

**Assessing customer satisfaction of pre-payment meter usage in Asokwa district of
ECG in Kumasi Metropolis**

KNUST

By

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DECLARATION

I hereby declare that this piece is my own work towards the Master of Business Administration and that, to the best of my knowledge, it contains no material previously published by another person or material which has been accepted for the award of any other degree of the university except where due acknowledgement has been made in the text.

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ABSTRACT

The energy sector over the years has witnessed a tremendous change and transformation in the bid to increase customer satisfaction while at the same time solving the problems of administrative inefficiencies in the operation of the sector. ECG as a single producer and supplier of energy to both domestic and industrial consumers of power, there is therefore the need to come out with an alternative means of billing the electricity consumption of the consumers, hence the emergence of the prepayment meter system. Aside the significant benefit that pre payment meter give to customers, there is lack of consultation with stakeholders, pre-financing difficulties, theft and network challenges which result in customers not buying-in into the change from post paid to pre paid and hence results in having bad perception of the services as well as poor customer service. The study focused on assessing customer satisfaction of prepayment meter usage in the Asokwa District of ECG in Kumasi metropolis. The population of the study comprised of the customers that use prepaid meter and management of ECG. The survey was conducted on a total of 393 respondents out of which 344 responses were received representing 87.53% response rate. The study adopted purposive and convenience sampling technique to select management of ECG and customers who use pre-payment meter respectively. Among the challenges of prepayment meter usage is the fact that customers have to spend more on electricity after being moved to the prepaid meter, resistance to change since customers are used to the old system of payment, uncertainties of performance as consumers tends to experience more blackout when they shifted to prepaid billing system. Again consumers complain of spending more money for small unit of credit when they purchase more than once in a month, the system is equally disadvantageous to the poor. The benefits of prepaid meter usage include carefulness with energy consumption, minimal cost, and improvement in cash flow, cut down in revenue lost as well as acute curtailing on illegal connection. The study recommended effective monitoring, individuals should have separate meter, and converting of meter to cash and intensified education on pre paid meter usage.

DEDICATION

This thesis is dedicated to my beloved wife Mrs Elizabeth Arthur Boadu and my lovely children Josephine, Samuella and Micheal Boadu. I say, I love you.



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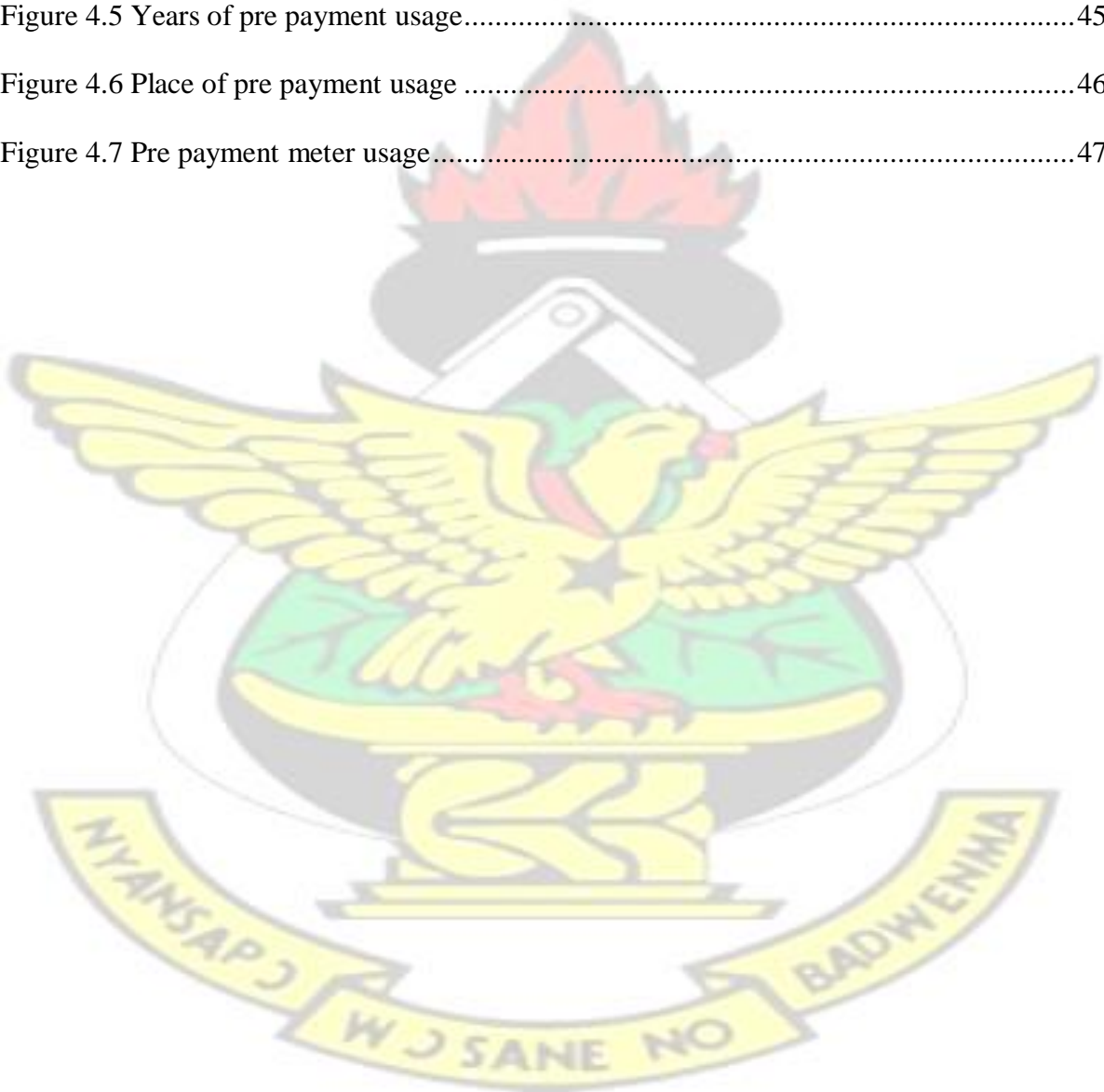
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CHAPTER ONE

GENERAL INTRODUCTION

1.1 Introduction

In this chapter, the study explored the study background, statement of the problem, objectives of the study, research questions, and scope of the study, justification of the study, limitations of the study and structure of the study.

1.2 Background of the Study

Because of the dynamic nature of business environment, the main focus of management has now geared towards bringing the needed change which will result in desired customer satisfaction. Over the past couple of years, African countries for that matter Ghana has adhered to post payment way of paying their utility bill and electricity is no exception. Nowadays, most of the utility service providers are changing to pre payment model so as to cash on the significant benefits associated with the pre payment model (Harvey, 2005). The adoption of pre payment model has become common in services such as telecommunication service, electricity usage, health services provision and the use of water (Harvey, 2005). The aim of the pre payment system is to ensure that, there is a constant provision of service at a lower cost aside the social and political dimensions that are associated with it (Soto, 2012). When the pre payment model is managed well, it gives clients the desired satisfaction and positive perception of the firm and customers will embrace the new service happily (Bond, 2007). However, there are other researchers that argue that, the adoption of pre payment system is capitalist management of the poor in the society (Ruiters, 2009; Tewari, 2003; Bond, 2007).

Bond (2007) is of the opinion that, there is a challenge with respect to pre payment models as most customers are not been consulted before changing to the pre payment model resulting in difficulty in embracing the concept.

One must note that, customer satisfaction comes from how well a company establishes its image in the minds of the customer where customers see assurance that, what they are expecting from the company's offering would meet their needs and exceed their expectation. Customer satisfaction can be viewed as comprising several aspect of the relationship that the business will build with its customers (Oh, 1999). Satisfaction is viewed by many customers as quality delivered to a particular service, the delivery process, performance with respect to price or as and when the services or product meets or exceed what customers are expecting. One should note that, customer satisfaction is undeniable matter since service industry in their customer retention strategies as it is critical than just prospecting for new clients since the ability to make customer loyal will result in increase profit for the company. Service organization must therefore try hard to increase profit in the long run through satisfying customer needs and want and try to achieve zero defection rate (Oh, 1999).

There are many customers who do not prefer the use of pre payment meter usage which has become worrying situations for many electricity corporations (Szmigin, 2003). This is as a result of marketability of the pre payment meters and the various challenges associated with the pre payment meter usage. There is a growing rejection of pre payment meter usage among customers as most functions associated with pre payment meters are complex and difficult to understand. In Africa, many countries such as Tanzania, South Africa and Ghana have

introduced pre payment meter usage among its customers in recent year in order to value to customers. The pre payment meter help power utility companies to receive bills from clients before resulting in lowering the percentage rate in lost to power theft, in appropriate billing and reading meters as well as reluctant and inability of customers to honor their electricity bill on time (Jain,2011).

The applicability of pre payment meter results in considerable power saving, there is an increase revenue, fall in recording loses, and increasing company's overall profit (Khan, 2010; O'Connor, 2001). Pre payment meters function by requiring customers to pay upfront before they will be able to consume electricity power. There is a desire of the electricity corporation to control pre payment meter that is usually installed in the homes of customers using electricity power (Subramoney, 2007). The issue of proximity to purchase the electricity power is important when it comes to satisfaction of customers with respect to electricity usage. The customer will be satisfied and procure electricity at the closest electricity vendor. Baptista (2013) is of the opinion that, pre payment electricity enables customers the autonomy to make use of electricity and dividing purchase of energy. The adoption of pre payment meter model helps social ordering which is not only wholly economic but also technological. Baptista (2013) is of the opinion that, energy specialist, development scholars as well as economist are generally confidents of the benefits of pre payment meter model to both customers and the power providers

In today dynamic nature of business environment, the ability of business to provide superior service by means of providing enough and strong policies that focus on the customer is an

important element that helps firms to gain everlasting competitive advantage by way of customer satisfaction (Chiara, 2007). These days, marketer cultivate the habit of sustainable evaluating and monitoring of the quality of service which include many innovative products and service development that results in customer service experience (Ladhari, 2011). Improvement in service enables customers to raise their perceived value and their satisfaction, improve the chances of the firm's retention effort and their financial performance and hence give the firm a good corporate image (Nguyen & Leblane, 1998).

Electricity Corporation of Ghana (ECG), a state utility monopoly, was established in Ghana by Decree, 1967 (NLCD 125) as amended. By Executive Instrument No. 59 dated June 29, 1967, all assets and liabilities of former Electricity department under the ministry of works and housing were vested in ECG. ECG was primarily commission to transmit, supply and distributes electricity within Ghana, to purchase electrical energy in bulk from Volta river authority for distribution, to construct, reconstruct, install, assemble, repair, maintain and provide other electrical services to the people of Ghana. In an effort of ECG to satisfy customers, the corporation introduce the use of pre payment metering system with the aim of realizing in the long run, the strategic vision of becoming desired excellent in the provision of quality electricity power producer to the customers and the capacity to competitively export energy. With respect to post payment meter where customer may pay for electricity at the end of every month after the consumption has been recorded. The study therefore assesses the effect of prepayment metering system and its effect on customer satisfaction with the Asokwa District of ECG in Kumasi metropolis.

1.3 Statement of the Problem

Over the past couple of years, the use of pre payment meter usage has been facing various challenges and resistance from customer as corporations keeps on trying to convince customer to perceive as better. Customers are expected to believe that, will be reliable, very safe and it ensure better services with respect to trying to monthly call a staff is highly curtailed (Babakus & Boller, 1992; Cronin & Taylor, 1992). One can also say that, customers who subscribe to the use of the pre payment meter usage most at time are seen telling their dissatisfaction with respect to corporation not having customer friendly service hours in order that customers can recharge their pre payment cards anytime they run short of credit. Most customers even complain of failure of facing difficulty of refilling recharge charge with problems such as network problem, which is been manage by ECG a monopoly service provider in Ghana.

Aside the significant benefit that pre payment meter give to customers, there is lack of consultation with stakeholders which result in customers not buying-in into the change from post paid to pre paid and hence results in having bad perception of the services as well as poor customer service. Customer satisfaction looks at the state of customers mind emanating from the position customers have about a firm that what they are expecting about the service to meet or exceed their services offerings. For service providers to meet or exceed customers what customers are expecting, there is a need to bring innovation to bear either radical or incremental. The unsatisfactory nature of pre payment meter system results in most customers performing illegal connections and agitating for change to post payment system.

There are also problems of cost of installation, friendliness of prepaid meters, durability and most particularly reliability of prepaid meters (Quayson-Dadzie, 2012). All these problems

make customers dissatisfied with the use of prepaid meter usage hence the study therefore seeks to assess prepaid meter usage and its effects on customer satisfaction

1.4 Objectives of the study

The general purpose of the study is to probe customer satisfaction of pre-payment meter usage.

Specifically, the study seeks:

1. To investigate challenges facing customers using pre- payment meters within the Asokwa District of ECG in Kumasi Metropolis
2. To examine the relevance of prepayment meter usage over the post-payment meter usage within the Asokwa District of ECG in Kumasi Metropolis
3. To evaluate the level of customer satisfaction with respect to pre-payment meter usage
4. To ascertain the effect of Pre-payment meter usage on customer satisfaction within the Asokwa District of ECG in Kumasi Metropolis

1.5 Research Questions

1. What challenges confronts customers using pre- payment meters within the Asokwa District of ECG in Kumasi Metropolis?
2. What is the relevance of prepayment meter usage over the post-payment meter usage within the Asokwa District of ECG in Kumasi Metropolis?
3. What is the level of customer satisfaction with respect to pre-payment meter usage?
4. What are the effects of Pre-payment meter usage on customer satisfaction within the Asokwa district of ECG in Kumasi metropolis?

1.6 Scope of the Study

The focus of the study is to investigate customer satisfaction of pre-payment meter usage.

The research was limited to customers who use pre-payment meters of ECG within the Asokwa East District of ECG in Kumasi metropolis. The study captured both domestic and industrial users. Management within the Asokwa East District of ECG, Kumasi metropolis has also been used for the study.

1.7 Significance of the Study

This study is timely as it will help to identify and address some flaws in the formulation and implementation of strategies in ECG with respect to pre-payment meter usage. The results from the study with respect to metering system, with an in-depth study of ECG is vital since it would serve as base line study for policy recommendation and intervention on addressing electricity consumption in Ghana.

Again, the recent developments within the ECG with regards to meeterring of customers premise have gathered a lot of conflicts and demonstrations. The public outcry and sentiments need to be investigated and addressed for the mutual benefit of both ECG and its customers.

Thirdly, the study will be relevant for academic purposes as it will serve as guide for other researchers who want to study similar topic.

1.8 Summary of research methodology

The total population of the study area is estimated at 23,000 customers who are using prepayment meters of ECG within the Asokwa district of ECG in Kumasi metropolis and management of ECG. A sample of 393 was selected for the study. The research adopted

purposive and convenient sampling method to select management and customers respectively. The main data collection tools were questionnaires and interview guide. The study used SPSS software to code the questionnaires and employed mean, standard deviation, percentages, regression, and correlation analysis techniques to analyse the data.

