

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

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BUSINESS SCHOOL



THESIS

TOPIC:

THE EFFECTS OF SERVICE DELIVERY ON DISTRICT ASSEMBLIES REVENUE

MOBILIZATION: EVIDENCE FROM AFIGYA-KWABRE SOUTH

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ABSTRACT

The general aim of the study is to investigate the effects of services delivery on district assemblies' revenue mobilization with evidence from the Afigya Kwabre South District. The general objective was divided into specific objectives in an attempt to accomplish the purpose of the study. The specific objectives designed were; to examine the impact of services delivery on revenue mobilization in the Afigya Kwabre South District, to determine ways of improving services delivery and the existing revenue mobilization capacity of the district. The OLS estimations reveal that, there exist a highly significant and positive relationship between services delivery and revenue mobilization in the Afigya-Kwabre District assembly. The results also show that, people are willing to pay additional tax for quality services. The respondents however, view that, it would be difficult for the assembly to increase revenue mobilization through enforcement of tax laws and prosecution of defaulters. Based on the findings from the study, the study recommends that quality services should be delivered by the Afigya Kwabre South District Assembly to the residents in the district since they are prepared and willing to pay additional fee for such services. The study further recommends effective and regular tax education to residents of the district in an attempt to clear some bottlenecks to revenue mobilization in the district.

DEDICATION

This work is dedicated to my lovely family; Genevieve, Jayden, Jaysen, Jaylyn and to everyone who supported me in one way or the other to successfully complete this dissertation.



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Vision has its main divine source but it takes the assistance of men to bring it into reality. Glory and honor be to Almighty God, who gives me all the needed strength, protection and knowledge to complete this study.

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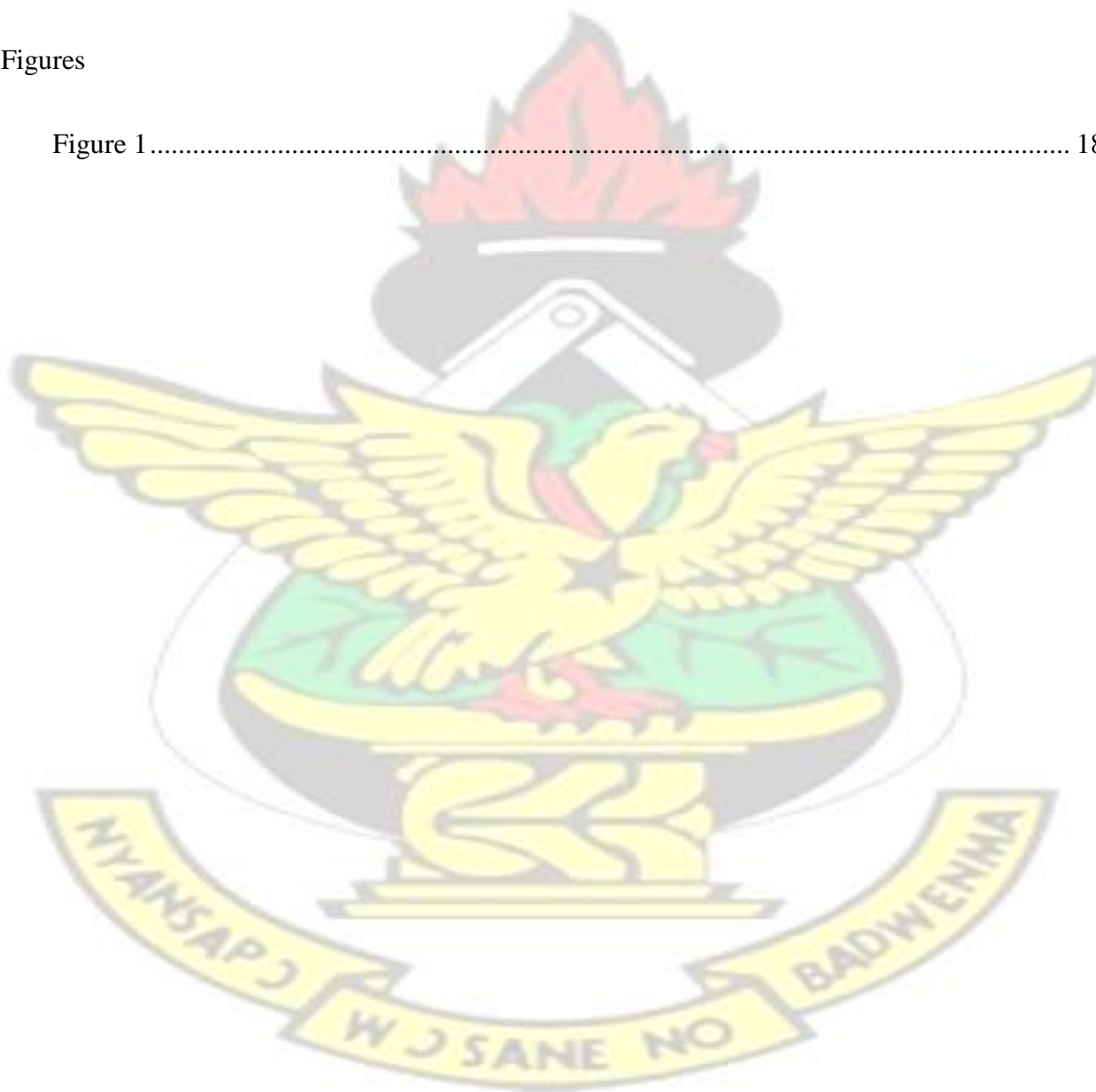
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CHAPTER ONE

Introduction

1.1 Background to the Study

A sound revenue system for local governments is an essential precondition for the success of fiscal decentralization (Adu-gyamfi, 2014). In addition to raising revenues, local revenue mobilization has the potential to foster political and administrative accountability by empowering communities (Scott, 2018). However, prescriptions deriving from theory and good internal practices imposed huge constraints on the choice of revenue instruments for local governments (Opoku, Kyeremeh and Odoom, 2014). In modern times, Africa is characterized with rapid population growth and outplaced local authorities having weak capacity for service delivery in terms of financing, infrastructure, and management (Mpaata, Lubogoyi and Okiria, 2017).

Many local authorities in Africa are seriously challenged in terms of poor services delivery and crisis in governance. In recent times, fiscal decentralization which encompassed absolute powers to local authorities in the area of revenue mobilization and powers to spend has become the major theme for local governance (Fjeldstad and Heggstad, 2012). Notwithstanding, the major sources of local governments revenues are normally licenses, market tolls, property rates, and facility user fees. However, these revenue instruments have serious challenges based on experience gathered from many African countries (Mawejje and Munyambonera, 2016).

For instance, administering property tax can be very expensive and many have resisted in an attempt to enforce facility user fee, especially from the pro-poor urban centers. And also, many businesses have expressed their concerns in the area of complex business licensing systems put up

by local authorities as a source of impediment on expansion most especially start-up enterprises (Otieno *et al.*, 2013).

In sub-Saharan Africa, fiscal decentralization is considered by many countries as the major restructure to facilitate development. The central government in most of these nations however, have not been willing to give to local authorities creating huge shortfalls in the field of revenue mobilization and expenditure. This made central government transfers a significant source for local government revenue (Boogaard *et al.*, 2016).

The over reliance on these transfers have generated a number of political and administrative hindrances as analyzed in the literature. The transfers from central governments are usually tied to project specifics as well as strict and tighter conditions, hence reducing the responsibility of taking decisions at the local levels with respect to their pressing needs and priorities. Notwithstanding, revenue mobilization at the local levels can greatly be stimulated by central governments transfers if the distribution formula includes local tax effort as determining factor of such transfers (Fjeldstad and Heggstad, 2012).

Primarily, there are two main sources of revenue for decentralized government units in Africa, thus external transfers, and internally generated funds. Own revenue generated includes license fees, property taxes, and facility user fees. However, these local taxes are limited, such that all the lucrative areas like import and export duties, sale taxes, and income taxes reside with the central government (Adu-gyamfi, 2014).

The current investigation of tax systems in Zambia, Mozambique, and Tanzania indicate a major constraint in commercializing agriculture, small and medium businesses. Levies are perceived as very high and sometimes coupled with upfront charges without considerations to business size and

type. This has resulted in undermining the legitimacy of the tax system at the lower levels, hence promotes tax evasion and hinders the formal processes of small and medium businesses in the area. And also, it hampers the community's outreach on taxpayer education initiatives (Opoku, Kyeremeh and Odoom, 2014).

Despite the numerous comprehensive reforms on tax by the central government in the last two decades, in sub-Saharan Africa, local governments revenue mobilization systems have largely not witnessed remarkable change, even though some kinds of improvements can be reckoned recently. Additionally, survey in Uganda reveals that, in general, people have appreciated the importance of taxation to support provisions of local services, but decide on non-compliance as a result of lack of confidence in the system of local governance (Mpaata, Lubogoyi and Okiria, 2017).

According to Otieno *et al.*, (2013), confirms that between 2003 and 2006, people in Tanzania positively changed towards local taxation as a result of improvement in service delivery and thus resulted huge mobilization of local revenue at the period compared to revenues generated for the past three years. The service delivery touched at the time includes health, roads, education, law and order, and largely due to the smooth revenue collection methods introduced. However, the people perceived corruption as well as trusting government officials as the main problem for their reluctance to pay taxes to local authorities (Fjeldstad and Heggstad, 2012).

The Kenyan constitution strongly advocates the provisions of mandatory funds to devolved local government units, at least 15% of all revenues generated nationally. And also an equalization fund is established by the constitution equivalent to 0.5% of total revenues allocated to marginalized counties (Scott, 2018).

In Nigeria, local government administration, thus the three-tier system have dwindled revenues generation as featured with deficits in annual budgets and inadequate funds for meaningful economic growth and viable development projects. In Nigeria, local governance is sent to the door steps of the people at the grassroots and positioned to play national development roles. Local government in Nigeria found it very difficult to deliver their mandate responsibility in service delivery due to problems of vicious poverty as characterized by inadequate functions and powers as well as employment of incompetent technical personnel (Mpaata, Lubogoyi and Okiria, 2017).

In Ghana, the District Assemblies (DA) have three sources of revenue and thus includes the Internal Generation Fund (IGF), ceded revenue, and the District Assemblies Common Fund (DACF). The Internal Revenue Service (IRS) is charged with the responsibility of collecting adverts and betting taxes under the ceded revenue, and however transferred to the district assemblies through the ministry of local government and rural development. There is however, rare evidence to back its viability (Adu-gyamfi, 2014).

Notwithstanding the decentralization policy reforms in Ghana, many district assemblies have been challenged with governance problems and poor service delivery capability. Otieno *et al.*, (2013) postulates that inadequate funds at the assemblies remains the sole concern to the success of devolution in Ghana. The devolution of revenue mobilization and power of spending to district assemblies are not left out in the challenges. In addition, many district assemblies in Ghana are very weak and only rely on central government financial transfers and aids, therefore faced with numerous problems in mobilizing the appropriate levels to execute the huge gap in services delivery and issues relating to inequality at the local levels (Boogaard *et al.*, 2016).

1.2 The problem Statement

The Afigya Kwabre South District is noted to be facing with many challenges in its local revenue mobilization activities as a result of poor services delivery. The issue characterized by pure discriminations, corruption, complexities and low levels of compliance. This has significantly affected the amount of funds mobilized from the internal sources of the assembly. Additionally, there have not been effective mechanisms put in place to ensure sufficient revenue mobilization at assembly. As a result of insufficient funds, majorly caused by poor services delivery since people in the affected areas find it difficult to comply with the tax law, hence rendering the assembly handicap in terms of providing the needed services delivery equitably in the district (Adu-gyamfi, 2014).

The external sources of funds also put undue pressure on the assembly as they want to better themselves in the dispense of services delivery. In fact, the overdependence of the external transfers impedes internal revenue mobilization capacity at the district level, and frequently tied to conditions that do not fall in line with the needs and priorities of the local people. Giving the fundamental relevance of mobilizing revenue by the assembly, with a core function of providing quality and accessible services delivery to its people, the assembly have failed woefully in this regard due to inadequate revenue mobilized for the past ten years.

Preliminary search by the researcher indicates that (Opoku, Kyeremeh and Odoom, 2014; Scott, 2018; Mpaata, Lubogoyi and Okiria, 2017) all researched on the effects of revenue mobilization on services delivery but not the vice versa, and it is on this basis that the researcher has taken upon himself to investigate on the effects of services delivery on revenue mobilization at the Afigya Kwabre South in the Ashanti Region to patch up the gap in the literature.

