



*Telecommunications and Broadcasting Sectors*

# **Annual Market Report 2016**



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Nothing in this report shall be construed as prejudicing any determination or regulatory action undertaken by the Authority in accordance with the Telecommunications Act Chap. 47:31

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# MOBILE INTERNET USERS ON THE RISE



## Foreword

It is my pleasure to present the 2016 edition of the Annual Market Report, which is a comprehensive compilation of statistics on the performance of the telecommunications and broadcasting sectors in Trinidad and Tobago. These data include the uptake of telecommunications and broadcasting services, gross revenues generated by the sectors, consumption patterns related to the number of calls and minutes, and the level of concentration in the relevant markets.

As the report shows, the telecommunications and broadcasting sectors performed relatively well in 2016, with a minor reduction in total revenues recorded for the period. Total revenues generated were approximately TT\$5.6 billion in 2016 which, as a percentage of GDP, equates to 3.8%. This represented a 0.3% decrease in total revenues generated by this industry compared to the previous year. One of the standout areas of 2016 was the growing demand for mobile Internet services, increasing by 9% to record over 700,000 subscriptions.

I trust that the data and analysis contained in this report will be valuable to the business community, operators in the market, government, academia, the citizens of Trinidad and Tobago and others as we continue working towards building a digital society.

## **Executive Summary**

The Telecommunications Authority of Trinidad and Tobago's 11<sup>th</sup> Annual Market Report: *Telecommunications and Broadcasting Sectors* (Annual Market Report) presents performance data reported within the telecommunications and broadcasting industry during the period January to December 2016. The report also highlights market trends observed over the five-year period 2011 to 2016.

### ***Minimal decreases in telecommunications and broadcasting revenues continue***

Compared to the previous year, in 2016, the telecommunications and broadcasting sectors experienced a 0.3% decrease in total revenues, generating an estimated TT\$5.6 billion. The mobile market continues to be the top revenue earner in the sectors, accruing TT\$ 1,889.6 million, or 33.9%, of total industry revenues. This was followed by Internet services and fixed voice services, which generated TT\$ 1,485.5 million, or 26.6%, and TT\$ 723.4 million, or 13.0%, respectively.

### ***Minimal to moderate increases in subscriptions observed within the fixed and mobile market respectively***

In 2016, the downward trend in subscriptions in the fixed voice market ended with an estimated 0.8% increase. Likewise, fixed line household penetration also increased from 52.5 in 2015 to 53.7 in 2016.

Subsequent to the relatively sharp increase of mobile voice subscriptions observed in 2015, a moderate increase of 2.0% was recorded, standing at 2.17 million subscriptions in 2016. The increase in mobile subscriptions was also reflected in changes of the mobile penetration rate which stood at 160.0 in 2016, an approximate increase of 1.7% from 2015.

With respect to international voice traffic, outgoing traffic volumes continued the downward trend, falling by 30.9% when compared to the previous year. On the other hand, international incoming minutes increased minimally by 1.8% in 2016.

### ***Mobile Internet users on the rise while substantial decreases in fixed internet subscriptions reported***

Following four years of steady growth, the number of subscriptions in the fixed Internet market decreased substantially in 2016, with a recorded 255,600 subscriptions. This equated to a 9.5% reduction in subscriptions when compared to the same period in 2015. Conversely, the mobile Internet market experienced an increase in subscriptions of 9.6%, to record an estimated 707,300 total mobile

Internet subscriptions. These statistics resulted in a calculated mobile Internet penetration rate of 18.9 and fixed Internet penetration rate of 52.2..

***Operators employ a mix of technologies in the provision of Internet services***

In 2016, a mix of technologies was used to provide fixed wired and wireless broadband Internet services to the public. Fixed wired broadband Internet services employ ADSL2+ over copper cables, Hybrid Fibre Coaxial Network utilising DOCSIS 3.0 technology, as well as a mix of Fibre to the Curb (FTTC), Fibre to the Business (FTTB) or Fibre to the Home (FTTH) topologies.

On the other hand, fixed wireless Broadband Internet operators employ WiMAX technologies and LTE technologies. Mobile Internet operators offered customers mobile broadband Internet services utilising Evolved High Speed Packet Access (HSPA+) and LTE as well as via 2.5G technology (i.e., Enhanced Data Rates for GSM Evolution (EDGE)).

***Falling revenues observed in pay TV and free-to-air television and radio markets***

In 2016, a significant decrease in gross revenues in the free-to-air television market was observed (TT\$56.1 million, or 36.4%). Similarly the free-to-air radio broadcasting market experienced a decrease of 16.5 % when compared to the previous year's revenue earnings.

Following years of consecutive growth, there was also a reported reduction in the number of pay TV subscriptions, falling from 232,800 subscriptions in 2015 to 206,700 in 2016.

***Varying changes in market concentrations across markets***

Market concentrations, as measured by the Hirschman Herfindahl Index (HHI), continue to remain relatively stable within the mobile market, ending the year at 5,104. On the other hand, consistent with observations over the past five years, the fixed voice market's HHI continue to fall, dropping to a historical low of 7567 in 2016.

The fixed Internet market also experienced a fall in HHI, recording a 5.2% decline when compared to December 2015. Similarly, the pay TV market continued its downward decline in 2016, recording 4,410 points at the end of the first quarter of 2016.

During 2016, the HHI for the free-to-air television market fluctuated, ending the year at 3,905. With respect to the free-to-air radio market, the HHI results show that the level of concentration based on concessions decreased while the level of concentration based on concessionaires increased.

2016 ANNUAL MARKET REPORT  
OVERVIEW OF THE MARKET



# 1. Overall Market Review

This report, published by the Telecommunications Authority of Trinidad and Tobago (the Authority), presents information on the markets within the telecommunications and broadcasting sectors, which includes data on subscriptions, gross revenues and traffic. The data collected is also used by the Authority to inform and monitor policy decisions, which will facilitate the orderly development of these sectors.

The information presented is based primarily on data submitted by operational concessionaires within the telecommunications and broadcasting sectors for the period 1 January to 31 December 2016, as well as historical data series and other information made available to the Authority at the time of publication of the report.

The Authority also publishes quarterly market updates on the telecommunications and broadcasting sectors to supplement this Annual Market Report, which can be accessed from the Authority's website: [tatt.org.tt](http://tatt.org.tt)

## 1.1. Total Authorisation

Under Section 21 of the Telecommunications Act Chap. 47:31 (the Act), the Authority is responsible for making recommendations to the Minister with responsibility for telecommunications for the granting of concessions to telecommunications and broadcasting operators. As at December 2016, 94 concessions were granted. A detailed list of concessions granted by the Authority can be found in Appendix II<sup>1</sup>.

Concessions are issued to concessionaires who are authorised to:

- i. operate a public telecommunications network or network.
- ii. provide public telecommunications service or services.
- iii. provide public broadcasting service or services.

A concessionaire may be granted more than one concession to provide telecommunications and broadcasting services to the public.

Table 1 lists the number of operational concessionaires in the various markets as at December 2016.

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<sup>1</sup> A current list of concessions is available on the Authority's website at [tatt.org.tt](http://tatt.org.tt)



Table 1. Number of operational concessionaires by market as at December 2016

Network Category	Service Provided	Operational Concessionaires
<b>International Telecommunications</b>	Network only	1
	Services only	
	Network and Services	6
<b>Mobile Telecommunications</b>	Mobile voice and Internet services	2
<b>Fixed Telecommunications</b>	Fixed Telephony	7
	Fixed Internet	11
<b>Pay TV (Subscription TV)</b>		13
<b>Free-to-air Radio Broadcasting</b>		37
<b>Free-to-air Television Broadcasting</b>		6
<b>TV Broadcasting via Cable</b>		9

In addition to the granting of concessions, under Section 36 of the Act, the Authority is also responsible for the granting of licences. For the period January to December 2016, the Authority granted 324 licences<sup>2</sup>. Table 2 lists the categories and the number of licences granted during 2016.

Table 2. Number of licences granted during the year 2016

Type of Licence		2016
<b>Spectrum</b>	Cellular Mobile	3
	Land Mobile	33
	Point-to-Point	16
	Point-to-Multipoint	1
	SCADA	0
<b>General Radiocommunications</b>	Satellite Earth Stations	4
	Amateur Stations	113
	Maritime Stations	61
	Aeronautical Stations	18
<b>Broadcasting (Special Events)</b>		75
<b>Total</b>		<b>324</b>

<sup>2</sup> Licences granted include new as well as renewal authorisations.

## 1.2. Overview of the Telecommunications and Broadcasting Sectors

### 1.2.1. Market Revenue Contributions of the Sectors

The telecommunications and broadcasting sectors generated an estimated TT\$5.6 billion<sup>3</sup> (US\$836.0 million<sup>4</sup>) in 2016, which as a percentage of GDP<sup>5</sup> equates to 3.8%. This represented a 0.3% decrease in total revenues generated by this industry compared to 2015.

Of the total telecommunications and broadcasting revenues, mobile voice services accounted for the majority of revenues with TT\$1,889.6 million (33.9%). This was followed by Internet services, which contributed TT\$1,485.5 million (26.6%). The next highest revenue earners for the industry were fixed<sup>6</sup> voice services and pay TV services, contributing a total of TT\$723.4 million (13.0%) and TT\$718.4 million (12.9%), respectively. The international voice market was next in line, generating TT\$331.4 million (5.9%) in revenues. The free-to-air radio and television markets each contributed TT\$167.0 million (3.0%) and TT\$98.2 million (1.8%), respectively. Leased line services<sup>7</sup> contributed TT\$50.4 million (0.9%).

Other revenues<sup>8</sup> generated TT\$112.0 million, which contributed 2.0% to total industry revenues. Of that TT\$112.0 million, other telecommunications revenues generated TT\$105.7 million while other broadcasting revenues generated TT\$6.3 million.

To illustrate the above information, Figure 1 depicts the revenues earned within the industry while Figure 2 shows the percentage revenue contribution by each market towards overall gross revenues from the industry.

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<sup>3</sup> This figure includes revenues from telecommunications and broadcasting services offered to members of the general public and private leased line services.

<sup>4</sup> Exchange rate US\$1=TT\$6.67

<sup>5</sup> Gross domestic product (GDP) at current market prices for 2016 was TT\$145,910 million (Source: TT Ministry of Finance *Review of the Economy 2016*).

<sup>6</sup> Fixed voice market revenues include revenues earned from fixed voice services and access (excluding international services).

<sup>7</sup> Leased lines include both international and domestic leased circuits.

<sup>8</sup> "Other revenues" comprise revenues earned from both the telecommunications sector and the broadcasting sector, such as revenues received from wholesale services and production and airtime for local programming on pay TV. See Sections 1.2.2 and 1.2.3 for further definitions.

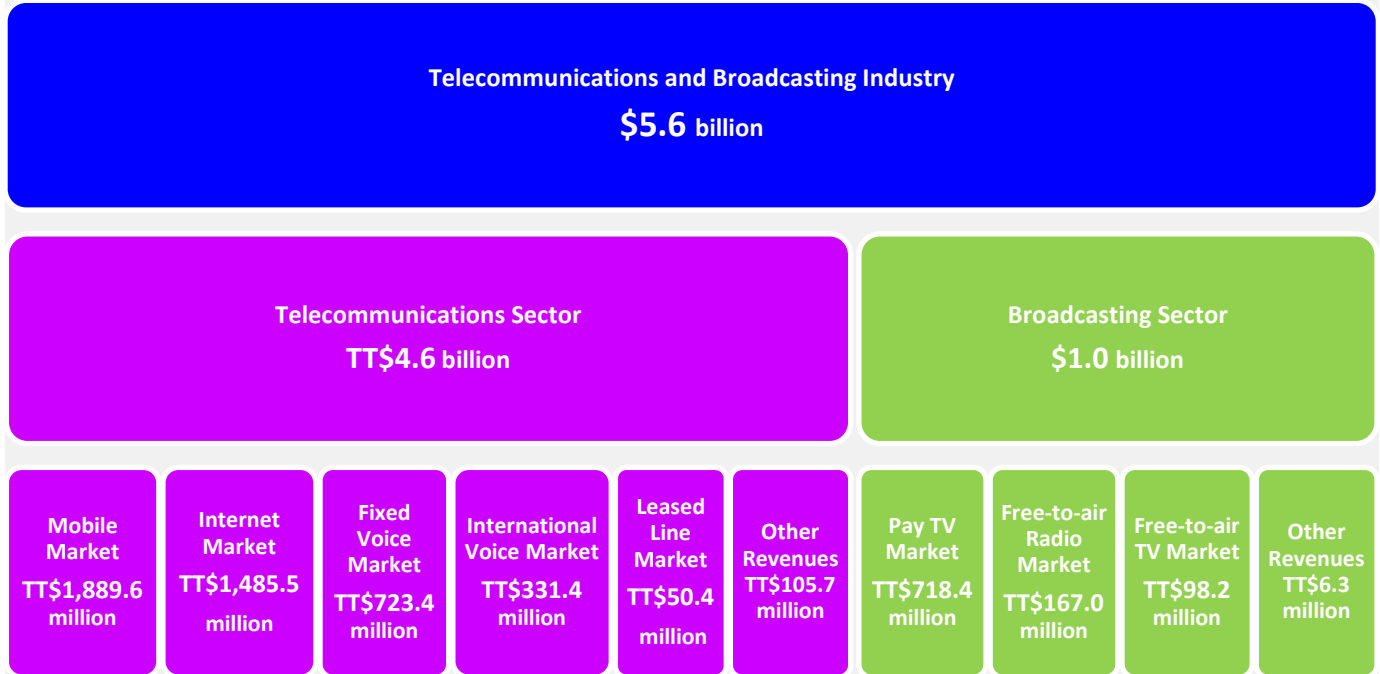


Figure 1. Gross revenues by industry, sectors and markets 2016

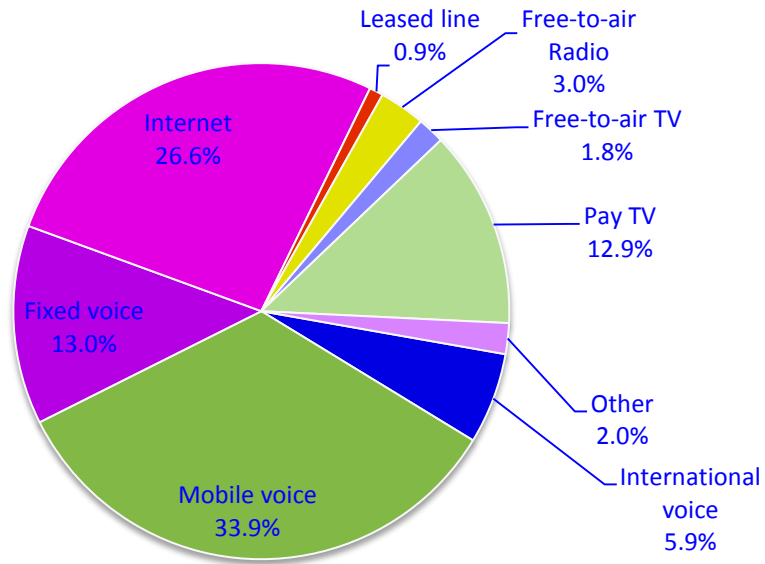


Figure 2. Percentage of gross revenues contributed by markets 2016

### 1.2.2. Market Revenue Trends in the Telecommunications Sector

For the 2016 period, the telecommunications sector contributed TT\$4.6 billion or 82.2% to overall industry revenues.

