

**THE EFFECTS OF GOVERNMENT REGULATIONS ON THE MOBILE
COMMUNICATION TELEPHONY IN GHANA**

By

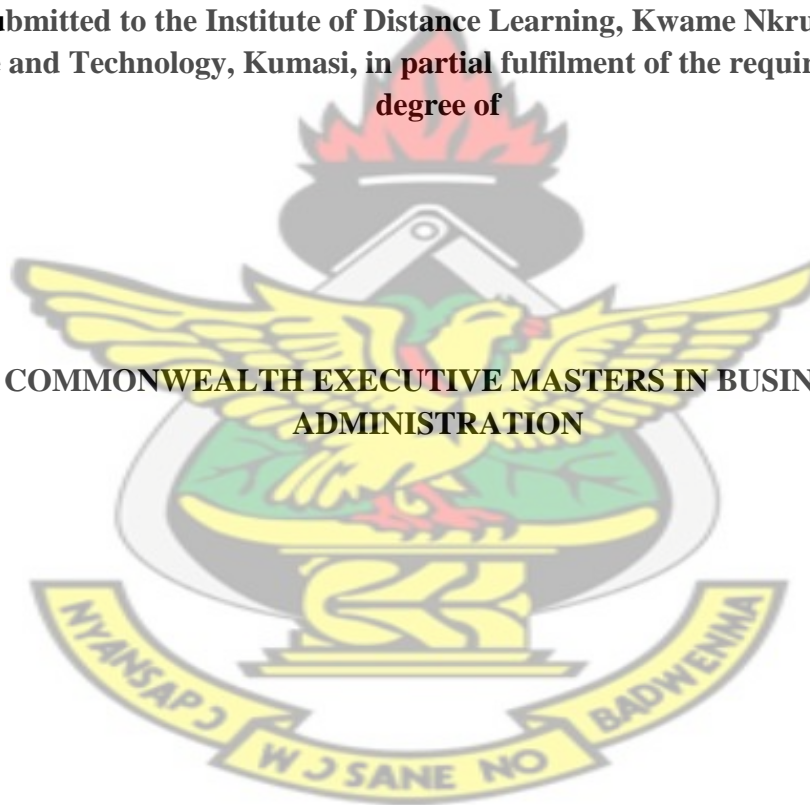
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**A Thesis submitted to the Institute of Distance Learning, Kwame Nkrumah University
of Science and Technology, Kumasi, in partial fulfilment of the requirements for the
degree of**

**COMMONWEALTH EXECUTIVE MASTERS IN BUSINESS
ADMINISTRATION**



APRIL, 2012

DECLARATION

I hereby declare that this submission is my original work and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgment has been made in the text.

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ACKNOWLEDGEMENTS

My thanks go to the Almighty God for his grace and mercies throughout the study.

I wish to express my profound gratitude to my supervisor, Mr Eugene Bawah, for his patience, criticisms and invaluable suggestions. Also, I express my thanks to Mr Osman Ibrahim for his review of the work, which have resulted in its successful completion.

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ABSTRACT

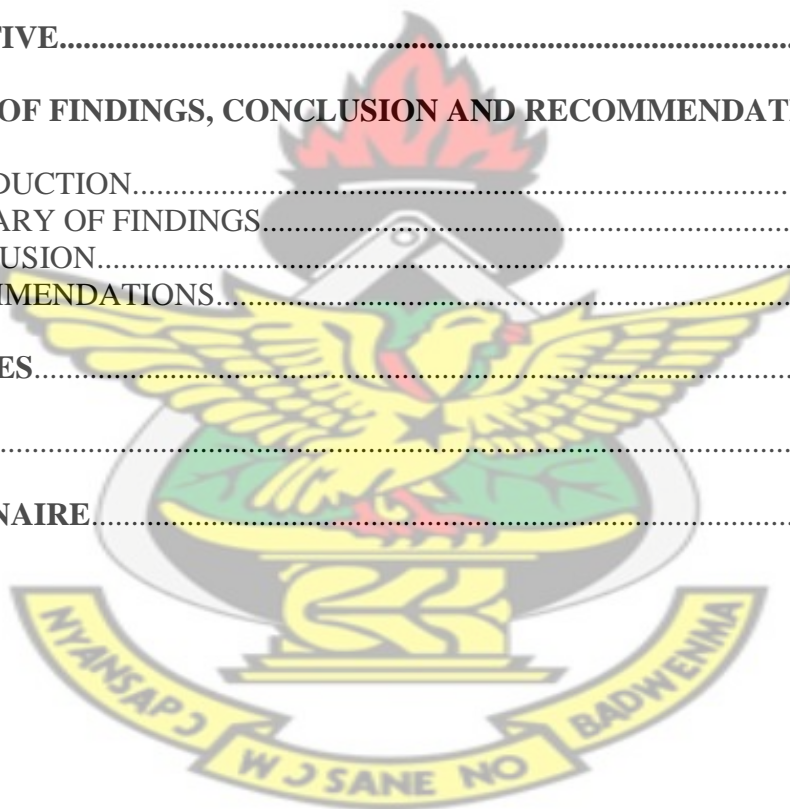
The government of Ghana embarked on a liberalisation programme of the telecommunication sector in the latter part of the 20th century due to the inability of the national telecommunication company, Ghana Telecom to expand its services across the country with its fixed line systems. The liberalisation programme was initiated by the sale of a stake in Ghana Telecom to a private investor firm and the licensing of the first mobile service provider, Millicom Ghana limited (Tigo) in 1992. To promote competition in the sector, more mobile service providers were issued licenses, which included Spacefon (MTN), Celltel (Expresso), Airtel (Zain), Onetouch (Vodafone) and Globacomm. The study sought to examine the effects of the government's liberalisation programme on the mobile communication telephony by comparing and contrasting the pre and post telecommunication reform eras. It was also to evaluate the effects of government liberalisation of the telecommunications sector on the mobile telecommunications telephony in Ghana and to determine how new regulations would affect the mobile communications telephony in Ghana. Data were sourced from both primary and secondary sources. The study revealed that government regulations have significant impact on the operations of mobile phone operators in Ghana. It is recommended that government involves the various stakeholders such as the mobile phone operators and the National Regulatory Authority in creating a regulatory environment which promotes fair practices and competition in order to promote the growth of the mobile communications sector.

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LIST OF ABBREVIATIONS

| | |
|--------|---|
| ADP | Accelerated Development Plan |
| NTP | National Telecommunication Policy |
| FTP | First Telecommunication Project |
| NCA | National Telecommunication Authority |
| WGI | Worldwide Governance Indicators |
| WATC | West African Telecommunications Conference |
| ITU | International Telecommunications Union |
| FDI | Foreign Direct Investments |
| ICC | International Chamber of Commerce |
| GSMA | Global System for Mobile Communication Association |
| ICT | Information and Communication Technology |
| ICT4AD | ICT for Accelerated Development |
| TRE | Telecom Regulatory Environment |
| WTO | World Trade Organisation |
| ARPU | Average Price per Unit |
| SPSS | Statistical Package for Social Scientists |
| GIFEC | Ghana Investment Fund for Electronic Communications |

CHAPTER ONE

GENERAL INTRODUCTION

1.1 BACKGROUND OF STUDY

In 1992, when the first mobile telephone service provider, Millicom Ghana Limited launched its service under the brand name Mobitel (now Tigo), Ghana Telecom Company was the only communication service provider providing fixed line services. Telephone penetration in that period stood at 0.3% according to the World Bank country data statistics (Ahortor, 2003). The lack of investments, project delays and the capital intensive nature of fixed line communications and the low quality of service were factors that contributed to this low telephone penetration.

Telecommunications in Ghana was still extremely inadequate. In 1995, only 37 of the 110 administrative districts of the country had telephone exchange facilities, and there were only 35 payphones in the entire country, with 32 in Accra (Alhassan, 2003).

Also, there was an average of three faults per line per year, and the average duration of the faults was 7 days (Alhassan, 2003). Further, the cost per line was \$3,500.00 as compared to \$1000.00 in developed countries (Allotey & Akorli, 2001). The Ministry of Communications estimated that a \$450 million investment would be required between 1995 and 1999 (Allotey & Akorli, 2001).

As a result of the dismal state of telecommunications in the country, the government embarked on a liberalization policy which included the following programmes;

- The establishment of a regulatory body for the sector to be known as the National Communications Authority (NCA). The NC regulates service standards and tariffs, as well as, seek to create the necessary environment to stimulate investment in the sector.
- The sale of the government's controlling stake in Ghana Telecom through the sale of a minority stake (which will have management control) to a strategic investor
- The licensing of a second main operator to compete with Ghana Telecom

(Ahortor, 2003).

Western Telesystems Limited (Westel), the second fixed line operator, which commenced operations in 1995, was unable to meet targets of rolling out up to 100,000 fixed lines across the country. This was attributed to bureaucratic disagreements and a lack of investment (Ahortor, 2003).

The advent of mobile telecommunications provided a solution to telecommunication coverage with its fast deployment of communication services, due to its low set-up costs as compared to the fixed lines technology and thus, had been described as the main means of bridging the digital divide between developed and under-developed countries.

As a result, more mobile operators were issued licenses by the NCA to commence services to meet the high demand, stimulate competition and provide the current trends in telecommunication services. As at 2010, the mobile coverage stood at 74%. Ghana has thus

become Africa's ninth largest mobile market and West Africa's second largest by subscription count after Nigeria (Peter Tobbin, 2008).

Although great strides have been made in the industry, there have been challenges which have affected the operations of the mobile telephone operators. Millicom Ghana Ltd, operators of Tigo, the first mobile service provider which was then using the Analogue service, failed to launch the new digital GSM service due to licensing issues. This inadvertently led to MTN, then Spacefon capturing a greater part of the Ghanaian market and holding on to that lead when it launched its new GSM service (Ahator, 2004).

Interconnectivity fees became a bone of contention between then Spacefon (MTN) and Ghana Telecom (Vodafone) which resulted in the inability of calls originating from Ghana Telecom not being terminated onto Spacefon. Globacomm, the sixth licensed mobile operator which is yet to commence operations has had problems with the Environmental Protection Agency (EPA) not issuing permits for the construction of its masts. For its part, the EPA had only just completed a draft document on the rules for installing Base Station Towers in the country. The document called for more use of co-location on towers to curb their spread - and asked the telecommunications regulator to make co-location mandatory where viable.

According to a Daily Graphic report of Monday, February 1, 2010, citing a letter dated January 12, 2010 to the EPA, the Ministry of Environment, Science and Technology, issued a ban on the construction of telecommunication masts. In a press release issued on Tuesday

June 1, 2010, the Ministry lifted the ban after adopting new guidelines for the deployment of telecommunication towers. Although this ban affected all the mobile service operators, Globacomm was most affected as on-going masts constructions had to be suspended. The 24th May 2010 edition of the Daily Graphic showed a headline caption of Globacomm intending to pull out of the country from an authoritative source close to the company citing amongst others the ban on masts and sabotage of its billboards.

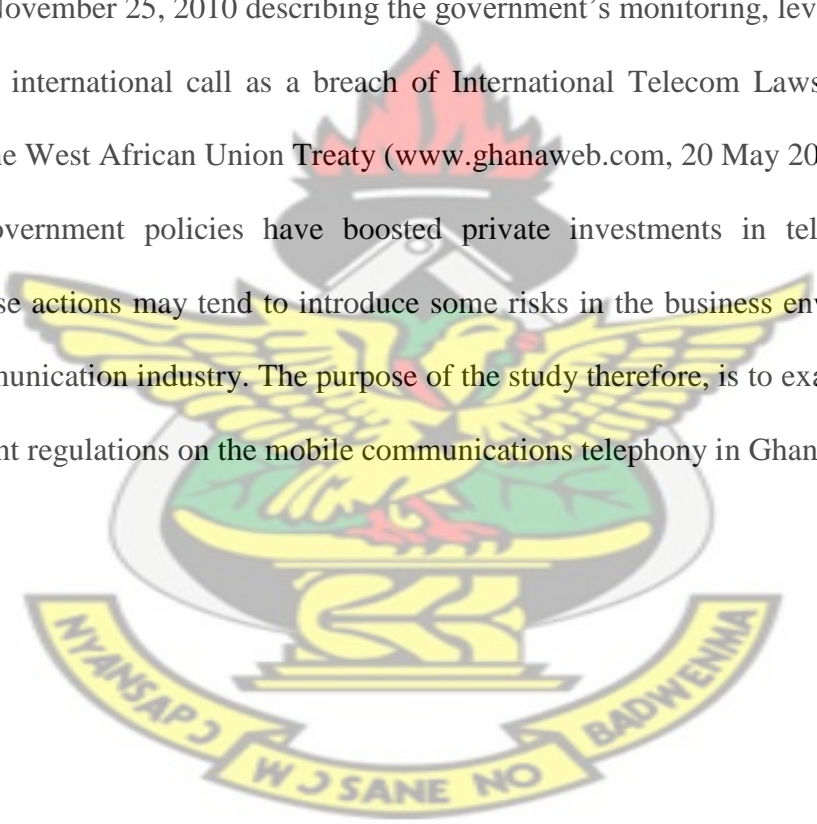
In addition, government's plans to generate more revenue resulted in the passing of the Communication Service Tax Act 754 in June, 2008. The Communications Service Tax (CST) is a tax levied on charges for the use of communications service that are provided by communications operators. Six per cent (6%) of the charge for the use of communication services will go into government coffers as tax (<http://news.myjoyonline.com/business/200804/14976.asp>, 18 March 2011).

