THIRD QUARTER SECTOR STATISTICS REPORT FOR THE FINANCIAL YEAR 2017/2018 (1ST JANUARY – 31ST MARCH 2018)

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***Disclaimer*:**
Although every effort has been made to ensure accuracy of the data contained in this report, the Authority is not liable for inaccuracies in any of the information contained in this report, which is contingent upon the operator's/service providers' compliance returns.

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LIST OF ABBREVIATIONS

DTT	Digital Terrestrial Television
EASSy	Eastern Africa Submarine Cable Systems
ICTs	Information Communication Technologies
EVDO	Evolution-Data Optimized
LION2	Lower Indian Ocean Network
GSM	Global Systems for Mobile Communications
ISP	Internet Service Provider
Mbps	Megabits per second
Gbps	Gigabits per second
MMS	Multimedia Service
MoU	Minutes of Use
MNO	Mobile Network Operator
MVNO	Mobile Virtual Network Operator
SEACOM	Sea Sub-Marine Communications Limited
KW	Kilowatts
SIM	Subscriber Identification Module
SMS	Short Messaging Service
TEAMS	The East African Marine System
VSAT	Very Small Aperture Terminal
FY	Financial Year
OTT	Over-The-Top
C2B	Customer to Business
B2C	Business to Customer
B2B	Business to Business
C2G	Citizen to Government
G2C	Government to Citizen
P2P	Person to Person
DDoS	Distributed Denial-of-Service
KE-CIRT/CC	National Kenya Computer Incident Response Team/Coordination Centre

I. *PRELIMINARY NOTES*

- This report is based on data provided by service providers in the communications sector as per their license conditions.
- The information provided in this report is subject to review in case of any revisions or updates from the service providers.

II. *REPORT SUMMARY*

The Third Quarter Sector Statistics report provides an overview of the performance and trends of the communications sector for the period 1st January to 31st March 2018 on the following service categories:

- Mobile Telephony Services
- Fixed Telephony Services
- Data/Internet Services
- Broadcasting Services
- Postal and Courier Services
- Tariffs, Promotions and Special Offers

Summary of Key ICT Indicators

INDICATORS	**Oct-Dec 2017**	**Jan-Mar 2018**	**% change Q2 to Q3**
	Q2	**Q3**	
Mobile Subscriptions (Millions)	42.815	44.119	3.0
Fixed subscriptions	69,861	68,646	-1.7
Mobile Penetration (Per 100 inhabitants)	94.3	95.1	0.8
VOICE TRAFFIC IN MINUTES			
Mobile On-Net Voice Traffic (Billions)	10.493	11.256	7.3
Mobile Off-Net Voice Traffic (Billions)	1.298	1.463	12.7
International Incoming Mobile Voice Traffic (Millions)	157.392	144.326	-8.3
International Outgoing Mobile Voice Traffic (Millions)	107.512	107.447	-0.1
Roaming-out (Own Subscribers) (Millions)	40.660	42.936	5.6
Roaming-in (Foreign Subscribers) (Millions)	35.010	40.956	16.9
Total Local Fixed network traffic	585,744	601,803	2.7
MOBILE SMS TRAFFIC			
SMS On-Net (Billions)	17.333	14.184	-18.2
SMS Off-Net (Millions)	697.840	727.933	4.3
International Incoming SMS (Millions)	14.595	12.551	-14.0
International Outgoing SMS (Millions)	9.283	9.224	-0.6
MOBILE MONEY SERVICES			
Number of Active Mobile Money Transfer Subscriptions (Millions)	30.000	29.106	-3.0
Number of Registered Mobile Money Agents	198,234	202,244	2.0

Number of Transactions-Sending and Withdrawal (Millions)	607.413	663.731	9.3
Value of Transactions- Sending and Withdrawal (Ksh.) trillion	1.763	1.873	6.2
Number of Mobile Commerce Transactions	441.248	474.541	7.5
Value of Mobile Commerce Transactions (Ksh.) trillion	1.169	1.292	10.5
DATA/INTERNET SERVICES			
Data/ Internet Subscriptions (Millions)	33.365	36.095	8.2
Total Available International Bandwidth (Gbps)	3,182.592	3,223.1	1.3
Total Used International Bandwidth (Gbps)	916.287	917.3	0.1
Broadband Penetration	39.6	42.9	8.3
NATIONAL CYBER THREAT LANDSCAPE			
Total Cyber Threats	7,970,286	10,705,492	-25.5
Total Cyber Reports	3,488	677	415.2
BROADCASTING SERVICES			
Number of free-to-air TV channels	64	62	-3.1
Number of Radio FM stations	178	169	-5.1
Digital Terrestrial Television Signal Population Coverage (%)	85.8	85.8	0.0
POSTAL AND COURIER SERVICES			
Postal Outlets	623	623	0.0
Private Courier Outlets	997	997	0.0
Number of Letters (Up to 350 gms) Posted Locally (Millions)	16.03	16.004	-0.2
Total Courier Items Sent Locally (Millions)	1.855	1.910	2.9
International Incoming Letters (Up to 350 gms) (Millions)	1.064	1.069	0.5
International Outgoing Letters (Up to 350 gms) (Millions)	1.090	1.069	-2.0
Total Population in Kenya (Millions)	45.4	46.6	2.6

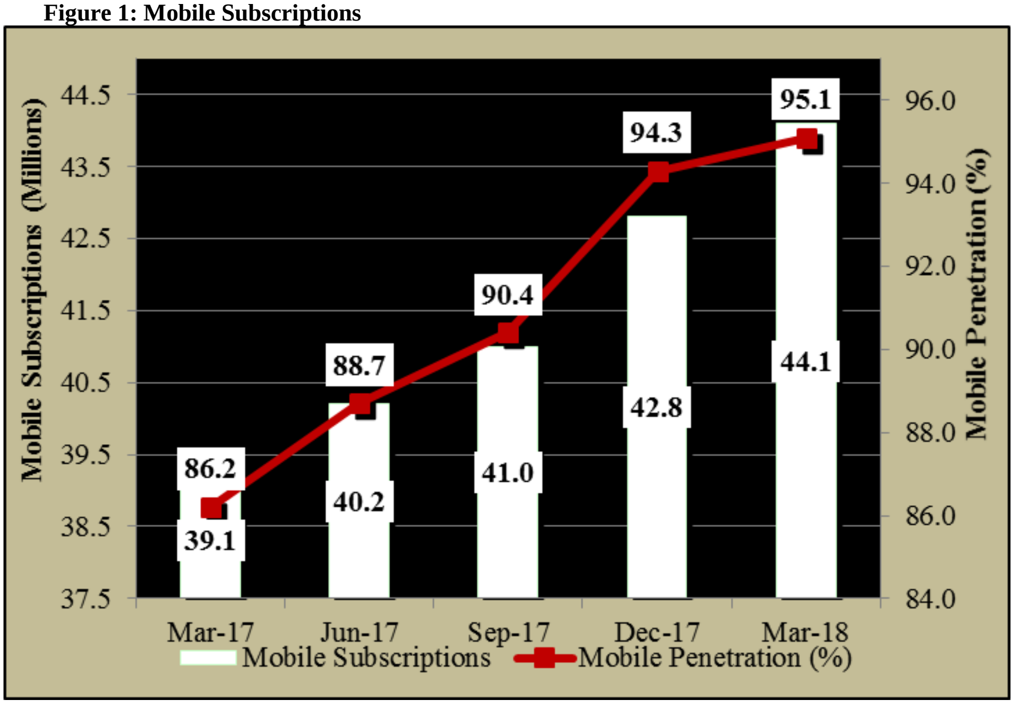
1 CELLULAR MOBILE SERVICES

1.1 Mobile Subscriptions

The country's mobile market continues to undergo significant changes in the wake of rapid development in the telecommunication industry. During the third quarter of the financial year 2017/18, the number of mobile subscriptions[1] grew by 3.0 percent to stand at 44.1 million from 42.8 million subscriptions reported during the second quarter. As a result, the mobile penetration level rose to 95.1 per cent from 94.3 per cent.

Figure 1 illustrates trends in mobile subscriptions.

Figure 1: Mobile Subscriptions



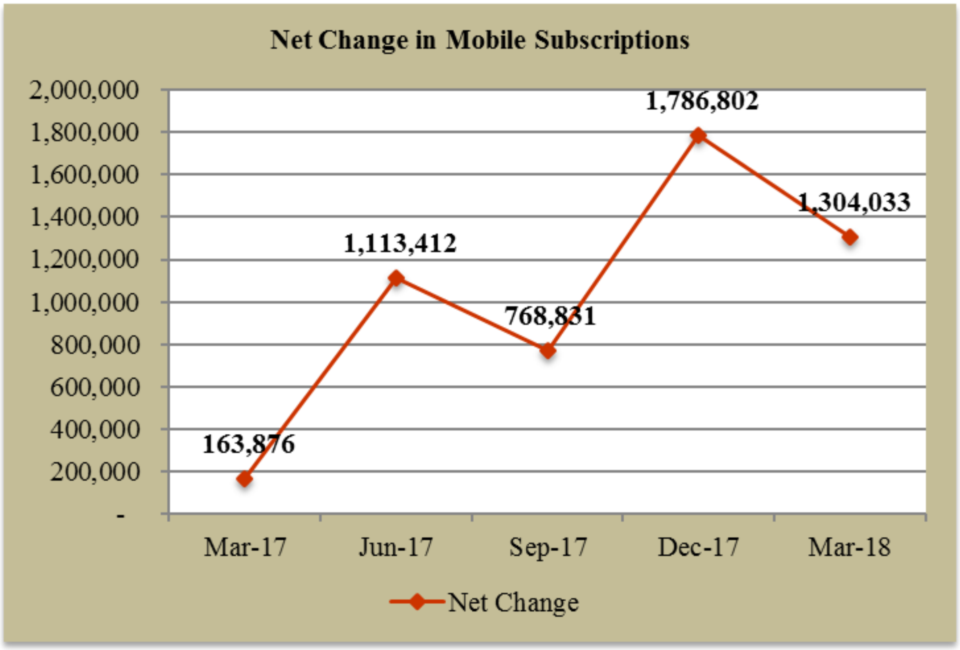
Source: CA, Operators' Returns.