1.9 Limitations of the Study

The first limitation that confronts the study is that, some of the questionnaires sent out were not received for a 100% response rate. However, 87.53% response rate received was a good response rate that can be relied on.

The second limitation has to do with inability of respondents to give a true explanation of their experience based on the reasons best known to them. Some may view the research as waste of time. The researcher however was able to explain to customer the numerous benefits of the research which motivates them to respond to the questionnaires.

One cannot ignore the great contribution of financial constraints in the research. The researcher therefore mobilised its scarce resources to make the research a success.

Also, lack of cooperation from respondents during the data collection especially from the customers, but this was resolved by explaining the rationale behind the study in order to persuade them to partake. However, within these constraints, all attempts were made to undertake a valid, concise and comprehensive research.

1.10 Structure of the Study

The study is organised in five chapters. Chapter One explain the general introduction to the study. Chapter Two reviewed other relevant literature on customer satisfaction and relevance and challenges of pre-payment meter usage. Chapter Three discussed the study methodology. The Chapter four analyse research findings and discuss findings while chapter Five summarise the research findings, give conclusion and suggest appropriate recommendations.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, the study reviewed existing literature on the subject matter based on themes developed from the study. The study explored customer satisfaction, pre payment meter usage, benefits of using pre payment meters, challenges confronting pre payment meter usage and the effect of pre payment meter usage on customer satisfaction.

2.2 Customer satisfaction

Satisfaction is the total attitude of the customer to a service provider or the reaction customers exhibited towards what they anticipate and the total satisfaction derived concerning the fulfillment of particular goals, objectives and desires (Hansemark & Albinson, 2004). The idea of any management is to provide a scheme that can lead and ensuring serious improvement in the quality of product thereby increasing the profit margin of the companies through customer loyalty and repeat purchases of a particular brand of product. Naumann et al (2001) explained that, customer satisfaction should be the pivot or the principal means and strategies that companies employ to create and maintain a particular market segment for them in order to gain competitive advantage over their competitors. Wong (2000) was of the view that the satisfaction of consumers largely is an emotional drive and evaluating the reactions of perception which is based upon the consumption of the product or the services rendered. And it is obvious that satisfaction comes as a result of identifying the need of a consumer, therefore knowing the actual need of a consumer is of paramount important to every service provider.

When customers are satisfied with the services of a particular service provider, the end result is customer loyalty. Customer loyalty is the total commitment on the part of the customer to buy or patronize a particular product from a service provider even in the future without switching to other producer of the same product (Oliver, 1997). Baker (2002) further suggest that the sellers or service providers must endeavor to establish the exact need of their customers so that they can produce goods and services in conformity to what the consumers' needs, and this enable them to effectively interact with their customers by the use of the internet.

There are market factors that compel both the government and the utility providers in the African sub region to work towards the adoption of the prepayment meter system. Mwaura (2012) also pointed to some factors or drivers that compel people to adopt the prepayment meter usage and such factors include the overall reduction in financial risk, reliable customer service, personal energy conservation drives, and technical gains are all worth considering in the sector.

In Ghana, the adoption of the prepaid metering system was by the country's main service provider the electricity company of Ghana (ECG) which has been tasked to work on supplying the prepaid meters to the energy users, and other challenges such as the overall reduction on the expenses incurred in collection of revenue, total eradication of bad debt in the system, efficacy in the cash flow system with the aim of significantly improving the liquidity position of the company.

2.3 Level of satisfaction

The consumers in every company or organization are very key and essential for the success and growth of the economic activities and its subsequent incline in the organizational success (Fornell et al., 2010). It was further pointed out that in a situation where consumers spending dwindle, then the economy will equally experience slow growth as well and when the consumption level of customers falls greatly, the economy will experience marginal contraction as well. Hence marketers are to quickly try as much as possible to identify customers want and satisfy them profitably and anything contrary to this will lead to dissatisfaction of customers thereby leading to massive defection (Chezy & Itamar, 2007).

Satisfactions of customers are most often than not a mindset emanating from whether the customers are satisfied with the company's product or not. And for companies to either meet or exceed customer's wants, innovation then becomes necessary and vital. And innovation can be introduced either gradually or rapidly, and rapid innovation are usually driven by the desire of customers for an improvement on the product or services and that can enhance the performance with convenience while the rapid or radical form of innovation is usually economic and technologically driven by the companies desired to become leaders or be ahead of its competing companies (Vercauteren, 2008). The development of innovation should aim at providing a very positive views and perception being seen as the incremental new ways of doing things which drive the perception of customers rather than the radical innovation which is largely based on the drive by a technology (Wijmans, 2001, O'Connor, 2001).

A major prominent level of satisfaction that the customers enjoy from the adoption of prepayment meter usage or system is the payment before usage and it largely assist the customer feel comfortable and get maximum satisfaction. The prepayment electricity usage require the users pay before the usage of the energy and its consumption is also being control by the prepaid meters which are usually mounted on walls in the house (Subramoney, 2007). Usually the prepaid meters must have credit loaded on it before the customer can effectively enjoy the electricity usage. Baptista (2013) was of the view that the prepaid electricity give consumers the power to control the electricity usage and how to purchase the credit periodically and consumers further enjoy empowerment in the prepayment meter usage as compared to the post credit meter usage. Especially as in the case of Mozambique as per the urban dwellers, they welcome the prepaid meter usage massively as they felt empowered.

With the introduction of prepaid meters, the consumers have it very easy to monitor and subsequently manage their proposed budget for a specific period of time thereby reducing unnecessary spending and unwarranted cost (Tewari 2003). Prepaid meter usage largely benefit the household and the company through its improvement in profit by effective revenue collection systems as well as reducing the cost incur by the service providers in terms of bad debts which characterized the traditional system (post paid) of getting power, especially the post- paid metering system and also improving and maintaining such an effective customer relation between the consumer and the service provider (Harvey, 2005). Another prominent advantage of the prepayment meter usage is the safety that the employees of the ECG enjoy since it is a very hazardous work and exposed them to danger at any point in time. Usually meter readers who most often than not frequent the consumers residence for reading meters

are usually been exposed to dog bite and other forms of harassment and perception of invading in the privacy of the consumers (Jain, 2011).

Meanwhile in most cases, the consumers reach their peak or highest level of satisfaction even with just the communication of the change process to them at any point in time. According to Miyogo, et al (2013), if the change process is so huge or incremental, then there is the likelihood of resistance since majority of the consumers are still comfortable with the old systems of metering. It is obvious that some level of resistance will remain underground and will not surface at the early stage because they need to gather momentum. Miyogo, et al (2013) believed that, it is obvious that the process of change is usually applicable to any management level within the organization especially the various department that are engaging in changing from one way of doing things to another or one level of customer service to another. Hence the drives to change from the post- paid to the new prepayment system obviously required a fundamental change of management in order to ensure a smooth transition from receiving bills at the end of the month to a state where prepayment credit are purchased to power the meters. And with the fulfillment of the change, the customers' ways of thinking and the olden system of operation also needs to be work on seriously in order to change the mindset of the customers (Hocutt, 1997).

The perception about how quality in services has affected the level of satisfaction of the consumers and their behavior towards complaints. Services that comes from some essential element concerning the perception of the product are important as for as level of satisfaction is concerned. According to Kelley and Davis, (1994) when considering change management, then the expectation of customers and ways and means of getting or achieving the expectation

should be critically considered. And as such, the management has to put measures in place in order to execute effective plans, and implement the plans and goes further to put measures in place to monitor and control the exact services offered in order to do away with any service gaps. In reality, the service perceptions are the overall total of the various services which include how responsive the management is towards satisfying the consumers, how reliable they are in terms of delivering on time, and the assurances received from the service providers.

2.4 Prepayment Meter

In recent time, it is obvious that the majority in both domestic and commercial purposes have resorted to the use of pre-payment meter instead of the traditional post paid system where consumers of electricity power are billed after consumption of power at the end of every month. Prepayment meter as it is usually called is electronic instruments used in supplying and measuring the amount of power an individual purchased in advance through the consumption of electricity or gas (Bond, 2007). In general terms, the use of prepayment system involve the consumer buying the electricity or gas with the aim of activating the load through the pre-paid meter (Harvey, 2005).

There are various forms of prepayment application available for both electricity and gas and these are in different categories starting from a very simple advance cash payment system for both electricity and gas where pre-purchase of a fixed amount of electricity or gas (Bond, 2007). Practically considering the prepayment application system, it is obvious that the consumer will not bill at the end of every month since payment for electricity consumption has been made in advance or been prepaid already (Harvey, 2005). There are laid down rules

and regulations governing and spelt out the condition regarding the prepayment are established by the suppliers and providers of electricity and gas and these are strictly subject to scrutiny and serious regulation.

The actual processes which include the designed, construction, installations and performance coupled with the usage of the device for prepayment application process are duly subject to proper regulations in most countries across the world. The prepayment meter usage works just exactly as the name sound, and instead of the consumers receiving bills for electricity consumed at the end of the month, in prepayment system, the charges are paid before consumption (UK Power Limited, 2012).

2.5 Prepayment Meter Usage

Accessing prepayment system from technological point of view, the system involved three main and well differentiated parts (Vogelsang, 1994). The first part which is a service meter is usually installed at the point where energy consumption takes place where households dwells or in stores. Generally, the meters are normally “two-gang” and often consist of the users interface with a unit with a current measuring set. This interface unit is most often a device normally installed inside the consumers building and which allows the owner of the prepayment meter to interact with the meter. Metering unit on the other hand which is been attached to the first component is that smart and intelligent part or component which usually stores credit and information pertaining to its consumption and constitute the element that either clears or switches the electricity supply off.

The component which is the credit dispensing unit, which serves as the vending machines where consumers in the need of prepaid credit can have access and purchase it with ease. But under normal circumstances, the sale and distribution outlets are made available to consumers in order to have easy access to the credit. Vogelsang (1994) pointed out that generally, the particular sales points are located in the main commercial offices as well as other stores with long operating hours, and while the remaining third component is definitely the supporting device that connects the various sales points to the utility's main management system. The results enable individuals sales outlet to render services to consumers of the prepaid credit in a more comfortable and accessible manner.

The very first country to use the pre-payment electricity was South Africa in the mid-1980s and its primary objective was mainly to extend electric power to low income individuals and customers at a very moderate price or rate (Stoner, 2009). The major concern regarding the universal services in providing utilities indeed have motivated firms and companies including the potential regulators to identify technologies and series of options available in pertaining to how regulations of the system should be carried out which aimed at motivating and encouraging ready access and make the credit available to consumers so that they can effect payment for the services enjoyed (Casarin & Nicollier, 2009).

The mechanism and processes set for the payment actually required consumers to purchase credit onto the cards and then use it to the point where the credit purchase are consumed or exhausted as it relate to consumers of electricity where supply can only be enjoy it and only if they have credit on the cards. Under normal circumstances energy supply is disrupted or cut

when the credit is exhausted. And learning from the success story of South Africa, other countries such as UK, Turkey, India, and Argentina has accepted the idea of prepaid electric meters in order to extend electricity supply to both poor city folks but and typical and far rural people in an attempt to give them electricity supply at affordable rates (Tewari & Shah, 2003). In recent time, as encountered with a record high debt and serious challenge with revenue collection, organisations such as Power Holding Company (PHC) in Nigeria and National Power Authority of Sierra Leone have introduced the prepayment meter system around 2006 and 2007 respectively.

Meanwhile these particular decisions was strongly motivated with a strong desire and zeal to increase and boost the system of revenue collections and further decrease the debt usually incurred by this distribution companies (Ogujor, 2007). But, truly the research conducted has revealed the introduction of the new system of obtaining energy has immensely increase the revenue generated, it also further decreases the revenue generation capacity of the company because it dependently based. This actually implies that consumers who usually patronize the prepaid meters are now vigilant and careful especially by the means through which their electricity credit has been used. This has stress the fact how the consumers are going to use the electricity credit purchased are now left at their own discretion and strict management of the system is duly observed by the consumers. And as a means of recommendation, it was found that, there is the need for consumers to wholly welcome the prepayment meter system and it really ensure that consumers will only pay energy used but not the bills that are estimated and distributed to consumers at the end of every month (Ogujor & Otasowie, 2010).

In a more pragmatic sense, the primary objective of implementing the use of prepayment meter in recent time is to a large extents achieve the objective of supplying energy to a large number of low and middle income and consumers that are geographically scattered and dispersed. This particular idea came into practice through the discoveries that such low and middle class income members are most often are not able to meet and defray the cost incurred during the postpaid payment of bills. According to Estache et al. (2000), the new system that is the prepayment system was later welcome and adopted in India, Great Britain and Argentina in order to assist the individuals households pay electricity bills incurred without any difficulties or challenges.

It is interesting to note that for consumers to know the steps, processes or phases involve in using prepayment meter. Indeed there are three main steps which are usually involved in the working and operation of prepaid meter usage (Casarin & Nicollier, 2009). And the very first step involve the user purchasing the energy at the sales and distribution outlet and forming part of the operation of the new system receives a credit slip from the vendors with a supporting device which usually identify the actual operation which can also be a voucher together with an identification pin or code or another one with magnetic support. Secondly, the user uses the device add onto their credit by inserting the cards into the meter or by simply dialing a code and in all cases this can be successful only when the device ID the matches with the meter. Again the consumption of the amount of credit purchased will be cleared by the measuring unit and display in reality the available credit left after certain consumption. Fourthly, the meter on its own goes off when the credit on it is exhausted and switch on again when there is a recharge of the device.

The mechanisms and the system requires that the consumers pay for the purchase, and delivery of goods and services in real terms before they effect consumption and in this way, mostly consumers hold credit on the cards, use it up to the time the credit on it is exhausted. This particular mechanism and processes require the users to pay for the services rendered to them before taking full control and utilizations and in this regard, consumers stored credit on their cards, use it until it is been exhausted.

After the introduction of prepaid metering of electricity, the growth and increase in energy usage has seen a tremendous improvement and the usage is on the ascendency. This assertion was further supported by the another school of thought and argued that since the coming or emergence of prepaid metering system of electricity, the world growth has witness a gradual increase recently (Tewari & Shah, 2003). For instance, a research conducted by Pike (2012) ascertain and revealed that, the installation capacity or base of electricity prepaid meters for the consumption of energy was over 200m throughout the world in 2011. And this particular is estimated and expected to exceed 23m to 33.7m meters on a world basis the close of 2012 and 2017 respectively. Whiles averaging and targeting a modest compound monthly growth rate of 9.1% and that is in between 2010 to 2017. This was further researched into and finding shows that more agencies throughout the world are preparing to introduce the new prepaid projects or even extend the already existing prepayment services to other big and well established customer base (Pike 2012).

The different types of meter used in Ghana are usually manufactured in Ghana by Ghana Electrometer Company limited. This is one of the single producers of meters for both domestic and commercial purposes in the country. Usually, these meters are manufactured to meet the quality standard of the country. And as at the year 2013 ECG with its capacity has close to about 30% of the their entire customer population patronizing the prepaid meter system and still there are measures in place to extend the prepaid usage to districts that are duly qualified to be place on the prepayment usage (ECG, 2013).

