STRATEGIC RESPONSE BY AFSAT COMMUNICATIONS KENYA LTD TO THE ARRIVAL OF THE SUBMARINE FIBRE OPTIC INTERNET CABLE IN EAST AFRICA

BY

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DECLARATION

This management research project is my original work and has not been presented to any college or institution for any degree.

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D61/P/8451/2003

Signed: ..... Date: 15-11-2016

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

Dr. John Yabs

Signed: ..... Date: 15-11-2016

DEDICATION

My dedication goes to my wife, Sharon for her unwavering understanding and support, and my children Sara, and Roy for allowing me to use part of my family time to carry out the study.

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ABBREVIATIONS

CCK	Communications Commission of Kenya
ACAL	Afsat Communications Africa Limited or Afsat Group
ACKL	Afsat Communications Kenya Limited
AFOL	Africaonline
VSAT	Very Small Aperture Terminal
ARPU	Average Revenue per User
Kshs	Kenya Shillings
US$	United States Dollars
CVNO	Commercial VSAT Network Operators License
PDNO	Public Data Network Operators License
USA	United States of America
LAN	Local Area Network
WAN	Wide Area Network
ICT	Information Communications Technologies
TCP	Transport Control Protocol
IP	Internet Protocol
GSM	Global System for Mobile Communication
GOK	Government of Kenya
DoD	Department of Defence
TKL	Telkom Kenya Limited
VoIP	Voice over Internet Protocol
KDN	Kenya Data Networks
WWW	World Wide Web

ARPA	Advanced Research Project Agency
NGO	Non-governmental Organization
ISP	Internet Service Provider
ARCC	African Regional Centre for Computing
USA	United States of America
UK	United Kingdom
GEO	Geostationary Earth Orbits
MEO	Medium Earth Orbits
LEO	Lower Earth Orbits
ODU	Outdoor Unit
IDU	Indoor Unit
NOC	Network Operating Centre
EASSy	East African Sub-marine Cable System
TSA	Telkom South Africa
KPLC	Kenya Power and Lighting Company

ABSTRACT

The Internet has had a relatively brief, but explosive history. It grew out of an experiment begun in the 1960s by the U.S. Department of Defence (DoD). The DoD wanted to create a computer network that would continue to function in the event of a disaster, such as a nuclear war. This was so if part of the network was damaged or destroyed, the rest of the system still had to function.

Right from the advent of the internet in Kenya in the 1990's- unlike other continents of the world- little has changed since all forms of internet connectivity have mostly been satellite- based until June 2009 when the first submarine optical fibre cables landed on the East cost of Africa, courtesy of the Seacom cable. It was soon followed by the government-lead TEAMS cable by the end of the same year. The arrival of these cables marked the end of our over-reliance on satellite as the only gateway to the internet backbone.

Just like most of Africa, Kenya had for years been dependent on satellite communication- VSAT and related variants- for her internet needs. Prior to the liberalization of the telecommunication sector in the country, the state monopoly, TKL, was the only gateway to the internet backbone through its earth stationed at Suswa, off the Narok road. However the liberalization of the market saw the proliferation of many service providers and ISPs offering a myriad of solutions. ACKL was one such company.

The objective of this case was to establish the strategies that Afsat Communications Kenya Limited (ACKL) has adopted in order to counter the effects that the arrival of the sub-marine cables have exerted on its business in Kenya.

ACKL was formed on the premise of providing fast and reliable internet connectivity to corporate entities in the country through VSAT. Its design was unique and revolutionary in the market because it could provide clients direct connectivity to the internet without going through many intermediaries as had been the case with TKL and other service providers. This uniqueness in network design saw ACKL's client base and revenues grow at an almost exponential rate from 2005 until 2009. These clients were mostly NGOs, the

United Nations and many other high-spending international organizations that appreciated the reliability of service.

The objective of this case was to establish the strategies that Afsat Communications Kenya Limited (ACKL) has adopted in order to counter the effects that the arrival of the sub-marine cables have exerted on its business in Kenya. From the study, it was evident that the arrival of the cables has resulted in significant revenue and client loss. The respondents pointed out that even though the company has lost significantly with the arrival of the cables, it has the potential of recouping these losses if the measures it has put in place are aggressively pursued. They explained that there is a lot of potential owing to the fact that ACKL is owned by Telkom South Africa (TSA). TSA can leverage its resources and experience in other African markets in making ACKL regain its foothold.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Information communications technology's (IT) contribution to economic growth and competitiveness has been the subject of a large and growing literature over the last two decades. This debate has been triggered in part by the recognition of the importance of IT, more specifically the internet in an economy that is increasingly open to the products and services of an increasingly globalised world.The Internet is a highly efficient tool for transferring information—e-mail, for example, is cheaper than a telephone call, leaves an electronic record and can be "broadcast" simultaneously to many recipients. There is widespread hope that the Internet will provide a powerful new tool in the battle against global poverty. For instance, the G-8's Charter on the Global Information Society, G-8(2000, pg 9) declared, " Information and Communications Technology (IT) is one of the most potent forces in shaping the twenty-first century ... IT is fast becoming a vital engine of growth for the world economy...Enormous opportunities are there to be seized and shared by us all."

Unlike any other period in Kenya's history, IT has become one of the most important contributors to growth in employment and incomes in the economy. In the last three years for example, leading telecommunication companies in Kenya have invested heavily in laying down metro fibre cables.Jamii Telcom and Kenya Data Networks (KDN) have each sunk in no less than Ksh.1.5 billion on these cables alone.Access Kenya has invested about Ksh. 781 Million. These investments have in turn had a ripple effect on the rest of the economy.For instance, many companies have been created to specialize in buiding of telecommunication equipment. For instance, Telmec Soliton, which has been laying the KDN cable. These companies have in turn employed many people thereby remedying the joblessness situation in the country. The government is also in the process of setting up an ICT Village at Malili, which is in turn expected to spur development in the area.

Romer (1990 pg 123) sums up the effect of technological change as follows, "...technological change provides the incentive for continued capital accumulation, and together, capital accumulation and technological change account for much of the increase

in output per hour worked..." As with any sector in any economy, telecommunications is affected by the environment in which it exists. There are two kinds of driving forces; Internal driving forces, and external driving forces. Internal driving forces are those kinds of things, situations, or events that occur inside the business, and are generally under the control of the company. These may include: organization of machinery and equipment, technological capacity, organizational culture, management systems and employee morale. External driving forces are those kinds of things, situation, or events that occur outside of the company and are by and large beyond the control of the company. Examples of external driving forces might be, the industry itself, the economy, demographics, competition, political interference and technological change among many others.

For the purpose of this paper, I intend to narrow down on the external factors, specifically technological change following the arrival of the sub-marine fibre optic cables in East Africa. External driving forces can bury a business if not appropriately dealt with. The question is, how does a business know what changes are occurring so that they can deal with them in a positive way? In order for a business to succeed and gain the competitive edge, the business must know what changes are indeed occurring, and what changes might be coming up in the future. A company must be cognizant of these changes, flexible, and willing to respond to them in an appropriate manner.

Companies such as Afsat Communications Kenya Ltd (ACKL), which has for long been a leader in the provision of internet solutions through satellite, now finds its self a victim of the arrival of the undersea fibre optic cables. It must therefore strategise on how to respond to this new development in the market.

I have chosen ACKL as my case because I have worked with this organization and do understand its predicament and potential. With the advent of the sub-marine fibre cable connectivity; ACKL has faced a myriad of challenges as a company. We have lost revenues, some members of staff and quality clients to the competition . Even though this topic has been dealt with in recent times, very few writers have offered solutions. This project is geared at coming up with possible remedies to this situation which can assist

management make impactful decisions that would enable the company re-gain its foot hold in the market.

1.1.1 Concept of Internet

The Internet is a world wide system of interconnected computer networks that uses a set of communication protocols commonly referred to as Transmission Control Protocol and Internet Protocol (TCP/IP) to serve millions upon millions of users in the globe. A protocol is the set of standard rules for data representation, signalling and confirmation required to send information over a communications channel. "It is a network of networks that consists of millions of private, public, academic, business, and government networks of local to global scope that are linked by a broad array of electronic and optical networking technologies. The Internet carries a vast array of information resources and services, most notably the inter-linked hypertext documents of the World Wide Web (WWW) and the infrastructure to support electronic mail"

1.1.2 Concept of strategic response

Strategy refers to a plan of action designed to achieve a particular goal. The word is of military origin, deriving from the Greek word strategos, which roughly translates as general. In his book, The Art of War, Sun Tzu says that, "Strategy is the great work of the organization. In situations of life or death, it is the Tao of survival or extinction. Its study cannot be neglected." According to Porter (1996), companies must be flexible to respond rapidly to competitive market changes. They must benchmark continuously to achieve best practice. "They must outsource aggressively to gain efficiencies. And they must nuture a few core competencies in the race to stay a head of rivals"

Quinn (1992, pg 16) indicated that a well-formulated strategy helps to marshal and allocate an organization's resources into, "...a unique and viable posture based on its relative internal competencies and shortcomings, anticipated changes in the environment, and contingent moves by intelligent opponents" All types of businesses require some sort of strategy in order to be successful; otherwise their efforts and resources will be spent haphazardly and likely wasted. Although strategy formulation tends to be handled

more formally in large organizations, small businesses too need to develop strategies in order to use their limited resources to compete effectively against larger firms.

1.1.3 Internet communication: Its origin and developments in Kenya

In 1957, the Soviet Union launched the first satellite, Sputnik I, triggering US President Dwight Eisenhower to create the Advanced Research Project Agency (ARPA) to regain the technological lead in the arms race. ARPA appointed J.C.R. Licklider to head the new organization with a mandate to further the research of the Sage program and help protect the US against a space-based nuclear attack. "Licklider evangelized about the potential benefits of a country-wide communications network, influencing his successors to hire Lawrence Roberts to implement his vision". Kleinrock (1964, pg 17*)*. Roberts led development of the network, based on the new idea of packet switching invented by Paul Baran , and a few years later by Donald Davies at the UK National Physical Laboratory. A special computer called an Interface Message Processor was developed to realize the design, and the ARPANET went live in early October, 1969. The first communications were between Leonard Kleinrock'ss research center at the University of California at Los Angeles, and Douglas Engelbarts' centre at the Stanford Research Institute.

The Internet has had a relatively brief, but explosive history. It grew out of an experiment begun in the 1960s by the U.S. Department of Defence (DoD). The DoD wanted to create a computer network that would continue to function in the event of a disaster, such as a nuclear war. If part of the network was damaged or destroyed, the rest of the system still had to function. That network was called ARPANET, (Advanced Research Projects Agency Network) which linked U.S. scientific and academic researchers, the forerunner of today's Internet. This research and a period of civilian funding of a new U.S. backbone by the National Science Foundation spawned worldwide participation in the development of new networking technologies and led to the commercialization of an international network in the mid 1990s, and resulted in the following popularization of countless applications in virtually every aspect of modern human life. As of 2009, an estimated quarter of Earth's population uses the services of the Internet. "The Internet has revolutionized the computer and communications world like nothing before. The invention of the telegraph, telephone, radio, and computer set the stage for this

unprecedented integration of capabilities. The Internet is at once a world-wide broadcasting capability, a mechanism for information dissemination, and a medium for collaboration and interaction between individuals and their computers without regard for geographic location" Leiner et al (1998, pg 63)

The use of the Internet has grown relatively rapidly in most urban areas in Africa. Five years ago, only a handful of countries had local Internet access, now it is available in every capital city. However, the digital divide is still at its most extreme in Africa, where the use of information and communications technologies (ICTs) is still at a very early stage of development compared to other regions of the world. The divide between urban and rural areas is even greater. Most of the services and users are concentrated in the towns, while the majority of people are scattered in small communities spread-out across the vast rural areas. Very limited diffusion of the telecommunication networks into rural areas (often over 75 % of the country's telephone lines are concentrated in major towns) and irregular or non-existent electricity supplies are a common feature and a major barrier to use of the Internet, especially outside the major towns.