1.3 General Objective to the Study

The general objective of the study is to research on the effects of services delivery on revenue mobilization in the Afigya-Kwabre South District.

1.4 Specific Objectives to the Study

1. To critically examine the influence of services delivery on revenue mobilization in the Afigya Kwabre South District.
2. To determine ways of improving services delivery and existing revenue mobilization capacity in the District.

1.5 Research questions

- 1.5.1 What influence does service delivery have on revenue mobilization?
- 1.5.2 In what ways can services delivery and the existing revenue mobilization capacity in the district can be improved?

1.6 Significance of the Study

Knowledge on how to increase revenue mobilization capacity at the assembly level with regards to the numerous functions they undertake at the grassroots level is much necessary and at the heart of every assembly in Ghana. Hence, the empirical results of this study will be useful to stakeholders of the various district assemblies in Ghana in terms of decision-making and planning. Additionally, the end results of this research will be used as a source of reference document for those in academia.

1.7 Scope of the Study

Primarily, the study will be based on the effects of services delivery on revenue mobilization in the Afigya-Kwabre South in the Ashanti Region. The investigation will be centered on how services delivery activities within the district impact revenue generation.

1.8 Brief Literature Review

The study would thoroughly review related literature in the field of local governments revenue mobilization. The detailed literature review would be centered on definitions and conceptualization of terms, theoretical review, empirical review and conclusion.

1.9 Brief Research Methodology

The study will employ an explanatory approach as the research design. In investigating the effects of services delivery on revenue mobilization, the study will adopt a quantitative approach in analyzing its data. The sample selection for the study will be estimated from the major stakeholders in the district. The sampling technique to be adopted will be stratified sampling method.

The study will use primary data and it will be sourced from the Afigya Kwabre South District. The study will design questionnaires to collect data from respondents. Finally, the data will be collected from the field and carefully analyze using the SPSS software.

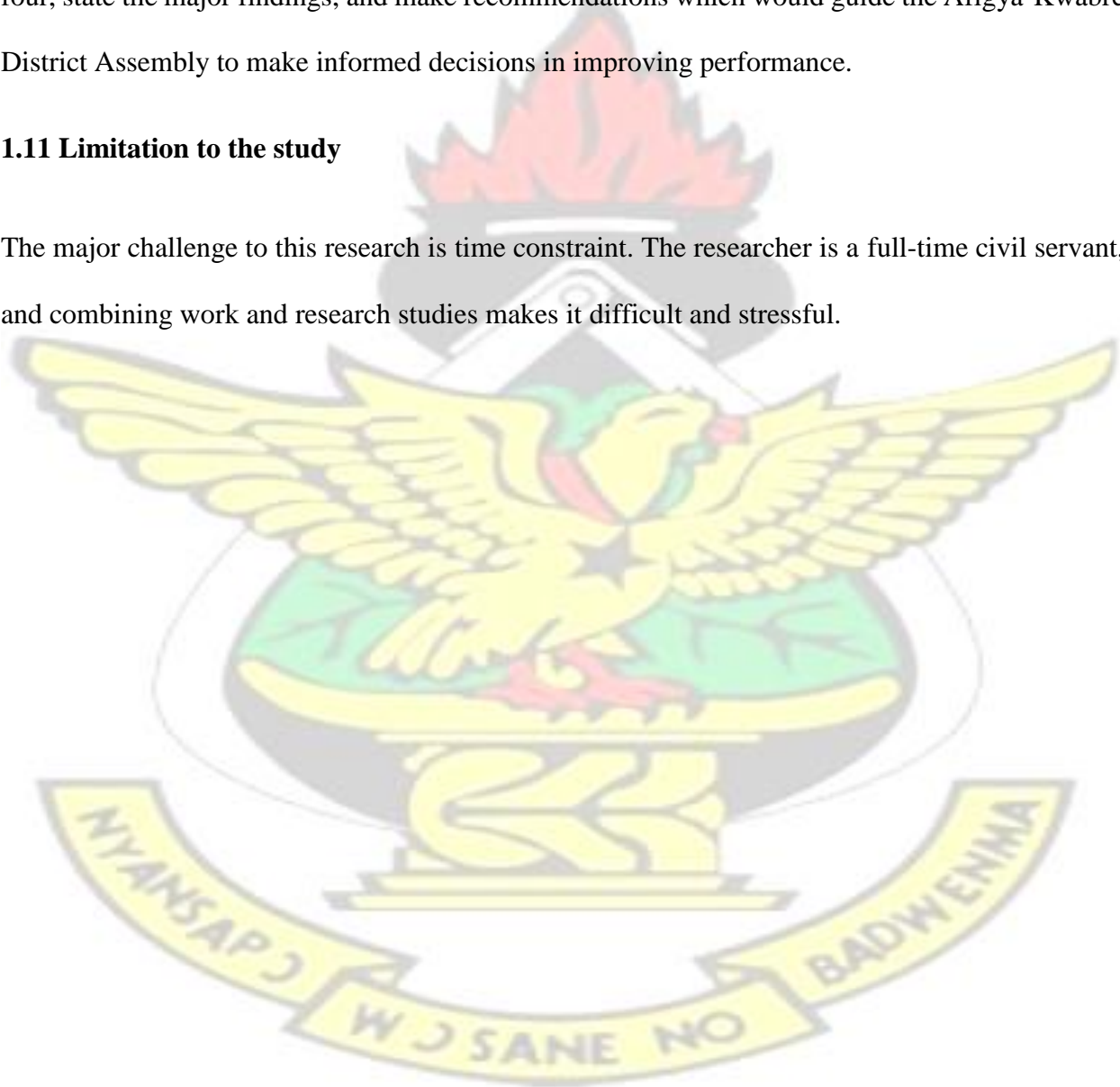
1.10 Organization of the study

The organization of this study is put into five chapters. The first chapter, thus chapter one contains the study introduction, which consists of background to the study, problem statement, objectives to the study, research questions, scope of the study, brief methodology, study justification, and organization to the study. The chapter two reviewed related literature and explained some

important concepts, review of related theories, empirical review of related literature, conceptual review, and conclusion. The chapter three contains detailed methodology for the study. The chapter described the research design, data sources and the population for the study and sample selection techniques employed in investigating the topic of interest. The fourth chapter focused on data collection and analysis. The chapter five dealt with study findings emanating from chapter four, state the major findings, and make recommendations which would guide the Afigya-Kwabre District Assembly to make informed decisions in improving performance.

1.11 Limitation to the study

The major challenge to this research is time constraint. The researcher is a full-time civil servant, and combining work and research studies makes it difficult and stressful.



CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviews related literature from other researchers who have carried out research in similar field of study. The chapter would be made up of four major sections. These includes definitions and conceptual review, theoretical review, empirical review, conceptual framework, and a conclusion.

2.1 Conceptual Literature Review

2.1.1 Decentralization

Decentralization is any act in which a central government formally cedes powers to actors and institutions at the lower levels. This means that political powers as well as responsibilities are shared between central government and local government units (Adekola *et al.*, 2017). The central government in an attempt to fully fulfil this concept supports these local government units with adequate managerial staff and resources, financially, and legally to discharge their duties. It therefore means that local government units must be accountable to both their constituents and central government (Adu-gyamfi, 2014). This act fully supports the spirit of democracy, since power is allocated along all government levels. The concept of decentralization also means that, the transfer of authority on a physical basis to governments at the lower level. The idea of decentralization can take the form of de-concentration, thus through delegation authority to same departments in the field, or by giving local government units the true sense of power, thus devolution (Scott, 2018).

2.1.2 Revenue Mobilization

Revenue mobilization is made up of series of activities under which revenues are generated and collected together through established entities and funded by donors and partners (Boampong and Dwumfour, 2016). This is very common with community-based programs where generating funds is a problem. Additionally, Kimutai (2017) defines revenue mobilization as external and internal means by which revenues are generated, thus both monetary and non-monetary revenues are collected together to support organizational activities. It implies that in mobilizing revenue, a lot of pressures are put on the ability of the organization's members. Mayer (2011) postulated that, the series of procedures in collecting revenues together for sustainable societal progress begins by establishing a robust revenue mobilization approach. In a quest to mobilize enough funds to pursue development projects, efforts must be made in identifying new financial sources to widen the revenue base (Kariuki, 2011).

2.2 Theoretical Review

2.2.1 The Optimal Theory of Taxation

The optimal theory of taxation is viewed as a process for minimizing the costs of taxation. The theory postulates that, in quest to maximize social welfare, a tax system should be chosen to function subject to a set of constraints. The social welfare function is fundamentally based on utilities of individuals in the society. The nonlinear function of the theory allows social planner to have more equal distribution (Sørensen, 2010). In reducing the challenges faced in the process of revenue generation, it is generally assumed that everyone in the society has same preferences over consumption and leisure. Generally, the homogeneity assumption of this concept is shifted one step more taken into assumption that the population in the economy is made up of individuals of

same identities. In choosing the tax system that maximizes the welfare of the consumer is very paramount, been aware that the consumer will directly react to any incentive the tax system is providing (Sørensen, 2010).

2.2.2 The Agency Theory

The agency theory posits a relationship that is of contractual in nature and basically engaged by two persons, thus a principal and an agent charged to perform some services. The concept involved delegating some decision-making authority to agent by the principal. The sole function of the agent is to bring a contractual relationship between the principal and a third party (Bendickson and Liguori, 2018). The agent does not initiate a contract of his own behalf but for the principal. The legal doctrine which applies is “(Boogaard *et al.*, 2018) *qui facit per alium facit per se*” (he who does something through another does it himself). The agency theory is geared towards a person establishing the agency relationship. This is where the principal delegates a responsibility for an agent to perform, binding the principal in his/her actions. The duty of the agent is to execute legal actions within his/her competence (Boogaard *et al.*, 2018).

The responsibility of a person for his agent torts in the ordinary course of his employment depends on the nature of a master servant relationship, in accordance with English and American law. The master is vicariously responsible for the tortuous actions of his servant performed during the course of his employment. There are cases where an agency relationship arises when an individual group called principal hires someone called an agent to perform some service, where the principal delegates decision- making power to the agent. This kind of relation includes those between stock holders and managers and between stockholders and debt holder (Bendickson and Liguori, 2018).

2.3 The Relationship Between Revenue Mobilization and service delivery

The overall reason for decentralization is genuinely give power to local governments to be in a better position to identify and deal with the needs of their people than central government (Niang and Mbaye, 2020). Based on this background, local government units are encouraged to identify and raise funds from internal sources in a form of tolls, fines and fees, rates, property tax and many others to widen their financial base to be able to undertake development activities within the locality. Normally, these local governments are expected to strategically laydown programs and activities that will alleviate levels of poverty in the district (Wawire, 2020).

According to Bhatia (2006) revenues generated from property taxes and other things can be put into two folds; tax revenue and non-tax revenue. In financial analysis, revenue is very significant since it is part of measures in determining financial inflows and financial outflows. Revenue is termed as receivables in government, as it is purported in financing services and implementing development programs (Akudugu, 2016). The success of decentralization program in a locality strongly depends on sustainable revenue in the area. This is because in building independent and accountable governance at the local units, generating reliable revenue at the local levels is very key. The ability of a local government unit to tackle the needs and priorities of its people wholly depends on its financial muscle and autonomy. There are available sources for generating revenue at the local levels normally provided in the constitution (Alam and Koranteng 2015).

2.4 Brief history and Local Government Structure in Ghana

The process of decentralization in Ghana started in 1988 under the legal framework provided under the PNDC 207. The Local Government Act 462 enacted in 1993 promoted the process. However, over three decades down the line, the capacity of Metropolitan, Municipal, District Assemblies (MMDAs) to fully undertake issues of development in their respective localities, particularly in the area of poverty, is still critical in the process of institutionalizing decentralization in Ghana. In the process to carry-out the decentralization idea, in 1988/1989 all the districts in Ghana were re-organized into local government units, with the aim of bringing governance to the doors steps to people. Additionally, corruption was also targeted to be drastically reduced amongst government officials at the time (Adusei-asante, 2016).

The 1980s reforms subdivided the regions in Ghana into 110 districts, under which local administration had to be handled by the various local assemblies. Fast forward, in the year 2006, the districts assemblies number jumped up to 138, as a result of additional 28 districts created at the time. In 2008 some district assemblies were elevated to municipal status, and went ahead to create more new districts bringing the total number to 170. Also, additional 46 districts were established in 2012 shooting up the number to 216 districts. The number of district assemblies continuous to be in the increase, the figure further rise from 216 in 2012 to 254 in 2017, and again increased to 260 in 2019. Generally, the brain behind these continuous divisions is to ensure participatory democracy at the lower levels as well as equitably distribution of national resources (Scott, 2018).