Nevertheless, the new partnership that exist between Ghana Electrometer and electricity company of Ghana which is another metering technology system which is called the SmartG has been introduced into the system to help supplement the existing ones. This stems from the fact that the prepayment system has actually boosted the energy consumption level of the consumers hence the need to either come out with another model or improve on the already exist by ones and in practice, this prepayment meters use cards in purchasing the credit from the vendors or the suppliers in order to have electricity supply. It is interesting to note that the customers purchasing ought to pay all charges due in advance before getting the supply and it is also easy for one to buy extra or top- up the exact amount in order to have more supply of electricity and this supply can at times cut off if there is a problem with the power supply system.

2.6 Benefits of the prepayment meter usage

The prepayment meter usage has presented the customers with a variety of benefit and merit for both the customers and the service providers of the electricity. Judging from the economic

point of view, one can confidently point to the fact that the prepayment meter usage has accounted for mixed reaction and financial fortunes to both energy providers and the consumers at large (Tewari & Shah, 2003). A typical example was given and it is indicated that prepayment usage may end up in decrease in metering, billing the consumers and subsequently in disconnecting and cost involve in connecting the customer back are all cost to the power provider. And this was specially introduced with the principle that consumers usually effect payment prior to the electricity consumption, which has led to a significant improvement and progress in revenue generation and eventually leads to decrease in working capital or the cost involve in doing the transaction.

On the part of the consumers, the system could result in a thorough understanding of how energy consumption takes place, having proper control of energy use and finally prudent budget management and control in order to avoid waste of the energy supply and the cost used in purchasing it. Truly some cross section of observers has challenged that a significant or a major key attribute of prepaid meter usage is that the implementation in some areas and communities has help immensely to limit the level of arguments and confrontation that usually ensue between individuals of the same household, and the local utility providers and the customers who mostly patronized the prepaid meters (Bond, 2007).

Nonetheless, the issue of revenue collection or payment of electricity bill has been a serious challenge to ECG all over the years especially under the old system of postpaid whereby this meters are read on monthly bases, the result then captured and several processes and procedures are used to come out with a bill for consumers to pay and under this system, several

mechanisms were put in place to reduce the level of inefficiency and hence produce better result in order to achieve efficacy and sound result which can lead to improve operation of the system and prudent revenue collection (Bond, 2007). The system usually emanate from the offices of the ECG, the various pay points, affiliated banks, inclusion of third parties which include revenue collectors which is often called the bonded cashiers, and these are all private individuals and institutions who usually do operate in both rural and partial rural areas especially in various joint where ECG do not have any point of pay cash offices to collect revenue from the consumers.

Despite the fact that the strategy has to a large extent yield fruitful result, yet still there are means by which some run away from payment, there are loopholes where revenue leaks and some other serious challenges that the consumers on daily basis face. Among the challenges are, delay in disbursement of bills on timely bases, crediting of bills normally paid to the customer's account, giving wrong bills to individuals and above all lack of proximity to sales and revenue points (Mensah et al 2012).

In order to enhance revenue generation and collection whiles at the same time tackling consumers challenges, has led to the introduction of prepaid metering system. The system was previously adopted and implemented on pilot basis between 1994 and 1995 through the use of cash power especially in some part of SSNIT flat, Adenta and Sakumono in Greater Accra region of Ghana, Tema and Kumasi for both commercial and residential consumers whose electricity consumption is usually small through several years of rigorous testing. As at today, the services has been extended to almost all the big cities and urban areas, in municipal and

districts capitals due to the numerous benefits that accrued to the providers in the form of massive cut down on revenue losses, acute curtailment on illegal connections, as well as conserving energy to the utility provider (Quayson Dadzie, 2012). The prepaid meter will assist the customers to buy and use the electricity power just like how consumers buy scratch card to recharge their phones.

Through the emergence of this system, ECG would be able to make the scratch cards available to their customers through their vendors or at any point of sales and this has enabled the customer feel comfortable in the consumption of electricity power. Again the efficiency and cash flow management of ECG's operation will be improving from time to time (Quayson-Dadzie, 2012). And moreover, systems need to be put in place in order to achieve accountability and result. With regards to accurate billing of customers, equity and fairness and also to tackle issue of health and safety concern of both the domestic and industrial utilization of prepaid, proper and sound systems are put in place to achieve this process (Ogijor & Otasowie, 2010).

However, studies through the use of prepaid meter revealed that there is a significant improvement in revenue generation by utility providers or companies through accurate and proper billing of customers and revenue collection processes most especially in the sectors such as the water. A study conducted by Kingdom et al (2006) in Thailand concerning the water utility department or sector was provided by the metropolitan waterworks Authority (MWA) indicated a significant improvement in revenue generation even to some sustainable level as through the implementation of the new billing and revenue collection processes and

practices. With the resounding result out the various practices, the entire financial prudence and performance of the company was on the positive direction especially around 1998 and 2008 (Rao, 2012). This truly shows that the sector with the sound and effective policies, can be maintain and sustain and this is because the revenue accrued has exceeded the cost or expenditure incurred and this indicated that the sustainability of the utility sector is perfectly assured as the cost incurred in mobilizing the revenue are comfortably covered by the excess revenue (Rao, 2012).

There are some other benefits that have been noted and among this include improved and timely collection of revenue and prompt delivery of services to consumers of the electricity power. Concerning efficiency in ways of mobilizing revenue, it is evidently clear that the prepayment system is a right step in a right direction so that service providers are constantly checking every loophole so as to increase the efficiency it requires (Kettles, 2004). Further studies has also pointed out that the prepayment system has once again work effectively even in the UK for close to 80 years and it was established that the system has improved as a means of solving bad debts. Meanwhile the prepaid meter usage extensively enable customers to desist from procrastinating the payment of overdue bills as it happened in the case of post-paid method of billing customers (Tewari & Shah, 2003 and O'Sullivan et al. 2014).

Another model called the socio- technical was of the view that there exist a cordial or very close relationship between the behaviors of the consumers and the energy infrastructure and this infrastructural system is to boost the provision and utilization of the energy supply to its

consumers (Shove, 2010). In all human entity, the behavior of some individuals can influence them either positively. And there is a strong believe that the socio- technical models has exceeded the way individuals attitude and ways of life can substantially be influence by other people through proposed technologies has some tendency to change the user of prepaid to behave in a particular ways (Guy, 2006).

Meanwhile, there are different system of technologies that can work together in other technological systems that usually allow or ginger some particular lifestyles and attitudes and this later in other angle to reinforce the exact ways of life. This explain the reasons why the idea is called was name socio-technical and this particular approach has known the significant role the metering technological system has in mediating and coordinating the familiarity between the energy providers and the members in the community (Akrich, 1994). The big idea again back the view that despite the fact that applying the prepaid metering system to energy used or consumption even difficult and tedious, it can effectively influence the behavior of energy consumers in a given community which in the long run lead to energy conservation attitude and also equally acts as a security or security provider to utilities (Graham & Marvin, 1994; Hand et al., 2005).

2.7 Challenges of prepayment meter usage

From the foregoing, it is important that the views of employees and consumers of energy regarding the ongoing transition from postpaid to prepaid electricity billing system are critically examined. The relevance of consumers and employees of the energy provider is inherent in the fact that these changes might be highly correlated with changes in their welfare

and the fact that they are also a relevant factor behind the success of any change in the organization. While it is appreciable that progress can only come through change, not everyone including the beneficiaries of such progressive change are willing and ready to embrace change. On the contrary, it is widely believed that most would resist change (Duck, 2004). Nevertheless, previous studies indicate that prepaid meters are not necessarily a wellreceived innovation in some segments of society, to the extent that in some cases, society as a whole is reluctant to adopt the system (Tewari & Shah, 2003).

The introduction of prepaid billing system in Argentina was received with much skepticism, with many arguing that it was meant to exploit them. But why even progressive change may be resisted is well captured by Pietersen (2002) who reckons that for many people, the prospect of change produces fear, uncertainty and doubt, more so if it is top-down and induced by the management. But even more vital to the proposed study is how such fears and uncertainties may affect the performance of the ongoing change at the company. Such confrontations have been well documented from many Asian countries. Here in Kenya, numerous accounts of illegal connections of electricity and other public utility such as water in urban slums have been witnessed and Service providers of the affected services have been forced to seek the services of security in disconnecting these services (Estache et al (2000)).

Despite the benefits enumerated by the power provider in convincing consumers in accepting the new policy, paradoxically, anecdotal evidence points to the fact that, majority of consumers have contrary opinion regarding the usage of prepaid meters. For example, consumers complain about having to spend more on electricity after being moved to the

prepaid meter. Similarly, consumers in compound houses which share meters complain about having to spend more which to them is unusual than those in single household. Though the aim of every utility provider is to provide efficient service to its clients, in developing countries low-income levels continue to pose a daunting challenge especially in terms of cost recovery (Sualihu & Rahman, 2014).

Bill payment and collection efficiency also referred to as “headline efficiency” which supports adequate service provision (Kayaga et al. 2004) are generally poor; thus below 50% cost of production in Africa. These inefficiencies in billing and revenue collection are mostly due to incidence of undercharging and overcharging, due to billing errors, creating dissatisfaction among consumers, inefficiencies in the billing system, failure to establish customer base, irregular bill delivery resulting in non-payment by registered clients (Chipofya et al., 2009). The best way to avoid any form of error is to eliminate too much of human handling of the metering system. Misra and Kingdom (2012) contend that meter reading and billing errors, whether involuntary or resulting from fraudulent practices, should be eliminated by limiting the human handling of data through the adoption of efficient billing systems.

2.8 Effect of prepayment meter usage on customer satisfaction

Being effective and accountable largely depends on knowing and giving account for the quantity of energy that the service providers are able to produce and distribute to the consumers. But in most cases this has not been accounted for. And this occurs as a result of major technical inefficiencies at the various generation units and its transmission lines to the distribution unit where a substantial amount of credits have been wasted. There is another

huge percentage loss to other inefficiencies other than technical and this is basically at the customer level, which include customer's deliberate attempt to temper with the metering system coupled with illegal connection so as to adjust the effective working of the meter. Meanwhile, there are various systems and mechanisms put in place to address these challenges, and this include the institution of legal penalties to the culprit, giving out the reading and billing of the meters to independent but competent bodies to oversee the billing and collection of revenue to the ECG.

But as it is known in life, nothing seems to be 100 percent correct or successful in life as far as human institutions are concern. Hence the very approach that seems to be effective and conducive for both the customers and the management with cost efficient is the use of the prepaid metering system (Power Division, 2011). Meanwhile the argument favoring the prepaid metering is that it has the potency to drastically reduce the losses incur to both the account receivables and other technical problems which are basically of human concern.

Therefore the prepaid metering system has in one way solved even if not all the problem of financial drain that the power companies, especially the ECG usually encountered (Power Division, 2011).

Nevertheless, there are two main types of cost that consumers that switch from the traditional postpaid to the new prepaid system normally encountered, one of them is the financial cost , while the other is the habitual differences that comes as a result of changing from the former to the later of energy consumption which occur prior to consumption. Meanwhile, the direct financial effect the consumer can largely experience is automatically the cost of the new

prepaid meter coupled with its associated opportunity cost which was put into consideration in relation to the financial position of the customer (Eskom, 2010).

The frequent change in consumers purchase of electricity credit means that the consumers attitude and habit has drastically change either as result in increase in income level or the preference for the prepaid meter. The rate at which the costs incur or increase largely depends on the number of times the consumer recharge their credit within the month as this will also be similar to the cost incur when on the old post -paid meter system and this will largely depend on the financial capacity of the consumers. Hence on the average, the use of the prepaid meter has contributed immensely to the utility providers by reducing the financial and administrative cost and lapses which in other hand will bring the cost of selling electricity to the consumers to its barest minimum, hence there is comfort ability derived on both the utility provider and the consumer of the utility (Ariel & Luciana, 2008).

Meanwhile, the utility providers for a very long time have been aware of the potential benefit of using the prepaid meter over the post paid meter, but this was only within the mid1990s and this was due to the frequent development of technologies to prove that indeed the merit of using prepaid meter far out weight the post credit metering system (Ariel A. C.et al 2008). Over the years, effort are in place to improve the affordability of the prepayment meters and strategies are also far advance in reducing cost and other associated inefficiencies which may in one way or the other affect the quality of service delivery or reducing the demand of other potential customers who may be willing to switch to the use of prepaid meters (Gómez-Lobo & Contreras, 2004).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter looks at research methodology adopted in accomplishing the study. The research paradigm, purpose of the research, sampling procedures, data collection methods, data analysis, quality of research, ethical issues and limitations are discussed in this section.

3.2 Research Paradigms

Research paradigms can be defined as patterns of beliefs and practices that control inquiry within a discipline by providing lenses, frames and processes through which investigation is accomplished (Weaver & Olson, 2006). There are quantitative and qualitative paradigms and a combination of both is known as mixed paradigms research. Qualitative research is defined as a multi-method in focus, involving an interpretive, naturalistic approach to its subject matter (Denzin & Lincoln, 2005). Quantitative research can be explained as explaining phenomena by collecting numerical data that are analyzed using mathematically based methods (Aliaga & Gunderson, 2000). Mixed research method is research in which the researcher uses the qualitative research paradigm for one phase of a research study and the quantitative research paradigm for another phase of the study.

The study therefore explored both quantitative and qualitative data for the study through the use of both questionnaires and interview guide for the study to solicit data from the respondents.

3.3 Purpose of the study

This study seeks to assess the effect of pre-payment meter usage on customer satisfaction.

Understanding exploratory, explanatory or descriptive research help in understanding the kind of research that one is embarking on. An exploratory study is a valuable means of finding out 'what is happening; to seek new insights; to ask questions and to assess phenomena in a new light' (Robson 2002). In an exploratory study, it has the purpose of formulating problems more precisely, clarifying concepts, and gathering explanations, gaining a thorough insight, eliminating impractical ideas, and forming hypotheses. According to Marvasti (2004) when surveying people, exploratory research studies would not try to acquire a representative sample, but rather, seek to interview those who are knowledgeable and who might be able to provide insight concerning the relationship among variables.

Descriptive research seeks to portray an accurate profile of persons, events or situations' (Robson, 2002). Descriptive research seeks to gather information so that a description of what is going on can be made. Descriptive research should be able to define questions, people surveyed, and the method of analysis prior to beginning data collection. Such preparation allows the researcher the opportunity to make any required changes before the costly process of data collection begins (Marvasti, 2004). The purpose of a descriptive research is to portray an accurate profile of persons, events or situations under study (Robson, 2002). The case study

is a kind of descriptive research in which an in-depth investigation of an individual, group, event, community or institution is conducted.

