Introduction

Telecommunication is defined as the technology of transmitting messages or any form of communication over a distance using electric, electromagnetic or electronic impulses. It covers a variety of components, such as broadcast, cable, telephone, satellite and telegraph. Telecommunication has evolved through the years to become not only faster but cheaper and of higher quality. The amount of information that can be transmitted in the contemporary world via telecommunication channels is seemingly unquantifiable. this report seeks to analyze the telecommunication sector and how it works. It will then narrow the scope down to the scenario in Kenya. Factors which will be considered are the challenges that exist, the opportunities available, the main players in the Kenyan telecommunication sector as well as regulation that governs the sector. Finally, a summarizing conclusion with the key points of the report's findings will be provided.

Sector Overview

The development and improvement of telecommunication services has become of key importance not only to individuals and corporates but also to governments. As the world becomes a global village, information sharing has become fast and efficient, with additional reliability. Wi-Fi speeds have continued to rise, with the fastest average national speed being recorded in the United Arab Emirates at 22.98Mbps. broadcasting has taken on a new perspective, with news and programming streamed with ease from nearly anywhere. This has served to promote the rise of streaming service providers who have revolutionized the delivery of content. Global telecommunication services revenue stood at $2.1 trillion in 2012, and this is projected to rise to about $2.7 trillion in 2017. Increased subscription services are the main driving force behind this, as well as the successful adoption of mobile phones, smartphones and tablets in the developed and developing world. While the Western World has traditionally been at the forefront in the adoption and implementation of technology thus maintaining a competitive edge, Africa is fast picking up on the trend and improving its telecommunication standing globally. Kenya is an example of one such economy which is making significant strides towards raising its rank and attracting additional attention and investment.