During the quarter under review, the net change in mobile subscriptions stood at 1.3 million down from 1.7 million subscriptions registered during the previous quarter.

Figure 2 shows the net change in mobile subscriptions.

[1] A subscription refers to a registered active SIM Card

Figure 2: Net Change in Mobile Subscriptions



Source: CA, Operators' Returns.

Safaricom PLC registered a market share of 67.0 percent in mobile subscriptions marking a decline of 2.1 percentage points when compared to 69.1 percent recorded during the previous quarter.

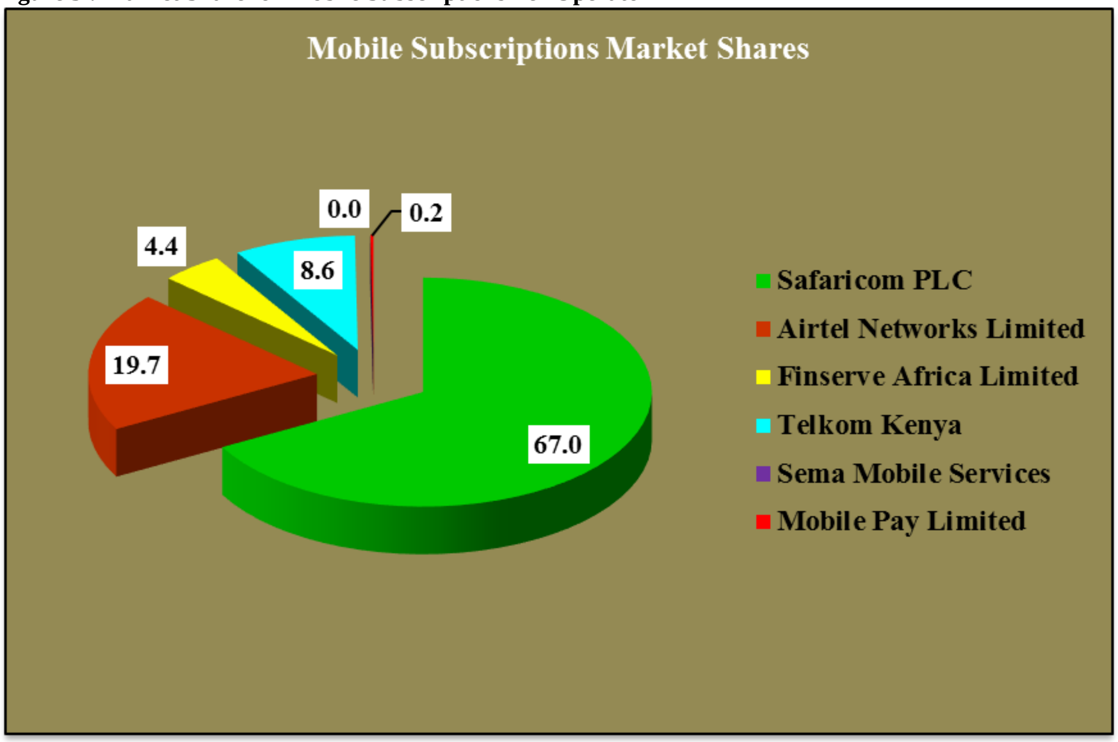
Airtel Networks Limited gained 2.5 percentage points to record a market share of 19.7 percent during the reporting period.

Telkom Kenya Limited lost by 0.4percentage points to register a market share of 8.6 per cent from 9.0 per cent recorded last quarter. Similarly, Finserve Africa Limited lost by 0.1 percentage points to post a market share of 4.4 per cent.

The market shares for Sema Mobile Services and Mobile Pay Limited remained unchanged at 0.0 per cent and 0.2 per cent respectively.

Figure 3, illustrates mobile subscriptions market shares per operator.

Figure 3 : Market Share for Mobile Subscriptions Per Operator



Source: CA, Operators' Returns.

During the quarter under review, the number of pre-paid and postpaid mobile subscriptions stood at 42.8 million and 1.2 million subscriptions respectively as illustrated in Table 1.

Safaricom PLC reported a total of 29.5 million mobile subscriptions with 28.4 million being prepaid and 1.1 million postpaid subscriptions.

Airtel Networks Limited mobile subscriptions grew remarkably by 18.2 percent to post 8.7 million subscriptions from 7.3 million subscriptions recorded during the previous period. Pre-paid subscriptions stood at 8.6 million whereas post-paid subscriptions stood at 100,015.

Telkom Kenya Limited registered a decline of 1.4 percent in total mobile subscriptions to record 3.8 million subscriptions. The pre-paid subscriptions stood at 3.7 million whereas post-paid subscriptions were 9,561.

Finserve Africa Limited registered a growth of 0.7 per cent to post 1.94 million in total mobile subscriptions.

Mobile Pay limited recorded 90,062 pre-paid mobile subscriptions up from 89,892 subscriptions reported during the previous quarter.

Table 1: Mobile Subscriptions per Operator

Name of operator	*Mar-18*			*Dec-17*			*Quarterly variation (%)*
	Pre-paid	*Post-paid*	*Total*	*Pre-paid*	*Post-paid*	*Total*	
Safaricom PLC	28,431,629	1,138,556	**29,570,185**	28,297,097	1,267,077	**29,564,174**	0.0
Airtel Networks Limited	8,609,541	100,015	**8,709,556**	7,232,787	137,248	**7,370,035**	18.2
Telkom Kenya Limited	3,795,435	9,561	**3,804,996**	3,850,432	10,127	**3,860,559**	-1.4
Finserve Africa Limited	1,944,231	-	**1,944,231**	1,930,337	-	**1,930,337**	0.7
Sema Mobile Services*	112	-	**112**	112	-	**112**	0.0
Mobile Pay Limited	90,062	-	**90,062**	89,892	-	**89,892**	0.2
Total	**42,871,010**	**1,248,132**	**44,119,142**	**41,400,657**	**1,414,452**	**42,815,109**	3.0

Source: CA, Operators' Returns. *Provisional Data

1.2 Mobile Money Services

As at the end of the period under review, the number of active mobile money transfer subscriptions declined by 3.0 percent to stand at 29.1 million from 30.0 million subscriptions reported last quarter. On the other hand, the number of active mobile money transfer agents increased from 198,234 to 202, 244. Similarly, mobile money transfer transactions[2] stood at 663.7 billion and were valued at Kenya shillings1.8 trillion. Mobile commerce transactions[3] were recorded at 474.5 billion and were valued at Kenya shillings 1.29 trillion during the reporting period.

Table 2 shows details of mobile money transfer and mobile commerce services.

Table 2: Mobile Money Transfer Service

Operator /Indicator	*Agents*	*Active Subscriptions*	*No. of Transactions*	*Value of Transactions (Kshs)*	*No. of M-Commerce Transactions*	*Value of M-Commerce Transactions (Ksh.)*	**P2P Transfers (Ksh.)**
M-Pesa	156,534	23,647,293	531,295,394	1,480,556,965,000	394,236,529	998,044,535,200	538,160,441,043**
Airtel Money	31,240	3,390,275	3,411,562	1,882,921,436	2,671,075	3,981,214,600	1,275,216,663
Equitel Money		1,944,231	128,618,340	389,370,853,200	77,616,789	290,293,097,300	114,199,180,800
T-Kash*	8,343	34,149	2,226	8,144,784	17,348	1,715,573	729,255
Mobile Pay	6,127	90,442	404,020	971,850,414	-	-	766,532,592
Total	**202,244**	**29,106,390**	**663,731,542**	**1,872,790,734,834**	**474,541,741**	**1,292,320,562,673**	**654,402,100,353**

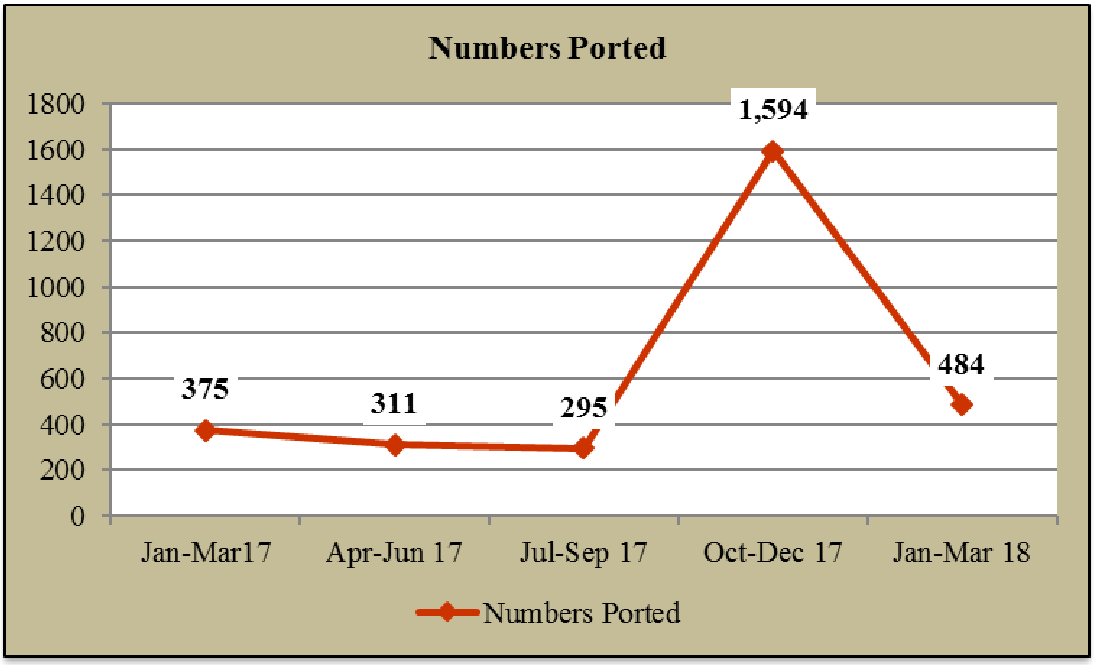
Source: CA, Operators' Returns. *Data Revised by CA, **Data Revised by Safaricom PLC

[2] Mobile Money Transfer Transactions-Sending (P2P) and Withdrawals
[3] Mobile Commerce Transactions- C2B, B2C, B2B, C2G, G2C

1.3 Mobile Number Portability

The number of mobile in-ports decreased by three-fold during the quarter under review to post 484 in-ports from 1,594 in-ports recorded during the previous period as shown in Figure 4.

