

**STRATEGIES AND CHALLENGES OF ROLLING OUT
WIRELESS COMMUNICATION IN THE ICT SECTOR IN
KENYA.**

'A CASE STUDY OF TELKOM KENYA LTD'

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D61/P/8455/05

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A management research project submitted in partial fulfillment of the requirements for the degree of Master in Business Administration (MBA), School of Business, University of Nairobi

March, 2009

DECLARATION

This management research project is my original work and has not been submitted for award of a degree in the University of Nairobi.

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This management project has been submitted for examination with my approval as the University supervisor.

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DEDICATION

Dedicated to my son Joash

ACKNOWLEDGEMENT

Special acknowledgement goes to my supervisor Ms. Catherine Ngahu for her guidance and advises through all stages of the project.

I must acknowledge the guidance I received from the lecturers during presentation of the research proposal. Special thanks to the entire team.

I also acknowledge my husband, Reuben, for his continuous support throughout this research project.

ABSTRACT

ICT is the World's fastest growing economic activity. The sector has turned the globe into an increasingly interconnected network of individuals, firms, schools and governments communicating and interacting with each other through a variety of channels and providing economic opportunities transcending borders, languages and cultures. The ICT environment is competitive both in Kenya and in the world in general. There is need for competitive strategies for a firm that rolls out Wireless Communication in ICT for it to gain competitive edge in the market. It was on this impression that this study was carried out.

This was a qualitative research which relied on qualitative data i.e. the data collected was mainly ideas rather than numbers. Case study was the method for data collection. Telkom Kenya Ltd which offers integrated telecommunications services on fixed networks, Wireless and Mobile Networks was the case study. Primary data was collected by way of personal interviews. In-depth interviews were conducted on 30 staff of Telkom Kenya. These were functional heads and managers in the Technical, Business Marketing and Wholesale departments. The other method of data collection was the use of secondary data which was internal data of the organization. Data was analyzed through content analysis.

Based on the study findings the following conclusions were made: The strategies for a Wireless Communication firm to be competitive in the telecommunication market are mainly centered on accessibility of the service, quality of the service, availability, mobility, affordability, short lead times of customer connections, advertisements and promotions. The challenges on Wireless Communication are expensive sites acquisition and Co-location for base stations, geographical factors that affect signal strength, low transmission bandwidths, unavailability of physical address of subscriber lines, poor interconnection agreements with other operators, regulatory challenges, high turnover of skilled labour, poor distribution channels of the services and stiff competition in the market.

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CHAPTER ONE: INTRODUCTION

1.1 Background

Communication is an important aspect in human life. It often occurs in a healthy society. People can't do without communicating. According to Oxford dictionary (1994), Communication is defined as information, letter, message, connection or means of access, social dealings or science and practice of transmitting information.

Different technologies have been developed to enhance better communication locally, nationally and internationally. These technologies have been changing over the years to make communication easier, accessible, faster and cheaper. Communication has therefore been improving both nationally and internationally. A few years ago, for example there was no internet. People relied on letters to convey information. Similarly, mobile communication came into Kenya recently.

According to Communication Commission of Kenya (CCK) annual report, 2006/2007, Communication has improved the standard of living of people. In Kenya, Communication sector contributes greatly to the economic and social development of the country. According to Kenya ICT Board (2008) effective communication enables a country make great improvements in productivity, quality in agriculture, food security, manufacturing infrastructure, public administration, finance, trade, distribution, marketing, education, job training and health.

According to Telkom Kenya Ltd 2009 report, there is significant evidence highlighting the importance of communications for a growing society. Studies show that the use of ICT reduces costs of transactions, improves the quality of production, empowers consumers and ultimately boosts profits. An increase of just 10 mobile lines per 100 people boosts the GDP by up to 0.4%; a 1% increase in internet usage increases total exports by an amazing 4.3%.

According to Kenya's ICT industry paper (2005), competition has risen over the years in communication sector in the country due to liberalization of the market. The telecommunication operators run different services such as data, voice or text through

different technologies. This liberalization has resulted in improved affordability, accessibility, quality of service and availability.

1.1.1 Strategy

Strategy is the direction and scope of an organization over the long term which achieves advantage for the organization through its configuration of resources within a changing environment to meet the needs of the markets and to fulfill stakeholders' expectations (Johnson & Scholes, 2005)

According to Porter (1980), strategy is about positioning a company in its industry. Positioning is about choosing a basis for delivering value or superior offering for the market to consider an organization as a better organization with better value. Competitive advantage is a result of such positioning. According to Porter (1985), to be able to attract customers a firm must have competitive advantage over the others

1.1.2 Information Communication Technology (ICT)

Information Communications Technology (ICT) is an umbrella term that includes all technologies for the communication of information. According to Wikipedia, the free encyclopedia (2008), ICT is defined as computer hardware and software and telecommunications technology. ICT is the world's fastest growing economic activity; the sector has turned the globe into an increasingly interconnected network of individuals, firms, schools and governments communicating and interacting with each other through a variety of channels and providing economic opportunities transcending borders, languages and cultures.

ICT cover internet service provision, telecommunication equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centers, commercial information providers, network based information services and other related information and communication activities (Kenya's ICT industry paper, 2005)

1.1.3 Telecommunication

Telecommunication is the assisted transmission of signals over a distance for the purpose of communication. In earlier times, this may have involved the use of smoke signals, drums, semaphore, flags or heliograph. In modern times, telecommunication typically involves the use of electronic devices such as the telephone, television, radio or computer. A basic telecommunication system consists of three elements which include, a transmitter that takes information and converts it to a signal, a transmission medium that carries the signal and a receiver that receives the signal and converts it back into usable information.

The media used for transmitting information can be wireless or wire line technologies. Wire line technologies involve the use of wires to transfer information. Examples of media in wire line include copper, coaxial and optic fiber cables. According to Wikipedia, the free encyclopedia (2008), Wireless technologies include cellular networks, broadcasting, point to point and point to multipoint communication. Further, there are several technologies that can be used on these media, for example CDMA (Code Division Multiplex Access) and GSM (Global System for Mobile). The Technology being used contributes to the speed, accessibility and cost of communication. Information can be relayed in form of data, voice, video or text.

According to Mureithi (1999-2003), to exploit telecommunications for development it is necessary that cheap and reliable telecommunications are available. This calls for a continuous review of the telecommunications policy and regulation to accommodate new technologies required to support these applications. The Kenya government has reviewed the policy to address application of telecommunications as part of information communications technologies strategies (ICTs). Telecommunications and Postal sector Policy Guidelines gazetted in 2001 recognized the role of telecommunications in ICT. Following from this policy guidelines, the government published a draft national ICT strategy in August 2003. The draft ICT policy seeks to mainstream ICT in all national activities. The draft ICT framework is a recognition of the benefits and the opportunities of IT-led growth in creating jobs, raising national productivity, increasing incomes and opening opportunities for increased trade and human development. Areas of concern that the government intends to develop

through consultation with stakeholders include digital transactions policy, regulatory and legal framework for electronic signatures, contracts, electronic authentication and security and cyber crime and e-governance (Mureithi, 1999-2003)

1.1.4 Wireless Communication

Wireless communication is the transfer of information over a distance without the use of electrical conductors. It is a branch of telecommunications. Wireless operations permits services, such as long range communications, that are impossible or impractical to implement with the use of wires. The term is commonly used in the telecommunications industry to refer to telecommunications systems which use some form of energy to transfer information without the use of wires. Information is transferred in this manner over both short and long distances. According to Wikipedia, the free encyclopedia (2008), applications may involve point-to-point communication, point-to-multipoint communication, broadcasting, cellular networks and other wireless networks