2.5 An Overview of the Afigya Kwabre South District Assembly

The Afighya Kwaabre South District was created out of the Afigya Kwabre District in November 2017 under a Legislative Instrument (L.I 2333), where its district capital is located at Kodie. The District is located in the central part of Ashanti Region of Ghana between Latitudes 6.893867 and 6.894077, and Longitudes -1.68917 and -1.52372 (WGS 84 coordinate system). The district has an area of about 122 square kilometers (12,188.3 hectares). The District is bounded by Suame Municipal Assembly to the South, Afigya Kwabre North to the North, Atwima Nwabiagya North to the West, Sekyere South to the North East, and Kwabre East Municipal to the South East. The central location of the district within the Ashanti Region coupled with its accessibility to most of the areas make interaction among the populace very easy Afigya-Kwabre South District (2017).

2.6 Empirical Review

Mpaata et al., (2017) the study examines the effect of local government revenue mobilization on the delivery of services in Masaka District in Uganda. The study employed purposive sampling technique, of which 60 respondents were administered the questionnaires. The study results indicate that, there is a significant relationship between the tax base and delivery of basic services in the area. And also, there is a significant relationship between the existed revenue mobilization capacity and delivery of basic services in the district. The investigation however found a negative relationship between transparency and services delivery.

Otieno *et al.*, (2013) studied how information systems can affect revenue mobilization in the Homa Bay County in Kenya. A structured cross-section survey method was used to obtain data from 2,007 respondents. The study results found that, there exist a significant relationship between information systems, and also efficiency and effectiveness in revenue mobilization. The study

again reveals a significant positive relationship internal control systems and revenue mobilization. The study therefore recommended the county to fully and properly integrate information management systems into its daily activities and processes in line with revenue generation.

Dada (2017) assesses the problems and prospects of revenue collection among local governments in Nigeria. The investigation basically focused on how development affect internal sources of funding by local governments. The study designed questionnaires as a source of its data for analysis. The findings indicate that development has a strong influence on revenue generated internally of local governments in Nigeria, and also financial misappropriation significantly affects local governments revenue generated internally in Nigeria. The study drawn a conclusion that, the level of human and infrastructural development and the rate of financial misappropriation are the key elements to Nigerians local governments revenue base. Finally, the study recommended that, various local governments should promote human and infrastructural developments as well as designing an effective motivation measures for staff to enhance the level of local governments revenue mobilization in the country.

Kimutai (2017) investigated the impact of training in increasing revenue mobilization on socio-economic development in Rift North in Kenya. The study used descriptive research design. The sample size was made up of 321 respondents selected randomly. The results from the regression analysis reveal that training has significant influence on socio-economic development in Rift North county. The study therefore strongly recommended County officials to be taken through some training with regards to revenue mobilization methods.

Adu-gyamfi (2014) critically examines effective revenue mobilization by the Upper Denkyira East Municipal Assembly in Ghana. The study employed both quantitative and qualitative approach in its estimations and analysis. The sample selected for the investigation was based on purposive and

convenient sampling techniques, with 85 respondents. The study findings indicate that, major sources of internal generation funds were property rates, tolls, fees and licenses. The study further reveals that the assembly was facing serious challenges in terms of mobilizing revenue as a result of inadequate availability of data with regards to revenue sources, non-existence of workable bye-laws to enforce revenue collections, untrained revenue collectors, and inadequate staff personnel in the area of communication and technology. The study finally recommended to the assembly to vigorously campaign on tax education, motivating and training of revenue collectors, enforcement of bye-laws, and ensure that tax defaulters are prosecuted.

Scott (2018) investigated revenue mobilization practices amongst district assemblies in Ghana and how they influence services delivery. The study used a mixed research design to organize quantitative and qualitative data for the study, using questionnaires. The investigation adopted a multi-stage sampling technique, to which 612 respondents were selected. The investigation results reveal that revenue collection practices greatly impact services delivery. The study recommended authorities to undertake effective up-to-date audit practices as well as automated revenue collection techniques to widen the net base of the revenues collected. It further indicates that central government should ensure that the District Assemblies Common Fund (DACF) is transferred to the various assembly units in time.

Opoku et al., (2014) extensively assessed local revenue mobilization mechanisms at the Abura-Asebu-Kwamankese District Assembly in Ghana. A total of 214 people formed the selected sample size. The study findings show that the assembly includes local tax collectors in their decisions and planning. However, it was found that tax payers were not considered in the assembly decision making, coupled with poor managerial skills, inadequate skill personnel, poor cash management, corruption, and accountability problems hindering the effective performance of the

assembly. The study recommended for strong and robust monitoring teams to put in place to duly supervise the activities of revenue collectors. Appropriate sanctions should be meted out to tax defaulters to serve deterrent to others. It further added that the assembly should create room for private participation for effective revenue mobilization.

Adusei-asante (2016) examines the Assembly Members of local government system in Ghana. The study centered on the weaknesses somehow inherent in the local government system in Ghana most particularly affecting the assembly members' operations. The study unearthed that, most assembly members across the selected districts face major challenges in the course of their duty. The study recommended national education for assembly members as well as some constitutional amendments to further deepen the idea of decentralization in the country.

Adu et al., (2020) investigated local government institutions in Ghana that have employed digitized technology to improve upon their revenue mobilization processes most especially in the Accra Metropolitan Assembly. This is because the Accra Metropolitan Assembly was the first amongst local government institutions in Ghana that introduced the point of sale devices in collection of rates as early as 2012. The study found that the intervention was only a failure since its inception could not result increase in revenue collection in the metropolis. They however stated that the intervention has help to enhance transparency and accountability in rate collection activities. The study therefore recommended promoting similar interventions to enhance effective revenue generation.

2.7 Conceptual Framework

Despite the above research-related evidences on local governments and revenue mobilization, it is realized that the general contribution to academic debate on the subject is weak. This is because studies on the subject are generally few, and most of them provided their evidences based on meta-analysis and literature reviews. However, a lack of related studies in a Ghanaian context is direr. The special interest of the researcher in this study is to provide related evidence using primary data and empirical analysis, which provides a more valid and verifiable estimation on how services delivery affects revenue mobilization in the Afigya Kwabre South District in the Ashanti Region in Ghana. The study adopted the following conceptual framework;

Figure 1

Independent Variables

Services Delivery

- Service Availability
- Quality of service
- Cost of service
- Citizen satisfaction

Dependent Variable

Revenue Mobilization

Author's source, 2020

2.8 Conclusion

Based on the above related literature, it is realized that little emphasis has been placed on services delivery and its impact on revenue mobilization. Many of earlier researchers rather focused on how revenue mobilization influence services delivery but not the vice versa. Hence the researcher identified a gap in the literature and has taken upon to find out how services delivery can affect revenue mobilization of the Afigya Kwabre South District.



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter gives detail description of how the whole research is carried out. It placed emphasis on the study design, study population, sample selection, research instruments, data collection procedure and analysis. The chapter finally concludes on ethical considerations.

3.2 Population/ Sample Selection

The study population of this investigation is 230, thus the heads of decentralized departments, assembly members, opinion leaders, and other local bureaucrats who have much experience in assembly matters and community members at the grassroots level. The sample size for the study is 150 and is made up of 25 revenue collectors, 120 respondents from the three major communities in the district, thus Buoho, Afrancho, and Atimatim, constituting of Chiefs, businessmen, hawkers, traders, market women, community members, drivers, assembly members, decentralized heads, and also 5 personnel from the district assembly were selected for the research. The researcher used convenient and purposive sampling technique, since this can best achieve the researcher the needed information.

3.3 Research Instruments

For the purpose of this study, data would be collected through the use of a structured questionnaire, and thereafter analyze using quantitative methods of analyses. Thus, the study would be based on primary data collection through a well-structured questionnaire that would measure the related research variables to gain insights into the phenomena. The questionnaires would be developed based on the research questions. The researcher prefers to use questionnaires

in sourcing information from respondents because they may feel reluctant to discuss certain personal issues with the researcher. The questionnaires would be both closed and open-ended to allow respondents to answer questions within the objective of the study.

3.4 Reliability and Validity

Reliability refers to the extent at which the study results are consistent over a period of time as well as accurate representation of the population under study Joppe (2000). Validity also refers to the ability of the construct to exactly measure it designed for. In an attempt to safeguard consistency and accurateness from the gathered data, the study undertakes the following processes; After the data collection, the questionnaires would be screened to find out if there are any errors and the necessary corrections would be made. The questions phrased and the options for responding by the respondents would be assessed to find out if they are appropriate. The questionnaires would be assessed to find out whether it would be comprehensive enough to collect all the information needed to address the purpose and goals of the study

3.5 Data Gathering and Analysis Procedure

The researcher would first send the questionnaires to respondents. After that, follow-ups would be made to retrieve the answered questionnaires from respondents. It would take the researcher one week to get the questionnaires back from respondents. When the researcher received questionnaires from the respondents, another week would be used to look into answers given by respondents and confirm certain facts. Data from the questionnaires would be analyzed based on the research questions.

3.6 Ethical Consideration

According to Cooper and Schindler (2000), the aim of ethics in research is to make sure no one suffers negative consequences from the research process. The confidentiality and privacy usually considered in research is to ensure that the information obtained are used for only the purposes of the research. In the process of collecting data, the researcher ensured that all ethical issues are taken or adhered to the later to avoid the study from ethical breaches. The researcher would seek the consent of respondents before given out the questionnaires. Again the researcher would make known to the respondents about the purpose of the study and assured them of the confidentiality of their responses.

3.6 The Ordinary Least Square (OLS)

The study also used Ordinary Least Square (OLS) in estimating the relationship between services delivery and revenue mobilization practices in the Afigya-Kwabre District. The study employed the OLS estimation technique based on the fact that, it is said to be BLUE by Gauss Markov Theorem.

3.7 Description and Measurement of Variables

Revenue Mobilization

The study defined revenue mobilization as external and internal means by which revenues are generated, thus both monetary and non-monetary revenues are collected together to support community development activities. This variable is the dependent variable for the study and is measured in Ghana Cedis.

Services Delivery (SVD)

The study also defined services delivery as basic social amenities provided by the Afigya-Kwabre District Assembly to which residents find value in it. This variable is an independent variable and is expected to have a positive relationship with revenue mobilization. The variable is measured in service availability.



CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Introduction

This chapter presents discussions and analysis of results obtained from the data gathered from the field. The chapter provided detail findings and discussions of results in relation to the set objectives for the study. The first section dealt with demographics of the respondents while the subsequent sections treated with specific issues addressing the research questions to the topic under study.

4.1 Demographics Data and Respondent's Information

Respondents' demographic data was analyzed. The various demographic data captured in the study includes; gender, age of the respondent, marital status, educational level, and the number of years the respondent has lived in the community.

4.1 Gender

| Gender | Frequency | Percent |
|--------|-----------|---------|
| Male | 86 | 57 |
| Female | 64 | 42.7 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.1.2 Age

The ages of respondents' range between 20-30 years, 31-40 years, 41-50 years, 51-60 years and 60 and above years. The respondents' responses indicate that, majority of the people captured under this study were youthful. Thus, greater number of these respondents fall within the ages of

41-50 years making 42 percent out of the total population considered. The results further reveal 21.3 percent of the respondents to be 60 and above. The age range of 20-30, 31-40, and 51-60 also recorded 1.3, 16, and 17.3 percent.

Table 4.2 Age

| Age | Frequency | Percent |
|--------------|-----------|---------|
| 20-30 | 2 | 1.3 |
| 31-40 | 24 | 16 |
| 41-50 | 63 | 42 |
| 51-60 | 26 | 17.3 |
| 60+ | 32 | 21.3 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.1.3 Marital Status

The sub-constructs for marital status specified for respondents were Single, Marriage, and Divorce. The results show that, many of the respondents considered under the study are marriage thus frequency of 89 making 59.3 percent. The marital status outcome also shows that, 22.7 percent and 18 percent of the respondents are singles and divorce respectively. The Table 4.3 below further illustrates the marital information of respondents.

Table 4.3

| Marital Status | Frequency | Percent |
|----------------|-----------|---------|
| Single | 34 | 22.7 |

| | | |
|----------|-----|------|
| Marriage | 89 | 59.3 |
| Divorce | 27 | 18 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.1.4 Level of Education

The study constructs for educational level includes; Masters, Degree, HND, WASSCE, and Others.

The study outcome indicates that, majority of the respondents to the questionnaires disseminated were WASSCE holders. Thus, respondents with this qualification are made up of 43.3 percent.

The results also show that, respondents with Masters degree, first degree, HND, and Others recorded a percentage of 10.7, 8.7, 33.3, and 4. The results clearly demonstrate that majority of the respondents including the assembly workers considered are WASSCE and HND holders. The Table 4.4 below further demonstrates the results on education.

