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## AN ANALYSIS OF THE EFFECTS OF OVER THE TOP SERVICES ON PAY TV SERVICES IN KENYA

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### Abstract

**Purpose:** To establish the effects of over the top services on Pay TV service providers and television broadcasting services in Kenya.

**Methods:** The study utilized desktop literature review and focused on previously published documents in PDF format that looked into the impact of OTT services on Pay TV services around the globe. A total of 20 publications were found relating to OTT services and Pay TV service providers. Yamane (1967) formula was used to calculate the sample size.

**Results:** The results from literature review found that various components of OTT services affect the services offered by Pay TV providers. It was also revealed that OTT service providers allowed viewers to watch movies and TV programs as per their convenience and preference. It was found that the cost benefits and flexibilities offered by the OTT players have led to consumers increasingly preferring using them over Pay TV services.

**Unique Contribution to theory, practice and policy:** To address the implications of OTT services on the performance of Pay TV service providers, the providers should consider upgrading some of the services so that they are able to offer cost effective, convenience and quality services to the users. Some of the applicable ways that Pay TV providers can use to stay relevant in the market are partnering with OTT players and developing their own OTT services. The critical focus should be putting considerable effort on improving their content and meeting the demand of consumers in all ways. In modeling of these practices, the Pay TV providers should take into consideration experts who are well conversant with integration of OTT services in their own systems. Additionally, technology is evolving each day therefore; the Pay TV providers should set strategies of improving their systems once they set the OTT services in place. This will help the providers to remain relevant in the sector of broadcasting.

**Keywords:** *OTT services, Cost and Pay TV.*

## 1.0 INTRODUCTION

### 1.1 Background of the study

Technological developments have led to changes in television broadcasting services over the years. Cable companies used to offer TV services including video-on demand (SVOD) subscription for media houses, but due to changes in the internet, many television media houses are undergoing digital transformation, shifting focus to over-the-top TV services (PwC, 2015). This refers to the transmission of audio-visual content and other related TV content via the internet. In this transformation, the content distributed becomes free from control by the OTT service provider in terms of viewership, copyrights cum other content redistribution rights. Therefore, television service providers such as Pay TV, VOD, IPTV or VOD have, in recent years, attracted competition from OTT services across the world. Television broadcasters sell their contents to the third party distributor (OTT service), which include NetFlix, Hulu, Apple TV, Ipid, Android box, and Amazon video, which deliver the services to the end user via internet service provider (ISP) (Evens, 2014).

Despite the fact that a large share of Americans (61%) still has cable in their households, there has been a steady decline in subscriptions over the past several years (Fluent, 2017). Over the last five years, nearly 8 million US households have abandoned traditional Pay TV. Today, the decline has further been exacerbated by the fact that millennial are subscribing to cable at lower rates, compared to previous generations. Currently, only 57% of millennial possess cable in their households. Overall, access to video streaming services in the US has surpassed cable subscriptions. This is especially true for the millennial audience. More than 3 out of 4 millennial's have access to some form of streaming service and are more likely to subscribe to Netflix which is an OTT service than they are to have cable in their household. Hulu and YouTube Red are also significantly more popular with younger viewers (Fluent, 2017).

According to Wan, Cenamor and Chen (2017), Pay TV services have been in operation in China. For instance, the China Telecom has been on the front line with 40 million Pay TV subscribers. The top 10 Pay TV operators' amounts for 27% of the total pay TV subs globally, where 5 out of ten operators are from China. China's video industry represents a large and growing sector determined by market forces and remarkable regulation policies. In this respect, China's video industry is undergoing digital convergence, featuring the entry of OTT service providers and the transformation of the traditional TV sector. The remarkable rise of China's Internet video sector has dwarfed the slow growth of its traditional TV sector, which consists of TV stations and network operators (Huang, Shang, Lin, Li & Tan, 2017).

Vijayasathya and Ilangovan (2016) posit that the Broadcasting Sector in India consists of Television, both analog and digital cable TV services. The sector has shown significant growth over the years spanning last two decades. India stands as the third largest Television market after China and USA. The television subscriber base has grown at over 34 per cent per year for the last 20 years and the service providers have also increased to commensurate this growth (Vijayasathya & Ilangovan, 2016). The Pay TV market and Broadcasting Sector in this country is now facing a stiff competition from the OTT providers a move that has prompted traditional broadcasters to expand their offering of on-demand content services (Bhawan, 2015).