Of the five main markets within this sector, the mobile market continued to generate the majority of revenues, accounting for 41.2% of total telecommunications revenues. The Internet market generated the second highest with 32.4%, while revenues from the fixed voice and international markets followed with 15.8% and 7.2%, respectively. The leased line market earned 1.1% of telecommunications revenues and continued to be the smallest revenue contributor to the sector. Other telecommunications revenues<sup>9</sup> contributed 2.3% to total telecommunications revenues.

Figure 3 depicts the revenue contributions of the individual markets toward the total revenues generated from the telecommunications sector. As shown, the Internet market continued to expand its percentage contribution to total telecommunications revenues, increasing from 30.0% in 2015 to 32.4% in 2016. The proportion of revenues generated by all other telecommunications markets decreased slightly, with the exception of the international voice market, which increased its percentage contribution from 5.1% in 2015 to 7.2% in 2016.

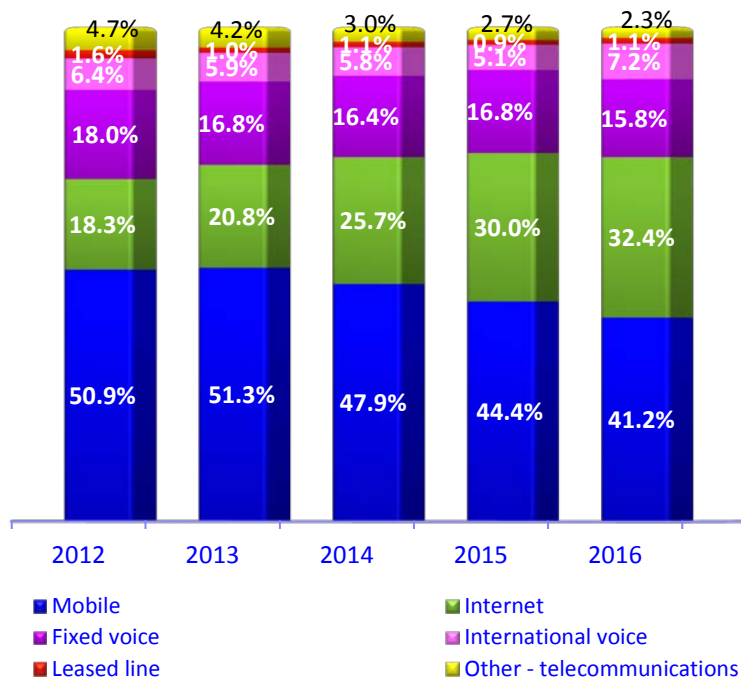


Figure 3. Percentage revenue contributions by telecommunications markets 2012 - 2016

<sup>9</sup>Other telecommunications revenues earned from service providers in the sector include other wholesale services (excluding leased line), high-capacity wireless links and two-way radios.

### 1.2.3. Market Revenue Trends in the Broadcasting Sector

For the review period, the broadcasting sector contributed TT\$989.9 million, or 17.8%, towards overall industry revenues. The broadcasting sector is divided into three main markets: pay TV<sup>10</sup>, free-to-air television and free-to-air radio. Similar to the trends experienced over the past five years, the pay TV market continued to earn the majority of revenues in the broadcasting sector, accounting for 72.6% of total broadcasting revenues for 2016. Trailing behind significantly were both the free-to-air radio and free-to-air television markets earning 16.9% and 9.9% of total broadcasting revenues, respectively. "Other" broadcasting revenues<sup>11</sup> contributed 0.6% to total broadcasting revenues.

Figure 4 highlights the yearly trends with respect to the revenue contributions by the individual markets towards total broadcasting sector revenues. As seen, the pay TV market increased its percentage contribution to revenues in the broadcasting sector from 65.9% in 2015 to 72.6% in 2016. The percentage of revenues earned from the free-to-air radio and free-to-air television markets declined markedly in 2016.

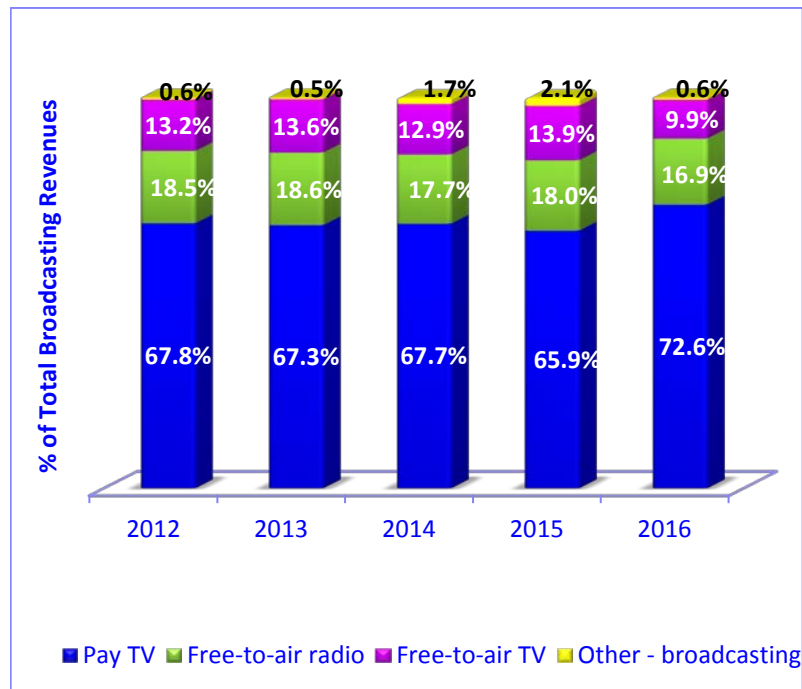


Figure 4. Percentage revenue contributions by broadcasting markets 2012 - 2016

<sup>10</sup> Also known as subscription TV

<sup>11</sup> Other revenues earned from service providers in the broadcasting sector include production and airtime for local programming on pay TV.

#### 1.2.4. Telecommunications and Broadcasting Subscriptions

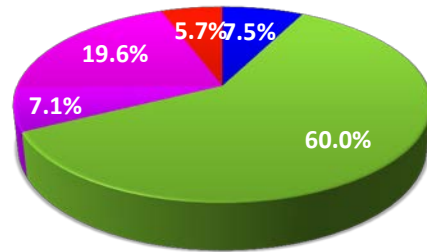
For the year ending December 2016, the number of subscriptions within the fixed voice, mobile voice, fixed Internet, mobile Internet and pay TV market segments totalled approximately 3.6 million<sup>12</sup>. This represents an increase of 1.6%, or 56,200 subscriptions, when compared to the same period in 2015.

The mobile voice market contributed 2.2 million subscriptions, representing 60.0%, whereas the fixed voice market contributed 271,900 subscriptions, representing 7.5% of total subscriptions. Fixed Internet subscriptions stood at 255,600 as at December 2016, contributing 7.1% to total subscriptions, whereas the number of mobile Internet subscriptions totalled 707,300 or 19.6% of total subscriptions. Pay TV services contributed 5.7% with 206,700 subscriptions. Table 3 lists the number of subscriptions for the period 2012 to 2016, while contributions by the various market segments towards total industry subscriptions as at December 2016 are shown in Figure 5.

**Table 3. Number of subscriptions by market 2012 – 2016**

	2012	2013	2014	2015	2016
<b>Mobile Voice Subscriptions (millions)</b>	1.9	1.9	2.0	2.1	2.2
<i>Growth rate</i>	3.1%	3.2%	1.9%	7.2%	2.0%
<b>Fixed Voice Subscriptions ('000)</b>	286.1	291.3	289.8	269.8	271.9
<i>Growth rate</i>	-1.8%	1.8%	-0.5%	-6.9%	0.8%
<b>Fixed Internet Subscriptions ('000)</b>	224.2	231.7	249.6	279.8	255.6
<i>Growth rate</i>	16.7%	3.3%	7.8%	12.1%	-8.6%
<b>Mobile Internet Subscriptions ('000)</b>	422.5	450.6	570.5	645.4	707.3
<i>Growth rate</i>	217.2%	6.7%	26.6%	13.1%	9.6%
<b>Pay TV Subscriptions ('000)</b>	198.7	209.3	228.8	232.8	206.7
<i>Growth rate</i>	5.8%	5.3%	9.3%	1.7%	-11.2%
<b>Total Subscriptions ('millions)</b>	3.0	3.1	3.3	3.6	3.6
<i>Growth rate</i>	14.6%	3.7%	6.2%	7.0%	1.6%

<sup>12</sup> The significant increase in the number of mobile Internet subscriptions in 2012 is due mainly to the Authority's revision of the calculation of the mobile Internet penetration to include active prepaid mobile Internet subscriptions.



■ Fixed voice subscriptions      ■ Mobile voice subscriptions  
■ Fixed Internet subscriptions      ■ Mobile Internet subscriptions

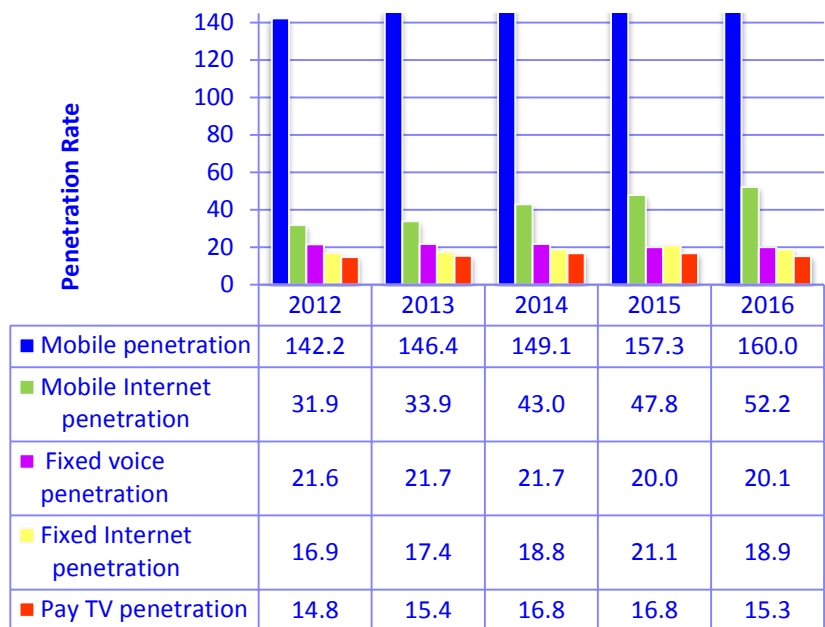
**Figure 5. Market shares of total industry subscriptions by service as at December 2016**

### 1.2.5. Subscription Penetration Rate

As seen in Figure 6, the penetration rates<sup>13</sup> for all subscription-based markets increased for the 2016 period, with the exception of fixed Internet and pay TV services.

Mobile voice penetration sustained its dominant position, increasing from 157.3 in 2015 to 160.0 in 2016. Mobile Internet penetration maintained its second place, increasing from 47.8 in 2015 to 52.2 in 2016. There was a minimal increase in the penetration level for fixed voice services to 20.1.

Significant declines were observed in the level of penetration for fixed Internet and pay TV services. Fixed Internet penetration decreased from 21.1 in 2015 to 18.9 in 2016, while pay TV penetration decreased from 16.8 in 2015 to 15.3 in 2016.



**Figure 6. Penetration rates 2012 - 2016**

<sup>13</sup> The penetration rates are based on the number of subscriptions per 100 of the population.

## Box 1: Review of the Domestic Economy

**The protracted decline in commodity prices, exacerbating already negative external imbalances<sup>14</sup> and diminishing foreign reserves, has significantly impacted the Trinidad and Tobago economy.** The Central Statistical Office (CSO) made downward adjustments to estimates for both nominal and real gross domestic product (GDP)<sup>15</sup>, citing the adverse variations in commodity prices as the primary reason for these revisions. The Trinidad and Tobago economy in 2016 was estimated to have contracted by -2.3%<sup>16</sup> (TTMOF ROE 2016) with the nominal GDP for 2016 estimated by the CSO to be \$145,910.7 million. This was a stark reflection of the sluggish real economic activity in both the petroleum and non-petroleum sectors, with estimated contractions of 9.6% and 1.8% respectively in 2016. Consequently, the petroleum sector's share of real GDP fell from 34.6 percent in 2015 to 32.0 percent in 2016. The performance of the non-petroleum sector was attributed to spillover effects from the contracting petroleum sector and a lower fiscal injection into the non-petroleum sector by central government<sup>17</sup>.

**Adding to the country's already austere economic conditions, the international rating's agency, Moody's, downgraded Trinidad and Tobago's government bond rating from Baa2 to Baa3 negative<sup>18</sup>.** As justification for its position, the agency cited a lack of assurances on how effective the fiscal consolidation efforts embarked upon by central government would be in the long run; low oil and gas prices negatively impacting economic and government financial capabilities until 2018; and the possibility that government aid in the form of loan guarantees to state-owned Petrotrin could be higher than actually reported<sup>19</sup>. As energy prices continued to decline during the year, the average oil and natural gas prices were adjusted downwards to US\$35 per barrel of crude and US\$2.50 per mmBtu<sup>20</sup> during the 2016 Mid-Year Budget Review. This led to the disclosure that the Government of Trinidad and Tobago's fiscal operations for 2016 were expected to lead to an overall deficit of \$6.7 billion, or about 4.0% of GDP (TTMOF ROE 2016).