1.1.5 Telkom Kenya Ltd

Telkom Kenya Ltd is one of the telecommunication operators in Kenya. It was established as a telecommunications operator under the companies act in April 1999. It provides integrated communications solutions such as voice and data services. The company currently has a customer base of about 500,000 customers on both fixed and CDMA wireless with a country-wide presence. Telkom Kenya is currently the only fixed national operator. It recently rolled out mobile GSM services in the already competitive mobile cellular market. In December 2007, Telkom Kenya entered into a partnership with France Telecom group who also bought a 51% share. France Telecom group of companies is international telecommunications operators with over 174 million customers across five continents. Telkom Kenya partnership with France Telecom group has enabled them make unprecedented investments into their operations helping them deliver better services for customers. The backing of France Telecom group's network and carriers will open wide perspectives for Telkom Kenya, and place it as a major player in the Kenya market. New services, technologies, and a

worldwide presence are some of the strong areas of support that Telkom Kenya will receive from its partner. (Telkom Kenya Report, 2009)

1.2 Statement of the problem

ICT contributes significantly to world's economic growth. The government of Kenya's economic blueprint for 2003-2007 notes that the ICT sector is important to the realization of the required improvement in productivity and empowerment of the citizenry. Telecommunications play a major role in ICT and so is Wireless Communication (Ministry of Planning and National Development, 2003).

Past studies in the field of Telecommunication by Morris (2004) on First Mile, First Inch explored the technological and social consequences of low-cost telecommunications implemented in remote schools, clinics and tele centers. Morris (2008) on the project 'Wireless Africa' is currently addressing the issues of rural development by advancing the development of business enterprises and employment in rural areas through the use of wireless infrastructure. Locally, a study by Chepkonga (2002) on helping Kenya extend ICT to rural areas help to stimulate investment in rural communications across Kenya through developing a Kenyan universal access policy and a universal access fund.

Past studies have not addressed the challenges faced both in the rural and urban areas and Strategies necessary to roll out Wireless Communication. Given the importance of Telecommunication sub sector in contributing to the economy, without ignoring the research findings of past studies, the proposed study seeks to bridge the existing knowledge gap by finding responses to the following research question: Which strategies should a firm in ICT sector in Kenya implement to be successful when rolling out wireless communication?

1.3 Objectives of the study

(i) To determine strategies used by Telkom Kenya Ltd to roll out Wireless Communication to be competitive in the ICT sector in Kenya

(ii) To determine challenges faced by Telkom Kenya Ltd in rolling out Wireless Communication.

1.4 Importance of the study

- i. Investors who intend to venture into ICT sector in Kenya will benefit from the study by understanding the strategies required for wireless communication to be competitive in the sector.
- ii. Firms offering Communication services in Kenya will benefit because the study will be a source of information in identifying their shortcomings in their current strategies.
- iii. Researchers will benefit from the study findings and from increased literature of information communication technology
- iv. Other service industries operating in Kenya can use this study as a source of vital information regarding information communication technology.

CHAPTER TWO: LITERATURE REVIEW

2.1 Strategy

According to Johnson & Scholes (2005), strategy is the direction and scope of an organization over the long term which achieves advantage for the organization through its configuration of resources within a changing environment to meet the needs of the markets and to fulfill stakeholders' expectations (Johnson & Scholes, 2005)

Ansoff looked at strategy in terms of product/market scope of a company. An organization must provide an output that the environment values. The subject of strategy analyses a company's relationship with its environment. All organizations are open systems, this means they continuously depend on the environment for survival. Organizations are environment dependent and environment serving.

According to Ansoff's strategic success formula, a firm's performance potential is optimum when aggressiveness of the firm's strategic behavior matches the turbulence of its environment, responsiveness of the firm's capability matches the aggressiveness of its strategy and when the components of the firm's capability are supportive of one another. The diagnostic procedures of strategies are derived from the strategic success formula. According to Ansoff, Strategic diagnosis is a systematic approach to determining the changes that have to be made to a firm's strategy and its internal capability in order to assure the firm's success in its future environment (Ansoff & McDonnell, 1990).

According to Porter (1980), strategy is about positioning a company in its industry. Positioning is about choosing a basis for delivering value or superior offering for the market to consider an organization as a better organization with better value. Competitive advantage is a result of such positioning. According to Porter (1985), to be able to attract customers a firm must have competitive advantage over the others.

According to Johnson and Scholes (2002), people tend to view strategy in different ways, these different perspectives have been seen as strategy lenses. The three

strategy lenses are strategy as design, strategy as experience and strategy as ideas. Strategy as design is whereby strategy is seen as a forward plan, it comes before events it governs. Strategy as experience is where strategy is about the long term direction of an organization, strategy develops in an adaptive way, new strategy develops from existing strategy. Strategy as ideas views strategy as emergence of order and innovation from the variety of ideas that exist in and around companies.

Strategy guides organization to superior performance through establishing competitive advantage. Good strategies are required to enable an organization to effectively match its capabilities with the environment. It should match its strengths and weaknesses to the environmental opportunities and threats.

According to Florence (2003) on the Project Kenya National ICT Policy Development, Kenya's ICT sector has lagged behind its East African neighbours, Tanzania and Uganda. A Key reason has been outmoded regulatory regime and lack of focus and coordination in addressing ICT challenges and opportunities. To remove these barriers, the Kenya Government needs to guide and coordinate its efforts and a comprehensive policy driven by the input and commitment of all the groups and sectors who will be responsible for turning the policy into reality. Strategies are required for successful implementation of ICT policy. Some of the strategies identified in this project are raising ICT awareness through workshops and training for senior Government officials; developing indicators for measuring the progress and impact of the policy's implementation; and documenting the lessons learned from Kenya's policy process to help other African countries grappling with similar challenges.

Morris (2004) on his project of First Mile, First Inch developed strategies on exploring technology and sociological issues to implement low cost telecommunication in remote areas. In rural areas, the end point of telecommunications distribution networks, often referred to as the 'last Mile' is usually the most challenging, expensive and difficult to deploy and manage. The project will address the needs of rural communities with various kinds of innovative, inexpensive wireless access, documenting the sustainability of such access. Some of the strategies include bridging with WiFi ,Wireless Internet, technology the "first

mile” in poorly served rural and marginalized communities, develop innovations such as power line communications, as well as off-the-shelf, consumer technologies. To allow users to easily interact with computers, ‘first inch’, this project will develop open source, easy-to-use applications in local languages.

2.2 Information Communication Technology (ICT)

ICT is the World’s fastest growing economic activity. It has opened new channels for service delivery in areas such as e-government, education, e-health and information dissemination. According to Kenya’s ICT industry paper (2005), rapid development of ICT accompanied by the convergence of telecommunications, broadcasting and computer technologies is creating new products and services, as well as new ways of learning, entertainment and doing business. At the same time, more commercial, social and professional opportunities are being created through the unique opportunity provided by ICT. As a result, the world is undergoing a fundamental transformation as the industrial society that marked the 20th century rapidly gives way to the information society of the 21st century. The new society promises a fundamental change in all aspects of our lives, including knowledge dissemination, social interaction, economic and business practices and political engagement.

The environment for ICT access has improved relatively rapidly in most urban areas. The primary motivation for growth in ICT has come from the private sector, with the role of governments being that of a facilitator for creating an enabling environment. The challenges to incorporate ICT in various aspects of economic development centers on five major areas: support to small and medium business, Education, attracting high tech industry, Access to technology infrastructure and Business – friendly government (Kenya’s ICT paper, 2005)

2.2.1 ICT Sector in Kenya

According to Kenya’s ICT Board, one of the main priorities of the Kenyan Government towards the realization of national development goals and objectives for wealth and employment creation is the achievement of an information-based society (Kenya ICT Board, 2008)

Globally, ICT enhances greatly the economic and social development by acting as a production sector for economic growth and an enabler for social development. ICT will improve government operations and it is expected to play crucial role towards realization of vision 2030.