Explanatory research seeks to establish causal relationships between variables (Saunders et al., 2009). The emphasis here is to explain a situation or a problem in order to explain the relationships between variables. Explanatory research seeks to identify the dependent and independent variable so as to explain the causal relationship existing among them and to explain the impact of one variable on the other.

This study therefore employed descriptive research approach to gather information and define questions and portray accurate picture of pre paid meter users within the Asokwa East District of ECG. The study also used explanatory approach to establish the relationship between customer satisfaction and pre payment meter usage in the Asokwa East District of ECG. The study also adopted exploratory approach to interview management of ECG that poses knowledge with respect to pre payment meter usage and have a precise knowledge with challenges confronting pre payment meter.

3.4 Sampling procedures

The section discusses the population of the study, sample size and sampling technique adopted in selecting the respondents for the study.

3.4.1 Population and Sample Size

A population refers to the total number of all units of the issue or phenomenon to be investigated into which all the possible observations of the same kind are made (Kumekpor,

2002). The research population consisted customers who use pre-payment meters and management of ECG within the Asokwa East District of ECG Kumasi. The population of the study is estimated about 23,000 customers who use prepaid metering system and management within the Asokwa District of ECG.

The sample size is the number of respondents chosen from the population to be a representative of the population (Saunders et al., 2009), For the purpose of the study, 393 respondents were selected for the study made up of 392 customers and project manager in charge of ECG in the Asokwa district of ECG was selected. Martin (1996) is of the opinion that, if the information needed to answer the research question can be answered, the researcher can select by own judgment, the most productive sample to answer the research question hence an project manager of ECG within Asokwa District is enough for the interview. There are five (5) management staff at Asokwa district of ECG out of which one was selected to represent the management of ECG.

The Slovin's sampling method was adopted in determining the sample size. The formula is presented as; $n = N / [1 + N(e)^2]$ (where n = sample size; N = sample frame; and e = margin of error/confidence level. Using a margin of error of 5%, with a population of

$$23,000, n = \frac{N}{1 + N(e)^2} = \frac{23000}{1 + 23000(0.05)^2} = \frac{23000}{58.5} = 393.16$$

The sample size selected was therefore 393.

3.4.2 Sampling Techniques

Sampling is the act, process, or technique of selecting a suitable sample, or a representative part of a population for the purpose of determining parameters or characteristics of the whole population (Webster, 1985). The study adopted purposive and convenience sampling technique to select management of ECG and customers who use pre-payment meter. Purposive sampling enables you to use your judgment to select cases that will best enable you to answer your research question(s) and to meet your objectives. This form of sample is often used when working with very small samples such as in case study research and when you wish to select cases that are particularly informative (Neuman 2005). In selecting customers for the survey, a convenient sampling technique was applied. Convenience sampling (judgmental sampling) involves selecting haphazardly those respondents that are easiest to obtain for your sample, as the sample selection process is continued until your required sample size has been reached (Saunders et al 2009). The researcher adopted these methods in selecting respondents that could give the right data for the particular studies.

3.5 Sources of data

Data can be defined as facts, opinion, and statistics that have been collected together and recorded for reference or for analysis Saunders et al. (2007). Sources of data refer to originality of information for the purpose of accomplishing the study. The sources include both primary and secondary source

3.5.1 Primary data collection

Primary sources of data refer to fresh data collected from customers using pre payment meter and management of ECG in Asokwa East District, Kumasi. This is done through the use of questionnaires and interview guide with employees and management respectively.

3.5.2 Secondary data collection

Secondary data refer to already existing information that was available for a study. Secondary sources of data for this study include literature from journals, textbooks, manuals, reports, and publications and articles from the internet and annual reports from ECG.

3.6 Data Collection Method

The data collection methods include the use of questionnaires and interview guide for employees and management respectively

3.6.1 Questionnaires

The primary sources of data required information from customers through filling questionnaires concerning the research under study. Questionnaires were administered among customers using pre payment meters in Asokwa East District of ECG, Kumasi. The questionnaire includes both open ended and closed questions to give customers the opportunity to express themselves. The reason for using questionnaire was that it is the most effective instrument for data collection as when it comes to field survey (Wunsch, 1986). Again, because of limited time, the questionnaires were seen as best suited for the research in order to elicit the necessary information from the respondents.

2.6.2 Interviews

There was an interview guide that collected information from management in Asokwa East District of ECG, Kumasi. The interview elicit information on challenges that are associated with using pre- payment meters, relevance of prepayment meter usage over the postpayment meter, level of customer satisfaction with respect to pre-payment meter usage and effects of Pre-payment meter usage on customer satisfaction within the Asokwa district of ECG. The researcher conducted face to face interview with the project manager of ECG at Asokwa District in Kumasi in accomplishing the objectives of the study

3.7 Data Analysis

Data collected was subjected to critical analysis and examinations. The questionnaires were all coded into the Statistical Program for Social Solution (SPSS) software after which the analysis was performed. Descriptive results were presented in frequency distribution, charts, and tables. Regression analysis was conducted to ascertain the effect of prepayment meter usage on customer satisfaction. Mean and standard deviations were also used to assess the variables used for the study. Reliability test was run using the cronbach alpha. The data was analysed based on the responses received from the respondents'. Meanings and interpretations were given to the data based on statistical tools like graphs, charts, tables and means. Nnvivo software was used to analyse the interview conducted with the project manager by putting the responses in theme and interpretation given accordingly.

3.8 Validity and Reliability of the research

The validity and reliability of the data collected and the response achieved depend, to a large extent on the design of the questions as a valid question will enable accurate data to be collected and one that is reliable will mean these data are collected consistently (Saunders et al 2009). In order to test for the reliability of the scale used, the Cronbach's alpha coefficient was performed on the data collected. The essence of the Cronbach's alpha is to test for the reliability of the scales used in the work. It tests the scale's internal consistency. This refers to the degree to which the items that make up the scale 'hang together. That is to see if they are measuring the same underlying construct. Ideally, the Cronbach alpha coefficient of a scale should be above .7 (DeVellis 2003).

3.9 Ethical Issues and Limitations

Ethics refer to system, morals, rules, and behaviours. Research ethics provide researchers with a code of moral guidelines on how to conduct research in a morally acceptable way (Struwing & Stead, 2001). Such guidelines seek to prevent researchers from engaging in scientific misconduct, such as: distorting and inventing data, plagiarizing the works of others, republishing their data as original contribution without proper acknowledgement, failing to maintain the confidentiality of research respondents and participants, forcing people against their will to be involved in research, not executing a study properly, deceiving people and falsely reporting results (Saunders et al, 2003).

This research has been accomplished against the background of all ethical considerations in terms of non-manipulating results, conveniently respecting respondent's rights and abiding by all important consideration through the conduct of the research. Respondents who declined

participating were accorded the maximum respect and were not forced. The study is therefore is reliable, devoid of unethical behaviours.

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CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Introduction

This chapter presents the information on data collected from the respondents on the effect of pre payment meter usage on customer satisfaction within Asokwa District ECG of Kumasi. The chapter presented the findings base on the objectives set for the study. The study discuss demography of the respondents, challenges associated with using pre- payment meters, significant of prepayment meter usage over the post-payment meter usage, customer satisfaction with respect to pre-payment meter usage and the effect of Pre-payment meter usage on customer satisfaction within the Asokwa district of ECG in Kumasi metropolis. The data was presented in tables, and other statistical tools. The survey was conducted on a total of 393 respondents out of which 344 responses were received representing 87.53% response rate.

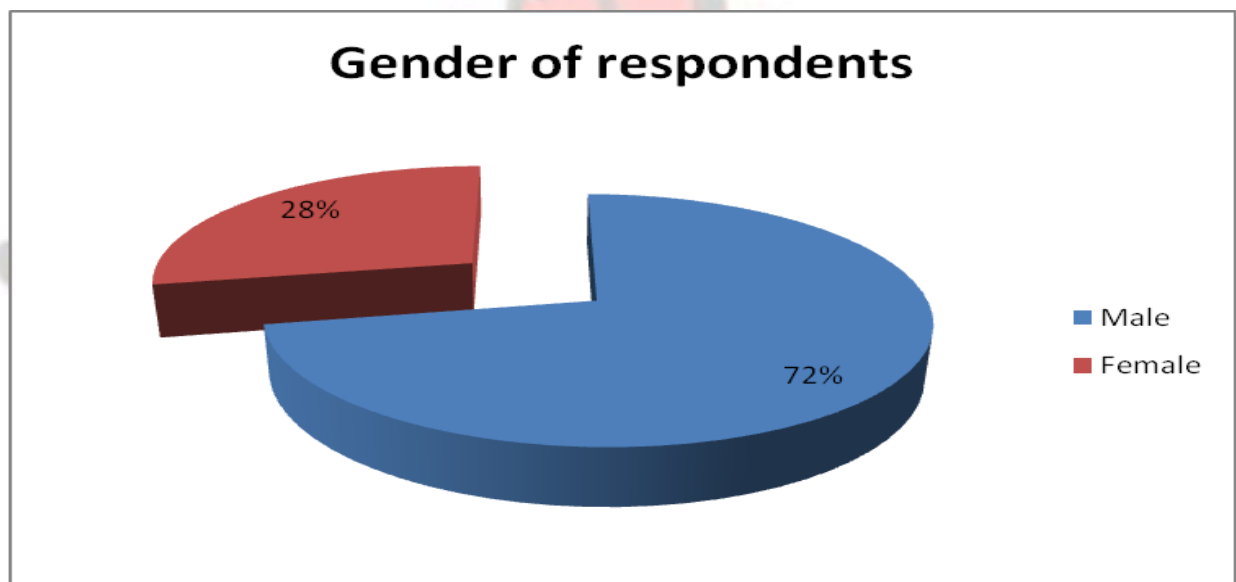
4.2 Demographic Profile of Respondents

The study looked at demographic factors such as gender of respondents, marital status of customers, age distribution of respondents, educational level of staff and number of years customers have been using pre payment meters and where customers are using the prepayment meter. These demographic data are discussed below.

4.2.1 Gender of respondents

The study is conducted on a total of 343 respondents out of which 247 were males representing 72.0% and 96 of the respondents are female representing 28% of the response rate. Most men are the ones who are the ones who pay the bills hence dominate the gender distribution. This information is presented in figure 4.1.

Figure 4.1 Gender of respondents



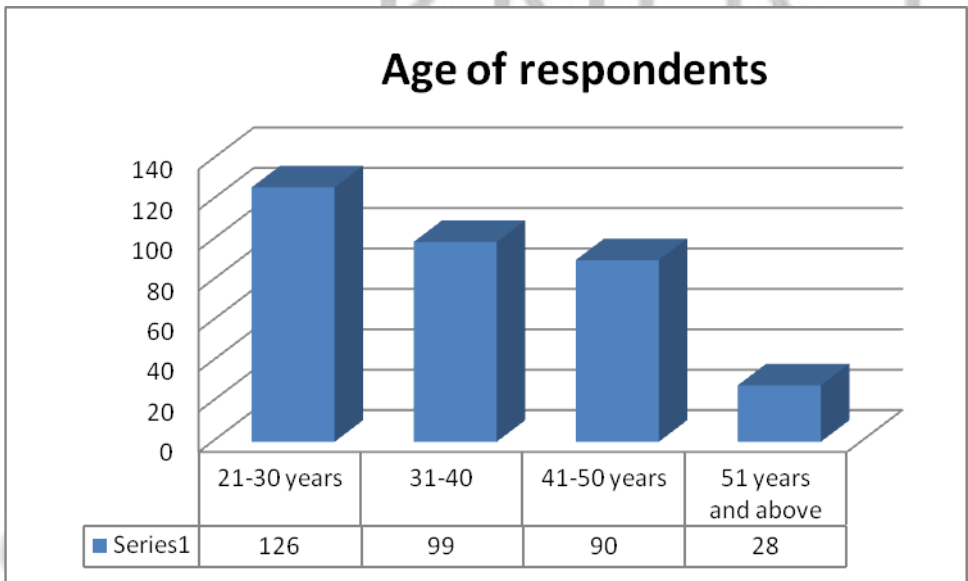
Source: Researcher's field work, 2015

4.2.2 Age of respondents

The age distribution reveals distributed respondents. 126 of respondents are between the ages of 21-30 years with a valid percentage rate of 36.7%, 99 of them are between 31-40 years with a total percentage of 28.9%, and 90 of the respondents are also between the ages of 26.2%

whiles the remaining 28 of the respondents are 51 years and above. This information is represented in figure 2 below.

Figure 4.2 Age of respondents

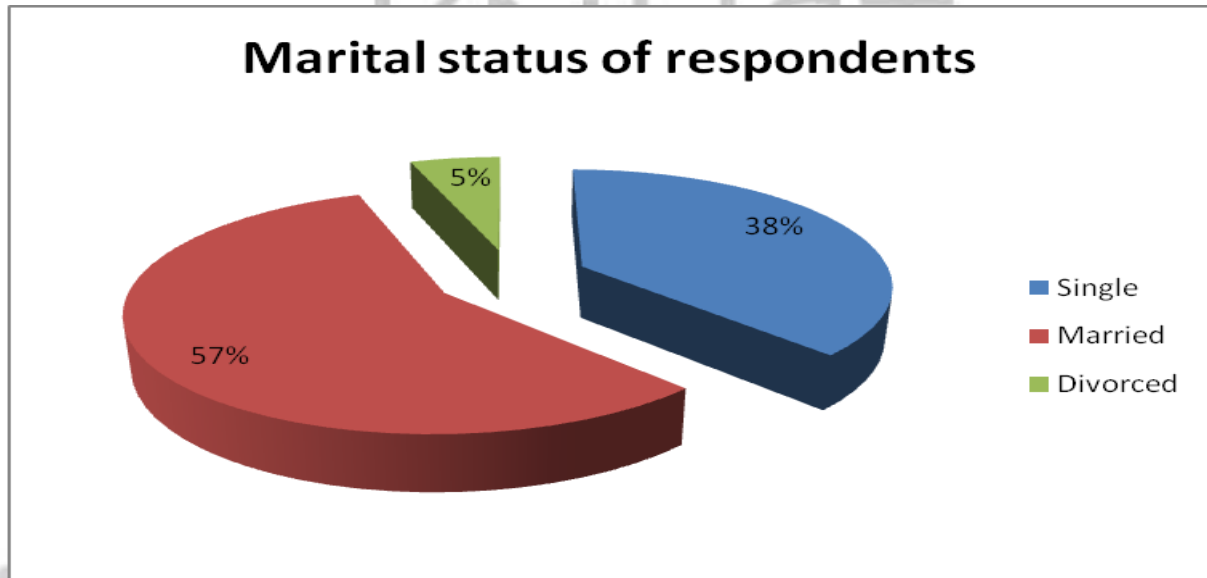


Source: Researcher’s field work, 2015

4.2.3 Marital status of respondents

The survey is conducted on a total of 343 respondents at ECG, Asokwa District. The marital status of respondents’ r reveals 129 of them are single which constitute a percentage rate of 37.6%, 195 of the respondents with a percentage of 56.9% also married, whiles 19 of them with an over- all percentage 5.5% are divorced.

