Factors Contributing to The Rapid Growth of Kenyan Optical Fiber Network Infrastructure

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Summary

In the recent past, Kenya has experienced a rapid growth of the optical fiber network. In this paper we present the factors contributing to the rapid growth of Kenyan optical fiber network infrastructure. Currently, Kenya is served by four undersea cables TEAMS, EASSy, SEACOM and LION2. The landing of these four undersea cables at the Kenyan coast has been a major boast to the information and communication technology (ICT) industry. Apart from the landing of undersea cables, the rapid growth of the optical fiber infrastructure network in Kenya has been attributed to many factors which we have discussed in this paper. In major Kenyan towns, Fiber-to-the-home is considered the home user's dream as it would enable service providers to offer a hefty selection of services including high-speed Internet, broadcast cable television, direct broadcast satellite television, and additional two-way video-based services. This has lead Telecommunications industry in Kenya to revolutionize leading to robust and wide spread optical network.

Key words:

Optical fiber network Infrastructure, optical fiber, rapid growth

1. Introduction

Optical networks are high –capacity telecommunication networks based on optical technologies and components that provide routing, grooming and restoration at the wavelength level as well as wavelength based system.[1].Optical network, based on emergence of the optical layer in transport network provide higher capacity and reduced costs for new application such as internet ,video, and multimedia interaction and advanced digital services[2].Due to many advantages of the optical fiber many companies in Kenya have raid the optical network this are Kenya Data network(KDN),Jamii Telecom,Tecom orange Kenya ltd and Kenya power. KDN has deployed the largest fiber optic network in the region so far. With over 1000 Kilometers of Metropolitan fiber optic cable in Nairobi, 150 in Kisumu and Mombasa and 75 in Nakuru, Eldoret and Thika, KDN has the key towns in Kenya covered [3].Jamii Telecom (JTL) has deployed Next Generation Metro Fiber Networks Countrywide. It has also built a National DWDM Backbone connecting all the Major Towns in Kenya and the borders to Tanzania and Uganda. The National Backbone has been provisioned on the highly secure OPGW fiber on Kenya Power & Lighting Co Ltd (KPLC) HT power lines [4].The underlying factors which have lead to this players laying the optical network infrastructure in Kenya are hereby outlined.

2. E-governance

The Kenya government has been making significant attempts to make its services and information on the Internet available in the recent past. The success of these efforts depends to a great extent, on how well the targeted users i.e. the citizens in general make use of the services and information. The transition period from the KANU government to the NARC government(December 2002), marked the full realization of the e-government aspect, as the nation was set to tap the great potential of ICT-in service delivery to its subjects. Nonetheless, it was in January 2004 when, after the executive (cabinet) session, that a Directorate of e-government was established. The newly created department had the duty to draw the plan of action; for future ICT implementations [5]. Direct effects of e-government include cost effectiveness in government and public operations, significant savings in areas such as public procurement, tax collection and customs operations, with better and continuous contacts with citizens, especially those living in remote or less densely populated areas [7][10]. The achievement of e-Government is one of the main priorities of the Kenyan Government towards realization of national development goals and objectives for wealth and employment creation. Effective and operational e-Government will facilitate better and efficient delivery of information and services to the citizens, promote productivity among public servants, encourage participation of citizens in Government and empower all Kenyans. The government as created many websites for services delivery to its citizens [8]. All this factors have lead to rapid network to remote areas too.

3. E-banking

The banking industry is a key section in any economy and as prime movers of economic life; banks occupy a significant place in every nation. The Kenyan banking industry has been expanding branch networking amid the introduction of branchless banking system, which include the use of EFTs, ATM cards, SMS banking etc[11].

In Kenya, majority of banks have introduced internet banking, mobile banking and other e-banking facilities, to enhance delivery channels to their customers. Like many other developing countries, e-banking in Kenya is at its nascent stages. Many banks are embracing e-banking but majority have at least one or two technology based delivery channels. The non adoption of e-banking by banks was attributed to impaired non-availability of infrastructure and legislation to support e-banking [13]. This has been solved by the optical infrastructure and in the recent past many banks are adopting e-banking at a very high rate through adverts in the media.