Table 4.4 Educational Level

| Education | Frequency | Percent |
|-----------|-----------|---------|
| Masters | 16 | 10.7 |
| Degree | 13 | 8.7 |
| HND | 50 | 33.3 |
| WASSCE | 65 | 43.3 |
| Others | 6 | 4 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.2 Sources and Practices of Revenue Mobilization to the Assembly

4.2.1 Sources and Revenue Mobilization

The results also indicate that 82.4 percent of the respondents are aware that property rate, basic rate, tolls and the district assembly common fund (DACF) are reliable revenue sources to the assembly. 2.6 of the respondents are only aware about property rate, basic rate, and tolls as the major avenues for revenue mobilization in the Afigya Kwabre South District. Additionally, 0.7 percent are aware of tolls being the only source of mobilizing revenue the district, while 2.6 percent know of property rate, basic rate, and the district assembly common fund as channels of revenue mobilization. Based on the above analysis, it is clear that, some people within the Afigya Kwabre South District are not privy to some revenue mobilization sources to the assembly and thus contributed to the financial challenges of the assembly. For instance, 2 percent of the respondents believed only DACF is the legitimate source of mobilizing funds for the assembly in undertaking its developmental activities. Also, aside these popular sources of revenue, none of the respondents were able site other local means of generating revenue to assembly. The Table 4.5 below further illustrates respondents views on sources of revenue to the Afigya Kwabre South District. Where A represents property rate, B represents basic rate, C represents tolls, D represents district assembly common fund, and E represents other sources.

Table 4.5 Sources of revenue

| Revenue Source | Frequency | Percent |
|----------------|-----------|---------|
| A,B,C,D | 126 | 82.4 |
| A,B,C,D,E | 2 | 2.6 |
| A,B,D | 4 | 2.6 |

| | | |
|-------|-----|-----|
| A,C,D | 9 | 5.9 |
| C | 1 | 0.7 |
| D | 3 | 2.0 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.2.2 Efficiency of Revenue Mobilization Practices

The study results on measuring revenue mobilization practices in the Afigya Kwabre South District also reveals that 37.3 percent of the respondents viewed the methods to very efficient, while 36.7 percent see it as efficient. However, 24 percent and 2 percent viewed the various revenue mobilization practices in the Afigya Kwabre South District as inefficient and very inefficient respectively. The 24 percent views on the inefficiency ways in mobilizing funds in the district is quiet alarming. This confirms Kimutai (2017) studies in similar investigations where they categorically stated that, several district assemblies across Sub-Saharan Africa are facing inadequate revenue challenges as a results of inefficient revenue collection methods.

Table 4.6 Revenue Mobilization Practices

| Revenue Practices | Frequency | Percent |
|-------------------|-----------|---------|
| Very Efficient | 56 | 37.3 |
| Efficient | 55 | 36.7 |
| Inefficient | 36 | 24 |
| Very Inefficient | 3 | 2 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.2.3 Tax Education

The study results further show that, 26.7 percent of the respondents strongly agree the assembly often organize tax education for the community members from time to time. Also, large majority of the respondents, thus 38.7 percent also agreed that, the assembly do organize tax education for them. However, 16 percent of the respondents disagree to that assertion while 18.7 percent of them are neutral. This further confirmed that the Afigya Kwabre South District assembly in an attempt to collect revenue for developmental projects in the area faced with difficulties since 16 viewed the assembly do not educate them on their taxes. This again is in consistent with the works of Dada (2017) in similar investigation, they espoused that, local government units is able to mobilize adequate funds through frequent tax education and sensitization programs.

4.2.4 Community Participation

Additionally, 20.7 percent of the respondents strongly agree that, the Afigya Kwabre South District assembly occasionally inform the general public on the intended projects to carry out with the collected revenue, while 65.3 percent only agree to that. Meanwhile 6.7 percent of the respondents disagree to that assertion, while 7.3 percent said they were neutral in that regard. The Table 4.7 below further illustrates the results.

Table 4.7 Community Participation

| Participation | Frequency | Percent |
|----------------|-----------|---------|
| Strongly Agree | 31 | 20.7 |
| Agree | 98 | 65.3 |
| Neutral | 11 | 7.3 |

| | | |
|----------|-----|-----|
| Disagree | 10 | 6.7 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.2.5 Accountability

The respondents views on whether revenues collected by the assembly are accounted to them indicate that, 29.3 percent and 60 percent strongly agree and agree respectively. The results also show that, 6.7 percent of the respondents disagree that the assembly account revenues collected to them. Lastly, 7.3 percent of the respondents are neutral to that assertion. The Table 4.8 below further illustrates the above statement;

Table 4.8 Accountability

| Accountability | Frequency | Percent |
|----------------|-----------|---------|
| Strongly Agree | 44 | 29.3 |
| Agree | 90 | 60 |
| Neutral | 7 | 4.7 |
| Disagree | 9 | 6 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.2.6 The assembly has room to increase their net revenue by providing basic services to the people

The study results further indicate that 82 percent of the respondents strongly agree the Afigya Kwabre South District assembly has more room to increase its revenue net by increasing the rate at which it delivers basic services to the people within its catchment area. Also, 15.3 percent agree

to that effect. However, 1.3 percent of the respondents disagreed that the assembly can expand its revenue net by providing more basic services to the people. Table 4.9 below further portrays the above results.

Table 4.9 Revenue Expansion

| Revenue Expansion | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree | 123 | 82 |
| Agree | 23 | 15.3 |
| Neutral | 1 | 0.7 |
| Disagree | 2 | 1.3 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.3 Services Delivery

4.3.1 Whether the mode of revenue collection in the district is cost effective

The results show that, 60 percent of the respondents agree the Afigya Kwabre South District assembly mode of revenue collection is cost effective. Additionally, 19.3 percent also strongly believed cost effective measures are considered in mobilizing revenue within the district. However, 14.7 percent of the respondents disagree that the assembly adopt proper and cost-effective measures in generating revenue, while 2 percent strongly disagree to that effect. 12 percent of the respondents to this construct stayed neutral. The Table 4.10 below illustrates the above results.

Table 4.10 Mode of revenue collection is cost effective

| Cost-Effective | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree | 29 | 19.3 |
| Agree | 90 | 60 |
| Neutral | 17 | 11.3 |
| Disagree | 13 | 8.7 |
| Strongly Disagree | 1 | 0.7 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.3.2 Residents in the district have no issues with the tax they pay

The study also measured whether residents in the district have problems in paying tax. The results reveal that, 20 percent and 51.3 percent strongly agree and agree respectively that they do not face issues in paying tax. Notwithstanding, 14.7 percent and 2 percent disagree and strongly disagree to the construct, and hence implies that some challenges are faced in attempt to pay tax. The results also indicate that, 12 percent of the respondents stayed neutral. The Table 4.11 below summarizes the above analysis.

Table 4.11 Issues with tax payment

| No Issues | Frequency | Percent |
|----------------|-----------|---------|
| Strongly Agree | 30 | 20 |
| Agree | 77 | 51.3 |
| Neutral | 18 | 12 |

| | | |
|-------------------|-----|------|
| Disagree | 22 | 14.7 |
| Strongly Disagree | 3 | 2 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.3.3 Some special revenue is mobilized by the assembly to carry out specific projects

The result also shows that, 27.3 percent of the respondent strongly agree that, the Afigya Kwabre South District assembly generate special revenue for some specific projects. Additionally, 49.3 percent also agree the assembly do collect special revenue for some ear-marked projects. However, 13.3 percent disagree that the assembly do generate special revenue for special projects. 10 percent of these respondents remained neutral. The Table 4.12 below further illustrates the above explanations.

Table 4.12 Special Revenue for specific projects

| Specific Projects | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree | 41 | 27.3 |
| Agree | 74 | 49.3 |
| Neutral | 15 | 10 |
| Disagree | 20 | 13.3 |
| Strongly Disagree | - | - |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.3.4 Essential and adequate services in the district

The study results further indicate that, 18.7 percent of the respondents strongly agree the assembly provides essential and adequate services to its residents. 53.3 percent of the respondents also agree that the assembly provides essential and adequate services to the people. However, 10.7 percent and 4.7 percent of the respondent disagree and strongly disagree respectively on the issue that the assembly provides the people with essential and adequate services. 12.7 percent of the respondents stayed neutral. The Table 4.13 below throws more light on the above analysis.

Table 4.13 Quality Services

| Adequate Services | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree | 28 | 18.7 |
| Agree | 80 | 53.3 |
| Neutral | 19 | 12.7 |
| Disagree | 16 | 10.7 |
| Strongly Disagree | 7 | 4.7 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.3.5 Residents views in delivering services

The study also measured respondents view on whether the Afigya Kwabre South District assembly consider their view in delivering services. The results show that, 18 percent of the respondents strongly agree that, in delivering services, the assembly consider the views of residents within its catchment area. 37 percent of them also agree to the construct. However, 21.3 percent disagree the assembly take into consideration the views of people in delivering essential and basic needs to the

people in the area. Additionally, some small section of the respondents, thus 3.3 percent strongly disagree to the construct while 20 percent of them remained neutral. The Table 4.15 below illustrates the above results.

Table 4.15 Services Delivery

| Views in services delivery | Frequency | Percent |
|----------------------------|-----------|---------|
| Strongly Agree | 27 | 18 |
| Agree | 56 | 37.3 |
| Neutral | 30 | 20 |
| Disagree | 32 | 21.3 |
| Strongly Disagree | 5 | 3.3 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.3.6 Whether people are ready to pay additional tax for quality services

The study also measured the views of respondents on how willing they will be in paying additional tax for better and quality services. The constructs specified for this questionnaire are yes and no. The results reveal that, 95.9 percent of the respondents responded to yes. This implies that larger majority of the residents residing in the Afigya Kwabre South District are willing to pay additional fee for quality services delivery. However, 5 percent of the respondent responded no to the construct. The Table 4.16 below further illustrates the results.

Table 4.16 Additional tax for quality service

| Additional tax | Frequency | Percent |
|----------------|-----------|---------|
| Yes | 142 | 95.9 |
| No | 3 | 2 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.4 Ways of increasing revenue mobilization

4.4.1 The assembly can increase revenue mobilization through tax

Furthermore, the response from the assembly personnel show that, 51.3 percent of them viewed the assembly can increase revenue mobilization through tax education. 37.2 of the personnel also agree to the construct while 3.8 percent remained neutral. However, 7.7 percent of the personnel disagree the assembly can increase tax through tax education.

Table 4.17 Increase Tax

| Increase tax | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree | 40 | 51.3 |
| Agree | 29 | 37.2 |
| Neutral | 3 | 3.8 |
| Disagree | 6 | 7.7 |
| Strongly Disagree | - | - |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.4.2 The assembly can enforce taxes laws and prosecute defaulters

The results also reveal that, the assembly can enforce taxes laws and prosecute defaulters. The results indicate that, 12.8 percent of the personnel strongly agree the assembly can increase revenue enforcement of tax laws and prosecution of defaulters while 28.2 percent of them also agree to the construct. However, majority of the personnel, thus 34.6 percent disagree the assembly can enforce tax laws and prosecute defaulters. Also, 15.4 percent of the personnel strongly disagree to the construct and 9 percent of them stayed neutral.

Table 4.18 Tax enforcement

| Additional tax | Frequency | Percent |
|-------------------|-----------|---------|
| Strongly Agree | 10 | 12.8 |
| Agree | 22 | 28.2 |
| Neutral | 7 | 9 |
| Disagree | 27 | 34.6 |
| Strongly Disagree | 12 | 15.4 |
| Total | 150 | 100 |

Source: Field Survey, 2020

4.5 The OLS estimation

4.5.1 The impact of services delivery (SVD) on revenue mobilization (RM) in the Afigya Kwabre South District

The estimated Ordinary Least Squares (OLS) results reveals an R-Square value of 0.171. This means that, the predictable variables; services delivery (SVD) level of education, age of respondents, marital status, numbers of years lived in the community, and the number of years

worked with the Afigya-Kwabre District Assembly explained a variation of 17 percent in Revenue Mobilization (RM).

The results from the Ordinary Least Squares (OLS) estimates further indicate that, there exist a highly significant and positive relationship between services delivery and revenue mobilization in the Afigya Kwabre South District. The results imply that, a unit change in service availability will lead to Ghc0.399 change in revenue mobilization. The result is very important and confirmed the popular Ghanaian views that, they do not see what their taxes are used for. The result also agrees to earlier investigations by Mpaata et al., (2017) in similar field of study. Additionally, the OLS estimates reveal that, the level of education has no significant impact on revenue mobilization in the Afigya Kwabre South District. Even though the P-Value of level of education is insignificant, its sign is positive, thus means that, it has a positive relationship with revenue mobilization in the district. Additionally, the age of respondents, number of years lived in the Afugya-Kwabre District reveal positive association with revenue mobilization but statistically not significant. However, marital status, and number of years the personnel worked with the assembly indicate a negative relationship with revenue mobilization practices in the district.