Figure 4.3 Marital statuses of respondents

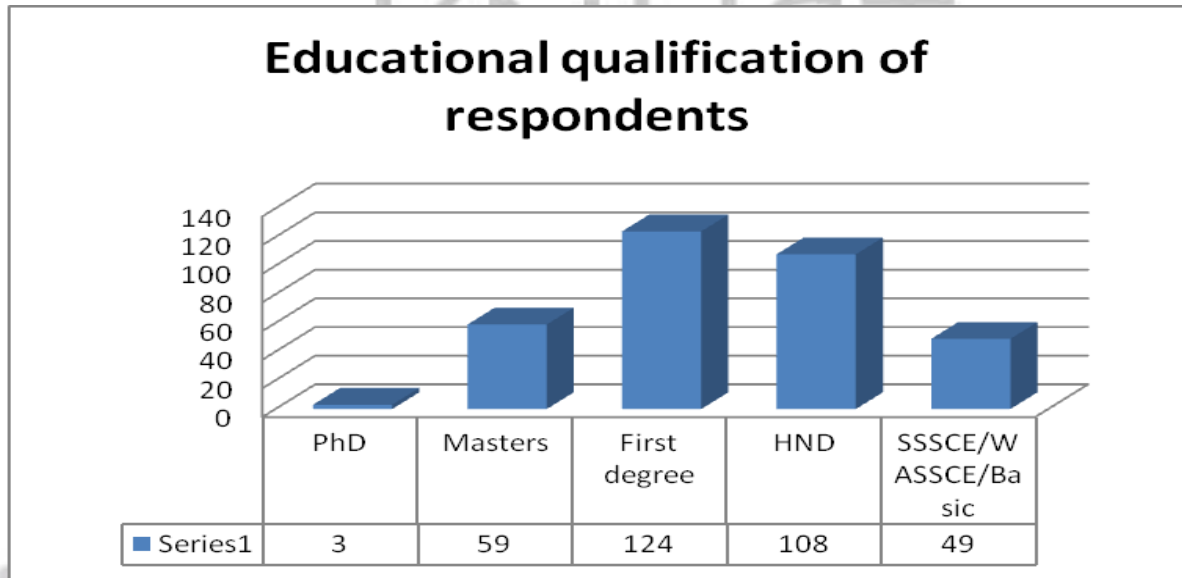


Source: Researcher's field work, 2015

4.2.4 Educational qualification of respondents

The study assesses the educational qualification of respondents at Asokwa district of ECG. Findings revealed that 3 of the respondents has PhD, 59 of them have Masters, 124 of them representing the highest figure and a highest percentage figure of 36.2% have first degree 108 of them have HND, 49 of the respondents have SSSCE/WASSCE/Basic.

Figure 4.4 Educational qualifications of respondents

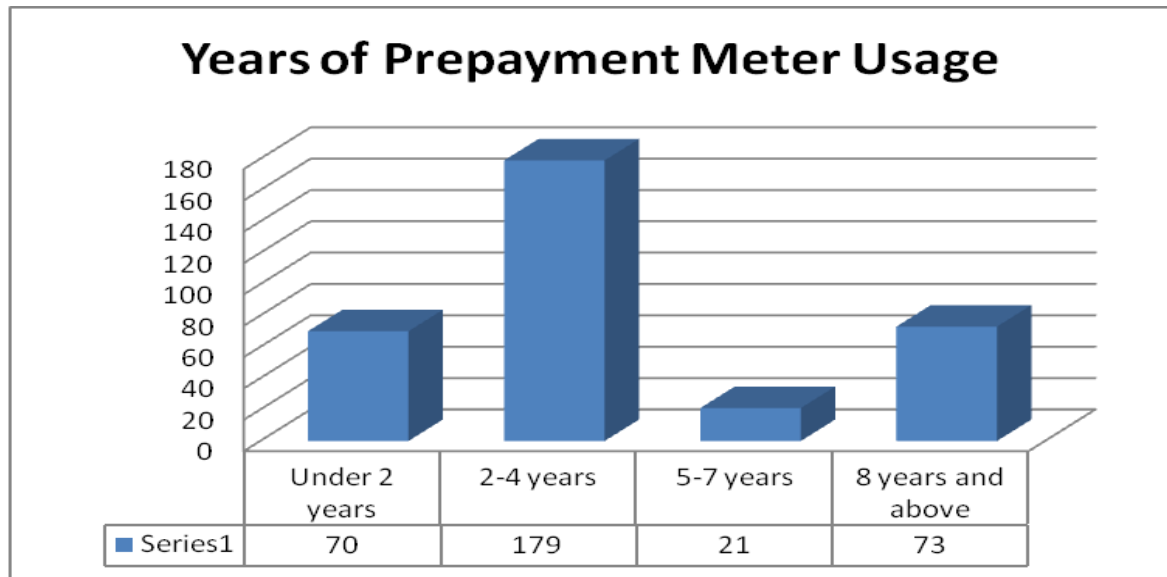


Source: Researcher's field work, 2015

4.2.5 How long have you been using prepayment meter

The distribution revealed that 70 of the respondents have been using prepayment meter barely under 2years, 179 of them with the highest percentage figure are between 2-4 years, have been using prepayment meter with a valid percent of100. This information is presented in figure 5

Figure 4.5 Years of pre payment usage

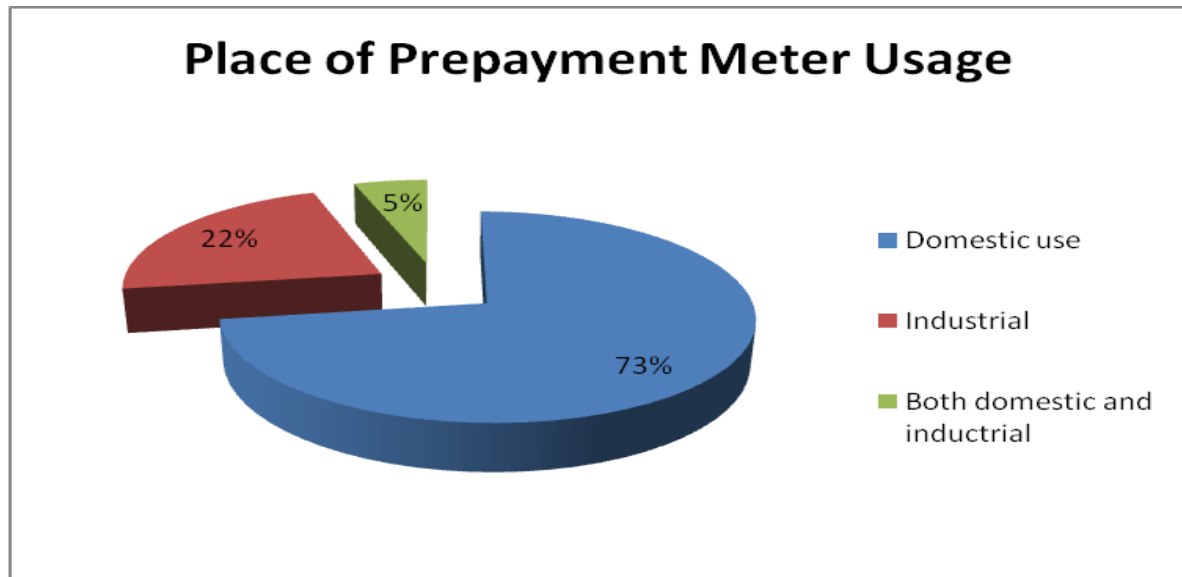


Source: Researcher's field work, 2015

4.2.6 Where the respondents are using the Pre payment Meter

The survey was further conducted on a total of 343 respondents at Asokwa ECG to ascertain where the respondents are actually using the prepayment meter and finding revealed that 249 of the respondents which constitute the highest percentage of 72.6% are using it for domestic purposes, 76 of them are using it for industrial businesses while the remaining 18 of the respondents are also using the prepayment meter for both industrial and domestic consumption. This is represented in figure 6 below

Figure 4.6 Place of pre payment usage

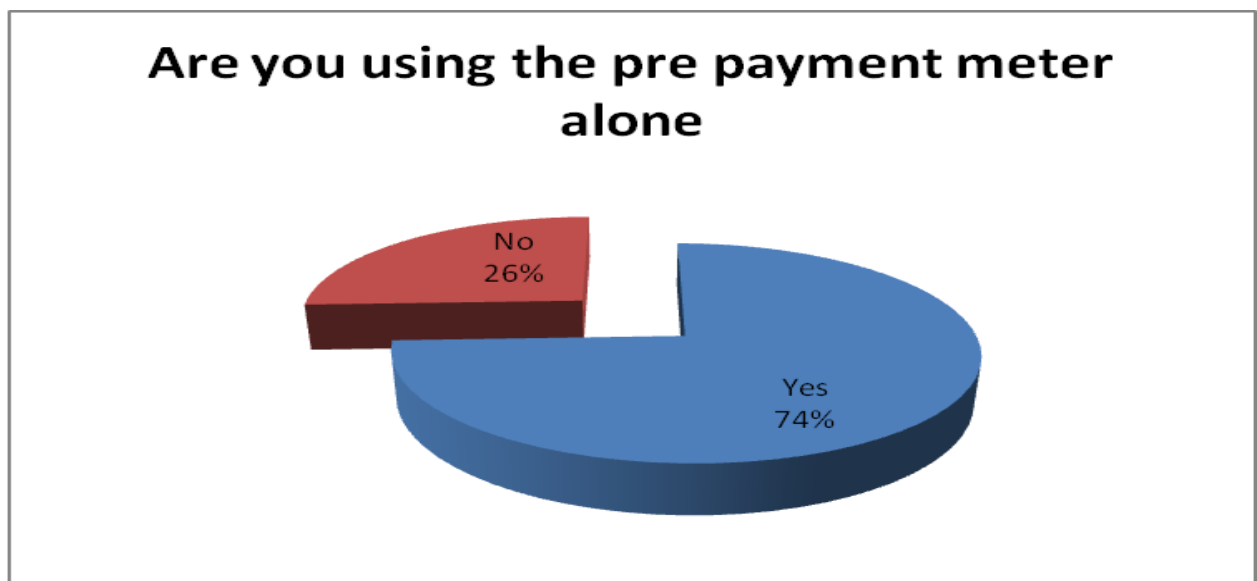


Source: Researcher's field work, 2015

4.2.7 Rate of Pre Payment Meter Usage

In finding whether the respondents are using the prepayment meter alone or sharing it with their neighbors, it was revealed that 255 of the respondents which constitute a percentage rate of 74.3% has agreed and said yes indeed they do not use the prepayment meter alone and instead share it with other people. 88 of the respondents with a percentage of 25.7% use the meter alone. This is represented in figure 7 below

Figure 4.7 Pre payment meter usage



Source: Researcher's field work, 2015

4.3 Challenges facing customers using pre- payment meters within the Asokwa district of ECG in Kumasi metropolis

Setbacks often characterised human endeavour and quite naturally, there are challenges that are associated with pre payment meter usage for both customers and ECG. Table 4.1 shows the variables used to measure the variables measuring challenges confronting pre payment meter usage.

Table 4.1 Challenges facing pre payment meter usage

Variables measuring Challenges facing pre payment meter usage	Mean	Std. Deviation	%	N
I am use to the post payment system so it not convenient using pre paid	2.31	1.307	46.2	343
I experience more blackout since I shifted to prepaid billing system	2.40	1.429	48.0	343

Spend more money and get small unit when you purchase more than once in a month	3.42	1.451	71.0	343
We always fight over sharing of bill	3.02	1.488	68.8	343
Difficulty in pre financing as other users complain of not having money	3.05	1.404	61.0	343
Disadvantageous to the poor since without money to buy pre paid, you cannot use electricity	3.44	1.416	60.4	343
There is less education on the use of pre payment meter	3.55	1.325	68.4	343

Source: Researcher's field work, 2015

4.3.1 Inconvenience in pre payment Usage

With respect to challenges facing customers using pre-payment meters within the Asokwa district of ECG in Kumasi metropolis, a mean of 2.31 of the respondents which constitute a percentage rate of 46.2% attest to the fact that they prefer the post-paid meter to the new prepaid meter because they are used to it. Paramount among the reasons given is that the post-paid meter usually allow them to enjoy electricity usage even if they do not have money to pay instantly. Again, the post-paid meter usage can minimize petty conflict and misunderstanding that might arise as a result of two or more consumers hooked to a single prepaid meter. One can also say that, consumers of electricity find the post-paid metering system to be more convenient than the prepaid because with the post-paid there will not be frequent power disruption leading to dark out whiles with the prepaid the power can go off as soon as the credit purchased is exhausted. But the remaining 53.8% of the respondents hold a different view and think that, change to the new prepayment meter is of immense benefit to

them since the tendency to delay bill payment which may subsequently leads to disconnection is largely avoided under the prepaid meter system.

4.3.2 Black out experiences

Again with the issue of challenge that customers face regarding the usage of prepaid meter in the Kumasi metropolis, a mean of 2.40 of the respondents with a percentage rate of 48.0% is of the view that they experience more black out after been shifted to the prepaid billing system. And difference reasons were attributed to this, and among these reasons include, purchasing the credit frequently is actually painful and difficult to most of the consumers. Majority of the respondents use heavy and sophisticated gadgets which consume high voltage of electricity thereby subjecting consumers or users of prepaid meter to frequent power cut off or black out. Moreover, since in most of the households in the municipality share the prepaid meter with their neighbours, there is bound to be problem with the purchase of the credit, hence leaving the users of the prepaid meter to experience more blackouts anytime there is a delay in the payment and recharging of the prepaid meter cards. Meanwhile the remaining 52.0% of the respondents are of the view that instead of experiencing more and frequent blackout, the prepaid metering system rather helps in eliminating if not all to its bearers minimum the issue of frequent power.

4.3.3 Minimal Education

The survey was further conducted on finding the challenges that consumers of electricity in the Kumasi metropolis encountered in using the prepaid meter system, a mean of 3.55 of the respondents which constitute a percentage rate of 71.0% is of the view that there is less

education on the use of prepaid meter and hence majority of the consumers of electricity find it difficult to change to the use of prepaid meter. This is because both management and employees of the ECG at Asokwa have it as duty bound to educate both the domestic and industrial consumers of electricity about the need to change to the prepaid metering system but it is evidently clear that this was not done. And even if it is done, it implies that it did not go down well with most of them and more needs to be done in order to intensify education on the need to adopt the prepaid meter usage. Another reason could be the laziness on the side of the people been employ to disseminate information. Meanwhile the remaining 29.0% of the respondent disagree and argue that in every human society, change is always inevitable, hence majority always prefer the old system of doing things.