The mobile phone service operators argued that levying tax on calls would increase the cost incurred in the use of mobile telephone by consumers. Thus, the revenue expected by these operators may fall as customers would reduce their talk time.

Also, the government imposed 19 cents per minute charge for international incoming calls and employed Global Voices Group (GVG), to monitor those calls and ensure that government got its revenue as the mobile phone service providers were accused of under-declaring international call revenue which affected revenue mobilization in the country. (www.myjoyonline.com, 15 April 2011)

In the light of these government actions, the Ghana Chamber of Telecommunications comprising all the mobile service operators was formed to establish a Telecommunications Chamber, similar to globally instituted chambers to bring the industry together periodically, to discuss matters of common interest to stakeholders. In a press release, the chamber, endorsed a declaration by the West African Telecommunications Conference (WATC) which condemned international call monitoring in Ghana at the WATC's recent meeting in Dakar, Senegal on November 25, 2010 describing the government's monitoring, levy and surcharges on incoming international call as a breach of International Telecom Laws, the ECOWAS Treaty and the West African Union Treaty (www.ghanaweb.com, 20 May 2011).

Although government policies have boosted private investments in telecommunication industry, these actions may tend to introduce some risks in the business environment of the mobile communication industry. The purpose of the study therefore, is to examine the effects of government regulations on the mobile communications telephony in Ghana.



1.2 STATEMENT OF PROBLEM

The government's policy of opening the telecom market to attract private investment has spurred the growth of the mobile communications telephony. The mobile communications telephony has also made social and economic impacts in the country. Thus, the government's desire to streamline the industry and maximise revenue from the industry has resulted in the passing of regulations such as the communication service tax, Mobile number portability, Increase in international incoming traffic charges and call monitoring as well as the issuance of licenses to separate communication masts construction companies.

Although regulations on the Mobile Number Portability and licensing of separate communication masts construction companies were welcomed, the mobile operators expressed their disapproval to some of the regulations such as the communication service tax and the increase in the international incoming traffic charges, citing that these regulations would increase the costs of using the mobile devices by the public, which may affect their revenue as call charges would increase. Furthermore, the privacy of calls and national security were raised on the set up of a call monitoring system by a foreign firm.

Government regulations have played a role in the mobile telecommunications sector and this study therefore seeks to examine the effects of these regulations on the operations of mobile communications firms in Ghana.

1.3 OBJECTIVES OF THE STUDY

1.3.1 General Objective

The general objective of the study is to examine how government regulations affect the mobile communications sector in Ghana.

1.3.2 Specific Objectives

The specific objectives of the study are;

- To examine how government regulations affect the operations of Mobile telephone operators in Ghana.
- To evaluate the effects of government's liberalization of the telecom sector on the mobile communications telephony in Ghana
- To determine how new government regulations will affect the mobile communication telephony in Ghana.
- To identify the correlation between the government regulations and the mobile communications telephony in Ghana
- To make recommendations on how to reduce the negative impact of government regulations on the mobile communications telephony in Ghana

1.4 RESEARCH QUESTIONS

The research questions for the study are:

- How do government regulations affect the operations of Mobile Service operators in Ghana?
- What are the effects of the government's telecom sector liberalization programme on the mobile communication telephony in Ghana?
- How will new government regulations affect the mobile communication telephony in Ghana?
- Is there a correlation between the government regulations and the mobile communications telephony in Ghana?
- What recommendations could be made to reduce the negative impact of government regulations on the mobile communications telephony in Ghana?

1.5 SIGNIFICANCE OF STUDY

The study seeks to show how the regulatory environment affects the business operations of the mobile service operators. n enacted. The findings of the study are expected to help the various stakeholders take careful considerations in mobile communication regulatory policies in the country.

1.6 SCOPE OF STUDY

The study will cover the mobile communications telephony in Ghana and would address how various government regulations have affected the operations of all but one of the mobile

telephone service providers in Ghana namely Tigo, Airtel, MTN, Expresso and Vodafone. The latest mobile telephone service provider Glo is yet to commence its service and thus was omitted from the study.

1.7 METHODOLOGY OF STUDY

Both primary and secondary data were used in the study. Primary data was obtained from all the five operational mobile telephone operators by interviewing their Network Operation managers. A purposive sampling technique was employed considering the target group of the mobile telephone operators. Primary data from the interview was used in analysing the effects of the telecommunication liberalisation on the mobile phone telephony, how government regulations affect the mobile phone telephony and the likely effects of new regulations in the sector.

Secondary data obtained from the websites of the regulatory body, the NCA and the Worldbank was used to perform a regression analysis to determine the correlation between the government regulations and the mobile communications telephony.

1.8 LIMITATIONS OF THE STUDY

The five operational mobile telephone service providers would be drawn in the study although Glo was omitted. Glo may have faced some regulatory issues in its plan to set up its network, in spite of this limitation, the study is expected to be detailed enough considering the number of mobile telephone operators under study and the length of time they have been in operation.

1.8 ORGANISATION OF THE STUDY

The study consists of five chapters.

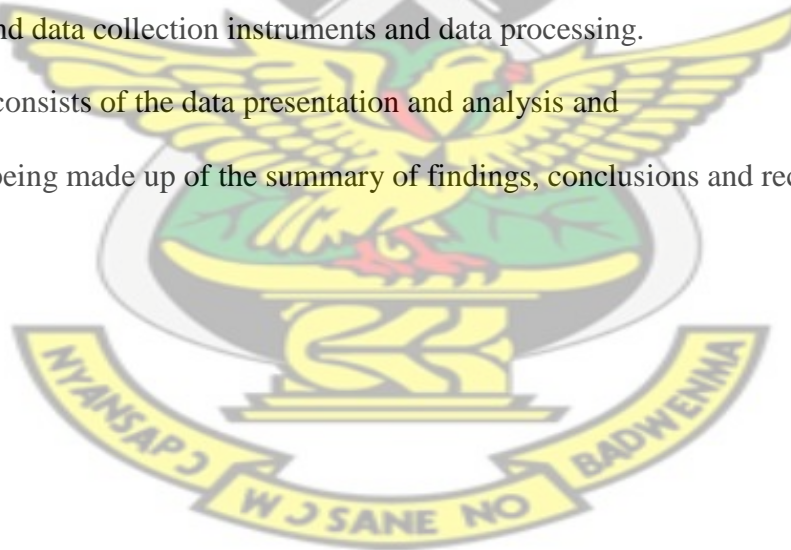
Chapter one focuses on the background of the study, statement of the problem, objectives of the study, research questions, significance of the study, scope of the study, methodology of the study, limitation of the study and the organization of the study.

Chapter two consists of the Literature review on the subject matter. This includes the concept of liberalisation of the telecom market, an examination of how government regulations affect the business environment of mobile service providers and the merits of the mobile communications telephony to a country's economy among others.

Chapter three contains the methodology of the study. The methodology includes the population of the study, sample size determination, data sources, primary data collection instruments and data collection instruments and data processing.

Chapter four consists of the data presentation and analysis and

Chapter five being made up of the summary of findings, conclusions and recommendations



CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter presents the concept of telecommunication liberalisation, the merits of the mobile communications telephony, an overview of the telecommunications sector in Ghana prior to the reform programmes, the present regulatory frameworks, regulatory risks and investments in mobile communications telephony as well as an assessment of Ghana's telecommunication environment.

2.1 THE CONCEPT OF TELECOMMUNICATION LIBERALISATION

Telecommunications liberalisation means introducing competition into the telecoms sector by allowing commercial enterprises to set up new telecoms businesses as long as they comply with certain government-defined policies, rules and regulations. It is a fundamental shift in the way a government, at the national level and through international treaty agreements, regulates the provision and use of public telecoms resources. (ITU, 2006)

According to Braga (1997), the process started in the US, followed by the UK and the rest of Europe and Japan, and spread to the rest of the world, facilitated by initiatives of international organizations, for example, the WTO agreements on the basis of the Uruguay Round. The background for the process was a combination of technology changes, market demands from, in the first instance, business users advocating lower long distance tariffs, and general policy changes in favor of more liberal market conditions.

2.1.1 THE MONOPOLY OF TELECOM MARKETS

Telecom was formerly considered as a public utility, which was also the case with water, gas and electricity supply. Samarajiva and Goddard (1990) state that the policy makers' reaction to the telecom service as a natural monopoly gave rise to the government provision of service in the form of a state-owned telecommunications company. Historically, telecoms infrastructure and services were provided on a monopoly basis with the post, telegraph and fixed telephone service as the main offering. The reasons put forward for characterizing this as a natural monopoly case have been the large necessary investments for setting up national telecommunication systems and the strong network effects associated with point-to-point communications.

By the early 1970s and 1980s, however, most countries were confronted with three challenges; Rapid technological change, Abysmal performance of state-owned telecom providers and Lack of adequate financial resources to deploy and integrate new technologies that could offer better and expanded services to the customers.

The above factors influenced governments to think about reforming their telecom sectors. Senior policy advisors and international experts offered three basic recommendations; privatize the state-owned monopoly provider, introduce competition and create independent regulatory agencies.

Governments realized that monopoly networks and services were limiting the development of new markets and services. A legal or de facto monopolist will traditionally not be

incentisized to introduce and offer new technologies or services as this increases operational cost and risk, which is typically not profit maximising for the monopolist. The goal of furthering economic growth in the national market place and the desire to attract investment in the telecoms infrastructure became the catalyst for governments to start the telecommunication liberalization process (International Chamber of Commerce, 2007).

2.1.2 PRIVATISATION OF STATE-OWNED MONOPOLY PROVIDER

Governments may decide that selling a stake in the incumbent operator to outside investors (privatization) is a good idea to raise revenues, or to strengthen the incumbent's balance sheet for future investments, or to help the incumbent become a more robust competitor. But privatization is one of many options, not an essential obligation for purposes of achieving liberalization.

A government can decide to maintain ownership of the incumbent operator, as long as the operator is effectively and transparently separated from the government agencies that regulate the telecoms sector. If not done carefully, privatization can create its own set of problems. Investors in the incumbent may request the extension of monopoly rights which can create an obstacle to liberalization (International Chamber of Commerce, 2007).

2.1.3 THE GOALS OF TELECOMMUNICATION LIBERALISATION

Liberalization and the competition it brings are means, not ends.

Governments have to consult the relevant stakeholders to decide and articulate at the outset what their objectives are. These objectives may differ from country to country and can include:

- Attracting new investment
- Upgrading national infrastructure
- Improving national efficiency in an increasingly global market place
- Delivering macro- economic benefits such as creating jobs
- Contributing to improving universal access
- Improving services, pricing and choice for the end-user community
- Encouraging innovation and differentiation of services

Some of the goals of liberalization can initially be achieved by amending the national legislation on entry barriers or foreign direct investment (FDI) limits. Other long term goals need to be realized by the creation of a longer term framework that provides the tools for regulatory intervention to deal with failures to achieve competition. The fundamental need is for policies to develop and foster choices in the marketplace for mass market and business users of services. Different markets have different needs, requiring different solutions to develop and foster such choice, but all markets should strive for:

- Existence of competition among the diverse platforms that are increasingly available (for example fixed lines, wireless, fixed wireless, satellite, cable);
- Effective implementation of regulations creating an enabling environment.