Pay television services require that the end user subscribe to view their content via digital cable and satellite television. Subscription TV services in Kenya are provided by companies such as, StarTimes, DSTV, Zuku, GOtv and recently, the world leading Pay TV service provider Netflix was launched in the Kenyan market. According to Dataxis Research (2015), 32% of 12.04 million Kenyan household had a TV set, and out of this, 561,500 households had subscribed to Pay TV services. The results goes on to state that, StarTimes edged other Pay TV services in terms of market share by 39%, with MultiChoice coming in second at 38%. Another Pay TV service provider is GOtv launched in 2013.

Despite the availability of this Pay TV services in Kenya, television operators and media houses still embrace OTT services in their daily broadcasting programs. The use of OTT messaging has gone viral in the country, which media houses use to reach their vast audience as fast as possible compared to the use of pay TV services. Instant messages of breaking news and other programs are regularly sent to the end users via OTT platforms such as WhatsApp, Facebook, Twitter and through internet connected devices including smart TV such as Google TV (Maytom, Tim, 2014). This is an indication that OTT services in Kenya, have posed a great challenge to the Pay TV service providers such as Startimes, DSTV, GoTV, AzamTV among others. On this background this study purposed to focus on the socioeconomic and technological factors that were driving people to adopt more of OTT services and abandon the Pay TV and broadcasting services.

## **1.2 Statement of the problem**

The emergence of OTT services has favored many viewers; this is due to the wide variety of applications and services offered by OTT players (Sujata *et al.*, 2015). However, this is luring the customers away from the Pay TV services and television broadcasting providers. As a result, the adoption of the over the top services is threatening the revenue of Kenya Pay TV providers (Sawe, 2015). In Kenya, Pay TV service providers such as MultiChoice/DSTV have complained that the OTT services are infringing on their market size, an issue that has resulted to unrest in the media industry and telecommunication companies. It is thus becoming clear that, in future, the provision of services by OTT players will impact revenues of Pay TV service providers insofar as their current business models are concerned. This has already started happening in some developed countries. A report by Ovum highlights that the OTT market is growing at a rate of 20 percent. According to this report application's usage was expected to reach 1.7 trillion minutes by 2018, which translates to \$63 billion in lost revenue (Bhawan & Marg, 2015). According to this report the increasing demand of online applications for content view, poses a great threat for Pay TV providers in Kenya to lose revenues.

## **1.3 Objective of the Study**

The aim of this paper is to establish the effects of over the top services on Pay TV service providers and television broadcasting services in Kenya.

## 2.0 LITERATURE REVIEW

### 2.1 Empirical Review

A recent GSM Association (GSMA) report, compiled by Deloitte, indicated that there are more Ghanaians opting for the use of OTT VoIP platforms such as Facebook, Viber, Tango and Skype to make calls in Ghana than there is use of direct mobile lines (GMSA, 2015). Ghana's MNOs offer low-cost data packages to encourage data consumption, mainly through single service top-up bundles for usage of OTT apps such as WhatsApp, Facebook, Twitter, Viber and Tango. For example, at the time of the investigation for this paper in late 2015, the market leader, MTN Ghana, was offering a Social Bundle at GHC51 (roughly USD 1.26) for 30 days of use of Facebook, Twitter and WhatsApp. The study by GSM Association (2018) is relevant to our study by revealing the cost benefit of OTT services. The association showed that due to a stiff competition from OTT players, major operators and Pay-TV providers in Latin America had ramped up investment in their distribution capabilities, on-demand services, as well as various content forms, including original series in Spanish and Portuguese.

A study by Sawe (2015) showed that the adoption of Whatsapp, which is an OTT service, had been on the rise because of its ease of use and reduced cost of operation. The findings of the paper by Sawe (2015) showed that OTTs provided low cost or free-of-charge alternatives giving the user an option for paying only for the data consumed. This study by Sawe (2015) informs this study by bringing an understanding of the cost effectiveness of OTT services, but it does not show how the affordable payments of OTT services affect the Pay TV providers.