4.3.4 Disadvantage to the poor

Another serious challenge that customers using prepaid in the Kumasi metropolis encountered on countless occasion was ascertained and a mean of 3.44 of the respondents with a percentage rate of 68.8% is of the view that the system is always disadvantageous to the poor since without money to purchase credit, the poor cannot enjoy electricity usage. This is because persistent and continue use of power largely depend on the consumers ability to buy credit frequently in order to enjoy electricity, and in a situation where the poor in the metropolis at a time where the available credit on the meter is exhausted and there is no money to effect a new recharge or buy the credit, then the poor is at disadvantage. Meanwhile, the other 31.2% of the respondent also argue that the system rather, will go a long way to help the poor in the society to avoid power disconnection due to pilling up of bills and it associated challenges and disgrace; hence the system will let the poor to practice management effectively.

4.3.5 Difficult in pre financing

The survey was further conducted on finding the challenges that consumers of electricity in the Kumasi metropolis encountered in using the prepaid meter system, a mean of 3.05 of the respondents in the metropolis with a total percentage of 61.0% also pointed to the fact that there is difficulties in pre financing as other users complain of not having money. In times where the consumption and purchase of the prepaid credit needs to be pre finance in order to avoid power cut or blackout, there is equally the problem of raising money to pre finance it thereby posing a serious challenge and discomfort to the consumers. And in a situation where there are two or more people on the same meter, contributing to finance the purchase of the credit usually becomes a very herculean task to the ordinary consumer. But as the case may be, 39% of the remaining respondents in the metropolis has disagree and argue that the difficulties encountered are usually is as a result of management and improper planning on the part of the consumers in the metropolis, and last but not the least, it take greater commitment to achieve a task.

4.3.6 Fight over sharing of bills

Again with the issue of challenge that customers face regarding the usage of prepaid meter in the Kumasi metropolis, a mean of 3.02 of the respondents with a percentage rate of 60.4% of the respondents within the Asokwa district ECG in Kumasi has pointed to the fact that in most cases they always fight over sharing of bill to members that are on one particular prepaid

meter. This happen as a result of individuals perception of cheating and discrepancies that emanate as some are using more gadget than the others and in this case, fight and quarrels are abound to occur, and in a situation where frequent billing and purchase of credit become intense, misunderstanding and petty fighting will automatically ensue between this members. Again when a particular person or individual refuses to pay the amount due them, then misunderstanding will emerge leading to fighting. Management of ECG confirm that *‘customers who live in compound houses where more than one tenant use the same meter create conflicts as to how to share or apportion cost and hence leads to the dissatisfaction of customers’*. Whiles the remaining 39.6% of the respondents believe that fighting can only arise if maturity and integrity among the respondents are lacking, hence proper measures and mechanisms needs to be put in place to quickly resolve any teething problems in order to encourage the prepaid meter usage.

4.3.7 More money with less credit

The survey was further conducted on finding the challenges that consumers of electricity in the Kumasi metropolis encountered in using the prepaid meter system, a mean of 3.42 of the respondents which constitute a total percentage rate of 68.4% has ascertained that consumers of electricity power spend more money and get small unit when you purchase more than once in a month and thereby creating discomfort and irritation among the consumers in the metropolis. This is very difficult to avoid because, no matter how well consumers manage their consumption and electricity usage it is likely that the credit will be exhausted before the end of every one month. Once it is only advisable to buy prepaid credit once a month, consumers tend to pay more for less credit. The other 31.6% of the respondents are of the view

that it will be prudent for every individual to practice energy conservation in order to avoid wastage of power.

4.3.8 Cost, theft and network challenges

E.C.G. management has been confronted with several challenges since the introduction of the pre payment metering projects in 1995. The first challenge has to do with cost. In order to change from credit (post paid) to prepaid meters, the company has to incur a lot of cost. This stems from the fact that they need to mobilize additional materials, financial and human resources to enable them carry out these replacement exercise. . Management categorically stated that *‘in most cases, the company has to source for funding to replace credit meters which are neither faulty nor damaged’*.

Another challenge confronting ECG relates to the possibility of power theft by unscrupulous customers. Experience has thought ECG that customers actually steal power especially where a comprehensive prepayment monitoring programme is not put in place to check power theft. Management stated that, *‘the credit meters are visited more frequently for purposes of reading and other interventions’*, however *‘prepayment meters are less visited by ECG as no readings are taken on them’*. In extreme cases, some industrial users actually remove the meters and link cables directly to the main supply to steal power. As to the question of the way forward on prepayment meters, ECG confirmed that their focus is on prepayment metering and in Ashanti Region; two major projects are being rolled out. These are ‘ENERSMART PREPAYMENT’ Metering Project and the ‘ELECTROMETER’

Prepayment Projects. These meters according to ECG, are more robust, smart and cannot be easily tampered with however customer friendly.

Besides these, the ECG also indicated that they have network challenges on their prepayment vending. Management stated that, the network problem sometimes creates *‘long queues at various vending stations especially during the first week of the month, when people rush to purchase their units for the month’*.

4.4 Relevance of prepayment meter usage over the post-payment meter usage within the Asokwa district of ECG in Kumasi metropolis

The ultimate aim of every policy introduce by firms is to contribute significant benefit to the customer. The introduction of pre payment meters therefore contributes significant benefit of pre payment meter to the customer and ECG as a whole. Table 4.2 below shows variables measuring importance of pre payment meter usage.

Table 4.2 Importance of prepayment meter usage

Variables measuring significance of pre payment meter usage	Mean	Std. Deviation	%	N
I am now careful with my consumption of electricity	4.04	1.160	80.8%	343
I pay less since I shifted to the prepaid billing system	3.31	1.289	66.2%	343
I buy credit at my own convenience and do not fear disconnection	3.95	1.196	79.0%	343
I don't pay any money when I don't use the meter	3.45	1.267	69.0%	343
No more disappointment when one is uncertain how much to pay when post meters are use	3.62	.956	72.4%	343

There is no disconnection since I started using prepayment meter	3.86	1.013	77.2%	343
No need to pay re-connection fee	4.08	.776	81.6%	343

Source: Researcher's field work, 2015

4.4.1 Careful with energy consumption

With regards to ascertain the relevance of prepayment meter usage over the post-payment meter usage within the Asokwa district of ECG in Kumasi metropolis, a mean of 4.04 of the respondents with a total percentage rate of 80.8% attest to the fact that with the introduction of prepaid meter, consumers are now careful with the consumption of electricity and has taken energy conservation practices seriously. This is because most of the respondents argued that they find it difficult to buy credit frequently hence there is the need to carefully conserve and manage the credit purchased, it pays to save any money that comes your way and one major way of wasting money is through mismanagement. But the remaining 19.2% of the respondents has disagree that even still with the prepaid system consumers are still wasting and are not careful with energy consumption.

4.4.2 Pay less

The survey was further conducted on finding the relevance of prepayment meter usage over the post-payment meter usage within the Asokwa district of ECG in Kumasi metropolis, a mean of 3.31 of the respondents with the percentage of 66.2% is of the view that as the introduction of the prepaid system, their bill or payment has reduced drastically. Reasons assigned to this is that consumers begin to manage the credit purchased effectively devoid of waste and the necessary energy conservation tips have been adhere to, and again, since

majority of the respondents are using separate prepaid meters, it has help them substantially to reduce the energy consumption hence effectively leads to less expenses on energy consumption. Meanwhile, the remaining 33.8% of the respondents still hold the view that they still spend much on energy usage, especially the prepaid meter system.

4.4.3 No fear of disconnection

Again, the survey to ascertain the relevance of prepaid metering system over the post-paid system in the Kumasi me metropolis, it was revealed that a mean of 3.95 of the respondents with a percentage rate of 79.0% is of the view that they buy credit at their own convenience and do not fear any disconnection. This was due to the fact that in prepaid metering system, the consumer is independence and responsible for the purchase of their own credit as and when it pleases them, hence there is no fear of disconnection for non- payment of bills. And again, the consumer can conveniently decide as and when to use the electricity power without incurring any cost. But the remaining 21.0% of the respondents are of the view that in some cases even with the use of prepaid, they are still depend on the main power supply from the main service or electricity provider. Moreover, the consumer can be disconnected on the basis of any illegal connection and the subsequent fear of been jail.

4.4.4 No cost incur

Again, with regards to ascertain the relevance of prepayment meter usage over the postpayment meter usage within the Asokwa district of ECG in Kumasi metropolis, a mean of 3.45 of the respondent with a 69.0% of the response rate in the metropolis are of the view that they don't pay any money when they don't use the meter. Here it was conveniently clear

that once consumption of the electricity did not take place there is equally no charges or payment levied on the consumer, hence the consumer has the liberty to regulate their own consumption level and can choose to off the meter at any time they prefer. While the remaining 31.0% of the respondents argued that in most cases, the consumers of electricity power turn to be levied by the ECG for some special charges such as strict light charges, government special levies. This has disputed the fact that consumers do not pay if no consumption or usage has taken place.

4.4.5 No more disappointment

The survey was further conducted on finding the relevance of prepayment meter usage over the post-payment meter usage within the Asokwa district of ECG in Kumasi metropolis, a mean of 3.62 of the respondents with a percentage of 72.4% strongly attest to the fact that No more disappointment when one is uncertain how much to pay when post meters are use. In this instances consumers or the respondents in the metropolis alluded to the fact that the prepayment system has brought major relief to them from the difficulties and challenges encountered under the post-paid metering system where the consumers in most cases are not aware of the exact amount until it finally release by the ECG officers, since the prepaid system has given the consumers the opportunity and control over power consumption, the usual disappointment suffered under the post-paid system has been taken away. But the remaining 27.6% of the respondents still believe that the disappointment still exist since the ECG official in most cases slap them with some charges even with the prepaid meter system. The findings is in line with a study that found that, there is the need for consumers to wholly welcome the prepayment meter system and it really ensure that consumers will only pay energy used but

not the bills that are estimated and distribute to consumers at the end of every month (Ogujor & Otasowie, 2010).

4.4.6 No disconnection

With regards to ascertain the relevance of prepayment meter usage over the post-payment meter usage within the Asokwa district of ECG in Kumasi metropolis, a mean of 3.86 of the respondents with a total percentage rate of 77.2% testify that with the emergence of prepaid metering system, power disconnection for inability to pay electricity bill on time has become things of the past. Prepaid metering system serves as a mobile recharge system where individual consumers recharge their own credit any time they run out of credit or the recharged one have been exhausted, the issue of whether to use electricity or not is at the discretion of the consumer, and the ECG has it as duty to provide only meter to every household including industrial users. Meanwhile, the remaining 22.8% of the respondents again argue that in a situation of any illegal connection or non-conformance of the rules and regulations governing the ECG, individual consumers can have their lines disconnected or even punish the offenders. Again the customer satisfaction can be seen from the fact that no disconnection takes place by the ECG. Management points to the fact that *‘customers determine how much power he need at a time and make purchases accordingly’* and the *‘customer is his/her own dis-connector and re-connector’*.

4.6.7 No need for reconnection fees

The survey was further conducted on finding the relevance of prepayment meter usage over the post-payment meter usage within the Asokwa district of ECG in Kumasi metropolis, a

mean of 4.08 of the respondents with a an overall percentage of 81.6% get convince that there is no need to pay re-connection fee since the prepaid system has allow the consumers in the metropolis to regulate the ways and manner the electricity has been used by the customers to ECG. Individual customers or respondents in the metropolis can decide to disconnect the power and on it at their own convenient time without paying any disconnection fees to the service providers, again the system will automatically disconnect itself as soon as the credit on it is exhausted and it will again switch on immediately there is a new recharge. But the remaining 18.4% of the respondents hold a different view and argued that consumers will experience disconnection fees especially if the ECG officials detect some foul play from the consumers.

4.6.8 Conscious with spending

Again, with regards to ascertain the relevance of prepayment meter usage over the postpayment meter usage within the Asokwa district of ECG in Kumasi metropolis, a mean of 3.78 of the respondents which constitute a percentage rate of 75.6% are now conscious with how much they spend in a month regarding the purchase of prepaid credit as compare to the post-paid meters where individual consumers are more often not aware and will find it tedious to be aware of their level of spending. With the prepaid system the individual consumer is always aware of how much credit they purchase at a particular point in time and hence it is always easy to control too much spending on electricity.

Perhaps the most important benefit of prepayment metering to ECG is its ability to improve cash flow and hence revenue mobilization. Customers pay upfront before they use the supply and these enhance revenue for the Company. Cost Reduction is the next benefit of prepayment to ECG. In raising bills for its credit metered customers, the company incurs huge costs. These include the cost of stationery such as bill cards and other printing materials; Salaries of meter reading staff and other overheads. In prepayment metering, such costs are not incurred. The responses from management confirm findings that suggest that, numerous benefits that accrued to the providers in the form of massive cut down on revenue losses, acute curtailment on illegal connections, finally a move in conserving energy to the utility provider (Quayson Dadzie, 2012).

4.5 Customer satisfaction with respect to pre-payment meter usage within the Asokwa district of ECG in Kumasi metropolis

Customer satisfaction is critical as far client satisfaction with pre payment meter usage is concerned. The ability of prepayment meters to give value to customers thereby satisfying their needs is important. Table 4.3 below shows variables measuring customer satisfaction with respect to pre payment meter usage

Table 4.3 Customer satisfaction with pre payment meter Usage

Variables measuring customer satisfaction with pre payment meter usage	Mean	Std. Deviation	%	N
The prepayment meters are efficient and does not easily spoil	3.77	3.745	75.4%	343
I am satisfied with pre paid because there is no accumulated debt	3.85	1.269	77.0%	343

I am satisfied because I purchase electricity at the nearest electricity vendor	4.29	.849	85.8%	343
I am satisfied with paying upfront before using electricity	3.61	1.105	72.2%	343
I am satisfied with the quick response from ECG any time I encounter challenge	3.01	1.128	60.2%	343
I prefer pre payment meter to post payment meter	3.91	1.102	78.2%	343
It is easy to buy pre paid credit than post payment meters	3.52	1.067	70.4%	343

4.5.1 Efficient pre payment meter

With regards to ascertain customer satisfaction with respect to pre-payment meter usage within the Asokwa district of ECG in Kumasi metropolis, a mean of 3.77 of the respondents with a percentage rate of 75.4% are of the view and attest to the fact that the prepayment meters are efficient and does not easily spoil. Reasons assigned to this is as a result of the satisfaction consumers enjoy from the use of prepayment meters, the use of prepayment meters are very effective to the customers and are free from petty problems that confront most of them on daily basis, satisfying customers profitably is another major priority of ECG to their customers in the metropolis. Meanwhile, the remaining 14.2% of the respondents in the metropolis hold a different view and think that the standard of customer satisfaction offered by the ECG in the Kumasi metropolis through the adoption and implementation of the prepaid metering system still needs to be given much attention.

4.5.2 No accumulated debt

The survey was further conducted on finding the customer satisfaction with respect to prepayment meter usage within the Asokwa district of ECG in Kumasi metropolis, a mean of 3.85 of the respondent which constitute a percentage rate of 77.0% are of the view that they are satisfied with pre-paid because there is no accumulated debt. Paramount among the reasons given is the fact that with the pre-paid metering system, consumers can only enjoy electricity usage if they buy pre-paid credit; therefore the issue of debts accumulation is not associated with the system, with the prepayment system, consumers themselves regulate their own energy consumption therefore it is difficult and not possible to accumulate debt. But the remaining 23.0% of the respondents hold a different view and think the system can equally incur and accumulate debt.