Furthermore, most tax regimes still treat computers as luxury items, which makes these almost exclusively imported items all the more expensive, and even less obtainable by the majority. Although there have been notable efforts in some countries to reduce duties on computers, however communications equipment and peripherals are still often charged at higher rates. For instance, in Kenya, whereas the government does not charge duty on imported computers, it charges duty and value added tax on some components such as modems, network cards and motherboards on locally assemble computers and on cost of bandwidth. This explains for example why it may seem cheap buying a Safaricom internet access modem, but the cost of running it is still high.

In Africa, the pattern of Internet diffusion has been similar to that of the mobile telephone networks. Although not quite as widespread, the Internet preceded the mobile phone explosion, has had greatest impact at the top end of business, and middle income groups, primarily in the major urban areas. Ironically, the non-profit sector – the academic institutions and the NGOs pioneered the use of the Internet in the early 1990s, fuelled by their need for low cost international communications. Subsequently it was taken up by

private Internet Service Providers (ISPs), and most of the national telecom operators, such as the Kenya Postal services and the proliferation of internet cyber cafes in major towns. As early as 1992, email services were used by a few enthusiasts in Kenya. NGOs and IGOs who were in need of establishing communication with their counterparts elsewhere were among the early adopters of Internet. These also included services offered by HealthNet, email services for the staff of Institute of Computer Science at the University of Nairobi, as well as ARCC email services based on dialup connection to FIDOnet. In October 1995, ARCC established the first full Internet services connection in Kenya. Soon after (1995-1996) a number of commercial ISPs led by FormNet and Africa Online entered the market with an array of dialup access and leased circuits offerings. One of the most lucrative businesses for FormNet then was to sell modems for dial-up, then retailing at Ksh 24,000. When added to the cost of a PC, then the end-user equipment was quite expensive.

As competition increased following the entry of three other ISPs. The commercial operators leased analogue and digital data links to the USA and UK to access the Internet backbone. Local dedicated lines were predominantly analogue lines leased ranging in capacity from 28.8 Kbps to 64Kbps mainly. "The high costs of services to the providers from the incumbent monopoly constituted a major expense. The same high costs were passed to the consumers. This acted as the major deterrent for the uptake of Internet services by the larger populace and the inherent perception of the service as being for the elite" Netcom Information Systems (2007) The notable early adopters were: Africa Regional Center for Computing (ARCC) an NGO focused in development and provision of ICT in the country.

Right from the advent of the internet in Kenya in the 1990's- unlike other continents of the world- little has changed since all forms of internet connectivity have mostly been satellite- based until June 2009 when the first submarine optical fibre cables landed on the East cost of Africa, courtesy of the Seacom cable. It was soon followed by the government-lead TEAMS cable by the end of the same year. The arrival of these cables marked the end of our over reliance on satellite as the only gateway to the internet backbone. A backbone is points of convergence of internet traffic.There are five such locations in the world. They include: United States, Canada, Japan, Germany and The

United Kingdom. I will explain and illustrate in subsequent chapters the various configurations to accessing the internet.

The purpose of this paper is to assess internet access connectivity in Kenya before, and after the arrival of the fibre optic cable with specific reference to Afsat Communications Kenya Ltd (ACKL), the positioning that ACKL is taking and the strategies it is adopting in a bid to remain relevant in an industry characterised by cut-throat competition. I also intend to depict how other players in the market are re-aligning their businesses with the arrival of the submarines cables; how current and prospective users of the internet are responding to this change, and lastly, the implication on the economy of the country.

1.1.4 Afsat Communications Kenya Limited (ACKL)

ACKL is a subsidiary of Afsat Communications Africa Limited (ACAL). It is a private company registered in Guernsey UK in 1994 with subsidiaries in Kenya, Uganda, Nigeria, Zambia and Tanzania. ACAL's major shareholder was Modern Africa Fund Managers, a US government backed venture capital fund until the end of 2007.In 2008, Modern Africa Fund Managers sold its share holding to the MWEB Group of South Africa, which re-sold Afsat to Telkom South Africa .ACKL is part of the ACAL group with a distributor network in 29 African countries charged with selling its iwayafrica brand. In Kenya, ACKL owns the Commercial VSAT Network Operator's (CVNO) license and has appointed Callkey networks as its local distributor.For the sake of this paper, I shall only limit my self to Afsat's operations in the Kenya market through ACKL and predominantly its internet part of the business-iwayafrica.

ACKL was formed to in order to fill a void in the in the market for high quality dedicated Wide Area Network(WAN) connectivity across West, East and Central Africa region. To this end, the pioneering directors of the company commissioned a research in these markets that would also make recommendations as to the best data communications solutions for African environment. After serious thought and professional recommendations, Afsat settled for the VSAT technology. This technology was seen to offer more advantages at the time in comparison to what the market provided. For instance, it provided uniformity in service across different countries and time zones. This lead to ACKL specializing in providing high – end satellite data network solutions for

corporate entities, banks and government organizations. In 1995, ACKL submitted its application for a CVNO license; this application was to remain in file until December 2005, after expiry of the monopoly enjoyed by the Telkom Kenya Limited (TKL) in the provision of data communication services in Kenya.

Between 1995 and 2002, TKL completely enjoyed full monopoly on the provision of VSAT services in Kenya. Organizations having several branches in Kenya that were geographically disperse relied on VSAT solutions for WAN connectivity because it was the only reliable connectivity solution compared other terrestrial-based solutions such as Wireless networks and copper which were prone to vandals, weather effects leading to frequent break downs. Multinational Organization requiring international link to their head quarters abroad had to deploy VSATs for their data connectivity. Because of the poor operational efficiencies of TKL, the cost of doing business in Kenya kept on increasing steadily for multinational due to very poor communication infrastructure leading many corporate organizations to relocate operations to neighbouring countries.

The restrictive regulatory environment between 1995 and 2004 forced ACKL as part of its growth and survival strategy to engage TKL into a strategy which allowed both parties reciprocal use of the others VSAT licenses within the region. This strategy opened new horizons for ACKL within the Southern Africa region via the TKL licenses; whilst allowing TKL to provide VSAT services in Central Africa and West Africa. The Afsat group's expertise in deploying VSAT WAN solutions, adherence to high quality of service (QoS) standards and the provision of superior technical and product support enabled ACKL to grow its VSAT client base in Kenya under the TKL license. At one time 62% of the 300 corporate clients using the TKL VSAT services on both the shared hub and dedicated platforms were ACKL clients. These clients included; Supreme Furnishers Pty, British American Tobacco (BAT) East Africa, East African Breweries, Bamburi Cement Limited, Caltex Oils, Coca Cola Bottling Company Limited, KenGen and Kenya Power & Lightning Company Ltd amongst others.

However the take up of VSAT for WAN connectivity continued to be slow due to the high cost of equipment and services by TKL in comparison to similar services offered in Tanzania and Uganda. Industry players lobbied CCK to undertake market studies in order

to review the telecommunication sector policy so as to "arrest capital flight" of organizations from Kenya to neighbouring countries Tanzania, Uganda and Zimbabwe because of failure by TKL to provide quality services, couple with an aging communications infrastructure. The study showed that there were about 3,000 corporate organizations in Kenya requiring data communication services. Their requirements varied from inter- corporate connectivity (local or international) on a voice or data platform. It was also evident that there was a steady increase in the demand for multimedia services like Internet, VoIP and streaming of both TV & Radio.

All these organization expressed a strong desire in using technologies that were reliable, scalable and dependable. Cost wasn't much of a concern for as these companies were willing to pay a small premium to improve their operational efficiency. This study concluded that although the cost of VSAT services at the time were approximately 30% more expensive than those offered by terrestrial technologies in terms of operational costs, organizations still invested in this technology due to its superior reliability it gave. At the time only 5% of the corporate population in Kenya was using VSAT services in Kenya. An additional 45% of the companies surveyed indicated willingness to use VSAT services if the costs were lowered while still maintaining the high levels of service and reliability that was experienced by users of the technology.

The most significant milestone in the data communications sector was in January 2005, when CCK licensed 8 data operators, 4 of which used VSAT technology and the others terrestrial based technologies (wireless, fiber, copper). The new licensing regime allowed for both local and international data communication networks in Kenya. The government also reviewed the tax burden from 43% to 16%, making VSAT services more affordable. By January 2006 there were 6 licensed VSAT operators and 5 licensed PDNO operators in Kenya. The attainment of full liberalization of the data communications sector has been full of challenges. However the benefits to the customers and the economy have been immense. The total market for WAN connectivity has grown ten fold in the last five years. The battle field is now on two fronts: Pricing of the services, as this is key in acquisition of the customers, QoS determines whether the provider retains its customers. The customer can now choose their WAN solution depending on the cost benefit analysis offered by the various solutions in the market.

ACKL has grown in leaps and bounds over the past 5 years, until early 2009. The work force has risen from the initial pioneering five to close to hundred in 2010. The number of VSAT installations deployed was close to 1,400 as of January 2009. This figure however has begun falling owing to the arrival of the submarine fibre optics cable in the country. In light of the new development (fibre cable) and its effect on the company's bottom line, ACKL had to react by adopting strategies geared at being relevant and preserve its revenues. These strategies are what shall be the crux of this paper.

1.2 Statement of the problem

Technology affects almost every aspect of our lives; a look around reveals how wired how wired we are. Thanks to the internet virtually anything one desires can be delivered to their door in a matter of days. The business world has revolutionized almost beyond recognition in the past few decades. Technology has changed the face and the pace of business.

Nearly all of Africa's international bandwidth is provided by satellite. Except for those countries which are connected to, and utilising submarine fibre-optic, satellite still remains the only means of carrying international communication. Moroney and Hamilton (2001). Kenya and other East Afrcan countries joined this league of countries connected to the submarine fibre-optic about one year ago. As a result, African countries have a very high dependency on satellite, with the majority of countries more than 95% of international traffic carried by satellite.

It is with this growing insatiable appetite for satellite capacity over Africa in general and Kenya in particular, that nudged governments and industry players into coming together to build a submarine fibre cable along the East Coast of Africa, christened EASSy. This idea was to be followed up by another (TEAMS) singly championed by the government of Kenya. The East African Marine System (TEAMS) is an initiative spearheaded by the government of Kenya to link the country to the rest of the world through a submarine fibre optic cable. It was first proposed as an alternative to EASSy, the East African Submarine Cable System.

Another privately owned cable, SEACOM, landed in the country in June 2009 and was followed suit by TEAMS in September of the same year. After a long wait and politics around it, the EASSy cable finally landed in Mombasa this May 2010 and has been under going tests in readiness for commercial roll out by August this year. The arrival of the 3 fibre optic cables into East Africa was feted as a definite ingredient that would spur more use of ICT and therefore catalyze the development process. Indeed internet access prices have fallen tremendously in the last one year-from a high of US$ 4,000 for 1 megabit per second to US$600.

So while the market is pre-occupied in the fight for lower cable prices, the VSAT service seems either forgotten or paid the least attention. Because there has been no major changes in satellite prices (1 mega bit per second still goes for an average of US$2000). So what is the way forward for companies such as ACKL which has specialized in providing internet connectivity through VSAT?

There have been two groups of writers who have commented on the subject of the fibre cables: Those who have dwelt on the benefits that would accrue to the country and those who have predicted the demise of the VSAT service. The few who have said anything positive about the VSAT; Makau (2009) did not predict massive price fall for the fibre because Africa, and Kenya in particular because it doesn't have the economies of scale associated with similar fibre networks in other parts of the world.

Another ICT expert, Ndege (2009) had similar arguments while speaking to "Your ICT Magazine", said that apart from the colossal cost of installing fibre optic networks and the high risk of being cut and damaged, there was a very low motivation to invest in this technology due to small user base especially in Africa. "Fibre optics cables in Africa are predominantly being used for backbone or backhaul and not for last mile solutions" There is no study which has offered solutions on how companies dealing in VSATs can survive amidst the arrival of the fibre cables. This paper sought to therefore to give insights of both VSAT and fibre technologies and strategies that ACKL is has in order to stay afloat in a very competitive telecommunication industry resulting from the arrival of the under sea fibre optic cables.

1.3 Research Objectives

The objective of this study was to look into strategies which ACKL is adopting in order to over come the effects that the sub-marine fibre cables have had on its business in Kenya.