One motivation in adopting OTT TV technology on the part of pay TV operators has been to reduce the need to invest in expensive consumer premises equipment (Ji, Daohua, & Jialou, 2018). According to Ji *et al.* (2018), OTT has also been adopted by service providers with an aim to cut down the costs of integrating multiple OTT services. This has been made possible through adoption of off-the-shelf Android TVs. Some of the functions contained in the Android TV include the app store and the ability to validate OTT services. Ji *et al.* (2018) study presents a good example of integration that can be adopted by Pay TV providers in Kenya rather than the providers complaining about the OTT players in the Kenyan market.

Sujata *et al.* (2015) study on the factors driving users towards OTT service, found out that OTT service providers allow them to watch movies and TV programs as per their convenience and preference. Further, he realized that through features like auto-sync with the user's entire contact list and the capability of OTT services to sort messages into conversations and eliminating the need to send multiple messages have made it convenient for users to communicate with each other in any way they want to. He established that these features have caused traffic in the OTT platforms by individuals who want to get these services. Sujata *et al.* (2015) made some important finding that reveals the capabilities of OTT services that drives its adoption; the only aspect left out in Sujata *et al.* (2015) study is how the capabilities have affected the Pay TV providers.

Whittle (2018) conducted a study on the exploration of the gratifications that are obtained by sports fans from using OTT live streaming services for sports content. A national survey was used to obtain data on a sample. The results of the study found out that the sport fans found it

convenient to watch live sports content via OTT live streaming services, because they would do that anywhere, either indoors or outdoors. This explained the growing interest in OTT live streaming services online among all generations. According to this review convenience seems to be a major determinant that has contributed to the adoption of OTT services. Whittle (2018) concluded that OTT as a new technology was becoming a greater challenge to traditional cable/satellite television services as Americans continued to cancel their cable services for new online streaming options.

NAB (2017) highlighted that the convenience of catch-up services such as BBC iPlayer had become a great consumption enabler among the population. According to NAB (2017), the iPlayer by the BBC enables individuals to subscribe directly to their desired channels. It is clear that OTT services such as the BBC iPlayer were meeting the demand of consumers which led to their adoption. BBC is also a broadcaster and its iPlayer initiative shows its commitment to integrate OTT services in its system, a move that helps the provider to remain relevant in the market.

Lewis, Brown, and Billings (2017) in their study showed that participants enjoyed the convenience of accessing sports on multiple devices. They also established that OTT online streaming services could offer the participants a possibly more gratifying user experience due to the ability of watching sports content on various portable mobile devices, computers, and on SmartTVs that provides them the option to view on a larger screen in their own home. The study concluded that Cable/satellite services have seen a concerning decline in the number of subscribers to their services. The advanced communication technologies in OTT services have allowed individuals to share more multimedia information with their friends through applications like OTT applications such as Instagram, Snapchat, Vine, WeChat etc. (Sujata *et al.*, 2015). The study did not show how the technological aspect affects Pay TV providers.

According to Barker and Asmundson, (2013), the quality OTT messaging features which includes “one to many” broadcast messages, in addition to private or direct messaging unlike traditional SMS messaging which is largely private or direct messaging has led many people to adopt the OTT services. Barker and Asmundson (2013) posit that these messaging services have been conveyed through OTT messaging apps capabilities such as voice and video messages. As a result, users of these OTT applications have grown tremendously. An example is the WhatsApp which delivered 30 billion messages in the year 2014 across the globe and the figure grew in 2015 where the application delivered 64 billion messages.

A study was conducted by Kabusheva, Tyll, and Machek (2016) on the overview of the transformation of telecommunication business in the Czech Republic. They employed a quantitative approach to examine the current Czech telco market situation. Data set collected was analyzed through SPSS software. The findings showed that telecom technologies such as the radio access has moved from initial GSM and CDMA technology to third- and fourth generation technologies (Sujata *et al.*, 2015). This advancement enabled the viability and massive launches of voice over Internet messages, video calls, media sharing, micro blogging, video downloading and streaming, etc. As a result, consumers are able to use great content and high speed demanding applications.

