b58a0a332> Date: 15th May, 2016.
- Neuman, W. L (1997). Social research methods, qualitative and quantitative approaches (3rd ed.). Boston: Allyn and Bacon.
- Nyamwaya, D. (1994). *A Guide to Health Promotion through Water and Sanitation*. African Medical and Research Foundation. Nairobi, Kenya.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed). Thousand Oaks, CA: Sage
- Polit, D. F. & Beck, C. T. (2008). *Nursing research, principles and methods*, Lippincott Williams & Wilkins, Philadelphia.

- Prüss-Üstün, A., Bos, R., Gore, F., Bartram, J. (2008). *Safer water, better health: costs, benefits and sustainability of interventions to protect and promote health*. Geneva: World Health Organization.
- Rosemarin, A. (2008): Small systems best for many cities. In: *Stockholm Environment Institute; Sanitation Now*. A magazine on the global sanitation crisis, Oaks, Pennsylvania.
- Salifu, L., A. Nashiru, & K. Tayler. (2005). Sanitation Policy in Ghana – Assessing key elements and Policy measures. Maximizing the Benefits from Water and Environmental Sanitation. Proceedings of the 31st WEDC International Conference, Kampala, Uganda.
- SANDEC/WSSCC (2000) *Environmental Sanitation in the 21st Century; Summary Report of Bellagio Expert Consultation 1-4 February*; Sanitation in Developing Countries, Duebendorf
- Saunders, M. L. & P., Thornhill, A. (2009). *Research Methods for Business Students*, Fourth Edition, Prentice Hall, Pearson Education, London, England.
- Schertenleib, R. & Dionys, F. (2002). *An Integrated Approach to Environmental Sanitation and Urban Agriculture*. Deubendorf, Switzerland.
- Schneider, F. (2007). “The size of the shadow economies of 145 countries all over the world: first results over the period 1999 to 2003”, *Journal of Population Economics*. 20 (3): 304 – 526.
- Shank, G. & Brown, L. (2007). *Exploring educational research literacy*. New York: Routledge

- Simpson-Hébert M. & Wood S., eds. (1998). *Sanitation promotion*, World Health Organisation, Geneva.
- Stem, C., Margoluis, R., Salafsky, N. & Brown, M. (2005). Monitoring and evaluation in conservation: a review of trends and approaches. *Conservation Biology* 19 (2):295-309.
- Swann, J. & Pratt, J. (2003) *Educational Research in Practice: Making Sense of Methodology*, London: Continuum
- UNDP (2010) *Water Supply and Sanitation*, Post 2015 Development Goals. Available at www.undp.org/content/undp/en/home/librarypage/environment-energy/water_governance/water_supply_and sanitation.html
- UNEP (2003) *Urban Waste Management Strategy*. International Environment Technology Centre.
- UNEP. (2005). *Environmental Management and Community Participation - Enhancing Local Programmes*. Nairobi, Kenya.
- UN-HABITAT (2003): *Cities: Competing Needs in an Urban Environment*. Earthscan Publications, London
- UN-HABITAT (2009). *Global Report on Human Settlements. 2009: Planning Sustainable Cities*. UK Earthscan Publisher.
- UNICEF & WHO (2006). *Meeting the MDG Drinking Water and Sanitation Target: The Urban and Rural Challenge of the Decade*. Joint Monitoring Report.
- UNICEF (1999). *Sanitation and Hygiene; a Right for Every Child*. New York: United Nations Children's Education Fund.
- UNICEF (2008). *Celebrating World Water Day – 2008*. Resources/advocacy-material.

- United Nations Development Programme (2006). Human Development Report 2006: Beyond Scarcity—Power, Poverty and the Global Water Crisis. Basingstoke, United Kingdom: Palgrave Macmillan.
- Vodounhessi, A. (2006). Financial and institutional challenges to make faecal sludge management integrated part of Ecosan approach in West Africa. Case study of Kumasi, Ghana. MSc Thesis WM 2006.05, UNESCO-IHE Institute for Water.
- WHO & UNICEF (2008). *Global Water Supply and Sanitation Assessment 2000 Report*. World Health Organisation, Geneva.
- WHO (2006). Guidelines for the Safe Use of Wastewater, Excreta and Grey Water. P. xxiii. France.
- WHO (2010). Progress on Sanitation and drinking water – 2010 update, Geneva.
- WHO (2012). Progress on sanitation and drinking water – 2012 update.
- WHO/UNICEF/WSSCC (2000). *10 Things you need to know about sanitation*. Available at www.org/downloads/media/sanitation/10thingspdf. Accessed November, 2014.
- WHO/UNICEF/WSSCC (2000). *Global Water Supply and Sanitation Assessment 2000 Report*, World Health Organisation, Geneva.
- World Bank, (2002). Sustainable Sanitation. [<http://www.NETSSAF.net>], (accessed 2010 March 11).
- Wright, A. M. (1997). *Toward a Strategic Sanitation Approach: Improving the Sustainability of Urban Sanitation in Developing Countries*. United Nations Development Programme – World Bank Water and sanitation Programme, Washington DC, USA.
- Yamane, T. (1967). Statistics: An Introductory Analysis, 2nd Edition, New York: Harper and Row. p.258.

Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.

Zikmund, W. G. (2003). *Exploring Marketing Research*. (7th ed.), Dryden Press, Fort Worth.

Section B: Current sanitation situation in the Tema New Town market

6. How do you dispose of waste from within the market?

- a. Dumping in container at vantage points
- b. Collecting by “borley boys”
- c. Keeping the refuse and sending it home
- d. Dumping them in the gutters/drainages
- e. Other method (please specify)

.....

7. What is your reason for your answer in question 6?

.....

8. How often is waste collected from the market?

- a. More than once a day
- b. Daily
- c. Few times a week
- d. Undefined time intervals

9. What is the state of drainage system in the market?

- a. Very bad
- b. Bad
- c. Normal
- d. Good
- e. Very good

10. What do you think is/are the cause(s) of the condition expressed in question 9?

.....

11. Do you have access to „washroom“ while operating at the market?
- a. Yes []
 - b. No []
12. What do you consider as major sanitation problem(s) in the market? (*Many responses allowed*)
- a. Poor drainage system []
 - b. Absence of bins and waste collectors []
 - c. Lack of washrooms within the market centre []
 - d. Others (please specify)
-
13. Has the sanitation situation been improving or worsening over the past one year.
- a. Improving []
 - b. Remains the same []
 - c. Worsening []

Section C: Factors contributing to poor sanitation in the market

14. How do market women contribute to poor sanitation in the market?
- a. Indiscriminate dumping of their refuse []
 - b. Their unwillingness to pay for the cost of collecting waste they generate []
 - c. Over generation of waste products []
15. Which category of people is responsible for the waste over generated in the market?
- a. Occupants of market stalls []
 - b. Sellers operating in the open []
 - c. Petty traders/hawkers []

16. Which of these do you think contributes to poor sanitation in the market?
- a. Lack of funds to enable the TMA provide what is needed to ensure sanitation []
 - b. Lack of education on sanitation at the market []
 - c. Poor individual attitude towards sanitation []
 - d. Lack of unity/collaboration between stakeholders to find sanitation solutions sanitation []
 - e. Others (please specify)
-

17. How would you rate the performance of waste collectors responsible for collecting waste from the market?
- a. Very poor []
 - b. Poor []
 - c. Good []
 - d. Very good []

Section D: Effect of sanitary condition on trading activities

18. In what way does bad drainage condition in the market affect your trading activity?
- a. Drives away potential customers to other markets []
 - b. Causes flood in the market during rainy season []
 - c. Causes an atmosphere not conducive for both customers and traders []

19. In what other way does bad drainage system in the market affect your trading activity?
-

20. How does absence/poor washroom facility in the market affect your trading activity?
- a. Drives away potential customers to other markets []

- b. Wastes economic time in visiting washrooms outside the market area []
- c. Causes hygienic challenges to the people in the market []

21. In what other way does absence/poor washroom facility in the market affect your trading activity?

.....

22. Do you think individual traders' surrounding conditions affect their sales?

- a. Yes []
- b. No []

23. Why "No" or "Yes" in question 22?

.....

24. Within the past year, have you been attacked by any hygiene-related disease (cholera, diarrhea, malaria, etc., that you could not come to trade on the market?

- a. Yes []
- b. No []

Section B: Current sanitation situation in the Tema New Town market

Please rank (by ticking in the space) the following statement using the scale 1(Strongly disagree), 2(Disagree), 3(Moderate), 4(Agree), and 5(Strongly agree) to indicate your perception of sanitation on the market.