1.4 Importance of the study

The significance of this study is as follows:
It seeks to advice players in any industry on the importance of proactive strategies in business. For instance, when there is imminent technological change, a company should be proactive in finding out what the change will portend for the company, and therefore put measures in place that would ensure it will still remain relevant and competitive. ISPs should now be anticipating new technological developments for internet provisioning.

Government agencies can use this study in formulating strategies for the sector. As Netcom Information Systems (2007) noted, "...Internet development is critical to development of the ICT sector and to national socio-economic development. For example, studies have shown that a 1-percentage point increase in the number of Internet users boosts total exports by 4.3 percentage points." The government could for instance waive license fee for VSAT customers in light of competition brought by fibre which is making VSAT unattractive.

It can be useful for investors in the sector by highlighting challenges and opportunities in the telecommunication sector in the country. For instance, Access Kenya is the only listed ICT firm. It has invested over Ksh. 450 Million in metro fibre around the city in order to provide fibre optic connectivity to prospective clients. Would-be investors may therefore have some interest in its share.
This paper seeks to contribute to academia by emphasizing the need of focus in business strategy. It may form a basis for future research. The staff of companies dealing in VSAT technology may use this study as basis for deciding whether to change jobs or career.

1.5 Scope of the study

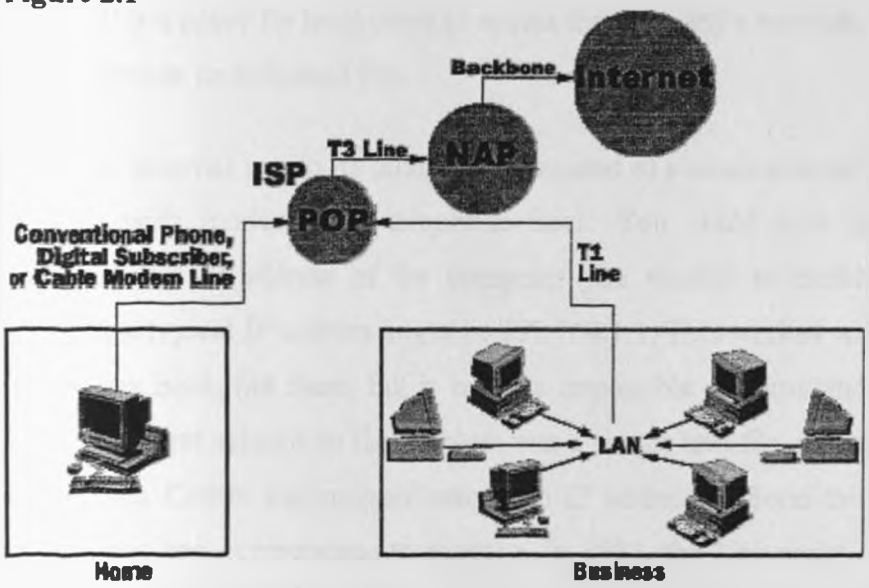
The scope of my study was to establish the effect the fibre cables have had on VSAT with special emphasis on certain key departments at ACKL. These departments included: Sales and marketing, technical, customer support, accounts, finance and administration. Consequently therefore, my interview guides went to individuals working in these departments. Because this population is mostly known to me, having worked with them for the last 5 years, and the fact that they are all on email, I emailed my interview guides for ease and quick reach. I however to administered it personally and collect the interview guide forms after the interview.

CHAPTER TWO: LITERATURE REVIEW

2.1 How the Internet operates

One of the greatest things about the Internet is that nobody really owns it. It is a global collection of networks, both big and small. These networks connect together in many different ways to form the single entity that we know as the internet. In fact, the very name comes from this idea of interconnected networks. Since its beginning in 1969, the Internet has grown from four host computer systems to tens of millions. However, just because nobody owns the Internet, it doesn't mean it is not monitored and maintained in different ways. The internet society, a non-profit group established in 1992, oversees the formation of the policies and protocols that define how we use and interact with the Internet. The figure below illustrates how the internet works:

Figure 2.1



Source: www.howstuffworks.com

When information is sent or received on the Internet it is initially broken down into smaller pieces called packets. Each packet is passed from server to server until it reaches its destination. Every machine on the Internet has a unique identifying number that is called an IP address. The IP stands for Internet Protocol, which is the language used by computers to communicate over the Internet. A typical IP address looks like this 192.168.1.1 every machine on the Internet has a unique identifying number, called an IP Address. The IP stands for Internet Protocol, which is the language that computers use to

communicate over the Internet. A protocol is the pre-defined way that someone who wants to use a service talks with that service.

Every computer that is connected to the Internet is part of a network, even the ones at home as show above. For example, you may use a modem and dial a local number to connect to an Internet Service Provider (ISP). At work, you may be part of a local area network (LAN), but you most likely still connect to the Internet using an ISP. Connecting to an ISP means that one becomes part of their network. The ISP may then connect to a larger network and become part of their network. The Internet is simply a network of networks. Most large communications companies have their own dedicated backbones connecting various regions. In each region, the company has a Point of Presence (POP). The POP is a place for local users to access the company's network, often through a local phone number or dedicated line.

When the Internet was in its infancy, it consisted of a small number of computers hooked together with modems and telephone lines. You could only make connections by providing the IP address of the computer you wanted to establish a link with. For example, a typical IP address might be 192.168.1.1. This worked well because there were only a few hosts out there, but it became impossible as more and more systems came online. The first solution to the problem was a simple text file maintained by the Network Information Centre that mapped names to IP addresses. Soon this text file became so large it was too cumbersome to manage. In 1983, the University of Wisconsin created the Domain Name System (DNS), which maps text names to IP addresses automatically. This way you only need to remember www.vahoo.com, for example, instead of yahoo.com's IP address (http://69.147.76.15).

When you use the Web or send an e-mail message, you use a domain name to do it. For example, the Uniform Resource Locator (URL) http://www.uonbi.ac.ke, contains the domain name uonbi.ac.ke .So does the e-mail address: dryabs@uonbi.ac.ke. Every time one uses a domain name, you use the Internet's DNS servers to translate the human-readable domain name into the machine-readable IP address. Top-level domain names, also called first-level domain names, include .COM, .ORG, .NET, .AC, .EDU and .GOV.

Every name in the .COM top-level domain must be unique. The left-most word, like www, is the host name. It specifies the name of a specific machine (with a specific IP address) in a domain. A given domain can, potentially, contain millions of host names as long as they are all unique within that domain. DNS servers accept requests from programs and other name servers to convert domain names into IP addresses. When a request comes in, the DNS server can do one of four things with it:

i) It can answer the request with an IP address because it already knows the IP address for the requested domain.

ii) It can contact another DNS server and try to find the IP address for the name requested. It may have to do this multiple times.

iii) It can say, "I don't know the IP address for the domain you requested, but here's the IP address for a DNS server that knows more than I do."

iv) It can return an error message because the requested domain name is invalid or does not exist.

The company's name server then sends a query to the .COM DNS server asking it if it knows the IP address for www.yahoo.com The DNS server for the COM domain knows the IP addresses for the name servers handling the www.yahoo.com domain, so it returns what is asked for. The name server then contacts the DNS server for www.yahoo.com and asks if it knows the IP address for www.yahoo.com. It actually does, so it returns the IP address to your DNS server, which returns it to the browser (e.g. Internet Explorer, Firefox), which can then contact the server for www.yahoo.com to get the Web page. "One of the keys to making this work is redundancy. There are multiple DNS servers at every level, so that if one fails, there are others to handle the requests. The other key is caching. Once a DNS server resolves a request, it caches the IP address it receives. Once it has made a request to a root DNS server for any .COM domain, it knows the IP address for a DNS server handling the .COM domain, so it doesn't have to bug the root DNS servers again for that information. DNS servers can do this for every request, and this cashing helps to keep things from bogging down". Tyson.J (no date). Even though it is totally invisible, DNS servers handle billions of requests every day and they are essential to the Internet's smooth functioning.

The fact that this distributed database works so well and so invisibly day-in and day-out is a testimony to the design of the internet.

2.1.1 The future of the internet

The architecture of the Internet has always been driven by a core group of designers, but the form of that group has changed as the number of interested parties has grown. With the success of the Internet has come a proliferation of stakeholders - stakeholders now with an economic as well as an intellectual investment in the network. In the words of Leiner, Cerf and Clark (1998 pg 56): "We now see, in the debates over control of the domain name space and the form of the next generation IP addresses, a struggle to find the next social structure that will guide the Internet in the future. The form of that structure will be harder to find, given the large number of concerned stakeholders."

In the 2008 Pew Internet & American Life/Elon University Predictions Survey on what the future portends for the internet by the year 2020, most of the respondents predicted the evolution of mobile internet communications. The mobile phone is the primary connection tool for most people in the world. In Kenya, Safaricom has close to 20Million subscribers. "In 2020, while "one laptop per child" and other initiatives to bring networked digital communications to everyone are successful on many levels, the mobile phone—now with significant computing power—is the primary Internet connection and the only one for a majority of the people across the world, providing information in a portable, well-connected form at a relatively low price. Telephony is offered under a set of universal standards and protocols accepted by most operators internationally, making for reasonably effortless movement from one part of the world to another..." Rainie, Anderson and Fox (2008 pg 112)

The consensus is that mobile devices will continue to grow in impact because people need to be connected, wherever they are; cost-effectiveness and access are motivating factors; the devices of the future will have significant computing power. This is currently reflected in Kenya where people whose phones can support multimedia viewing are able to follow the goings-on at the World Cup tournament in South Africa while on sitting in a bus headed home. Mobile phones are facilitating money transfer, a role hitherto the

preserve of foreign exchange changers. More recently in collaboration with Equity Bank, these devices are servicing as virtual banks accounts courtesy of their M-Kesho service.

Just as the Internet revolutionized how the world accessed information and communicated through the 1990's, the ongoing development in speed, bandwidth, and functionality will continue to cause fundamental changes to how our world operates for decades to come. Some of the major trends shaping the future of the Internet are summarized below, along with extrapolated predictions:

"...A better informed humanity will make better macro-level decisions, and an increasingly integrated world will drive international relations towards a global focus. Attachments to countries will marginally decrease, and attachments to the Earth as a shared resource will significantly increase" Leiner et al(1998, pg 5)

The future of the Internet communications revolution is ongoing, now uniting communities as it recently united networks. Not everything about the Internet is global; an interconnected world is also locally interconnected. The Internet will increasingly be used for communications within communities as much as across countries. Local communities will organize in virtual space and take increasing advantage of group communication tools such as mailing lists, newsgroups, and websites, and towns and cities will become more organized and empowered at the neighbourhood level" Leiner et al(1998, pg 58)

The future of the Internet integration with an increasing number of other technologies is as natural as a musician's experimentation with notes. The Internet will become increasingly integrated with phones, televisions, home appliances, portable digital assistants, and a range of other small hardware devices, providing an unprecedented, nearly uniform level of integrated data communications. Users will be able to access, status, and control this connected infrastructure from anywhere on the Internet. Leiner et al (1998, pg 63)

2.2 Satellite communication overview

A communications satellite is a specialized wireless receiver/transmitter — receiving radio waves from one location and transmitting them to another that is launched by a rocket and placed in orbit around the earth. Today, there are hundreds of commercial satellites in operation around the world. Those satellites are used for such diverse purposes as wide-area network communications, weather forecasting, television broadcasting, amateur radio communications, Internet access and the Global Positioning System. Satellites have many important uses, not just communications. Most modern weather reports rely on satellite information. Global Positioning systems work because of a linked set of satellites. Scientific studies of our planet, the atmosphere and the universe all rely on satellites.

2.2.1 Satellite Orbits

A satellite orbit is the position in space where a satellite is launched onto and is the resting place until its life span expires. There are three areas for satellite orbits: Geostationary Earth Orbit (GEO), Medium Earth Orbit (MEO) and Low Earth Orbit (LEO). GEO satellites orbit the earth directly over the equator, approximately 35 400 km (22 000 miles) up. At that altitude, one complete trip (orbit) around the earth takes 24 hours. Thus, the satellite remains over the same spot on the surface of the earth (geo) at all times, and stays fixed in the sky (stationary) from any point on the surface from which it can be "seen." MEO is defined simply as the area between LEO and GEO. The primary satellite systems there are the GPS (Global Positioning System) satellite constellations. LEO is between 200 and 1400 km above the earth. Satellites in LEO rapidly circle the earth and are typically in range of one location for only 90 minutes. Their main advantage is how close they are, providing shorter delays for faster communications. However, for consistent communications they require a constellation of satellites so that communications can be maintained as one satellite moves out of range as another moves within range of the ground station. LEO satellites are less expensive to build, typically less powerful, and have a shorter average life span.