This can be done by:

- Fostering open market conditions that create a level playing field for all actors in the market place;
- Establishing a fair and independent regulator which stimulates free competition;
- Acting consistently and creating stable government telecom policies which ensure a smooth flow of investments;
- Creating an agile regulatory environment where governmental actions, when needed, are not unduly delayed;
- Promoting compliance with global technology standards and globally harmonized frequency bands;
- Delivering a regulatory framework that facilitates convergence and builds conditions for an inclusive information society; and
- Governments must also be very careful about imposing taxes on telecommunications players which can have materially detrimental effect on investment. These include rights of way taxes, import duties, universal service obligations.
- Transparent regulatory processes, procedures and decision-making (Maitra, 2006)

2.1.4 BENEFITS OF TELECOMMUNICATION LIBERALISATION

Along with road systems, airports and electricity, a modern telecoms system is an essential pre-requisite for economic growth. Indigenous industries and home-grown companies of all sizes need the basic and increasingly complex infrastructure for business to thrive at home, compete internationally, and contribute to overall economic growth. ICTs play an ever

increasingly important role in both the developed and developing countries overall economic growth. As liberalization enables the provision of much, better and innovative communication services, it is an essential pre-condition for countries looking to make the most of ICTs (ITU, 2006).

2.1.4.1 ECONOMIC GROWTH

Good telecoms infrastructure can facilitate overall economic growth where it is needed the most. Studies have shown that developing countries with higher levels of connectivity significantly out-performed others during the 1980s and 1990s. Improvements in telecommunications infrastructure result in better trade and market opportunities, reduced unemployment, improved health care delivery and higher quality of life (World Bank, 2002).

2.1.4.2 FOREIGN DIRECT INVESTMENTS

Telecommunications is a capital intensive industry and access to capital is key to ensuring the deployment and expansion of a robust network. Countries that have eliminated barriers to FDI have benefited from greater commitment and longer-term engagement by foreign investors as well as new management approaches, technology, and skills transfer to the host country. FDI has typically been the driver of telecom sector growth in liberalizing economies. Over the last two decades, most countries have taken significant steps to allow the flow of FDI in their telecom sectors, but many still limit foreign ownership to less than 100%. Between 1990 and 2003, 122 of 154 developing countries financed telecommunications projects with foreign investment (The World Bank, 2006).

2.1.4.3 NEW JOBS, MORE JOBS

Liberalization also leads to the creation of new jobs when new entrants and existing service providers compete to offer new products and services to a growing customer base. In many cases, the jobs created by the new entrants and the companies that support them will more than compensate for any initial job losses that may occur within the incumbent operator.

2.1.4.4 UNIVERSAL ACCESS

The International Telecommunication Union (ITU) defines universal access as “widespread availability of telecoms or ICT service.” Liberalization in the telecoms sector leads to new investment and significant growth, especially in the rollout of completely new services. Countries that have made formal liberalization commitments tend to have higher levels of fixed line and mobile penetration, and also have higher telecoms sector revenues. For example, Chile was an early liberalizer, beginning in the late 1980s, and the growth in its teledensity rates during the 1990s doubled that of Colombia, Mexico and Venezuela who all started later. (World Bank, 2003)

2.2 REGULATORY CHALLENGES

Regulatory efforts applied in the process of liberalization should focus on areas of greatest importance in making competition a reality. This focus can be achieved by determining whether market power is harming competition, for example if there are facilities that are key to the provision of competitive services but are not available from multiple sources or at reasonable prices. As an example, prior to the liberalization of international services, submarine cables and landing stations were often limited in number and accessible only on

unreasonable terms, thus comprising significant obstacles for the development of competition in the international services market (WTO, 1996).

However, as new entrant operators were allowed to gain access to submarine cables or landing stations, competition in the international services market emerged. This regulatory focus can also be achieved by focusing on the detection and correction of anti-competitive practices in all areas of the market. Regulators often focus their scrutiny for market power and resulting anticompetitive conduct on international access, then trunk and access lines. As competition develops, regulation can be progressively withdrawn. The challenge is on ensuring adequate investment while at the same time ensuring effective competition. This is a very difficult balancing act and needs to be undertaken with constant consultation of all stakeholders, as well as looking to international best practice.

2.3 GHANA'S TELECOM MARKET-PRE REFORM ERA

Identical to most monopolistic National Telecommunication Providers, Ghana Post and Telecommunication (GP&T) was at its worst position by the end of the 1980s with only 3 phones per 1000 inhabitants with a distribution skewed towards those living in Accra (the capital) and other urban areas (Ahator, 2004). Most of the district centres were not connected and the Northern part of the country which accounts for 30% of the inhabitants only had 1% of the total number of phones (Haggarty et al, 2002). As stressed by Haggarty et al (2002), the telecom sector at that time was characterised by poor management and inefficiencies.

Before the early 1990s when the main telecommunication reform started in Ghana, there were a number of significant projects which were earmarked to improve the operations of the incumbent GP&T and also to introduce competition into the sector. In 1975, GP&T started a series of projects known collectively as the First Telecommunication Project (FTP) which aimed at rehabilitation, modernization and expansion of Ghana's national telecommunication network. The project which was sponsored by the Government of Ghana (GoG) and some international donor agencies from Canada, Japan and the Africa Development Bank totalled \$76million and was planned to last from 1975 to 1979. The FTP was delayed as a result of changes in government, economic recession, and other social factors. It was eventually completed in 1985 and there were marginal accomplishments from this project (Frempong, 2002).

A Second Telecommunication Project (STP) with an eight years plan was initiated in 1987. The project aimed to modernize much of the existing network and to expand network capacity from 56,000 lines to 76,000 lines. Some of the objectives were achieved, with the installation of a new international telephone exchange, the rehabilitation of the satellite earth station for international service and rehabilitation of various exchanges and external cable network (World Bank, 1995). The STP was funded by the World Bank, GoG and some donor agencies.

As part of the general economic system adopted from the World Bank and International Monetary Fund in the 1980s, the government was to divest from direct participation in certain sectors of the economy and play more of a facilitatory role. Consequently, the telecommunications sector was reformed

2.3.1 THE REFORM PROCESS

In Ghana, the telecom reform process could be said to have started with the launch of the Accelerated Development Programme (ADP) for the telecommunication sector in 1994 (Ahator, 2004). The programme was developed after an extensive consultation with telecom service providers, policy makers, financiers, donors, users and consultants (Haggarty et al, 2002). It set out to revamp and revitalize the telecom sector through the introduction of competition and to attract new investments both foreign and local with an objective of Ghana becoming the gateway to West Africa. The ADP is the programme which set out the policy objectives for the telecommunication reform in Ghana. The programme stressed the need for competition to ensure reliability, quality of service and price reduction. It also emphasized the need of a national single regulator. It identified the following specific objective objectives:

- Achieving a density between 1.5 and 2.5 lines per 100 people;
- Competition in the sector by introducing a second network operator
- Improving public access in rural and urban areas, through the provision of payphone facilities (public and private);
- Expanding the coverage of mobile services;
- Liberalization of value added services
- Promoting Ghanaian ownership and control of telecommunications companies; and
- Retaining an overall public regulatory control of the sector through the creation of a single agency: the National Communications Authority (NCA).

To achieve the above mentioned objectives ADP adopted the following strategies;

- the authorization of two national network operators: Ghana Telecom and a new independent operator.
- support of new financing: arrangements which promote investment in new telecommunications infrastructure throughout the country and
- the privatisation of Ghana Telecom through the sale of a strategic stake to an international operating company combined with measures to broaden share ownership in Ghana.

The second significant step in the Ghanaian telecom reform process was the incorporation of Ghana Telecom as a public limited liability company in 1995, separated from the Post. To introduce competition, the policy called for a second network operator (SNO) to create a duopoly, the privatization of the incumbent by selling 30% share through an international competitive bid and to set up a telecom regulator. The SNO like the Ghana Telecom was supposed to provide services both locally and internationally. The new SNO was also going to have a 20-year initial license. During the first five years, the two carriers were to be given nationwide exclusive rights over fixed line telecom services. The license for the operation of the SNO was auctioned at the same time as the sale of 30% share of the incumbent (Ghana Telecom). A duopoly was created in December 1997 when Westel paid 10.5million U.S. dollars for the SNO license. Also, the 30% sale of Ghana Telecom was completed with the Malaysian Telecom emerging as the winner (Allotey and Akorli, 1996).

The establishment of the regulator is often seen as part of the telecom reform process. It is usually created to foster competition and protect the consumer and new entrants from the

powers of the incumbent. The regulator was established by the National Communication Act (NCA) of parliament Act.524, 1996. As stressed earlier, it was established to provide controlled competition into the telecommunication industry (Alhassan, 2003).

The NCA act defines the responsibilities of this regulatory body as:

- setting technical standards
- licensing service providers
- providing guidelines on tariffs chargeable for services
- monitoring the quality of service providers and initiate corrective action where necessary
- setting terms and guidelines for interconnections of the different networks
- considering complaints from telecom users and taking corrective action where necessary
- controlling the assignment and use of the radio frequency spectrum
- resolving disputes between service providers and between service providers and customers
- controlling the national numbering plan
- controlling the importation and use of types of communication equipment; and
- advising the minister of communications on policy formulation and development strategies of the communications industry (National Communication Authority 2008).

In 2004, a National Telecommunication Policy (NTP) was developed to provide a framework within which the sector will evolve. This policy document stipulates the government's overall policy objectives for the telecommunication sector. Central to the objectives of the policy was to develop competition in the telecommunications sector while maintaining universal service provisions to protect vulnerable customers. The National Telecommunication Policy objectives are further broken down into specifics as described below;

- Universal access for all communities and population groups in Ghana to telephone, internet and multimedia services by the year 2010.
- National penetration universal telecommunications service to reach 25% of the population, including at least 10% in rural areas, by the year 2010.
- Connection of all schools, medical clinics, and Government offices and public and community broadcasting stations to advanced telecommunications services;
- Fully open, private, and competitive markets for all telecommunications service
- Streamlined, efficient, and effective regulation of the telecommunications industry on a fully transparent, technologically neutral, and competitively balanced basis
- Affordable prices for telecommunications services, particularly for low income citizens
- Profitable investment opportunities for businesses in all segments of the market

Ghana shall be seen as a first-class hub for international telecommunications and information industry investment, jobs, and development, and a leader in the transformation of Africa

toward a full participation in the Information Society (National Communication Authority, 2005)

2.4 GHANA'S POLICY AND REGULATORY FRAMEWORKS

Presently, two policies are driving ICT developments – ICT for Accelerated Development (ICT4AD) Policy and National Telecom Policy (NTP). The ICT4AD Policy has the overall objective of supporting an ICT-led socio-economic development process aimed at transforming Ghana into a middle-income, information-rich, and knowledge-based society (Ghana Government, 2003). On the other hand, the goal of the NTP is to establish market structures that will be most beneficial to Ghana's citizens and businesses, and to set in motion the procedures and incentives that will boost the market's development (Ministry of Communication, 2004). It is also to support the realisation of the vision of the national ICT4AD policy (Frempong, 2010)

Efforts have been made to implement some of the strategies enunciated in these two policy documents. For example, further liberalisation of the telecom market has taken place with the licensing of a sixth mobile telephone operator, with the intended effect of driving down prices.

However, regulation of the industry remains a daunting task for the NCA. Poor quality of service and the inability of the regulator to enforce all the tenets of the licensing obligations of the ICT service operators affect the effective development of the sector. These affect the ICT development index of the country, critical components of the information society

evolution framework. For example, Ghana's ICT development index in 2007 was 1.63 and ranked 114 in the world. Despite the competitive effects of a liberalised market, a certain segment of the market, the Internet market has not been competitive and this has affected the development of the sector. (Frempong, 2010)

The legal and regulatory regime has seen some rigorous developments. New laws have been passed to support the implementation of the two ICT policies and improve the regulation of the sector. The laws include:

- National Communication Authority Act, 2008, Act 7691
- National Information Technology Agency Act, 2008, Act 771
- Electronic Transactions Act, 2008, Act 772
- Electronic Communications Act, 2008, Act 775

The developments in the market demonstrate the effects of open-market policy in the country. The telecom market in Ghana has six mobile telephone operators and two national fixed-network operators. The mobile telephone operators are MTN Ghana, Tigo, Vodafone Ghana, Expresso and Airtel. The sixth operator, Glo Mobile, is yet to commence business, but is currently involved in building its physical infrastructure. With the exception of MTN and Globacomm, the operators are subsidiaries of multinational mobile telephone companies.