Figure 4: Mobile Number Portability



Source: CA, Operators' Returns.

1.4 Local Mobile Traffic and Usage Pattern

1.4.1 Local Voice Traffic

During the period under review, the total mobile voice traffic grew by 8.2 percent to record 12.7 billion minutes from 11.8 billion minutes recorded last quarter.

On-net mobile voice traffic grew by 7.3 per cent during the quarter under review to post 11.2 billion minutes from 10.4 billion minutes posted last quarter. Traffic originating from own network and terminating into other networks-Off net grew significantly by 15.3 percent to record 1.4 billion minutes. Mobile to fixed network voice traffic grew by 16.3 percent to record 27.0 million minutes during the period under review.

During the quarter under review total traffic terminating into mobile networks (Incoming traffic) grew by 8.3 percent to post 12.7 billion minutes from 11.7 billion minutes posted during the previous period. Incoming mobile voice traffic from other networks stood at 1.5 billion minutes whereas fixed to mobile network stood at 10.3 million minutes.

Table 3 shows a summary of local mobile voice traffic.

Table 3: Local Mobile Voice traffic in Minutes

Mobile Traffic	***Jan-Mar 18***	***Oct -Dec 17***	***Quarterly Variation (%)***	***Jan-Mar 17***
By Traffic originating (outgoing traffic)				
Own Network –Own Network	11,256,954,012	10,493,091,107	7.3	9,265,953,858
Own Network to Other Mobile Networks	1,496,522,432	1,298,099,413	15.3	1,169,552,639
Mobile Network to Fixed Network	27,049,332	23,253,694	16.3	20,265,293
Total Traffic Originating(Outgoing)	**12,780,525,776**	**11,814,444,214**	**8.2**	**10,455,771,790**
By Traffic terminating (incoming traffic)				
Own Network –Own Network	11,256,954,012	10,493,091,107	7.3	9,265,953,858
Other Mobile Networks to Own Network	1,507,012,421	1,290,211,269	16.8	1,117,786,855
Fixed Network to Mobile Network	10,306,701	9,791,760	5.3	11,742,761
Total traffic termination (Incoming)	**12,774,273,134**	**11,793,094,136**	**8.3**	**10,395,483,474**

Source: CA, Operators' Returns.

1.4.2 Local Mobile Voice Traffic per Operator

The total mobile voice minutes for Safaricom PLC declined by 0.9 percent during the period under review to post 8.4 billion minutes. On-net traffic declined by 1.5 percent to stand at 8.0 billion minutes whereas off net traffic grew by 13.3 percent to stand at 397.6 million minutes. The operators' market shares for mobile voice traffic dropped by 6.0 percentage points to stand at 66.5 percent during the quarter.

Airtel Networks Limited recorded a total of 3.6 billion minutes which was an increase from 2.5 billion minutes recorded during the previous quarter. This increase in mobile voice minutes is attributed to the additional 1.3 million mobile subscriptions gained by the operator during the period under review. Subsequently, the operators' market shares by mobile voice traffic grew by 6.7 percentage points to stand at 28.7 percent.

Telkom Kenya Limited recorded local mobile voice traffic of 581.7 million, a decline from 608.6 million minutes reported during the previous period. As a result, the operators' market shares by mobile voice traffic declined by 0.6 percentage points to stand at 4.6 percent during the same period.

The local mobile voice traffic for Finserve Africa Limited declined to 37.1 million minutes from 37.5 million minutes recorded during the preceding quarter. The operator's mobile voice market share remained unchanged at 0.3 percent. Mobile Pay Limited registered an increase of

9.3 per cent in mobile voice traffic to post 30,007 minutes however the market share remained unchanged at 0.0 percent.

Local mobile voice traffic by operator and their respective market shares is illustrated in Table 4

Table 4: Local Mobile Voice traffic by Operator

Period	***Name of Operator/ Indicator***	***Safaricom PLC***	***Airtel Networks Kenya Limited***	***Telkom Kenya Limited***	***Finserve Africa Limited***	***Sema Mobile Services***	***Mobile Pay Limited***	***Total***
Jan-Mar 18	*On-net*	8,077,151,028	2,787,845,102	387,787,772	4,166,956	3,258	3,154	11,256,957,270
	Off-net	397,625,724	871,955,639	193,962,426	32,951,790	36,453	26,853	1,496,558,885
	Total	**8,474,776,752**	**3,659,800,741**	**581,750,198**	**37,118,746**	**39,711***	**30,007**	**12,753,516,155**
	Market share (%)	66.5	28.7	4.6	0.3	0.0	0.0	
Oct - Dec 17	*On-net*	8,200,724,633	1,874,925,780	413,559,948	3,874,294	3,258	3,194	10,493,091,107
	Off-net	350,913,622	718,367,640	195,092,257	33,665,187	36,453	24,254	1,298,099,413
	Total	**8,551,638,255**	**2,593,293,420**	**608,652,205**	**37,539,481**	**39,711**	**27,448**	**11,791,190,520**
	Market share (%)	72.5	22.0	5.2	0.3	0.0	0.0	
Jan-Mar 17	*On-net*	8,191,883,021	660,920,000	409,544,140	3,600,081	3,596	3,020	9,265,953,858
	Off-net	361,270,839	602,363,650	162,824,828	43,024,227	43,461	25,634	1,169,552,639
	Total	**8,553,153,860**	**1,263,283,650**	**572,368,968**	**46,624,308**	**47,057**	**28,654**	**10,435,506,497**
	Market share (%)	82.0	12.1	5.5	0.4	0.0	0.0	

Source: CA, Operators' Returns. *Provisional Data

1.4.3 Domestic Short Messaging Service (SMS)

There was a decline of messages sent from Safaricom PLC network from 17.1 billion messages sent during the previous quarter.to14.1 billion messages during the quarter under review. This resulted to reduction in the operator's SMS market share to 94.9 percent from 96.3 percent recorded in the previous quarter.

SMS traffic originating from Airtel Networks Limited grew from 557.9 million messages to 659.2 million messages in the period under review resulting in a market gain of 4.4 percent.

Telkom Kenya Limited recorded a decline of 13.8 percent in its total SMS traffic to post 85.6 million messages during the quarter under review. However, despite this decline, its' market share remained unchanged at 0.6 percent.

Finserve Africa Limited also recorded a decline from 8.5 million messages registered during the previous period to 8.2 million messages. The market shares for Finserve stood at .1 percent during the period under review.

Sema Mobile Services and Mobile Pay Limited recorded 7,633 and 22,806 messages respectively. The SMS market share for the two operators remained at 0.0 percent.

SMS traffic and the corresponding market shares per operator is as shown in Table 5

Table 5: Short Messaging Service per Operator

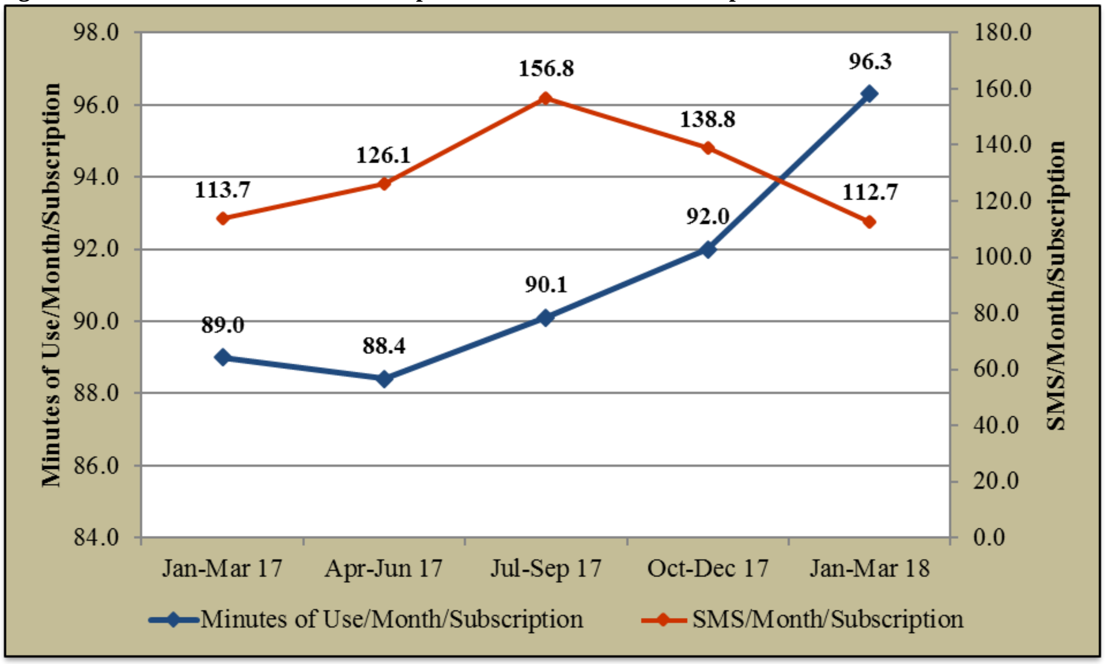
Period	***Name of Operator/Indicator***	***Safaricom PLC***	***Airtel Networks Kenya Limited***	***Telkom Kenya Limited***	***Finserve Africa Limited***	***Sema Mobile Services****	***Mobile Pay Limited***
Jan-Mar 18	*On-net*	13,905,810,537	258,983,630	18,174,803	1,659,781	510	2,411
	Off-net	253,547,271	400,281,332	67,488,115	6,589,345	7,123	20,395
	Total	**14,159,357,808**	**659,264,962**	**85,662,918**	**8,249,126**	**7,633**	**22,806**
	Market share (%)	94.9	4.4	0.6	0.1	0.0	0.0
Oct-Dec 17	*On-net*	16,924,173,424	184,995,402	22,896,061	1,581,536	510	2,442
	Off-net	241,318,520	373,003,788	76,499,650	6,990,772	7,123	20,651
	Total	**17,165,491,944**	**557,999,190**	**99,395,711**	**8,572,308**	**7,633**	**23,093**
	Market share (%)	96.3	3.1	0.6	0.0	0.0	0.0
Jan-Mar 17	*On-net*	12,534,726,046	249,014,488	16,381,210	985,042	1,136	2,214
	Off-net	161,383,384	314,064,515	44,905,509	7,369,673	12,203	19,706
	Total	**12,696,109,430**	**563,079,003**	**61,286,719**	**8,354,715**	**13,339**	**21,920**
	Market Share (%)	95.3	4.2	0.5	0.1	0.0	0.0