2.2.2 Communication Satellites

Most communications satellites are in GEO. A single geostationary satellite can cover as much as 40 percent of the earth's surface; so, in theory, three such satellites (e.g. Intelsat, Galaxy, and New Skies Satellites) can provide global coverage. To ensure accurate and strong coverage of a specific region, continent or country, the transponders are often "shaped" to focus transmission and increase signal strength for a service area. A satellite transponder (short-for Transmitter-responder), is an automatic device that transmits a predetermined message in response to a predefined received signal. This device is installed on the satellite that is launched to space. A satellite's job in the communications network is to serve as a repeater. That is, it receives a signal from one location and rebroadcasts it so another station can receive the signal. Reception and retransmission are accomplished by a transponder. A single transponder on a geostationary satellite is capable of handling approximately 5,000 simultaneous voice or data channels. A typical satellite has 32 transponders.

2.2.3 Very Small Aperture Terminal (VSAT)

A Very Small Aperture Terminal (VSAT) is a device known as an earth station, that is used to receive satellite transmissions. The "very small" component of the VSAT acronym refers to the size of the VSAT dish antenna, typically about 0.55-1.2 m (2 to 4 feet) in diameter, which is mounted on a roof or wall, or is placed on the ground. That size is appropriate for Ku band communications which, as mentioned above is most used for current systems. A slightly larger antenna would be needed for C-band communications, 1.8 m (4 ft). The antenna, along with the attached low-noise block converter or LNB (which amplifies the received satellite signals) and the transmitter (which sends signals) make up the VSAT outdoor unit (ODU), one of the two components of a VSAT.

The second component of the VSAT is the indoor unit (IDU), also called Modem. The indoor unit is a small desktop appliance that converts between satellite analog communications and appropriate protocols for local devices such as telephones, computer networks, PCs, TVs, kiosks, etc. On top of basic conversion routines, IDUs can also

contain value-added functionality such as security, network acceleration and other features. The indoor unit is connected to the outdoor unit with a pair of cables.

2.3 Internet access prior to iwayafrica

Before ACKL started the provision of its iwayafrica internet service in the country, the most common methods of internet access included dial-up, landline (over coaxial cable, fiber optic or copper wires) and limited wireless solutions. Dial-up connections were available and still are the most common type of internet connection available from ISPs, for instance Africaonline has many of its clients on dial-up.. A dial-up connection allows users to connect to the internet via a local server using a standard 56k modem, the PC literally dials (hence the name) a phone number provided by the ISP and connects to the server's modem and therefore the internet. Once connected users are free to search the web as they please, however, compared to modern speeds of broadband internet, dial-up is very slow and can only nominally transfer at 56 Kilobits of data a second at its best.

Any VSAT solutions that were being offered by other VSAT operators were mostly based on double hop technologies in the provision of internet service. A double hop VSAT design means that internet traffic from a remote terminal (customer's site) first gets routed to a local hub or Network Operating Centre (NOC), such as Longonot earth station in the case of TKL; before it is ultimately routed out of the country to the internet backbone. By 2007, the following companies were in the list of VSAT operators in the country. A few of these companies had not started operations even though they had requisite licenses. Some held on to their licenses for speculative purposes hoping to sell them to prospective buyers.

Table 2.1: Commercial VSAT operators in Kenya

No.	Name of Company	Address	Town/Postal Code	Tel. No.
1	Commcarrier Satellite Services Limited	41093	Nairobi-	312712
2	Telkom Kenya Limited	30301	Nairobi-00100	3232000
3	AFSAT Communications	27554	Nairobi-00506	604933/4/5/6750412

	Kenya Limited			
4	Simbanet Com Limited	46728	Nairobi	532349/651692/3
5	Alldean Satellite Networks Limited	14400	Nairobi	3743595
6	Harun International Limited	10972	Nairobi-00400	226327/330594

Source: Communications Commission of Kenya

Most of these companies operated with local-based hubs which were ideal for a client's inter-branch connectivity, but in efficient when it came to internet access because the double hop from remote to the hub, then out to the internet backbone which meant more latency (delay). Diagrams illustrating these scenarios are available at the appendix. For illustration sake, I have used Telkom kenya local hub at Longonot to show how a double hope works. The hub at Longonot is the gateway to the internet backbone and so all the traffic(email, web browsing , data transfer) must all go through this point so it can be re-directed to whatever destination one may be interested in. Whether one is accessing the internet over a double or single hop system, the ultimate objective of whatever one is sending is to get it to the internet backbone.

Wiki defines an internet backbone as, "...the principal data routes between large, strategically interconnected networks and core routers in the Internet. These data routes are hosted by commercial, government, academic and other high-capacity network centers, the Internet exchange points and network access points that interchange Internet traffic between the countries, continents and across the oceans of the world". Therefore, the intermediaries between the customer's offices and the internet backbone present possible points of failure. The fewer these points are, the better for the customer since whatever he is sending gets processed faster. This explains why there was a lot of buck-passing between ISP and TKL in the provision of internet services for many years. Not wanting to be blamed, ISPs and TKL would keep shifting blame as to where a problem lay, to the detriment of a client's operations. A double hop internet makes it difficult to easily pin point where the problem lies, and for clients to get guarantees on services from ISP. This lack of accountability by ISPs is what lead to the introduction of the iwayafrica internet service by ACKL in the Kenyan market.

2.4 Iwayafrica solution

ACKL put the findings of a market research it conducted prior to launch, into good use by implementing its recommendations. As a starting point, the founders decided to locate the NOC right at the internet backbone in Germany. In doing so, the company circumvented the challenges brought about by double hop systems as I have outlined above. This enabled customers to have unprecedented fast speeds and greater reliability of service. The direct single hop configuration from a customer's premises right into the internet backbone was revolutionary in the Kenyan market. This design was by far more superior to any in existence. By having the NOC in Germany meant that there was virtual no intermediaries between the customer and the internet backbone. In essence, the customer's IDU/modem became his gateway to the internet (in contrast to TKL where one would need to go through their Longonot earth station gateway, in order to get to the internet backbone). Another major decision which would later proof key to differentiating iway from the rest of the pack was in the design and positioning of the iway brand. Out of research done by the ACKL management, corporate entities were interested in a fast and reliable service. For this reason; the management introduced the concept of managed services into the market.

2.5 Bandwidth Management

Bandwidth is a term used to describe how much information can be transmitted over a connection. Bandwidth is usually given as bits per second. It is, in simple terms, the transmission speed of one's connection to the Internet.

Before launching Iway Broadband, Afsat commissioned a survey in order to establish internet usage patterns in Africa by prospective clients, and also popular destinations of internet traffic. The latter is the reason that influenced the decision to base the network operating centres Germany. The results of the survey were that the average user in an office environment uses 500Mb of volumes (sum of inbound and outbound traffic) every month. So, in order to size up the right bandwidth for an office, one would only need to multiply this with the number of users in the office. For instance, an office of 4 people using the internet would be: 500Mb * 4= 2000 Mb. This is approximately 2GB of volumes because 1GB is equal to 1024 Mb. The next move would then be to recommend

the most appropriate service plan that allows a client to transmit approximately 2GB of internet traffic every month. From the table below, the most likely service plan would be the Small Office Home Office (SOHO) service plan. The table 2.2 below shows some of the various bandwidth offerings under Iway broadband:

Table 2.2: iway service plans

Service Plan	Guaranteed Speed	Typical monthly volume	Recommended number of computers	Price in US$(Excl. VAT)
SOHO	150Kbps	2 GB	1 - 4 Corporate Computers	294.50
SOHO PLUS	260Kbps	3GB	5 - 7 Corporate Computers	541.50
SMALL ENTERPRISE	340Kbps	4.5GB	8 - 10 Corporate Computers	779.00

From the illustration above of 4 users accessing the internet in an office, the recommended plan to subscribe to would be SOHO. Under this package, a client would get guaranteed downloads of 260 Kbps which would enable the running of operations more efficiently. Other options are available for bigger networks. For clients running business applications (software), the band width requirement per business transaction, and the overall requirement for the total number of transactions per day can be established. This information is then summed up with the requirements for browsing and email and the client advised on the most appropriate bandwidth choice for the business.

Customers who exceed their volumes utilization are expected to upgrade to a higher plan which would not only enable them to do more volume of traffic, but also, higher speed. If a client is pushing through more traffic, then the assumption is that he need better speeds to accomplish. This assumption may not necessarily be true as so clients don't mind down loading more information at lower speeds as this could be automated so it can happen when one is a sleep. This ability to measure exactly the bandwidth needed for any Local Area Network (LAN) is what distinguished the Iway brand from other market offerings. Other IPSs in the market were not paying attention to a client's requirements beyond availing internet connectivity. The Iway bandwidth management style therefore presented a cost effective solution because clients purchased only the bandwidth they

needed at a given point in time. This popularity can be attested by the growth in VSAT installations by ACKL over a five-year period as shown in the table below:

Table 2.3: Growth in ACKL client base

Year	2002	2003	2004	2005	2006	2007	2008	2009(May)
No. of VSAT installations	176	186	200	350	750	954	1112	900

Source: ACKL

There was an almost exponential growth in VSAT installations by ACKL right from 2002 when it momentarily utilized TKL license, up to 2008.By this year, ACKL was the leading VSAT provider in the country and had surpassed even TKL which had been in the market much earlier.

It is evident however that fortunes began to dwindle from the mid of 2009.Client numbers fell sharply to 900.This is the year in which the first sub-marine system landed in the country. The first cable to reach the country was that of SEACOM.The drop in client numbers was as a result of clients' eagerness to use to reap the benefits of the sub-marine cable which had promised very low costs and huge capacity for data transfer.

2.5.1 Challenges to Iway

After an unassailable popularity of the iway business model in the country, it wasn't long before the competition replicated it. Before the start of 2009, iway faced two main threats– internal and external.

2.5.1.1 Internal Threats

The survey which formed the basis of designing service plans was done close to six years ago. The survey was based on email and browsing requirements for the purpose of conducting business, and as such, did not take into account such aspects of the internet as streaming movies and audio or social networks e.g Facebook and YouTube which were non-existent then, but now the hallmark of internet access, and all of which are bandwidth intensive. This effectively means that people are do more than they did before and the generalization of an average user in an office utilizing 500Mb of internet volumes per month has been overtaken by events. It is understandable that with the limited

bandwidth over Africa, the management of Iway may not be in a hurry to review this figure (500Mb) in light with usage trends within the country. This will only happen as soon as a new satellite is deployed in space to serve Africa's growing needs. The sad news is no one is certain when this would happen.

2.5.1.2 External Threats

Following the iway success story, its business model is rapidly being copied and perfected by other competitors in the market. A case in point is Safaricom and Zain who now sell similar products for a fraction of Iway's initial capital outlay. Table 2.3 below shows Safaricom's offer as at December 2008. They have since improved on their offer and the cost of their broadband modems are going for Ksh.2,000, or free depending on the subscription one goes for. They is also more flexibility in the amount of data bundle one can buy.Ksh. 250 for example can get one 40Mb of data. Corporate organizations get free installations.

Table 2.4: Safaricom internet bundle offers (2008)
Source: http://www.safaricom.co.ke (retrieved 8th December 2008)

Plan	Equipment (Incl. VAT)	Tariff(Incl. VAT)	Target
Pre-pay	Broadband Modem Kshs. 9,999	Pre-Pay Bundle; a)300 Mb at Kshs 999 b) 700Mb at Kshs 1,999 c) 1GB at Kshs 2,499	Both PC and laptop Users
Post-pay	Broadband Modem Kshs. 5,999	-Post-pay Bundle; a)700Mb at Kshs1,999 Per Month b) 2 GB at Kshs 3,999 Per Month c) 5 GB at Kshs 6,999 Per Month d)8 GB at Kshs 10,000 Per Month	Both PC and laptop users

Whereas Iway guarantees speed to the internet, Safaricom's 3G solutions may experience significant speed fluctuations depending on how many people are using the service at any given point in time. Nonetheless, Safaricom's pricing, coupled with other offers has seen many clients exit the iway network over these past few years.