Furthermore, the government has reduced its direct involvement in the market. It sold 75% interest in the then Westel to Celtel International, a subsidiary of Zain (Airtel) for US\$120m in 2007. Westel was initially licensed as a second national network operator as part of the

duopoly introduced under the Accelerated Development Plan for Telecommunication (ADP) of 1994. The objective of ADP was to liberalise and revamp the sector through the participation of the private sector to meet the changing needs of Ghanaians as well as ensuring effective integration into the global context (Atubra and Frempong, 1999). Also, the government sold its majority (70%) stake in Ghana Telecom to Vodafone for US\$900m in 2008. Additionally, the telecom international gateway has been liberalized and four mobile operators, namely Vodafone, Tigo, MTN Ghana and Airtel have been granted licenses to provide international gateway services.

2.5 THE MERITS OF THE MOBILE COMMUNICATIONS TELEPHONY

This section examines the benefits of the mobile communication industry to the country. In Ghana, since 2001, the coverage of the mobile communication telephony service surpassed fixed lines coverage and has since been increasing. One of the contributing factors is the relatively low incremental cost of adding subscribers to cellular networks, and to the value users place on mobility. Mobile networks can be built more quickly than fixed networks, and mobile technology allows users a variety of ways to obtain access to the network. In particular low income consumers can opt for prepaid options, and do not have to qualify for subscription plans. This growth of the mobile networks is not only akin to Ghana but to most developing countries which have embraced the industry as the means to bridging the digital divide especially in sub-Saharan Africa.

The benefits of the industry include coverage and access, investments as well as economic and social developments. These benefits are expatiated below:

2.5.1 COVERAGE AND ACCESS

As a result of the substantial growth of the mobile sector, around 80% of the world's population already lives in an area with mobile network coverage. However geographic coverage in many countries in Sub-Saharan Africa is more limited, and is often focused on urban areas. An estimated 50% of Sub-Saharan Africa is covered by a mobile signal, and this provides significantly more coverage than the fixed line infrastructure. Network coverage is not always the most important constraint to mobile ownership, and access to services also depends on the affordability of services.

2.5.2 INVESTMENTS

The private sector invested US\$210 billion in telecommunications infrastructure in the developing world from 1995 to 2002 (World Bank, 2005). In many African countries, telecommunications investment accounts for a very significant proportion of total investment. In 2003, the telecoms sector accounted for more than a tenth of gross fixed capital formation in four out of the nine countries for which data were obtained from the ITU.

Much of this investment came from overseas in the form of Foreign Direct Investment (FDI). In most African countries, local capital is scarce and countries are reliant on attracting international investors to fund projects which involve the construction of significant infrastructure. The openness of a country to FDI is therefore an important determinant of investment and penetration growth.

Table1. Telecom Investments in a Selection of Sub-Saharan African Countries

| Country | Telecommunications Investment 2003 \$mn | % Gross Fixed Capital Formation |
|--------------|---|---------------------------------|
| Benin | 26.4 | 5.8 |
| Burkina Faso | 34.9 | 4.5 |
| Kenya | 188.6 | 10.5 |
| Lesotho | 7.1 | 3.3 |
| Mali | 17.7 | 3.0 |
| Senegal | 108.6 | 10.4 |
| Swaziland | 27.6 | 11.7 |
| Togo | 30.0 | 11.5 |
| Uganda | 68.0 | 4.9 |

Source: GSMA, 2006

The takeover of Zain and Ghana Telecom has brought in investments into the industry. Bharti Airtel, the Indian company that has acquired the African operations of Zain, said it will invest USD 200 million to expand its operations in Ghana. UK-based mobile group Vodafone intends to invest up to USD700 million in the development of telecoms networks and services in Ghana, after its takeover of Ghana Telecom.

2.5.3 ECONOMIC DEVELOPMENT

The growth of subscriber numbers is not only an aim in itself but contributes, directly and through spill-over effects, to the economic development of the countries concerned

2.5.3.1 IMPACT ON GROSS DOMESTIC PRODUCT

Pricewaterhouse Coopers in the GSMA report, estimated that for Africa as a whole, mobile revenues alone accounted for 2.2% of GDP in 2004 (an increase from 1.4% in 2002). By comparison, in Sub-Saharan Africa, agricultural activities such as farming, hunting, forestry and fishing constitute around 15%-20% of the economy and manufacturing, mining and

manufacturing accounts for just over 10% of GDP. However, mobile operations and technology play a more important role in the economy than the size of their revenues suggests.

Without a functioning communications network hardly will any region generate significant levels of investment, through FDI or otherwise. Companies and industries that appear to be entirely unrelated to telecommunications will take into account the availability of communications networks when deciding where to locate their industries. In other words, communications networks form an essential part of infrastructure that is a prerequisite for the economic development of other sectors and of the economy as a whole. This was recognised in the 1985 Maitland Commission Report, which suggested that telecommunications were “an essential component in the process of development”.

As other mobile services, such as mobile banking and payments become more prevalent, the economic impact will further be amplified, particularly as credit and transactional facilities are extended to those who previously had no access to banking facilities. Similar arguments apply to mobile commerce and data services, as well as a range of other applications, including wireless internet access for rural schools and government healthcare initiatives enabled through mobile technologies.

A recent study attempted to quantify the effect of increased mobile penetration on GDP, and found that between 1996 and 2003 a developing country with ten more mobile phones per

100 people could expect to experience annual GDP growth that was 0.59% higher than an otherwise identical country (Waverman et al. 2005)

2.5.3.2 REVENUE FOR GOVERNMENT

Tax revenue from the mobile sector provides a significant stream of income for governments in Sub-Saharan Africa. In many of these countries a significant part of the economy is informal, presenting many obstacles to tax collection. Some activities in the mobile sector can also be informal, for example sales of mobile top-up cards by street hawkers, and the activities of other micro-entrepreneurs. However, this income is channelled into the formal sector through mobile operator revenues. This allows easier collection of taxes than from many other parts of the economy. In some cases these factors have encouraged governments in developing countries to tax mobile communication at a disproportionately high level.

2.5.3.3 EMPLOYMENT CREATION

Mobile networks contribute to employment both directly and indirectly. In addition to staff employed by the operators to build infrastructure, many other employment opportunities are generated in the sale of mobile phones, top-up cards, and other services associated with mobile networks such as outsourced operations. The indirect effects on employment may be much more important. There is significant anecdotal evidence to suggest that the use of mobile phones greatly facilitates the job-search process in countries where the flow of information in the economy is sluggish due to poor general infrastructure and communication networks. Where postal services are poor and there is no access to fixed-line telecommunications a mobile phone can be a vital way to find out about a job. A mobile phone also provides a point of contact for potential employers.

2.5.3.4 IMPACT ON PRODUCTIVITY

Mobile communications has developed new innovations which have reduced the time spent in conducting activities as well as increasing the volume and speed of information flow. Services such as call conferencing enable participants to conduct meetings without having to be together. Also, Money transfers systems, such as Tigo Cash and MTN Money transfer here in Ghana, have been developed by mobile networks in order for customers to send and receive money by using the phone. Furthermore, banks have launched mobile banking services whereby customers can conduct transactions such as Account balance information on their phones by sending text messages on their phones.

In addition, Esoko, an agricultural market information platform was developed in partnership with the UN FAO in 2005, in response to the explosive growth of cellular services in Africa. It is managed on the web and delivered via mobile. Individuals, agri-business, government and projects use Esoko to collect and send out market data using simple text messaging. The Esoko platform provides automatic and personalized price alerts, buy and sell offers, bulk text messaging and stock counts. Accessibility of price signals ensures that scarce commodities are channelled to the right locations, namely where they are most scarce and prices are highest, thus contributing to a reduction of shortages of food and other essential supplies.

2.5.3.5 SOCIAL DEVELOPMENT

The impact of mobile phones extends beyond measurable economic indicators. Much attention has been focused recently on the ‘digital divide’, which refers to the fact that in

many parts of the world income differences are reflected in a gap between those with, and those without, access to computing and communications technology. This divide is regarded as responsible for further isolating the world's poor from the rest of the global community.

In 2003, a paper published by the ITU stated that: “in countries where mobile communications constitute the primary form of access, increased exchange of information on trade or health services is contributing to development goals”. The UN has also advocated the use of information and communication technology (ICT) in the achievement of the Millennium Development Goals. The UN Millennium Project stated that: “ICT is a powerful enabler of development goals because it dramatically improves communication and the exchange of knowledge and information, strengthening and creating new social and economic networks.”

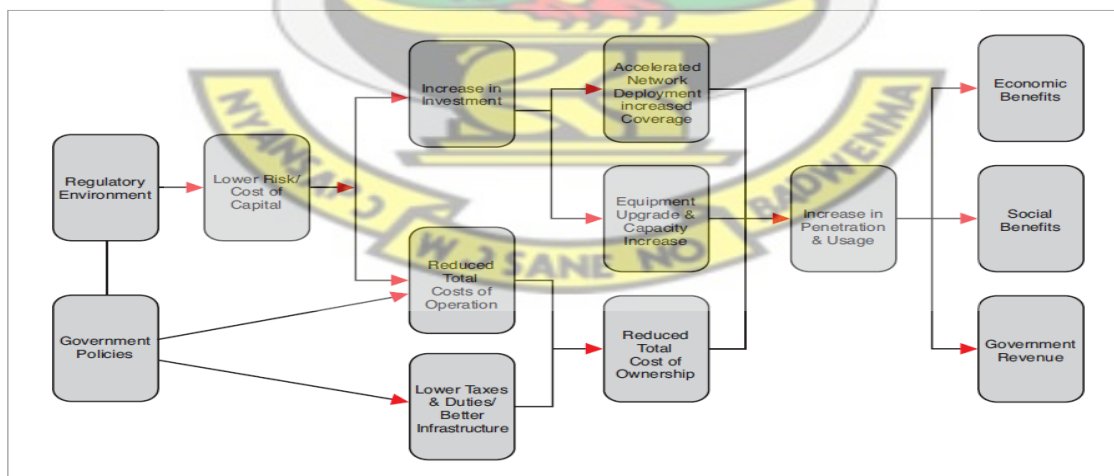
There are many examples that suggest that providing mobile connectivity in poor communities can indeed deliver significant social benefits. The importance of mobile coverage to communities is starkly illustrated by a case disclosed by one operator. After building a mobile phone mast in the countryside of one African country, the operator returned to the site a couple of months later to find that a nearby village had relocated next to the mast where mobile phone reception was best. On later visits electricity and water supply had become available, and a road had been built to the site.

The youth have embraced social networking sites as Facebook to link up with friends and loved ones. These social networking sites also offer features such as messaging and chat which is all accessible on the mobile phones. Thus, the young generation is abreast with current trends and amassed with a wealth of information through internet access offered on the phones. Thus it is expected that mobile communications continue to increase internet access where fixed lines has failed.

2.6 REGULATORY RISKS AND MOBILE COMMUNICATIONS TELEPHONY GROWTH

This section examines the link between regulation and the growth and development of the communications sector. The figure below illustrates the mechanisms through which government and regulatory actions impact on investment and penetration, and eventually GDP, social welfare and tax revenues.

Figure 2.1: Impact of Regulation and Government policies



Source: GSMA, 2006

There are two major mechanisms by which the level of regulatory risk impacts on the growth of the mobile sector:

- Regulatory risk increases hurdle rates and thereby reduces investment.

Hurdle rate represents a minimum threshold below which investments will not be deemed viable.

- Regulatory risk increases the total cost of ownership and thereby reduces take-up and penetration of the sector.

2.6.1 REGULATORY RISK AND INVESTMENT

Functioning competitive markets rely on the prospect of profits to attract investors. The potential to earn superior profits drives investment and operational efficiency. It also encourages innovation and improvements in service quality. Low-risk business environments attract many suppliers (and investors) and as a result, competition leads to lower profits. However, in countries where political or sector risk is high, investors will be reluctant to make investments unless expected returns are higher. Higher levels of expected returns compensate for the fact that returns might fluctuate significantly.