Statements	1	2	3	4	5
6. The market's sanitation is environmentally friendly					
7. The aisles in the market are usually not littered with filth					
8. Unused polythene bags, water sachet and food wastes are barely found on the ground					
9. The sheds and stalls/stores in the market are always kept free of filth					
10. One can observe that there is conscious attempt to keep the market sanitized					

Avenues for waste disposal

Statements	1	2	3	4	5
11. There are visible refuse bins at vantage points around the market square					
12. Refuse gathered or collected at different points in the market are disposed of timely					
13. It is less strenuous for buyers to dispose of their waste using appropriate means while on the market					
14. Waste containers in the market are often emptied to prevent spill over					
15. Waste management services can be seen working around the clock to sanitize the market					

16. Do you have access to „washroom“ while operating at the market?
- a) Yes []
- b) No []
17. What do you consider as major sanitation problem(s) in the market? (*Many responses allowed*)
- a) Poor drainage system []

- b) Absence of bins and waste collectors []
 - c) Lack of washrooms within the market centre []
 - d) Others (please specify)
-

18. Has the sanitation situation been improving or worsening over the past one year.
- a) Improving []
 - b) Remains the same []
 - c) Worsening []

Section C: Factors contributing to poor sanitation in the market

19. How do market women contribute to poor sanitation in the market?
- a) Indiscriminate dumping of their refuse []
 - b) Their unwillingness to pay for the cost of collecting waste they generate []
 - c) Over generation of waste products []
20. Which category of people is responsible for the waste over generated in the market?
- a) Occupants of market stalls []
 - b) Sellers operating in the open []
 - c) Petty traders/hawker []
21. Which of these do you think contributes to poor sanitation in the market?
- a) Lack of funds to enable the TMA provide what is needed to ensure sanitation []
 - b) Lack of education on sanitation at the market []
 - c) Poor individual attitude towards sanitation []
 - d) Lack of unity/collaboration between stakeholders to find solution for sanitation []
 - e) Others (please specify)
-
-

22. How would you rate the performance of waste collectors responsible for collecting waste from the market?
- a) Very poor []
 - b) Poor []
 - c) Good []
 - d) Very good []

Section D: Effect of sanitary condition on trading activities

23. Which of the following conditions have ever distracted you from the market?
- a. Overcrowding []
 - b. Lack of comfort []
 - c. Poor drainage and muddy market floors []
 - d. Uncleanliness in the market []
 - e. Health risks []
24. What kind of health risks have you anticipated for which reason did not encourage you to come to the market?
- a. Cholera []
 - b. Malaria []
 - c. Typhoid fever []
 - d. Food poisoning []
 - e. Others (please specific)

-
25. How many days in a month have you patronized the market?
- a. Very frequent (4-6 days) []
 - b. Frequent (3 days) []
 - c. Infrequent (2 days) []
 - d. Very infrequent (1 day) []

APPENDIX C: OBSERVATION CHECKLIST

Refuse collection

1. Presence of large communal waste containers and distance of waste container's location from the market.
2. Presence of refuse containers at vantage points in the market.
3. Condition of the floors in market in terms of waste deposits:
 - a. Presence of polythene bags, rubber bags and waste papers;
 - b. Presence of organic waste on the ground; and
 - c. Presence of faecal matter within the market.

Drainage system

4. Presence of gutters to convey waste water.
5. Design of gutters within the market area.
6. Condition of gutters with the market area.

Washroom facility

7. Presence and number of washrooms in the market space.
8. What is washroom made of;
 - a. Structure;
 - b. Fixtures; and
 - c. Compartments.
9. Stagnation of liquids/faecal matter in/around the washroom
10. Number of people washroom can serve in a space of 10 minutes.

APPENDIX D: INTERVIEW GUIDE

Questions for Officials of TMA

Objective One

1. How do you dispose of waste from within the municipality/market?
2. What is the condition of the drainage system in the municipality/market?
3. How is disposable water disposed of on the market?
4. How is waste disposed of away from the market?
5. What's the current state of public washroom in the market?
6. Are there any other sanitation problems in the municipality?
7. Has the sanitation situation been improving or worsening over time?
8. Do people or interest groups raise concerns about the sanitation situation in the market?
9. How good would you describe the sanitation situation in the market?

Objective Two

1. How do market women contribute to the poor sanitary situation in the market?
2. How do other businesses also contribute to poor sanitation in the market?
3. What are the responsibilities of the Assembly in ensuring proper sanitation?
4. What challenges does the Assembly face in solving sanitation problems on the market?
5. Has the Assembly lived up to expectation as far as ensuring proper sanitation is concerned?
6. Which service providers are responsible for cleaning the market?
7. How would you assess the performance of these service providers?

Objective Three

1. How does the state of the public washroom in the market affect sanitation in the market?
2. How do drainage problems affect trading in the market?
3. Do you think the market loses customers to other markets due to poor sanitary conditions?
4. Do you think individual traders' hygienic condition affect their sales?

5. Within the past year, have you been attacked by cholera, diarrhoea, etc., and did it prevent you from coming to market?

Objective Four

1. Do you have policies for cleaning the market?
2. What specific intervention has been implemented by the following to have the sanitation situation improved?
 - a. Traders
 - b. Government
 - c. NGO and other stakeholders
3. How regular and intensive do you educate the public on the effects of poor