

FOURTH QUARTER SECTOR STATISTICS REPORT FOR THE FINANCIAL YEAR 2017/2018 (APRIL-JUNE 2018)

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LIST OF ACRONYMS AND ABBREVIATIONS

ADN African Digital Network Limited

B2B Business to Business
B2C Business to Customer
C2B Customer to Business
C2G Citizen to Government
DoS Denial-of-Service

DTT Digital Terrestrial Television

EASSy Eastern Africa Submarine Cable Systems

EVDO Evolution-Data Optimized

FY Financial Year

G2C Government to Citizen
Gbps Gigabits per second

GSM Global Systems for Mobile Communications ICTs Information Communication Technologies

KW Kilowatts

KE-CIRT/CC National Kenya Computer Incident Response Team/Coordination Centre

LION2 Lower Indian Ocean Network

Mbps Megabits per second MMS Multimedia Service MoU Minutes of Use

MVNO Mobile Virtual Network Operator NCC National Cybersecurity Centre

OTT Over-The-Top P2P Person to Person

SEACOM Sea Sub-Marine Communications Limited

SIM Subscriber Identification Module

SMS Short Messaging Service

TEAMS The East African Marine System

USF Universal Service Fund

VSAT Very Small Aperture Terminal

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.

REPORT SUMMARY

The Fourth Quarter Sector Statistics report provides an overview of the performance and trends of the communications sector for the period 1st April 2018 to 30th June 2018 on the following service categories:

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

Summary of ICT Indicators

| INDICATORS | July - Sep 2017 | Oct-Dec 2017 | Jan-Mar 2018 | Apr - Jun 2018 | % change |
|--|--------------------|-----------------|-----------------|-------------------|-------------|
| | Q1 | Q2 | Q3 | Q4 | Q3 to Q4 |
| Mobile Subscriptions (Millions) | 41.028 | 42.815 | 44.119 | 45.569 | 3.3 |
| Fixed subscriptions | 71,118 | 69,861 | 68,646 | 70,455 | 2.6 |
| VOICE TRAFFIC IN MINUTES | | | | | |
| Mobile On-Net Voice Traffic (Billions) | 9.920 | 10.493 | 11.256 | 12.354 | 9.8 |
| Mobile Off-Net Voice Traffic (Billions) | 1.147 | 1.298 | 1.463 | 1.574 | 7.6 |
| International Incoming Mobile Voice Traffic (Millions) | 147.098 | 157.392 | 144.326 | 157.226 | 8.9 |
| International Outgoing Mobile Voice Traffic (Millions) | 111.501 | 107.512 | 107.447 | 107.832 | 0.4 |
| Roaming-out (Own Subscribers) (Millions) | 44.27 | 40.66 | 42.936 | 45.152 | 5.2 |
| Roaming-in (Foreign Subscribers) (Millions) | 35.053 | 35.010 | 40.956 | 39.459 | -3.7 |
| Total Local Fixed network traffic | 603,200 | 585,744 | 601,803 | 620,833 | 3.2 |
| MOBILE SMS TRAFFIC | | | | | |
| SMS On-Net (Billions) | 18.754 | 17.333 | 14.184 | 13.983 | -1.4 |
| SMS Off-Net (Millions) | 539.53 | 697.84 | 727.933 | 816.887 | 12.2 |

| International Incoming SMS (Millions) | 10.053 | 14.595 | 12.551 | 10.545 | -16.0 |
|---|----------|------------|-----------|-----------|-------|
| International Outgoing SMS (Millions) | 9.578 | 9.283 | 9.224 | 8.986 | -2.6 |
| MOBILE MONEY TRANSFER SERVICES | | | | | |
| Number of Active Registered Mobile Money Transfer Subscriptions (Millions) | 28.192 | 30.000 | 29.106 | 29.678 | 2.0 |
| Number of Registered Mobile Money Agents | 184,537 | 198,234 | 202,244 | 206,940 | 2.3 |
| Number of Transactions-Sending and Withdrawal (Millions) | 537.242 | 607.413 | 663.731 | 611.341 | -7.9 |
| Value of Transactions- Sending and Withdrawal (Ksh.) trillion | 1.659 | 1.763 | 1.873 | 1.919 | 2.5 |
| Number of Mobile Commerce Transactions (Millions) | 352.4 | 441.248 | 474.541 | 510.113 | 7.5 |
| Value of Mobile Commerce Transactions (Ksh.) (trillion) | 0.714 | 1.169 | 1.292 | 1.427 | 10.4 |
| DATA/INTERNET SERVICES | | | | | |
| Data/ Internet Subscriptions (Millions) | 30.891 | 33.365 | 36.095 | 41.112 | 13.9 |
| Total Available International Bandwidth (Gbps) | 2,909.51 | 3,182.59 | 3,223.10 | 3,277.720 | 1.7 |
| Total Used International Bandwidth (Gbps) | 887.187 | 916.287 | 917.300 | 931.370 | 1.5 |
| BROADCASTING SERVICES | • | | | | |
| Number of free-to-air TV channels | 62 | 64 | 62 | 67 | 8.1 |
| Number of Radio FM stations | 178 | 178 | 169 | 169 | 0.0 |
| Digital Terrestrial Television Signal Population Coverage (%) | 83.6 | 85.8 | 85.8 | 86.0 | 0.2 |
| POSTAL AND COURIER SERVICES | - | | | | |
| Postal Outlets | 623 | 623 | 623 | 623 | 0.0 |
| Private Courier Outlets | 997 | 997 | 997 | 1,027 | 3.0 |
| Number of Letters (Up to 350 gms) Posted Locally (Millions) | 16.030 | 16.030 | 16.004 | 15.828 | -1.1 |
| Total Courier Items Sent Locally (Millions) | 1.712 | 1.855 | 1.910 | 1.033 | -45.9 |
| International Incoming Letters (Up to 350 gms) (Millions) | 1.078 | 1.064 | 1.069 | 1.067 | -0.2 |
| International Outgoing Letters (Up to 350 gms) (Millions) | 1.08 | 1.090 | 1.069 | 1.080 | 1.0 |
| CYBER SECURITY | | | | | |
| Total Cyber Threats | - | 10,705,492 | 7,970,286 | 3,462,480 | -56.6 |
| Total Cyber Reports | - | 677 | 3,488 | 2,613 | -25.1 |
| Total Population in Kenya (Millions)* | 45.4 | 45.4 | 46.6 | 46.6 | 0.0 |

• Source: Economic Survey 2018

1 CELLULAR MOBILE SERVICES

1.1 Mobile Subscriptions

The ICT sector in Kenya has experienced tremendous developments over the past decade. This has been accelerated mainly by the increased adoption of ICT products, ICT processing technologies and ICT support services. This has in return increased the demand of ICT related services in the facilitation of other service industries. The rise and growth of mobile technology has been a great contributor to this transformation making the country a mobile-first economy. The increasing demand for and uptake of mobile services such as mobile money, mobile internet, mobile Apps, mobile banking, marketing and gaming has resulted to a significant increase in the number of mobile services subscriptions.

As at 30thJune 2018, the number of mobile service subscriptions in the country stood at 45.5 million up from 44.1 million reported in March 2018. This also marked an increase of 13.2 percent when compared to the 40.2 million subscriptions recorded as at 30th June 2017. This has resulted to increased mobile penetration of 97.8 per cent during the subject quarter from 95.1 per cent reported in the preceding quarter.



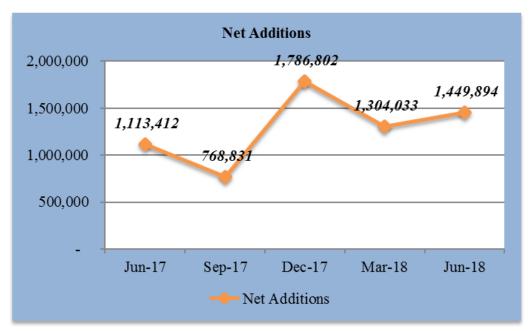
Figure 1 illustrates the trends in mobile subscriptions and penetration levels.

Source: CA, Operators' Returns.

Figure 1: Mobile Subscriptions

As illustrated in figure 2, 1.4 million new mobile subscriptions were registered during the fourth quarter up from 1.3 million registered in the third quarter.