2.6 Internet access before the fibre optics cables

Before the arrival of the sub-marine fibre optic cable, all internet-destined traffic in Kenya was in one way or another been satellite. Be it single hop-as in the case of iway- or double hop. A client would need to invest in VSAT equipment at his office. All traffic leaving the customer's office are beamed a geostationary satellite in space which in turn directs the Network Operating Centre (NOC) into the internet backbone. The purpose of the NOC is to channel the client's request to the required destination. For example, if somebody in the office needed to access the CNN website, he would type into his internet browser (e.g Internet Explorer) www.cnn.com .Once this characters reach the NOC, they are directed to relevant part of the internet backbone where the CNN servers are located and the user can thus get access to the news and other content available at the CNN site.

Even though the design above continues to serve the continent, it is not without its own set backs. Information has to be relayed from the customer's premises to the satellite in space, a distance of 35,000Km and another same distance to the NOC where the information is processed further. This combined distance of 70,000Km causes some slight delay in communication of about 1200 milliseconds. This delay is more of a concern when one is running applications over the internet that requires minimal latency. While making internet based calls, there is a slight delay in conversations. The second major challenge with satellites is limited bandwidth. Bandwidth refers to the average data rate of successful data transfer through a communication path. There is not enough satellites in space offering services over Africa. For this reason, the cost of satellite bandwidth in Africa is still very high. This explains why for a long time internet access has been expensive and internet penetration very low. Lastly, satellites are affected by extreme weather conditions such as rain storms, snow and sand storms. During such conditions, communication is interrupted for as long as the disruption prevails. However,

with technological advancements, there are innovations in hardware that reduce the effects of such extreme weather conditions.

2.7 The arrival of sub-marine fibre optic cables

An optical fibre, (or fibre) are long, thin strands of very pure glass about the size of a human hair. Fibre optic is a technology that uses glass (or plastic) threads (fibres) to transmit data. A fibre optic cable consists of a bundle of glass threads, each of which is capable of transmitting messages modulated onto light waves.

The landing of the submarine fibre optic cables on the shores of the east African coast from the middle of 2009 brings to close the notoriety of the eastern African seaboard being the longest stretch of coastline in the world (7000 km) without a single submarine fibre optic cable landing on it. The use of fibre optic technology has certain distinctive features over other means of communication e.g. satellite, telephone twisted pair wires, coaxial cables, etc. Fibre optic systems offer users more potential bandwidth than any other type of transmission medium. Fibre carries much higher capacity of data than satellite. This is why one can download or upload so much more in such little time with fibre. High capacities across a satellite are not possible due to the restriction of carrying capacity on satellites. Unlike satellite, fibre has higher signal quality as it is immune to noise and interference, and not affected by temperature variations. Weather elements such as heavy rain can greatly reduce signal quality on satellite transmissions.

Latency refers to the time delay between the moment a signal is initiated, and the moment one of its effects becomes detectable. This time delay is much higher in satellite transmissions compared to fibre; hence we can say that fibre has reduced latency times than satellite. The arrival of the cables has also seen a tremendous drop in the cost of internet of access by up to 70%. Before fibre, 1Mbps link went for $2,000; the same capacity now goes for $500 to $600.This has seen more people and corporate establishments use more internet based modes of undertaking their businesses. With the many entrants such as GSM (mobile phone companies such as Zain, Orange, YU, Safaricom) networks getting out of their traditional voice business, and venturing into data transfer (internet business), ACKL's revenues shall continue to fall. At the beginning

of this month (June, 2010), the CCK made a very significant reduction in 3G licenses from $25Million, to $10Million.

This license will enable mobile phone providers such as Zain, Yu and Orange to install a 3G system currently operated by Safaricom. This technology shall make it possible for these companies to deliver a wider array of services which includes faster internet speeds. In order to benefit from these services, clients on these networks need to only spend as little as Ksh.2000 in order to get data modems. In contrast with ACKL, every installation requires a VSAT system that costs no less than $2,500 in order to deliver speeds comparable to those delivered on a 3G network. So if a client has got to decide on what solution to go for, the choice is almost obvious.

The enthusiasm that greeted the arrival of the fibre optic cable in the Kenya is reflected by the surge in the number internet users in the country as of June 2009.It is worth noting that by this time, the cable had just arrived and full utilization hadn't been realised. Kenya witness a growth of 1,579.8% between 2002 and June 2009.Internet penetration was 8.6%. Kenya's percentage of internet users as a proportion of Africa's population is 3.9%. This is figure of 3.9% is very impress when compared with countries such as Algeria with 4.8% and yet have had fibre cable connectivity for many years. There were 3.4 million users of the internet in Kenya by June 2009.This is a very impressive figure considering that during that time; only one cable had landed in the country. Two more cables (EASy and TEAMS) have since landed and their full effect shall be felt into the foreseeable future.

The arrival of the submarine cables therefore serves only to aggravate an already worse situation. This situation is well captured by Kim and Mauborgne (2005): "...imagine a market universe composed of two sorts of oceans: red oceans and blue oceans. Red oceans represent all the industries in existence today. This is the known market space. Blue oceans denote all the industries not in existence today. This is the unknown market space. In the red oceans, industry boundaries are defined and accepted, and the competitive rules of the game are known. Here, companies try to outperform their rivals to grab a greater share of existing demand. As the market space gets crowded, prospects for profits and growth are reduced. Products become commodities, and cutthroat

competition turns the red ocean bloody..." The arrival of the submarine fibre cables has made the 'red ocean' for many companies such as ACKL real, 'bloody'. Existing ISPs with infrastructure suitable to the utilization of the fibre cables have not wasted time in making fibre proposals to their clients. Others such as Access Kenya and Kenya Data Networks rolled our ambitious metro cable network around the city in order to tap on to the newly found opportunity.

As the scramble for new opportunities arising from the fibre cables, companies such as ACKL that have traditionally dealt with satellite solutions were experiencing am unprecedented fall in its revenues and client numbers. For example, Callkey East Africa which distributes ACKL's product in the Kenyan market has been facing the worst time since it started operations.The table below indicates iWay Weekly Summary For The Week Ending February 12th, 2010:

Table 2.5: Iway Weekly summary report as at 12th February 2010

New Installations	De-commissions	Upgrades	Downgrades	De-activations	Complaints
2	0	3	0	27	4

De-activations refer to temporarily switching off a site for a period of time. During the month in question above, 27 clients asked for their sites to be de-activated. This indicated that they must have done so in order to try out the fibre optics connectivity. Many other de-activation requests followed and subsequently lead to de-commissions (clients quitting service)

2.8 The way forward for ACKL

Kiplimo (2008) in his dissertation outlined several strategies which could be adopted by firms experiencing globalization challenges in Kenya. Below are some of these strategies and how ACKL may respond:

2.8.1 Diversification of product portfolio

The arrival of the sub-marine cable has impacted negatively on ACKL's business model. The same has befallen other companies also engaged in the provision of internet solution

through satellite. One way these companies could sustain their survival is to introduce new products into their product basket. Already, Callkey E.A., a distributor of ACKL for the Kenyan market has partnered with other infrastructure providers in order to avail the fibre optic to some of its clients. They have done this by packaging a product consisting of fibre connection at the same time so that in the event that one connection were severed, a customer would have another link to fall back on to. The challenge here however is the price at which they are buying fibre connection for re-sale. The prices are not competitive; obviously the vendors of the fibre connections know the situation bedevilling VSAT providers and just don't care for their fate.

2.8.2 Change of strategy

ACKL may not suffer major revenue losses overly in the short term because it is cushioned by its operations in other countries. However in the Kenyan market, there is no doubt that revenues are dwindling. ACKL should therefore stop have generic strategies in all the markets in operates and start adopting strategies that suit individual markets. This is because the environments under all its operations are not the same. Following the acquisition of Afsat by the M-Web group of South Africa, meant that ACKL and Africaonline are both interests of MWeb. Because Africaonline has been predominantly providing internet connectivity using Wifi technology (this is a wireless type of network), ACKL should immediately make good use of Africaonline's infrastructure in order to reach a wider segment of the market in a shorter time. It would be cheaper. During an executive distributor conference held at the Winsor Golf Hotel in March 2010, it was decided that part of the strategy would be to, "expand our solutions and consolidate iwayafrica, Africaonline and MWEB" Close to 3 months down the line, this hasn't kicked off and yet the competition is blistering.

The arrival of the fibre cable has resulted in bandwidth glut in the country. This oversupply means companies have to change their proposition to customers by offering more bandwidth for less meaning lower ARPU. "low ARPU means that for ISPs to maintain the same level of cash flow, their subscriber base has to increase tremendously. However, at the moment, the subscriber base in the ISP sector is mostly corporate and niche. The only way to increase subscribers is to target the mass market by offering mass

market oriented products. Safaricom thought it could do this by the sheer number of mobile telephony subscribers it has, but of late it has realized that mobile data is not sufficient to spur more bandwdith utilization and they have now started selling laptops (and therefore entered the IT vendor arena). The sale of laptops to their subscribers at massively subsidized prices is aimed at users consuming more bandwidth because internet browsing from a PC uses nearly 100 times more bandwidth than from mobile." Makau (2010)

2.8.3 Business process re-engineering

"Reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed " Hammer and Champy (1993, pg 98). They promoted the idea that sometimes radical redesign and reorganization of an enterprise (wiping the slate clean) was necessary to lower costs and increase quality of service and that information technology was the key enabler for that radical change. Hammer and Champy felt that the design of workflow in most large corporations was based on assumptions about technology, people, and organizational goals that were no longer valid.

If there is anything that ACKL needs to do now, it would be re-engineer its business model. This could entail the following: Re-design of the outdated iway product. For instance to allow more speed and volumes per service plan

Restructure its workforce. In comparison to other players in the industry, ACKL has competitive terms of work and remuneration. In light of the fact that the rate of client sign-ups has not been good to off set revenue losses, ACKL should consider restructuring its work force by for instance sending them to other operations in Africa, giving staff who would like to leave attractive packages and even dismissing those who services are no longer necessary or mediocre.

Cutting operational costs such as rent by re-locating to cheaper offices. For instance, ACKL could fully acquire Callkey E.A., its premier distributor in Kenya and house it with Africaonline in the same premises.

It could also consider scaling down its business from the provision of internet services over satellites and concentrate services such as building Wide Area Networks (i.e. inter-branch networks for clients).ACKL can achieve this by building a local hub that would be connected to one of the fibre cables within the country.

ACKL could consider being bought out by bigger players such as Safaricom, or it could purchase another ISP with infrastructure that can quickly optimise the sub-marine fibre optic cables. For instance, ACKL can buy cheap bandwidth from EASSy cable (they have the least cost structure of all the cables currently in the country) and resell it at a profit.In order to do so, they would need to negotiate the use of infrastructure of other players in the industry. It can for instance utilize KPLC's cable between Nairobi and Mombasa, and inter-land once KPLC complete laying their cable around the country.

2.8.4 Tap into pay-TV business

During its distributor conference in March 2010, one of the senior MWEB representative suggested that the iway should, "extract investment and value out of satellites- our cash cow". With over 13 years experience in the design and deployment of satellites across Africa, Afsat has a great resource in its staff, networks of clients, equipment suppliers and providers of space segment. It can therefore leverage these resources and provide pay TV services in select markets such as Kenya. In Kenya, Multichoice (DSTV) is the only company deemed to be offering quality services and a variety of TV channels. They haven't experienced any meaningful competition and that may be why their prices have remained static over the years. In fact, they raised their prices by $3 across all their offering just before the onset of the World Cup tournament in South Africa. Afsat would very easily compete in this field at least cost terms. The bandwidth being left behind by clients leaving the network could be converted to transmitting TV channels. "VSAT operators also need to flavour the deal with more offering, Astra2connect is offering internet, voice and TV on their service and on a 98cm dish, this means that installation is easy and cheap and users can cut costs by buying bundle plans such as those." Makau (2010)

2.8.5 Capitalize on the short comings of fibre optic connectivity

At an evening cocktail party in Kampala last year, Afsat Communications General Manager and technology guru Job Ndege took a group of journalists through the pros and cons of two competing technologies for Internet connectivity. "VSAT technology is gaining prominence in Africa in spite of the general opinion that fiber optic networks are the panacea to bringing down the soaring Internet connectivity rates that have hindered the penetration of these services in most African countries," Ndege (2009). Since the idea of constructing an undersea cable to complete the fiber optics loop around Africa was mooted, the promoters of fiber optics have branded satellite technology as expensive and limiting to connectivity. While that might not be entirely wrong, Ndege said VSAT is becoming more popular due to its maturity, reliability and efficiency, having supported Internet and telecommunication service providers since 1989. Apart from the colossal cost of installing fiber optic networks and the high risk of the lines being cut and damaged, there is a lack of motivation to invest in this technology due to the small user base, especially in Africa.