The Table 4.19 below further summarizes the OLS results above.

Table 4.19 OLS Estimate

| Variable | Coefficient | Std. Error | t-Statistic |
|--------------------------|-------------|------------|-------------|
| SVD | 0.399*** | 0.084 | 4.774 |
| Level of Education | 0.061 | 0.040 | 1.501 |
| Age | 0.27 | 0.042 | 0.650 |
| Marital Status | -0.059 | 0.062 | -0.946 |
| Years lived in community | 0.001 | 0.015 | 0.086 |
| Years of work | -0.003 | 0.003 | -0.848 |
| Constant | 1.374*** | 0.299 | 4.602 |
| R-Square | 0.171 | - | - |
| F-Change | 4.914 | - | - |

Source: Field Survey, 2020

4.6 Discussion of Results

The study results based on the OLS estimations indicate a highly significant and positive relationship between services delivery and revenue mobilization in the Afigya-Kwabre District. The results show that, a unit increase in services availability leads to Ghc0.399 in revenue mobilization in the district. This finding corroborates with works of Kimutai (2017), where it stated that, the rate of basic services availability in a community has a significant effect on revenue mobilization. The findings also reveal that, the reliable sources of revenue mobilization to the Afigya-Kwabre District are the District Assembly Common Fund (DACF), property rate, basic rate, and tolls. These sources of revenue revealed by the respondents confirmed with Mayer (2011),

where it stated that, it stated that, sources of local governments funds are property rate, basic rate, tolls and central government subventions.

Additionally, majority (37 percent) of the respondents viewed efficiency of revenue mobilization practices in the district to be very efficient. This outcome compliments findings of Scott (2018) where it stated that, good revenue collections practices greatly impacts revenue mobilization. Furthermore, majority of the respondents agreed that, the assembly from time to organizes tax education for its residents. This is based on the fact that, 26.7 percent and 38.7 viewed that tax education is very efficient and efficient respectively. This is in consistent with the works of Dada (2017) in similar investigation, where it espoused that, local government units is able to mobilize adequate funds through frequent tax education and sensitization programs. Also, Adusei-asante (2016) in similar investigations reported that, many districts assemblies in Ghana are facing problems in revenue mobilization due to the fact that, most of its constituents do not have taxes education. Another good revenue practice reveal by the study results is that, the assembly do involve residents in its projects distributions. This based on the fact that, 20.7 percent and 65.3 percent 'strongly agree' and 'agree' to that construct respectively. This practice helps to identify the most pressing needs of the people and thus boost people interest in tax paying. The study also realized that the assembly is adhered to the principle of accountability, thus 60 percent of the respondents jointly 'agreed' to the residents of Afigya-Kwabre.

The results also show that, the assembly can increase its revenue net through provision of basic quality services to residents. 82 percent of the respondents 'strongly agree' the assembly has more room to expand its revenue net by ensuring that, basic services are delivered. This is also in agreement to findings of Bhatia (2006), where it found that, people are motivated to pay tax when

they are readily provided with basic services. This further confirmed to the fact that, 95.9 percent of the respondents agreed that, they are to pay additional tax for quality services delivery.

However, the results show that, the assembly cannot increase revenue mobilization through enforcement of tax laws and prosecutions of defaulters. This based on the fact that, 34.6 percent and 15.4 percent 'disagree' and 'agree' to that construct. This therefore means that, in an attempt for Afigya-Kwabre District to improve revenue mobilization, the court system should be used.



CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATION

5.0 Introduction

This chapter is the last chapter of the study, and consists of summary of major findings, conclusions, and recommendations.

5.1 Summary of Major Findings

The general aim of the study is to investigate the effects of services delivery on district assemblies' revenue mobilization with evidence from the Afigya Kwabre South District. The researcher therefore divided the general objective into specific objectives in an attempt to accomplish the purpose of the study. The specific objectives designed were; to examine the impact of services delivery on revenue mobilization in the Afigya Kwabre South District, to determine ways of improving services delivery and the existing revenue mobilization capacity of the district.

5.1.1 The Relationship between Services Delivery and Revenue Mobilization

The results from the Ordinary Least Squares (OLS) estimates indicate that, there exist a highly significant and positive relationship between services delivery and revenue mobilization in the Afigya-Kwabre South District. The results imply that, a unit change in services delivery will lead to 1.366 units change in revenue mobilization. The result is very important and confirmed the popular Ghanaian view that, they see what their taxes are used for. Additionally, the OLS estimates revealed that, the level of education has no significant impact on revenue mobilization in the Afigya Kwabre South District. Even though the P-Value of level of education is insignificant, its sign is positive, thus means that, it has a positive relationship with revenue mobilization in the district.

5.1.2 Ways of Improving Services Delivery and Revenue Mobilization Capacity

Based on the empirical findings, the results show that the assembly can increase revenue mobilization through tax education. Even though some section of the respondents disagreed to that assertion, majority of them shared similar views. The results further indicate that, the people are ready to pay additional tax for quality services. The findings also indicate that, in delivering services, the assembly consider their views. However, majority of the respondents viewed that, it would be difficult for the assembly to enforce tax laws and prosecute defaulters.

5.2 Conclusion

Based on the study findings, there exist a highly significant and positive relationship between services delivery and revenue mobilization in the Afigya Kwabre South District. The results imply that, a unit change in services delivery will lead to 1.366 units change in revenue mobilization. The result is very important and confirmed the popular Ghanaian views that, they see what their taxes are used for. Additionally, the OLS estimates reveal that, the level of education has no significant impact on revenue mobilization in the Afigya Kwabre South District. Even though the P-Value of level of education is insignificant, its sign is positive, thus means that, it has a positive relationship with revenue mobilization in the district.

Additionally, the results show that the assembly can increase revenue mobilization through tax education. Even though some section of the respondents disagreed to that assertion, majority of them shared similar views. The results further indicate that, the people are ready to pay additional tax for quality services. The findings also indicate that, in delivering services, the assembly consider residents views. However, majority of the respondents viewed that, it would be difficult for the assembly to increase revenue through enforcement of tax laws and prosecution defaulters.

5.3 Recommendation

Based on the findings from the study, the study recommends that quality services should be delivered by the Afigya Kwabre South District Assembly to the residents in the district since they are prepared and willing to pay additional fee for such services. The study further recommends effective and regular tax education to residents of the district in an attempt to clear some challenging bottlenecks to revenue mobilization in the district. Lastly, the study recommends future researchers to investigate the impact of district assembly accountability on revenue mobilization in the Afigya-Kwabre South District.



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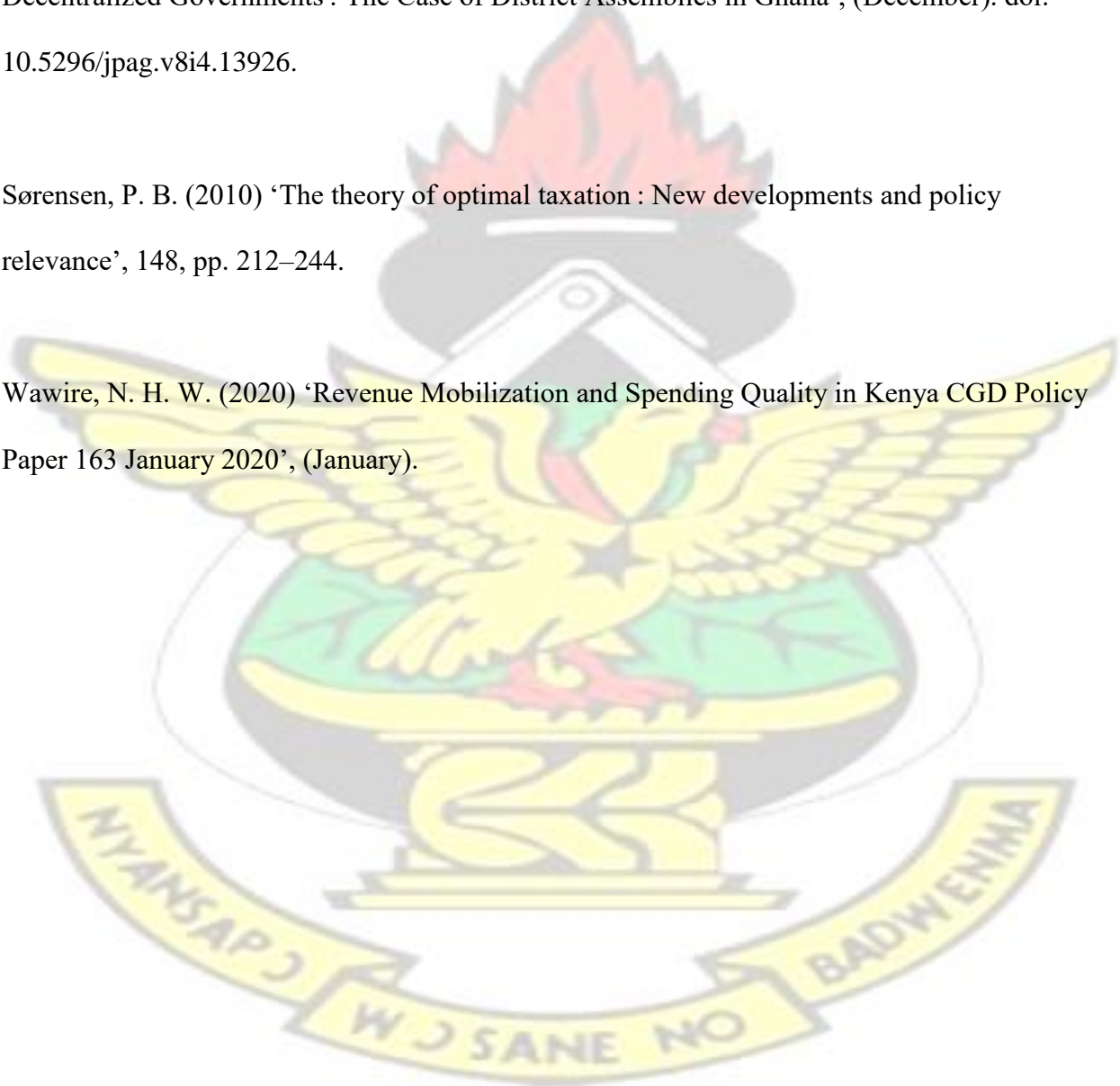
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Appendix

KNUST BUSINESS SCHOOL

QUESTIONNAIRES

I am a researcher from KNUST BUSINESS SCHOOL undertaking a research on the topic: the effects of services delivery on revenue mobilization in the Afigya-Kwabre South District.

I would be most grateful if you could please spare some few minutes of your time to answer all the following questions. The information will be used for academic purposes only, hence confidentiality is assured.

PART I: DEMOGRAPHICS

1. Gender: (a) Male (b) Female

2. Age (in years). Please tick (√)

20 – 30 31 – 40 41 – 50 51 – 60

61 and above

3. Marital status: Single Married Divorced

4. Highest level of education. Please tick (√)

PhD Master's Degree First Degree HND

SSCE/ WASSCE Others (specify)

5. How long have you being living in this community?.....years

6. How long have you being working in this Assembly? years

7. Which department are you? Specify:.....

8. How many hours on average do you work per day?Hours

9. Job title / position

10. What type of employment contract do you have? Please tick (✓)

Permanent Full Time [] Part-time [] Contract [] Temporal []

PART II: SOURCES AND PRACTICES OF REVENUE MOBILIZATION TO THE ASSEMBLY

1. Are you aware of the following sources of revenues to the District Assembly?

Please tick (✓)

- a. Property rate []
- b. Basic rate []
- c. Business Operating Permits (BOP) []
- d. District Assembly Common Fund (DACF) []
- e. Others, specify.....

2. Which of the following procedures does the District Assembly used to collect revenue?

Please tick (✓)

- a. Through their own staff (a) []
- b. Through their agents (b) []
- c. Both a and b []
- d. Others, specify

3. How would you rate mobilization practices in the District?

- a. Very Efficient

- b. Efficient
- c. Inefficient
- d. Very Inefficient

4.