When comparing investment opportunities, investors take into account many different factors which impact on risk and the expected return of an investment. Higher-risk investment opportunities will only be considered if they are expected to result in higher returns. This extra return for a given level of risk is referred to as a “Risk premium”. Finance theory identifies two key types of risk: systemic risk and specific risk.

Systemic risk is associated with the general performance of the economy (for example fluctuations in the economic cycle). This risk cannot be diversified by holding a portfolio of investments (in that economy).

Technically this is reflected in a company's "beta", a statistical measure of company performance compared to the market average. Companies that are more sensitive than average to the performance of the economy have a higher beta and tend to have a higher "cost of capital", as the certainty of delivering a particular expected return is lower. This beta determines the additional return investors require for investing in equities in the individual sectors over and above the risk free rate. Investment opportunities can typically be financed by a combination of debt and equity. The required return to both types of investor, including interest payable to creditors and compensation for equity investors taking on systemic risk, is known as the "weighted average cost of capital".

Specific risk relates to those risks that arise in a particular sector. They are risks that affect specific aspects of a company's business plan i.e. the particular line items of a company's revenues and costs. This includes items like technology risk, uncertainty over consumer reaction to new products, market share performance, the length of time over which the company will generate returns, and the level of capital and operating costs.

Regulatory policy influences most, if not all, of these factors. Licensing policy will influence costs, the number of competitors, and the timeframe for recouping investment. The regulator

may or may not be successful in achieving a level playing field. Spectrum policy, interconnection policy will directly influence the costs of the company and regulation can also affect pricing discretion

Some specific risk relates to factors that are outside the control of the regulator and, possibly, the government as a whole. Political unrest, for instance, could result in a significant curtailment of the opportunity to recoup investments. This “country risk” is an additional downside risk that investors will need to bear. When faced with significant downside risk investors therefore apply a risk premium to compensate. Higher risk leads to higher return requirements. This is another way of saying that pay-back periods are relatively shorter. As a result, companies may choose equipment based on short-term profit maximization needs (say 2-4 years) instead of choosing technology that is optimal, based on the time span of asset lives (say 10-12 years).

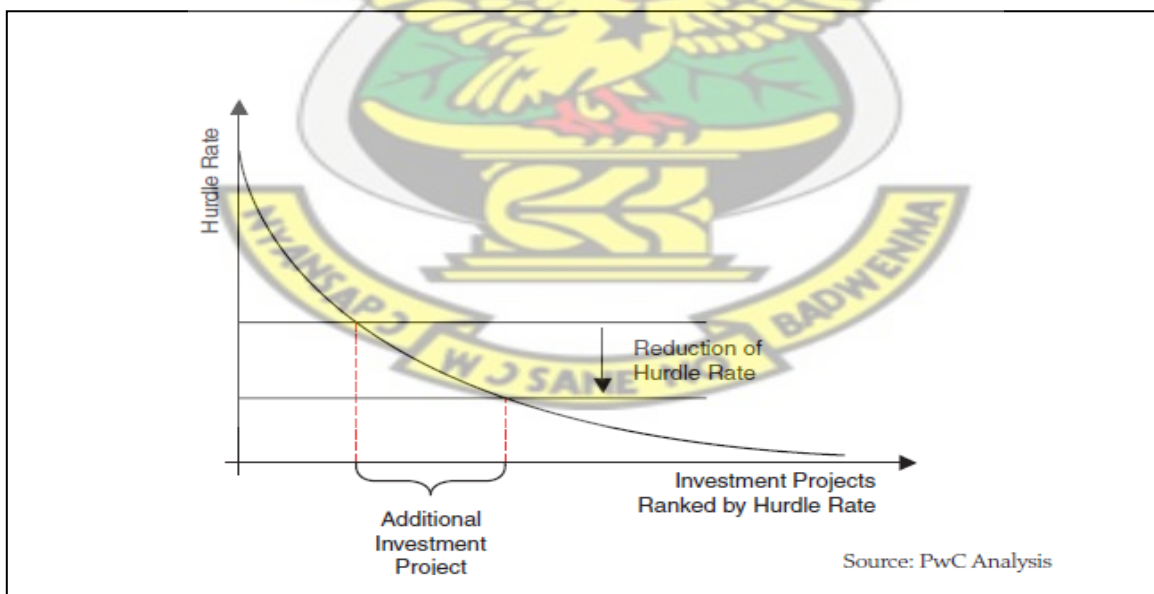


Figure 2.2 Risks and Investments Projects Source: GSMA 2006

2.6.2 REGULATORY RISK, COST OF OPERATION AND TOTAL COST OF OWNERSHIP

Regulatory risk not only impacts on the level and timing of investments but also on the total costs of running a mobile operation. The costs of a mobile operator must ultimately be covered by its revenues, so any reduction in costs will eventually feed into lower prices for consumers. This in turn will prompt further increases in penetration and usage. The total cost of ownership of a mobile phone is composed of all the expenses that a consumer incurs in owning and using a mobile phone, including the costs of the handset, of connection, line rental (if any) and call charges including VAT.

Operators set retail prices for calls with a view to recovering their costs, including operating costs and the costs of network and non-network assets (i.e. depreciation and the cost of capital). The latter tends to be a very significant part of total costs due to the capital-intensive nature of the telecoms industry. Given that the required return on investment depends on hurdle rates, which are driven by risk, including regulatory risk, it is obvious that regulatory risk increases the cost of capital; this will be passed on in the total cost of ownership. This link deserves more regulatory attention than it has received in many countries so far. If regulation is unpredictable and therefore increases risk, this becomes bad news not only for operators, but also for consumers, who ultimately bear the associated costs.

Other elements which regulators and government have to consider include the following;

- Taxes (direct and indirect)

- Duties (customs and excise duties, etc. and bureaucracy, often involving several different authorities)
- Site acquisition costs
- Costs of building and maintaining roads leading to base stations
- Higher costs of sub-optimal technology driven by short repayment periods
- Costs of power generation to operate the network
- Costs of security measures taken by operators

Given that demand elasticities tend to be high in developing countries like those in Sub-Saharan Africa, significant reductions in TCO will lead to significant increases in take-up and hence penetration. If governments and regulators want to ensure that their communications sectors thrive and grow, they should prioritise the reduction in the above costs.

In particular governments should be wary of overtaxing a sector that accelerates economic and social development and should instead focus on the wider benefits of providing essential infrastructure. Regulators should take care to eliminate all unnecessary risk which will drive up investors' hurdle rates and therefore TCO and the prices consumers have to pay. Reduced regulatory risk and better governance would reduce costs for operators. This would ultimately be passed on to consumers in the form of a lower total cost of ownership. It is estimated that better regulation might lead to a reduction in TCO of up to 10%. (GSMA, 2006)

2.7 OVERVIEW OF TELECOM REGULATORY ENVIRONMENT (TRE)

ASSESSMENT TOOL

The TRE survey is a diagnostic instrument for assessing the performance of the laws affecting the telecom sector and the various government entities responsible for its implementation. The TRE can also be used as a tool for investors to assess regulatory risk in a country. Particularly for investors facing investment opportunities in the telecom sectors of more than one country, the TRE can provide a ranking of the countries in terms of telecom-specific regulatory risk.

The TRE tool covers the three sectors of telecom communications, Fixed, Mobile and Broadband Internet services. The TRE asks senior level stakeholders to assess the Telecom Regulatory Environment in a country across a number of dimensions through questionnaires. Thus it is a measure of perception of a country's regulatory environment.

There are three levels of stakeholders who are involved in the survey, they include;

- Category 1: Stakeholders directly affected by telecom sector regulation, which include Operators, Industry associations, Equipment suppliers, Investors
- Category 2: Stakeholders who analyze the sector with broader interest. These include Financial institutions, Telecom consultants, Law firms
- Category 3: Stakeholders with an interest in improving the sector to help the public, examples are Academics, Research organizations, Journalists, Telecom user groups, Civil society, Former members of regulatory and other government agencies.

The various dimensions captured in the survey include the following:

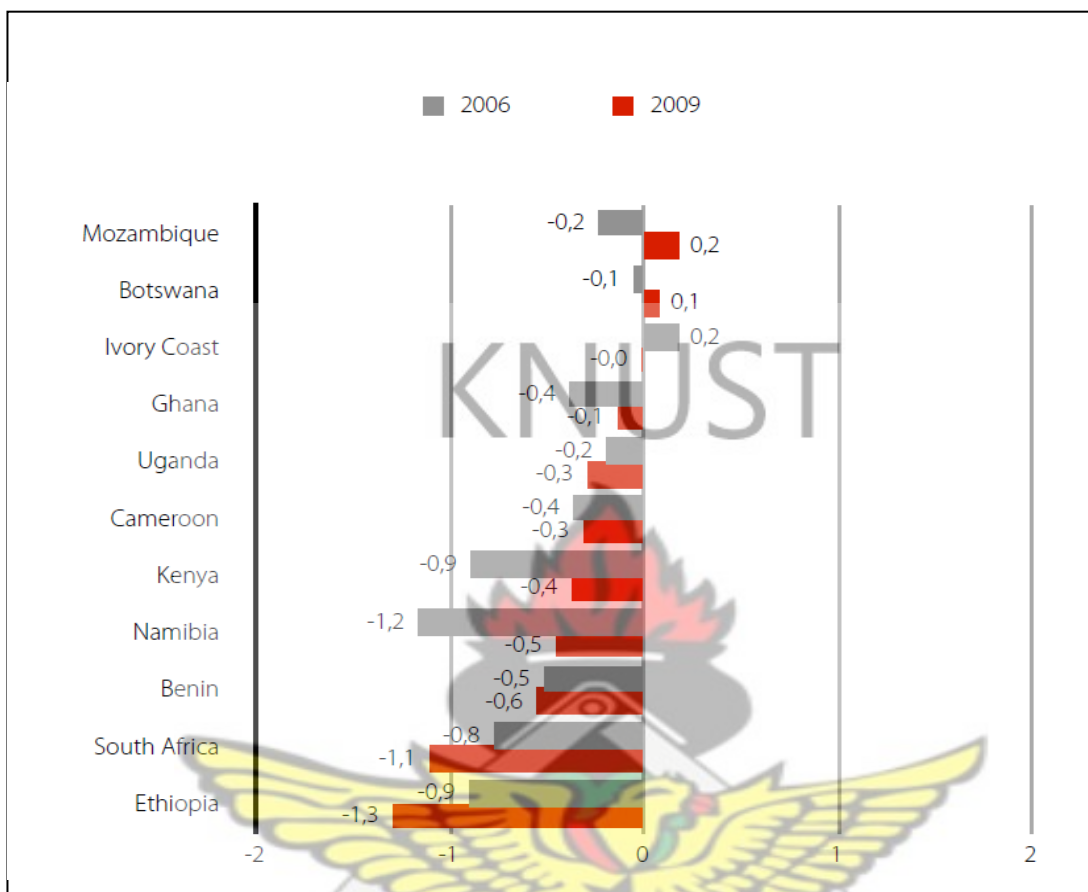
- Market entry
- Allocation of scarce resources
- Interconnectivity
- Regulation of anti-competitive prices
- Universal Service Obligations
- Quality of Service (QoS)

Of these, the first 5 dimensions are based on the Reference Paper of the Fourth Protocol of the General Agreement on Trade in Services (WTO, 2007) and reflect the broadest international consensus of the most important aspects of telecom regulation (LIRNEasia, 2008)

QoS for mobile is becoming important – for example, completing a financial transaction via the various m-payment methods is only feasible if the mobile signal doesn't drop half-way through the transaction. Each of the seven dimensions is scored on a scale of 1 – 5, where 1 is Highly Unsatisfactory and 5 is Highly Satisfactory.

Below are figures showing the TRE survey results of some selected African countries and a comparison of Ghana's TRE survey.