On benchmarking with industrialized countries, Kenya has found out that ICT applications have enabled these countries make great improvements in productivity and quality in agriculture, food security, manufacturing infrastructure, public administration, finance, trade, distribution, marketing, education, job training and health (Kenya ICT Board, 2008)

There had been growing demand for a formal National ICT policy emanating from diverse interest groups of ICT stakeholders, including government departments, education stakeholders, research institutions, ICT marketing and training sectors, ISPs, development partners, NGO communities and other parties in the provision of the ICT infrastructure.

Kenya's National ICT policy (2006) and ICT strategy for economic growth (2006) were approved by the Kenya government, in order to drive growth in this sector and to use ICT for employment creation, poverty reduction as well as broad based enabler for economic recovery and the achievement of national developmental goals (Kenya ICT Board, 2008).

These policy guidelines aim at transforming the Kenyan economy through ICT by promoting and facilitating the private sector to serve as the driver for economic development through innovation in the ICT sector. The long term commitment of Kenya is to develop into globally competitive ICT outsourcing destination as well as a base for the development, production and sale of information, knowledge and technology products and services.

The Kenya ICT Board was established as a state corporation under the state corporations Act Cap 446 on 19th February 2007. Kenya ICT Board was established

to encourage cohesion, creativity and energy in the deliberation of pertinent ICT to excellence in managing issues within the sector (Kenya ICT board, 2008)

ICT cover internet service provision, telecommunication equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centers, commercial information providers, network based information services and other related information and communication activities.

2.2.2 Contribution of ICT to Kenya's development

Telecommunications and information infrastructures are vital for any country's economic productivity, competitiveness and national security. ICT profoundly affects all aspects of human activities and changing lifestyles. It is the vehicle being used worldwide for ensuring information and knowledge-based society for effective development.

The developments in Kenya's ICT industry are mirrored in the industry's contribution to the overall country's economy. According to CCK Annual report (2006/2007), the transport and communications sector in general grew by 10.6%, accounting for 9.7% of total GDP in 2006. The mobile telephone market segment in particular was notable due to the increase in the subscriber base by 36.5%. The industry's growth also had a multiplier effect on employment in the country. It posted the highest number of new jobs created during the year (CCK Annual report, 2006/2007)

Despite ICT sector contribution in the overall country's economy, Kenya still lags behind many newly industrialized countries. ICT applications have enabled these countries make great improvements in productivity and quality in agriculture, food security, manufacturing infrastructure, public administration, finance, trade, distribution, marketing, education, job training and health (Kenya ICT Board, 2008). The decisions and actions that Kenya takes on the use of ICT will determine the industry contribution to economic and social development in the country.

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2.2.3 Kenya's competitive advantage as an ICT investment destination

ICT sector is profitable for the operators and is going to be an enticing feature for increased investment and for new entrants to the market. Kenyan government is committed to ensuring that Kenya becomes a preferred location for ICT and ICT enabled services. This will be rewarding to investors. The government intends to collaborate with all stakeholders in maintaining a favorable climate for investment in ICT manufacturing and services as well as foreign direct investment (Kenya ICT Board, 2008)

Availability of trained manpower in ICT sector is an important resource. The Kenya government has recognized this by introducing computer education in schools and other learning institutions, while the private sector has responded to the demand of skilled computer operators by setting up commercial computer training colleges in major urban centers all over the country. Realizing that ICT is a primary instrument for realizing economic growth, Kenya offers attractive incentives and presents various investment opportunities for potential investors as it prepares to leverage ICT in its national priorities of growth and poverty reduction. As an entry point to the regional market and a communications and financial hub for the region, Kenya also offers potential investors a wide market for their products and services in the utilization of ICT (Kenya's ICT industry paper, 2005).

As a regional hub and a financial capital of the East and Central Africa region, Kenya's competitive advantage as an ICT investment destination is supported by various investor friendly factors that include: Regulatory framework, availability of a well-trained labour force, Kenya's relation with the global information infrastructure, diversified experience, local market availability, access to the regional market, investor friendly arrangements, investment insurance, strategic location, good quality of life and stable political climate (Kenya ICT Board, 2009)

2.3 Telecommunication

Telecommunication is the assisted transmission of signals over a distance for the purpose of communication. In modern times, telecommunication typically involves

the use of electronic devices such as the telephone, television, radio or computer. A basic telecommunication system consists of three elements which include, a transmitter that takes information and converts it to a signal, a transmission medium that carries the signal and a receiver that receives the signal and converts it back into usable information (Wikipedia, 2009).

According to Mureithi (1999-2003), to exploit telecommunications for development it is necessary that cheap and reliable telecommunications are available. This calls for a continuous review of the telecommunications policy and regulation to accommodate new technologies required to support these applications. According to Wikipedia, the free encyclopedia (2008), the media used for transmitting information can be wireless or Wire line technologies. Wire line technologies involve the use of wires to transfer information. Examples of media in wire line include copper, coaxial and optic fiber cables. Wireless technologies include cellular networks, broadcasting, point to point and point to multipoint communication. Further, there are several technologies that can be used on these media, for example CDMA (Code Division Multiplex Access) and GSM (Global System for Mobile). The Technology being used contributes to the speed, accessibility and cost of communication. Information can be relayed in form of data, voice, video or text. New applications call for new technologies to serve changing customer needs. Consequently, operators are introducing new technologies to serve these needs.

In Kenya, a Focus Group on New and Emerging Technologies (FoGNETs) has been established during the year 2006/2007 in order to keep abreast of emerging technologies. The group collaborates with relevant research institutions including universities to provide strategic technical and policy advice to the Commission on regulatory best practice (CCK annual report, 2006/2007).

According to Kenya ICT industry paper (2005), Impact of liberalization in a telecommunication sector can be viewed from the perspective of affordability, accessibility and availability. The affordability of services parameter is a demand side indicator that seeks to measure the capacity of consumers to pay for telecommunications services. The parameter addresses how the operators are responding to the pressure to make the services cheaper to the consumers.

Affordability is the greatest impediment affecting growth of telecommunications particularly in poor localities.

In Kenya, since telecommunication sector reform, the price of certain services has come down due to competition in certain market segments. This makes the services more affordable to the general consumer. In particular, the prices have come down on cellular and Internet services due to competition. Cellular operators have introduced a range of tariff packages to suit different categories of users and wad off competition. The availability of cheap handsets has also improved the growth of the mobile service. The other reason why this service has experienced tremendous growth is due to the flexibility in charging where per second billing has been adopted by both mobile operators and the introduction of prepaid service. The licensing of more data services players resulted in competitive tariffs and the improvement of the services. The tariff for the data services is changing as competition increases. The charges for local digital leased lines as well as for international leased lines have been reducing (Kenya's ICT industry paper, 2005).

Internet tariffs have come down tremendously due to competition. This reduction affects all categories of service provision i.e. leased lines, dial-up as well as cyber cafes. Telecommunication costs are also set to go down after Kenya is connected by optic fiber to the global ICT environment and nationally as well. The most notable ones are the Fibre Optical National Network (FONN) and The East African Marine System (TEAMS) which aim at facilitating national and international fibre optic connectivity (Kenya's ICT industry paper, 2005)

The key driver of Short Message Services (SMS) being widely used for commercial and social information dissemination is its low cost. In Kenya, The volume of Short Message Services (SMS) has drastically increased since introduction of the service by the Mobile operators (CCK Annual report, 2006/2007)

Consumers are also affected by high tariffs imposed for inter-mobile traffic. According to Kenya's ICT paper (2005), an interconnection arrangement among operators is basically decided between two parties who are exchanging traffic through their networks. CCK licensing policy requires that network operators negotiate

commercial charges for traffic exchange between operators that are not discriminatory. Should they fail to agree then CCK would intervene. Traffic between providers has been low due to the high tariffs imposed for inter-mobile traffic. This has forced consumers to subscribe to both networks to avoid inter-mobile calling. It is unfortunate that in Kenya, there is no regulatory response to remove this barrier to inter-mobile traffic, which is anti-competitive by influencing traffic flow.