Figure 2 shows the net additions in mobile subscriptions.



Source: CA, Operators' Returns.

Figure 2: Net Additions

During the quarter under review, Safaricom PLC lost its market share by 1.6 percentage points, Airtel Ltd and Telkom Kenya gained by 1.7 and 0.2 percentage points respectively. Finserve Africa lost by 0.1 percentage points whereas the market shares for Sema Mobile and Mobile Pay Ltd remained unchanged as shown in Figure 3 below.

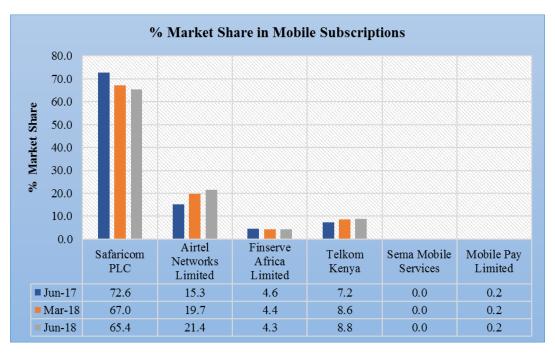


Figure 3: Percentage market share for mobile subscriptions per operator

The total number of mobile subscriptions as at 30th June 2018 stood at 45.5 million with pre-paid and postpaid subscriptions registering at 44.3 million and 1.19 million respectively. The ratio of pre-paid subscriptions remained dominant at 97.4 percent and this is attributed to the ease and convenience of subscription as compared to post-paid subscription which has mandatory requirements which may pose a great challenge for most users. Pre-paid service also offers a variety of tariffs and low denomination calling cards as low as Ksh. 5 which convenient and affordable for low income subscribers.

Table 1 shows Pre-Paid and Post-Paid Mobile Subscriptions per Operator.

Table 1: Mobile Subscriptions per Operator

| Name of | Apr-Jun 18 | | | | Quarterly | | |
|----------------------------|------------|-----------|------------|------------|-----------|------------|---------------|
| operator | Pre-paid | Post-paid | Total | Pre-paid | Post-paid | Total | variation (%) |
| Safaricom PLC | 28,702,646 | 1,077,402 | 29,780,048 | 28,431,629 | 1,138,556 | 29,570,185 | 0.7 |
| Airtel Networks Limited | 9,643,139 | 101,301 | 9,744,440 | 8,609,541 | 100,015 | 8,709,556 | 11.9 |
| Telkom Kenya Limited | 3,983,784 | 11,581 | 3,995,365 | 3,795,435 | 9,561 | 3,804,996 | 5.0 |
| Finserve Africa Limited | 1,959,009 | - | 1,959,009 | 1,944,231 | - | 1,944,231 | 0.8 |
| Sema Mobile Services | 112 | - | 112 | 112 | - | 112 | 0.0 |
| Mobile Pay Limited | 90,062 | - | 90,062 | 90,062 | - | 90,062 | 0.0 |
| Total | 44,378,752 | 1,190,284 | 45,569,036 | 42,871,010 | 1,248,132 | 44,119,142 | 3.3 |

Source: CA, Operators' Returns.

1.2 Mobile Money Services

The mobile money service in Kenya has transformed from the traditional cash-in and cash-out transactions to a key driver of financial inclusion and facilitator for digital economy through the emergence and evolution of services such as mobile loans, mobile savings, cross-border remittances and pay bills. As at 30th June 2018, the number of active mobile money transfer subscriptions and agents stood at 29.6 million and 206,940 respectively. Similarly, 727.0 million transactions valued at 1.9 trillion Kenya Shillings were made between 1st April 2018 and 30th June 2018. In addition, the value of goods and services transacted over mobile platform amounted to 1.4 trillion Kenya shillings. A total of 675.5 billion Kenya shillings was moved from Person to Person.

Table 2 shows the trends of mobile money transfer and mobile commerce services.

Table 2: Mobile Money Transfer Service

| Service | | me wioney Trans | | Ann Ivo 1 | 10 | | | | | |
|------------|------------|-----------------|-------------|-----------------------|-------------|-------------------|-----------------|--|--|--|
| | Apr-Jun 18 | | | | | | | | | |
| /Indicator | Agents | Active | No. of | Value of | No. of M- | Value of M- | P2P Transfers | | | |
| | J | Subscriptions | Transaction | Transactions (Ksh) | Commerce | Commerce | (Ksh.) | | | |
| | | Subscriptions | s^1 | 11 disactions (11511) | Transaction | Transactions | (115777) | | | |
| | | | S | | | | | | | |
| | | | | | s^2 | (Ksh) | | | | |
| M-Pesa | 159,726 | 23,946,174 | 581,944,422 | 1,503,293,228,098 | 418,308,928 | 1,097,046,295,854 | 556,605,518,202 | | | |
| Airtel | 24,533 | 3,619,415 | 4,141,781 | 1,270,252,917 | 3,518,653 | 2,569,011,810 | 1,170,665,840 | | | |
| Money | 24,333 | 3,019,413 | 4,141,761 | 1,270,232,917 | 3,316,033 | 2,309,011,610 | 1,170,005,640 | | | |
| Equitel | | 1.050.000 | 140 429 270 | 412 422 114 000 | 97 900 091 | 229 007 090 500 | 117 026 101 700 | | | |
| Money | - | 1,959,009 | 140,438,370 | 413,423,114,000 | 87,890,981 | 328,097,080,500 | 117,036,101,700 | | | |
| T-Kash | 16,554 | 63,023 | 78,504 | 118,024,097 | 394,576 | 29,195,944 | 13,899,525 | | | |
| Mobile Pay | 6,127 | 90,442 | 404,020 | 971,850,414 | - | - | 766,532,592 | | | |
| Total | 206,940 | 29,678,063 | 727,007,097 | 1,919,076,469,526 | 510,113,138 | 1,427,741,584,108 | 675,592,717,859 | | | |

Source: CA, Operators' Returns.

1.3 Mobile Number Portability

As outlined in table 3 the number of mobile in-ports remain unchanged during the quarter under review. However, the number of mobile in-ports for the fiscal year 2017/18 increased by more than double when compared to the FY 2016/17.

Table 3: Mobile Number Portability

| Period | Period Apr-Jun 18 Jan-Mar 18 | | Quarterly | FY 2017/18 | FY 2016/17 | Annual | | | | |
|--------|------------------------------|--|---------------|------------|------------|---------------|--|--|--|--|
| | _ | | Variation (%) | | | Variation (%) | | | | |

¹ Mobile Money Transfer Transactions - Sending (P2P) and Withdrawals

² Mobile Commerce Transactions- C2B, B2C, B2B, C2G, G2C

| Number of | 484 | 484 | 0.0 | 2,857 | 1,243 | 129.8 |
|-----------|-----|-----|-----|-------|-------|-------|
| in-ports | 101 | 101 | 0.0 | 2,037 | 1,213 | 127.0 |

1.4 Mobile Traffic and Usage Pattern

1.4.1 Local Voice Traffic

During the quarter under review, the volume of on-net mobile voice traffic rose by 9.8 per cent to post 12.3 billion minutes from 11.2 billion minutes recorded in the previous quarter. The same trend was observed during the 2017/18 financial year where the total intra-network voice traffic increased by 16.7% to 44.0 billion minutes from 37.7 billion minutes recorded in 2016/17.

The volume of off-net mobile voice traffic recorded a growth of 5.2 per cent to post 1.5 billion minutes from 1.4 billion registered in last quarter.

Mobile to fixed network voice traffic declined to 16.2 million minutes from 27.0 million minutes reported in the preceding quarter. On the contrary, the traffic rose by 20.3 per cent in the FY 2017/18 to record 89.6 million minutes from 74.5 million minutes posted last year.

The total voice traffic originating from mobile networks stood at 13.9 billion minutes during the fourth quarter up from 12.7 billion minutes registered in quarter three. Generally, there was an increase in local mobile voice traffic during the fiscal year under review and this is mainly attributed to the busy and long electioneering period.

Table 4 shows a summary of local mobile voice traffic.