4. Business Outsourcing Centers

Kenya hopes to become a bigger player in Business Process Outsourcing (BPO) as India has done in the recent past. Kenya's nascent call center business has grown from employing 200 people in the year 2006 to 3,000 in 2012 despite relying on expensive satellite-based communications. Kenya's Ministry of Information and Communications in the recent past said that in order for the BPO sector to compete, the government was to increase its bandwidth to 500 megabits per second by the end of the year (2007) and subsidize costs until the cable is completed. There has been a lot of talk, especially in East Africa, about business process outsourcing (BPO) as a big way to elevate the technology field. The logic is that while many of these jobs might not be super high-tech (ie, programmers), they're at least in the tech field thereby allowing people to get comfortable with computers and bringing outside investment into the country[14]. The 2006 Kenya ICT Strategy, Collaboration and Outsourcing, launched by the president of Kenya, created the framework for Kenya to focus on global business process outsourcing as a way of generating jobs for young people and generating wealth for local entrepreneurs and investors. Outsourcing has been identified in the Vision 2030 as a key pillar and driver of social and economic improvement through job and wealth creation [15].

5. Internet and Voice Services

Speed and reliability have significantly improved, and this has had an impact of increasing the number of Internet users in the country.Kenya's mobile operators are racing

to extend their network coverage across the country to keep up with the growing number of subscribers. Internet usage has grown by 69 per cent to 6.5 million subscribers. safaricom the company, which is highly dependent on fibre for voice and Internet services, would finance the investment internally. Safaricom, 40 per cent owned by Britain's Vodafone, already has 600km of fibre, and will start adding another 800km from November 2012 which will be completed within 18months according to its CEO, Collymor [16].

6. Expansion of University

The Internet is a global system of interconnected computer networks including schools, governments, businesses, and other organizations. The Internet facilitates information exchange across the globe. African university libraries, as a centre of academic and research activities for development, require this connectivity to remain viable in the present ICT environment. The way in which information is produced, shared, and consumed is now so heavily mediated by information technology that a university depends on the quality of its connections to both the commercial Internet and the global research network. Bandwidth determines the efficiency of Internet connections, but equally important is the type of infrastructure used in the connectivity. The effectiveness of Internet connectivity depends on the speed of transmission across the networks [17].

Discussion and Results

The Kenyan optical fiber infrastructure has rapid grown due to the above major contributing factors. The regions below have experienced the recent infrastructure development

Western Region
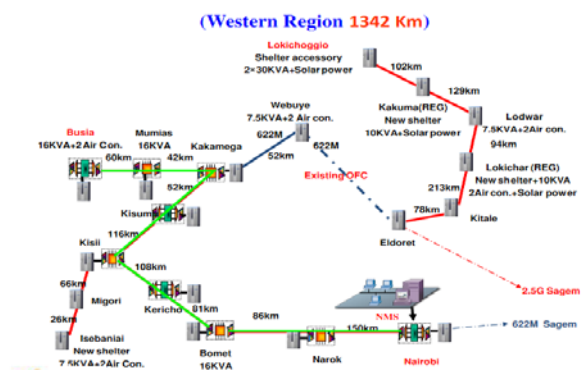
The map below gives the optical connectivity in the western region. It starts all the way from Narok , Kisii , Kisumu all the way to north rift parts of the great rift valley of Lokichoggio. This region has widely opened its road network and there is a lot of development projects

going on. For example there has been expansion of university, in the recent past this region has received almost 5university/college from the government this include Maasai Mara university, Kisii University, Rongo University college, Jaramogi Oginga Ondiga University of Science and Technology, Kabianga University and University of Eldoret. Most of these Universities are developing their ICT infrastructure and they are emplacing the optical fiber technology for their LAN connectivity.