4.5.3 Nearest vendor

With regards to ascertain customer satisfaction with respect to pre-payment meter usage within the Asokwa district of ECG in Kumasi metropolis, a mean of 4.29 of the respondents with a percentage rate of 85.8% are convinced that they are satisfied because they purchase electricity at the nearest electricity vendor. This is truly ascertained because with the emergence of the prepaid system, a large number of vendors, customer service point and sales point are wide spread all over to help the consumers to easily access the credit at any time thereby the increasing the satisfaction level of the consumers. ECG through its customer satisfaction motive has established customer care system to effectively address customer complains thereby ensuring customer satisfaction. But the remaining 23% of the respondents also argue that even though the sales point all over every community for consumers to access, there is the problem of lateness and laziness on the part of the sales representatives and other workers

who seeks the welfare of the consumers. The finding confirm a study that suggest that, issues pertaining to how regulations of the system should be carried out which aimed at motivating and encouraging ready access and make the credit available to consumers so that they can effect payment for the services enjoyed (Casarin & Nicollier, 2009).

4.5.4 Upfront payment

Concerning the issue of customer satisfaction with respect to pre-payment meter usage within the Asokwa district of ECG in Kumasi metropolis, a mean of 3.61 of the respondents with a percentage rate of 72.2% of response rate agreed and testify that they satisfied with paying upfront before using electricity. This is because with the prepaid system, consumers can only enjoy the electricity usage if the credit are been purchased, hence there is an element of upfront payment which release the burden on the consumers. But the remaining 27.8% of the respondents argued strongly that they are not comfortable with the upfront payment system because it heavily place financial burden on the consumers. It was further argued that the upfront payment system large assist only the rich in the society leaving majority of less privilege ones dissatisfied.

4.5.5 Quick response

In further assessment of customer satisfaction with respect to pre-payment meter system within the Asokwa district of ECG in Kumasi metropolis, a mean of 3.01 of the respondents with a percentage rate of 60.2% believed that customers are most often satisfied with the quick response from ECG any time I encounter challenges. Challenges such as disruption in power supply, fault occurrence in some part of the metropolis, corrections of errors and mistakes in

the billing system are mostly receives quick response and correction from the operators anytime any of such challenges occurs. Since prepayment metering system is a new introduction or innovation, there bounds to be some few challenges, therefore systems are put in place to quickly correct any teething problems along the line of operation. But the remaining 39.8% of the respondents disagreed and laments that emergency response team usually turns to drag their feet and act slowly anytime customers report a problem to them.

4.5.6 Prefer prepayment

With regards to ascertain customer satisfaction with respect to pre-payment meter usage within the Asokwa district of ECG in Kumasi metropolis, a mean of 3.91 of the respondents with a total percentage rate of 78.2% as a response rate, prefer pre-payment meter to post payment meter. One prominent reason assigned to this is the numerous advantages associated with the use of pre-payment meter. And among the advantages include, the elimination of frequent disconnection, consumers' privacy is relatively assured, consumers control over how to use the credit purchased and among others. Meanwhile, the remaining percentage of the respondents which constitute 21.8% of the respondents hold a different view and think that prepaid metering system also come with its acute problems and challenges, hence consumers' needs to be very careful in totally condemning the post-paid metering system.

4.5.7 Easy to buy prepaid

Concerning the issue of customer satisfaction with respect to pre-payment meter usage within the Asokwa district of ECG in Kumasi metropolis, a mean of 3.52 of the respondents with a percentage rate of 70.4% truly believe that it is easy to buy pre-paid credit than post payment

meters. Here there is denial of the fact that, prepaid credit are easy and simple to buy and use at any point in time as compare to the post-paid metering system where bills are distributed at the end of every month with its associated problems. These problems include delay in disbursement of bills, over billing and other technical errors usually committed by the ECG officials. Meanwhile at the same time, the remaining 29.6% of the respondents hold a different view and believe that though the prepaid credits are easy to buy, yet still the service providers in most cases play some shows some lukewarm attitude towards the consumers, and also delay in service delivery was cited as another predicament hindering the progress of the system.

4.6 Effect of Pre-payment meter usage on customer satisfaction within the Asokwa district of ECG in Kumasi metropolis

The study adopted regression and correlation data analysis technique to assess the effect pre payment meter usage on customer satisfaction. Table 4.6 and 4.7 shows regression and correction analysis used to do.

Table 4.4 Regression Results showing significance of Pre-payment meter usage on customer satisfaction

Independent Variables	Unstandardized coefficient (B)	T values	Significant	Beta
Constant	1.377	4.161	.000	
Consumption Carefulness	.206	4.958	.000	.256
Saving Money	.203	5.334	.000	.282
No Disconnection	.015	.181	.048	.015
Less Spending	-.080	-1.565	.119	.093

Less Bill Payment Pressure	.155	3.288	.001	.210
No Disappointment	-.064	-1.436	.152	.077
No re-connection fee	.169	2.197	.029	.182
R	.458			
R Sq	.210			
Dependent Variable	Customer Satisfaction			

Source: Field Survey, 2015

From the regression output, the results show that, there is moderate relationship between customer satisfaction and the pre payment meter usage among ECG customers with a value of .458. The R^2 value indicates that 21% (.180) of customer satisfaction could be explained using pre payment meter usage.

4.6.1 Consumption Carefulness

As a result of pre payment meter usage to post payment meters, most customers are careful with their consumption pattern with respect to electricity usage. The result shows a coefficient value of .206 of consumption carefulness as far as electricity usage among customers is concerned. This reveals a positive relationship between customer satisfaction and carefulness in electricity consumption. One can say that, when the other independent variables are held constant, customer satisfaction would increase by 20.6% when there is a 100% effort made by customers to minimise their consumption patterns as far as electricity usage is concerned, all things being equal. Consumption carefulness is statistically significant and it is making a

unique contribution to the prediction of customer satisfaction scoring a significant value of .000.

4.6.2 Saving Money

The regression result shows that, the coefficient value for saving cash as a result of pre payment meter usage was .203 showing a positive relationship on client satisfaction. All things being equal, when the other independent variables are held constant; customer satisfaction would increase by 20.3% when customers make 100% effort to save a lot of cash as far as electricity usage is concerned. This saving in cash emanate from the fact that, a customer buys credit and utilize it judiciously hence do not incur additional cost when the post payment meters are used. Saving money is statistically significant and it is making a unique contribution to the prediction of customer satisfaction scoring a significant value of .000.

4.6.3 No Disconnection

Pre payment meter usage creates value for customers in a sense that, one does not need to be disconnected for accumulated non payment of bills. The regression result shows that, the coefficient value for no disconnection of power as a result of pre payment meter usage was .015 showing a positive relationship on client satisfaction. All things being equal, when the other independent variables are held constant, customer satisfaction would increase by 1.5% as there is a 100% guarantee that, there will be power supply as far as prepayment meter usage is concerned. No disconnection of power is statistically significant and it is making a unique contribution to the prediction of customer satisfaction scoring a significant value of .048.

4.6.3 Less Spending

Pre payment meter usage creates value for customers in a sense that, there is less spending in terms of cash and units as a result of consciousness. The regression result shows that, the coefficient value for no disconnection of power as a result of pre payment meter usage was 0.080 showing inverse relationship on client satisfaction. All things being equal, when the other independent variables are held constant; customer satisfaction would decrease by 8% as there is a 100% guarantee that, there will be power supply as far as prepayment meter usage is concerned. Less spending is not statistically significant and it is not making any unique contribution to the prediction of customer satisfaction scoring a significant value of .119. This may be as a result of customers not able to see any significant value in their spending pattern when they start using pre payment meters.

4.6.3 Less Bill Payment Pressure

Pre payment meter usage creates value for customers in a sense that; client may pay less for their credits compared to post payment meter usage. The regression result shows that, the coefficient less bill payment pressure of power as a result of pre payment meter usage was .155 showing a positive relationship on client satisfaction. All things being equal, when the other independent variables are held constant; customer satisfaction would increase by 15.5% as there is a 100% guarantee that, there will be power supply as far as prepayment meter usage is concerned. Less bill payment is statistically significant and it is making a unique contribution to the prediction of customer satisfaction scoring a significant value of .001.

4.6.3 No Disappointment

As far as pre payment meter usage is concerned, there is no more disappointment when one is uncertain how much to pay when post meters are use. The regression result shows that, the coefficient value for no disappointment as a result of pre payment meter usage was $-.064$ showing an inverse relationship on client satisfaction. All things being equal, when the other independent variables are held constant; customer satisfaction would decrease by 6.4% as there is a 100% guarantee that, there will be power supply as far as prepayment meter usage is concerned. Disappointment with bill payment uncertainty is not statistically significant and it is not making any unique contribution to the prediction of customer satisfaction scoring a significant value of $.152$. This is as a result of many disappointments that customer face when they have to pay more with respect to pre payment meter usage.

4.6.3 No re-connection fee

Pre payment meter usage creates value for customers in a sense that, there is no need for paying re-connection fees as a result of non payment of bills. The regression result shows that, the coefficient value for no re-connection fee as a result of pre payment meter usage was $.169$ showing a positive relationship on client satisfaction. All things being equal, when the other independent variables are held constant; customer satisfaction would increase by 16.9% as there is a 100% guarantee that, there will be power supply as far as prepayment meter usage is concerned. No re-connection is statistically significant and it is making a unique contribution to the prediction of customer satisfaction scoring a significant value of $.029$.

4.6.4 Contribution of significance of pre payment meter usage on customer satisfaction

In comparing the input of the independent variables, the beta values are used to explain the contribution. Consumption carefulness, saving money, no disconnection, less spending, less bill payment pressure, no disappointment and no re-connection have beta values of .256, .282, .015, .093, .210, .077, and .182 respectively . The largest beta value is .282, which is saving money meaning that, saving money makes the biggest input to explaining customer satisfaction with pre-payment meter usage.



CHAPTER FIVE

SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

5.1 Introduction

In this chapter, the study explored the summary of findings, recommendations that are stated based on the study and conclusion of the study. The summary of findings is captured under the objectives which are stated below.

5.1.1 Challenges facing customers using pre- payment meters within the Asokwa district of ECG in Kumasi metropolis

In evaluating the challenges that confront customers using pre-payment meters within the Asokwa district of ECG in Kumasi metropolis, cost of changing to pre-payment meter confront management of ECG. In order to change from credit (post-paid) to prepaid meters, the company has to incur a lot of cost. Again the finding revealed that the system is truly disadvantageous and cannot in all materials times benefit the poor in the municipality, that consumers of electricity power spend more money and get small unit when you purchase more than once in a month and thereby creating discomfort and irritation among the consumers in the metropolis, is difficulties in pre financing as other users complain of not having money, less education on the use of prepaid meter and hence majority of the consumers of electricity find it difficult to change to the use of prepaid meter, customers again experience more black out after been shifted to the prepaid billing system.

5.1.2 Relevance of prepayment meter usage over the post-payment meter usage within the Asokwa district of ECG in Kumasi metropolis

In accessing the relevance of prepayment meter usage over the post-payment meter usage within the Kumasi metropolis, findings revealed that, with the introduction of prepaid meter, consumers are now careful with the consumption of electricity and has taken energy conservation practices seriously. Customers are of the view that with the introduction of the prepaid system, their bill or payment has reduced drastically; customers again buy credit at their own convenience and do not fear any disconnection. The customers in the metropolis are of the view that they don't pay any money when they don't use the meter. Moreover, customers in the metropolis strongly attest to the fact that there no more disappointment when one is uncertain how much to pay when post meters are use. And with the emergence of pre-payment metering system, majority of the respondents testify that power disconnection for inability to pay electricity bill on time has become things of the past. And last but not the least, customers get convince that there is no need to pay re-connection fee since the prepaid system has allow the consumers in the metropolis to regulate the ways and manner the electricity has been used by the customers to ECG.

5.1.3 Customer satisfaction with respect to pre-payment meter usage within the Asokwa district of ECG in Kumasi metropolis

With customer satisfaction in respect to prepayment meter usage, findings revealed that, customers are of the view and attest to the fact that the prepayment meters are efficient and does not easily spoil, and that customers are satisfied with pre-paid because there is no accumulated debt. Another level of satisfaction derived with respect to the prepayment meter

usage is that customers in the metropolis are convinced that they are satisfied because they purchase electricity at the nearest electricity vendor; customers in the metropolis duly testify that they get the maximum satisfaction with respect to paying upfront before using electricity. Whiles some cross section of respondents in the metropolis are of the view that customers are most often satisfied with the quick response from ECG any time challenges are encountered.

5.1.4 Effect of Pre-payment meter usage on customer satisfaction within the Asokwa district of ECG in Kumasi metropolis

From the regression output, the results show that, there is moderate relationship between customer satisfaction and the pre-payment meter usage among ECG customers with a value of .458. The R^2 value indicates that 21% (.21) of customer satisfaction could be explained using pre-payment meter usage. There are positive and significant relationships between consumption carefulness, saving money, no disconnection, minimal bill payment, no reconnection fee and customer satisfaction with respect to pre-payment meter usage. However, there are inverse and non-significant relationships between less spending and no disappointment and satisfaction with respect to pre-payment meter usage. Comparing the contribution of consumption carefulness, saving money, no disconnection, less spending, less bill payment pressure, no disappointment and no re-connection; saving money makes the biggest input to explaining customer satisfaction with pre-payment meter usage.

5.2 Conclusion

The result generally implies that ECG both the management and authorities at Asokwa ECG has place customer satisfaction first and deem it as its core mandate to satisfy customers effectively as a result of prepayment metering system and its usage in the metropolis. The research clearly indicated that customers in the metropolis has whole heartedly embrace the emergence of the prepayment metering system in the metropolis and the management readiness to effectively address any teething problems and challenges confronting the customers in the metropolis. A side the numerous challenges confronting both management and customers with respect to adoption pre-payment meter, more effort and strategies on the part of ECG to increase client satisfaction and customers as well should endeavour to abide by the rules and regulation pertaining pre-payment meter usage.

5.3 Recommendations

The following recommendations are worth considering based on the study.

The units must be converted to cash in order to know exactly how much they spend in the month for electricity consumption. This will enable consumers in the metropolis to calculate in monetary terms the amount spend on energy usage, and its effect on how well the customers in the metropolis has access and welcome the prepaid metering system.

It is recommended that more or additional prepaid meters should be given to every customer, including households and industrial usage. Its significant or resultant effect is increase in revenue mobilization as the problem of illegal connection and refusal to pay electricity bill under the post-paid system has become things of the past.

Furthermore, the prepayment meters should be handled with care by the service providers especially during fixing and installation of the prepayment meters in order to prevent the meters from developing fault. This is because any little fault developed can equally leads to errors in energy consumption thereby creating inefficiency and discomfort to the customers in the metropolis.