Table 4: Local Mobile Voice traffic in Minutes

| Mobile Traffic | Apr-Jun 18 | Jan-Mar 18 | Quarterly Variation (%) | FY 2017/18 | FY 2016/17 | Yearly Variation (%) | | | | | |
|--|---|-----------------|-------------------------------|----------------|----------------|----------------------------|--|--|--|--|--|
| | By Traffic originating (outgoing traffic) | | | | | | | | | | |
| Own Network – Own Network | 12,354,529,618 | 11,256,957,270 | 9.8 | 44,024,755,088 | 37,775,948,439 | 16.5 | | | | | |
| Own Network to Other Mobile Networks | 1,574,420,162 | 1,496,558,885 | 5.2 | 5,516,441,769 | 4,895,887,311 | 12.7 | | | | | |
| Mobile Network to Fixed Network | 16,267,840 | 27,049,332 | -39.9 | 89,632,702 | 74,500,816 | 20.3 | | | | | |
| Total Traffic Origination (Outgoing) | 13,945,217,620 | 12,780,525,776 | 9.1 | 49,630,793,106 | 42,746,336,566 | 16.1 | | | | | |
| | | By Traffic term | inating (incom | ing traffic) | | | | | | | |
| Own Network – Own Network | 12,354,529,618 | 11,256,954,012 | 9.8 | 44,024,755,088 | 37,775,948,439 | 16.5 | | | | | |
| Other Mobile Networks to Own Network | 1,584,711,388 | 1,507,012,421 | 5.2 | 5,480,704,725 | 4,742,450,819 | 15.6 | | | | | |

| Fixed Network to Mobile Network | 10,526,317 | 10,306,701 | 2.1 | 41,633,368 | 43,294,557 | -3.8 |
|--|----------------|----------------|-----|----------------|----------------|------|
| Total traffic termination (Incoming) | 13,949,767,323 | 12,774,273,134 | 9.2 | 49,547,086,516 | 42,561,693,815 | 16.4 |

1.4.2 Voice Traffic by Operator

During the fourth quarter, Safaricom PLC recorded a total of 9.1 billion minutes originating from its network up from 8.4 billion minutes reported in the previous quarter. This is attributed to the promotion plan ran by the provider where its voice inactive customers were offered discounted rates on voice calls. On the contrary, its Voice traffic market share dropped to 65.7 per cent from 66.5 per cent registered during the third quarter. The operator recorded 34.6 billion minutes in 2017/18 from 35.6 billion minutes reported last year.

The volume of local mobile voice traffic originating from Airtel Networks limited increased to 4.2 billion minutes from 3.6 billion minutes registered last quarter. Subsequently, its voice market share rose to 30.2 per cent from 28.7 per cent in the last quarter. The total mobile voice traffic originating from Telkom Kenya Limited networks declined by 7.9 per cent during the period under review to 535.5 million from 581.7 million minutes reported during the previous period. When compared to the previous financial year, a similar trend has been observed during whereby the total voice traffic dropped to 2.3 billion minutes from 2.7 billion minutes registered during the previous financial year.

The total local mobile voice traffic registered by Finserve Africa Limited grew to 38.9 million minutes during the period under review from 37.1 million minutes posted during the previous quarter. Total voice traffic for the fiscal year dropped to 154.0 million from 187.3 million minutes recorded in the preceding fiscal year.

During financial year 2017/18, Sema Mobile Services and Mobile Pay Limited recorded a total of 158,388 minutes and 117,535 minutes of local mobile voice traffic respectively.

Minutes of use per subscription increased to 102.0 during the quarter under review from 96.3 minutes reported in the third quarter as shown in Figure 4 below.

The traffic volumes per MNO and MVNOs, and their respective market shares are shown in Table 5.

Table 5: 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 |
|---|------------|-------------------------------|------------------|----------------------------------|-------------------------|-------------------------------|----------------------------|--------------------------|
| 4 | Apr-Jun 18 | On-net | 8,730,358,224 | 3,273,875,096 | 345,830,389 | 4,459,497 | 3,258 | 3,154 |
| | | Off-net | 420,762,108 | 929,405,586 | 189,705,875 | 34,483,287 | 36,453 | 26,853 |
| | | Total | 9,151,120,332 | 4,203,280,682 | 535,536,264 | 38,942,784 | 39,711 | 30,007 |

| | Market share (%) | 65.7 | 30.2 | 3.8 | 0.3 | 0.0 | 0.0 |
|------------|------------------|----------------|----------------|---------------|-------------|---------|---------|
| Jan-Mar 18 | On-net | 8,077,151,028 | 2,787,845,102 | 387,787,772 | 4,166,956 | 3,258 | 3,154 |
| | Off-net | 397,625,724 | 871,955,639 | 193,962,426 | 32,951,790 | 36,453 | 26,853 |
| | Total | 8,474,776,752 | 3,659,800,741 | 581,750,198 | 37,118,746 | 39,711 | 30,007 |
| | Market share (%) | 66.5 | 28.7 | 4.6 | 0.3 | 0.0 | 0.0 |
| FY 2017/18 | On-net | 33,207,410,206 | 9,248,019,858 | 1,553,021,422 | 16,277,764 | 13,181 | 12,657 |
| | Off-net | 1,480,177,668 | 3,135,481,304 | 762,793,230 | 137,739,482 | 145,207 | 104,878 |
| | Total | 34,687,587,874 | 12,383,501,162 | 2,315,814,652 | 154,017,246 | 158,388 | 117,535 |
| | Market Share(%) | 70.0 | 25.0 | 4.7 | 0.3 | 0.0 | 0.0 |
| FY 2016/17 | On-net | 32,529,179,619 | 3,164,827,000 | 2,066,233,723 | 15,689,896 | 12,066 | 6,136 |
| | Off-net | 3,164,827,000 | 2,573,765,051 | 710,273,114 | 171,617,376 | 149,101 | 52,026 |
| | Total | 35,694,006,619 | 5,738,592,051 | 2,776,506,837 | 187,307,272 | 161,167 | 58,162 |
| | Market Share(%) | 80.4 | 12.9 | 6.3 | 0.4 | 0.0 | 0.0 |

1.4.3 Domestic SMS Traffic

The traditional mobile SMS service in Kenya has maintained an upward trend over the years regardless of stiff competition from over-the-top services such as WhatsApp. This growth is mainly attributed to the competitive retail SMS tariffs coupled with lucrative SMS bundles offered by the various mobile operators. During the fiscal year under review, total on-net and off net messages stood at 66.8 billion marking an increase of 17.8 percent from the previous financial year. However, the number of messages sent per month per subscription has experienced a continuous drop since the first quarter of the fiscal year under review as illustrated in Figure 4 below.

Safaricom PLC recorded 13.9 billion messages sent from its network during the quarter under review down from 14.1 billion messages reported in the previous quarter. Its SMS traffic increased substantially to 63.9 billion messages during financial year 2017/18 from 53.9 billion reported in the previous financial year.

Airtel Networks Limited registered 779.9 million messages sent from its network during the quarter under review up from 659.2 million messages recorded in the previous quarter. This trend has been observed during the financial year under review where the total number of outgoing SMS increased to 2.49 billion from 2.41 billion messages reported in the previous financial year.

Telkom Kenya limited registered a total of 82.0 million messages originating from its network during the quarter under review. This marked a decline of 4.2 per cent compared to 85.6 million messages recorded in the last quarter. However, the number of originating messages recorded during the financial year under review increased to 333.8 million messages from 267.5 million messages reported in 2016/17.

Finserve Africa Limited reported a total of 8.9 million messages during the fourth quarter up from 8.2 million messages recorded in the third quarter. On the other hand, the number of messages sent during the year under review declined to 34.1 million from 36.5 million messages reported during the previous year.

Sema Mobile Services Limited and Mobile Pay limited recorded the least number of originating messages recorded at 33,336 and 76,773 messages respectively.

SMS traffic and the corresponding market share per operator is as shown in Table 6.