In South Africa, a study by Nene (2017) revealed that the growth of the use of WhatsApp services by employees in Parliament was rapid. The objective of the research was to establish the role of OTT service's (WhatsApp) consumption in the everyday. The target population for the study was the black-middle class employees of Parliament of the Republic of South Africa. The findings of the study established that it was as a result of WhatsApp features that were valued by the employees in Parliament. These included the employees' ability to use WhatsApp to send and share family photos, video and communication with other colleagues.

Whittle (2018) conducted a study on the exploration of the gratifications that are obtained by sports fans from using OTT online live streaming for sports content. A national survey was used to obtain data on a sample. The findings of the study show that most people perceived OTT online live streaming of sports content to be entertaining and enjoyable. Further, the respondent's friends recommended them to use OTT online live streaming services for sports content.

You Tube Statistics (2014) report that OTT providers such as YouTube, Netflix, Amazon Instant Video have met the demand of the public for huge content; this can be corroborated from the fact that the number of videos uploaded on You Tube are approximately 100 hours each minute. Further, the statistics revealed that the availability of content in local languages further drives the adoption of OTT services by the consumers.

Fan (2018) asserts that Content Delivery Network (CDN) has also played part in the adoption of OTT services. He indicates that it has been made possible through the CDN supply of content at very low cost to its customers like Viusasa who are responsible for delivering OTT content. Fan also established that CDN are quick and effective in their transmission of content to the end users, which in turn helps in enhancing the consumer experience. Further, the study reveal that content owners have also played a very important role in driving the adoption of OTT services by reducing the time it takes a film to go from theatrical release to availability for purchase on Electronic-Sell-Through (EST). For instance, movies on an average can now be received on the OTT platforms within a period of 3 months after theatrical release

Frost and Sullivan (2017) findings reveal that the demand of content for live sports coverage is one of the driving forces for growth of OTT, IPTV and Pay TV services. He concludes that OTT consumption has therefore gone up, due to its features that are convenient and enables on-the-go live streaming thus making content available for live sports coverage. They recommended that Pay TV providers will need to constantly update their content portfolio and retain the content partnerships to avoid churn in the highly competitive market.

Whittle (2018) conducted a study on the exploration of the gratifications that are obtained by sports fans from using OTT online live streaming services for sports content. A national survey was used to obtain data on a sample. One of the respondents in this study asserted that OTT live streaming for sports content provided high quality content, and that it was free of delay, jitter, and buffering. The respondent also stated that OTT online live streaming for sports content provided better quality service than cable/satellite.

Mulubi (2014) investigation on the adoption of e-governance in delivery of services employed a descriptive survey research design to conduct the study. The study also used stratified sampling to sample. Mulubi (2014) proved that many individuals, organizations and the government were

adopting e-governance because it improved performance in delivery of services. According to Settles (2015), there exists a positive relationship between efficient delivery of services and e-governance, which is an OTT service. Further, Settles argue that e-government had enabled public 11 institutions to institute efficiency in the way payables and receivables are done within the public sector.

Stork, Calandro and Gillwald (2013) conducted an analysis on internet access and use trends in 11 African countries based on household and individual ICT survey data. The study used nationally representative data for households and individuals in residential and semi-residential areas. The study noted that the range of OTT-capable devices which were available were very broad (desktop and laptop computers, smartphones, tablets, smart TVs, desktop and mobile video games, gaming consoles, portable video players, etc.). From the findings of Stork *et al.* (2013), the falling prices of these devices played an important role in OTT content consumption.

Sawe (2015) reveal that Kenya had 89.2% of internet penetration as of March 2016 compared to 87.7% recorded in the previous quarter. The growth of Smartphones sales has favoured the use of OTT services in Kenya, especially because most of the smartphones come with pre-installed OTT applications. Sawe (2015) assert that competition in smart phones brands has led to price reduction of smart phones which favors' the adoption of OTT services in Kenya

According to Evens (2014), the use of distinct, innovative consumer models has driven the adoption of OTT services. The study by Evens (2014) pays a sharp focus on adoption of co-competition strategies by TV broadcasters for launching online video services. It is established that OTT players like Netflix, Hulu and Amazon have used the distinct, innovative consumer models thus leading to the adoption multiscreen TV services. The free ad- supported service available on the PC by Hulu and the ability to stream to connect TVs has contributed to the adoption of their OTT services. Evens find out that the ad format by the players has given viewers more control and on their ad exposure. It is claimed that the emergence of online video platforms like YouTube and Netflix had driven the TV broadcasters to collaborate with their closest competitors to reduce costs and reach the necessary scale in the global marketplace.