Source: CA, Operators' Returns *Provisional data

The Minutes of Use per Month per Subscription (MOU) has maintained an upward trend since Q4 FY 2016/17 and the quarter under review recorded a high of 96.3 MOU. On the other hand, the number of messages sent per Month per Subscription has been on a downward trend since Q1 FY 2017/18. The period under review recorded 112.7 messages sent per Month per subscription. The decline in SMS traffic is attributed to the increasing use of Over the Top (OTT) services (Facebook, WhatsApp, Snapchat, Twitter etc).

Figure 5 illustrates the trend in Minutes of Use per Month per subscription and Minutes sent per Month per Subscription.

Figure 5: Minutes of Use /Month/Subscription and SMS/Month/Subscription



Source: CA, Operators' Returns

1.5 Roaming Traffic

The out roamers registered 42.9 million minutes, sent 13.7 million messages and consumed 5.1 million MB of data. In-roamers registered 40.9 million minutes, sent 4.6 million messages and consumed 24.8 million MB of mobile data as shown in Table 6.

Table 6: Roaming Traffic

	Jan-Mar 2018					
	Roaming-Out (Own Subscribers)			***Roaming-In (Foreign Subscribers)***		
	Voice	SMS	Data	Voice	SMS	Data
Uganda	29,130,183	4,422,896	1,294,669	24,738,466	577,369	502,383
Tanzania	1,520,479	1,836,010	906,040	402,540	606,997	321,568
Rwanda	2,261,469	386,189	209,333	7,582,140	114,592	143,865
Burundi	20,890	24,173	10,963	7,878	12,624	1,114
S. Sudan	2,982,921	558,708	44,675	6,012,716	85,652	8170551
Others	7,021,016	6,538,851	2,674,615	2,213,205	3,236,306	15,700,238
Total	42,936,958	13,766,827	5,140,295	40,956,945	4,633,540	24,839,719

Source: CA, Operators' Returns.

1.6 International Mobile Traffic

During the period under review, the number of international incoming mobile voice minutes declined by 8.3 percent to post 144.3 million minutes whereas international outgoing mobile voice traffic decreased by 0.1 percent to post 107.4 million minutes. However, incoming and outgoing traffic within the EAC countries increased by 24.7 and 4.7 percent respectively.

International incoming and outgoing mobile messages reduced by 14.0 and 0.6 percent respectively.

Table 7 shows the trend in international mobile traffic.

Table 7: International Mobile Traffic

Traffic	***Region***	***Jan-Mar 18***	***Oct - Dec 17***	***Quarterly Variation (%)***	***Jan-Mar 17***
International Incoming Mobile Voice Minutes	*EAC*	59,488,587	47,694,065	24.7	44,434,436
	Others	84,838,329	109,698,601	-22.7	97,919,141
	Total	**144,326,916**	**157,392,666**	**-8.3**	**142,353,577**
International Outgoing Mobile Voice Minutes	*EAC*	49,434,140	47,195,312	4.7	45,547,779
	Others	58,013,562	60,317,485	-3.8	71,893,083
	Total	**107,447,702**	**107,512,797**	**-0.1**	**117,440,862**
International Incoming Mobile SMS		12,551,905	14,595,128	-14.0	8,530,417
International Outgoing Mobile SMS		9,224,070	9,283,732	-0.6	9,169,746

Source: CA, Operators' Returns.

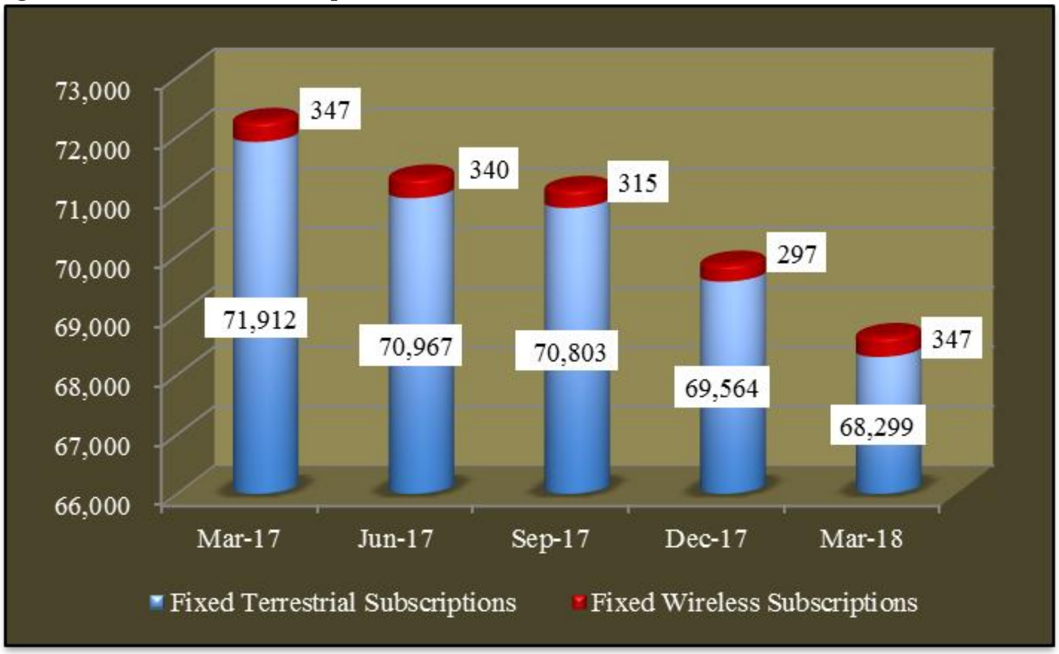
2 FIXED TELEPHONE SERVICE

2.1 Fixed Network Subscriptions

The number of fixed terrestrial connections dropped by 1.8 percent to record 68,299 connections during the period Jan-Mar 2018. However, fixed wireless connections increased from 297 lines to 347 lines in the period under review.

Figure 6 show the trend in fixed network subscriptions.

Figure 6: Fixed Network Subscriptions



Source: CA, Operators' Returns.

2.2 Fixed Network Traffic

During the period under review, the total local fixed network voice traffic grew by 2.7 percent to post 601,803 minutes from 585,744 posted in the previous quarter. Fixed-to-fixed local traffic increased by 10.6 percent to stand at 285,150 minutes. However, fixed wireless-to-fixed wireless traffic declined by 3.4 percent to post 316,653 minutes.

Table 8 illustrates the trend in fixed network traffic.

Table 8: Local Fixed Network Traffic in Minutes

Local Fixed Network traffic	***Jan-Mar 18***	***Oct-Dec 17***	***Quarterly Variation (%)***	***Jan-Mar 17***
Fixed-fixed	285,150	257,874	10.6	389,154
Fixed wireless-fixed wireless	316,653	327,870	-3.4	338,129
Total Local Fixed Network Traffic	**601,803**	**585,744**	**2.7**	**727,283**

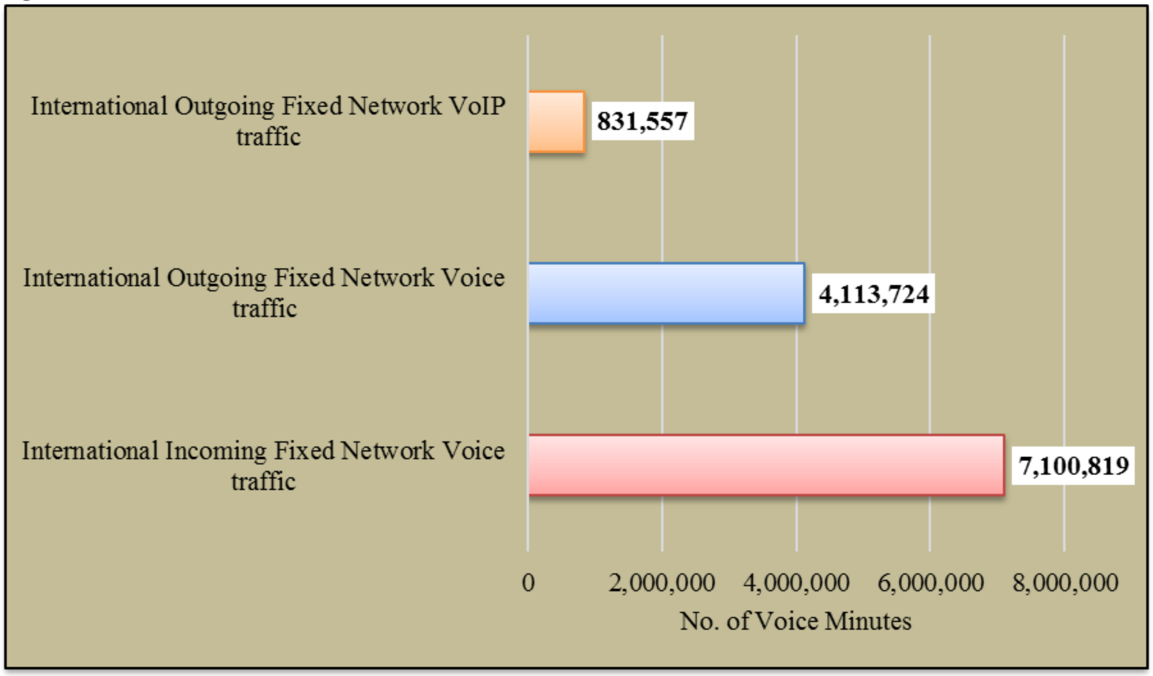
Source: CA, Operators' Returns.