**A drop of 5.7% in real economic activity in the manufacturing subsector, the second largest non-petroleum subsector, was estimated for 2016, as opposed to the 1.6% expansion registered in 2015.** The subsector's contribution to real GDP was expected to fall to 7.8% in 2016, from 8.1% in 2015. Headline inflation was constrained to low single digits (3.3% - 3.5%) during the first six months of 2016. Unemployment trended upward to 3.8% in the second quarter of fiscal 2016, up from 3.6% in 2015. Trinidad and Tobago experienced an increase in the unemployment rate for a third successive quarter to 3.8% in the January to March 2016 period, marginally above the 3.5% level recorded during October to December 2015. On a sectoral basis, the highest unemployment rates were reported in: Other Mining and Quarrying (30.0%); Construction (6.6%); Petroleum and Gas (5.8%); and Wholesale and Retail Trade, Restaurants and Hotels (4.9%) (TTMOF ROE 2016). In contrast, for the Transport, Storage and Communication sector (1.6%), unemployment rates were observed to be below the national average.

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<sup>14</sup> Caused by large central government budget deficits in the case of Trinidad and Tobago

<sup>15</sup> Based on constant 2000 prices; Source: *Trinidad and Tobago Ministry of Finance (TTMOF), Review of the Economy (ROE) 2016*

<sup>16</sup> Source: *Trinidad and Tobago Ministry of Finance (TTMOF) Review of the Economy (ROE) 2016*

<sup>17</sup> Government of the Republic of Trinidad and Tobago (GoRTT)

<sup>18</sup> A credit rating used by Moody's credit agency for long-term bonds and some other investments. A Baa3 rating represents a relatively low-risk bond or investment; banks are allowed to invest in Baa3 rated bonds. However, Baa3 is at the bottom of investment-grade bond ratings, being only one grade above junk bond ratings

<sup>19</sup> Moody's 15 April, 2016. Accessed 3 April, 2017 moodys.com

<sup>20</sup> mmBtu means million British thermal units



Other performance measures of Trinidad and Tobago's economic activity are given below for the five-year period 2012 to 2016:

**Table Box 1. Trinidad and Tobago's economic activity for the five-year period 2012 to 2016**

Economic Indicator	2012	2013	2014	2015	2016
<sup>21</sup> Real GDP Growth (current prices, % Δ)	1.3	3.1	2.6	-5.4	-2.3
<sup>22</sup> Energy Sector (% Δ)	-2.8	1.3	-2.5	-4.0	-9.6
<sup>23</sup> Non-energy Sector (% Δ)	2.3	3.2	1.2	1.2	-1.8
<sup>24</sup> Inflation Rate (%)	9.2	5.1	5.8	0.7	3.4
<sup>25</sup> Unemployment Rate (%)	4.9	3.7	3.3	3.7	4.1
<sup>26</sup> Exports (% Δ) year on year	-12.8	-0.4	-3.8	-1.4	-14.0
<sup>27</sup> Imports (% Δ) year on year	-2.5	-0.9	-1.2	55.3*	0.2
<sup>28</sup> Current Account Balance (% of GDP)	3.2	7.3	4.6	-5.4	-5.2
<sup>29</sup> Overall BOP (MM- TT\$)	-3962	5024	8456	-9676	-3961
<sup>30</sup> Moody's Ratings	Baa1	Baa1	Baa1	Baa2	Baa3(-)
<sup>31</sup> Exchange Rate (USD)	6.37	6.39	6.36	6.33	6.67
<sup>32</sup> Gross National Savings (% GDP)	16.6	20.7	18.1	8.01	4.76
<sup>33</sup> Net Official Reserves (MM- US\$)	9,335	9,427	10,119	10,312	10,077
<sup>34</sup> Population ('000's)	1,335	1,340	1,345	1,350	1,353
<sup>35</sup> GDP (current Prices -MM-TT\$)	165,203	170,317	167,764	150,246	145,910
<sup>36</sup> GDP per capita (Current Prices –US\$)	19,322	19,809	20,344	19,311	16,637

<sup>21</sup> Source: Central Bank of Trinidad and Tobago (CBTT) Economic Bulletin 2017: March 2017, Volume XVI, No 1

<sup>22</sup> Source: CBTT National Accounts Dataset, sectoral GDP percentage change (constant 2000 prices)

<sup>23</sup> Source: CBTT National Accounts Dataset, sectoral GDP percentage change (constant 2000 prices)

<sup>24</sup> Source: TT MOF Review of the Economy 2016

<sup>25</sup> Source: CBTT Economic Bulletin 2017: March 2017, Volume XVI, No 1

<sup>26</sup> Source: International Monetary Fund (IMF), percentage change year-on-year. Accessed 4 April 2017 [imf.org](http://imf.org)

<sup>27</sup> Source: International Monetary Fund (IMF), percentage change year-on-year. Accessed 4 April 2017 [imf.org](http://imf.org)

<sup>28</sup> Source: CBTT Economic Bulletin 2017: March 2017, Volume XVI, No 1. Refers to the period January to June 2016

<sup>29</sup> Source: International Monetary Fund (IMF), Trinidad and Tobago, 2016 Article IV Consultation. IMF Country Report 16/204

<sup>30</sup> Source: Moody's. Accessed 3 April 2017 [moody.com/research](http://moody.com/research)

<sup>31</sup> Source: Central Bank of Trinidad and Tobago, US Buying

<sup>32</sup> Source: International Monetary Fund (IMF). Accessed 4 April 2017 [imf.org](http://imf.org).

<sup>33</sup> Source: TT MOF Review of the Economy 2016. Value of Net Official Reserves as at September 2016

<sup>34</sup> Source: TT MOF Review of the Economy 2016

<sup>35</sup> Source: TT MOF Review of the Economy 2016.

<sup>36</sup> Source: BMI Research. Accessed 3rd, April, 2017. [bmiresearch.com](http://bmiresearch.com).

## Regional Performance Comparison

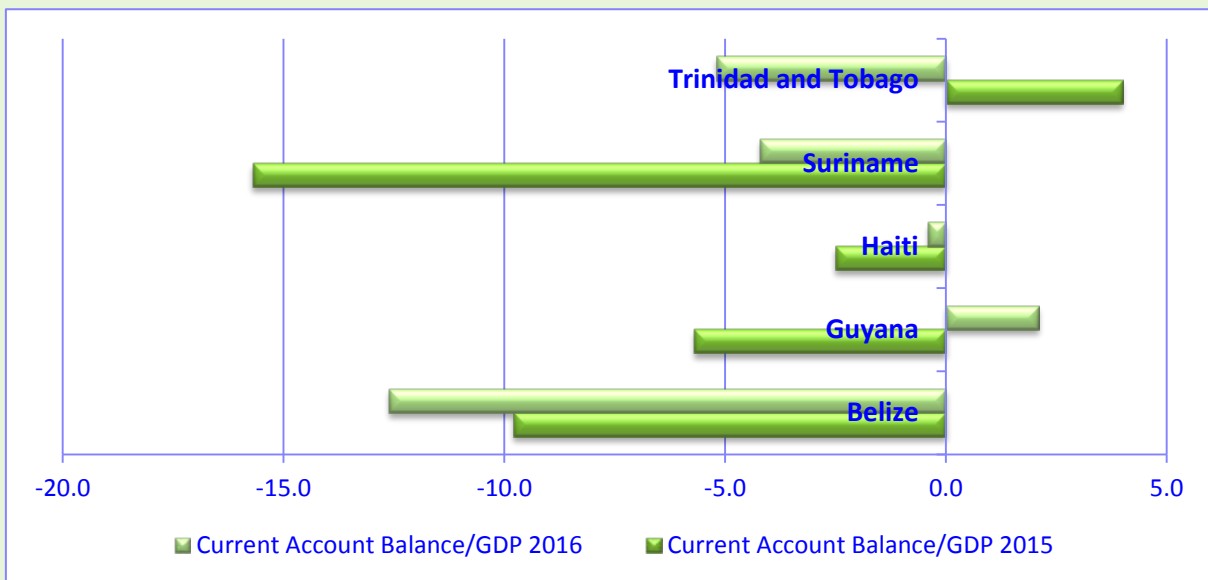


Figure Box 1. Current account balance/GDP of the major commodity exporters in the Caribbean region

Source: *CBTT Economic Review 2017*

The economic performance in 2016 varied for the Caribbean (TTMOF ROE 2016). The region grew by 3.4% in 2016 and is projected to grow by a further 3.6% in 2017 (*World Economic Outlook, October 2016*). Falling commodity prices continued to dominate the economic fortunes of most of the Caribbean's major commodity exporters<sup>37</sup> in 2016 as highlighted in Figure seven above. The graph highlights that the current account balance/GDP of Trinidad and Tobago went from a surplus of 4.0% in 2015 to a deficit of 5.2%<sup>38</sup> in 2016. The current account balance/GDP<sup>39</sup> for Guyana went from a deficit of -5.7% to a surplus of 2.1% in 2016 in conformance with IMF forecasts of a positive performance of the Guyanese economy for 2016 (*CBTT Economic Review 2017*). It is pertinent to note that, despite hampered growth in commodity-exporting economies due to declining commodity prices, there was a marked increase in tourism activity in the service-based economies of the region for 2016 (*CBTT Economic Review 2017*).

## Outlook

<sup>37</sup> The five major commodity-exporting countries in the Caribbean are Belize, Guyana, Haiti, Suriname and Trinidad and Tobago.

Source: *Caribbean Development Bank 2015 Economic Review: 2016 Forecast*

<sup>38</sup> For the period January to June 2016

<sup>39</sup> Current account balance/GDP expressed as a percentage of GDP can be defined as the balance of the current account (deficit or surplus) in a country divided by gross domestic product.

According to the Central Bank of Trinidad and Tobago (CBTT), the domestic economic environment for Trinidad and Tobago in 2017 will continue to show signs of sluggishness, with retail, construction and their associated industries remaining passive (CBTT Monetary Policy Announcement 2017). The domestic telecommunications and broadcasting sectors will have to come up with inventive market-oriented and concerted solutions to stave off macroeconomic stresses on both domestic and international fronts. Despite the depressed economic position for 2017 posited by the CBTT, reference was also made to improved performances by the energy sector in 2017. This view of a coming economic turnaround was also supported by IMF projections, which expect the Trinidad and Tobago economy to move out of recession and expand by 2.28% and 2.6% for the years 2017 and 2018 respectively<sup>40</sup>. Nevertheless, focused and steady stewardship of the economy will be required in both the short and long term.

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- a. BMI Research: Accessed 3rd, April, 2017. [www.bmiresearch.com](http://www.bmiresearch.com).
- b. Caribbean Development Bank 2015 Economic Review: 2016 Forecast.
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- f. International Monetary Fund (IMF), percentage change year-on-year. Accessed 4th, April, 2017. [www.imf.org](http://www.imf.org).
- g. International Monetary Fund (IMF), Trinidad and Tobago, 2016 Article IV Consultation. IMF Country Report 16/204
- h. Moody's: Accessed 3rd, April, 2017. [www.moody.com/research](http://www.moody.com/research).
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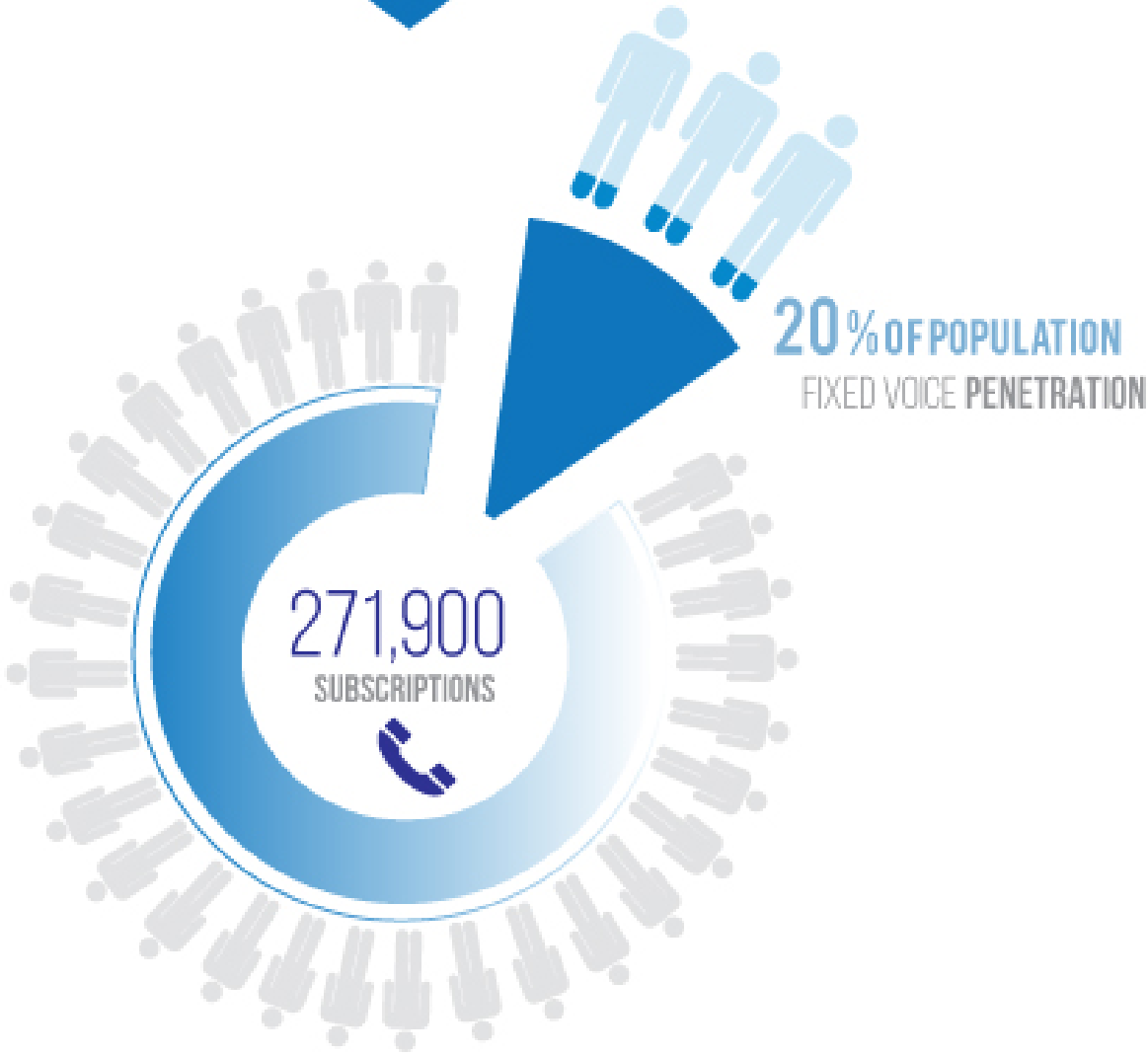
<sup>40</sup> <http://www.guardian.co.tt/business-guardian/2017-04-06/improved-prospects-tt%E2%80%99s-economy>



GROWTH 2015-2016

5.1%  
decrease over 2015

**\$723.4M**  
FIXED VOICE REVENUES



## 2. Fixed Voice Market Review

As at December 2016, there were 17 operators authorised by the Authority to provide fixed domestic telecommunications services to the public over wired and/or wireless facilities as listed below:

1. Air Link Communications
2. Columbus Communications Trinidad Limited (CCTL)
3. Digicel (Trinidad and Tobago) Limited
4. Diversified Technologies Limited
5. Green Dot Limited
6. Independent Cable Network of Trinidad & Tobago Limited
7. Lisa Communications Limited
8. Massy Communications Limited
9. Massy Technologies Infocom
10. Network Technologies Limited
11. Open Telecom Limited
12. Prism Services (Trinidad) Limited
13. RVR International Limited
14. Santa Flora Cable Network Limited
15. Telecommunications Services of Trinidad and Tobago Limited (TSTT)
16. TRICO Industries Limited
17. Wireless Telecommunications Ltd

Only seven of these operators, however, offered domestic fixed voice services in 2016.