Availability of services as a parameter describes growth in quantity of lines and services and bandwidth available to the consumers for business or personal use. It seeks to express the efforts and results of operators to supply 'adequate' services to the consumers. In Kenya, The fast growth in cellular has occasionally caused congestion, a factor that irritated customers and calls for the attention of the regulator. This fast growth against a stagnant economy is to mop up latent demand not served during the monopoly era. Unlike the cellular services, the fixed line services performed poorly. Internet growth was very rapid with the fast growth of ISPs, user base, and the cyber cafés. A great challenge is the cost of bandwidth, its quality and a competitive access to the local loop. Licensing of data operators will also provide much needed competitive supply of the local loop options (Kenya's ICT industry paper, 2005)

Quality of service is an important aspect to consumers. This contributes greatly to customer satisfaction. According to Kenya ICT industry paper (2005), one of the key objectives to the telecommunication sector reform was to improve quality of services to the consumers. This was imperative given the high failure rate of the telecommunications services before the advent of the reform. The regulator has improved quality of service obligation to ensure that consumers get improved services. To date, consumers have reported quality of service problems in all services but with the increased choice of services the impact of service failure has reduced. According to CCK annual report (2006/2007), it has acquired quality of service monitoring system to enable them to independently verify the quality of the services offered by the cellular mobile operators.

Accessibility is a parameter which describes the degree with which the service is accessible by as many people as possible. In Kenya, The urban areas have reasonable

accessibility to all types of services with high rates for penetration. In the rural areas, small manual exchanges are providing service but with the mobile coverage, their usage is gradually reducing. The mobile operators have extended their services to the commercially viable centers with limited coverage to marginal areas. Access to telephone has improved except for sparsely populated areas (Kenya's ICT industry paper, 2005).

According to CCK's annual report (2006/2007), the Commission has continued to maintain its focus on improving access and affordability of communications services in Kenya through the universal service programme. Further, a Geographic Information System (GIS) was set up, a tool that will help the Commission and service providers define access gaps and formulate suitable intervention mechanisms. The Commission has stepped up efforts to empower consumers with the requisite information to assist them in making informed purchase and usage decisions. Additionally, the Commission developed a service charter that spells out the minimum standards that clients should expect when dealing with and receiving services from CCK (CCK annual report, 2006/2007)

2.3.1 Telecommunication sub-sector in Kenya

According to Kenya's ICT industry paper (2005), a telecommunications policy statement was issued in 1997 that set out the government vision on telecommunications development to the year 2015. The challenge at that time was to transform the existing policy structure from one designed for a monopoly to a policy managing a liberalized telecommunication market. The government separated the functions and management of the sector. This clarified roles for the policy, regulatory and operational responsibilities with the government and specifically the ministry of information and Communications retaining policy guidance (Kenya's ICT industry paper, 2005)

According to Mureithi (1999-2003), the government launched the telecommunications sector reform in 1999 and introduced competition in certain market segments, while at the same time disbanding KP&TC. The cornerstone of the sector reform was a new telecommunication policy and telecommunication laws. The

reform had three major components namely: Separation of roles in sector management (policy, regulation), creation of a multiple operator environment (liberalization) and reduction and eventually elimination of government operational role in the telecommunications sector-privatization. KP&TC was consequently split into three legal entities, namely Telkom Kenya Limited, (TELKOM), Postal Corporation of Kenya (POSTA) and the Communications Commission of Kenya (CCK). The Communications Commission of Kenya was made the regulatory body for the sector and was established by the Kenya Communication Act 1998. The National Communications Secretariat was also formed under the Kenya Communications Act 1998 to serve as the policy advisory arm of the Government on all matters pertaining to the info-communications sector

Since the launch of the telecommunication sector reform, Kenya has made great strides in the expansion of telecommunications services. Between 1999 to-date, the government has implemented policy reforms that have resulted in a number of structural changes. The main structural changes are – redefinition and clarification of roles for policymaking, market Kenya's ICT Industry, regulation, dispute resolution and operation of services among multiple players. In the operation of services, multiple operators are competing in various market segments based on a policy of the private sector operating in a competitive environment that also safeguards consumer interest (Kenya's ICT industry paper, 2005)

While the growth of the ICT sector in Kenya has been significantly influenced by global trends, it can be evaluated in terms of number of fixed and mobile telephone lines, the teledensity, the number of computers and services, Internet Service Providers (ISPs), the number of Internet users, market share of each one of them.

Telkom Kenya is today the only fixed national operator and arrangements are underway to licence a second national operator (SNO). The Government has liberalized the mobile cellular market and currently there are four mobile cellular operators, Safaricom Ltd and Celtel International (now Zain), Econet Wireless and Telkom Kenya.

According to the ICT industry paper (2005), one of the immediate goals of the telecommunications sector reform was to increase telecommunication supply. The

immediate result of the reform has been witnessed in high growth in all areas that were open for competition. Low growth was noted in the areas without competition notably in the provision of fixed line services.

According to the CCK annual report (2006/2007), the licence categories available are as follows: National Fixed Line Operator, Mobile Operators, Public Data Network Operators (PDNOs), Internet Backbone and Gateway Services (IB & GO), Commercial VSAT Operators (CVO), Local Loop Operators (LLO) and Internet Service Providers (ISP). As a step towards unified licensing CCK completed the process of merging international data related licences into the Data Carrier Network Operator (DCNO) licence and invited the licensed Commercial VSAT Operators (CVOs) and Internet Backbone and Gateway Operators (IBGOs) to apply for the licence.

The market segments with competition experienced high growth. Cellular for example which had two operators licensed - Safaricom Ltd and Celtel International (now Zain), both recorded very high growth rates. Econet wireless and Telkom Kenya Ltd have joined the competitive cellular market. Competition in cellular telecommunication commenced in 2000 with the launch of a second mobile operator. This growth in cellular quickly overtook fixed lines with fixed lines now comprising a small market segment. The reasons for the slow uptake of fixed lines is the increasing consumer choice to cellular over fixed lines due to reduced connection fee, increased coverage and packaging of services. Other reasons are lack of additional investments to expand the access network to the consumer and vandalism of access network. (Kenya's ICT industry paper, 2005)

According to CCK's Annual report (2005), at the close of the year 2006/2007 the telecommunications sector had registered over 9.6 million subscribers up from 6.6 million in the previous year, with mobile users accounting for 96%. The fixed network, which had for a long time experienced stagnation, posted positive growth during the last quarter of the year 2006/2007 mainly due to the introduction of CDMA fixed wireless. Out of the total 339,229 fixed telephone subscribers fixed wireless subscribers accounted for 84,104. As a result, the country's fixed line tele-density increased from 0.9 per cent in the 2005/6 period to 1.0 in the year 2006/2007. The

mobile telecommunications sub-sector by and large maintained the lead with a combined subscriber base of 9.3 million, up from 6.4 in the previous year. The mobile market's total annual turnover increased to Ksh.58 billion up from Ksh.45 billion in the 2005/6 period. Considering the mobile subscriber growth, the cumulative tele-density in the country rose to 27.9 in 2006/07 up from 19.93 recorded in 2005/06 (CCK Annual report, 2006/2007)

The sector has recorded surplus for both the fixed line operator and cellular operators. The fixed line operator however has been experiencing increased operational costs without a corresponding increase in revenue generated. This can be attributed to competition from cellular operators, inability to upgrade to new services and lack of funding. Cellular operators have recorded fast revenue growth. The impact of competition in cellular services has resulted in faster expansion and growth. The government expects that competition in basic voice through the licensing of the Second Network Operator (SNO) will have the same impact of network expansion.