2.3 International Fixed Voice Traffic

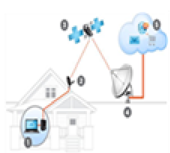
International incoming fixed voice traffic stood at 7.1 million minutes during the period under review whereas fixed voice traffic terminating on other countries recorded a total of 4.1 million minutes. International outgoing fixed network VoIP on the other hand recorded 831,557 minutes.

The trend in International fixed network traffic is outlined in Figure 7.

Figure 7: International Fixed Voice Traffic



Source: CA, Operators' Returns.



3 DATA/INTERNET SERVICES

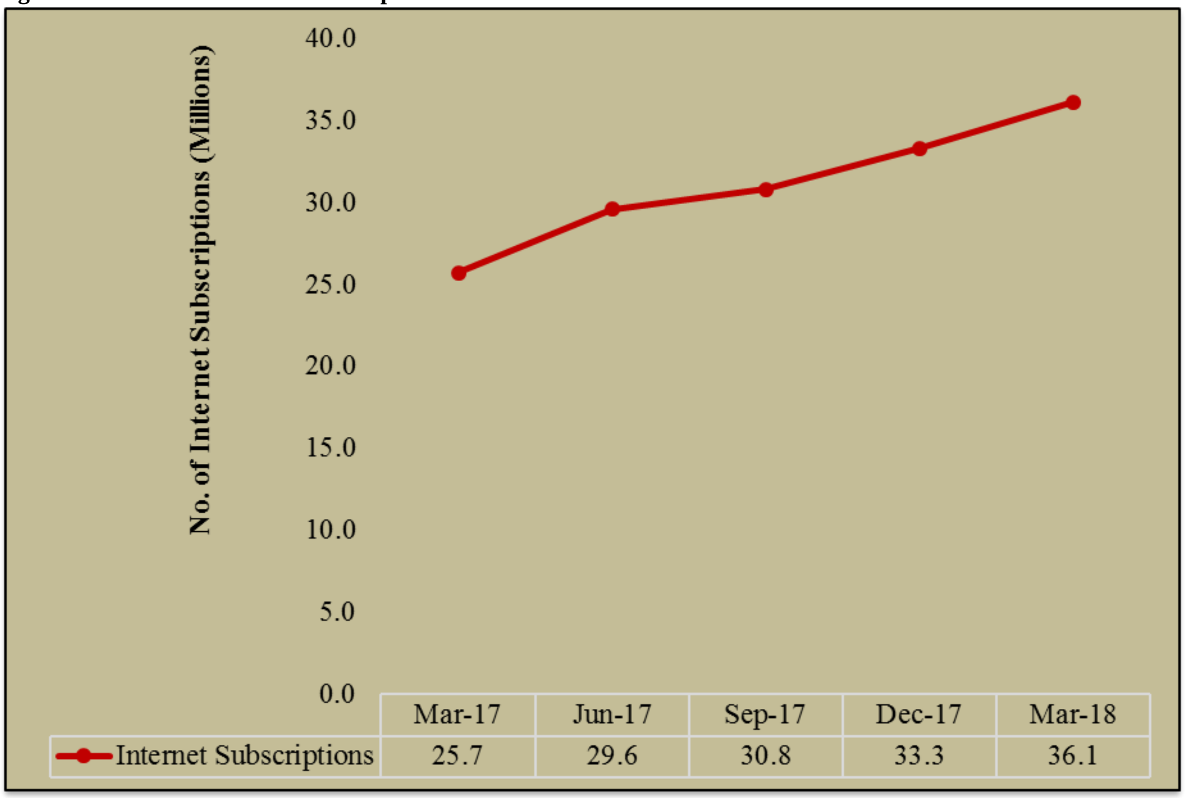
3.1 Data/Internet Subscriptions

The data/internet market in Kenya has grown remarkably over the years with majority of the users being on mobile data/internet. The demand and uptake for Smartphones in Kenya has also increased significantly. Smartphones are largely used to access, video on demand, online markets, games, music, news and social media sites. However, they are an increasingly essential tool to access financial products and a huge variety of useful services. Further, the access to and use of Internet services plays a key role in driving e-commerce in the country.

During the third quarter of the FY 2018/19, the total data/Internet subscriptions grew by 8.2 percent to record 36.1 million subscriptions from 33.3 million subscriptions recorded during the second quarter of the same financial year.

Figure 8 illustrates the trend in total number of data/internet subscriptions.

Figure 8: Total Data/Internet Subscriptions



Source: CA, Operators' Returns. The information on Internet Penetration has not been included in this report because the Authority is in the process of reviewing the methodology for estimating Internet Penetration in line with local needs and current market developments.

Mobile data/internet has continued to experience rampant growth following the deployment 4G Long Term Evolution (LTE) network by the three MNOs and one ISP. The LTE mobile telecommunication system was first deployed in the country in 2014 when safaricom re-farmed part of their 1800MHz and recently (in 2016) deployed it in 800Mhz. Other operators have also deployed the technology which includes Airtel in the 800MHz, Telkom in 800MHz and Jamii in 700MHz. Unlike the other operators who provide both voice and data services Jamii only provides data service. It is also worth noting that the coverage for LTE is mostly in urban centers and populated rural areas.

The quarter under review posted a total of 35.7 million mobile subscriptions from 33.0 million mobile subscriptions posted during the previous quarter. During the quarter under review, the number of terrestrial wireless data subscriptions grew by 23.5 per cent to record 101,742 subscriptions from 82,362 recorded in the previous quarter.

Satellite data subscriptions grew to 1,000 from 769 subscriptions registered in the second quarter. On the other hand, the number of Fixed DSL subscriptions decreased by 35.7 percent to stand at 1,256 from 1,953 subscriptions.

Fibre Optic data subscriptions increased by 15.5 percent from 99,643 to 115,058 subscriptions during the quarter under review.

During the quarter under review, the number of fixed cable modem subscriptions grew by 5.5 per cent to 102,165 from 96,876 subscriptions reported in the previous quarter. Other fixed data subscriptions declined by 6.2 per cent to post 6,285 from 6,700 subscriptions recorded during the previous quarter.

The number of data/Internet subscriptions is as indicated in Table 9.

Table 9: Data/Internet Subscriptions

Internet/Data Subscriptions	***Mar-18***	***Oct-Dec 17***	***Quarterly Variation (%)***	***Jan-Mar 17***
Mobile Data Subscriptions	35,769,582	33,076,894	8.1	25,524,363
Terrestrial Wireless Data Subscriptions	101,742	82,362	23.5	36,104
Satellite Data Subscriptions	1,000	769	30.0	622
Fixed DSL Data Subscriptions	1,256	1,953	-35.7	2,452
Fixed Fibre Optic Data Subscriptions	115,058	99,643	15.5	48,040
Fixed Cable Modem Subscriptions	102,165	96,876	5.5	95,976
Other Fixed Data Subscriptions	6,285	6,700	-6.2	0
Total Internet Subscriptions	**36,097,088**	**33,365,197**	8.2	**25,707,557**

Source: CA, Operators' Returns.

Safaricom PLC continued to lead in mobile data/internet subscriptions, however the market share declined from 72.8 percent recorded last quarter to 68.4 percent during the quarter under review. On the other hand, Airtel Networks Limited gained 4.6 percentage points to post a market share of 23.1 percent.

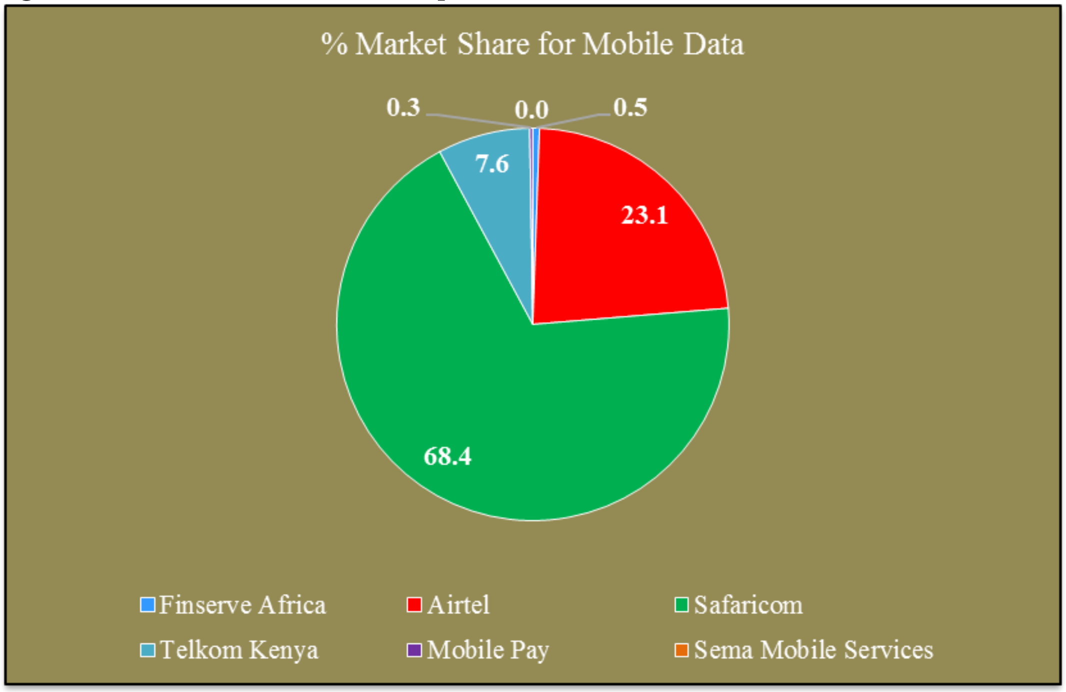
Telkom Kenya Limited posted a market share of 7.6 per cent down from 7.8 per cent reported in the preceding quarter.