In contrast, VSAT beats the last-mile problem by connecting a customer's network directly to the Internet on a single hop, unlike most technologies, which rely on others for Internet connectivity. ACKL therefore could choose concentrate on remotely located clients who have no direct connectivity to the fibre cables. According to Ndege, advantages of fiber optic networks are that they have higher capacity, can be used over great distances, have high bandwidth properties, are not prone to electromagnetic interference and can be laid next to power-distribution cables. Disadvantages include the fact that fiber optics are expensive and difficult to install as a last-mile solution, and the cables are more fragile than wire, requiring highly specialized and expensive tools.

Satellite is still used the world to safe guard against any possible break down in submarine cables. For example, in April this year, most of the cables serving the country was disrupted as a result of, "...repairs on a faulty equipment (repeater) at sea, started on April 25, 2010 and are expected to be completed by the end of this month." Business Daily. Telkom Kenya chief executive officer, Mickael Ghossein, said that despite the fact that satellite capacity is eight times more expensive than fibre, they are yet to terminate

their satellite service as it provides them with redundancy. "Satellite capacity is costly but this is the best way to protect our customers." As I write this paper (5th July 2010), SEACOM, one of the three providers of cable connectivity in the country have posted at their website that there is an outage on their network. "At 09:19 GMT, 5 July 2010, SEACOM experienced a submarine failure resulting in service downtime between Mumbai and Mombasa ... This unexpected failure affects traffic towards both India and Europe. Traffic within Africa is not affected. ."

Three days have elapsed and the failure in the cable has not been fixed.SEACOM posted the following on its website: "SEACOM has successfully secured a number of restoration options for its clients through other international connectivity providers, including cable networks. This effectively provides customers with alternatives to re-route services and restore connectivity" SEACOM, 7th July 2010 update.

Today it posted: "SEACOM's technical team has identified the exact location of the fault and the repair process has been fully mobilised. The faulty section of the cable is at one of the deepest points along its route, some 4700m deep. This may require for robotics to be deployed to locate and retrieve the cable for repairs to be undertaken on board the specialised repair ship before replacing the cable back on the ocean floor." The specialised repair ship is being deployed but information on its whereabouts and the exact timeline of the repairs cannot be made available as the repair process is managed by the contractors. This is common practice in the industry. Whilst the repair process is expected to continue for several days, the actual completion date remains unknown due to several factors such as transit time of the ship, weather conditions and time to locate the cable. SEACOM has successfully sourced and activated restoration capacity on other cable networks servicing eastern and southern Africa and will continue to work closely with all parties to ensure that restoration capacity is made available to additional clients requiring it " SEACOM, 8th July 2010 update. It is evident from the above communication posted at their website that it is not known for sure how long this cable will take to restore. The contingency measures taken by this company as the market is suffering losses and delays resulting from the break down.

.8.6 Staff departure advantage

ven though it would not be expected to be much of a problem (because of prevailing ood pay), it is still expected that some members staff would leave the company in search f other opportunities. For instance, some members of the sales team will most likely eave. ACKL has co-opted some of its account managers into sales functions instead of ecruiting new employees who would take long to understand the company's product. his should lead to some cost saving without impacting negatively on clients.

.8.7 Low internet penetration in the country

ike most of Africa, internet penetration in Kenya at 8.6% of the population, is still very ow in comparison to the rest of the world. It is not realistically possible to cover every orner of the country by cable. Because of geographical dispersion and topography, many reas will be covered by VSAT. Internet penetration in Africa stands at a paltry 6.7%, the vorld average is 24.7%. "To attain a substantial internet penetration in Africa via fiber ptic cables, a massive capital investment in backbone and last mile solutions is needed ecause of the sheer area to be covered, the African continent is larger than the USA, urope, Australia and Oceania put together but with a much smaller market for internet ervices due to the low literacy levels and poverty. (Only 30% of Africans can read and vrite and more than 50% of them live on less than a dollar a day, this is effectively the otal market for internet services in Africa). Some critics might ask then how mobile hone services have managed to capture such a large market share within a short time, vhat they have to realize is that the literacy levels needed to use a mobile phone are not s high as that of using the internet and the cost of ownership of a computer is not omparable to that of a mobile phone." Makau (2009)

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research Design

This was a case study. A case study is a detailed investigation of individuals, groups, institutions and other social units. I undertook a study of ACKL business model and strategies it is employing in responding to the arrival of the fibre optic cables in the country. A case study was suitable because it allowed for the gathering of relevant information and an in-depth analysis of the data I collected.

3.2 Data collection

I used both secondary and primary data. According to Stake (1995) there are at least six sources of data that can be used in a case study. They include: archival records, interviews, direct observation, participant observation and physical artifacts among others. In my study, the secondary data which I used included: departmental structure, management performance reports and ACKL profile. I administered my interview guide consisting of closed and open-ended questions to 11 out of the targeted 13 respondents in the company. The 2 who could not participate were out of the country on work-related assignments.

Other additional secondary data came from TKL, CCK and the some government departments such as the Kenya ICT board.

3.3 Data analysis

After collecting both primary and secondary data, I summarized and did content analysis as per the objective of my study. This made it possible to have a more qualitative picture of the respondents concerns, ideas, attitudes and feelings.

CHAPTER 4: DATA ANALYSIS AND INTERPRETATION

4.1 Outcome of the study

This chapter dwells in the analysis of my research findings. The objective of my study was to find out the strategic response by ACKL in dealing with the challenges brought about by the arrival of the sub-marine cables in Kenya. The target of this case study was 13 members of staff in the following departments of the company: management, marketing, finance, administration, technical and customer support. Because all these individuals have email facilities, I emailed them the interview guides and administered personal interviews with each respondent. I managed to interview 11 respondents out of the 13 I had targeted, 2 were away on official duty in South Africa. The 11 respondents represented a response rate of about 84%. It would have been interesting for the finance team to shed some light in terms money value of lost business, they could not because of proprietary and non-disclosure clauses contracts with the company. However, there was a general consensus among all respondents that indeed ACKL has lost revenue substantially following the arrival of the cables. Of the respondents I interviewed, 90% have worked in the telecommunication industry for over 5 years, and 4 years at ACKL.

4.2 Risk of losing key members of staff

In order to establish if ACKL is on the verge of losing key and experienced members of staff to the cable companies, I asked each respondent is they were thinking of changing jobs. The outcome is as shown in the table below:

Table 4.2 : Potential of losing staff

Are you thinking of changing jobs?	No. of respondents
Yes	4
No	3
Not Sure	4

If the respondents were honest, then ACKL is facing a serious challenge in terms of losing staff members to the competition. Four of the respondents said they were thinking of changing jobs while another 4 were not sure. If the latter were to leave the company, then ACKL would find its self in a precarious situation. When I asked the respondents if

they thought that their colleagues would leave ACKL for the cable cables, 72% said yes, 18% said no while the rest simply didn't know if they would. This confirms a serious threat to ACKL losing key members of staff.

4.3 Level of competition in the market

Majority of the respondents (90%), agree that the telecommunication market in Kenya is very competitive and that the arrival of the sub-marine cables have posed a big threat ACKL business in the country.

Table 4.3: Threat of sub-marine fibre cables to ACKL

Are the cables a threat to ACKL?	No. of respondents
A big threat to ACKL business	8
Modest threat	3
Good for ACKL's business	-
Irrelevant to ACKL business	-

It evident that 72% of the respondents see the arrival of the sub-marine cables as offering a very big threat to ACKL's business in the country, while only 28% think that the threat is modest.

4.4 Loss of revenue

All respondents were expected to give their opinion as to whether they thought that ACKL had lost some revenue or clients following the arrival of the cables. Obviously accountants had the advantage of accessing actual money figures lost , whiles the rest of the respondents to estimate out of number of clients leaving ACKL's network for the cable companies.

Table 4.4: Loss of revenue

Has ACKL lost revenue?	No. of respondents
ACKL has lost significant amount of revenues/ client	10
ACKL may have lost some revenue	1
ACKL has not lost business	-
I don't know	-

It is clear from the above table that 90% of the respondents believed that ACKL had lost significant amount of revenues and clients. One of the accountants mentioned that the company had lost more than one third of its revenues.

4.5 Technology ACKL should invest in

Majority of the respondents indicated that the technological change and competition from other service providers as the most critical challenges. About 81% thought that the technology of choice in internet provision in the future shall be fibre as shown in table 4.5 below.

Table 4.5: Internet technology in Kenya in the future

Is the future of internet in fibre?	No. of respondents
Yes	9
No	2
May be	1

As shown above, most of the respondents were confident that fibre would play a leading role in the provision of internet connectivity in the country in the future. When asked whether they thought ACKL should invest in the fibre cables, the responses were over whelmingly 100% from all the respondents. Once again, 90% of the respondents were of the opinion that ACKL's response to the arrival of the fibre cables was slow. One respondent suggested that ACKL should have a Research and Development section whose role is to design new products, test competitor offers and suggest counter offer solutions.

4.6 Relevance of VSAT technology

Even though most of the respondents were of the opinion that ACKL should embrace fibre optic technology, most of them were still of the opinion that VSAT still has some relevance and advantages in certain parameters of communications over fibre.

Table 4.6 : Comparison of VSAT and fibre technologies

Parameter	VSAT	Fibre	Total Respondents
Reliability	9	2	11

Speed	-	11	11
Security	10	1	11
Cost		11	11

According to table 4.6 above, about 81% of the respondents were of the opinion that VSATs are more reliable and secure in comparison to fibre. Consequently, ACKL would be advised to invest in fibre in order to gain the advantage of faster speed and lower cost to its clients.

4.7 Response by ACKL

Generally speaking, most of the respondents were of the opinion that ACKL was slow in responding to the cable companies. They however conceded that the company had put certain measures to minimize the cable effects. Some these included the following:

ACKL is provisioning internet connectivity through its hub in the UK. This NOC in the UK is providing clients with faster speeds and a marginal raise in volume of traffic they can transmit.

All the respondents were unanimous in advising the company to put in place a clear strategy that will service the company into the foreseeable future. This will avoid the need of 'fire-fighting' as is the case currently.

ACKL has designed a back-up package for clients that have left its network. The essence of this service is to provide redundancy so there would be no service interruption if their primary connection were to break down for any number of reasons.

Because ACKL has merged with Africaonline (AFOL), it is riding on the strength of both companies in offering alternative solutions. For instance, AFOL isn't specialised in VSAT like ACKL and therefore could very easily and quickly tap onto the fibre cables in Nairobi and other major towns. ACKL has started to encourage its distributors to re-sell all the services of AFOL.

Diversification of product range in order to avoid adverse effects where one line of business becomes unattractive to clients, and by extention the company. Even though some of the respondents did not suggest what other lines of business ACKL can pursue, they pointed that it could perhaps be achieved through partnerships with companies with the ability of reaching wider segments of the market in a shorter time. For instance, the

GSM companies such as Safaricom and Zain which are lately venturing into data business. With the advantage of their vast networks, they can reach many potential clients in a shorter time, with the least capital outlay.

ACKL is re-assigning roles to departments and staff in order to address staffing needs as a result of the few departures by some staff over the last one year. With the merger with AFOL, there may be no need of hurriedly recruiting new staff but rather take advantage of the merging. This has made the company safe some costs and boost the morale of its staff by ensuring that there are no job losses.