In the Internet sector, the market is fully liberalized. There is growth in this sector although this growth is constrained by Poor underlying infrastructure. The liberalization resulted in many potential operators seeking licenses. The low penetration and absorption of Internet services has remained one of the main challenges of the ICT sector in the country. According to the internet market study undertaken by CCK during the year 2006/2007, Kenya has an estimated 2.7 million Internet users. The study showed that the Internet was the least accessible, affordable and absorbed compared to other ICT services. The Internet sub-sector has shown some growth particularly in the international bandwidth capacity (CCK Annual report, 2006/2007)

2.4 Wireless communication

Wireless communication is the transfer of information over a distance without the use of electrical conductors. Wireless operations permits services, such as long range communications, that are impossible or impractical to implement with the use of wires. The term is commonly used in the telecommunications industry to refer to telecommunications systems which use some form of energy to transfer information

without the use of wires. Information is transferred in this manner over both short and long distances.

Wireless communication may be via radio frequency communication, microwave communication or infrared short-range communication. The term "wireless" should not be confused with the term "cordless", which is generally used to refer to powered electrical or electronic devices that are able to operate from a portable power source without any cable or cord to limit the mobility of the cordless device through a connection to the mains power supply. The term "wireless" now used to describe modern wireless connections such as in cellular networks and wireless broadband Internet.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

This was qualitative research which relied on qualitative data i.e. the data collected was mainly ideas rather than themes. Qualitative research allows an in-depth exploration of issues. This design is most suited for generating hypotheses rather than testing hypotheses. Qualitative research is concerned with qualitative phenomenon i.e. phenomena relating to or involving quality or kind (Rajendar, 2009)

3.2 Data collection

Method of data collection was a case study. A case study is an in-depth investigation of an individual, group, institution or phenomenon. Most case studies are based on the premise that a case can be located that is typical of many case studies (Mugenda, 2003).

A case can be most representative if it is chosen judgmentally, rather than randomly. Telkom Kenya Ltd was the case study. Primary data was collected by way of personal interviews. In-depth interviews were conducted on 30 staff of Telkom Kenya Ltd. These were functional heads and managers in the Technical, Business Marketing and Wholesale Departments.

Secondary data was also used to give background information that could not be available in a typical study. This was internal data of the organization which included accounting records, sales records and annual reports. This data was used to determine customer levels and financial position of the company as far as Wireless Communication business was concerned.

3.3 Data analysis

Content rather than statistical analysis of data was done. The content of data and information was what was important in this study and not the numbers associated with

the factors. According to Mugenda (2003), content analysis is a systematic qualitative description of the composition of the objects or materials of the study.

CHAPTER FOUR: DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter shows the data analysis through discussions of the findings. This was qualitative data which was analyzed using content analysis and presented as narratives. The researcher administered 30 in-depth interviews on functional heads and managers of Telkom Kenya Ltd

4.2 General Strategies of Telkom Kenya Ltd

Telkom Kenya Ltd is the nation's original telecommunications operator. The company has been undergoing a lot of restructuring so as to position itself well in the competitive telecommunications market. It unveiled a completely new look. The changes the company made are fundamental and far reaching with unprecedented investment in operations and a brand new approach to the way of doing business. This strategy was to have customers and partners look forward to a refreshing and dynamic experience with Telkom Kenya's Services.

In December 2007, Telkom Kenya managed to successfully secure a partnership with world renowned telecommunications operator France Telecom who, seeing huge potential in the company and the market, also committed to a 51% share. Telkom Kenya partnership with France Telecom group has enabled them make unprecedented investments into their operations helping the company deliver better services for customers. This strategy of partnership is expected to open wide perspectives for Telkom Kenya, and place it as a major player in the Kenya market. New services, technologies, and a worldwide presence are some of the strong areas of support that Telkom Kenya will receive from its partner.

One of the immediate strategies of the company is to offer integrated services. These are Orange mobile, Orange fixed plus, Orange broadband and Telkom fixed services. This places the company in a unique position of not having any direct competitors, however it rightly competes with single service providers.

Telkom Kenya Ltd strives to offer world class services to Kenyans through investment in technology, infrastructure, customer service and staff. One of the major projects being carried out by the company to improve technology and infrastructure is to upgrade its backbone and metropolitan transmission networks. The backbone transmission network is the Mombasa-Nairobi- Malaba links while the metropolitan networks are in Nairobi and Mombasa. The project's objective is to increase transmission capacities using new technologies. The media being used is the optic fiber cables. Majority of other telecommunication providers are expected to lease transmission capacities from Telkom Kenya Ltd.

Telkom Kenya Ltd is investing in its staff for better performance of the company. Not only have current staff undergone re-training, the company is now investing heavily in recruitment of dynamic, aspiring individuals to further enhance its new approach

The biggest anticipated change however is in the customer experience which Telkom Kenya has made a priority. Telkom Kenya carries a lot of promotions of its services as a key strategy to gain competitive edge over other operators. Promotional objectives are to acquire new customers, increase revenues, gain loyalty of existing customers and to gain competitive advantage. The promotional mix of the company includes advertising in the local dailies, having posters and flyers in all customer experience centers, distribution of flyers in all the major roundabouts and high residential areas during peak hours, radio advertisements, road shows and education campaign on its services such as internet. Some of the selling proposition that the company considers to be unique in the market are service solution for all the market segments, free set up cost, most affordable equipment, bonuses given to customers on recharging their accounts and extension of validity of recharge cards.

Other than promotions of its services, Telkom Kenya Ltd has put in place ways of measuring customer satisfaction. Road shows interviews on satisfaction are conducted on customers. Similarly a record on number and nature of customer complains are taken and compared to the total customers for every service. Customer satisfaction index is determined. This will help the company know generally if customers are okay with its services and the improvements the company needs to put in place for better services. During the launch of its new look, Telkom Kenya Ltd invited Kenyans to give their feedback by calling for free its integrated customer care number, 100. The

company welcomed honest and accurate feedback. This feedback is used to fine tune the network and deliver more to Kenyans.

Telkom Kenya Ltd has undertaken several social responsibilities which include launching the Orange foundation in Kenya to direct and manage all its corporate philanthropy initiatives. Orange corporate philanthropy is a term to describe a not for profit involvement beyond the business for the benefit of the local communities. The aim of the Orange foundation is to help people to communicate and build links with each other, so they can better integrate into society and live better lives. Telkom Kenya Ltd officially launched its anti-corruption campaign in June 2008 with the support of the entire staff. They are committed to fight corruption whenever it arises in order to enhance the quality of service they deliver to their customers. Such a campaign enables the company to protect its reputation and to foster a culture of pride and integrity within Telkom Kenya.

Telkom Kenya Ltd has embraced strategic values as it strives to offer better services to its customers. These are friendly, straight forward, honest, refreshing and dynamic. These means customers are treated friendly, the information on services are communicated to the customers as it is i.e. straight forward. The company is truthful to its customers, offers refreshing services and those that are changing with the times.

4.3 Strategies for CDMA Wireless Communication

The main Wireless Communication in Telkom Kenya is CDMA fixed wireless. This has been branded Orange fixed plus, formerly called Telkom Wireless. This service was rolled in the market in the year 2005. The technology of this service is Code Division Multiplexing Access (CDMA) which is different from that of mobile communication which uses GSM (Global System for Mobile). Code division multiple access (CDMA) is a channel access method utilized by various radio communication technologies.

Telkom Wireless was rolled out as a last mile solution. Mobility was an added advantage. At the time, Telkom Kenya Ltd offered services only on fixed line. Many potential customers could not be accessed due to lack of access network at the last mile to the customers. In cases where there was access network, the network was poor

and prone to frequent vandalism. Vandalism therefore caused frequent down times of services. Introduction of Wireless Communication enabled the company get many new active customers to its network, reduce down times of its services because of reduced vandalism.