Table 6: 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 | Total SMS |
|---------------|-------------------------------|------------------|--|----------------------------|-------------------------------|----------------------------|--------------------------|----------------|
| Apr- | On-net | 13,647,679,519 | 317,815,570 | 15,947,536 | 1,832,501 | 510 | 2,411 | 13,983,278,047 |
| Jun 18 | Off-net | 281,569,222 | 462,103,080 | 66,087,527 | 7,100,387 | 7,123 | 20,395 | 816,887,734 |
| | Total | 13,929,248,741 | 779,918,650 | 82,035,063 | 8,932,888 | 7,633 | 22,806 | 14,800,165,781 |
| | Market share (%) | 94.1 | 5.3 | 0.6 | 0.1 | 0 | 0 | |
| Jan- | On-net | 13,905,810,537 | 258,983,630 | 18,174,803 | 1,659,781 | 510 | 2,411 | 14,184,631,672 |
| <i>Mar 18</i> | Off-net | 253,547,271 | 400,281,332 | 67,488,115 | 6,589,345 | 7,123 | 20,395 | 727,933,581 |
| | Total | 14,159,357,808 | 659,264,962 | 85,662,918 | 8,249,126 | 7,633 | 22,806 | 14,912,565,253 |
| | Market share (%) | 94.9 | 4.4 | 0.6 | 0.1 | 0 | 0 | |
| FY | On-net | 63,031,132,852 | 945,790,004 | 72,453,227 | 6,453,605 | 2,482 | 9,676 | 64,055,841,846 |
| 2017/18 | Off-net | 946,418,341 | 1,546,651,207 | 261,355,250 | 27,673,167 | 30,854 | 67,097 | 2,782,195,916 |
| | Total | 63,977,551,193 | 2,492,441,211 | 333,808,477 | 34,126,772 | 33,336 | 76,773 | 66,838,037,762 |
| | Market Share (%) | 95.7 | 3.7 | 0.5 | 0.1 | 0 | 0 | |
| FY | On-net | 53,306,185,141 | 1,117,934,908 | 82,102,608 | 5,270,016 | 4,583 | 4,516 | 54,511,501,772 |
| 2016/17 | Off-net | 670,491,240 | 1,299,643,184 | 185,442,651 | 31,294,155 | 44,162 | 40,015 | 2,186,955,407 |
| | Total | 53,976,676,381 | 2,417,578,092 | 267,545,259 | 36,564,171 | 48,745 | 44,531 | 56,698,457,179 |
| | Market Share (%) | 95.2 | 4.3 | 0.5 | 0.1 | 0 | 0 | |

Source: CA, Operators' Returns.

Figure 4 illustrates the trend in Minutes of Use per Month per subscription and Minutes sent per Month per Subscription.

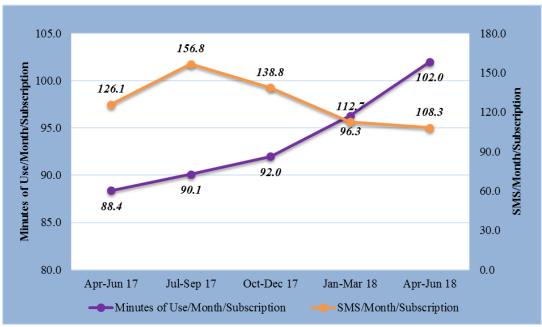


Figure 4: Minutes of Use /Month/Subscription and SMS/Month/Subscription

1.5 Roaming Traffic

During the quarter under review, the total roaming-out³ voice and SMS traffic stood at 45.1 million minutes and 37.4 million messages respectively. The out roamers consumed 5.6 million MB for data services.

In-roamers⁴ recorded a total of 39.4 million voice minutes and sent 22.3 million messages during the period under review. Further, in-roamers consumed 15.6 million MB of data.

Table 7: Roaming Traffic

| Table 7. Roamin | | Apr-Jun 2018 | | | | | | | | |
|-----------------|-------------------------------|--------------|-------------|----------------------------------|-----------|-------------|--|--|--|--|
| | Roaming-Out (Own Subscribers) | | | Roaming-In (Foreign Subscribers) | | | | | | |
| | Voice | SMS | Data (Mbps) | Voice | SMS | Data (Mbps) | | | | |
| Uganda | 30,623,942 | 5,786,151 | 1,249,338 | 25,050,601 | 3,823,306 | 538,293 | | | | |
| Tanzania | 1,590,494 | 8,785,141 | 952,918 | 396,826 | 7,446,841 | 324,416 | | | | |
| Rwanda | 2,394,830 | 1,769,295 | 240,118 | 8,831,039 | 807,448 | 171,925 | | | | |
| Burundi | 21,082 | 159,560 | 11,146 | 6,606 | 28,857 | 402 | | | | |

³ Roaming Out-This includes traffic originated and terminated by subscribers of national networks as users of foreign networks

⁴ Roaming In- Includes traffic originated and terminated by foreign subscribers on local networks

| S.Sudan | 2,737,175 | 979,522 | 46,637 | 1,839,358 | 123,488 | 4,229 |
|---------|------------|-------------|-----------|------------|-------------|------------|
| Others | 7,785,475 | 20,003,676 | 3,161,270 | 3,334,807 | 10,138,312 | 14,643,169 |
| Total | 45,152,998 | 37,483,345* | 5,661,427 | 39,459,237 | 22,368,252* | 15,682,434 |

Source: CA, Operators' Returns. * Revised data by service providers

1.6 International Mobile Traffic

The trends in international voice and SMS traffic within the EAC region and other countries across the globe for the two quarters and the two financial years is as outlined in Table 8. Traffic within the EAC countries has generally increased following the reduced calling rates under the One Network Area commitment.

Table 8: International Mobile Traffic

| Traffic | Region | Apr-Jun 18 | Jan-Mar 18 | Quarterly Variation (%) | FY 2017/18 | FY 2016/17 | Annual Variation (%) |
|--------------------------------------|--------|-------------|-------------|----------------------------|-------------|-------------|-------------------------|
| International | EAC | 68,422,182 | 59,488,587 | 15.0 | 222,478,542 | 182,565,063 | 21.9 |
| Incoming Mobile | Others | 88,803,981 | 84,838,329 | 4.7 | 383,566,002 | 385,923,571 | -0.6 |
| Voice Minutes | Total | 157,226,163 | 144,326,916 | 8.9 | 606,044,544 | 568,488,634 | 6.6 |
| International | EAC | 48,074,630 | 49,434,140 | -2.8 | 195,601,028 | 186,080,909 | 5.1 |
| Outgoing Mobile | Others | 59,758,211 | 58,013,562 | 3.0 | 238,693,796 | 275,926,041 | -13.5 |
| Voice Minutes | Total | 107,832,841 | 107,447,702 | 0.4 | 434,294,824 | 462,006,950 | -6.0 |
| International Incoming Mobile SMS | | 10,545,075 | 12,551,905 | -16.0 | 47,745,925 | 35,596,925 | 34.1 |
| International Outgoing Mobile SMS | | 8,986,359 | 9,224,070 | -2.6 | 37,072,236 | 38,429,821 | -3.5 |

Source: CA, Operators' Returns.

1.7 Mobile Revenue, Investment and Employment.

As illustrated in table 9, the total revenue earned by mobile service providers increased by 8.5 per cent in 2017/18 to Ksh 252.33 billion from Ksh.232.56 billion reported in 2016/17. It is evident that the revenue ratio of traditional mobile voice service is dominant at 41.7 percent of the total revenue.

The value of investment made by operators rose to Ksh 41.52 billion in 2017/18 from Ksh 40.98 billion reported in 2016/17. The number of employees working in the mobile service sector increased from 6,907 reported last financial year to 7,016 in 2017/18.

Table 9: Mobile Revenue, Investment and Employment

| | | FY 2017/18 | FY 2016/17 | Annual Variation (%) |
|------------------------------------|----------------|------------|------------|----------------------|
| Revenue in Ksh. (Billions) | Voice | 105.55 | 104.38 | 1.1 |
| | Data | 43.18 | 36.21 | 19.2 |
| | Other Services | 103.60 | 91.97 | 12.6 |
| | Total | 252.33 | 232.56 | 8.5 |
| Annual Investment in Ksh (Billion) | Investments | 41.52 | 40.98 | 1.3 |
| Employment | Male | 3,689 | 3,695 | -0.2 |
| | Female | 3,327 | 3,212 | 3.6 |
| | Total | 7,016 | 6,907 | 1.6 |

2 FIXED TELEPHONE SERVICE

2.1 Fixed Network Subscriptions

The use of fixed telephone has dropped tremendously since the introduction of mobile phones. However, the service seems to be picking up following the launch of fixed wireless voice services by Safaricom PLC in early 2015 whose main target is corporates and SMEs. This group of users may still take preference of landlines over mobile phones because of the consistent fidelity of the signal. The increasing demand for video conferencing services has also boosted the growth of fixed wireless services.