Bhawan and Marg (2015) consultation paper which was conducted in 2015 show that the introduction of smartphones with multimedia and advanced communication features have revolutionized the OTT services market. This is because the smart phones have a greater processing power, easy customizable interface and support high data rate connectivity (Bhawan & Marg, 2015). The investigation posits that these smart phone features have made innovation and adoption of OTT apps easier. Further, Bhawan and Marg (2015) establishes that rapid computerization of the banking system like internet banking, and the content/ app provider that can independently bill the consumer and get the money directly has also led to adoption of OTT services.

Barker and Asmundson (2013) revealed that the Smartphones features such as camera, game console, watches and other led to an exponential increase in numbers of smartphones used at the global level. This massive adoption has enabled data streaming and shifted the focus of telecom networks to OTT data centric networks (Tariq, 2015). According to Frost and Sullivan (2017), OTT platforms offer HD, UHD and 4K viewing on 2G, 3G and 4G speeds. Further, they offer an Adaptive bit rate streaming which has led to the adoption of OTT services.



Net neutrality is the principle that all electronic communication passing through a network is treated equally, independent of the nature of the content, application, service, device, sender address or receiver address (GSR, 2012). The FCC rules prohibit ISPs (Internet service providers) from using pricing models based on the user's quality of service, i.e., ISPs are prohibited from providing a multi-tiered service through discriminatory pricing (FCC, 2015a). The principle of net neutrality has therefore worked in favour of the OTT services, as telcos are forced to remain neutral in providing customers access to any service, whether its own, a partner's or a competitor's.

Van der Wee, Vandeveld, Verbrugge, and Pickavet (2015) used a case study about video on demand to analyze violations and certain approaches under net neutrality. The results of this investigation were computed using a game theoretic approach. The results of the analysis showed that, under the assumptions made for the analyzed case of competition between Telenet and Netflix in the Flemish market, the equilibrium for all scenarios was reached when the ISP assumed a high price and the OTT a low price. Furthermore, the results indicated a strong increase in ISP revenue for all non-NN (Net neutrality) scenarios, with the dominant ISP scenario even leading to the OTT having to leave the market.

A study by the Office of the Communications Authority (OFCA) addressed the latest development of network neutrality in various jurisdictions (TRAAC, 2018). The investigation was conducted on the relevant regulatory regimes in Hong Kong and the findings of tests conducted for monitoring the access to Over-the-Top content services. The paper noted that the growing popularity of OTT content services in the Hong Kong market, may have led the ISPs in Hong Kong to adopt discriminatory traffic management practices to compromise the principle of network neutrality in the delivery of OTT content services from competing providers. However, the results of the Test affirmed that there was no evidence to suggest any improper or problematic degradation or discriminatory prioritization of some of the most popular OTT content services (OFCA, 2017).

Sujata *et al* (2015) study on the factors driving users towards the usage of OTT service employed qualitative research study. They established that OTT providers like Netflix, Skype, Viber, WhatsApp can use the telecom infrastructure without paying for it, and they're not subject to the regulatory regimes that apply to operators such as Idea, Airtel & Vodafone. Further, Sujata *et al* realized that OTT players are not constrained to any geographical region and can practically serve consumers throughout the world, they are also not governed by any regulatory body globally as well regionally, which enable OTT players to adopt innovative, flexible and agile business model which are far more optimized. Further, he noted that Telecom operators were liable in their country of operation. However the obligation was not applicable to OTT players who are only required to pay taxes to the country where their HQ is located (Bhawan, & Marg, 2015). The study concluded that OTT players are able to provide inexpensive/ free of cost services to their customers and are thus able to realize an exponential growth in their consumer base simply because the OTT players do not have to comply with telecom regulations.

In Kenya, Net neutrality principle has paved way for OTT services to thrive in Kenya (Sawe, 2015). The fact that the principle makes it difficult for the Kenya telcos to regulate and interfere with any content passing through their infrastructure, this freedom has allowed the OTT players

to penetrate with their zero rating services in the Kenyan market. The study concluded that Net neutrality should be seen as an opportunity of fairness rather than an obstacle. Further, the study recommended the government to consider establishing fair OTT regulatory systems that consider both the OTT players and telecos.