4.7.1 Enterprise Resource Programme (ERP)

The respondents pointed out that ACKL had put in place an ERP which is also shared with its distributors. This they said is helping streamline operations within the company and is reducing the turn around times of tasks. For instance, is whenever there is complaint from a client regarding any aspect of the service, it is possible to track the resolution process to its logical conclusion. This system also does automated generation and emailing of invoices to clients every month, thereby removing the need to manually undertake this task. This system has also reduced the need for hiring many accountants.

4.7.2 Back-up service plans

Some of the respondents mentioned that ACKL was aware of the revenue lost due clients leaving for other networks on sub-marine cable.To this effect, ACKL has designed special service plans targeted at these companies. The core of this offering is to provide redundancy whenever the cables experience some disconnection. This is as shown in the table below:

Table 4.7: Back-up service plans

Service plan	Speed(Kbps)	Standing charge/ Month(US$)	Price Extra GB of traffic(US$)
SE+	540	100	75
ME	1080	100	200

Under this package, a client is given an allocation of volume of traffic per month and pay a small standing charge. If the client exceeds his allocation, then they are charged for the

extra volume at some rate per month. For instance, under the ME service plan in table 4.7 above, the volume allocated is 2Gb of traffic per month, and the speed to the client is guaranteed at 1080 Kbps. Should the client use more than the 2 GB, then a charge of $ 100 per GB of traffic is imposed. The rationale of the back-up service is contingency; the client is expected to use his primary link (cable) and will only resort to the VSAT when the cable is out of order.

4.8 ACKL future Profitability

Most of the respondents pointed out that even though the company has lost significant business with the arrival of the cables, it has the potential of re-couping these losses if the measures it has put in place are aggressively pursued. They explained that there is a lot of potential owing to the fact that ACKL is owned by Telkom South Africa (TSA). TSA has a plan of replicating solutions on offer in its Southern African market in East Africa and this plan shall be executed through ACKL. It is worth noting also that TSA has invested substantially in the EASSy cable and would very easily use this privileged position to offer ACKL competitive cable offers which rival those already in the Kenyan market.

CHAPTER FIVE: RECOMMENDATION AND CONCLUSIONS

5.1 Introduction

This section provides a brief summary of the analysis of the data collected, the challenges I experienced during the study and some recommendations for future studies.

5.2 Summary of study

The purpose of this study was to look at ACKL's response to the arrival of the sub-marine cables in the country. ACKL is a company that was established solely with the aim of providing internet connectivity solutions through satellite (VSAT). With the arrival of fibre optic cables in the country, ACKL has experienced worst times of revenue and loss of clients. From the study, 100% of the respondents were unanimous that there was no doubt the company had lost significant revenues.

The aforementioned not withstanding, the respondents were also of the opinion that the company may not close shop necessarily owing to the fact VSATs will still be needed even in presence of fibre. This is because fibre cables have not attained the stability needed to carry out business without the fear that they will fail.It is also not possible for cover the entire country on cable due to geographic the financial reasons.For this reason, VSATs shall continue to serve remote places such as Marsabit, Maralaal, Mandera or even Southern Sudan where ACKL has close 200 installations.

The company has also merged with Africaonline and is consolidating its internal operations in order to take advantage of the synergies emanating from the merger. The respondents were confident that with the unique ownership of TSA, it will be possible for the company to provide cable services and that TSA would provide new services in the Kenyan market thereby making ACKL competitive in the very near future.

The respondents were also upbeat that it is not just ACKL going through challenging economic times. One of the respondents pointed out that even Access Kenya, one of the leading providers of internet connectivity in Kenya had reported a 55% deep in its half-year profits for 2010 in comparison to a similar period in 2009. They were however

explicit that ACKL's over-dependence on VSAT business alone is no longer tenable and the company must quickly tap onto the cable in order to offer fast speeds at cost-effective prices.

5.3 Constrains and limitations

The main limitation of this study was confidentiality concerns. I would have liked for instance to quantify in shillings how much revenue the company has lost from the time the cables arrived in the country. There were also some limitations in literature on the subject relating to fibre in East Africa because its arrival was a totally new phenomenon. Lack of time due to work pressure and movement of personal within the organization also proved to be a challenge. For instance, whereas I had emailed my interview guide to 13 colleagues, I ended up interviewing 11.

5.4 Conclusion

It has always been said that in the ICT world, things happens so fast. This statement couldn't be said better. In as much as there wasn't much literature relating to my topic with regard to the 'heat' that fiber has generated on VSAT, a lot happened as I wrote.

In my study, one of the advantages of VSAT that came to the fore was that it offers some redundancy over failures of the sub-marine cable. As I progressed with my study, both the TEAMS and SEACOM cables failed for 3 weeks in April 2010, and the latter failed for to ten days in July 2010 during the world cup. This therefore underpins the need for VSAT for redundancy.

While the cables were still under construction, many leading local service providers were busy positioning themselves for its arrival by laying metro cables around major cities around the country. These companies include: TKL, Jamii Telcom, KDN and Access Kenya. These companies consequently sunk millions of dollars in their infrastructure expecting to reap when the cables landed. This has not been the case as most of them have seen their revenues fall and profitability fall due to differing dynamics. For instance, in the case of Access Kenya, they funded their metro cable through dollar-denominated borrowing and with the Shilling having lost significantly to the dollar; they have suffered massive losses in foreign exchange. The other major reason is the Kenya Power and

Lighting Company (KPLC) ventured into cable business by laying fibre optic cable over its overhead cables. Because of the ease of deployment and the fact that they are utilizing existing infrastructure and human resource in the deployment, their cable is more attractive to many other small operators who would want to utilize KPLC's capacity. This scenario has somewhat eroded the hitherto advantages envisioned by the 'big wigs' at the time of laying the metro cables. These challenges facing main stream internet service providers are further compounded by the fact GSM companies such as Safaricom and Zain have reduced calling rates by more than 50% following the CCK's reduction of inter-connection charges between networks.Following this reduction, these companies are looking to the data market(internet and inter-corporate data transfer) as the next battle zone.

In light of the aforementioned, it is evident that every industry player is facing difficult times, technology not withstanding. For this reason, I am confident that if ACKL can implement its strategies in a more long term fashion, it will certainly get its self out of the current doldrums and regain its foothold.

5.5 Recommendations for further study

In many Western countries such Europe and the USA, the use of VSATs is still wide spread even though they have the highest density of fibre cables in the world. Hughes Network Systems of the USA manufactures close to one million VSATs each year and close to one third are used in the US market alone. It is therefore worth investigating why the VSAT market profitability would quickly dwindle in the East African market following the arrival of only 3 cables in comparison to 34 European sub-marine cable systems and 22 in South America (as of 2009), yet these countries' VSAT usage remains on a growth path.

REFERENCES

Anderson, J. Q. & Rainie, L. (2006). The Future of the Internet II. Washington, DC: Pew Internet & American Life Project. Retrieved June 22, 2010 from http://www.pewinternet.org/pdfs/PIP_Future_of_Internet_2006.pdf

Chan Kim, W. and Mauborgne, R. Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant (Harvard Business School Press, 2005)

Cooper, D.R and Schindler, P.S. (2003).Business research methods (8th edition) Irwin/ McGraw Hill, Boston

Gilat Communications Network. Satellite Basics (retrieved 26 June 2010) from http://www.gilat.com/content.aspx?page=introduction_sat

Ghossein, M. (Business Daily 28 April 2010). "Satellite costs keep internet charges high" Nation Media Group, Nairobi

GOK (2007), Economic Survey, 2007.Central Bureau of Statistics, Ministry of Planning and National Development. Government Printers, Nairobi

Hammer, M., and Champy, J. (1993), Reengineering the Corporation: A Manifesto for Business Revolution. Harper Collins, London.

Hummels, D. (2001) Time as a Trade Barrier (Chicago, University of Chicago), Mimeo.

ILO (2001) World Employment Report (Geneva, ILO).

10. ITU 2006. ICT and Telecommunications in Least Developed Countries: Mid-term Review of the Decade 2001 – 2010.

ITU (2007), Measuring the Information Society Opportunity Index and World Telecommunication / ICT Indicators – 2007, Available online at http://www.itu.int/publications

ITU WTI (2006), World Telecommunications/ICT Indicators Database 2006, 10th Edition Available online at http://www.itu.int/publications

Kandie, P.(2001), A study of the Response by Telkom Kenya Ltd in a Competitive Environment. Unpublished MBA project of the University of Nairobi.

Keely, L. & Quah, D. (1998) Technology and Economic Growth (London, LSE), mimeo.

Kenny, C. (2002) Information and communications technologies for direct poverty alleviation:costs and benefits, Development Policy Review, 20, 2, pp. 141–157.

Kenny, C. & Williams, D. (2001) What do economists know about economic growth-or why don't they know very much? World Development, 29 No. 1.

Kiplimo, J.C. (2008). Challenges Faced by Telecommunication Operators in Kenya that are brought about by Globalization: A case of Telkom Kenya Ltd. Unpublished MBA Project of the University of Nairobi

Kirkman, G., Cornelius, P., Sachs, J. & Schwab, K. (Eds) (2002) The Global Information Technology Report 2001–2002 (New York, Oxford University Press).

Kleinrock, L. (1964), Communication Nets: Stochastic Message Flow and Delay, Mcgraw-Hill (New York)

Leiner,B., Cerf, V., Clark, D.,...Wolf, S.(1998). The future of the Internet. Retrieved from: http://www.livinginternet.com/i/ia_future.htm

Makau, T.M., "Don't Write off satellite just yet" Retrieved from: http://www.scribd.com/doc/16696587/Dont-write-off-Satellite-vet on 5th July 2010

Makau, T.M. (July 6th, 2010) Email communication

Mweu and Francisca, 2000. An Overview of Internet in Kenya, a presentation made in the African Internet and Telecom Summit in Bajul, The Gambia, June 2000, http://www.itu.int/africaInternet2000/countryreports/ken_e.htm

Netcom Information Systems (2007).Internet Market Analysis Study. Prepared for Communications Commissions of Kenya (CCK). Retrieve on 22nd July 2010 from: http://www.cck.go.ke/resc/downloads/Final_Internet_market_analysis_report.pdf

Ndege, J., VSAT Technology Gaining Prominence Inspite of Fibre Optic. http://www.vourictmagazine.com/networking/vsat/84-vsat-technology-gaining-prominence-inspite-of-fibre-optic (Retrieved on 3rd July 2010)

Ogwe, D.(No date). Kenya-Connectivity Costs Remain High despite Arrival of Fibre Optic. http://www.kenyatelecentres.org/index.php?q=node/487 (retrieved on 26 June 2010).

Safaricom Ltd, Internet bundle offers. Source: http://www.safaricom.co.ke (retrieved 8th December 2008)

SEACOM, http://www.seacom.mu/news/news_details.asp?iID=142(Accessed July 5, 2010)

Sekeran, U. (2003), Research Methods for Business-A Skill Building Approach. John Wiley & Sons. New York.4th Edition

Tzu, S. The Art of War: The New Translation, HarperCollins, 2008

Tyson, J. "How Internet Infrastructure Works", www.howstuffworks.com

Wiki. http://en.wikipedia.org/wiki/Communication (retrieved 16 June 2010)

World Internet Stats; Usage and population statistics (retrieved 2nd July 2010) http://www.internetworldstats.com/stats1.htm

APPENDIX 1: INTRODUCTORY LETTER

UNIVERSITY OF NAIROBI

Robert Metett
School of Business
University of Nairobi
NAIROBI

Dear Colleague,

REF: INTRODUCTORY LETTER

I am pursuing an MBA program at the University of Nairobi and I am required to submit as part of my course assessment a research project report. In this regard, I am writing a research proposal on the strategies that Afsat is undertaking in order to counter the effects of the arrival of the sub-marine cable system. The results of my study shall solely be used for academic purposes.

I would be grateful if you could spare some time to peruse my interview guide and respond to the questions therein.

Thank you for participation in this research.