TSTT offered fixed voice services through their Public Switched Telephone Network, CCTL via their Hybrid Fibre Coaxial Network, and Massy Communications Limited and Digicel (Trinidad and Tobago) Limited provided fixed voice services through their Gigabit Passive Optic Networks (GPON). Open Telecom Limited and Lisa Communications Limited offer fixed voice services via their fixed wireless networks. Prism Services (Trinidad) Limited offered hosted PBX services. The fixed voice review section presents the market trends based on data provided by six out of the seven operational operators<sup>41</sup>.

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<sup>41</sup> Open Telecom had not supplied data at the time of publication.

## 2.1. Annual Fixed Voice Telephony Subscriptions

After the sharp decrease experienced in 2015, the number of subscriptions in the fixed voice market increased minimally in 2016. Subscriptions to fixed voice services stood at 271,900 at the end of 2016 – an increase of 2,100, or 0.8%, when compared to 2015. Figure 7 illustrates a five-year trend for fixed voice subscriptions.

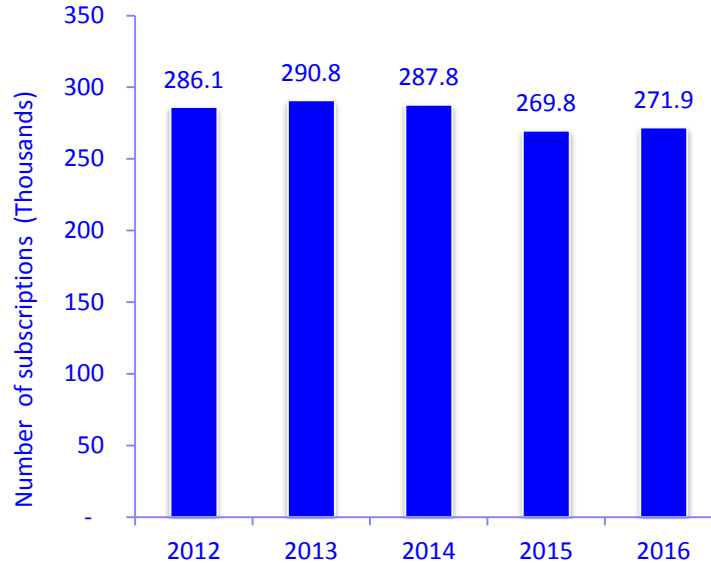


Figure 7. Fixed voice subscriptions 2012-2016

### 2.1.1. Annual Residential and Business Fixed Voice Subscriptions

Figure 8 illustrates the categorisation of the fixed voice market into residential and business subscriptions over the last five years (inclusive of companies subscribing to systems services, e.g., PBX trunks). In 2016, there were 215,600 residential subscriptions and 56,300 business subscriptions in this market. Residential fixed voice subscriptions increased by 2.3% while the number of subscriptions in the business market for fixed voice services fell by 4.6%. Reviewing the five-year trend depicted in Figure 8, there was an increase of 4,800 in residential subscriptions in 2016; this is significant when compared to the preceding period (2014-2015), where a downward trend was observed. Conversely, business subscriptions continued to decline, recording 2,700 fewer subscriptions in 2016.

Figure 9 depicts the proportion of residential and business subscriptions in the fixed voice market in 2016. Residential fixed voice subscriptions accounted for 79.3% of total subscriptions in this market while business subscriptions accounted for the remaining 20.7%.

### 2.1.2. Quarterly Fixed Voice Subscriptions

During 2016, fixed voice subscriptions remained relatively stable. Recording 273,900 subscriptions at the end of the first quarter, subscriptions decreased to 271,900 in the fourth quarter. This represents a 0.7% decrease in subscriptions between these quarters. During the year, subscriptions decreased by approximately 0.8% in the second quarter and by 0.1% in the third and fourth quarters, respectively. Figure 10 below shows the quarterly trend in fixed voice subscriptions in 2016.

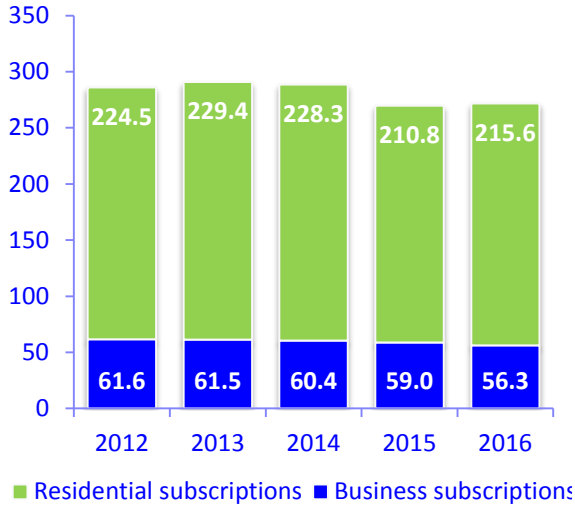


Figure 8. Residential and business fixed voice subscriptions 2012 - 2016

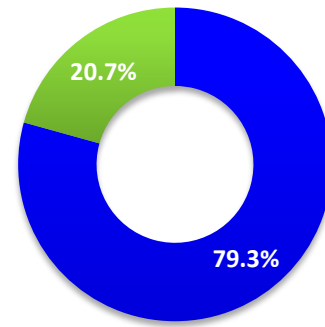


Figure 9. Residential and business fixed voice subscriptions 2016

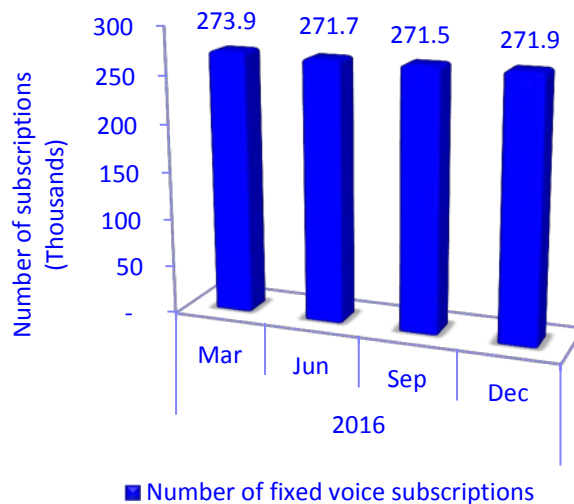


Figure 10. Quarterly fixed voice subscriptions 2016



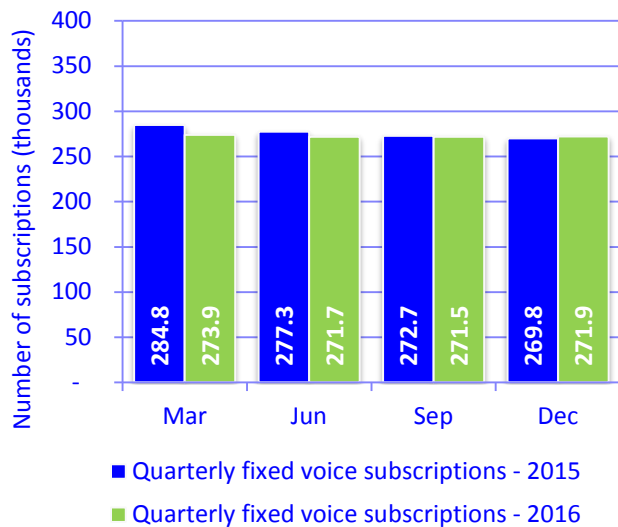


Figure 11. Quarterly fixed voice subscriptions 2015 and 2016

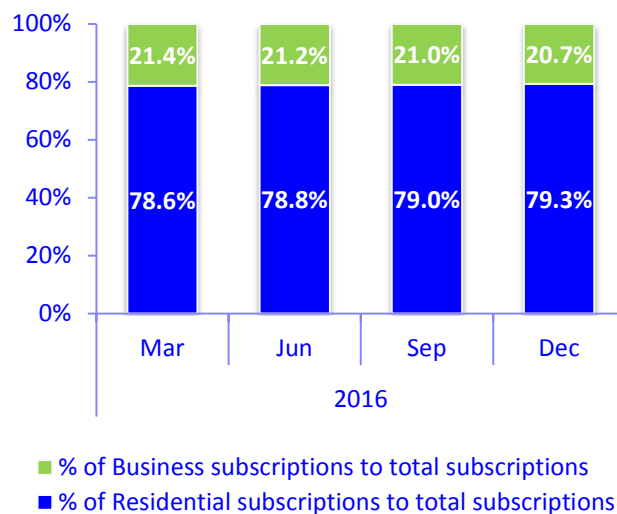


Figure 12. Percentage of quarterly residential and business fixed voice subscriptions 2016

A quarter-on-quarter comparison revealed that the fixed voice market performed less favourably in the first, second and third quarters of 2016, with fewer subscriptions being recorded in each quarter compared to 2015. The most significant variation was observed in the first quarter, where 273,900 subscriptions were recorded in the first quarter of 2016, compared to 284,800 subscriptions for the corresponding period in 2015. In the fourth quarter, subscriptions stood at 271,900 in 2016 – a 0.8% increase when compared to the 269,800 subscriptions for the same period in 2015. Figure 11 highlights this quarter-on-quarter comparison of fixed voice subscriptions during 2015 and 2016.

Figure 12 shows a percentage breakdown of residential and business fixed voice subscriptions at the end of each quarter of 2016. At the end of the first quarter, residential fixed voice subscriptions captured 78.6% of the market while business accounted for 21.4%. During the year, the proportion of residential subscriptions increased minimally in each quarter. At the end of the year, the ratio of residential to business subscriptions stood at 79.3 to 20.7.

Over the past five years, there has been an overall downward trend in the total number of fixed voice subscriptions. As seen in Figure 13, business subscriptions declined slowly over the years while residential subscriptions fluctuated during the period.

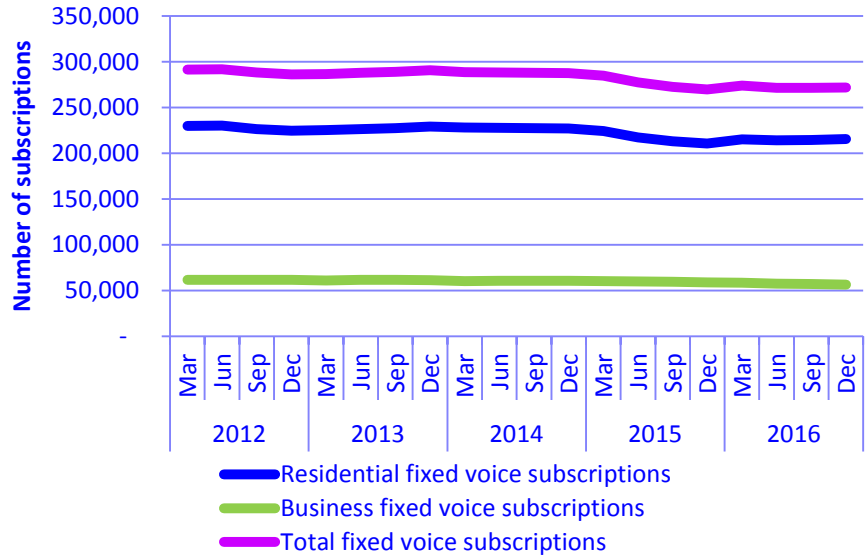


Figure 13. Comparison of quarterly fixed voice subscriptions 2012 - 2016

## 2.2. Fixed Line Penetration

As the standard metric recognised internationally by the International Telecommunications Union (ITU) to measure the adoption of fixed voice services, fixed voice penetration<sup>42</sup> is calculated using the number of fixed voice subscriptions per 100 of the population. With 271,900 thousand subscriptions for a population of approximately 1.4 million, the fixed line penetration rate in Trinidad and Tobago was approximately 20.3 as at December 2016. This means there were approximately 20 fixed voice subscriptions to every 100 persons in Trinidad and Tobago in 2016.