During the period under review fixed terrestrial subscriptions declined to 23,099 from 23,314 posted during the previous quarter. However, fixed wireless subscriptions doubled during the quarter to stand at 751 from 347 as illustrated in Table 10. The growth in fixed VoIP subscriptions increased by 3.6 percentage to post 46,605.

Table 10 outlines the trend in fixed network subscriptions.

Table 10: Fixed Network Subscriptions

| | Apr-Jun 18 | Jan-Mar 18 | Quarterly Variation (%) | Apr-Jun 17 | Annual Variation (%) |
|------------------------------------|------------|------------|----------------------------|------------|-------------------------|
| Fixed Terrestrial Subscriptions | 23,099 | 23,314 | -9.2 | 26,821 | -13.9 |
| Fixed Wireless Subscriptions | 751 | 347 | 116.4 | 340 | 120.8 |
| Fixed VoIP Subscriptions | 46,605 | 44,985 | 3.6 | 44,584 | 4.5 |

Source: CA, Operators' Returns.

2.2 Fixed Network Traffic

Fixed network traffic recorded a decline despite growth in the number of subscriptions and this is mainly attributed to the immobile nature of the service and therefore may represent a redundant service and an added cost for cell phone owners who are quite many in the country. Notably, onnet voice traffic for both fixed line and fixed wireless networks declined during the fiscal year 2017/18 when compared to the financial year 2016/17.

Table 11 illustrates the trend in fixed network traffic.

Table 11:Local Fixed Network Traffic in Minutes

| Local Fixed Network traffic | Apr-Jun 18 | Jan-Mar 18 | Quarterly Variation (%) | FY 2017/18 | FY 2016/17 | Annual Variation (%) |
|--------------------------------|------------|------------|-------------------------------|------------|------------|----------------------------|
| Fixed-fixed | 275,150 | 285,150 | -3.5 | 1,121,678 | 1,435,442 | -21.9 |

| Fixed wireless-fixed wireless | 345,683 | 316,653 | 9.2 | 1,289,902 | 1,344,368 | -4.1 |
|-----------------------------------|---------|---------|------|-----------|-----------|-------|
| Total Local Fixed network traffic | 620,833 | 601,803 | 3.2 | 2,411,580 | 2,779,810 | -13.2 |
| Fixed VoIP Traffic | 119,969 | 77,765 | 35.1 | 468,242 | DNA | |

Source: CA, Operators' Returns. DNA-Data Not Available

2.3 International Fixed Voice Traffic

During the quarter under review, International incoming fixed voice traffic rose by 24.5 per cent to 8.8 million minutes from 7.1 million reported in the previous quarter. When computed on an annual basis, the traffic rose to 20.2 million during 2017/18 from 10.9 million minutes reported in the FY 2016/17.

International outgoing fixed voice traffic increased slightly by 2.0 per cent during the quarter under review to register 4.19 million minutes from 4.11 million reported in the last quarter. During the financial year under review, the international outgoing fixed voice traffic rose to 11.0 million minutes from 8.5 million minutes recorded in FY 2016/17.

However on the other hand, the International outgoing fixed network VoIP declined by 18.0 per from 831,557 minutes to 681,947 minutes recorded in the previous quarter.

Table 12 International Fixed Voice Network Traffic

| International Fixed Network traffic | Apr-Jun 18 | Jan-Mar 18 | Annual Variation (%) | FY 2017/18 | FY 2016/17 | Quarterly Variation (%) |
|--|------------|------------|-------------------------|------------|------------|----------------------------|
| International Incoming Fixed Network Voice traffic | 8,840,127 | 7,100,819 | 24.5 | 20,218,108 | 10,923,999 | 85.1 |
| International Outgoing Fixed Network Voice traffic | 4,193,969 | 4,113,724 | 2.0 | 11,061,368 | 8,533,093 | 29.6 |
| International Outgoing Fixed Network VoIP traffic | 681,947 | 831,557 | -18.0 | 2,825,499 | 3,469,780 | -18.6 |

Source: CA, Operators' Returns.



DATA/INTERNET SERVICES

3.1 Data/Internet Subscriptions

The data/internet market in the country has been greatly transformed over the years by a combination of roll out of Universal Service Fund (USF) projects, increased investment in network upgrades by service providers and increased roll out of LTE technologies. The increasing availability of affordable smartphones and cheap data bundles has also played a major role in

facilitating Internet penetration. However, the demand for Internet use has been fueled by the growth of social networking, e-commerce, digitization of government services and online research activities. Over 99 percent of Internet subscribers access the Internet via mobile phones and other mobile devices. The data/internet market is expected to continue exhibiting similar trends in the coming quarters considering the government initiatives that are already in place such as development of the Konza Techno City, setting up more ICT hubs and continuous implementation of USF broadband projects that are aimed at bridging providing Internet connectivity.

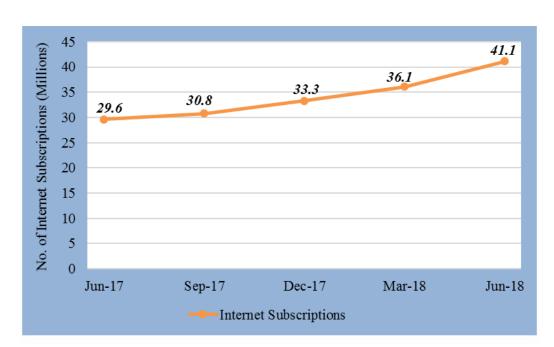


Figure 5 illustrates the trend in total number of data/internet subscriptions.

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.

Figure 5: Total Data/Internet Subscriptions

High speed fibre subscriptions doubled during the financial year 2017/18 to stand at 135,964 from 54,700 subscriptions posted last year driven by high demand for high video definition streaming and increased competition among service providers. Satellite subscriptions have also increased significantly since the last fiscal year and this is attributed to the USF School Broadband Connectivity project by the Authority which rides on Satellite technology and has so far connected over 800 Public Secondary Schools in 2017/18 financial year. Fixed wireless data subscriptions on the other hand increased by 3-fold to post 122,037 subscriptions from 47,231 subscriptions posted during the previous fiscal year. This is mainly attributed to the increasing demand for availing wi-fi services for public users especially in public institutions and corporates.

The number of data/Internet subscriptions is as indicated in Table 13.

Table 13:Data/Internet Subscriptions

| Internet/Data Subscriptions | Apr-Jun 18 | Jan-Mar 18 | Quarterly Variation (%) | Apr-Jun 17 | Annual Variation (%) |
|--|------------|------------|----------------------------|------------|-------------------------|
| Mobile Data Subscriptions | 40,743,570 | 35,769,582 | 13.9 | 29,419,164 | 38.5 |
| Terrestrial Wireless Data Subscriptions | 122,037 | 101,742 | 19.9 | 47,231 | 158.4 |
| Satellite Data Subscriptions | 1,165 | 1,000 | 16.5 | 693 | 68.1 |
| Fixed DSL Data Subscriptions | 1,254 | 1,256 | -0.2 | 2,715 | -53.8 |
| Fixed Fibre Optic Data Subscriptions | 135,964 | 115,058 | 18.2 | 54,700 | 148.6 |
| Fixed Cable Modem Subscriptions | 101,508 | 102,165 | -0.6 | 99,971 | 1.5 |
| Other Fixed Data Subscriptions | 7,352 | 6,285 | 17.0 | _ | - |
| Total Internet Subscriptions | 41,111,850 | 36,097,088 | 13.9 | 29,624,474 | 38.8 |

During the quarter under review, Safaricom PLC gained its market share for mobile data subscriptions by 1.1 percentage points to post 69.5 percent shares. The market shares for Airtel Networks Limited declined by 0.6 per centage points to stand at 22.5 per cent. Similarly, the market shares for Telkom Kenya Limited reduced by 0.4 percentage points to stand at 7.2 per cent from 7.6 per cent recorded last quarter.