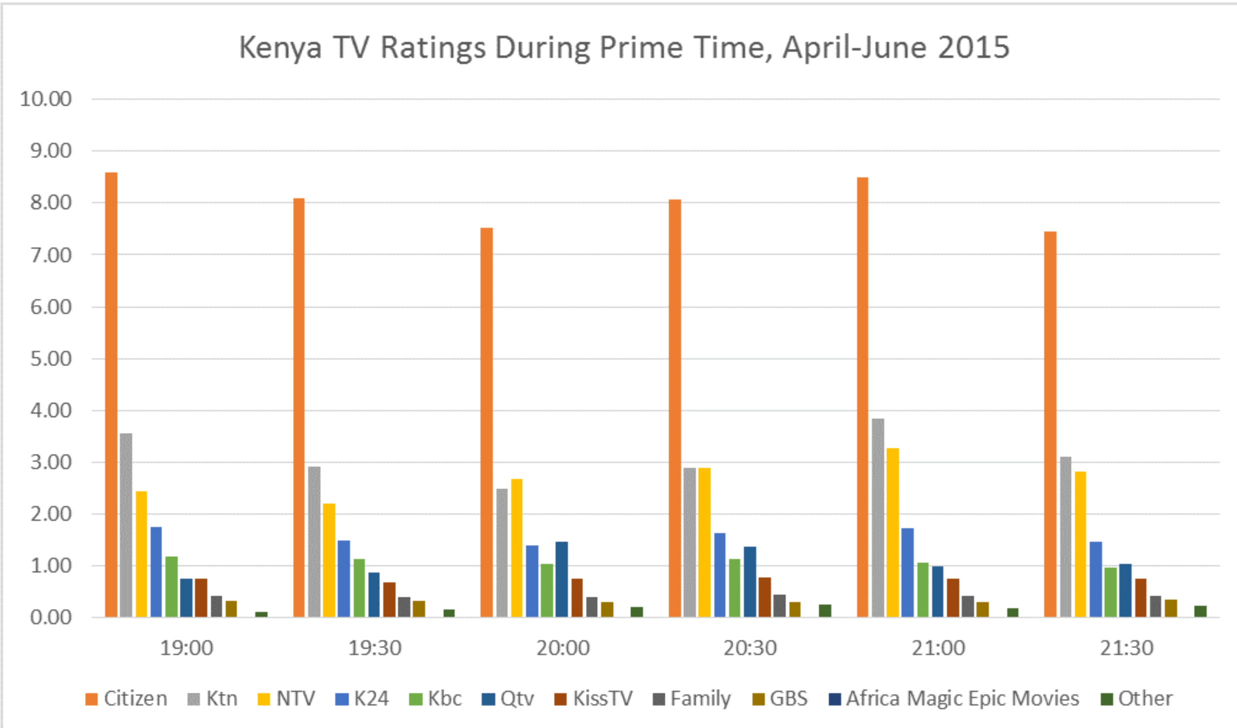
Kenyan Telecommunication

Telecommunication in Kenya mainly consists of broadcast, telephony and internet services, with the telegraph and other early forms of telecommunication having been phased out. In each of the identified categories there are a number of players whose services stand out, and some of who have specified client types. The Government of Kenya has laid down plans to improve local telecommunication through a strategic plan dubbed Vision 2030.

Sub-Sectors and Competitive Environment

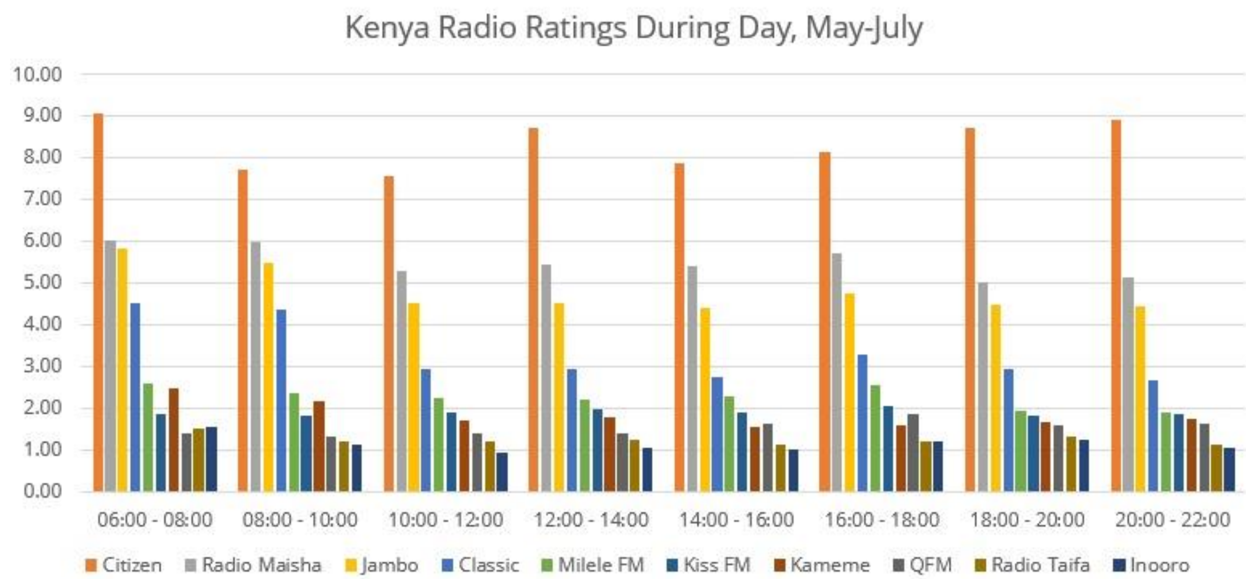
Broadcast

Television in Kenya is split into free-to-air and pay television. The latter has payments made on a monthly basis, and also offers channels under free-to-air television, with the addition of exclusive content. MultiChoice, StarTimes and Zuku are examples of pay television firms that have set their roots locally. The most note-worthy free-to-air provider is Radio Africa Group with their *Bamba TV* decoder. Kenya has no established television subscription system and streaming providers such as the ones offered in the United States by providers such as Hulu, Hulu Plus, HBO Go and Netflix. As such, data on viewership is done through external poll companies rather than by the television stations themselves based on subscriptions. A 2015 survey on primetime television viewership considered the country's main television channels. It gave the following results:



Source: The GeoPoll Blog, July 2015

Kenya has a number of radio stations which broadcast in English and Swahili, as well as in local dialects. Listener numbers have increased in recent times due to increased competition and variety. The ease of access to radio due to low costs and maintenance costs as well as ease of powering them has made radio the most preferred broadcast reception avenue, especially in low income homesteads with no television access. A 2015 survey on radio listeners in the country yielded the following results:



Source: The GeoPoll Blog, September 2015

Telephony

The Kenyan telephone landscape has considerably few but large players, forming an oligopoly. Statistics indicate that the demand for fixed or wired telephone connection in Kenya has dipped significantly. The statistics, covering the period between July and September 2014, indicate that fixed lines decreased by 4.2% while fixed line connections reduced by 3.9% over the quarter under consideration. The reduction in subscription was registered from 2011. This was contributed to by, among other factors, the increased penetration rate of mobile phones following the removal of handset tax. Landline telephony in Kenya has gradually been on a slow but sure decline. This was evidenced by the decision by The Orange Group's decision to sell its 70% stake in Telkom Kenya, the country's fixed line telephone service provider citing prolonged unprofitability. As of July 2015 Telkom Kenya had only 4 million customers.

Mobile phone use in the country took shape in 1997 with the introduction of what were then the only service providers, Safaricom and Kencell (currently Airtel). In the July to September quarter 2014, mobile subscribers increased from 32.8 million to 32.2 million, representing a 1.6% rise from the previous quarter. Mobile voice traffic increased to 8 billion minutes from 7.3 billion minutes in the previous quarter. In Kenya there are 3 mobile network operators, with one recently having pulled out of the market.

Safaricom is the largest mobile network operator in Kenya and in East Africa. It was established in Kenya in 1997 as a subsidiary of Telkom Kenya. It has since been bought by United Kingdom firm Vodafone, although it remains headquartered in Nairobi. Safaricom is involved in voice and messaging as well as internet and data services, money transfer through its M-Pesa platform as well as the provision of business solutions such as cloud computing and storage. The company also won a KES15 billion ($147.7 million) government tender to install closed circuit television (CCTV) security cameras in parts of the country's main cities in 2014. As at the end of 2015, the company controlled 67% of the Kenyan mobile phone subscriber market.

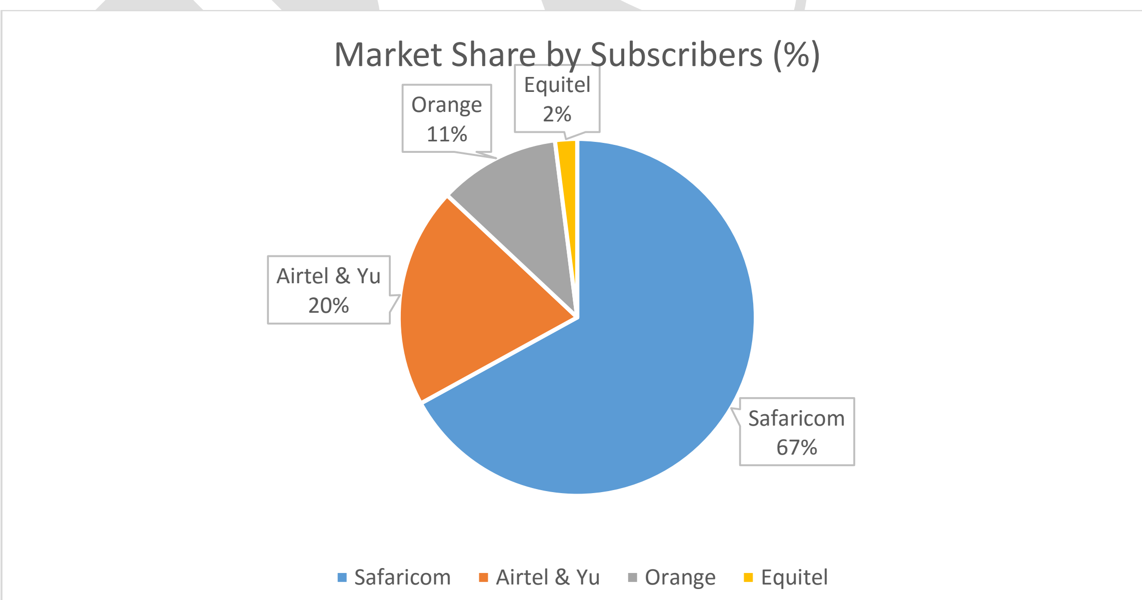
Airtel is Kenya's second largest mobile network operator by customer numbers and revenue. It began life in the country as Kencell in 2000 and is headquartered in Nairobi. It currently operates under its Airtel brand name and is owned by Indian telecommunications service provider Bharti Airtel. Its grip on the market has been challenged by Safaricom, with customer base reductions being attributed to both the stiff competition and its frequent rebranding, most notably in 2004 and 2008. The company is involved in voice and mobile data provision as well as a money transfer service dubbed Airtel Money.