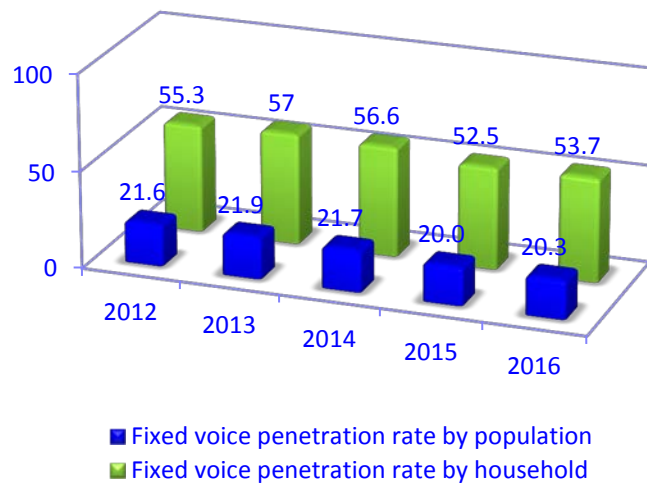


Figure 14. Fixed voice penetration rates 2012-2016

<sup>42</sup> Fixed line penetration = (number of residential fixed voice subscriptions / total population) \* 100. Total population used from the Central Statistical Office's 2016 midyear population estimate

Fixed line household penetration<sup>43</sup> was also calculated to assess the number of households with fixed voice telephone services. In 2016, the fixed line household penetration was 53.7. This number indicates that out of every 100 households, approximately 54 households, subscribed to fixed voice services.

An illustration of the fixed voice penetration trend from 2012 to 2016 is given in Figure 14 for both population and household. When compared to the previous year, there was a minimal decrease in the fixed line penetration by population, while fixed line household penetration increased.

### 2.2.1. Fixed Penetration Rates among the CARICOM Countries

A comparison among the Caribbean Community (CARICOM) member countries places Trinidad and Tobago eighth in terms of fixed line penetration. Based on data from Business Monitor International<sup>44</sup> (BMI), Barbados, with a fixed voice penetration rate of 49.1, had the highest number of fixed voice subscriptions per 100 of its population. Followed closely behind was Monserrat at 47.1. According to BMI, Trinidad and Tobago’s fixed voice penetration stood at 20.2 and is almost equal to that of Dominica, as Figure 15 illustrates.

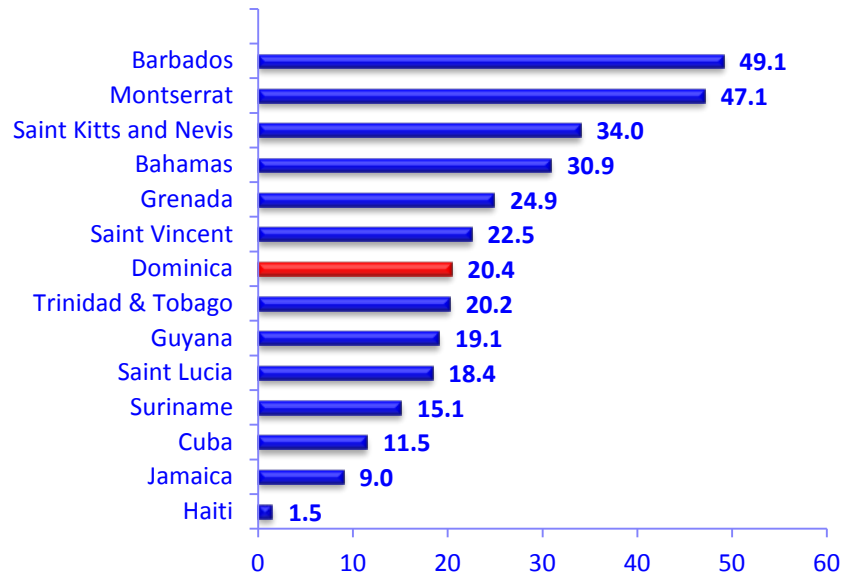


Figure 15. Fixed voice penetration rates among CARICOM countries 2016

<sup>43</sup> Fixed line household penetration was calculated using the number of residential fixed voice subscriptions divided by the total number of households, multiplied by 100. The number of households were obtained from the Central Statistical Office’s *Trinidad and Tobago 2011 Population and Housing Census, Demographic Report*

<sup>44</sup> Data sourced from Business Monitor International database, accessed June 23<sup>rd</sup> 2016

## 2.3. Domestic Fixed Voice Traffic

Domestic fixed voice traffic refers to the number of domestic minutes or calls originating on local fixed networks. This traffic can be categorised by the following types in Figure 16:

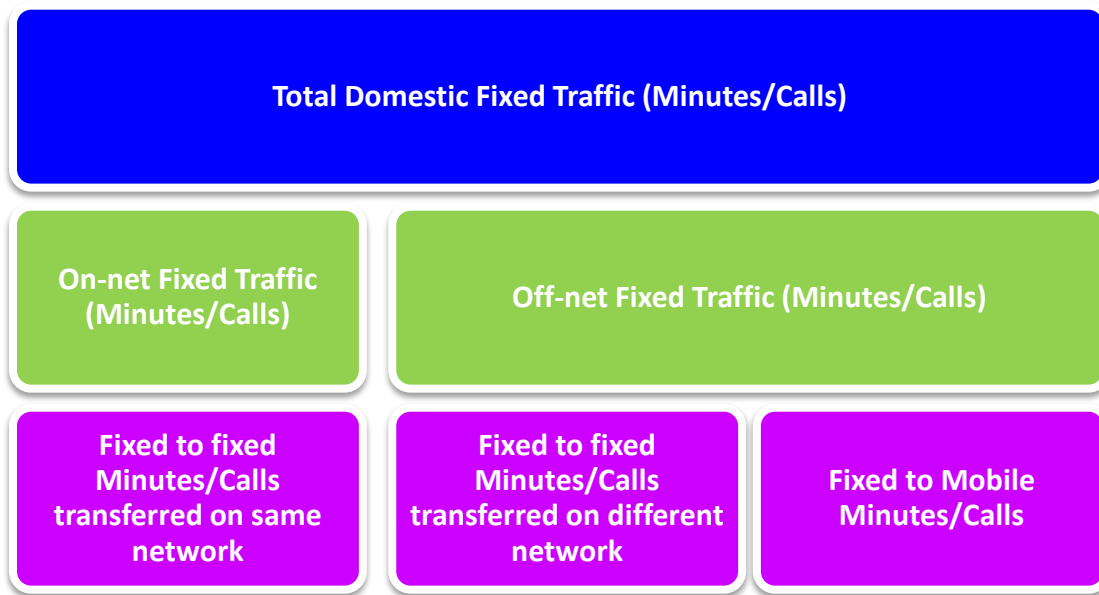


Figure 16. Classification of domestic fixed traffic

### 2.3.1. Annual Domestic Fixed Voice Traffic in Minutes

There were 1.1 billion fixed voice traffic minutes in 2016; on-net<sup>45</sup> and off-net<sup>46</sup> minutes accounted for 662.7 million and 471.4 million, respectively. Fixed-to-fixed minutes transferred on different networks (off-net) recorded 61.2 million minutes and fixed to mobile minutes amounted to 410.2 million minutes during 2016. The number of fixed voice minutes by traffic type is given in Figure 17.

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<sup>45</sup> On-net fixed traffic refers to traffic originating on a service provider's fixed network and terminating on the same fixed network.

<sup>46</sup> Off-net fixed traffic refers to traffic originating on a service provider's fixed network and terminating on another network (intra and inter service provider). For example, a call originating on TSTT's fixed network and terminating on Flow, bmobile or Digicel's network will be included in these minutes.

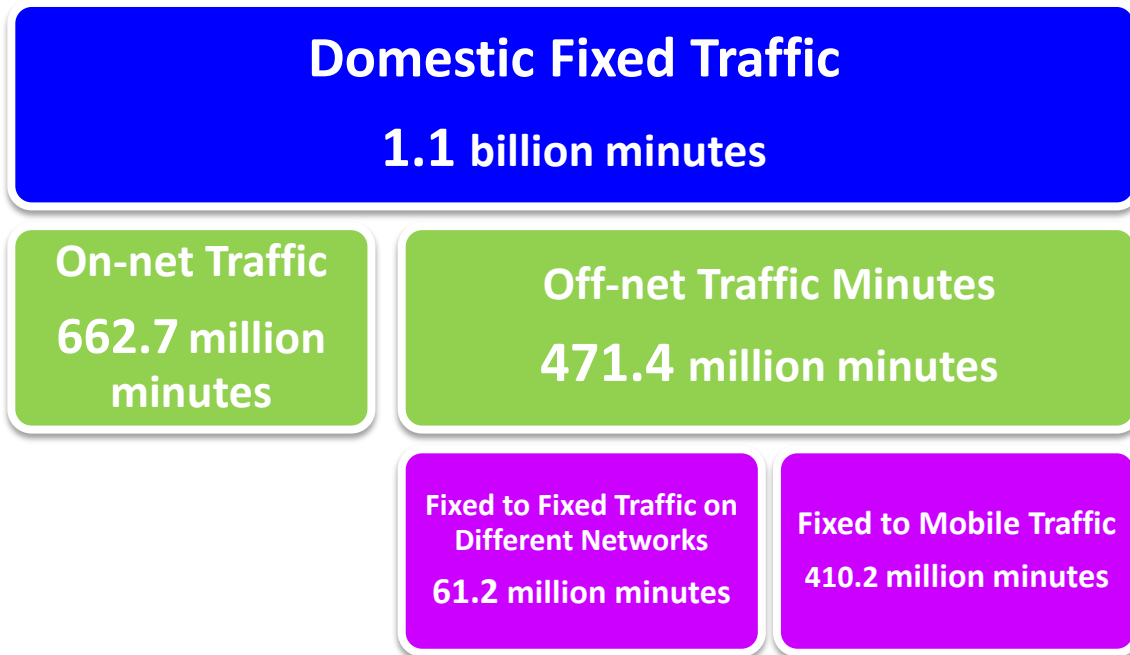


Figure 17. Breakdown of fixed domestic traffic minutes 2016

Consumption patterns for fixed voice minutes remained relatively stable in 2016 when compared to 2015. On-net traffic minutes contributed 58.5% to total minutes in the fixed voice market, increasing by 3.4 percentage points from 2015. Total off-net traffic contributed 41.5%, of which the majority comprised off-net fixed to mobile minutes (36.1%) and the minority comprised off-net fixed-to-fixed minutes (5.4%). This percentage breakdown of minutes by traffic type over the last two years is shown in Figure 18

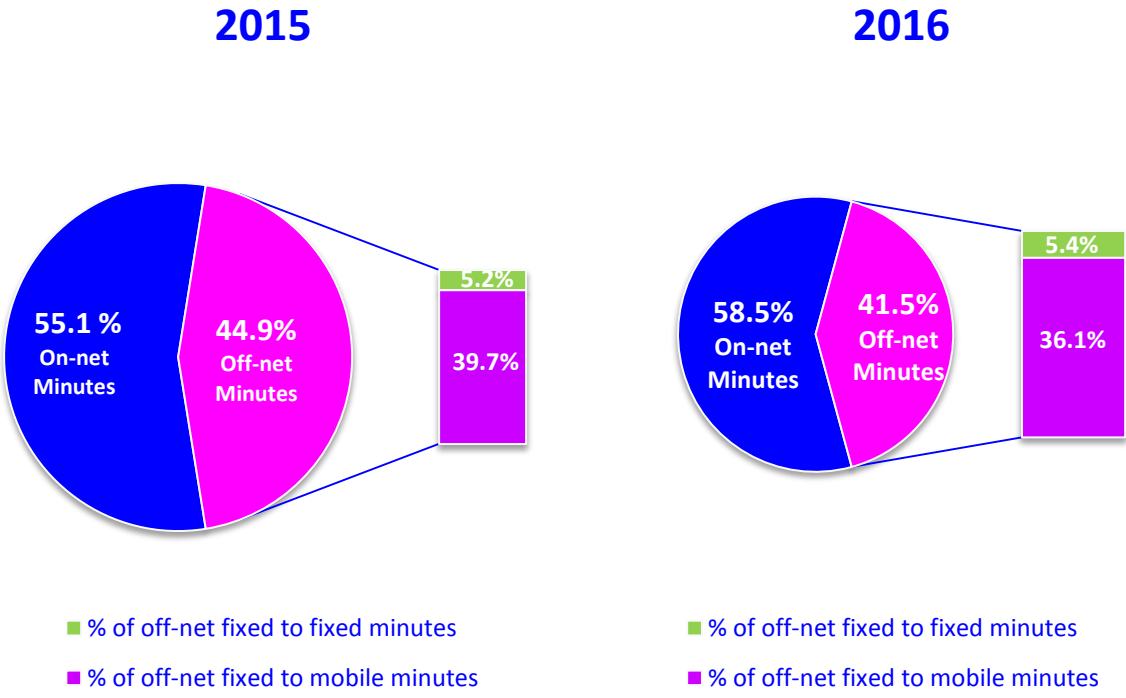


Figure 18. Total domestic fixed traffic minutes by traffic types 2015 and 2016

### 2.3.2. Quarterly Domestic Fixed Voice Traffic in Minutes

The number of domestic fixed telephone minutes by quarter fluctuated slightly in 2016. Recording 289.9 million minutes in the first quarter, domestic fixed voice minutes increased to 291.0 million minutes in the second quarter. Thereafter, fixed voice traffic minutes declined gradually in the third and fourth quarters of 2016. Figure 19 shows the fixed voice minutes quarterly trend during 2016.

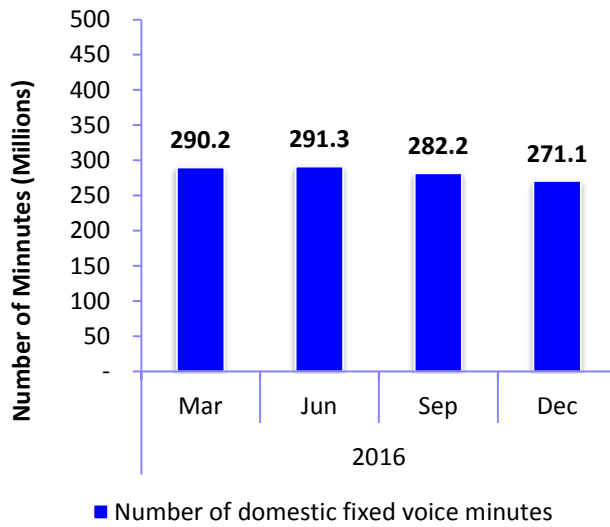


Figure 19. Quarterly fixed voice traffic 2016

In terms of quarterly fixed voice minutes by traffic type, on-net voice minutes decreased steadily during 2016 from 172.1 million minutes in the first quarter to 158.2 million minutes in the fourth quarter. Off-net fixed voice minutes peaked in the second quarter with 122.4 million minutes and then gradually declined in the third and fourth quarters of 2016. The quarterly trend by traffic type is depicted in Figure 20.