Finserve Africa Limited and Sema Mobile Services retained their market shares of 0.5 per cent and 0.0 per cent respectively. On the other hand, Mobile Pay Limited reported a decline of 0.1 per centage points to post 0.2 per cent from 0.3 per cent registered in the preceding quarter.

The market shares trends for mobile data/Internet market per operator are shown in Figure 6.

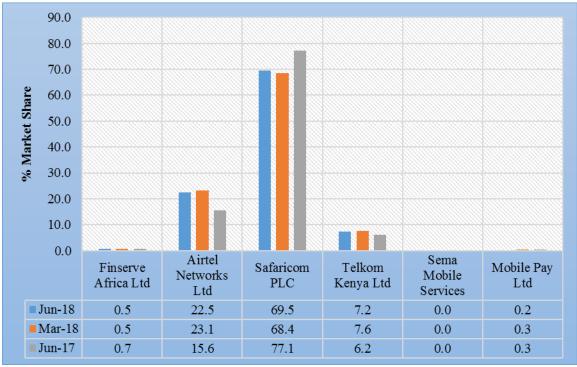


Figure 6: Mobile data/Internet Subscriptions

The number of fixed data/internet (Wireless, Fiber, Satellite, Cable, DSL & Others) subscriptions and the respective market shares per service provider is as shown in Table 14.

Table 14: Fixed Data/Internet Subscriptions for Top 10 Service Providers

| Apr-Jun 18 | | | | | | |
|--|----------------------|------------------|--|--|--|--|
| Name of Service Provider | No. of Subscriptions | Market Share (%) | | | | |
| Wananchi Companies (Kenya) Ltd* | 112,155 | 30.4 | | | | |
| Safaricom PLC | 78,104 | 21.2 | | | | |
| Mawingu Networks Ltd | 77,722 | 21.1 | | | | |
| Jamii Telecommunications Ltd | 43,529 | 11.8 | | | | |
| Poa Internet Kenya Ltd (formerly Argon Telecom Services Ltd) | 25,810 | 7.0 | | | | |
| Internet Solutions Kenya Ltd (formerly Access Kenya Group) | 15,227 | 4.1 | | | | |
| Liquid Telecommunications Kenya Limited | 9,720 | 2.6 | | | | |
| Telkom Kenya Ltd | 4,178 | 1.1 | | | | |
| Iway Africa Kenya Ltd | 635 | 0.2 | | | | |
| Mobile Telephone Networks Business Kenya Ltd | 603 | 0.2 | | | | |
| Other Fixed/Terrestial Wireless Service Providers | 1,603 | 0.4 | | | | |

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

3.2 Broadband⁵ Services

3.2.1 Broadband Subscriptions and Penetration

Broadband subscriptions continued to record an upward trend as witnessed during the period under review. The number of broadband subscriptions rose by 3.0 percent to 20.5 million from 19.9 million recorded in the third quarter. When compared to the same period in the previous year a growth of 33.1 per cent was witnessed. This is attributed to the increased roll out of 4G network and expansion of last mile fibre network coupled with increased demand for broadband services especially in driving the academic community, entrepreneurship and video streaming. Subsequently, broadband penetration stood at 43.9 per 100 inhabitants as the end of 30th June2018.

The trend in broadband subscriptions and Penetration level is illustrated in Figure 7.

⁵ Broadband-Data speeds equal to or/and greater than 256Kbps

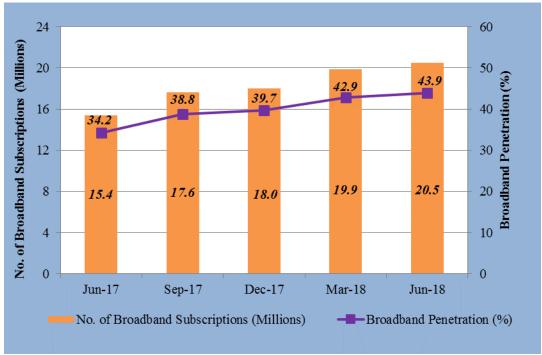


Figure 7: Broadband Subscriptions and Penetration level

3.2.2 Fixed Broadband Subscriptions by Speed

During the quarter under review, fixed broadband of speeds equal/and greater than 256Kbps but equal/ and less than 512 Kbps registered the least number of subscriptions while speeds greater than 2Mbps posted the highest number of subscriptions as has been the norm quarter-to-quarter.

The number of broadband subscriptions by broadband speeds is illustrated in Figure 8.

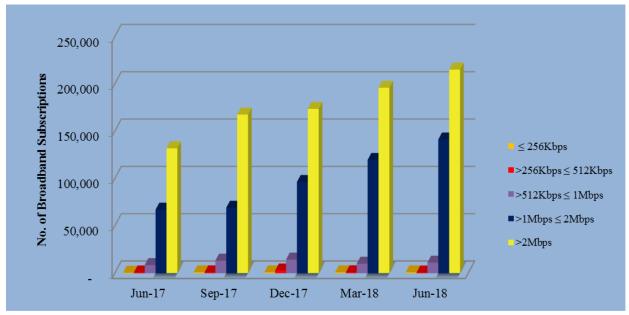


Figure 8:Fixed Broadband Subscriptions by Speed

3.3 International Bandwidth

As at the end of the period under review, the total International Internet bandwidth available in the country (Lit/equip capacity) increased to 3,277.72 Gbps up from 3,223.14 Gbps recorded in third quarter. A growth of 12.8 per cent has been achieved in 2017/18 when compared to the 2, 906.9 Gbps recorded in 2017/17

The Satellite Internet bandwidth available in the country as of June 2018 was 5.7 Gbps marking a significant increase of 10-fold when compared to the 0.5 Gbps recorded in 2016/17. This is mainly attributed to the School Broadband Connectivity project being undertaken by the Authority under the Universal Service Fund (USF) which solely rides on Satellite technology and has so far connected over 800 Public Secondary Schools during the financial year 2017/18.

The trend in international available bandwidth is as shown in Table 15.

Table 15:International Internet Available Bandwidth (Gbps)

| International Connectivity Bandwidth | Apr-Jun 18 | Jan-Mar 18 | Quarterly Variation (%) | Apr-Jun 17 | Annual Variation (%) |
|--|------------|------------|----------------------------|------------|-------------------------|
| SEACOM | 2,220.0 | 2,220.0 | 0.0 | 2,020.0 | 0.0 |
| TEAMS | 702.0 | 702.0 | 0.0 | 702.0 | 0.0 |
| EASSY | 161.3 | 139.5 | 15.6 | 83.0 | 94.3 |
| Lion 2 | 188.8 | 155.9 | 21.1 | 101.4 | 86.2 |
| Satellite Internet Bandwidth | 5.7 | 5.7 | 0.0 | 0.5 | 1,040.0 |
| Total International Internet Bandwidth (Gbps) | 3,277.7200 | 3,223.1400 | 1.7 | 2,906.9 | 12.8 |

Source: CA, Operators' Returns.

During the quarter under review, the total Used International Internet bandwidth grew by 1.5 per cent to stand at 931.37 Gbps from 917.37 Gbps recorded in the last quarter. Similarly, when compared to the same period of the previous year, an increase of 5.5 per cent was noted.

Satellite Internet used bandwidth stood at 4.57 Gbps during the period under review. A substantial growth was recorded during the financial year under review when compared to previous financial year where the bandwidth increased by more than tenfold. This is attributed to provision of internet service through satellite in phase 1 of USF projects on school broadband connectivity.

The trend in international used bandwidth is illustrated in Table 16.

Table 16: International Internet Used Bandwidth (Gbps)

| International Leased (Used) Bandwidth | Apr-Jun 18 | Jan-Mar 18 | Quarterly Variation (%) | Apr-Jun 17 | Annual Variation (%) |
|--|------------|------------|-------------------------------|------------|----------------------------|
| International Undersea Internet Used Bandwidth (Gbps) | 926.80 | 912.8 | 1.5 | 882.30 | 5.0 |
| International Satellite Internet USed Bandwidth | 4.57 | 4.57 | 0.0 | 0.2730 | 1,574.0 |
| Total International Internet Used Bandwidth (Gbps) | 931.37 | 917.37 | 1.5 | 882.5730 | 5.5 |

Source: CA, Operators' Returns.