### 3.0 METHODOLOGY

The study utilized desktop literature review and focused on previously published journals in PDF format that looked on the impact of OTT services on Pay TV and ISP around the globe. A total of 20 publications were found relating to OTT services. Yamane (1967) formula was used to calculate the sample size.

Yamane Formula:

$$n = \frac{N}{1 + N(e^2)}$$

Where;

n= sample size

N= size of population

e= error term of 5%

Therefore;

$$n = \frac{20}{1 + (0.05^2)}$$

$$n = 19$$

A sample of 19 publications was randomly selected for review.

### 4.0 RESEARCH FINDINGS

While many studies have been done regarding OTT services, a number of studies in literature review investigated the social and technological factors leading to the adoption of OTT services. The various studies reviewed showed that there were various factors leading to the adoption of OTT services. For instance, Sawe (2015) showed that the adoption of Whatsapp, which is an OTT service, has been on the rise because of its reduced cost of operation. Similarly, a study by GSM Association (2018) concurred with Sawe (2015) by revealing that the cost benefit of OTT services caused the adoption of OTT services. However, Sawe (2015) didn't reveal how the adoption of the services affected the Pay TV providers and the broadcasting companies but GSM Association (2018) revealed that the OTT players had caused a stiff competition between them and the Pay TV providers.

The Pay TV providers were forced to ramp up investment in their distribution capabilities, on the on-demand services. Other studies like Sujata *et al.* (2015) on the factors driving users towards OTT service, found out that OTT service providers allowed them to watch movies and TV programs as per their convenience and preference. This finding was supported by Whittle (2018) who established that convenience seemed to be a major determinant that had contributed to the adoption of OTT services, however Whittle (2018) concluded that OTT as a new technology was

becoming a greater challenge to traditional cable/satellite television services as Americans continued to cancel their cable services for new online streaming options.

According to Ji *et al.* (2018), OTTs has also been adopted by service providers with an aim to cut down the costs of integrating multiple OTT services. Ji *et al.* (2018) study presents a good example of integration that can be adopted by Pay TV providers in Kenya rather than the providers complaining about the OTT players in the Kenyan market. The investigation was supported by NAB (2017), who realized that BBC (a broadcaster) had initiated an OTT service by the name iPlayer showing its commitment to integrate OTT services in its system, a move that helped the broadcasting company to remain relevant in the market. Sujata *et al.* (2015) also proposed integration as a way that Pay TV providers and telecommunication operators would use to compete with the OTT players.

You Tube Statistics (2014) report that OTT providers such as YouTube, Netflix, Amazon Instant Video met the demand of the public for huge content, according to Fan (2018) this was aided by content owners who played a very important role in driving the adoption of OTT services by reducing the time it takes a video content to go from theatrical release to availability for purchase on Electronic-Sell-Through (EST). Frost and Sullivan (2017) concluded that OTT consumption had gone up, due to the convenience of the OTT features. Stork *et al.* (2013) who conducted an analysis on internet access and use trends in 11 African countries based on household and individual ICT survey data, found out that the falling prices of devices (desktop and laptop computers, smart phones, tablets, smart TVs, desktop and mobile video games, gaming consoles, portable video players, etc.) played an important role in OTT content consumption.

Similarly, Evens (2014) proved that the use of distinct, innovative consumer models had driven the adoption of OTT services. Further, Bhawan and Marg (2015) consultation paper which was conducted in 2015 showed that the introduction of smartphones with multimedia and advanced communication features had revolutionized the OTT services market. From, the three studies, technology advancement proved to have spurred up the mass adoption of the OTT services. Sujata *et al.* (2015) study on the factors driving users towards the usage of OTT service found out that OTT players were able to provide inexpensive/ free of cost services to their customers thus realizing an exponential growth in their consumer base simply because the OTT players did not have to comply with telecom regulations. This was supported by Sawe (2015) in Kenya, who established that Net neutrality principle had paved way for OTT services to thrive in Kenya.