The market shares for Finserve Africa Limited declined by 0.1 percentage points to stand at 0.5 percent from 0.6 percent reported last quarter.

Mobile Pay Limited and Sema Mobile Services market share for mobile data remained unchanged at 0.3 per cent and 0.0 per cent respectively.

The market shares for mobile data/Internet market per operator are shown in Figure 9.

Figure 9: Mobile data/Internet Subscriptions



Source: CA, Operators' Returns.

During the period under review, Wananchi Companies (Kenya) Limited continued to lead the fixed data/internet market with a market share of 34.4 percent.

Safaricom PLC reported a market share of 19.4 percent whereas Mawingu Networks Limited came in third with a market share of 18.2 percent.

The number of fixed/wireless data subscriptions and the respective market shares per service provider is as shown in Table 10.

Table 10: Fixed Subscriptions by service provider

Jan-Mar 18		
Name of Service Provider	**No. of subscriptions**	**Market Share (%)**
Wananchi Companies (Kenya) Ltd*	112,593	34.4
Safaricom PLC	63,567	19.4
Mawingu Networks Ltd	59,754	18.2
Jamii Telecommunications Ltd**	36,179	11.0
Poa Internet Kenya Ltd (Argon Telecom Services Limited)	24,553	7.5
Internet Solutions Kenya Ltd (Access Kenya Group)	14,845	4.5
Liquid Telecommunications Kenya Limited	9,507	2.9
Telkom Kenya Ltd	3,552	1.1
Iway Africa Kenya Ltd	885	0.3
Mobile Telephone Networks Business Kenya Ltd	586	0.2
Frontier Optical Networks Ltd	505	0.2
Other Fixed Internet Operators	980	0.3

Source: CA, Operators' Returns. * Data includes Wananchi Telecom, Wananchi Group, Simbanet Ltd and ISAT Africa Kenya Limited (Formely Alldean Satellite Networks Ltd) * *Provisional Data

3.2 Broadband[4] Services

3.2.1 Broadband Subscriptions

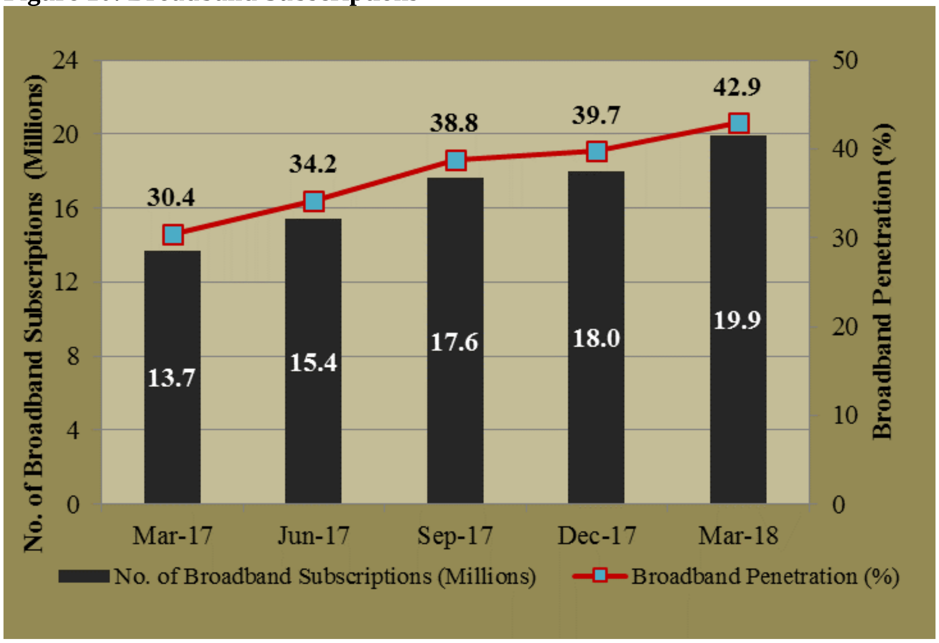
During the period under review, the number of broadband subscriptions increased by 10.9 percent to stand at 19.9 million from 18.0 million subscriptions recorded during the previous quarter.

As at the end of the quarter under review, the broadband penetration stood at 42.9 per cent.

The trend in broadband subscriptions is illustrated in Figure 10.

[4] Broadband-Data speeds equal to or/and greater than 256Kbps

Figure 10: Broadband Subscriptions

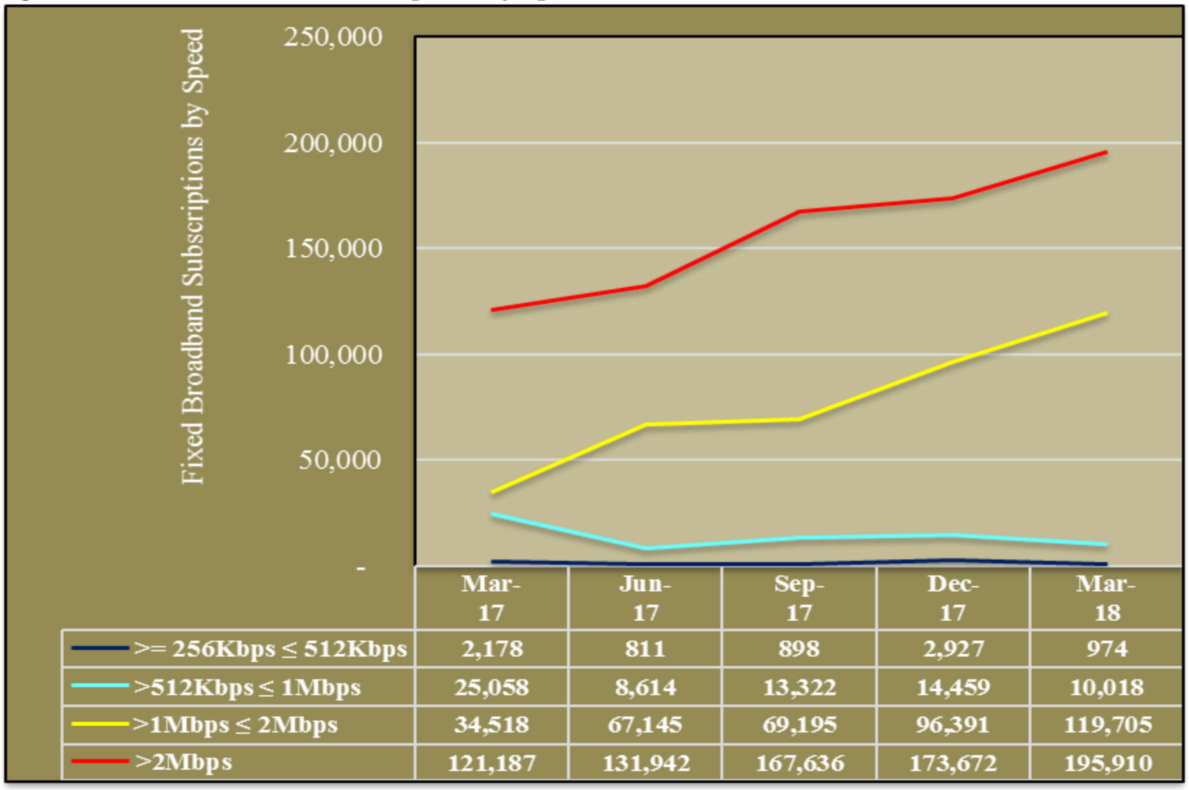


Source: CA, Operators' Returns.

3.2.2 Fixed Broadband Subscriptions by Speed

As illustrated in Figure 11, fixed broadband speeds equal/and greater than 256Kbps but equal/ and less than 512 Kbps recorded the least number of subscriptions whereas speeds greater than 2Mbps registered the highest number of subscriptions.

Figure 11: Fixed Broadband Subscriptions by Speed



	Mar-17	Jun-17	Sep-17	Dec-17	Mar-18
>= 256Kbps ≤ 512Kbps	2,178	811	898	2,927	974
>512Kbps ≤ 1Mbps	25,058	8,614	13,322	14,459	10,018
>1Mbps ≤ 2Mbps	34,518	67,145	69,195	96,391	119,705
>2Mbps	121,187	131,942	167,636	173,672	195,910

Source: CA, Operators' Returns.

3.3 International Bandwidth

Total international Internet bandwidth available in the country (Lit/equip capacity) increased by 1.3 percent to stand at 3,223.14 Gbps during the quarter under review. This was largely attributed to the expansion of capacity by EASSY submarine cable landing company with the aim to meet the increasing demand for bandwidth in the country.

The trend in international available bandwidth is as shown in Table 11.

Table 11: International Internet Available Bandwidth (Gbps)

International Connectivity Bandwidth	***Jan-Mar 18***	***Oct-Dec 17***	***Quarterly Variation (%)***	***Jan-Mar 17***
SEACOM	2,220.00	2,220.00	0.0	2,020.0
TEAMS	702.00	702.00	0.0	702.0
EASSY	139.53	106.40	31.1	83.0
Lion 2	155.94	148.60	4.9	101.4
Satellite Internet Bandwidth	5.67	5.59	1.8	4.7
Total International Internet Bandwidth (Gbps)	**3,223.14**	**3,182.59**	**1.3**	**2,906.8**

Source: CA, Operators' Returns.

The total international Internet bandwidth used increased from 916.28 Gbps reported last quarter to 917.37 Gbps during the quarter under review implying that only 28.5 percent of the available bandwidth was utilized.

The trend in international used bandwidth is illustrated in Table 12.