3.4 Registered Domain Names

As at 30th June 2018, the total number of domains stood at 75,096 up from 66,724 registered during the same period of previous year marking an increase of 12.5 per cent. "*co.ke*" recorded the highest number of domains at 69,287 representing 92.26 per cent of the total domains.

Table 17: Number of Domain Names

| | | Jι | ın 18 | Jun 17 | |
|------------|--|-------------------|-------|-------------------|-------|
| Sub-domain | Use | No. of Domains | (%) | No. of Domains | (%) |
| CO.KE | Companies | 69,287 | 92.26 | 61,969 | 92.87 |
| GO.KE | Government Entities | 448 | 0.60 | 397 | 0.59 |
| OR.KE | Non Profit Making Organizations | 1,948 | 2.59 | 1,947 | 2.92 |
| AC.KE | Institutions of Higher Education | 804 | 1.07 | 738 | 1.12 |
| SC.KE | Lower and Middle Level Institutions | 1,168 | 1.56 | 980 | 1.47 |
| NE.KE | Personal Websites and E-mail | 434 | 0.58 | 189 | 0.28 |
| ME.KE | Personal Websites and E-mail | 372 | 0.50 | 309 | 0.46 |
| MOBI.KE | Mobile Content | 184 | 0.25 | 48 | 0.07 |

| INFO.KE | Information | 451 | 0.60 | 147 | 0.22 |
|---------|-------------|--------|--------|--------|--------|
| Total | | 75,096 | 100.00 | 66,724 | 100.00 |

Source: Kenya Network Information Centre (KeNIC)

4 NATIONAL CYBER THREAT LANDSCAPE

4.1 Highlights of the activities during the quarter

During the quarter under review, the National Cybersecurity Centre (NCC) detected over 3.4 million cyber threats.

Table 18: Cyber Threats Detected

| No. | Attack Vector | Apr-Jun 18 |
|-----|-------------------------|------------|
| 1. | Malware attacks | 1,665,961 |
| 2. | Web application attacks | 771,518 |
| 3. | Botnet/DDOS | 1,023,388 |
| 4. | System Misconfiguration | 932 |
| 5. | Online Abuse | 647 |
| 6. | Online Impersonation | 34 |
| | Total Cyber Threats | 3,462,480 |

Source: National KE-CIRT/CC

Of the total number of cyber threats detected, the National KE-CIRT/CC validated and escalated 2,613 cases during the quarter under review as shown in Table 19, these being the cases which the National KE-CIRT/CC determined to be critical and therefore requiring intervention.

Table 19:Cyber Threat Advisories

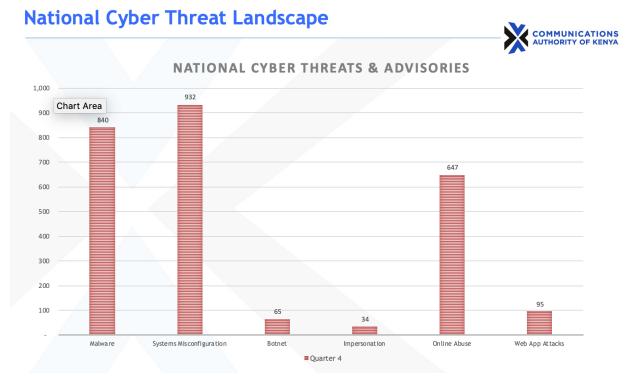
| No. | Cyber Attack Vector | Apr-Jun 18 |
|-----|-------------------------|------------|
| 1. | Malware | 840 |
| 2. | System Misconfiguration | 932 |
| 3. | Botnet/DDOS | 65 |
| 4. | Online Impersonation | 34 |
| 5. | Online Abuse | 647 |
| 6. | Web Application Attacks | 95 |
| | Total Cyber Reports | 2,613 |

Source: National KE-CIRT/CC

During the quarter, the NCC received cases of malware, systems misconfigurations, web application, botnet, online fraud, online impersonation and online abuse attacks.

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.

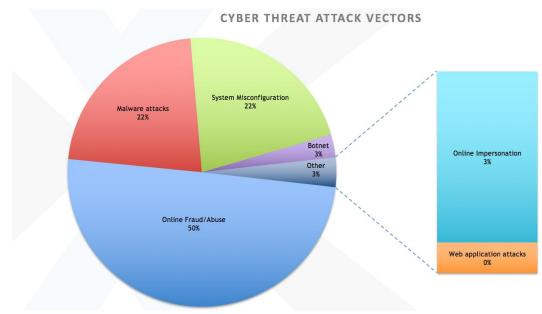
An overview of the total cyber threats detected versus the number of cyber threat advisories and cyber investigations reports issued after analysis is as shown in the graph below:



Source: National KE-CIRT/CC

Figure 9: Cyber Threat Landscape

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



Source: National KE-CIRT/CC

Figure 10: Attack Vectors Used to Perpetrate Cyber Attacks

During the period under review, the highest number of cyber threats targeted file sharing, web service and Voice over IP (VoIP) applications. The table 20 shows the top-5 service ports that were targeted.

Table 20: 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 | НТТР | 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

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, admin and test while the top-3 passwords used

were 123456, password and 1234. The table below shows the top-10 usernames and passwords used in brute force attacks.

| Top Targeted Usernames | | | | | |
|------------------------|-----------|-----------|--|--|--|
| No. | Username | Instances | | | |
| 1. | root | 1332 | | | |
| 2. | admin | 95 | | | |
| 3. | test | 21 | | | |
| 4. | anonymous | 20 | | | |
| 5. | user | 19 | | | |
| 6. | oracle | 12 | | | |
| 7. | ubuntu | 11 | | | |
| 8. | postgree | 10 | | | |
| 9. | ftpuser | 9 | | | |
| 10. | gits | 9 | | | |

| | Top Targeted Password | | | | | |
|-----|-----------------------|-----------|--|--|--|--|
| No. | Password | Instances | | | | |
| 1. | 123456 | 49 | | | | |
| 2. | password | 33 | | | | |
| 3. | 1234 | 32 | | | | |
| 4. | admin | 32 | | | | |
| 5. | 123 | 23 | | | | |
| 6. | default | 14 | | | | |
| 7. | nas4free | 13 | | | | |
| 8. | root | 12 | | | | |
| 9. | test | 11 | | | | |
| 10. | alpine | 10 | | | | |

All these are popular default username and password combinations for a majority of products by software and hardware vendors. To mitigate this, the National Cybersecurity Centre (NCC) issued a cybersecurity advisory to its stakeholders, as well as the general public, on the guidelines for password management including the risk of default system usernames and passwords.

For more information, visit the National KE-CIRT/CC website at: http://www.ke-cirt.go.ke.



5.1 Broadcasting Signal Distribution Services –Population coverage

The population coverage for Digital Terrestrial Television (DTT) signal increased from 85.8 per cent registered in the third quarter to 86.0 per cent in quarter four. This is attributed to the installation of a 2.3KW transmitter at Hola by SIGNET with the signal covering a significant portion of Tana River County. Similarly, the number of Digital TV stations grew by 3.1 per cent during the quarter under review to register 67 stations. Further the total number of digital TV subscriptions rose by 8.4 per cent to post 4.9 million from 4.5 million registered during the previous quarter. The growth is as a result of the World Cup Season that took place between June and July 2018 during which most consumers renewed their monthly subscriptions to enjoy the soccer matches.