(Central Region 1112Km)
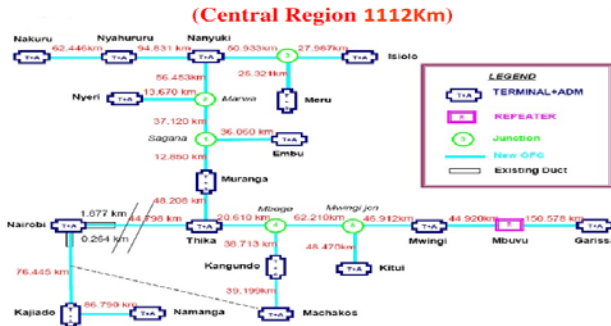
Central Region

The central region involves major towns surrounding the city of Nairobi. There has been in the recent past major development of this towns as a result of this the fiber connectivity to the offices is on high gear. The City of Nairobi host many Business outsourcing center. In the recent past there is high connectivity of fiber to the home (FTTH) in well of estates in the City of Nairobi. This as also boosted the optical connectivity in the central region. The major towns surrounding Nairobi have also experienced the expansion of universities which include Multimedia University of Kenya, Kimathi University of Science and Technology,Laikipia University,South Eastern University of Kenya, Karatina University,Kirinyanga University College etc.

North Eastern Region

(North Eastern Region)
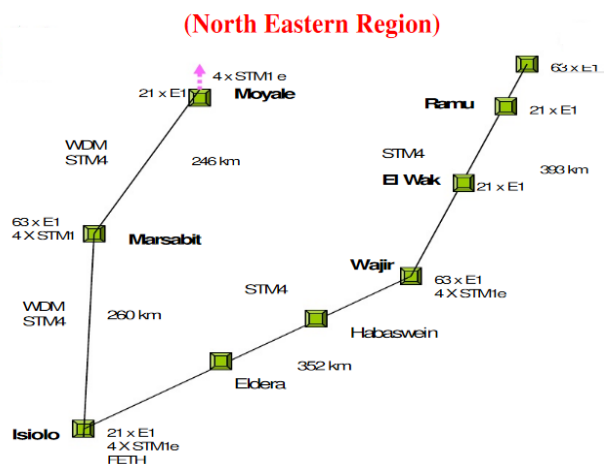
This region is also experiencing the growth of the infrascture.The region has also experienced in the recent past a new university i.e Garisa University college. The slow growth may be attributed to poor road network and undeveloped towns in this region but with the increased use of internet by the locals the region is also opening up.

Coast Region

The region is experiencing a rapid growth of optical infrastructure majoring due to the fact that it's the major town Mombasa with the four undersea cables connectivity to the outside world and main land. The region is a tourist destination for Kenya and has experienced in the recent past new University expansion which include Technical University of Mombasa, and Pwani University.

(Coast Region)
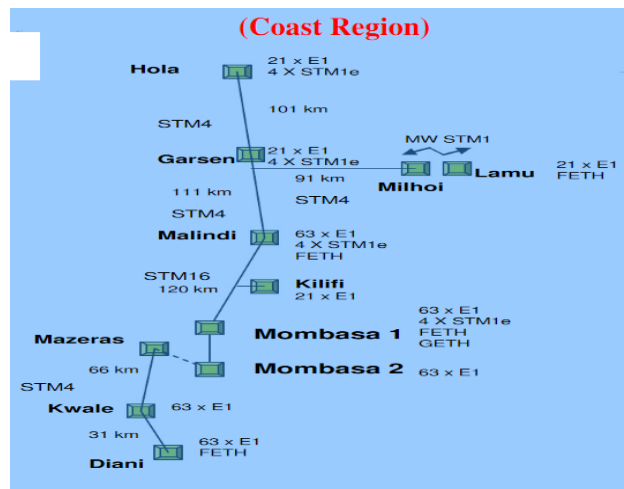
Conclusion

Kenyan optical fiber network rapid growth has been attributed to e-governance, increased internet user, expansion of higher education in Kenya ,e-banking etc.This and many more have in one way or another contributed to the fast expansively of the optical network in Kenya.

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