One of the main disadvantages of fixed network is that it is costly, involving, difficult and time consuming to install. It is easier and cheaper to install wireless network than fixed Network. Wireless network has shorter rollout lead times. It doesn't involve acquiring of right of way to do civil works from various authorities such as ministry of roads, city Council, County Councils etc, no digging is required and no laying of cables. These are some of the activities that are time consuming. Wireless network involves installation of base stations for coverage of signal. This strength of Wireless communication made Telkom Kenya strategize to develop the service to the world class standards they believe Kenyans deserve. This is by making the service as accessible as possible to all regions of the country. The more accessible the service is to customers the more customers can be connected.

Other than increasing accessibility of the service, Telkom Kenya strategy is to ensure good quality of service or good signal strength. This is done by continuous optimization of the network by increasing base station sites and doing drive tests to identify black spots. Modern network operation center is also being set up to be able to monitor the performance of the network.

Similarly it is involving and takes a lot of time for customers to get connected on fixed network. Customers of Telkom Kenya were dissatisfied with the process of acquiring a line and getting connected. Introduction of wireless communication was to improve on lead times of connections. All one requires to be connected is to buy customer equipment, get a RUIM (Removable User Identity Module) card which is for CDMA and a recharge card to start using the service.

Services offered on CDMA network were key issues that the company was interested in. Voice and Short Message service (SMS) were the immediate services offered. The company has upgraded the network for new services such as data (internet) on EV-DO. Evolution-Data Optimized or Evolution-Data, abbreviated as EV-DO or EVDO, is a telecommunications standard for the wireless transmission of data through radio

signals, typically for broadband Internet access. Internet can therefore be accessed anywhere in the country where there is coverage of the network.

CDMA Network was considered unique in the market unlike GSM mobile services that is being offered by established operators like Safaricom and Zain. Competition is generally lower in the market for CDMA. It is for this reason that Telkom Kenya has positioned itself in offering services through this network. CDMA network is also considered to offer higher bandwidth of data transmission than GSM networks.

The other strategy of Telkom Kenya gaining and retaining customers as much as possible is by making the services affordable. It has been able to do this by developing unique selling propositions such as introduction of free set up cost particularly for data connection, introduction of affordable equipment, giving customers bonuses when they recharge their accounts and extension of validity of recharge cards. The company has also ensured flexible recharging of calls and data connections through modern switching and billing systems. In CDMA network customers' calls are charged on per second billing, this is unlike fixed network where per second billing has not been achieved.

4.4 Challenges on CDMA Wireless Communication

One of the main challenges faced by Telkom Kenya Ltd is co-location and site acquisition for base transceiver station (BTS) installation. A base transceiver station (BTS) is a piece of equipment that facilitates wireless communication between user equipment and a network. The sites were expensive and sometimes not available at all. This raised the capital expenditure. At the same time, sites selection was affected by politics. This is because influential individuals pushed for their home areas to be first selected for roll out other than considering business oriented areas.

Geographical factors such as the nature of terrain affect the signal strength. The coverage of the signal cannot be uniform in hilly areas. Some parts would experience low signal and therefore poor service. To resolve this problem, many base stations would have to be installed so as to improve the coverage of the network. This raises the capital expenditure. Similarly weather conditions affect the signal and therefore affecting the quality and availability of service.

At the time of roll out, the network quality was poor due to a lot of call drops and echoes. The echoes experienced were due to lack of provision of echo cancellers in some equipment. However, the experts have been trying to resolve these problems to improve on quality of service and availability.

The product knowledge on CDMA services has been low due to low deployment of the technology in the market. This has led to expensive handsets due to low supply. Varied types of handsets are also unavailable. This is also contributed by low competition. Similarly there is lack of repair centers for the handsets.

Wireless Communication has one main challenge. Bandwidths that can be achieved through this kind of network are far much lower than through the fixed networks. This is particularly for data transmission and internet access. Fixed networks use media such as fiber and copper to transmit much higher bandwidths. It is for this reason that services offered though wireless are not easily sold to small business firms and corporate customers. At the same time, wireless line has no fixed address i.e. there is no physical address to identify a customer. This has also contributed to the low sale to small business firms and corporate customers.

CDMA network also experienced regulatory challenges during roll out. This included limited roaming, numbering and spectrum management. Roaming of a CDMA line is limited to a certain region. However at the beginning, roaming was not restricted. Restriction was later made for customers to roam within a Base Station Controller (BSC). The base station controller (BSC) provides the intelligence behind the Base Transceiver Stations (BTS). There are six base station controllers in the country: Nairobi, Mombasa, Nyeri, Nakuru, Eldoret and Kisumu. Customers of CDMA can roam only within their regions meaning mobility is restricted. Numbering is dependent on the extent of roaming. At the beginning, customers were given numbers with the Nairobi code, 020. This is when mobility was not restricted. Currently, numbers are allocated depending on the customer region within which they are allowed to roam. This has created confusion in numbering.

Interconnection with other telecommunication operators was yet another challenge. This was particularly for short message services. This service could not be terminated

at networks of these operators. The operators were initially reluctant to do configuration on relevant parameters in their network for termination of these services. This was mainly due to the threat of new entrants in the market. This problem was later resolved and now interconnection of the services to any network is workable.

Telkom Kenya Ltd for a long time has had well trained work force that are conversant with most telecommunication technologies. High turn over of this skilled labour has been one of the main challenges of the company. Most of these persons go to other telecommunication operators who are Telkom Kenya's competitors.

Other challenges faced include few distribution channels of the service, lack of recharge vouchers and poor after sales services. However these challenges have been overcome with time with introduction of more distribution channels with enough recharge vouchers.

4.5 Strategies for GSM Mobile Communication

GSM (Global System for Mobile Communication) is another Wireless Communication offered by Telkom Kenya. This has been branded Orange mobile. This service was rolled in the Market in the year 2008. The technology of this service is different from CDMA Wireless.

The services on GSM are well known in the Kenyan market. GSM (Global System for Mobile communications) is also the most popular standard for mobile phones in the world. It therefore took Telkom Kenya less effort to explain the services on GSM. The company has had to develop strategies of gaining more advantage than the already very competitive operators in the GSM Market.

One of the key strengths of GSM that was considered by Telkom Kenya is the mobility of the service. Customers are able to roam all around the country. This parameter is valued by customers and therefore easy to sell the service. In cases where a company develops contracts with service operators in other countries on roaming, then its customers would roam to these countries.

One of the main strategies that Telkom Kenya Ltd put in Place for its GSM Service is to make the service as much affordable as possible. Very appealing offers were introduced when orange Mobile (GSM) was rolled out. All Orange mobile to Orange mobile voice calls were Ksh1 per minute and all national SMSs to any network were Ksh 1. This was for a period of two months. There were no set up call charges and tariff changes involved. The Ksh 1 offer was available to all Orange mobile customers.

Telkom Kenya Ltd is keen to develop the GSM service to the world class standard. The company considers the best way to achieve this standard is to make the service as accessible as possible and to listen to the very people they want to serve. Wireless network involves installation of Base Transceiver Stations (BTS) for coverage of signal. For the service to be accessible to many people, then more BTS must be installed for bigger coverage of the network. One main advantage of GSM is that it has shorter roll out lead times as compared to installation of cables for the fixed network. The more accessible the service is to customers the more customers can be connected.

Telkom Kenya strategy is also determined to ensure good quality of service. This is done by continuous optimization of the network by increasing base station sites (BTS) and doing drive tests to identify black spots. Modern network operation center is also being set up to be able to monitor the performance of the network.