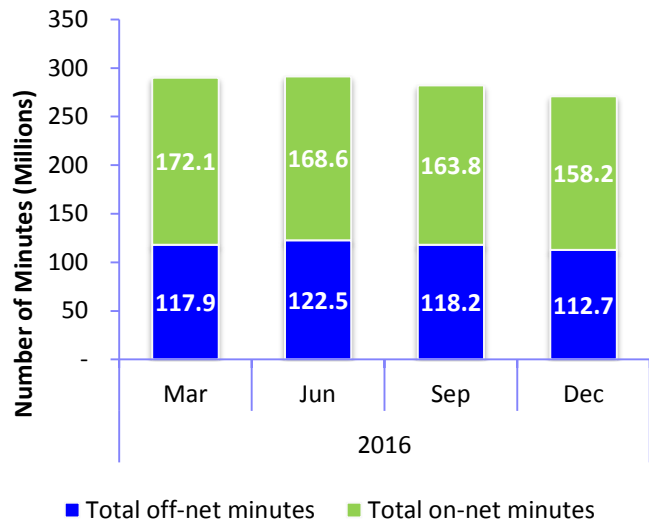


Figure 20. Quarterly fixed voice traffic minutes by type 2016

Overall, there was a smaller percentage decrease in off-net minutes compared to that of on-net minutes. During the year, on-net minutes decreased by approximately 8.1% from the first quarter to the fourth quarter, while off-net minutes decreased by 4.4% in the same period.

### 2.3.3. Annual Domestic Fixed Voice Call Volumes

In addition to the reduction in domestic fixed voice minutes observed in 2016, the number of domestic calls made on the fixed network also decreased. There were 370.8 million domestic fixed voice calls during the 2016 period a 7.2% decrease when compared to the 399.4 million calls recorded for 2015. Total on-net calls accounted for 214.0 million (42%) of total fixed voice calls, while total off-net calls accounted for 156.8 million calls (58%) of total fixed voice calls in 2016. When compared to 2015, the number of on-net calls decreased at a higher rate than off-net calls. While off-net calls

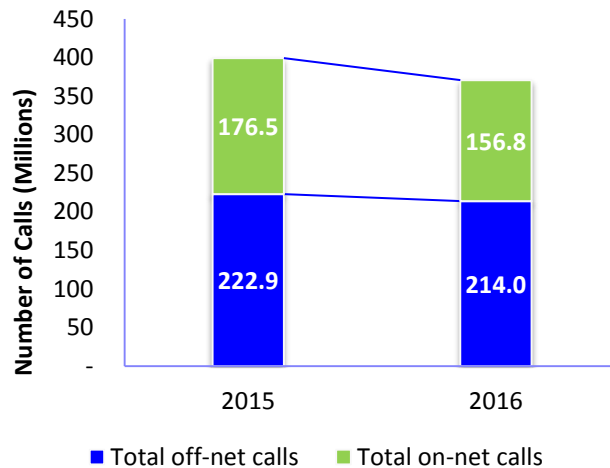


Figure 21. Comparison of domestic call volume by traffic type 2015 - 2016

dropped by only 4.0% in 2016, the number of on-net calls reduced significantly by 11.2%. Figure 21 provides a breakdown of domestic fixed line calls from 2015 to 2016.

## 2.4. Fixed Telephony Revenues

### 2.4.1. Annual Fixed Voice Revenues

Gross revenues received from all fixed voice services<sup>47</sup> totalled TT\$723.5 million in 2016, as compared to TT\$750.9 million in 2015— a \$28.3 million or 3.8% decrease in revenues.

These revenues can be broken down into fixed voice subscription revenues and auxiliary fixed voice revenues. Gross revenues received from fixed voice subscriptions for 2016 amounted to TT\$714.6 million – a decrease of

approximately TT\$25.8 million or 3.5% from the previous year. It was observed that the decrease in fixed voice subscription revenues was steeper in 2016, in relation to the 0.9% and 0.8% reduction observed in 2014 and 2015, respectively. Auxiliary fixed voice revenues accounted for the remaining TT\$10.4 million in revenues. The annual trend in fixed telephony subscription revenues for the period 2012 to 2016 is illustrated in Figure 22.

In 2016, residential subscription revenues decreased by 2.0%, while business decreased at a moderately higher rate of 4.9%. Residential subscriptions contributed TT\$352.3 million, or 49.4%, while business subscriptions accounted for TT\$361.5 million, or 50.6%. Figure 23 shows the separation of annual revenues derived from residential and business categories over the past five years, while Figure 24 illustrates the percentage of revenue contribution for the 2016 period.

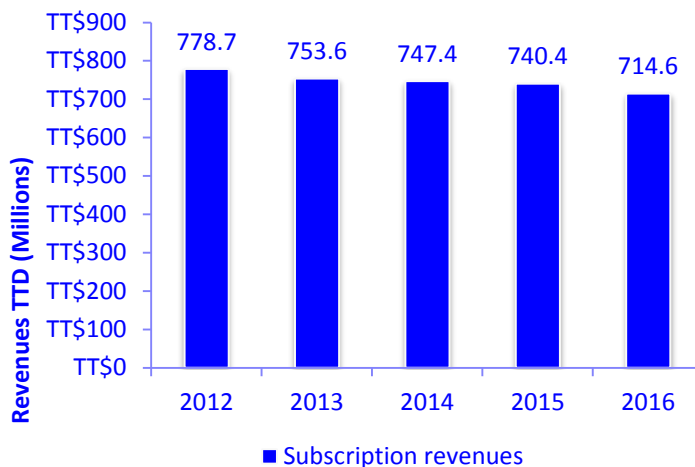


Figure 22. Fixed voice subscription revenues 2012 - 2016

<sup>47</sup> Fixed voice services include revenues from voice subscriptions and auxiliary fixed voice services such as payphones, calling cards and miscellaneous services.



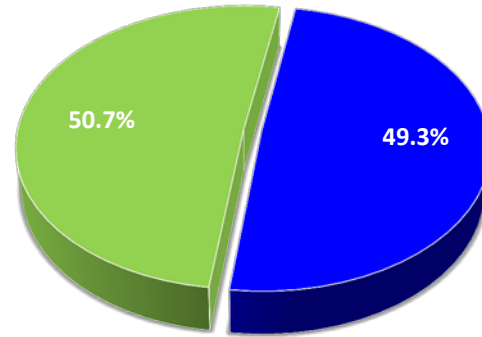
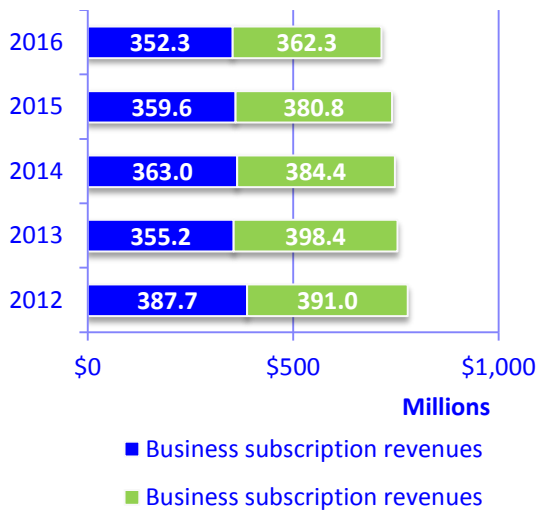


Figure 23 . Annual residential and business fixed voice subscription revenues 2012 - 2016

Figure 24 . Percentage of residential and business fixed voice revenues 2016

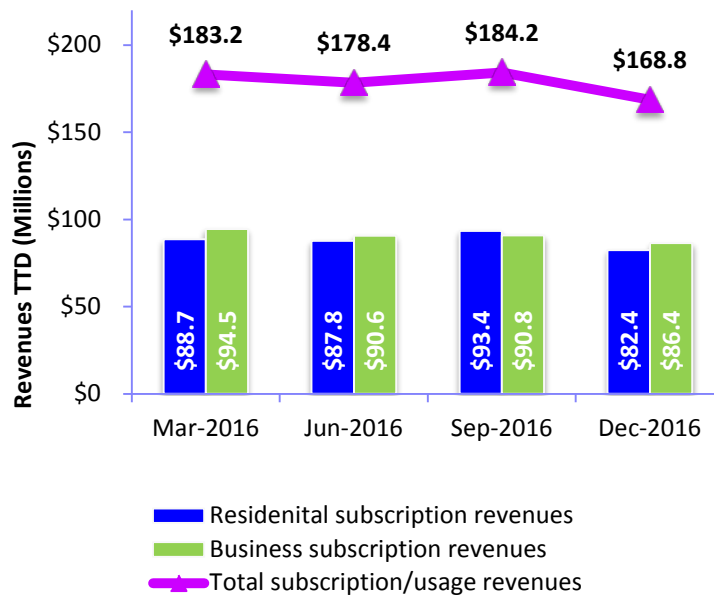


Figure 25 . Quarterly residential and business voice subscription revenues 2016

### 2.4.2. Quarterly Fixed Voice Subscription Revenues

Quarterly fixed voice revenues trended downward generally during 2016, notwithstanding the minor increase observed in the third quarter for residential revenues. Subscription revenues decreased from TT\$183.0 million in the first quarter to TT\$168.6 million in the fourth quarter. Comparing the

composition of this revenue, residential subscription revenues fluctuated during the period, averaging TT\$88.1 million whereas business subscription revenues declined steadily, with an average of TT\$90.4 million. The quarterly residential and business subscription revenues for 2016 are depicted in Figure 25.

## 2.5.Fixed Market Concentration

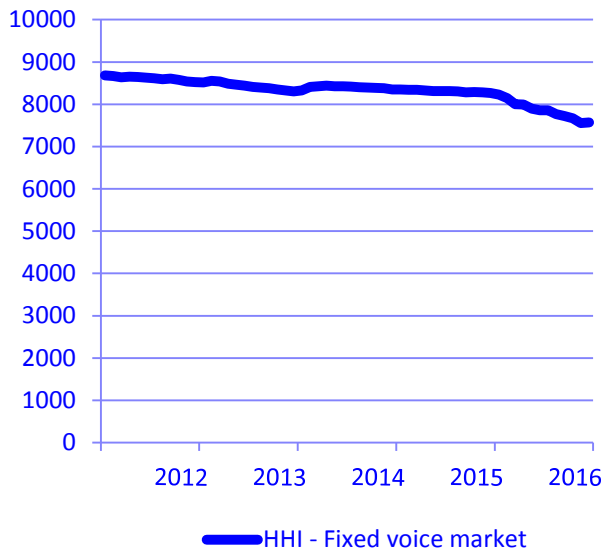


Figure 26. HHI for the fixed voice market 2012 - 2016

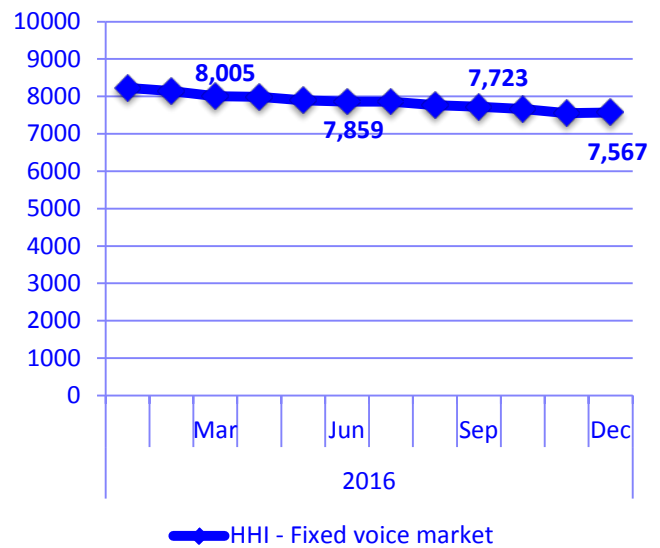


Figure 27 . HHI for the fixed voice market 2016

The Hirschman-Herfindahl Index (HHI) is a useful tool that measures the concentration of firms within a particular market. It is computed as the sum of squares of the market share of all firms within a particular market and ranges from approximately 0 to 10,000. Comparing the last five years, Figure 26 shows that the HHI for the fixed voice market has been generally declining.

Over the last five years, there has been a consistent decline in the level of concentration in the fixed voice market. In 2016, a new player entered this market resulting in a significant decrease in the level of

concentration. The fixed voice market HHI dropped to an historic low in 2016, recording 7,567<sup>48</sup> at the end of the year – an 8.5% decrease over the previous year.

During the year, the level of concentration decreased sharply from an HHI of 8,005 in the first quarter to 7,859 in the fourth quarter. This decrease in the level of concentration reflects, in part, a shift in the proportion of subscriptions between the players in the fixed voice market. Figure 27 shows the HHI for the period January to December 2016.

## 2.6.Fixed Voice Average Revenue per User (ARPU)

On average, each subscription to fixed voice services generated TT\$2,656 annually in 2016. This represents a decrease of TT\$49.0, or 1.8%, in the average revenue per user (ARPU)<sup>49</sup> over the amount recorded for 2015. The changes in ARPU for the last five years are highlighted in Figure 28.

Over the past five years, the ARPU for both residential and business customers remained relatively stable, generating TT\$1,640 and TT\$6,294, respectively, per subscription in 2016. The trend in ARPU for residential and business consumers is illustrated in Figure 29.