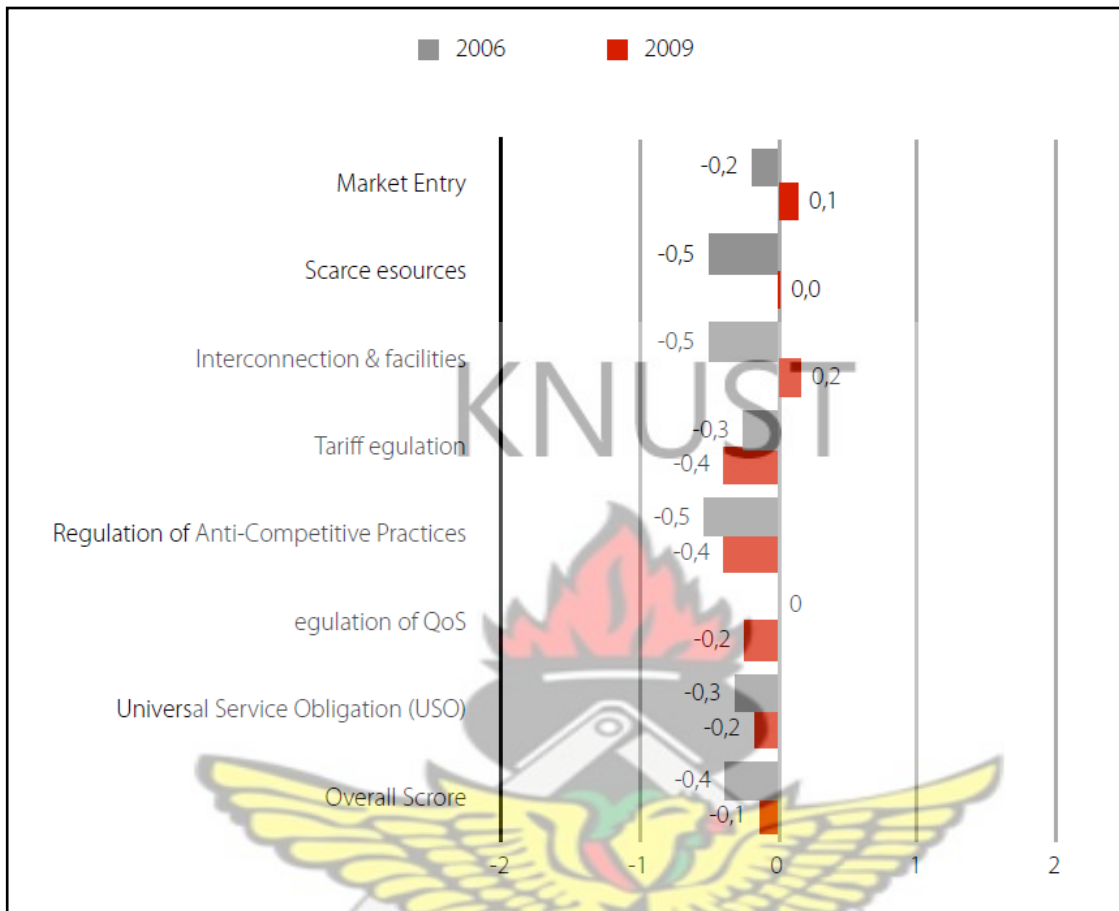
Figure 2.3: Comparisons between 2006 and 2009 TRE among Selected Countries



Source: Ghana ICT performance Review, 2010



Figure 2.4 Comparisons between 2006 and 2009 TRE in Ghana



Source: Ghana ICT performance Review, 2010

Generally, there has been some improvement in the telecom regulatory environment in the country. Ghana scored positive marks in two indicators – interconnection and market entry; with the exception of tariff regulation, all the other indicators registered some improvements in the 2009 TRE. Comparatively, it is Mozambique and Botswana which had positive assessments from the TRE.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 INTRODUCTION

This section describes the methodology of study. The areas covered are population of study, sample size determination, data sources, primary data collection techniques and data processing and analysis.

3.1 POPULATION OF STUDY

Sekeran (1990) defines population as the entire group of people, events or things of interest that the researcher wishes to investigate. The population of this study was all the mobile communication telephony operators in Ghana which are MTN, Tigo, Airtel, Globacomm, Expresso and Vodafone.

3.2 SAMPLE SIZE DETERMINATION

Sekeran, (1990) defines a sample as a portion of the population that has attributes as the entire population. Considering the number of mobile communication telephony operators in Ghana, which made up the population of the study, a purposive sampling technique was used because the target population defines a specific group and the size was also small. The sample size was determined as six which is made up of all the mobile communications telephony operators namely; Tigo, MTN, Airtel, Vodafone, Expresso and Globacomm. Globacomm has not commenced operations and was therefore omitted from the study, therefore the sample size was reduced to five (5).

3.3 DATA SOURCES FOR THE STUDY

The data sources for the study included both primary and secondary data. Primary data was obtained from the five operational mobile communication telephony operators. Primary data were sought because of the need for current data to address the research objectives and also for the reason that the methodology was known. However, it was expensive to collect data using this source.

Secondary data were obtained from the websites of the national telecommunications regulatory body, the National Communication Authority, the International telecommunications Union and the Worldbank as well as textbooks and journals because of the ease of data collection.

3.4 PRIMARY DATA COLLECTION INSTRUMENT

The research instruments used to collect primary data were interviews using an interview guide. The network operation managers of the mobile communications telephony providers were interviewed. By visiting the head offices of the mobile phone operators in Accra, the capital city; appointments were booked on later dates to grant the interviews, after an initial introduction of the study to the Network Operation Managers. The interviews were conducted as a result of the need to obtain accurate and reliable data and also because it offered an opportunity to probe further and clarified ambiguity faced by the respondents..

3.5 DATA PROCESSING AND ANALYSIS

The data that were collected were edited in order to eliminate errors and ensure consistency.

The SPSS computer program was to compute the regression analysis. Tables were used as tool for presentation using the computer program, Microsoft Excel.

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CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF RESULTS

4.0 INTRODUCTION

In this section, data from the study is presented and analysed. The following sections are presented; how the government regulations affect the mobile communication telephony, the effects of the government's telecommunication liberalisation programme, the effects of new regulations on the mobile communications telephony, the relationship between government regulations and the mobile communications telephony as well measures to improve the regulatory environment in Ghana.

4.1 THE EFFECTS OF GOVERNMENT REGULATIONS ON MOBILE COMMUNICATIONS TELEPHONY IN GHANA

To examine how government regulations affect the mobile communications telephony, the respondents were asked whether the government played a major or minor role in the telecommunications sector; whether there were any regulations that had promoted the growth or adversely hindered the mobile communications telephony and in what manner; as well as any regulatory challenges encountered and measures on how the government can improve its role in the sector.

4.1.1 The role of the government in the telecommunications sector

Respondents were asked whether the government plays a major or minor role in the telecommunications sector. All the respondents stated that the government plays a major role in the telecommunications sector. The results are shown on table 4.1.1

Table 4.1.1 The role of the government in the telecommunications sector

| Item | Number of respondents | Percentage |
|-------|-----------------------|------------|
| Major | 5 | 100% |
| Minor | 0 | 0 |
| Total | 5 | 100% |

Source: Field survey, August 2011

The result shows that the actions of the government greatly influence the mobile communications telephony. This affirms the views of Madanmohan Rao (2010) that the growth of mobile communications telephony is made possible if governments embrace the concept of open markets and avoid regulations that may act as bottlenecks to the sector.

4.1.2 Regulations that have promoted the growth of mobile communications telephony

The respondents were asked whether there were regulations that have promoted the growth of the mobile communications telephony. The results are shown in the table 4.1.2

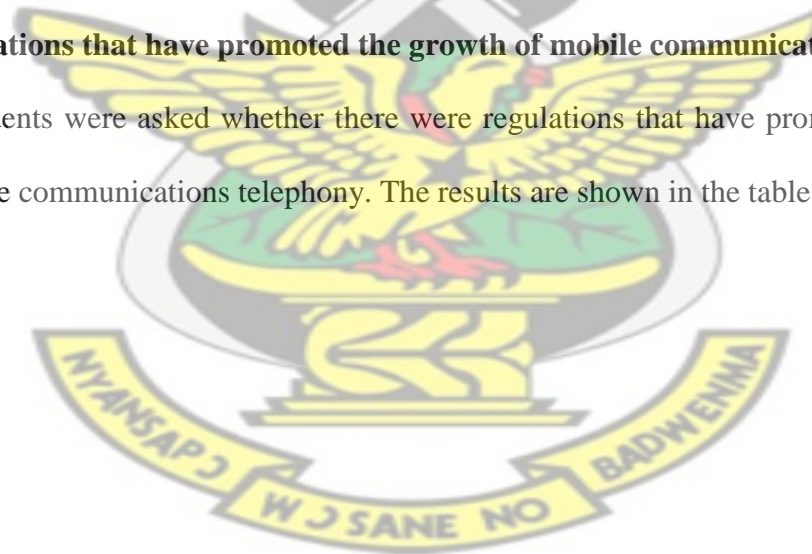


Table 4.1.2 Regulations that have promoted that growth of mobile communications telephony in Ghana

| Item | Total number of respondents | Yes | No | Percentage |
|---|-----------------------------|-----|----|------------|
| Liberalisation of the telecommunications sector | 5 | 5 | 0 | 100% |
| Set up of the NCA | 5 | 5 | 0 | 100% |
| Universal service access | 5 | 5 | 0 | 100% |

Source: Field survey, August 2011

The respondents stated that the liberalisation of the telecommunication market had brought down barriers to the entry into the telecommunication market in Ghana. As a result, the mobile communication telephone operators had competed amongst themselves in coverage, pricing and quality of service over the years. This has resulted in the wide coverage of mobile communication services throughout the country.

Also, they stated that universal service access regulation had provided subsidies to mobile communication service operators to extend their telephony to underserved areas in the country. This government plan had helped in increasing the coverage more in the rural areas.

In addition, the respondents stated that the set up of the National Communications Authority as the national telecommunications regulator had promoted a platform for the mobile

communication authorities to resolve conflicts and ensure that telecommunication targets set by the government are met.

Pricewaterhouse Coopers (2006), states that for a vibrant growth of the mobile communications telephony, the above stated regulations must be put in place to spur the growth of the mobile communications telephony.

4.1.3 Regulations that have adversely affected the mobile communications telephony

Respondents were asked to identify any government regulations that have adversely affected their operations and how adversely it hampered their operations. The results are highlighted in table 4.1.3.

Table 4.1.3 Regulations that have adversely affected the mobile communications telephony in Ghana

| Item | Total number of respondents | Less adversely | moderately | More adversely | percentage |
|------------------------|-----------------------------|----------------|------------|----------------|------------|
| Temporary ban on masts | 5 | 0 | 4 80% | 1 20% | 100% |
| Service tax | 5 | 0 | 0 | 5 | 100% |
| Call monitoring system | 5 | 0 | 0 | 5 | 100% |

Source: Field survey, August 2011

The respondents stated that the communication service tax and the set up of a call monitoring system came up as the more adverse regulations to the mobile communications telephony.

They stated that the communication service tax affected the revenue generation of the mobile communication service operators in that the Average Revenue per Unit (ARPU) reduced in the first two months of the introduction of the tax as costumers reacted awkwardly to their talk time being taxed. The ARPU is the average revenue generated from a subscriber over a specified period. To mitigate this, promotional offers were made by the operators to attract customers to increase their talk time. The call monitoring system set up by the government, to monitor incoming international traffic calls in order to ensure that there is no loss in revenue from international traffic, was also considered to have more adversely affected the mobile communications telephony. The respondents stated that apart from the charges paid by the mobile communication service operators for the call monitoring which also affected their revenue generation, the privacy of calls could not be guaranteed. The privacy of calls is a delicate issue in mobile communications.

The temporary ban on the construction of communications masts was considered to have moderately affected the mobile communications telephony. Four out of the five (4/5) mobile communication service operators stated it adversely affected their operations moderately. Only one operator stated that it adversely affected its operations much more. It affected the deployment of cell sites by the various mobile communications service operators by changing their project scopes. They mitigated its effects by co-locating new sites with existing towers among themselves. The respondents stated that the ban brought some unpredictability in the regulatory environment which introduces risks which does not augur well for investments. The result shows that government must take careful considerations of policies that seek to generate more revenue from the mobile communications telephony as

this may affect the revenue generation of the operators and make the business environment unattractive.

4.1.4 Regulatory challenges encountered by mobile telephone operators

Respondents were asked if they had encountered any regulatory challenges in their operations. The results are shown in the table 4.1.4.0

Table 4.1.4.0 Regulatory challenges faced by mobile communication service operators

| Item | Total number of respondents | Yes | No | percentage |
|--------------------------|--------------------------------|-----|----|------------|
| Regulatory challenges | 5 | 5 | 0 | 100% |

Source: Field survey, August 2011

From the study, all the five (5) mobile communications service operators stated that they have had regulatory challenges in the operations.