5. The District Assembly often organizes tax education to the people

- a. Strongly agree
- b. Agree
- c. Neutral
- d. Disagree
- e. Strongly disagree

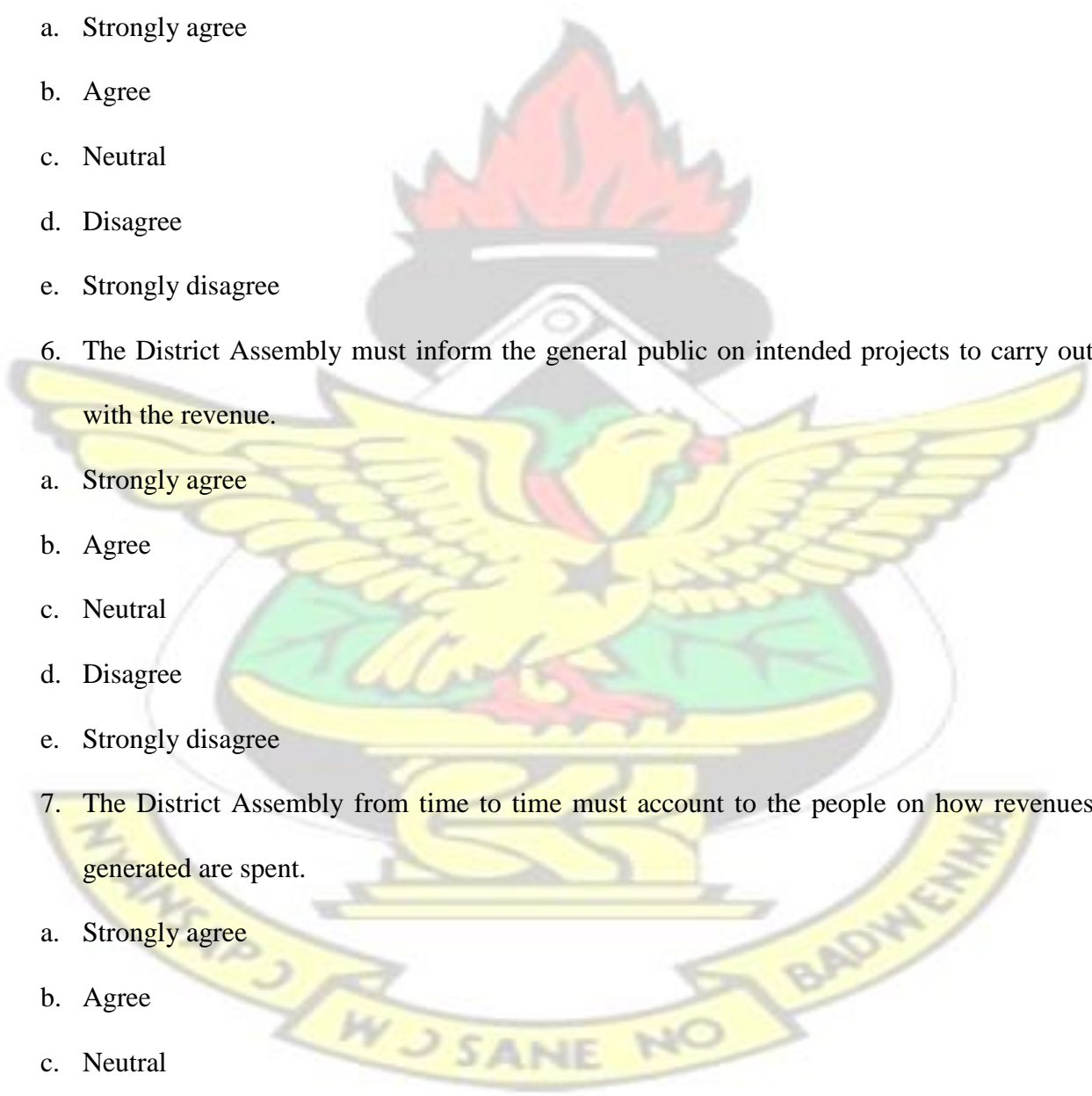
6. The District Assembly must inform the general public on intended projects to carry out with the revenue.

- a. Strongly agree
- b. Agree
- c. Neutral
- d. Disagree
- e. Strongly disagree

7. The District Assembly from time to time must account to the people on how revenues generated are spent.

- a. Strongly agree
- b. Agree
- c. Neutral
- d. Disagree

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e. Strongly disagree

8. Residents intentionally evade taxes.

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

9. Due to poor administrative capacity, the assembly is unable to assess the full revenue base.

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

e. Strongly disagree

10. Due to poor administrative capacity, the assembly is unable to enforce the payment of taxes.

a. Strongly agree

b. Agree

c. Neutral

d. Disagree

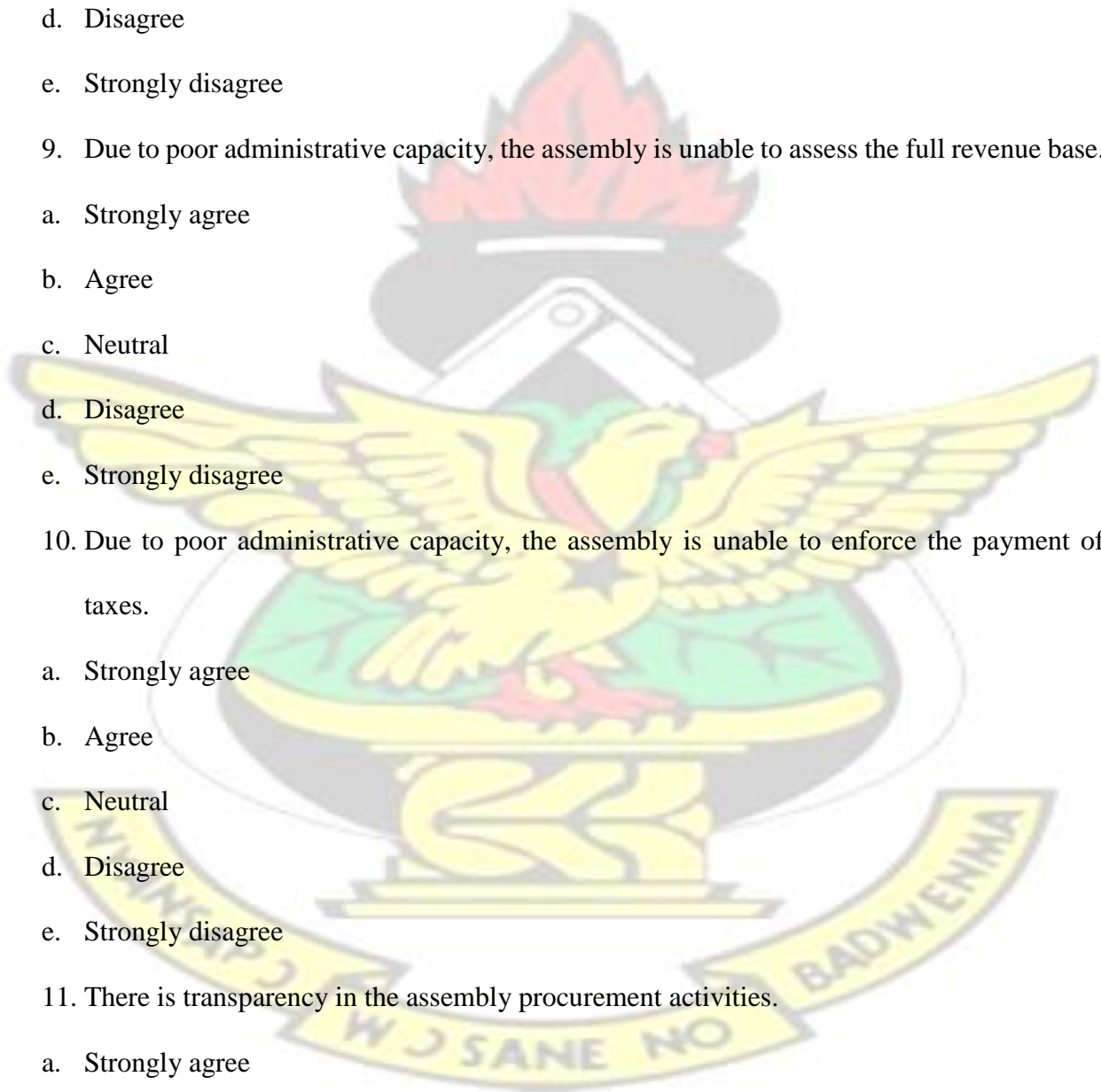
e. Strongly disagree

11. There is transparency in the assembly procurement activities.

a. Strongly agree

b. Agree

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- c. Neutral
- d. Disagree
- e. Strongly disagree

PART III: SERVICES DELIVERY

1. The mode of revenue collection in the district is cost effective.
 - a. Strongly Agree b. Agree c. Neutral d. Disagree e. Strongly Disagree
2. Residents in the District have no issues with the tax they pay.
 - a. Strongly Agree b. Agree c. Neutral d. Disagree e. Strongly Disagree
3. Some special revenue is mobilized by the assembly to carry out specific projects.
 - a. Strongly Agree b. Agree c. Neutral d. Disagree e. Strongly Disagree
4. Does the assembly provide essential and adequate services in the District?
 - a. Strongly Agree b. Agree c. Neutral d. Disagree e. Strongly Disagree
5. Does the assembly consider residents' views in delivering services?
 - a. Strongly Agree b. Agree c. Neutral d. Disagree e. Strongly Disagree
6. Will you still evade tax if the assembly delivers satisfactory and quality services?
 - a. Strongly Agree b. Agree c. Neutral d. Disagree e. Strongly Disagree
7. Revenue generated by the assembly is adequate for service provision.
 - a. Strongly Agree b. Agree c. Neutral d. Disagree e. Strongly Disagree
8. The rate at which services are provided significantly affect revenue generation.
 - a. Strongly Agree b. Agree c. Neutral d. Disagree e. Strongly Disagree

PART IV: QUESTIONNAIRE TO ASSEMBLY PERSONNEL

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

2. Age (in years). Please tick (√)

20 – 30 [] 31 – 40 [] 41 – 50 [] 51 – 60 []

61 and above []

3. Marital status: Single [] Married [] Divorced []

4. Highest level of education. Please tick (√)

PhD [] Master's Degree [] First Degree [] HND []

SSCE/ WASSCE [] Others (specify)

5. How long have you being living in this Assembly?.....years

6. Which department are you? Specify:.....

7. How many hours on average do you work per day?Hours

8. Job title / position

9. What type of employment contract do you have? Please tick (√)

Permanent Full Time [] Part-time [] Contract [] Temporal []