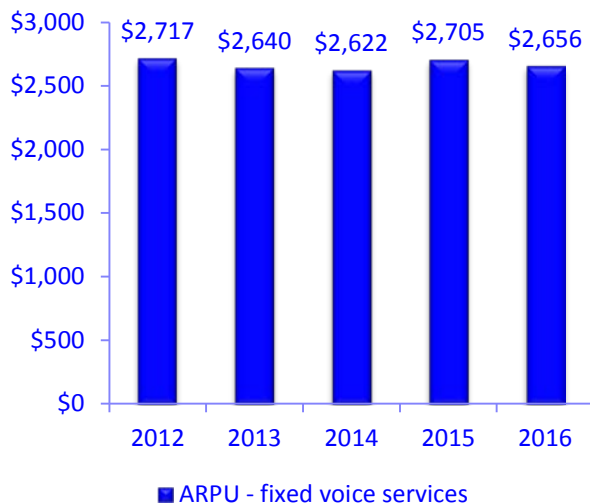


Figure 28 . ARPU fixed voice services 2012 - 2016

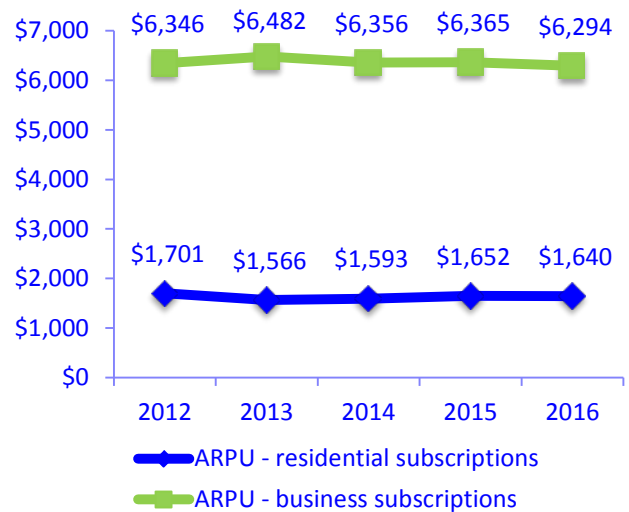


Figure 29. ARPU for fixed residential and business voice services 2012 - 2016

<sup>48</sup> Based on subscription market share

<sup>49</sup> ARPU measures the average revenue generated by one subscriber. It is calculated as total revenues for fixed voice subscriptions divided by the total number of fixed subscriptions.



GROWTH 2015-2016

5.1%  
decrease over 2015

**\$1,890M**  
MOBILE VOICE REVENUES



### 3. Mobile Voice Market Review

Trinidad and Tobago's public domestic mobile telecommunications services, for the period January to December 2016, were provided by the two authorised mobile service providers:

1. Telecommunications Services of Trinidad and Tobago Limited (bmobile)
2. Digicel (Trinidad and Tobago) Limited

The following technologies are currently used for the provision of mobile voice services in Trinidad and Tobago:

#### I. Global System for Mobile Communications (GSM)

GSM networks are actively used for voice services, in conjunction with its data enhancements GPRS and EDGE, and with other more recent generations of data services.

#### II. Universal Mobile Telecommunications Service (UMTS)

UMTS networks are currently deployed for voice services, in conjunction with its data enhancements HSPA and HSPA+.

Following is an overview of the mobile voice market of Trinidad and Tobago, which was compiled using data submitted by the two mobile operators.

### 3.1. Mobile Voice Subscriptions

#### 3.1.1. Annual Mobile Subscriptions

After a relatively sharp increase of 7.2% in 2015, mobile voice subscriptions<sup>50</sup> increased moderately by 2.0%, recording 2.17 million subscriptions in 2016. This result was similar to the moderate increases in subscriptions observed from 2012 to 2014, during which an average growth rate of 2.7% was achieved. Figure 30 illustrates the annual trend in mobile subscriptions over the last five years.

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<sup>50</sup>A mobile voice subscription includes SMS services and refers to an activated (prepaid or postpaid) SIM card that enables the user to make and/or receive a call or SMS or MMS.

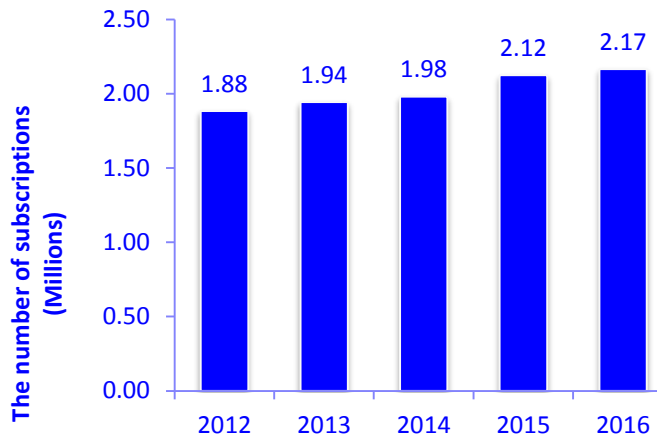


Figure 30. Number of mobile subscriptions 2012 - 2016

Of the 2.17 million mobile voice subscriptions, approximately 1.73 million were prepaid customers (where customers purchase credit prior to service use), while 432,300 were postpaid customers (where customers enter into a contractual billing arrangement with a mobile service provider). Reviewing the trend in prepaid and postpaid subscriptions for the period 2012 to 2016, prepaid subscriptions decreased for the first time in 2016. Subscriptions to prepaid decreased by 0.9%, following four years of steady growth. On the other hand, postpaid subscriptions continued its strong upward trend, increasing by 15.6% from 2015. The five-year trend in prepaid and postpaid mobile voice subscriptions is shown in Figure 31.

Prepaid subscriptions continued to constitute the majority of the mobile market, accounting for 80.0% of total mobile voice subscriptions, decreasing from 82.4% in 2015. Postpaid subscriptions made up the remaining 20.0% – an increase from 17.6% in 2015. Figure 32 shows the percentage breakdown of mobile voice subscriptions in 2016.

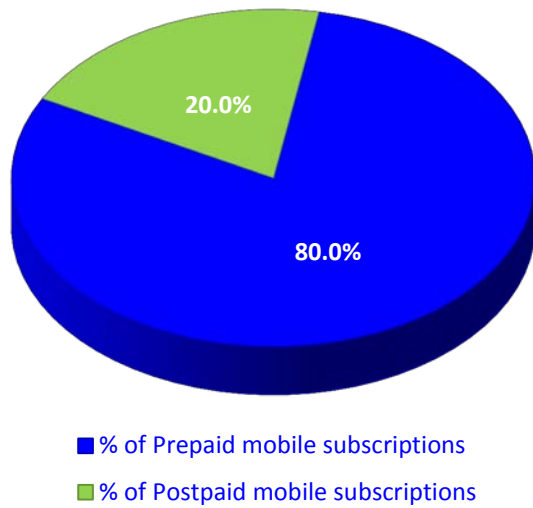


Figure 31. Percentage of prepaid and postpaid subscriptions 2016

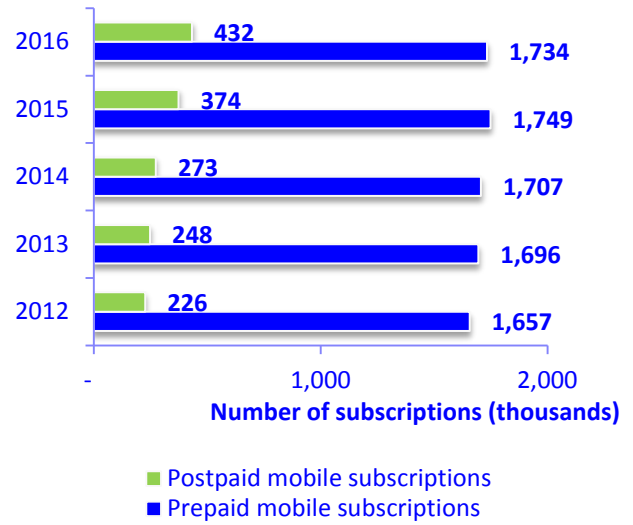


Figure 32. Mobile prepaid and postpaid subscriptions 2012 - 2016

Changes in the components of mobile subscriptions are further examined by reviewing consumers' switching patterns. Figure 33 illustrates a three-year trend (2014 to 2016) for the number of consumers switching between prepaid and postpaid mobile service options. During 2016, there were 970 subscriptions migrating from postpaid to prepaid services; this was notably the highest for the period (2014 to 2016). In fact, the number of consumers switching from postpaid to prepaid increased from 502 in 2015 to 970 subscriptions in 2016 – a percentage increase of 93.2%.

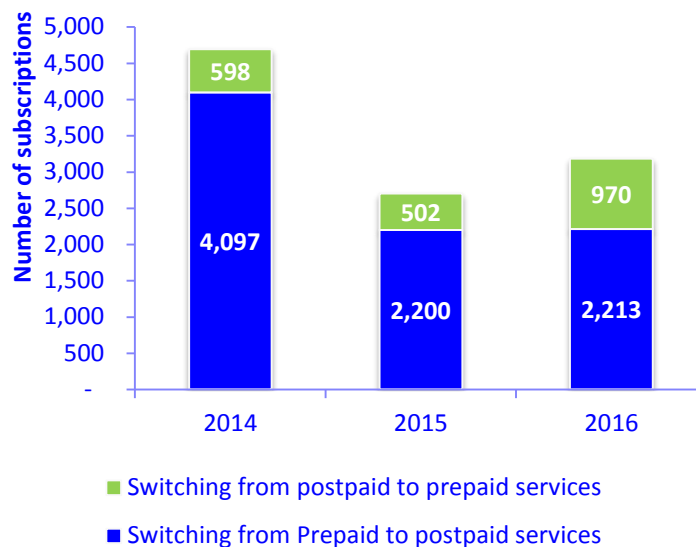


Figure 33. Prepaid and postpaid mobile subscription migration 2014 - 2016



The number of consumers switching from prepaid to postpaid services increased minimally in 2016. There were 2,213 customers switching from postpaid to prepaid service options during 2016 – a 0.6% increase when compared with 2015.

Although the percentage increase in the number of customers switching from postpaid to prepaid was greater than the percentage increase in the number of customers switching from prepaid to postpaid, the latter continued to comprise the majority of customers switching.

### 3.1.2. Quarterly Mobile Subscriptions

Figure 34 illustrates the marginal changes in mobile voice subscriptions during 2016. Mobile subscriptions decreased from 2.12 million in the fourth quarter of 2015 to 2.09 million in the first quarter of 2016 and continued to decrease in the second quarter to record 2.06 million. Mobile subscriptions subsequently improved during the remaining quarters of 2016, from 2.10 million subscriptions in the third quarter to 2.17 million by the end of the fourth quarter.

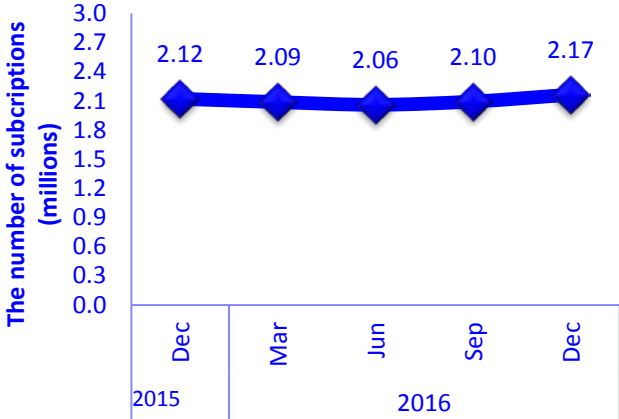


Figure 34. Quarterly mobile subscriptions 2016

During 2016, prepaid subscriptions remained relatively stable while a marked increase in postpaid subscriptions was observed. There were temporary decreases in prepaid subscriptions in the first and second quarters of 2016 with subscriptions declining from 1.75 million in the fourth quarter of 2015 to record 1.71 and 1.67 million subscriptions in the first and second quarters of 2016, respectively. Prepaid subscriptions subsequently increased in the third quarter to record 1.70 million subscriptions. By the fourth quarter, prepaid subscriptions recovered, increasing to 1.73 million. Figure 35 below shows a relatively steady quarter-on-quarter growth for prepaid subscriptions over the period 2015 to 2016.

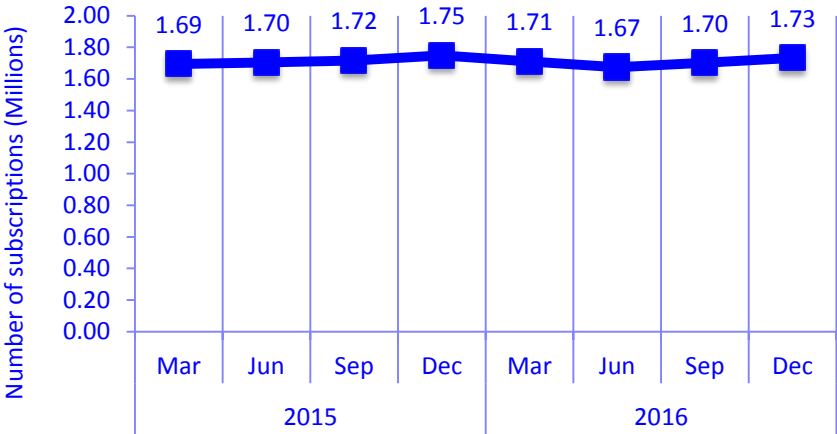


Figure 35. Quarterly prepaid subscriptions 2015 – 2016

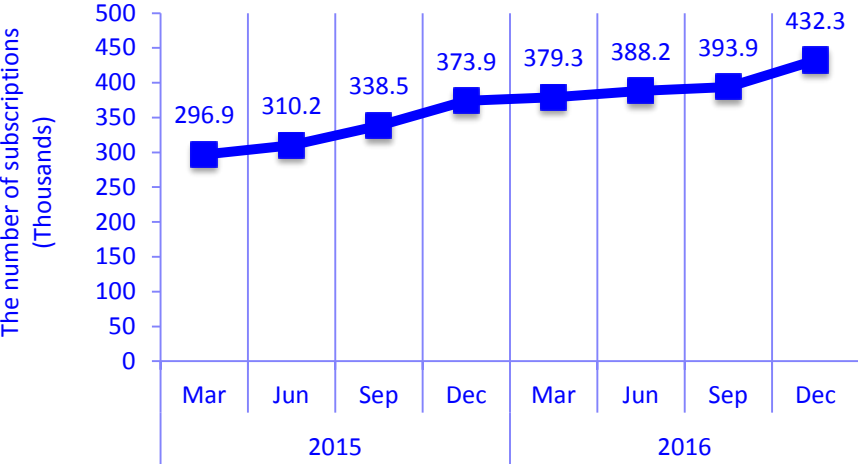


Figure 36 . Quarterly postpaid subscriptions 2015 – 2016

Overall, there was a steady upward trend in postpaid subscriptions over the past two years. Postpaid subscriptions increased moderately from 373,900 at the end of 2015 to 379,300 in the first quarter of 2016 – a 1.4% increase. The rate of growth subsequently improved slightly in the second and third quarters, increasing to 388,200 in the second quarter and 393,900 in the third quarter - 2.4% and 1.5% increases, respectively. The number of subscriptions increased significantly in the fourth quarter, resulting in a 9.7% growth, to record 432,300 subscriptions as Figure 36 illustrates.