4.1.4.1 Areas of Regulatory Challenges faced by the Mobile Telephone Operators

The areas of regulatory challenges which were faced by the mobile communications service operators are shown below.

Table 4.1.4.1 Areas of regulatory challenges

| Item | Total number of respondents | Yes | No | Percentage |
|---------------------|-----------------------------|-----|----|------------|
| Quality of service | 5 | 4 | 1 | 80% (Yes) |
| Spectrum allocation | 5 | 0 | 5 | 100% |
| Licensing | 5 | 1 | 4 | 20% (Yes) |
| Interconnectivity | 5 | 3 | 2 | 60% (Yes) |

Source: Field survey, August 2011

From the study, 4 out of the 5 mobile communications service operators stated that they had issues about their quality of service. None stated any challenge on spectrum allocation. Only one stated a regulatory challenge on licensing and 3 out 5 had experience issues on interconnectivity. The quality of service offered by the mobile telephone operators is realised to be the major regulatory issue although achievements have been made in the sector. The regulatory body and the mobile telephone operators must resolve this issue as customers would not have value for the services paid for otherwise; it can become a major drawback in mobile telephony sector.

4.1.5 Suggestions for improvement of government's role in the telecommunication sector

The respondents were asked to provide suggestions on how the government can improve its role in the sector. These are outlined below;

Government must continue to provide a level playing ground for all operators by not issuing exclusive rights to any operator in order to avoid any form of monopoly. This suggestion seeks to reduce interconnectivity issues among operators due to one dominant operator with exclusive rights.

Government should ensure that new regulations are assessed to meet the country's telecommunication market conditions. Involve stakeholders in deliberations to avoid the “cut and paste” policies from other foreign countries. These actions would ensure that the likely effects of policies in the sector are evaluated to avoid adverse effects on the mobile communications telephony.

Implement consistent and transparent policies and conducting regular consultations with industry players. This action would help in reducing business risks due to an unpredictable regulatory environment.

4.2 THE EFFECTS OF THE TELECOMMUNICATIONS LIBERALISATION PROGRAMME

The respondents were asked the results of the liberalisation programme and whether it had yielded the expected results. Also, the respondents were asked on ways the liberalisation programme could be improved. The results are shown in the tables.

Table 4.2.0 Has the telecommunication liberalisation yielded the expected results?

| Total number of respondents | Yes | No | Percentage |
|-----------------------------|-----|----|------------|
| 5 | 5 | 0 | 100% |

Source: Field survey, August 2011

From the results, all the 5 mobile communication service operators stated the telecommunication liberalisation programme had achieved the expected results. Thus the government's plan to increase telecommunication services in the country had been achieved greatly by the liberalisation programme.

Table 4.2.1 The results of the telecommunication liberalisation programme

| Item | Total number of Respondents | Yes | No | Percentage |
|--|-----------------------------|-----|----|------------|
| Increased data communications | 5 | 5 | 0 | 100% |
| High mobile penetration rate | 5 | 5 | 0 | 100% |
| Mobile Electronic transactions | 5 | 5 | 0 | 100% |
| Increasing internet access | 5 | 5 | 0 | 100% |
| Change in market structure from monopoly to an oligopoly | 5 | 5 | 0 | 100% |

Source: Field survey, August 2011

The study showed that all the 5 mobile communication service operators stated that as a result of the liberalisation programme, there has been an increase in data communications due to the their deployment of fibre networks, a high mobile penetration rate, the

development of mobile telephony electronic transactions, increasing internet access and a change in the market structure which has introduced competition in the market. This supports Braga's (1997) views that improved communications infrastructure and services is made possible through liberalisation. This is reducing the digital divide between developing countries like Ghana and the developed nations.

4.2.2 Measures to improve the liberalisations programme

All the 5 mobile communications telephone operators stated that the liberalisation programme has to adapt to changing technology and regulatory practices in order to ensure the telecommunication industry in Ghana keeps pace with improved technology trends and regulatory practices. This supports ITU's (2006) views that for telecommunication regulatory environment to improve in Africa, governments and regulatory bodies must embrace current regulatory practices that improve the sector and also adapt to changing technology.

4.3 THE EFFECTS OF NEW REGULATIONS ON THE MOBILE COMMUNICATIONS TELEPHONY

The respondents were asked about the likely effects of the new regulation on Mobile number portability (MNP). Mobile number portability is a system that allows subscribers to switch to another mobile telephone service operator and still maintaining his or her number from the other network. The government stated that this regulation would spur competition more in the sector. The respondents were asked if the conditions were right in the telecommunication sector for the implementation of the system. Also, the respondents were asked about the

likely effects of the licensing of new masts construction companies to provide communication masts for mobile telephone operators and whether that action was a step in the right direction. The results are shown in table 4.3.0.

Table 4.3.0 The readiness of the mobile communications telephony for MNP?

| Total number of respondents | Yes | No | Percentage |
|-----------------------------|-----|----|------------|
| 5 | 5 | 0 | 100% |

Source: Field survey, August 2011

All the 5 respondents stated that the mobile communications telephony was ready for the Mobile Number Portability. They stated that the main condition for the implementation of the system was that the mobile penetration rate in any market should be at least 50%.

This affirms the views of Siu Keat Chak (2007). They stated that MNP becomes viable in saturated markets like Ghana whose mobile penetration rate stood at 74% at the end of 2010.

4.3.1 The likely effects of the implementation of MNP

All the 5 respondents stated the MNP would result in an improvement in the quality of service of the mobile telephone operators to subscribers and better customer relationship management.

4.3.2 The likely effects of the licensing of separate communication masts providers

All the 5 respondents stated that the provision of communication masts by separate construction firms would reduce their capital expenditure and operational costs of the sites. This they said would bring substantial savings and enable them to focus more on other core

functions. This is a mutual benefit to both the government's desire to control the adverse effects of the masts on the aesthetics of towns and cities and the mobile telephone operators' desire to reduce cost.

Table 4.3.3 The licensing of separate communication masts providers, a step in the right direction?

| Total number of respondents | Yes | No | Percentage |
|-----------------------------|-----|----|------------|
| 5 | 5 | 0 | 100% |

Source: Field survey, August 2011

All the 5 respondents stated that the licensing of separate communication masts providers was a step in the right direction as it would reduce their costs of operations greatly. This would help deliver more innovative services to customers.

4.4 THE CORRELATION BETWEEN GOVERNMENT REGULATIONS AND THE MOBILE TELEPHONY

In order to determine the relationship between government regulations and the mobile phone telephony, a regression analysis was conducted using the SPSS computer program to determine the level of correlation between them. The mobile communications telephony was the dependent variable and the government regulations as the independent variable in the study. The mobile communications telephony was represented by the mobile penetration rate. The mobile penetration rate is the ratio of mobile phone users to the population. It represents

the extent of growth and coverage of the mobile communication industry. The government regulations were represented by the WorldBank Governance Indicators (WGI) on Regulatory Quality and Government Effectiveness. The WGI Regulatory quality indicator captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Concepts measured include, Import regulations, Price controls, Foreign investments, Banking and Finance, Tax effectiveness, Ease of starting a business, Access to capital markets, unfair competitive practices, Ease of market entry and Environmental regulatory impact on businesses.

The WGI Government effectiveness indicator captures perceptions of the quality of public services and the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Concepts measured include quality of general infrastructure, Excessive bureaucracy/Red tape, Satisfaction of roads and Highways, the reliability of electricity for the growth of business and the independence of regulatory institutions from government influences.

The period of analysis for the study was from 1992 to 2010. Data on the Ghana's mobile penetration rates was obtained from the websites of the NCA. The websites of the WorldBank provided data on Ghana's WGI. The R squared value (R^2) of the regression result shows the level of correlation between the two variables. It shows how much of the variances in the independent variable explains the variances in the dependent variable.

The result of the regression is shown in table 4.4

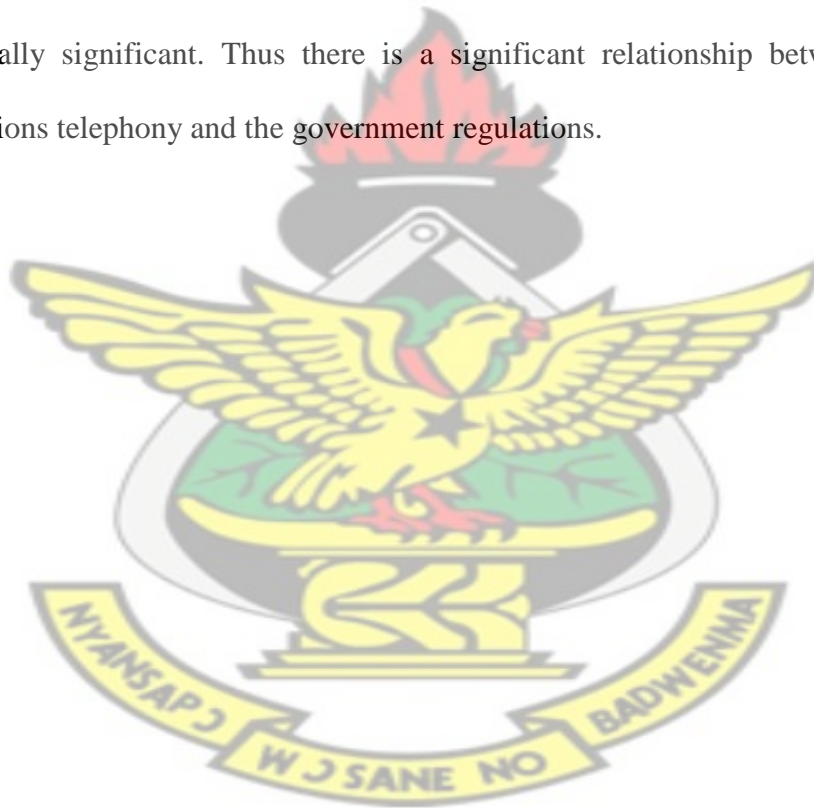
Table 4.4 Level of correlation between government regulations and mobile telephony

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|------|----------|-------------------|----------------------------|
| 1 | .872 | .761 | .658 | 12.86181 |

Source: SPSS Regression result, August 2011

Thus **76.10%** of the variances in the mobile penetration rate can be explained by the country's governance indicators on regulatory quality and government effectiveness.

For the level of correlation to be statistically significant, the R square value must be greater than 0.5. The R square value from the regression shows that the level of correlation is higher and statistically significant. Thus there is a significant relationship between the mobile communications telephony and the government regulations.



CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 INTRODUCTION

This chapter presents a brief summary of findings, conclusion and recommendations based on the study.

5.1 SUMMARY OF FINDINGS

The study has shown that government regulations have had a significant effect on the mobile communications telephony in Ghana. It has highlighted the fact that the government plays a major role in the telecommunications sector, thus any government action would result in a significant effect on the mobile communications telephony in the country.

The study also revealed the mobile communications telephony had thrived as a result of the following government policies; the liberalisation of the telecommunications sector, the set up of the National Communication Authority as the regulatory body and the set up of universal access fund. The liberalisation of the telecommunication sector opened up the sector for private participation. This saw the entry of mobile communications telephone firms which through competition have increased telecommunications coverage throughout the country. The set up of the NCA has provided a level playing field for all the mobile communications telephone operators and ensured fair competition amongst the operators as well as ensuring that targets set are met.

The universal access fund managed by GIFEC provides subsidies for mobile telephone operators to set up mobile telephone services in rural communities. This has also contributed in the growth of the mobile communications telephony.

The study revealed that there were certain government regulations that had adversely affected the operations of the mobile communications telephony in the country. These were the set up of the call monitoring system for incoming international calls, the temporary ban on the construction of communication masts and the communication service tax. The temporary ban on the construction of communication masts was realized to be less adverse because the mobile telephone operators mitigated its effect by co-locating new cell sites amongst themselves. The communication service tax and the set up of a call monitoring system were actions by the government to generate more revenue from the mobile communications telephony. The mobile telephone operators stated that their revenue generation was adversely affected as their Average Revenue per Unit subscriber reduced when these regulations came into force.