Van der Wee, Vandeveld, Verbrugge, and Pickavet (2015) used a case study about video on demand to analyze violations and certain approaches under net neutrality. This study portrayed a negative result about OTT players. Whereby, the results indicated a strong increase in ISP revenue for all non-NN (Net neutrality) scenarios, with the dominant ISP scenario led the OTT players leave the market. This indicates that the Pay TV providers in such a market experienced minimal competition.

The results from literature review found that various factors contributed to the adoption of OTT services by users. Some of the factors that were found to contribute to the adoption of the OTT services were cost reduction, convenience, content availability, technological advancement and net neutrality. The only study that showed a negative finding on OTT players reveal that net regulations in a certain setting would determine the success of an OTT player, and as a result

determine the performance of Pay TV providers and broadcasting services. Some of the studies found supportive findings on the factors that led to adoption of OTT services. However, some studies did not prove how the factors affected the operation of Pay TV providers and broadcasting companies. This means that the research regarding the effects of OTT services on Pay TV companies and broadcasting services has not been extensively investigated hence need for further empirical research. This is partly because most of the study findings focused on the effect of OTT services on Telecommunication network companies.

## 5.0 RECOMMENDATIONS

To address the complains from the Pay TV operators and broadcasting companies, that the OTT players were luring the customers away from the Pay TV services and television broadcasting providers, the two groups should consider the social and technological factors that has aided the increasing adoption of the OTT services. From the literature review, Pay TV providers and the broadcasting agencies should consider developing their own OTT services. Further, they should ensure that their OTT services are of good quality, convenient to the user, and are cost effective. This will help the providers maintain their customers, receive more revenues and remain relevant in the market.

## REFERENCES

- Achieng, F. O. (2014). Socio-Economic Factors Influencing Adoption of Improved Maize Storage Systems in Bungoma District, Kenya. *Unpublished Master of Arts Thesis. University of Nairobi, Nairobi, Kenya.*
- Barker, J. & Asmundson, P. (2013). “State of the Global Mobile Consumer: Connectivity is core” Retrieved January 11, 2013, from <http://www.deloitte.com/mobileconsumer>.
- Bhawan, M. D., & Marg, J. L. N. (2015). Regulatory Framework for Over-the-top (OTT) services. *Telecom Regulatory Authority of India*, 1-118.
- Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2013–2018. Available from: [http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white\\_paper\\_c11-520862](http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862). Pdf
- Consumer OTT VoIP Outlook: 2013 to 2018 [2013] by Ovum. Available from: <http://fortune.com/2014/06/23/telecom-companies-count-386-billion-in-lost-revenue-toskype-whatsapp-others/>
- Cooper, D. R. & Schindler, P.S. (2006) *Business Research Methods* (9th Edn). New York: McGraw Hill.
- Evens, T.1 (2014). Co-opetition of TV broadcasters in online video markets: a winning strategy? *International Journal of Digital Television*, 5(1): 61-74.
- Fan, J. (2018). *Smart Sharing: a content delivery network with local sharing of over-the-top devices* (Doctoral dissertation).