Table 12: International Internet Used Bandwidth (Gbps)

International Leased (Used) Bandwidth	***Jan-Mar 18***	***Oct-Dec 17***	***Quarterly Variation (%)***	***Jan-Mar 17***
International Undersea Internet Connectivity Bandwidth (Gbps)	912.8	911.8	0.1	879.3
International Satellite Internet Connectivity Bandwidth	4.57	4.48	1.8	2.7
Total International Internet Connectivity Bandwidth (Gbps)	**917.37**	**916.28**	**0.1**	**879.5**

Source: CA, Operators' Returns.

3.4 Registered Domain Names

As at 31st March 2018 the total number of domains stood at 75,587 with *.co.ke* recording the highest number at 69,801 domains representing 92.3 per cent of the total domains.

Table 13: Number of Domain Names

Sub-Domain	**User**	***Jan-Mar 18***		***Oct-Dec 17***	
		No. of Domains	**Percentage (%)**	**No. of Domains**	**Percentage (%)**
CO.KE	Companies	69,801	92.35	68,430	92.51
GO.KE	Government Entities	438	0.57	414	0.55
OR.KE	Non Profit Making Organizations	1,962	2.60	1,981	2.68
AC.KE	Institutions of Higher Education	775	1.03	768	1.04
SC.KE	Lower and Middle Level Institutions	1,117	1.48	1,027	1.39
NE.KE	Personal Websites and E-mail	456	0.60	466	0.63
ME.KE	Personal Websites and E-mail	405	0.54	386	0.52
MOBI.KE	Mobile Content	187	0.25	126	0.17
INFO.KE	Information	446	0.58	374	0.51
Total		**75,587**	**100.00**	**73,972**	**100**

Source: Kenya Network Information Centre (KeNIC)

4 NATIONAL CYBER THREAT LANDSCAPE

About the National KE-CIRT/CC

The National KE-CIRT/CC is a multi-agency collaboration framework which is responsible for the national coordination of cybersecurity as Kenya's national point of contact on cybersecurity matters. The National KE-CIRT/CC coordinates response to cyber security matters at the national level in collaboration with relevant actors locally and internationally.

The National KE-CIRT/CC continues to put in place initiatives to facilitate the management of cyber threats targeting Kenya. These initiatives cover people, processes and technology.

4.1 Highlights of the activities during the quarter

During the quarter, the National KE-CIRT/CC detected over 7.9 million cyber threats. This denoted a 25.5 percent decrease given the 10.7 million cyber threats detected during the second quarter. The decrease was due to the enhanced response to the cyber threat advisories issued by the National KE-CIRT/CC to the targeted organizations. The measures deployed by the targeted organizations prevented the recurrence of some of the attacks.

Table 14: Cyber Threats Detected

No	Attack Vector	*Jan-Mar 18*	*Oct-Dec 17*	*Quarterly Variation (%)*
1.	Malware attacks	5,695,265	7,884,217	-27.8
2.	Web application attacks	1,253,693	1,230,846	1.9
3.	Botnet/DDOS	1,016,961	1,587,347	-35.9
4.	System Misconfiguration	2,548	2,678	-4.9
5.	Online Abuse	1,757	140	1155.0
6.	Online Impersonation	62	264	-76.5
	Total Cyber Threats	**7,970,286**	**10,705,492**	**-25.5**

Source: National KE-CIRT/CC

During the quarter, the National KE-CIRT/CC validated and escalated 3,488 cases, which it determined to be critical, and therefore requiring intervention. This denoted a 415.2 percent increase given the 677 cyber threats detected during the second quarter. The increase in the number of escalated cyber threats was due to enhanced capabilities of the National KE-CIRT/CC, and increased collaboration through new partnerships with other National CIRTs globally.

Table 15: Cyber Threat Advisories

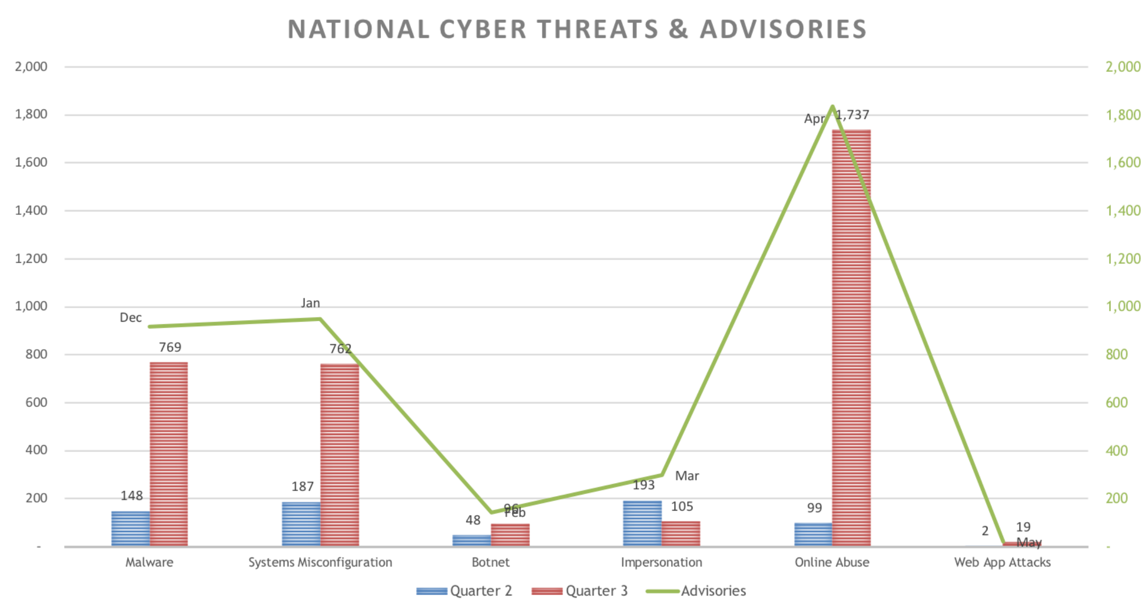
No.	Cyber Attack Vector	*Jan-Mar 18*	*Oct-Dec 17*	*Quarterly Variation (%)*
1.	Malware	769	148	419.6
2.	System Misconfiguration	762	187	307.5
3.	Botnet/DDOS	96	48	100.0
4.	Online Impersonation	105	193	-45.6
5.	Online Abuse	1,737	99	1654.5
6.	Web Application Attacks	19	2	850.0
	Total Cyber Reports	**3,488**	**677**	**415.2**

Source: National KE-CIRT/CC

During the quarter, the cyber threats detected varied from denial of service (DOS) including botnet and brute-force attacks that led to denial of computer services and illegal access to computer systems; online impersonation via social media accounts and domain names; web application attacks including website defacement; malware including phishing attacks; online abuse including online fraud, hate speech, incitement to violence and fake news; and systems misconfiguration, among others.

An overview of the cyber threat landscape for the period under review is as shown in Figure 12.

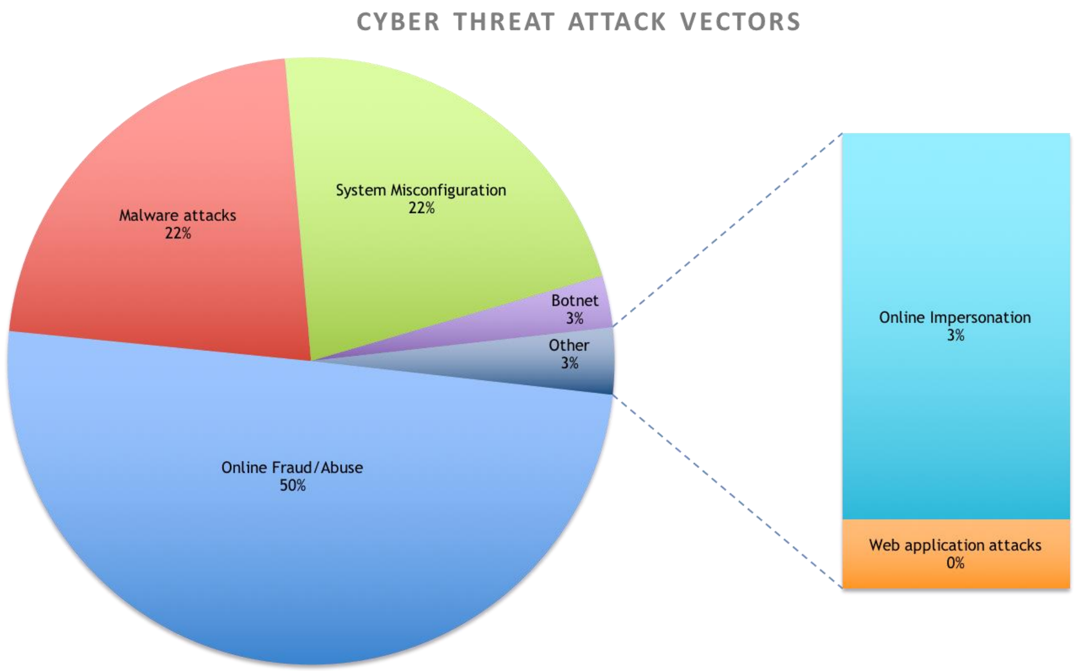
Figure 12: National Cyber threats & Advisories



Source: National KE-CIRT/CC

An overview of the methods used by the cyber attackers to perpetrate cyber threats are as shown in the chart below:

Figure 13: Attack Vectors Used to Perpetrate Cyber Attacks



Source: National KE-CIRT/CC

During the period under review, the highest number of cyber threats targeted file sharing, web service and Voice over IP (VoIP) applications. The table below shows the top-5 service ports that were targeted.

Table 16: Top-5 Targeted Services

No.	Port	Service	Service description
1.	445	Microsoft-Directory Services (Microsoft-DS)	Microsoft-DS is a port used for sharing files in Windows.
2.	80	HTTP	HTTP is the underlying protocol used by the World Wide Web and this protocol defines how messages are formatted and transmitted, and what actions Web servers and browsers should take in response to various commands.
3.	5060	Session Initiation Protocol (SIP)	SIP is a communications protocol for signaling and controlling multimedia communication sessions such VoIP and Chat.
4.	22	Secure Shell (SSH)	This is a protocol for securely connecting to remote machines on the same or different network.
5.	23	Telnet	Telnet is a network protocol that allows a user on one computer to log onto another computer on the same or different network. It is a less secure version of SSH.