Yu Kenya or yuMobile is a mobile network operator which operated in Kenya from 2008 to 2015. It is owned by Indian investment group Essar. The operator was involved in voice and mobile data provision as well as a money transfer service called yuCash. In 2015 the company sold off its infrastructure assets and had its subscribers acquired to and by Safaricom and Airtel respectively, in a $120 million deal. According to a 2015 survey, Airtel Kenya and yuMobile jointly controlled 20% of the Kenyan market.

Orange Kenya is the other operator in Kenya. It is involved in provision of voice and mobile data, internet solutions and money transfer dubbed Orange Money. The company was established in the country in 1999 and is the result of a partnership between Orange S.A. and Telkom Kenya.

The Kenyan bank Equity Bank Limited launched its own mobile network operator in 2015 dubbed Equitel, a partnership between the bank and Airtel Kenya. Adding to the services offered by the other operators, it allows customers to access their bank information and make payments to and from their Equity Bank accounts directly.

The following illustration gives the state of Kenya's mobile telephone market as at 2015, prior to yuMobile's market exit:



Source: https://www.safaricom.co.ke/sustainabilityreport_2015/executive-summary/performance-highlights/

Satellite and Cable

The installation of a fiber-optic cable network in the country has allowed the provision of internet connectivity to more parts of the as well as increasing speeds and reliability in the areas which were previously covered. Both cable and wireless internet access is available in Kenya, boosting its telecommunication reliability and diversity further. Currently, the country is ranked 91^{st} globally in Wi-Fi speed at 4.53Mbps. The most notable internet service providers in Kenya will be analyzed in the following section.

Jamii Telecommunications Limited is a Kenyan telecommunication company which is behind the *Faiba* brand. It uses terrestrial fiber optic cable, wireless broadband and satellite to provide its clientele with data communications services, and is one of the fastest rising firms in the country owing to its aggressive and creative advertising campaign. It targets both corporate and household level clientele.

Safaricom is also involved in internet solutions provision. It has invested in infrastructure which allows the company to offer 4G technology to its clientele. Its planned entry into the digital television market with its *Big Box* was also set to avail high speed Wi-Fi connectivity to customers.

SimbaNet offers high speed internet connectivity to its customers in the country through making use of a submarine fiber optic layout. It is one of the brands under Wananchi Group's Wananchi Business Services.

Zuku is a telecommunication service as well as a pay television provider. It covers the East Africa and is one of Wananchi Group's brands. Zuku primarily targets home internet connectivity owing to a rise in the middle income category of consumers as well as a tech savvy generation which would want to access internet services at home. In addition to its satellite internet connectivity, Zuku offers pay television as well as fixed line telephone services.

Access Kenya is one of the most renowned brands in Kenya in the internet solutions segment, which accounts for its core business. Currently, the company is owned by Dimension Data Holdings which is headquartered in South Africa. The company specializes in internet and network solutions at the corporate level.

Satellite internet connectivity in Kenya is additionally provided by *Space Engineering Limited* using VSAT (very small aperture terminal) satellite technology. Large scale clientele is targeted, such as non-governmental organizations, hospitals and the military, with high speed internet almost anywhere in the country.

Other present but less widely advertised brands include Liquid Telecom, and independent data, voice and internet protocol provider with an African footprint. It offers its services by making use of fiber optics and satellite.

Challenges

Operation Costs

The high costs of setting up and absence of significant government subsidies have made investing in telecommunication in Kenya difficult. Equipment needed to run such services is costly to install and maintain, especially where protection and restoration in the event of vandalism is required. Financial constraints have at times led to compromises in the quality of service provided, due to an increased number of subscribers relying on unexpanded networks. Phone call quality and internet speeds have been worst hit by this, with broadcast remaining unaffected.