Prepayment meters are good and laudable as it solve the problem of inconveniences customers usually experience especially disconnection and reconnection fees, hence it is therefore recommended that the tariff should be reduced as consumers pay in advance under the prepayment system.

There should be system or monitoring team well trained and established to check and resolve any discrepancies that may arise and also to check any illegal connections that may derail ECG from effective revenue mobilization.

Another prominent recommendation is for ECG to provide every household or individuals with separate meters more especially to the compound houses to do away with Misunderstanding and petty squabbles in purchasing unit.

Cost reduction and energy conservation is crucial for the sustainability of the energy sector, hence it is strongly recommended that, the service providers especially ECG should engage in phasing out all the post-paid meters and replace them with the prepaid in order to save a substantial amount of energy.

It is further recommended that more education on the use of prepaid metering should be intensified so as to inform customers about the need for them to switch to the prepaid metering system and this should be done diligently in order to avoid any misinformation and its subsequent effect on consumer's perception.



REFERENCES

- Agrawal, P., (2008). Performance improvement planning: Developing effective billing and collection practices', field note 44119, water and sanitation program. South Asia: World Bank
- Akrich, M., (1994). The description of technical objects. In Bijker, W.E. and J. Law (Eds). Shaping technology/building society: Studies in sociotechnical change. Massachusetts: MIT Press.
- Aliaga, M., and Gunderson, B. (2000). Interactive Statistics. Saddle River, p3-15
- Aqua-Mensah, J.K.A., M.K. Ahegbebu and Asabere, (2012). Development of an information and communication technology (ICT)-driven business model for the utility sector. International Journal of Information and Communication Technology Research
- Ariel A. Casarin A.A and Nicollier L. (2009). "Prepaid Meters in Electricity. A Cost-Benefit Analysis Utilities at the Base of the Pyramid. Athlens Centre and University of San Diego, California, United States.
- Babakus, E., and Boller, G.W. (1992). An empirical assessment of the SERVQUAL scale. Journal of Business Research, 24, 253-68.
[http://dx.doi.org/10.1016/01482963\(92\)90022-4](http://dx.doi.org/10.1016/01482963(92)90022-4)
- Baptista, I. (2013). Everyday Practices of Prepaid Electricity in Maputo, Mozambique.
- Bond, P. (2007). Decommodifying electricity in post-apartheid Johannesburg. Contesting innovatio. Journal of Product Innovation Management .18(4), 231-246. Internet and Web Applications and Services (ICIW'07). Morne, Mauritius
- Casarin, A. and A.L. Nicollier, (2008). Prepaid meters in electricity: A cost-benefit analysis. IAE Working Paper Series, IAE Business School, Austral University.

- Chiara G. et al (2007). Customer Experience: An Overview of Experience Components that Co-create Value With the Customer. *European Management Journal* Vol. 25, No. 5.
- Chipofya, V., Z. Hoko and C. Gustaff, 2009. An assessment of effective metering and billing as a water demand management tool. The case of area 49 in Lilongue, Malawi. In M. Schouten, E.
- Cronin, J.J., and Taylor, S.A. (1992). *Measuring service quality: a re-examination and*
- DeVellis R,F. (2003). *Scale Development: Theory and Application*. Sage Publication.
- Estache, A., Foster, V., and Q. Wodon (2000), 'Infrastructure Reform and the Poor. Learning from Latin America's Experience' LAC Regional Studies Program, WBI Studies in Development.
- Estache, A., Foster, V., and Q. Wodon (2000). 'Infrastructure Reform and the Poor. Learning From Latin America's Experience' LAC Regional Studies Program, WBI Studies in Development.
- Gomez Lobo, A. and D. Contreras (2003), 'Water Subsidy Policies: A Comparison of the Chilean and Colombian Schemes', *The World Bank Economic Review*,
- Guy, S., (2006). *Designing urban knowledge: Competing perspectives on energy and buildings*. Environment and Planning C: Government and Policy
- Hand, M., E. Shove and Southerton D. (2005). Explaining showering: A discussion of the material, conventional, and temporal dimensions of practice. *Sociological Research Online*,

Hansemark, O. C. and Albinson, M.,(2004) “Customer Satisfaction and Retention: Pitman publication

Harvey, E. (2005). Managing the poor by remote control: Johannesburg’s experiments with prepaid water meters. . The age of commodity: Water privatization in Southern Africa,,
KNUST

Hocutt, M. A. (1997). The impact of perceived justice on customer satisfaction and intention to complain in a service recovery. Advances in consumer research,

Jain, A. (2011). A prepaid meter using mobile communication. International Journal of

Jain, A. (2011). A prepaid meter using mobile communication. International Journal of Engineering, Science and Technology,

Kayaga, S., R. Franceys and K. Sansom, 2004. Bill payment behaviour in urban water services in Uganda. An empirical data from Uganda. Journal of Water Supply: Research and Technology-

Kelley, S. W., and Davis, M. A. (1994). Antecedents to customer expectations for service recovery. Journal of the Academy of Marketing Science,

Kettless, P.M., (2004). Prepayment metering systems for the low income group. London: PRI Ltd.

Khan, R. H. (2010). A prepaid smart metering scheme based on wimax prepaid accounting

Kingdom, B., R. Liemberger and P. Marin, (2006). The challenge of reducing non-revenue water (NRW) in developing countries. How the private sector can help: A look at performance-based service contracting. Water Supply and Sanitation Sector Board Discussion Paper Series, Paper No. 8. World Bank.

- Kumekpor T.K.B. (2002). Research Methods and Techniques of Social Research. Sonlife Press and Serviceslearned, and their policy implications for developing countrie. Energy Policy, 31(9), 911-927.
- Marvasti A.B. (2004). Qualitative Research in Sociology. Sage publication, London.
- Martin N. M. (1996). Sampling for qualitative research. Family Practice Oxford University Press 1996
- Misra, S. and W. Kingdom, 2012. India: Improving urban water supply and sanitation service provision. Lessons from business plans for Maharashtra, Rajasthan, Haryana and international good practices. World Bank and Ministry of Urban Development, India.
- Miyogo, C., Ondieki S., & Nashappi N. (2013). An Assessment of the Effect of Prepaid Service Transition in Electricity Bill Payment on KP Customers, a Survey of Kenya Power, West Kenya Kisumu, American International Journal of Contemporary Research, model. Smart Grids and Renewable Energy, 1(2), 63-69
- Mwaura, F., 2012. Adopting electricity prepayment billing system to reduce non-technical energy losses in Uganda: Lesson from Rwanda Utilities Policy.
- Nguyen N and Leblanc G.(1998). The mediating role of corporate image on customers' retention decisions: an investigation in financial services. Int J Bank Market 16(2):52–65.
- O'Connor, G. C. (2001). The nature of market visioning for technology-based radical innovation. Journal of Product Innovation Management
- Ogijor E.A. and Otasowie P. (2010). Pre-Paid Meter: Impact On Revenue Generation In Nigeria”. International Journal of Academic Research

- Ogujor, E.A (2007). Reliability Assessment of Electric Power Distribution: A case study of 2 x 15MVA Ugbowo Injection Substation. PhD Thesis: University of Benin, Benin City. Nigeria.
- Oh, H. (1999). Service quality, customer satisfaction, and customer value: A holistic perspective. *International Journal of Hospitality Management*, 67-82.
- Oliver, R. L., Satisfaction: A Behavioral Perspective on the Consumer, New York, McGraw Hill, 1997.
- Pike R. (2012). AMI managed services: Executive summary. oxford UK: institute for science innovation and society
- Rao, S., (2012). Impact of municipal billing systems on revenue collection (GSDRC Helpdesk Research Report). Birmingham, UK: Governance and Social Development Resource Centre, University of Birmingham.
- Robson C. (2002). Real World Research, (2nd Edition). Blackwell Publishing.
- Ruiters, G. (2009). Free basic electricity in South Africa: A strategy for helping or containing
- Saunders M., Lewis P. and Thornhill A. (2009). Research methods for Business Students.(5th Edition). Pearson Education
- Shove, E., (2010). Beyond the ABC: Climate change policy and theories of social change. Environment and Planning

- Soto, D. A.-S. (2012). A prepaid architecture for solar electricity delivery in rural areas. Specification Vending in South Africa: A Case Study;. Second international conference on
- Stoner, A. (2009). 22nd AMEU Technical Convention 36 AMEU Proceedings 2009: Pretoria: South Africa. A Paper Presented in A Conference on Future Global Energy Needs held in South Africa.
- Subramoney, G. H. (2007). A Secure Web Service for Electricity prepayment and industry Specification Vending in South Africa: A Case Study;. Second international conference on Internet and Web Applications and Services (ICIW'07). Morne, Mauritius
- Szmigin, I. (2003). Understanding the Consumer. London, GBR: SAGE Publications Inc. (US), pp 79-116.
- Tewari, D. D. (2003). An assessment of South African prepaid electricity experiment, lessons from other Nation. Lessons learned, and their policy implications for developing countries. Energy Policy
- Tewari, D. D. and T. Shah, (2003) An Assessment of South African prepaid electricity experiment, Lessons learned, and their policy implications for developing countries. Energy Policy
- Tewari, D.D. and T. Shah, (2003). An assessment of South African prepaid electricity experiment, lessons learned, and their policy implications for developing countries. Energy Policy
- Vercauteren, A. (2008). Customer/supplier interaction for radical technological innovation: inhibitor or facilitator? Belgium: Hasselt; Department of Business Administration.

Weaver K and Olson J.K (2006). “Understanding paradigms used for nursing research”
Journal of Advanced Nursing Volume 53, Issue 4, pages 459–469,

Wijmans, H. (2001). Creating New Products” in Jakki Mohr Marketing of High-Technology
Products and Innovation. New Jersey

World Bank, (2012) Installation of individual water meters increases revenue collection by 15
Per cent in Bangladesh.

Wunsch, D. (1986). Survey research: Determining sample size and representative response.
Business Education Forum, 40(5), 31-34

APPENDIX

QUESTIONNAIRES

This questionnaire seeks to collect data on **effect of pre payment meter usage on customer satisfaction within the Asokwa District of ECG**. The data collected will be used for academic purpose only and confidentiality is assured. Please answer the question by ticking the appropriate boxes or providing your answers where necessary. Thank you

TO BE COMPLETED BY CUSTOMERS OF USING PREPAYMENT METER

Demography of Respondent

1. **Gender:** Male [] Female []

2. **Age**
Under 20 years [] 21-30 years [] 31-40 years []
41-50 years [] 51years and above []

3. **Marital status:** Single [] Married [] Divorced []
4. **Highest Educational Level:** PhD [] Masters Degree [] First Degree []
HND [] SSCE/MSLC/Basic [] No formal Education []
5. **How long have you been using prepayment meter**
Under 2 years [] 2-4 years [] 5-7 years [] 8 years and above []
6. **Where are you using the prepayment meter?**
Domestic [] Industrial [] Both []
7. **Are you using the pre payment meter alone?**
Yes [] No []

From the statement below, please indicate your level of agreement or disagreement to the following statements. Please use the scale below

1=Strongly disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly agree

	CHALLENGES FACING CUSTOMERS USING PRE-PAYMENT METERS	1	2	3	4	5
	Resistant to change					
8	I am use to the post payment system so it not convenient using pre paid					
9	It is taking a long time for me to adjust to change					
	Uncertainties of Performance					
10	I experience more blackout since I shifted to prepaid billing system					
11	Am not certain of how durable the pre payment meters are					
	Expensive					
12	The electricity bill is higher than before					

13	Spend more money and get small unit when you purchase more than once in a month					
	Misunderstanding when use in group					
14	We always fight over sharing of bill					
15	Difficulty in pre financing as other users complain of not having money					
	Disadvantage to the poor					
16	The system is disadvantageous to the poor since without money to buy pre paid, you cannot use electricity					
	Less education					
17	There is less education on the use of pre payment meter					
18	I am used to the post meter system so am not comfortable with pre paid meter					

From the statement below, please indicate your level of agreement or disagreement to the following statements. Please use the scale below

1= Strongly disagree 2= Disagree 3= Neutral 4= Agree 5= Strongly agree

	IMPORTANCE OF PREPAYMENT METER USAGE	1	2	3	4	5
	Careful with Electricity consumption					
19	I am now careful with my consumption of electricity					
20	I do not waste electricity the way I use to					
	Spend Less					
21	I pay less since I shifted to the prepaid billing system					
22	I am conscious with how much I spend in a month					
	Minimum pressure with Bill Payment					
23	No struggle for bill payment since I buy before I use					
24	I buy credit at my own convenience and do not fear disconnection					

	Saving Money					
25	I don't pay any money when I don't use the meter					
26	I can off my meter when I travel for a long time and spend nothing					
	No Disappointment of how much to pay					
27	No more disappointment when one is uncertain how much to pay when post meters are use					
28	You don't know how much to pay when using post paid meter					
	No disconnection					
29	There is no disconnection since I started using prepayment meter					
30	No need to pay re-connection fee					

From the statement below, please indicate your level of satisfaction or dissatisfaction to prepayment meter usage. Please use the scale below

1= Highly dissatisfied 2=Dissatisfied 3=Neutral 4=Satisfied 5=Highly satisfied

	CUSTOMER SATISFACTION WITH RESPECT TO PREPAYMENT METER USAGE	1	2	3	4	5
31	The prepayment meters are efficient and does not easily spoil					
32	It is easy to buy pre paid credit than post payment meters					
33	I am satisfied with pre paid because there is no accumulated debt					
34	I am satisfied because I purchase electricity at the nearest electricity vendor					
35	I am satisfied with paying upfront before using electricity					

36	I am satisfied with the quick response from ECG any time I encounter challenge					
37	I prefer pre payment meter to post payment meter					
38	I am satisfied with the pre payment as a result of privacy I enjoyed when no one will bring bill or coming to read the meter					
39	Having control of how to use credit as a customer					

38. Do you prefer pre paid meters to post payment meters?

Yes [] No []

What recommendations will you give for the improvement of pre payment meter usage?

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INTERVIEW GUIDE FOR MANAGEMENT OF ECG GHANA LIMITED

This questionnaire seeks to collect data on **effect of pre payment meter usage on customer satisfaction within the Asokwa District of ECG**. The data collected will be used for academic purpose only and confidentiality is assured. Please answer the question by ticking the appropriate boxes or providing your answers where necessary. Thank you

What is your position

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What challenges are associated with using pre- payment meters within the Asokwa district of ECG in Kumasi metropolis?

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What is the relevance of prepayment meter usage over the post-payment meter usage within the Asokwa district of ECG in Kumasi metropolis?

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What is the level of customer satisfaction with respect to pre-payment meter usage within the Asokwa district of ECG in Kumasi metropolis?

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What effects does Pre-payment meter usage on customer satisfaction within the Asokwa district of ECG in Kumasi metropolis?

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What strategies is ECG putting in place to make customers satisfies with pre payment meter usage

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