Source: National KE-CIRT/CC

During the quarter under review, the National KE-CIRT/CC identified the following top-10 username and passwords as used in brute force attacks.

The top-3 usernames were root, user and usuario while the top-3 passwords used were admin, 1234 and password. The table below shows the top-10 usernames and passwords used in brute force attacks.

Table 17:Top Targeted Usernames

No.	Username	Instances
1.	root	2011
2.	user	1141
3.	usuario	81
4.	test	51
5.	guest	46
6.	ftpuser	40
7.	support	31
8.	postfix	26
9.	postgres	25
10.	hadoop	20

Source: National KE-CIRT/CC

Table 18: Top Targeted Password

No.	Password	Instances
1.	admin	209
2.	1234	165
3.	password	197
4.	12345	143
5.	Root	97
6.	Ubnt	102
7.	123456	138
8.	default	99
9.	0000	102
10.	admin123	73

Source: National KE-CIRT/CC

All these are popular default username and password combinations for a majority of products by software and hardware vendors.

To mitigate this, the National KE-CIRT/CC issued a cybersecurity advisory on guidelines for password management including the risk of default system usernames and passwords.

5 BROADCASTING

5.1 Digital Terrestrial Television

As at the end of the period under review, the number of free-to-air TV channels on the digital terrestrial platform declined to 62 from 64 channels reported in the previous quarter. On the other hand, the number of pay TV service providers on the Digital Terrestrial Television (DTT) platform remained unchanged (GoTV and StarTimes).

5.2 Digital Terrestrial Television sites rollout

The digital TV broadcasting signal population coverage remained at 85.8 per cent during the period under review.

5.3 FM Radio Stations

The number of FM radio stations in the country declined to 169 stations as at the end of the period under review from 178 Stations reported in the last quarter representing a decline of 5.1

per cent. The decline is attributed to the ongoing mergers and acquisitions amongst the FM stations.

6 POSTAL AND COURIER SERVICES

6.1 Postal and Courier Traffic

Postal and Courier sub-sector remained stable with the number of letters posted locally reduced marginally 16.00 million from 16.03 million letters recorded in the previous quarter. On the other hand, total courier items sent locally rose by 3.0 per cent to reach 1.9 million items during the quarter under review compared to 1.8 million items sent in the previous quarter.

The number of International incoming letters grew by 0.4 per cent to stand at 1.069 million from 1.064 million letters recorded in the preceding quarter. On the contrary, International outgoing letters recorded a drop of 1.9 per cent to stand at 1.06 million letters.

The postal and courier traffic is as shown in Table 14

Table 19 : Postal and Courier Traffic

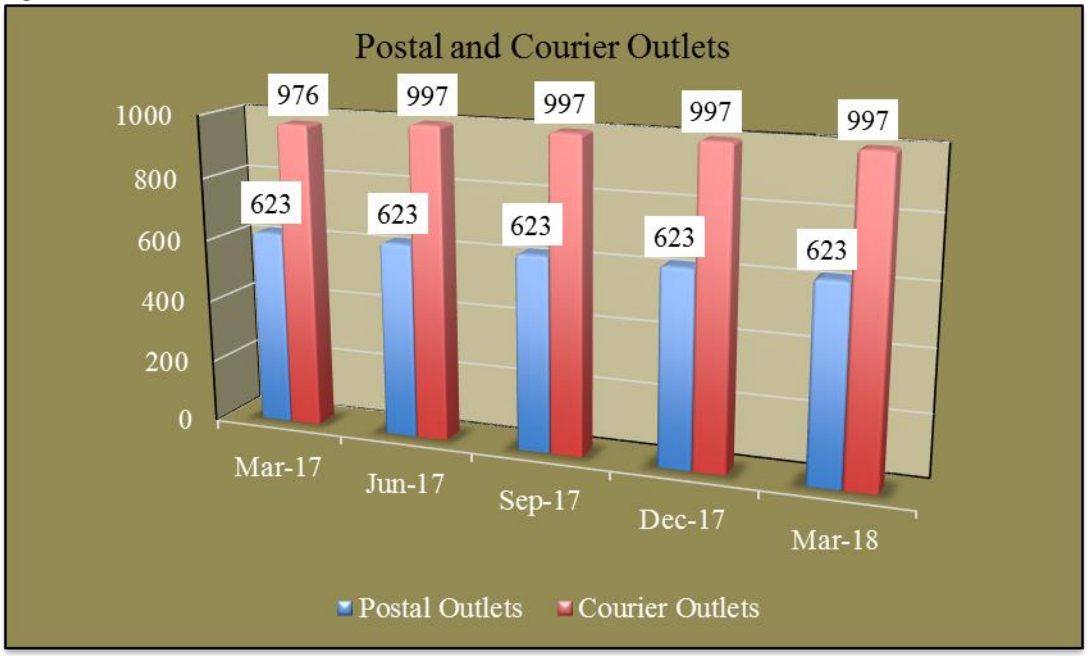
Post and Courier Traffic	Jan-Mar 18	Oct-Dec 17	Quarterly Variation (%)	Jan-Mar 17
Number of Letters (Up to 350 gms) Posted Locally	16,004,183	16,030,166	-0.2	8,209,615
Total Courier Items Sent Locally	1,910,912	1,855,492	3.0	1,630,765
International Incoming Letters (Up to 350 gms)	1,069,120	1,064,615	0.4	964,013
International Outgoing Letters (Up to 350 gms)	1,069,698	1,090,331	-1.9	912,825

Source: CA, Operators' Returns.

6.2 Number of Postal and Courier Outlets

The number of Postal and Courier outlets remained unchanged at 623 and 997 respectively as illustrated in Figure 12.

Figure 14: Number of Postal Courier Outlets



Source: CA, Operators' Returns.

7 TARIFFS, PROMOTIONS AND SPECIAL OFFERS

The Authority received a total of 21 applications for tariffs and promotions and special offers during the period under review, representing a 61.9 per cent decline in applications compared to the previous quarter.

A detailed distribution of the applications for tariffs and promotions and special offers is illustrated in Tables 15 and 16 respectively.

Table 20 : Tariffs

Service Provider	Jan-Mar 2018							
	Voice	**SMS**	**Data**	**Airtime**	**Bundle**	**Mobile Money**	**Other**	**Total**
Safaricom PLC	-	-	1	-	2	-	1	4
Airtel	-	-	-	-	1	-	-	1
Telkom	-	1	-	-	-	-	-	1
Total	-	1	1	-	3	-	1	6

Source: CA, filed tariffs

Table 21: Promotions and Special Offers

Service Provider	Jan-Mar 2018								
	Voice	**SMS**	**Data**	**Bundle**	**Airtime**	**Lucky Draw**[5]	**Mobile Money**	**Other**[6]	**Total**
Safaricom	1	-	5	1	3	1	2	-	13
Airtel	-	-	-	-	-	-	-	-	-
Telkom	-	-	-	-	-	1	1	2	2
Total	1	-	5	1	3	2	3	2	15

Source: CA, filed promotions and special offers

8 CONCLUSION

Continued expansion of GSM networks, roll out of LTE technologies both on commercial and trial basis, development of new products and enhancement of existing products by the various service providers has led to increase uptake of the various mobile services in the mobile cellular market. Mobile voice and mobile data traffic grew remarkably during the quarter under review as a result of the special offers and promotions carried out by the service providers within the period. Further, the partial completion of Voice Infrastructure and Services Projects network rollout in 31 sub-locations out of 78 sub-locations of Phase I under Universal Service Fund (USF) being implemented by the Authority has contributed towards the expansion of GSM voice infrastructure and services in the hitherto unserved populations in the far flung counties. This trend is expected to continue in the coming quarters as the Authority strives to complete the Phase I USF projects and scalability of the same projects to the next phases.

The mobile money services continue to offer customers a great value proposition, which has led to its increased uptake. Although the number of active mobile money transfer subscriptions declined slightly during the period under review, the number of activities within the platform which include sending, withdrawal, transfers, and merchant transactions grew significantly. The value of mobile commerce transactions which hit the Ksh. 1 trillion mark for the first time last quarter maintained an upward trend during the period under review. The mobile money transfer

[5]Lucky draw is a game of chance where the operator has no control over the specific user to receive a reward set out.

[6]"Other" refers to promotions that cannot be clearly attributed to any particular service or bundle of services, neither can they be attributed to a lucky draw

market is expected to grow significantly in the coming quarters following the launch of T-Kash Money by Telkom Kenya late within the quarter under review.

In the recent past, the Kenyan data/internet market has been characterized by the market entry of new players and most especially in the roll out of 4G mobile technologies, which offers more reliable and faster mobile Internet speeds. As at the end of the period under review, Safaricom PLC was the only operator officially licensed to roll out LTE. Conversely, Airtel Kenya Ltd, Telkom Kenya Ltd and Jamii Telecom were rolling out their LTE networks on a trial basis during the period under review. The expansive roll out of LTE service by Safaricom, Airtel, Telkom and Jamii sites has resulted into increased access to and use of data/internet services in the country considering that 99% of data/internet users are on mobile data. It is expected that this will enhance competition in the data market in the coming quarters where service providers are a variety of product offerings at different price points better deals with more friendly bundles at lower prices in order to retain and attract more customers to their networks.

The postal and courier market in Kenya has experienced a steady decline in its core business of delivering letters and parcels for the past few years. This is mainly attributed to the growing pervasiveness of mobile and Internet services, and other digital technologies across the country. However, the growing e-commerce market presents a great opportunity for the regeneration of the Postal and Courier market as e-commerce providers seek more reliable, cost effective and convenient channels of delivering goods purchased online. The Ministry of ICT is currently working with other relevant stakeholders to develop a National Addressing System, (NAS), a framework that provides for among others the naming/numbering of streets and/or numbering of properties and/or buildings/parcels of land to facilitate easy identification, location and access to such places on the ground. This is aimed at boosting e-commerce in the country and in return the Postal and Courier market.

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