Yours faithfully,

Robert Metett
MBA Student

APPENDIX 2: INTERVIEW GUIDE

Section A:

1. Name of the respondent.....(optional)

2. In which department do you work?.....(optional)

3. How long have you worked in the telecommunication industry?
   (a) Below 5 years( ) (b) Over 5 years ( ) (c) Over 10 years ( )

4. For how long have you worked at ACKL?
   (a)1- 2 years ( ) (b) 3-4 years ( ) (c) Over 5 years ( )

5. Are you currently thinking of changing jobs? *Please tick relevant box*

Yes	
No	
Not sure	

Section B

6. Do you think internet provision through satellite has a future? *Please tick relevant box*

Yes	
No	
Don't know	

7. How would you describe the level of competition in the telecommunication industry in Kenya at the moment? *Please tick relevant box*

Very competitive	
Fairly competitive	
Not competitive	

8. How would you describe the arrival of the fibre optic cables in the country? *Please tick relevant box*

A big threat to iway business	
Modest threat	
Good for ACKL's business	
Irrelevant to iway business	

9. In your opinion, do you think that ACKL could have lost some business as a result of the arrival of arrival of the under sea fibre optic cables? *Please tick relevant box*

ACKL has lost significant amount of revenues/ clients	
ACKL may have lost some business	
ACKL has not lost business	
I don't know	

10. Do you think that the future of the internet in Kenya is in the fibre optic cables?

Yes	
No	
May be	

11. In your opinion, do you think some of your colleagues will leave ACKL for the cable companies? *Please tick relevant box*

Yes	
No	
Don't know	

12. How would you rate ACKL's responsiveness to the arrival of the fibre cables? *Please tick relevant box*

Very responsive	
Slow	
Not responsive	

13. What is ACKL doing to forestall loss of business following the arrival of the fibre cables? Please explain.

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14. What other strategies do you think ACKL could employ to counter the effects of the fibre cable? Please explain

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15. In your opinion, do you think ACKL should invest in the fibre business? *Please tick*

Yes	
No	
May be	

16. In your opinion, which technology do you think clients would choose between fibre and VSAT, on basis of the parameters specified in the table below? *Please tick*

Parameter	**VSAT**	**Fibre**
Reliability		
Speed		
Security		
Cost		

17. What challenges do you ACKL might face in responding to the arrival of the fibre cables? Please explain

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.....

Thank you for your time in responding to the above questions.

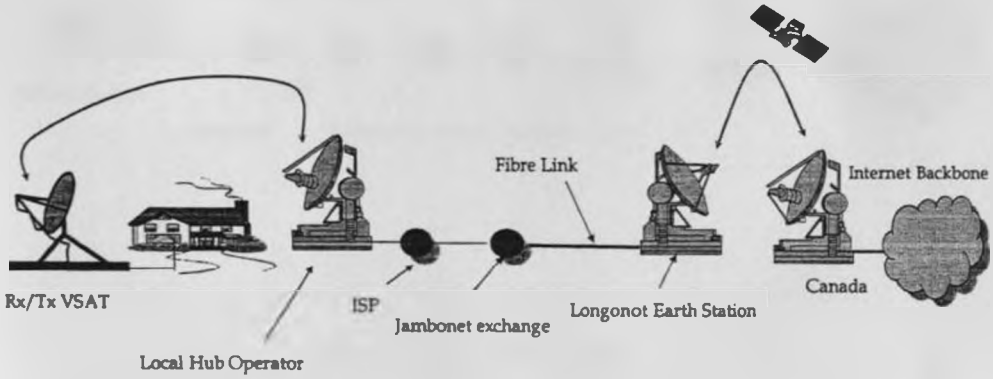
APPENDIX 3: DETAILS OF RESPONDENTS

Department	Designation of respondent/s	No. of respondents
Management	Assistant General Manager	1
Marketing	Corporate Account Manager and Corporate Solution Managers	3
Finance	Accountants	2
Administration	Office Manager and office assistant	2
Technical	Technicians	2
Customer support	Network Engineer and Support Engineers	3
TOTAL		**13**

APPENDIX 4: INTERNET ACCESS ARCHITECTURES OVER SATELLITE

iway AFRICA

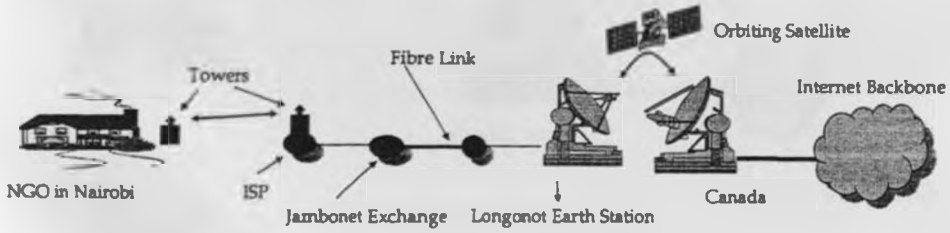
Internet access via double hop VSAT system



AFSAT COMMUNICATIONS KENYA LIMITED

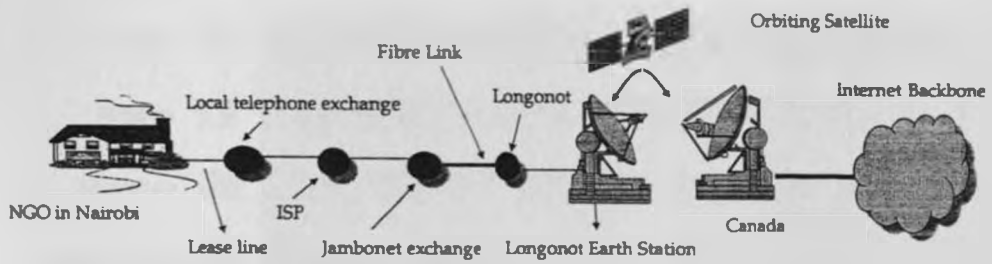
iway AFRICA

Internet access via Wireless/Microwave Solution



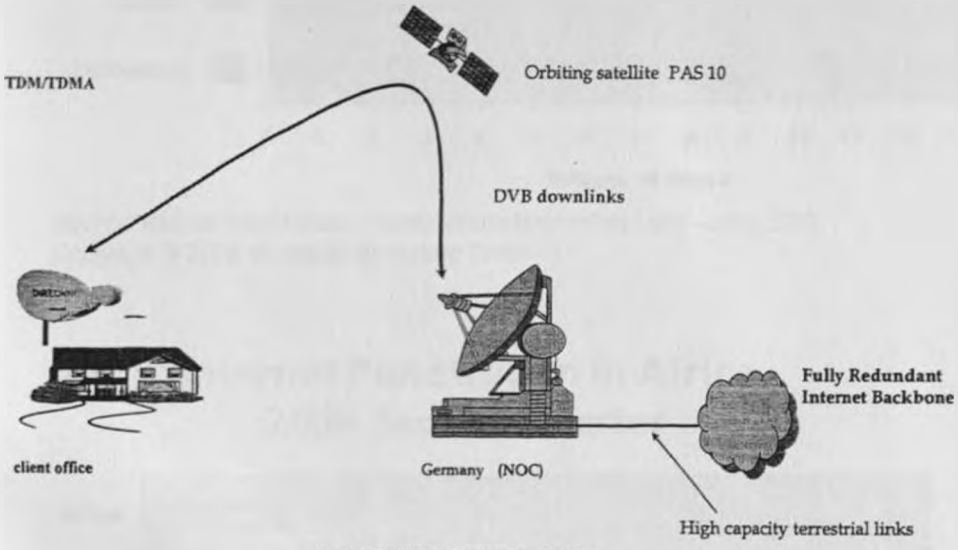
AFSAT COMMUNICATIONS KENYA LIMITED

Internet access via Lease line



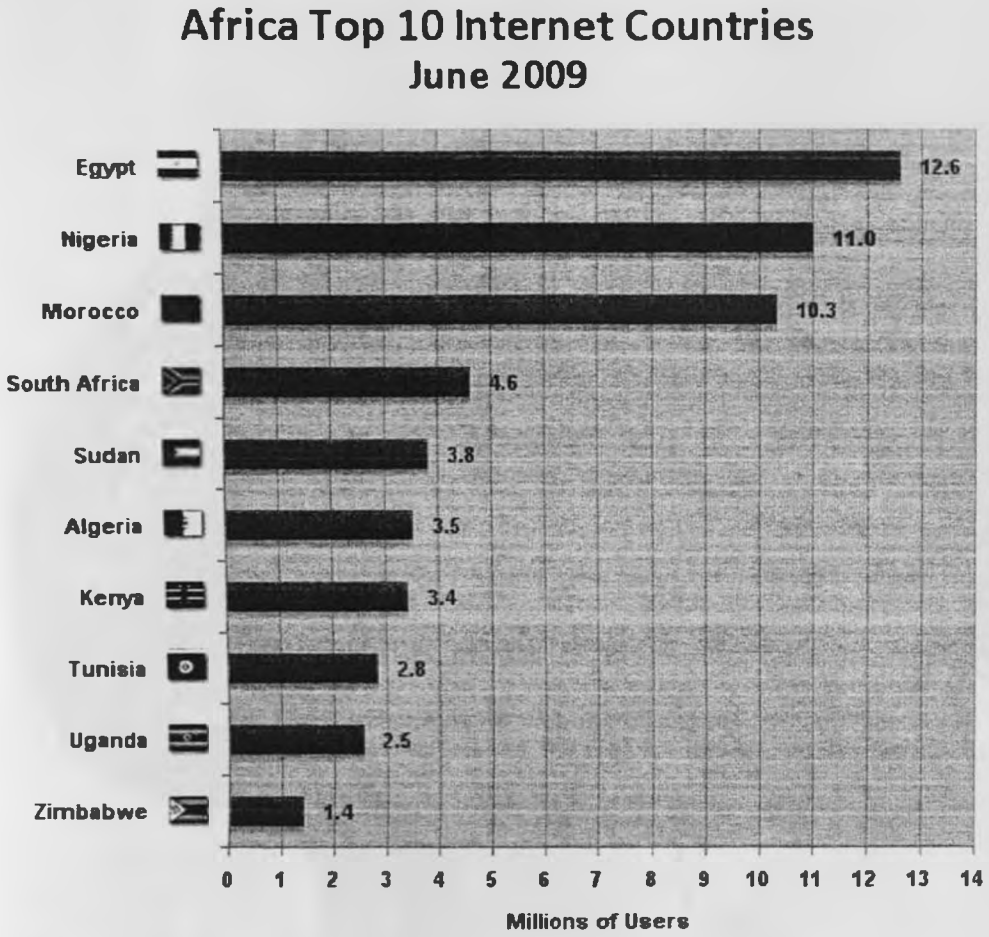
AFSAT COMMUNICATIONS KENYA LIMITED

iWay network Architecture



AFSAT COMMUNICATIONS KENYA LIMITED

APPENDIX 5: AFRICA INTERNET USAGE STATISTICS



Source: Internet World Stats - www.internetworldstats.com - June 2009
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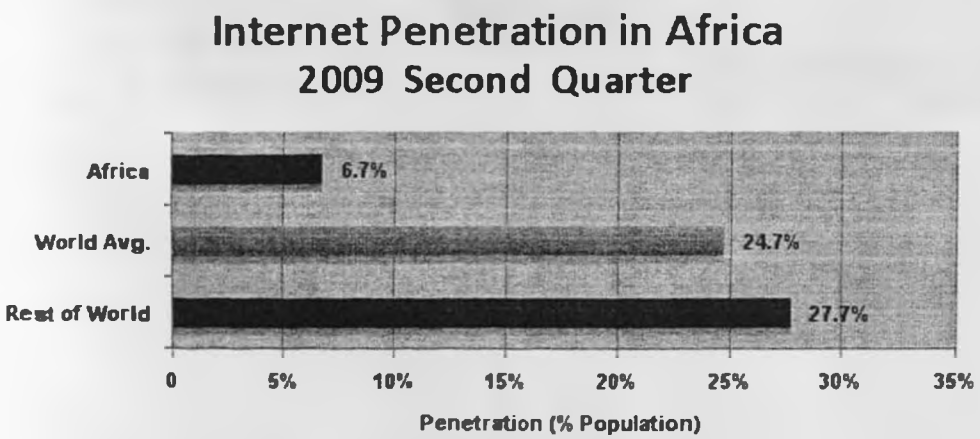

Source: Internet World Stats - www.internetworldstats.com - March 2009
65,903,900 estimated Internet users in Africa for June 2009
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APPENDIX 6: AFRICAN UNDERSEA CABLES