Lead times for connection is quite shorter compared to that of the fixed line. All one requires to be connected is to buy a handset, get a SIM (Subscriber Identity Module) card which is for Orange mobile and a recharge card to start using the service. The services that are offered on orange mobile are voice, short message service (SMS) Orange mobile and multi media services such as sending pictures and video clips.

Unlike CDMA network where handsets are expensive, GSM handsets are cheaper and varied types are available. This is mainly because of high demand for the handsets. The handsets are common and can be used across all GSM networks.

4.6 Challenges on GSM Mobile Communication

One of the main challenges Telkom Kenya faced during roll out of GSM services is the stiff competition in this market. It entered the market where there are well established service operators such as Safaricom Ltd and Zain. The challenge is to attract customers to its network yet there are mature operators in the market.

Co-location and site acquisition for base transceiver station (BTS) installation is yet another challenge. The sites are expensive and sometimes not available at all. This raises the capital expenditure and makes the process of rollout slower. At the same time more BTS are required for GSM network than for CDMA network for the same coverage area. This means it is more costly to roll out GSM than CDMA.

Geographical factors such as the nature of terrain affect the signal strength of GSM. The coverage of the signal cannot be uniform in hilly areas. Some parts would experience low signal and therefore poor service. To resolve this problem, many base stations would have to be installed so as to improve the coverage of the network. Similarly weather conditions affect the signal and therefore affecting the quality and availability of service.

There has also been a lot of call drops and echoes in the GSM network. The echoes experienced are due to lack of provision of proper echo cancellers. However, plans are under way to ensure that the quality of the network is good through complete reduction of these echoes, and call drops.

Other challenges faced are high turn over of skilled labour, fewer distribution channels of the GSM service, lack of recharge vouchers and poor after sales services.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter outlines summary and conclusions of this study. The objective of this study was to determine strategies for roll out and challenges on Wireless Communication.

5.2 Summary of the findings

The strategies of Wireless communication were mainly centered on improving last mile access, accessibility, quality of the service, availability, mobility, affordability, short lead times of customer connections, advertisements and promotions. The challenges were on co-location and site acquisition of base stations, geographical factors affecting signal strength, poor quality of service, low transmission bandwidths, unavailability of physical address of subscriber lines, interconnection agreements with other operators, high turnover of skilled labour and poor distribution channels. The challenges that were particular to the CDMA network were low product knowledge and regulatory issues such as limited roaming and Numbering. As for the GSM network the main challenge was stiff competition in the market.

Table 1 gives a summary of the findings of general strategies of Telkom Kenya Ltd.

Table 1

No.	Strategy category	Reason for the strategy
1.	Launch of Telkom Kenya new look	For all stakeholders to view the company a new
2	Partnership with France Telkom	For investments, wide perspectives, new services & world wide presence
3	Offering of integrated services	Places the company in unique position
4	Investment in Technology and Infrastructure	More services and increase transmission capacities
5	Investment in Staff	Better performance
6	Promotional mix	Acquire & gain loyalty of customers
7	Measure of Customer satisfaction	To determine any improvements required
8	Social Responsibility	Protect company's reputation and foster integrity
9	Company's strategic values	Guides ways of operation

Table 2 gives a summary of findings of strategies for rolling out Wireless Communication

Table 2

No.	Strategy category	Reason for the strategy
1	Last mile solution	To better access network at the last mile
2	Accessibility of the service	To connect as many customers as possible
3	Shorter rollout lead times	Faster acquisition of customers
4	Quality of service/Availability	To improve on reliability and customer satisfaction
5	Shorter lead times of Customer connections	Improve customer satisfaction and connect more customers
6	Mobility	Improve on convenience to customers
7	Uniqueness of the service (mainly CDMA)	Places the company in unique position
8	Affordability	Gives company competitive edge
9	Integrated Services	Places the company in unique position

Table 3 gives a summary of findings of challenges of rolling out Wireless Communication

Table 3

No	Challenge	Description	Probable ways of handling the challenge
1	Co-location and site acquisition of base stations	Sites are expensive and sometimes not available at all	Search for less expensive sites
2	Geographical factors affecting signal strength	Signal strength not uniform in hilly areas	Installation of many base stations
3	Poor Quality of service	Mainly due to call drops and echoes	Provision of good echo cancellers and testing the network
4	Low product knowledge (mainly CDMA)	Due to low deployment of the technology in the market	Extensive advertisement
5	Low capacities/bandwidths of transmission	This is a limitation of the wireless network	Use fixed networks where high bandwidths required
6	Lack of physical address to identify a subscriber	The nature of wireless network is that it is mobile	Use fixed network when a physical address is required
7	Regulatory challenges	This include numbering and limited roaming particularly for CDMA network	Harmonize all numbers of the same network accordingly. Use GSM network when full

			roaming is required.
8	Interconnection agreements with other operators	Mainly due to conflicts in termination of some services to other networks	Intervention of the regulator (CCK) required
9	High turn over of skilled Labor	Due to availability of better offers from other companies	Introduce attractive and competitive packages for staff
10	Competition (Mainly in the GSM market)	Due to Established operators in the GSM Market	Competitive marketing strategies required
11	Few Distribution channels	Inconveniences to existing customers and reduces chances of new acquisitions	Increase distribution channels

5.3 Conclusions and implications

The strategies applied by Telkom Kenya Ltd on Wireless Communication during roll out of the services were working and placed the company in a better position in the market. The strategies such as mobility of the service, affordability, short lead times for connections and accessibility increased the good response of customers towards these services. The number of subscriber base for CDMA network almost doubled that of fixed network and almost tripled for GSM Network within short periods. It is therefore concluded that the response for these services was good. However, the challenges that came with wireless communication such as poor quality of service due to echoes and call drops, low transmission bandwidths and poor distribution channels contributed to reduced customer satisfaction. This has led to reduced response for the services. This means reduction of active customers and loss of some customers to other telecommunication operators.

Table 4 summarizes the outcome of the strategies employed and the challenges experienced by Telkom Kenya Ltd.

Table 4

No.	Strategies/Challenges	Outcome
1.	Strategies: affordability, Short lead time of connections, accessibility, mobility, better access network at the last mile	-Increase in subscriber base of the company -Reduction of customer complains -Improved customer satisfaction -Increase in revenues

	and availability of integrated services	
2	Challenges: unsatisfactory quality of service, low transmission bandwidths, few distribution channels, low knowledge of services and high turn over of skilled labour	<ul style="list-style-type: none"> -Loss of existing customers to other operators -Reduction of active customers -low acquisition rate of new customers -Reduced company performance

5.4 Limitations of the study

Time for interview sessions with the functional heads and the managers of Telkom Kenya Ltd was the main limitation of the study. There were a lot of failed appointments and sometimes short interview sessions.

5.5 Suggestions for further research

- (i) Comparative research should be carried out to determine the advantages and disadvantages of CDMA and GSM Wireless Technologies.
- (ii) Research should be done to determine strategies and challenges for rolling out fixed line Communication

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REFERENCES

Ansoff H. & McDonnell F. (1990). **Implanting strategic management**. 2nd edition. Hertfordshire-Europe: Prentice Hall

Chepkonga Samuel (2002). **Helping Kenya Extend Access to ICTs to Rural Areas**. Nairobi: Communication Commission of Kenya

Communications Commission of Kenya (CCK) **Annual report (2006/2007)**

Etta Florence (2003). **Kenya National ICT Policy Development**. Nairobi: Ministry of Planning and National Development, Kenya

Johnson G. Scholes K & Whittington R. (2002). **Exploring corporate strategy**. 6th edition. New Delhi: FT- Prentice Hall

Johnson G. Scholes K & Whittington R. (2005). **Exploring corporate strategy**. 7th edition. New Delhi: FT- Prentice Hall

Kenya ICT Board (2008). <http://www.ict.go.ke> [viewed 18/09/2008]

Kenya ICT Board (2009). <http://www.ict.go.ke> [viewed 27/02/2009]

Kenya's ICT industry (2005) **Kenya's information & communications Technology sector 2005**. <http://www.ictparliament.org> [viewed 05/05/2008]

Kumar Rajendar C. (2009). **Research methodology**. New Delhi: APH Publishing Corporation

Morris Chris (2004). **First Mile First Inch**. Pretoria-South Africa: Council for Scientific and Industrial Research

Morris Chris (2008). **Wireless Africa**. Pretoria-South Africa: Council for Scientific and Industrial Research

Mugenda M.O. and Mugenda G. A. (2003). **Research Methods: Quantitative and Qualitative Approaches**. Nairobi -Kenya: Acts Press

Muriuki Mureithi (1999-2003). **Kenya telecommunications sector performance review**. Nairobi – Kenya: Summit Strategies Ltd.