10. Identify sources of revenue to the assembly.

A

B

C

D

E

F

12. The Land Valuation Board is well resourced to carry out its mandate and task.

- a. Strongly agree
- b. Agree
- c. Neutral
- d. Disagree
- e. Strongly disagree

13. The District has up-to-date database on revenue sources.

- a. Strongly agree
- b. Agree
- c. Neutral
- d. Disagree
- e. Strongly disagree

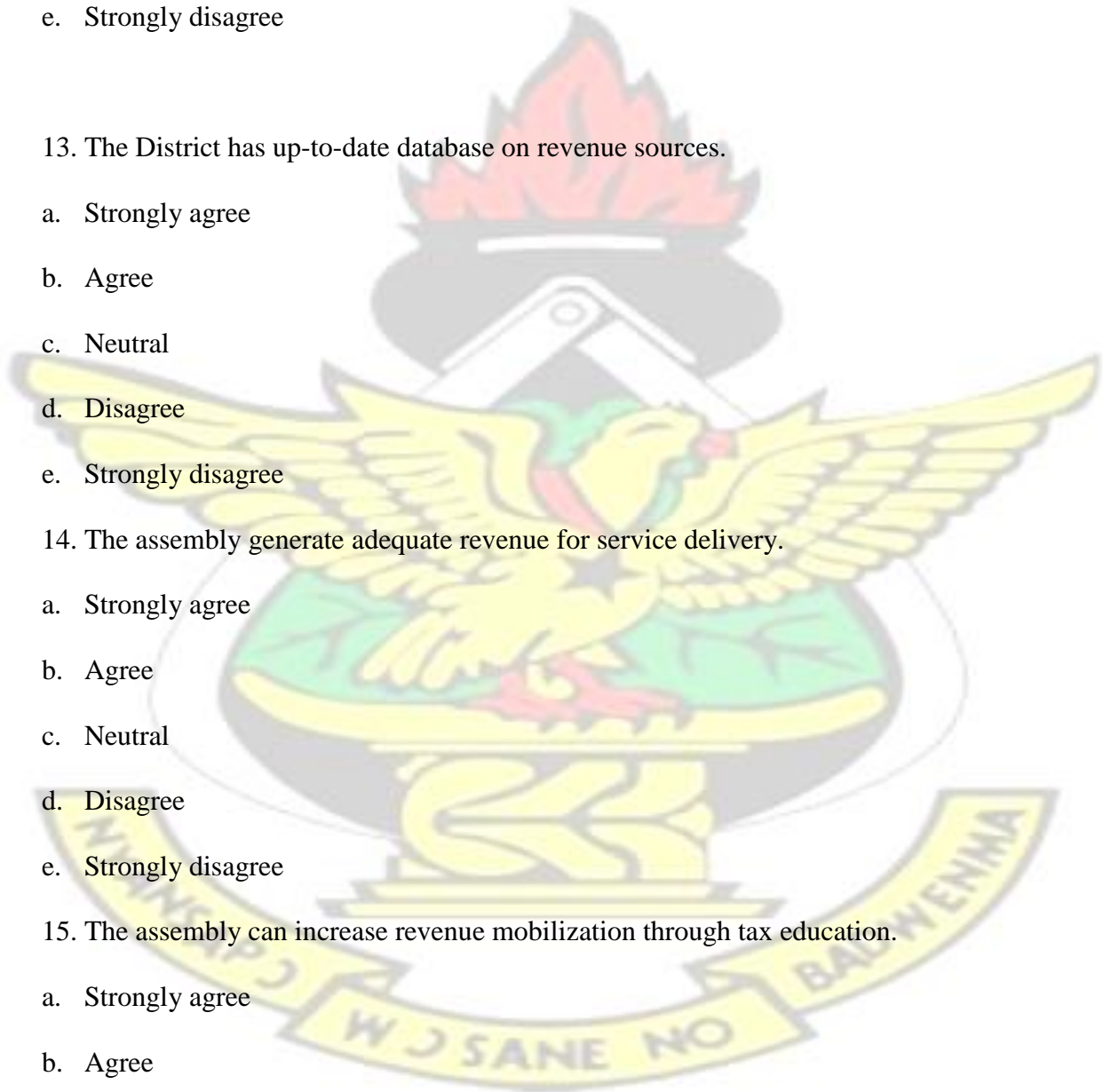
14. The assembly generate adequate revenue for service delivery.

- a. Strongly agree
- b. Agree
- c. Neutral
- d. Disagree
- e. Strongly disagree

15. The assembly can increase revenue mobilization through tax education.

- a. Strongly agree
- b. Agree
- c. Neutral

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- d. Disagree
- e. Strongly disagree

16. The assembly enforce taxes laws and prosecute defaulters.

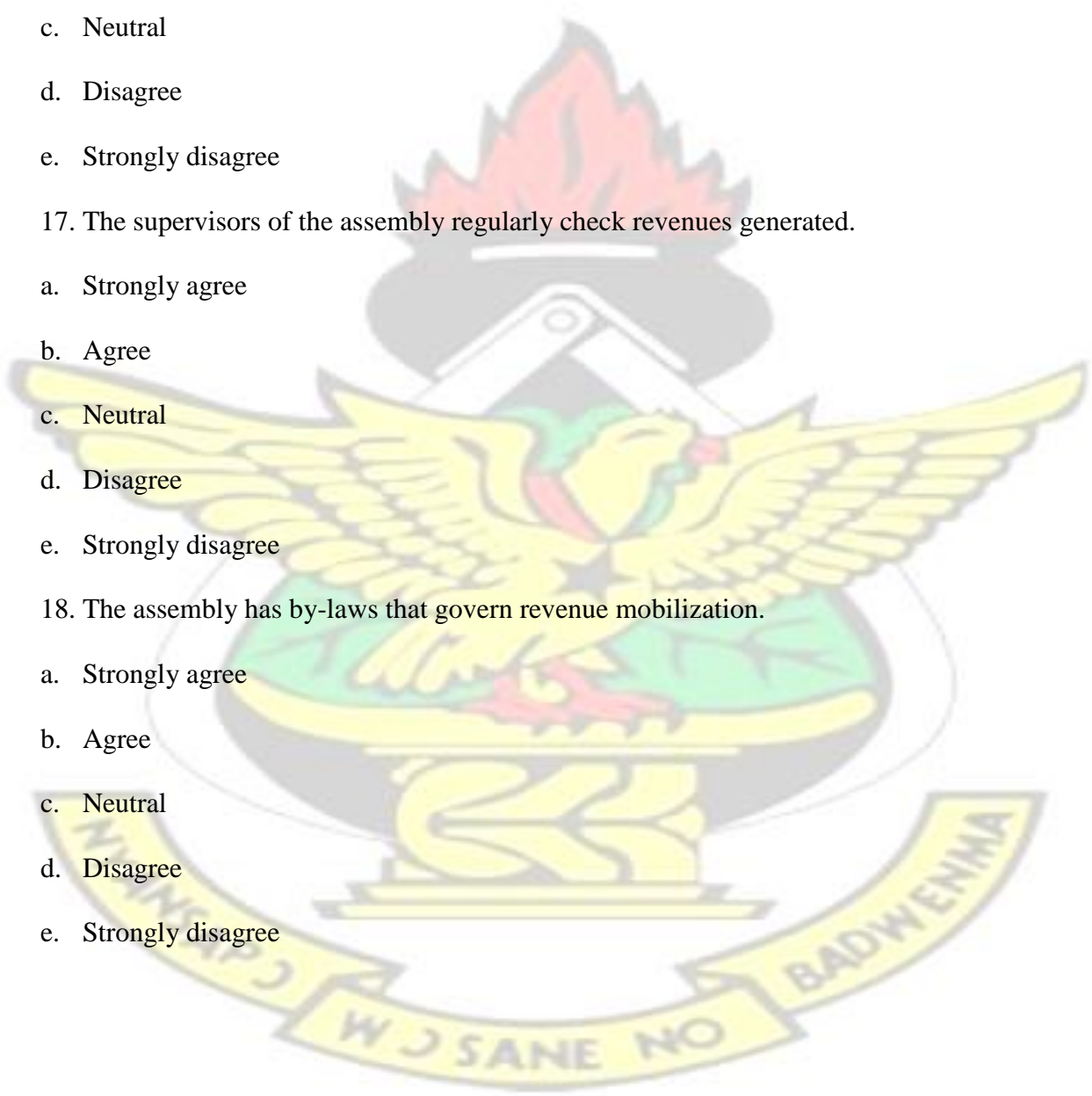
- a. Strongly agree
- b. Agree
- c. Neutral
- d. Disagree
- e. Strongly disagree

17. The supervisors of the assembly regularly check revenues generated.

- a. Strongly agree
- b. Agree
- c. Neutral
- d. Disagree
- e. Strongly disagree

18. The assembly has by-laws that govern revenue mobilization.

- a. Strongly agree
- b. Agree
- c. Neutral
- d. Disagree
- e. Strongly disagree



Statistics

| | | Gender | Age | Marriage | Level of education | Yrs |
|----------------|---------|--------|---------|----------|--------------------|----------|
| N | Valid | 150 | 150 | 150 | 150 | 150 |
| | Missing | 3 | 3 | 3 | 3 | 3 |
| Mean | | 1.4267 | 3.4733 | 1.9533 | 4.2133 | 17.9400 |
| Std. Deviation | | .49625 | 1.09726 | .63813 | 1.03358 | 14.62793 |
| Minimum | | 1.00 | 1.00 | 1.00 | 2.00 | 1.00 |
| Maximum | | 2.00 | 6.00 | 3.00 | 6.00 | 50.00 |

Gender

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid | Male | 86 | 56.2 | 57.3 | 57.3 |
| | Female | 64 | 41.8 | 42.7 | 100.0 |
| | Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | | |
| Total | | 153 | 100.0 | | |

Age

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|---------|-----------|---------|---------------|--------------------|
| Valid | 20 – 30 | 2 | 1.3 | 1.3 | 1.3 |
| | 31-40 | 24 | 15.7 | 16.0 | 17.3 |
| | 41-50 | 63 | 41.2 | 42.0 | 59.3 |
| | 51-60 | 26 | 17.0 | 17.3 | 76.7 |
| | 60+ | 32 | 20.9 | 21.3 | 98.0 |
| | 6.00 | 3 | 2.0 | 2.0 | 100.0 |
| | Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | | |
| Total | | 153 | 100.0 | | |

Marriage

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------|-----------|---------|---------------|--------------------|
| Valid | Single | 34 | 22.2 | 22.7 | 22.7 |
| | Marriage | 89 | 58.2 | 59.3 | 82.0 |
| | Divorce | 27 | 17.6 | 18.0 | 100.0 |
| | Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | | |
| Total | | 153 | 100.0 | | |

Level of education

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|---------|-----------|---------|---------------|--------------------|
| Valid | Masters | 16 | 10.5 | 10.7 | 10.7 |
| | Degree | 13 | 8.5 | 8.7 | 19.3 |
| | HND | 50 | 32.7 | 33.3 | 52.7 |
| | WASSCE | 65 | 42.5 | 43.3 | 96.0 |
| | Others | 6 | 3.9 | 4.0 | 100.0 |
| | Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | | |
| Total | | 153 | 100.0 | | |

Yrs

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | 1.00 | 2 | 1.3 | 1.3 | 1.3 |
| | 2.00 | 5 | 3.3 | 3.3 | 4.7 |
| | 3.00 | 9 | 5.9 | 6.0 | 10.7 |
| | 4.00 | 5 | 3.3 | 3.3 | 14.0 |
| | 5.00 | 5 | 3.3 | 3.3 | 17.3 |
| | 6.00 | 8 | 5.2 | 5.3 | 22.7 |
| | 7.00 | 5 | 3.3 | 3.3 | 26.0 |
| | 8.00 | 6 | 3.9 | 4.0 | 30.0 |
| | 9.00 | 7 | 4.6 | 4.7 | 34.7 |
| | 10.00 | 10 | 6.5 | 6.7 | 41.3 |
| | 11.00 | 6 | 3.9 | 4.0 | 45.3 |
| | 12.00 | 1 | .7 | .7 | 46.0 |

| | | | | | |
|---------|--------|-----|-------|-------|-------|
| 13.00 | | 6 | 3.9 | 4.0 | 50.0 |
| 14.00 | | 3 | 2.0 | 2.0 | 52.0 |
| 15.00 | | 5 | 3.3 | 3.3 | 55.3 |
| 16.00 | | 5 | 3.3 | 3.3 | 58.7 |
| 17.00 | | 8 | 5.2 | 5.3 | 64.0 |
| 18.00 | | 8 | 5.2 | 5.3 | 69.3 |
| 19.00 | | 5 | 3.3 | 3.3 | 72.7 |
| 20.00 | | 6 | 3.9 | 4.0 | 76.7 |
| 24.00 | | 1 | .7 | .7 | 77.3 |
| 29.00 | | 3 | 2.0 | 2.0 | 79.3 |
| 35.00 | | 9 | 5.9 | 6.0 | 85.3 |
| 40.00 | | 2 | 1.3 | 1.3 | 86.7 |
| 45.00 | | 5 | 3.3 | 3.3 | 90.0 |
| 47.00 | | 1 | .7 | .7 | 90.7 |
| 48.00 | | 5 | 3.3 | 3.3 | 94.0 |
| 49.00 | | 3 | 2.0 | 2.0 | 96.0 |
| 50.00 | | 6 | 3.9 | 4.0 | 100.0 |
| Total | | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | | |
| Total | | 153 | 100.0 | | |

1.Are you aware of the following sources of revenues to the District Assembly?