- Fluent (2017). *Can cable survive the threat of streaming services?* [PDF File]. Retrieved from: [http://www.fluentco.com/wp-content/uploads/2017/06/Fluent\\_StreamingServices\\_2017.pdf](http://www.fluentco.com/wp-content/uploads/2017/06/Fluent_StreamingServices_2017.pdf)
- Huang, J., Shang, W., Lin, W., Li, Y., & Tan, R. (2017, May). The reply and development strategy of cable TV industry in the era of big data. In *2017 IEEE/ACIS 16th International Conference on Computer and Information Science (ICIS)* (pp. 563-567). IEEE.
- Ji, J., Daohua, P. A. N., & Jialou, G. U. O. (2018). *U.S. Patent Application No. 15/741,556*.
- Jiang, L., Jun, M., & Yang, Z. (2016). Customer-perceived value and loyalty: how do key service quality dimensions matter in the context of B2C e-commerce?. *Service Business*, 10(2), 301-317.
- Kabusheva, S., Tyll, L., & Machek, O. (2016). Millennials and Over-the-Top-Services in the Context of Transformation of Telecommunication Business: Evidence from the Czech Republic. *Ekonomika a Management*, 2016(4).
- Katukoori, V. K. (1995). Standardizing availability definition. *University of New Orleans, New Orleans, La., USA*.
- Kwizera, E., Mico, D., Nayebare, M., Garba, A. A., Saint, M., & Deen, L. G. (2018, March). The Impact of over the Top Service Providers in the Rwandan Telecommunications Market: An Analysis of Business Models. In *International Conference on Innovations and Interdisciplinary Solutions for Underserved Areas* (pp. 62-71). Springer, Cham.
- Lewis, M., Brown, K.A., & Billings, A.C. (2017). Social media becomes traditional: Sport media consumption and the blending of modern information pathways. *Journal of Global Sport Management*, 2(2), 111-127.
- Mulubi (2014). Adoption of E-Governance in the Public Sector: a case of Nairobi City County. *Unpublished MBA thesis, Kenyatta University*.
- NAB (2017). *Cord-cutting saga far from over*. Retrieved from <https://www.nab.com.au/content/dam/nabrwd/documents/reports/corporate/2017-summary-review.pdf>
- Nene, S. T. A. (2017). *Legislation, policy and regulation in the post-telecommunication era: the role of OTT service's (WhatsApp) consumption and sense-making in the everyday lives of black-middle class employees of Parliament of the Republic of South Africa* (Doctoral dissertation, University of Kwazulu Natal, South Africa).
- OFCA (2017). *Development of network neutrality*. Retrieved from [https://www.ofca.gov.hk/en/pub\\_report/technical\\_reports/index.html](https://www.ofca.gov.hk/en/pub_report/technical_reports/index.html)
- Ogulande, O. (2016). Individual and Technological Factors Affecting Undergraduates' Use of Mobile Technology in University of Ilorin, Nigeria. *Digital Education Review*, 29, 124-133.
- Vijayasarathy, V. & Ilangovan, D. (2016). Television Broadcasting Industry in India. *International Journal of Economic and Business Review* 4(4) 2347- 9671.

- Plumpe, B. W. S. G. (2015). The Rise of SVOD: How the Growth of Subscription Video-on-Demand Impacts Copyright Holders.
- PwC (2015). “*South Africa Entertainment and Media Outlook including Nigeria & Kenya*”. *Media Report in African Business Central*. Retrieved from <https://www.africanbusinesscentral.com/2015/11/27/entertainment-and-media-outlook-south-africa-nigeria-kenya-2015-2019-pwc-report/>
- Roy, S. K., Lassar, W. M., & Shekhar, V. (2016). Convenience and satisfaction: mediation of fairness and quality. *The Service Industries Journal*, 36(5-6), 239-260.
- Sawe, T. K. (2015). Emergence of OTT Communication Services and Sustenance of Revenue among Kenya Telcos. *International Journal of Innovative Science, Engineering & Technology* 3(8) 2348 – 7968.
- Spirit DSP, in its report. The Future of Voice; 2012. Available from: <http://www.spiritdsp.com/industry-news/read-more-industry-news/article/ott-voip-to-cost-telcos479b-to-2020/>
- Stork, C., Calandro, E., & Gillwald, A. (2013). Internet going mobile: internet access and use in 11 African countries. *info*, 15(5), 34-51.
- Sujata, J., Sohag, S., Tanu, D., Chintan, D., Shubham, P., & Sumit, G. (2015). Impact of over the top (ott) services on telecom service providers. *Indian Journal of Science and Technology*, 8(S4), 145-160.
- Van der Wee, M., Vandeveld, N., Verbrugge, S., & Pickavet, M. (2015). Evaluation of the impact of net neutrality on the profitability of telecom operators: A game-theoretic approach. In *26th European regional conference of the International Telecommunications Society (ITS 2015)*
- Wan, X., Cenamor, J., & Chen, J. (2017). Exploring Performance Determinants of China’s Cable Operators and OTT Service Providers in the Era of Digital Convergence—From the Perspective of an Industry Platform. *Sustainability*, 9(12), 2247.
- Whittle, B. (2018). *The Uses and Gratifications of Streaming Live Linear Sports Networks Online* (Doctoral dissertation, University of Southern Mississippi, Hattiesburg).
- Yamane, Taro. (1967). *Statistics: An Introductory Analysis*, 2nd Ed., New York: Harper and Row.
- Youtube Statistics Report (2014). *The demand of the public for huge content*. Retrieved from <https://www.sata-sec.net/downloads/CTSA/OTT.pdf>