Oxford University (1994). **The Pocket oxford dictionary**. Walton street: Oxford University press

Pierce, J.A. & Robinson, R.B (2005).**Strategic management: strategy formulation, implementation and control**, 9th Edition. Homewood - Illinois: Irwin

Porter M.E (1985). **Competitive Advantage**. New York: The Free press

Porter M.E (1980). **Competitive strategy**. New York: The Free press

Telkom Kenya Ltd report (2009). <http://www.telkom.co.ke> [viewed 03/03/2009]

Wikipedia, the free encyclopedia (2008). **ICT**. <http://wikipedia.org> [viewed 2/05/2008]

Wikipedia, the free encyclopedia (2009). **Telecommunication**. <http://wikipedia.org> [viewed 02/03/2009]

Wikipedia, the free encyclopedia (2008). **Wireless Technologies**. <http://wikipedia.org> [viewed 2/05/2008]

APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

University of Nairobi,
School of Business,
P.O Box 30197,
Nairobi.

Dear Respondent,

RE: COLLECTION OF RESEARCH DATA

I am a postgraduate student in the above mentioned university undertaking a management research project on '**Strategies and Challenges of Rolling out Wireless Communication in the ICT Sector in Kenya**'

You have been selected to form part of this study. You are kindly requested to assist in data collection by responding to the questions in the accompanying Questionnaire. The information provided will exclusively be used for academic purposes only and will be treated with utmost confidence.

You will be provided with a copy of the final report upon request.

Yours faithfully,

Susan Kendagor.

APPENDIX II: QUESTIONNAIRE

'Strategies and Challenges of Rolling out Wireless Communication in the ICT Sector in Kenya'

1. Name (optional).....
2. Address (Optional).....
3. Department (e.g. marketing, Technical, IT, Sales etc)
.....
4. When were the following services of your company rolled out in the market?
 - (i) CDMA fixed Wireless
 - (ii) Fixed line.....
 - (iii) GSM Mobile service.....
5. How was the response of customers as soon as the services were launched?
 - (i) CDMA fixed Wireless
 -
 - (ii) Fixed line.....
 -
 - (iii) GSM Mobile service.....
 -
6. How is the current response of customers on these services?
 - (i) CDMA fixed Wireless
 -
 - (ii) Fixed line.....
 -
 - (iii) GSM Mobile service.....
 -
7. What are the challenges that you faced during the roll out of:
 - (i) CDMA fixed Wireless
 -
 -
 -
 - (ii) Fixed line.....
 -
 -
 -
 - (iii) GSM Mobile service.....
 -
 -
 -

8. Which services are offered on
- (i) CDMA fixed Wireless
 -
 - (ii) Fixed line.....
 -
 - (iii) GSM Mobile service.....
 -
9. Do you educate customers about your services?
- (a) Yes (b) No
10. How do you get your customers?
-
11. What is the average number of connections per day for:
- (i) CDMA fixed Wireless
 - (ii) Fixed line.....
 - (iii) GSM Mobile service.....
12. What is the current total number of subscribers on:
- (i) CDMA fixed Wireless
 - (ii) Fixed line.....
 - (iii) GSM Mobile service.....
13. What is the average number of users of your services per 1000 persons for:
- (i) CDMA fixed Wireless
 - (ii) Fixed line.....
 - (iii) GSM Mobile service.....
14. What is the average range of total revenue (in Ksh) per month for
- (i) CDMA fixed Wireless.....
 -
 - (ii) Fixed line.....
 -
 - (iii) GSM Mobile service
 -
15. How many operators in the ICT sector are offering the following service
- (i) CDMA fixed Wireless
 - (ii) Fixed line.....
 - (iii) GSM Mobile service.....
16. How is quality of service for
- (i) CDMA fixed Wireless
 -
 - (ii) Fixed line
 -
 - (iii) GSM Mobile service
 -

17. How is accessibility of your services in

(a) Rural areas for:

- (i) CDMA fixed Wireless.....
.....
- (ii) Fixed line.....
.....
- (iii) GSM Mobile service.....
.....

(b) Urban areas for:

- (i) CDMA fixed Wireless.....
.....
- (ii) Fixed line.....
.....
- (iii) GSM Mobile service.....
.....

18. How is availability of service for

- (i) CDMA fixed Wireless.....
.....
- (ii) Fixed line.....
.....
- (iii) GSM Mobile service.....
.....

19. Is there range of tariff packages to suit different categories of users for:

- (i) CDMA fixed Wireless (a) Yes (b) No
- (ii) Fixed line (a) Yes (b) No
- (iii) GSM Mobile service (a) Yes (b) No

20. Is there flexibility in charging

- (a) Yes (b) No

21. What is the charging rate for:

- (i) CDMA fixed Wireless.....
.....
- (ii) Fixed line.....
.....
- (iii) GSM Mobile service.....
.....

22. Why do you have difference in charging rates for the different services (if there is difference)

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

23. Is there availability of different handsets to suit different customer needs for

(i) CDMA fixed Wireless (a) Yes (b) No

(ii) Fixed line (a) Yes (b) No

(iii) GSM Mobile service (a) Yes (b) No

24. Are the prices varied for the different handsets for:

(i) CDMA fixed Wireless (a) Yes (b) No

(ii) Fixed line (a) Yes (b) No

(iii) GSM Mobile service (a) Yes (b) No

25. What are the major customer complains on:

(i) CDMA fixed Wireless

.....

.....

(iii) Fixed line

.....

.....

(iii) GSM Mobile service.....

.....

.....

.....

26. How do you measure customer satisfaction.

.....

.....

27. What do you consider to be strengths of the services as far as your business is concerned

(i) CDMA fixed Wireless

.....

.....

.....

(ii) Fixed line.....

.....

.....

.....

(iv) GSM Mobile service

.....

.....

28. What do you consider to be weaknesses of the services as far as your business is concerned

(i) CDMA fixed Wireless

(ii) Fixed line.....

(iii) GSM Mobile service

29. Does politics influence your business (a) Yes (b) No

30. What other external factors affect your business

.....

APPENDIX III: ACRONYMS

BSC- Base Station Controller

BTS- Base Transceiver Station

CCK Communications commission of Kenya

CDMA Code division multiple access

CVO Commercial VSAT Operators

DCNO Data Carrier Network Operators

EV_DO Evolution-Data Optimized

FONN Fiber Optic National Network

GDP Gross Domestic product

GIS Geographic Information system

GSM Global System for Mobile

IB & GO Internet Backbone and gateway Operators

ICT Information and Communications Technology

IT Information Technology

ISP Internet Service Provider

KP&TC Kenya Posts and Telecommunications Corporation

LLO Local Loop Operators

NGO Non-Governmental Organizations

PDNO Public Data Network Operators

RUIM Removable User Identity Module

SIM Subscriber Identity Module

SMS Short Message Services

SNO Second national operator

TEAMS The East Africa Marine Systems

TKL Telkom Kenya Ltd

VSAT Very small aperture terminal