The study also showed that there were regulatory challenges that had been encountered by the mobile communication telephone operators in their operations. These were identified as licensing, Interconnectivity, Quality of service and spectrum allocation. Quality of service was realized to be the most occurring issue with all the mobile telephone operators.

The liberalisation of the telecommunication sector was considered to have yielded the expected results by the mobile telephone operators. The results were identified as increased data communications service, high mobile penetration rate, mobile electronic transactions, increasing internet access and a change in the market structure from a monopoly to an oligopoly creating competition among the operators for subscribers.

The telecommunications sector was considered to be ready for MNP by the mobile telephone operators. It was realized that for MNP to be effective, the mobile penetration rate should be at least 50% and since the country's mobile penetration rate was higher at 74% as at December 2010, the condition was right. Furthermore, it was shown that the likely effect of MNP on the mobile communications telephony would be improved customer relations and quality of service as subscribers could easily switch from one network to another without losing their number.

The study also showed that the licensing of separate communication masts construction firms was received well by the mobile telephone operators. This they said would reduce their capital expenditure and operational costs of the sites and would bring substantial savings and enable them to focus more on other core functions of delivering innovative products to subscribers and other customers.

5.2 CONCLUSION

The mobile communications telephony has made impacts in the telecommunication sector in the country by increasing coverage and providing innovative products for customers. It has also made strides in reducing the digital divide. The government through its liberalisation programme paved the way for the entry of mobile communications telephony into the country and passed various regulations to promote the growth of the sector. In its attempt to generate much needed revenue, certain regulations came into force which has adversely affected the mobile communications telephony. The temporary ban on the construction of masts, showed some level of unpredictability of government actions in the telecommunications sector. This uncertainty introduces some business risk which affects investments in the sector. The government plays a major role in the telecommunications sector; therefore, it must take careful considerations in passing regulations since they have major significant effects on the mobile communications telephony. Recommendations are therefore outlined to improve on the regulatory environment in the country.

5.3 RECOMMENDATIONS

The analysis made from suggestions obtained in the study is presented in this section as recommendations.

5.3.1 An Independent and Well Resourced Regulatory Body

An independent and well resourced regulatory body, free from any political influence would ensure an open and fair competitive environment devoid of any exclusive right for any

mobile telephone operator. Furthermore, an independent regulatory body would act an advisory body to the government on regulatory policies.

5.3.2 Evaluation of Impacts of Policies

Evaluating the likely effects of proposed regulations would ensure that new regulations passed, would promote the growth of the mobile communications telephony. Evaluation of proposed regulations should involve consultations with the mobile telephone operators to ensure that regulations with likely adverse effects are avoided. This would go a long way to promote a transparent and stable regulatory environment and thereby reducing business risks due to uncertainty.

5.3.3 Embracing New Technology

In order to continue the strides in telecommunication services, the government and the regulatory body must embrace new technology that would offer competitive services. Mobile communications telephony is playing a major role in increasing internet access but by introducing Wireless Internet services such as WIMAX, options would be available for customers which would bring competition to the mobile communications telephony and help reduce price rates charged for internet access. This would increase the country's internet penetration greatly.

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APPENDIX

Ghana Telecommunications Statistics (1992- 2010)

| Year | Mobile penetration rate | Fixed line penetration rate |
|------|-------------------------|-----------------------------|
| 1992 | 0.00 | 0.30 |
| 1993 | 0.01 | 0.30 |
| 1994 | 0.02 | 0.30 |
| 1995 | 0.04 | 0.37 |
| 1996 | 0.07 | 0.44 |
| 1997 | 0.12 | 0.58 |
| 1998 | 0.22 | 0.72 |
| 1999 | 0.37 | 0.84 |
| 2000 | 0.67 | 1.09 |
| 2001 | 1.22 | 1.22 |
| 2002 | 1.89 | 1.34 |
| 2003 | 3.80 | 1.39 |
| 2004 | 7.91 | 1.46 |
| 2005 | 13.12 | 1.47 |
| 2006 | 23.25 | 1.59 |
| 2007 | 33.25 | 1.65 |
| 2008 | 49.55 | 0.62 |
| 2009 | 63.38 | 1.12 |
| 2010 | 74.20 | 1.20 |

Source: National Communication Authority, 2011

Ghana – Worldwide Governance Indicators (1996- 2009)

| Governance Indicator | Sources | Year | Percentile Rank | Governance Score | Standard Error |
|--------------------------|---------|------|-----------------|------------------|----------------|
| | | | (0-100) | (-2.5 to +2.5) | |
| Voice and Accountability | 17 | 2009 | 60.7 | 0.5 | 0.11 |
| | 16 | 2008 | 58.7 | 0.42 | 0.12 |
| | 15 | 2006 | 59.1 | 0.41 | 0.12 |
| | 12 | 2005 | 58.2 | 0.25 | 0.15 |
| | 11 | 2004 | 52.9 | 0.1 | 0.17 |
| | 10 | 2003 | 52.9 | 0.15 | 0.16 |
| | 9 | 2002 | 47.6 | -0.02 | 0.16 |
| | 6 | 2000 | 50 | 0.01 | 0.21 |
| | 5 | 1998 | 37 | -0.43 | 0.23 |
| | 4 | 1996 | 39.7 | -0.28 | 0.23 |
| Political Stability | 8 | 2009 | 50 | 0.16 | 0.22 |
| | 8 | 2008 | 49.8 | 0.12 | 0.23 |
| | 7 | 2006 | 52.4 | 0.14 | 0.23 |
| | 7 | 2005 | 52.4 | 0.14 | 0.24 |
| | 7 | 2004 | 41.8 | -0.13 | 0.25 |
| | 6 | 2003 | 43.3 | -0.09 | 0.26 |
| | 5 | 2002 | 42.3 | -0.15 | 0.25 |
| | 5 | 2000 | 38 | -0.19 | 0.26 |
| | 5 | 1998 | 42.3 | -0.1 | 0.25 |
| | 4 | 1996 | 41.3 | -0.06 | 0.33 |
| Government Effectiveness | 12 | 2009 | 56.7 | 0.06 | 0.17 |
| | 12 | 2008 | 58 | 0.13 | 0.17 |
| | 11 | 2006 | 56.8 | 0.07 | 0.18 |
| | 10 | 2005 | 50 | -0.19 | 0.15 |
| | 10 | 2004 | 48.5 | -0.25 | 0.15 |
| | 9 | 2003 | 49.5 | -0.25 | 0.15 |
| | 8 | 2002 | 51 | -0.18 | 0.16 |
| | 6 | 2000 | 55.3 | -0.03 | 0.19 |
| | 6 | 1998 | 48.5 | -0.24 | 0.15 |
| | 3 | 1996 | 35.4 | -0.49 | 0.29 |
| Regulatory Quality | 11 | 2009 | 54.8 | 0.12 | 0.16 |
| | 11 | 2008 | 53.6 | -0.01 | 0.17 |
| | 11 | 2006 | 52.7 | -0.06 | 0.17 |
| | 11 | 2005 | 51.7 | -0.11 | 0.17 |
| | 11 | 2004 | 41.5 | -0.34 | 0.17 |
| | 10 | 2003 | 39.5 | -0.37 | 0.18 |
| | 9 | 2002 | 38 | -0.43 | 0.2 |
| | 7 | 2000 | 50.2 | -0.03 | 0.23 |
| | 7 | 1998 | 45.9 | -0.13 | 0.25 |
| | 4 | 1996 | 47.3 | 0.13 | 0.33 |
| Rule of Law | 17 | 2009 | 51.9 | -0.11 | 0.13 |
| | 16 | 2008 | 53.1 | -0.06 | 0.14 |
| | 14 | 2006 | 54.3 | 0.04 | 0.15 |
| | 12 | 2005 | 49.5 | -0.12 | 0.15 |
| | 13 | 2004 | 46.7 | -0.22 | 0.15 |
| | 11 | 2003 | 48.6 | -0.07 | 0.15 |
| | 10 | 2002 | 52.4 | -0.03 | 0.16 |
| | 9 | 2000 | 55.7 | 0.05 | 0.16 |
| | 8 | 1998 | 38.6 | -0.39 | 0.19 |
| | 5 | 1996 | 43.3 | -0.31 | 0.25 |
| Control of Corruption | 15 | 2009 | 59.5 | 0.06 | 0.15 |
| | 14 | 2008 | 58.5 | -0.02 | 0.15 |
| | 13 | 2006 | 58.7 | 0.05 | 0.16 |
| | 11 | 2005 | 47.1 | -0.32 | 0.16 |
| | 10 | 2004 | 47.6 | -0.27 | 0.16 |
| | 8 | 2003 | 47.6 | -0.27 | 0.18 |
| | 7 | 2002 | 49.5 | -0.26 | 0.19 |
| | 6 | 2000 | 53.4 | -0.08 | 0.22 |
| | 6 | 1998 | 47.6 | -0.25 | 0.22 |
| | 3 | 1996 | 39.8 | -0.28 | 0.13 |

Source: www.worldbank.org, 2011

QUESTIONNAIRE
KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
INSTITUTE OF DISTANCE LEARNING
INTERVIEW GUIDE FOR NETWORK OPERATIONS MANAGERS OF MOBILE
TELEPHONE SERVICE OPERATORS.

I am a final year student pursuing the Commonwealth Executive Masters degree programme in Business Administration at the Institute Of Distance Learning from the Kwame Nkrumah University of Science and Technology. I am presenting a Thesis on the topic, “The effects of Government regulations on the Mobile communications telephony in Ghana.”

These set of questions serve as a guide to get information on how government regulations affect the operations of mobile communications telephony, the effects of the liberalisation programme as well as the likely effects of the new regulations on Mobile Number Portability (MNP) and the licensing of separate communication masts providers.

Please provide answers by either ticking the box or providing comments.

HOW GOVERNMENT REGULATIONS AFFECT MOBILE TELEPHONY?

1. Which role does the government play in the mobile communications telephony sector?

a. Major ☐ b. Minor ☐

2. Are there any regulations that have promoted the growth of the mobile communications telephony?

a. Yes ☐ b. No ☐

If yes, what are these regulations?

- a. The liberalisation of the telecommunications sector ☐
- b. The set up of the national communications Authority as the sector regulator ☐
- c. Universal service access ☐

Others (specify).....

.....

.....

.....

3. Please state how any of these regulations have promoted the growth of the mobile communications telephony?

.....

.....

.....

.....

4. Are there any regulations that may have adversely affected the mobile telephony?

- a. Yes ☐
- b. No ☐

If yes, what are these regulations?

- a. The temporary ban on communication masts construction ☐
- b. The communication service tax ☐
- c. The set up of a call monitoring system ☐

Others (specify).....

.....

.....

5. How adversely have the regulations affected the mobile communications telephony?

| Item | Less adversely | Moderately | More adversely |
|------------------------|----------------|------------|----------------|
| Temporary ban on masts | | | |
| Service tax | | | |
| Call monitoring system | | | |

6. Please state how any of these regulations have adversely affected the mobile communications telephony?

.....

.....

.....

.....

7. Has the mobile operator encountered any regulatory challenges?

Yes ☐ b. No ☐

If yes, what are these regulatory challenges?

a. Licensing ☐

b. Spectrum allocation ☐

c. Quality of service ☐

d. Interconnectivity ☐

Others (specify).....

.....

.....

8. How can the government improve on its role in the sector?

.....

.....

.....

.....

THE EFFECTS OF THE LIBERALISATION PROGRAMME

9. Has the government's liberalisation of the telecom sector yielded the expected results?

- a. Yes ☐ b. No ☐

10. What are the results of the liberalisation programme?

- a. Increase of mobile telephony operators ☐
- b. Increased Data access ☐
- c. Wide mobile communications service coverage ☐
- d. Fast Electronic transactions ☐
- e. New jobs, more jobs ☐

Others (specify).....

.....

.....

11. How can the liberalisation programme be improved?

.....

.....

.....

THE EFFECTS OF NEW GOVERNMENT REGULATIONS ON MOBILE TELEPHONY

12. Is the mobile communications telephony ready for Mobile Number Portability (MNP)?

- a. Yes ☐ b. No ☐

13. What are the likely effects of the implementation of this system?

.....

.....

.....

14. What are the likely effects of the issuance of licenses to separate communication masts providers?

.....

.....

15. Is the licensing of separate communication masts providers a step in the right direction?

a. Yes ☐

b. No ☐