Stiff Competition and Market Power

Although competition encourages innovation and quality improvement, it can also serve as a barrier to market entry. In telephony, Safaricom has often been accused of unfair operation, seeking to crown out market entrants and attempting to operate as a monopoly. Its diversification into several market segments has also seen it invade territory traditionally dominated by specific firms, such as in money transfer and internet solutions and cloud computing. An example of friction thud generated is the highly publicized battle between Safaricom and Equity Bank, first over the former's bank-related services and later on the latter's entry into mobile operator service provision with Equitel. With the number of firms in operation in the country, the competition locks out most entrants with insufficient financial and marketing capabilities.

Poor Marketing

In Kenya, aggressive advertising and brand recognition creation has only been adopted by a section of market players. A large majority of service providers either solely rely on networks or word of mouth to obtain customers, which has seen their brands overshadowed and their services largely short of demand.

Power and Infrastructure Deficit

Despite telecommunication service providers offering their services, there still are parts of the country whose telecommunication infrastructure is largely wanting. These include parts of North and North Eastern Kenya, where people are at times forced to travel long distances to get network reception. In most cases, such areas are also short on electricity grid coverage, which makes the provision of other telecommunication services such as television, radio and internet infeasible.

Opportunities

Infrastructure Development

Vision 2030, Kenya's national development roadmap identifies the high cost of information communication and technology operation, which it has pointed out as amounting to up to $15,000 monthly. This is unfavorable, compared to India's $4,800, Morocco's $7,000 and Poland's $2,000. The government has thus set out to accelerate infrastructure development in the country with the aim of added interconnectedness.

Market Segmentation

Only selected broadcasters and internet service providers have actively segmented markets and aggressively targeted specific groups. Segmentation based on age groups or income levels can better allow tailor-made products to be offered to clients. It will also help cut down on expenditure which currently goes towards products with minimal or inconsistent demand, saving costs and allowing them to be reinvested in other avenues.

Financial Injection

Kenya has several firms in the telecommunication sector which have products to offer but are limited financially. While broadcasters obtain revenue from advertising, they still require additional funding and are in some cases forced to roll out road shows to gain wider audiences. Cable and satellite internet solutions providers often also require added funds so as to expand and refine their services. Local and foreign investors therefore have an opportunity to bridge this financial gap.

Increased Partnerships

Although in competition, firms in telecommunications such as Equity Bank and Airtel or Telkom Kenya and The Orange Group illustrate that partnerships can yield positive results. It is thus on market players to seek out business compatibility and establish strategic partnerships which will not only benefit the involved parties but also their customers.

Regulation

The Communications Authority of Kenya (CA) is in charge of regulation of the country's telecommunications sector. In this respect, its functions include the licensing of service providers, the protection of consumers, tariff regulation and ensuring that there is fair and effective competition. CA is a statutory body which was established in 1999 by the Kenya Information and Communications Act of 1998 and is the main regulatory authority in the country. It is mostly concerned with mobile network operators and internet service providers, with secondary involvement in broadcasting.

Broadcasting in Kenya is regulated by the Media Council of Kenya and the Kenya Film Classification Board, both of which are statutory bodies recognized under the Laws of Kenya. The two oversee the discipline and conduct of those in the media industry, including broadcast content, and where necessary, set and enforce legislation to this effect. The Media Council of Kenya is established by the Media Council Act No.20 of 2013 while the Kenya Film Classification Board is mandated by the Films and Stage Plays Act, Cap 222 of the Laws of Kenya.

Conclusion

The Kenyan telecommunication sector is diverse and highly developed. The large number of competitors in any one of its constituent components has served to promote competition and thus improve the quality of services and range of options available. Some of the main challenges facing the sector include the lack of adequate expansion and operating funds as well as perceived unfair competition by dominant firms against subservient firms. The government has made efforts towards mitigating some of the challenges faced, with additional opportunities for investors to capitalize on some of the inefficiencies and deficiencies. This in a bid to develop East and Central Africa's largest telecommunication sector into an even more formidable force.