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| Valid | 3 | 2.0 | 2.0 | 2.0 |
| 4 | 3 | 2.0 | 2.0 | 3.9 |
| abcd | 126 | 82.4 | 82.4 | 86.3 |
| abcde | 4 | 2.6 | 2.6 | 88.9 |
| abd | 4 | 2.6 | 2.6 | 91.5 |
| acd | 9 | 5.9 | 5.9 | 97.4 |
| c | 1 | .7 | .7 | 98.0 |
| Dacf | 3 | 2.0 | 2.0 | 100.0 |
| Total | 153 | 100.0 | 100.0 | |

2. Which of the following procedures does the District Assembly used to collect revenue

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| Valid | | | | |
| | 3 | 2.0 | 2.0 | 2.0 |
| 3 | 2 | 1.3 | 1.3 | 3.3 |
| ab | 83 | 54.2 | 54.2 | 57.5 |
| abc | 2 | 1.3 | 1.3 | 58.8 |
| abcd | 3 | 2.0 | 2.0 | 60.8 |
| ac | 4 | 2.6 | 2.6 | 63.4 |
| c | 56 | 36.6 | 36.6 | 100.0 |
| Total | 153 | 100.0 | 100.0 | |

3. How would you rate mobilization practices in the District?

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|-----------|---------|---------------|--------------------|
| Valid | | | | |
| Very Efficient | 56 | 36.6 | 37.3 | 37.3 |
| Efficient | 55 | 35.9 | 36.7 | 74.0 |
| Inefficient | 36 | 23.5 | 24.0 | 98.0 |
| Very Inefficient | 3 | 2.0 | 2.0 | 100.0 |
| Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | |
| Total | 153 | 100.0 | | |

4. The District Assembly often organizes tax education to the people

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------|-----------|---------|---------------|--------------------|
| Valid | | | | |
| Strongly agree | 40 | 26.1 | 26.7 | 26.7 |
| agree | 58 | 37.9 | 38.7 | 65.3 |
| Neutral | 28 | 18.3 | 18.7 | 84.0 |
| Disagree | 24 | 15.7 | 16.0 | 100.0 |
| Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | |
| Total | 153 | 100.0 | | |

5.The District Assembly must inform the general public on intended projects to carry out with the revenue.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------------|-----------|---------|---------------|--------------------|
| Valid | Strongly agree | 31 | 20.3 | 20.7 | 20.7 |
| | agree | 98 | 64.1 | 65.3 | 86.0 |
| | Neutral | 11 | 7.2 | 7.3 | 93.3 |
| | Disagree | 10 | 6.5 | 6.7 | 100.0 |
| | Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | | |
| Total | | 153 | 100.0 | | |

6.The District Assembly from time to time must account to the people on how revenues generated are spent.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------------|-----------|---------|---------------|--------------------|
| Valid | Strongly agree | 44 | 28.8 | 29.3 | 29.3 |
| | agree | 90 | 58.8 | 60.0 | 89.3 |
| | Neutral | 7 | 4.6 | 4.7 | 94.0 |
| | Disagree | 9 | 5.9 | 6.0 | 100.0 |
| | Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | | |
| Total | | 153 | 100.0 | | |

7.The assembly has room to increase their net revenue by providing basic services to the people.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------------|-----------|---------|---------------|--------------------|
| Valid | Strongly agree | 123 | 80.4 | 82.0 | 82.0 |
| | agree | 23 | 15.0 | 15.3 | 97.3 |
| | Neutral | 1 | .7 | .7 | 98.0 |
| | 12.00 | 2 | 1.3 | 1.3 | 99.3 |
| | 13.00 | 1 | .7 | .7 | 100.0 |
| | Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | | |
| Total | | 153 | 100.0 | | |

1. The mode of revenue collection in the district is cost effective

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly agree | 29 | 19.0 | 19.3 | 19.3 |
| | agree | 90 | 58.8 | 60.0 | 79.3 |
| | Neutral | 17 | 11.1 | 11.3 | 90.7 |
| | Disagree | 13 | 8.5 | 8.7 | 99.3 |
| | Strongly Disagree | 1 | .7 | .7 | 100.0 |
| | Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | | |
| Total | | 153 | 100.0 | | |

2.Residents in the District have no issues with the tax they pay.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly agree | 30 | 19.6 | 20.0 | 20.0 |
| | agree | 77 | 50.3 | 51.3 | 71.3 |
| | Neutral | 18 | 11.8 | 12.0 | 83.3 |
| | Disagree | 22 | 14.4 | 14.7 | 98.0 |
| | Strongly Disagree | 3 | 2.0 | 2.0 | 100.0 |
| | Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | | |
| Total | | 153 | 100.0 | | |

3.Some special revenue is mobilized by the assembly to carry out specific projects

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------------|-----------|---------|---------------|--------------------|
| Valid | Strongly agree | 41 | 26.8 | 27.3 | 27.3 |
| | agree | 74 | 48.4 | 49.3 | 76.7 |
| | Neutral | 15 | 9.8 | 10.0 | 86.7 |
| | Disagree | 20 | 13.1 | 13.3 | 100.0 |
| | Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | | |

| | | | | |
|-------|-----|-------|--|--|
| Total | 153 | 100.0 | | |
|-------|-----|-------|--|--|

4.Does the assembly provide essential and adequate services in the District?

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly agree | 28 | 18.3 | 18.7 | 18.7 |
| | agree | 80 | 52.3 | 53.3 | 72.0 |
| | Neutral | 19 | 12.4 | 12.7 | 84.7 |
| | Disagree | 16 | 10.5 | 10.7 | 95.3 |
| | Strongly Disagree | 7 | 4.6 | 4.7 | 100.0 |
| | Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | | |
| Total | | 153 | 100.0 | | |

5.Does the assembly consider residents' views in delivering services?

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly agree | 27 | 17.6 | 18.0 | 18.0 |
| | agree | 56 | 36.6 | 37.3 | 55.3 |
| | Neutral | 30 | 19.6 | 20.0 | 75.3 |
| | Disagree | 32 | 20.9 | 21.3 | 96.7 |
| | Strongly Disagree | 5 | 3.3 | 3.3 | 100.0 |
| | Total | 150 | 98.0 | 100.0 | |
| Missing | System | 3 | 2.0 | | |
| Total | | 153 | 100.0 | | |

6.Are you ready to pay additional tax if the assembly provides quality services for a fee?

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 142 | 92.8 | 95.9 | 95.9 |
| | No | 3 | 2.0 | 2.0 | 98.0 |
| | 3.00 | 3 | 2.0 | 2.0 | 100.0 |
| | Total | 148 | 96.7 | 100.0 | |

| | | | | |
|---------|--------|-----|-------|--|
| Missing | System | 5 | 3.3 | |
| Total | | 153 | 100.0 | |

1. Identify sources of revenue to the assembly.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|--------|-----------|---------|---------------|--------------------|
| Valid | | 90 | 58.8 | 58.8 | 58.8 |
| | 2 | 9 | 5.9 | 5.9 | 64.7 |
| | A | 3 | 2.0 | 2.0 | 66.7 |
| | Ab | 3 | 2.0 | 2.0 | 68.6 |
| | abc | 11 | 7.2 | 7.2 | 75.8 |
| | abcd | 13 | 8.5 | 8.5 | 84.3 |
| | abcdef | 18 | 11.8 | 11.8 | 96.1 |
| | abcdf | 3 | 2.0 | 2.0 | 98.0 |
| | p_rate | 3 | 2.0 | 2.0 | 100.0 |
| | Total | 153 | 100.0 | 100.0 | |

2. The assembly generate adequate revenue for service delivery.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------------|-----------|---------|---------------|--------------------|
| Valid | Strongly agree | 19 | 12.4 | 24.4 | 24.4 |
| | agree | 40 | 26.1 | 51.3 | 75.6 |
| | Neutral | 14 | 9.2 | 17.9 | 93.6 |
| | Disagree | 5 | 3.3 | 6.4 | 100.0 |
| | Total | 78 | 51.0 | 100.0 | |
| Missing | System | 75 | 49.0 | | |
| Total | | 153 | 100.0 | | |

3. The assembly can increase revenue mobilization through tax education.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------------|-----------|---------|---------------|--------------------|
| Valid | Strongly agree | 40 | 26.1 | 51.3 | 51.3 |
| | agree | 29 | 19.0 | 37.2 | 88.5 |
| | Neutral | 3 | 2.0 | 3.8 | 92.3 |

| | | | | | |
|---------|----------|-----|-------|-------|-------|
| | Disagree | 6 | 3.9 | 7.7 | 100.0 |
| | Total | 78 | 51.0 | 100.0 | |
| Missing | System | 75 | 49.0 | | |
| Total | | 153 | 100.0 | | |

4. The assembly enforce taxes laws and prosecute defaulters.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly agree | 10 | 6.5 | 12.8 | 12.8 |
| | agree | 22 | 14.4 | 28.2 | 41.0 |
| | Neutral | 7 | 4.6 | 9.0 | 50.0 |
| | Disagree | 27 | 17.6 | 34.6 | 84.6 |
| | Strongly Disagree | 12 | 7.8 | 15.4 | 100.0 |
| | Total | | 78 | 51.0 | 100.0 |
| Missing | System | 75 | 49.0 | | |
| Total | | 153 | 100.0 | | |

Coefficients^a

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|-------|--------------------|-----------------------------|------------|---------------------------|-------|------|-------------------------|-------|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 1.366 | .215 | | 6.350 | .000 | | |
| | SVD | .347 | .071 | .378 | 4.873 | .000 | .975 | 1.026 |
| | Level of education | .011 | .034 | .025 | .325 | .745 | .975 | 1.026 |

a. Dependent Variable: RM

Model Summary^b

| Model | R | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | Sig. F Change | Durbin-Watson | |
|-------|-------------------|-------------------|----------------------------|-------------------|----------|-----|---------------|---------------|-------|
| | | | | R Square Change | F Change | df1 | | | df2 |
| 1 | .374 ^a | .140 | .42786 | .140 | 11.979 | 2 | 147 | .000 | 1.590 |

a. Predictors: (Constant), Level of education, SVD

b. Dependent Variable: RM

$$Y_t = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_{ik} X_{i1} + \beta_3 + \varepsilon_i = \beta_0 + \sum_{p=1}^k \beta_p X_{ip} + \varepsilon_i \quad (3.5)$$

In matrix form

$$Y = X\beta + \zeta \quad (3.6)$$

Here Y is an $(n \times 1)$ vector of dependent variables, X is an $[n \times (k + 1)]$ matrix of observations on $(k - 1)$ predictor variables. β is a $[(k + 1) \times 1]$ vector of regression coefficients to be estimated from the observations(data), and ζ is an $(n \times 1)$ matrix of error terms which follows a normal distribution with mean zero and constant variance.

Mathematically $\zeta \sim N(0, \sigma^2)$.

Next, compute the expected value and variance.

Now given,

$$Y = X\beta + \zeta \quad (3.7)$$

The Expectation of Y is given as

$$E(Y_i) = E(X\beta + \zeta) = X\beta \quad (3.8)$$

The variance of Y is given as

$$\text{Var}(Y_i) = \text{Var}(X\beta + \zeta) = \sigma_i^2 \quad (3.9)$$

The goal of Ordinary Least Squares is to minimize the sum of squared differences between the observed and the predicted values of the L-2 norm of the Beta vector.

From $Y = X\beta + \xi$, we have

$$\xi = Y - X\beta \quad (3.10)$$

$$\xi^T \xi = (Y - X\beta)^T (Y - X\beta) \quad (3.11)$$

$$= (Y^T - \beta^T X^T)(Y - X\beta) \quad (3.12)$$

$$\therefore \xi^T \xi = (Y^T Y - Y^T X\beta - \beta^T X^T Y + \beta^T X^T X\beta) \quad (3.13)$$

Differentiating with respect to β and setting the derivative to zero helps us to find the optimal value for β

$$\frac{\partial \xi^T \xi}{\partial \beta} = -2X^T Y + 2X^T X\beta \quad (3.14)$$

$$\frac{\partial \xi^T \xi}{\partial \beta} = -2X^T Y + 2X^T X\beta, \text{ but } \frac{\partial \xi^T \xi}{\partial \beta} = 0 \quad (3.15)$$

Implying that

$$-2X^T Y + 2X^T X\beta = 0 \quad (3.16)$$

Therefore

$$X^T X\beta = X^T Y \quad (3.17)$$

Rearranging the formula gives

$$\hat{\beta} = (X^T X)^{-1} X^T Y \quad (3.18)$$

This equation is used to compute the β parameter estimates.

3.6.2 Model Performance and Accuracy of the OLS Estimators

Expectation, Variance and MSE of the estimator are respectively given as follows

$$E(\hat{\beta}) = E[(X^T X)^{-1} X^T Y] \quad (3.19)$$

$$= [(X^T X)^{-1} X^T E(Y)] \quad (3.16)$$

$$= (X^T X)^{-1} X^T X \beta \quad (3.17)$$

$$\therefore E(\hat{\beta}) = \beta \quad (3.20)$$

Hence $\hat{\beta}$ is unbiased in estimating β , we have

$$Var(\hat{\beta}) = Var[(X^T X)^{-1} X^T Y] \quad (3.19) = (X^T X)^{-1} X^T Var(Y) X (X^T X)^{-1}$$

$$(3.20) = (X^T X)^{-1} \sigma_i^2 I X^T X (X^T X)^{-1} \quad (3.21)$$

$$Var(\hat{\beta}) = \sigma_i^2 (X^T X)^{-1} \quad (3.22)$$

Again,

$$MSE(\hat{\beta}) = \hat{\sigma}^2 trace(X^T X)^{-1} \quad (3.23)$$

Hence,

$$MSE(\hat{\beta}) = \hat{\sigma}^2 \sum_{i=1}^p \frac{1}{K_i} \quad (3.24)$$