Table 21: Broadcasting and Media services

| Table 21. Divadeasting and vietta services | Apr-Jun 18 | Jan-Mar 18 | Quarterly Variation (%) |
|---|------------|------------|----------------------------|
| Digital TV Signal Distributors | | | |
| Broadcast Signal Distributors | 2 | 2 | 0.0 |
| Self-Provisioning Broadcast Signal Distributors | 3 | 3 | 0.0 |
| Total Digital TV Signal Distributors | 5 | 5 | 0.0 |
| Digital TV Stations | 67 | 64 | 3.1 |
| Digital Terrestrial Television Signal Population Coverage (%) | 86.0 | 85.8 | 0.2 |
| Digital TV Subscriptions | | | |
| Cable TV | 153,462 | 133,674 | 14.8 |
| Direct to Home Satellite | 995,012 | 834,981 | 19.2 |
| Digital Terrestrial Televisions (STBs) | 3,809,244 | 3,604,022 | 5.7 |
| Total Digital TV Subscriptions | 4,957,718 | 4,572,677 | 8.4 |
| Radio Stations | | - | |
| Commercial FTA Radio | 131 | 131 | 0.0 |
| Community FTA Radio | 38 | 38 | 0.0 |
| Total Radio stations | 169 | 169 | 0.0 |

5.2 Local Content Quota Genre Performance

The results in this quarter show that Music had the highest weekly average of 38.8 % while religious content, as a genre was rated second with a weekly average of 17.7 % in local programming. Talk shows came in third at 17.3 %. Children, reality, Documentaries/features, Current affairs, Drama, Comedy and sports genres had the lowest local content across most of the stations monitored during the review period registering 5.5%, 3.5%, 3.3%, 3.2%, 2%, 0.8% and 0.6% respectively.

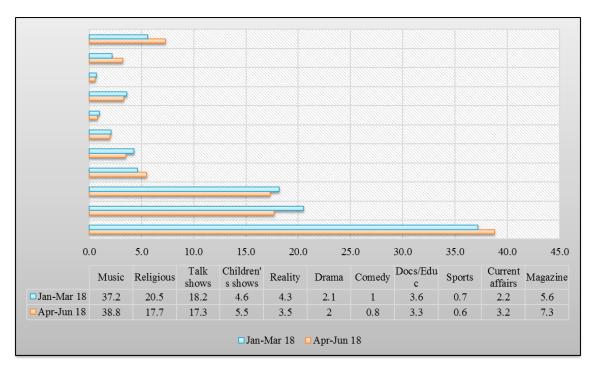


Figure 11: Performance of the various genres of local content



6.1 Postal and Courier Traffic

During the period under review, Postal and Courier sub-sector registered mixed trends as most consumers take preference in digital communication services. The number of letters posted locally recorded declined by 10.7 per cent to 14.2 million from 16.0 million letters registered last quarter. On the contrary, the total number of letters sent during FY 2017/18 increased by 9.3 per cent to record 62.3 million letters.

The number of courier items sent locally declined to 1.2 million items from 1.9 million items recorded in the previous quarter representing a drop of 36.5 per cent. However, the total number of courier items sent during the financial year stood at 6.6 million up from 6.1 million items sent during financial year 2016/17 representing a growth of 9.6 per cent.

The number of International incoming letters stood at 2.05 million up from 1.06 million letters posted in the last quarter. On the contrary, the total number of International incoming letters decreased to 4.2 million in the FY 2017/18 from 6.4 million letters recorded in FY 2016/17.

International outgoing letters dropped to 999,287 during the quarter under review from 1.06 million letters recorded in the third quarter. On the same trend, the total International outgoing

letters declined by 10.3 per cent to 5.3 million during FY 2017/18 from 5.9 million letters registered in the FY 2016/17.

The postal and courier traffic is as shown in table 22.

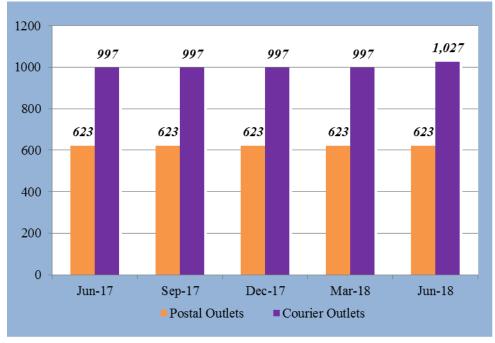
Table 22:Postal and Courier Traffic

| Post and Courier Traffic | Apr-Jun 18 | Jan-Mar 18 | Quarterly Variation (%) | FY 2017/18 | FY 2016/17 | Annual Variation (%) |
|---|------------|------------|-------------------------------|------------|------------|----------------------------|
| Number of Letters (Up to 350 gms) Posted Locally | 14,296,493 | 16,004,183 | -10.7 | 62,358,060 | 57,037,674 | 9.3 |
| Total Courier Items Sent locally | 1,213,619 | 1,910,912 | -36.5 | 6,692,212 | 6,107,552 | 9.6 |
| International Incoming Letters (Up to 350 gms) | 2,057,884 | 1,069,120 | 92.5 | 4,211,990 | 6,451,749 | -34.7 |
| International Outgoing Letters (Up to 350 gms) | 999,287 | 1,069,698 | -6.6 | 5,301,256 | 5,908,954 | -10.3 |

Source: CA, Operators' Returns.

6.2 Number of Postal and Courier Outlets

As at the end of the fourth quarter of FY 2017/18, the number of Postal outlets stood at 623 whereas Courier outlets increased to 1,027 from 997, marking a growth of 3.0 per cent as shown in Figure 11. This is attributed to the licensing of new courier operators during the year.



Source: CA, Operators' Returns.

Figure 12: Number of Postal and Courier Outlets

6.3 Postal and Courier Revenue and Investments

During the financial year 2017/18, postal and courier sub-sector revenues dropped to 4.5 billion Kenya Shillings from 4.6 billion Kenya shillings reported in the financial year 2016/17. On the other hand, investment in the sub-sector rose by 74.0 per cent to 795 million Kenya Shillings during the year from 457 million Kenya shillings registered in the year 2016 as shown in Table 23.

Table 23:Postal and Courier Revenue and Investments

| Post/Courier Revenue and Investment | 2017 | 2016 | 2015 | 2014 | 2013 | Variation (%) Over 2017 | Variation (%) Over 2016 | Variation (%) Over 2015 | Variation (%) Over 2014 | Variation (%) Over 2013 |
|---|-------|-------|-------|-------|-------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Revenue (KShs. Millions) | 4,582 | 4,670 | 4,800 | 8,530 | 7,086 | -1.9 | 2.7 | -43.7 | 20.4 | -5.1 |
| Investments (KShs Millions) | 795 | 457 | 327 | 397 | 519 | 74.0 | 39.8 | -17.6 | -23.5 | 33.1 |

Source: CA, Operators' Returns. PCK data is provisional

7 TARIFFS, PROMOTIONS AND SPECIAL OFFERS

During the quarter under review, the Authority received a total of 22 applications for tariffs and promotions & special offers.

A detailed distribution of the applications for tariffs and promotions & special offers is illustrated in Tables 24 and 25 respectively.

Table 24: Tariffs

| Period | Type of Tariff | | | | | | | | | |
|------------|----------------|-----|------|---------|--------|-----------------|-------|-------|--|--|
| Teriou | Voice | SMS | Data | Airtime | Bundle | Mobile Money | Other | Total | | |
| Apr-Jun 18 | - | - | 4 | - | 2 | - | - | 6 | | |
| Jan-Mar 18 | | | | | | | | | | |

Source: CA, filed tariffs

Table 25:Promotions and Special Offers

| Tubic zeti Tomotio | and Special Offices |
|--------------------|---------------------------------------|
| Period | Type of Promotions and Special Offers |
| | |

| | Voice | SMS | Data | Bundle | Airtime | Lucky Draw ⁶ | Mobile Money | Other ⁷ | Total |
|------------|-------|-----|------|--------|---------|----------------------------|-----------------|--------------------|-------|
| Apr-Jun 18 | 2 | - | 6 | 2 | 1 | - | 1 | 4 | 16 |
| Jan-Mar 18 | | | | | | | | | |

Source: CA, filed promotions and special offers

8 CONCLUNSION

The mobile sub-sector is expected to demonstrate a steady growth as the service providers continue to invest in LTE technologies as well as the expansion of existing infrastructure due to the increasing demand for ICT services by the various sectors in the country and the public in general. The ongoing voice infrastructure projects by the Authority under the Universal Service Fund are also expected to boost availability and access to mobile services especially in marginalized areas usually considered by service providers as economically unviable.

The data/internet market is also expected to continue exhibiting similar trends in the coming quarters considering the government initiatives that are already in place such as development of the Konza Techno City, setting up more ICT hubs and continuous implementation of USF broadband projects that are aimed at bridging the digital divide especially in terms of broadband connectivity.

⁶Lucky draw is a game of chance where the operator has no control over the specific user to receive a reward set out.

⁷"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