## **3.2. Mobile Penetration**

### **3.2.1. Mobile Penetration Rate in the Domestic Market**

The increase in mobile subscriptions in 2016 contributed to the rise in the mobile penetration rate. The mobile penetration<sup>51</sup> rate stood at 160.0 as at December 2016, representing an approximate increase of 1.7% over 2015. This implies that there were 160 mobile subscriptions per 100 inhabitants in Trinidad and Tobago as at the end of 2016. As highlighted in Figure 37, the mobile penetration rate increased steadily during the period 2012 to 2016.

### **3.2.2. Regional Mobile Penetration Rates**

Figure 38 compares the mobile penetration rates among the CARICOM Countries. According to BMI<sup>52</sup>, Trinidad and Tobago recorded the highest mobile penetration rate of 160.3 for the 2016 period. Grenada ranked second in mobile voice penetration, with approximately 144.4 mobile subscriptions per 100 of its population. Following closely behind was Dominica, recording a mobile penetration rate of 139.5.

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<sup>51</sup>Mobile Penetration is calculated as the number of mobile subscriptions divided by the total population, multiplied by 100. Total population used from the Central Statistical Office's midyear population estimate

<sup>52</sup>Data sourced from Business Monitor International database, accessed 23 June 2016

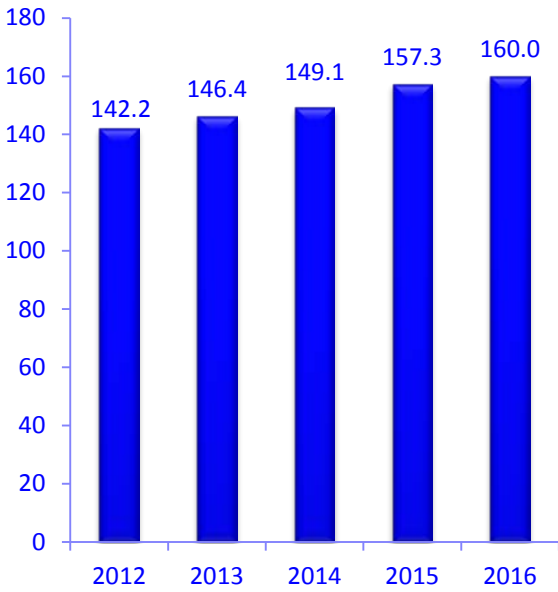


Figure 38. Mobile penetration rates per 100 inhabitants 2012 - 2016

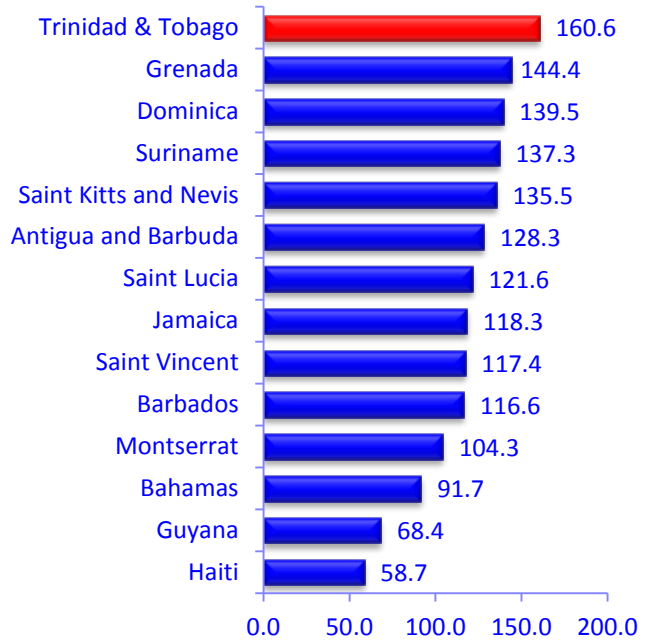


Figure 37. Mobile penetration rates among CARICOM countries 2016

### 3.3. Domestic Mobile Voice Traffic

Domestic mobile voice traffic is measured either by the number of minutes or the number of calls originating on domestic mobile networks. This traffic can be categorised as depicted in Figure 39. Consumers made a total of 3.1 billion mobile telephone calls, with a total duration of 3.7 billion minutes in 2016.

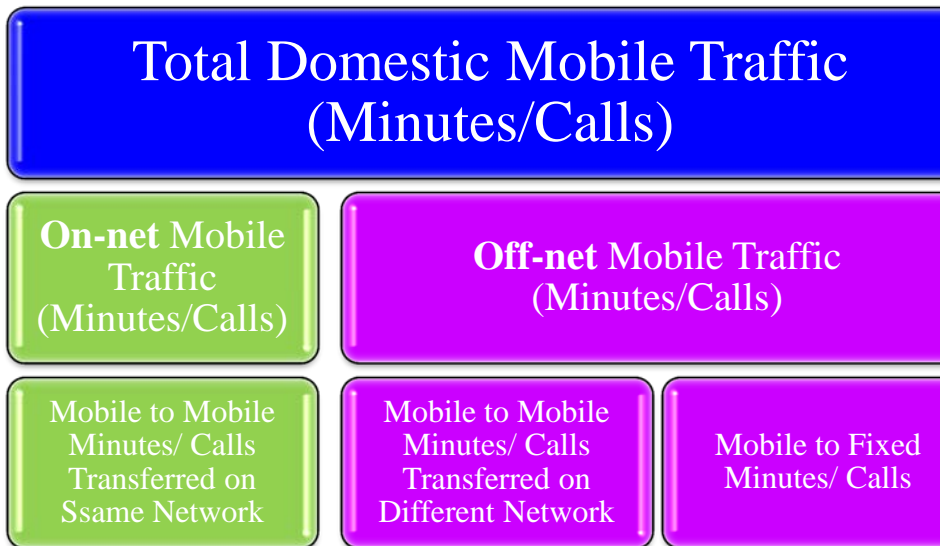


Figure 39. Classification of domestic mobile traffic

### 3.3.1. Annual Domestic Mobile Voice Traffic in Minutes

Of the 3.7 billion minutes of domestic mobile traffic recorded for 2016, on-net<sup>53</sup> traffic totalled 2.9 billion minutes while off-net<sup>54</sup> traffic recorded 801.1 million minutes. Off-net mobile-to-mobile minutes totalled 548.2 million, while off-net mobile-to-fixed minutes totalled 252.9 million minutes.

When compared to 2015, total domestic traffic (on-net and off-net minutes) decreased by 5.8% or 228.0 million minutes. It was also observed that on-net traffic minutes decreased by 7.1% (221.3 million minutes), while off-net traffic increased minimally by 0.3% (6.6 million minutes). Figure 40 illustrates the breakdown of domestic mobile traffic minutes for 2016 and Table 4 compares 2015 to 2016 domestic mobile traffic in minutes.

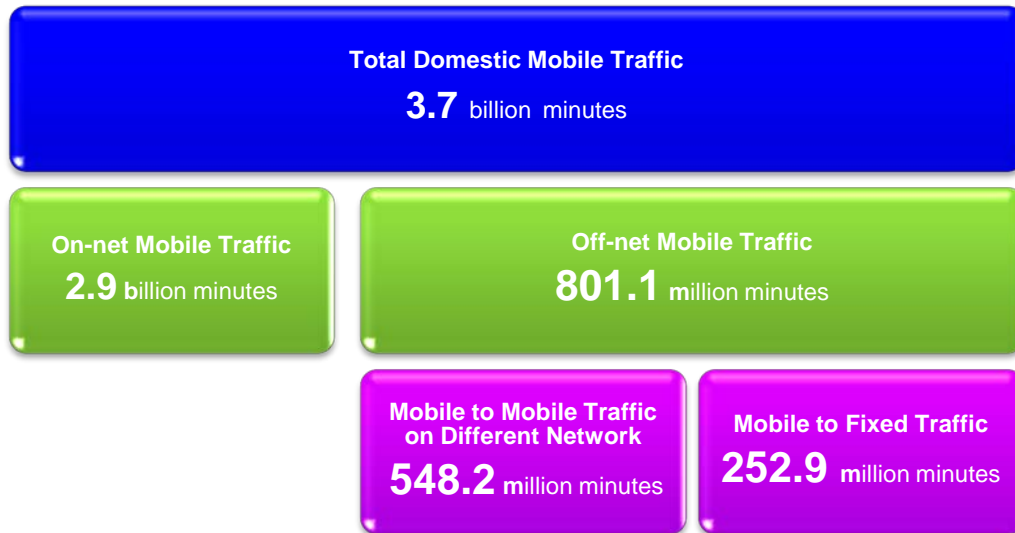


Figure 40. Breakdown of domestic mobile traffic minutes 2016

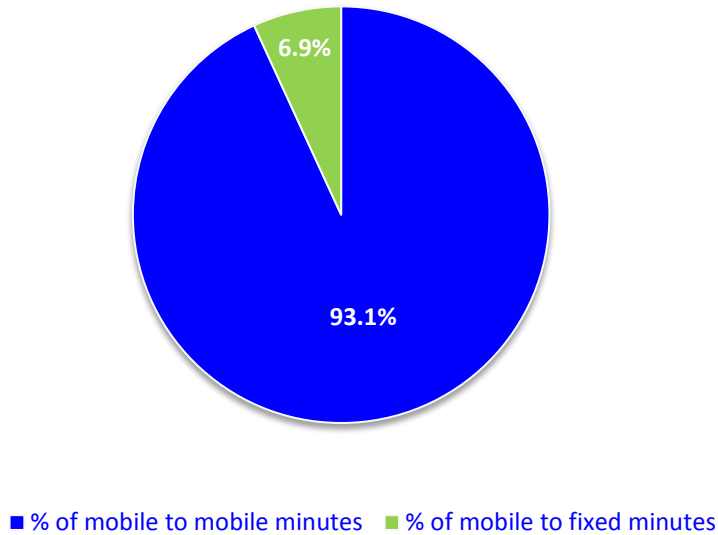
<sup>53</sup> On-net mobile traffic refers to traffic originating on a service provider's mobile network and terminating on the same mobile network.

<sup>54</sup> Off-net mobile traffic refers to traffic originating on a service provider's mobile network and terminating on another network (intra and inter service provider). For example, a call originating on Digicel's network and terminating on bmobile, Flow or TSTT's fixed network will be included in these minutes.

**Table 4. Breakdown of domestic mobile traffic minutes 2015 - 2016**

	2015	2016
<b>On-net Mobile Traffic (Billions)</b>	<b>3.1</b>	<b>2.9</b>
<b>Off-net Mobile Traffic (Millions)</b>	<b>807.7</b>	<b>801.1</b>
Mobile-to-Mobile Traffic on Different Networks (Millions)	546.4	548.2
Mobile-to-Fixed Traffic (Millions)	261.2	252.9
<b>Total Domestic Mobile Traffic (Billions)</b>	<b>3.9</b>	<b>3.7</b>

The percentage of total domestic mobile voice minutes terminating on a domestic mobile network continued to account for the majority of mobile minutes, comprising 93.1%. The number of domestic mobile minutes terminating on a domestic fixed network represented 6.9% in 2016. Figure 41 gives a representation of this percentage contribution.



**Figure 41. Percentage of mobile-to-mobile and mobile-to-fixed minutes 2016**

### 3.3.2. Annual Domestic Mobile Voice Call Volumes

In 2016, domestic mobile voice calls amounted to 3.1 billion, a reduction in the number of calls by 8.4% when compared with calls recorded for the previous year. Representing 74.2% of total domestic mobile calls, or 2.3 billion calls, on-net calls fell by 9.0% in 2016. Off-net traffic recorded 790.1 million calls, accounting for 25.8% of total domestic mobile calls. A breakdown of the subcategories of traffic by the number of calls is shown in Figure 42.

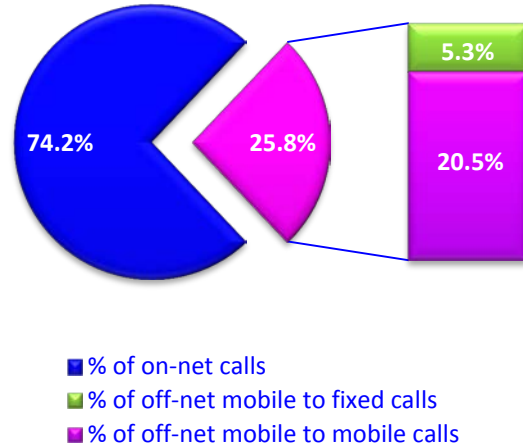


Figure 42. Breakdown of domestic mobile calls 2016

Of the 790.1 million off-net traffic calls, approximately 162.0 million were mobile-to-fixed, which represented 5.3% of total domestic mobile calls. The remaining 628.1 million off-net traffic calls were mobile-to-mobile and accounted for 20.5% of total domestic mobile calls. While the number of domestic mobile calls for each subcategory decreased, there was no major change in the ratios when compared to 2015. This indicates a fairly constant consumer call pattern in terms of the number of on-net and off-net calls during the review period. Table 5 compares 2015 to 2016 domestic mobile call volumes.

Table 5. Breakdown of domestic mobile calls 2015 - 2016

	2015	2016
<b>On-net Mobile Voice Calls (Billions)</b>	<b>2.5</b>	<b>2.3</b>
<b>Off-net Mobile Voice Calls (Millions)</b>	<b>846.5</b>	<b>790.1</b>
Off-net Mobile-to-Fixed Calls (Millions)	175.2	162.0
Off-net Mobile-to-Mobile Calls (Millions)	671.3	628.1
<b>Total Domestic Mobile Voice Calls (Billions)</b>	<b>3.4</b>	<b>3.1</b>

### 3.3.3. Quarterly Domestic Mobile Voice Minutes

As shown in Figure 43, domestic mobile voice minutes were stable at 944.7 million and 944.6 million minutes in the first and second quarters of 2016, respectively. Mobile minutes subsequently decreased by 7.6% in the third quarter to 872.6 million minutes and then rose by 5.8%, recording 924.4 million minutes in the fourth quarter. As Figure 44 illustrates, these fluctuations did not significantly change the proportion of mobile-to-fixed minutes and mobile-to-mobile minutes as this remained relatively stable during the year.

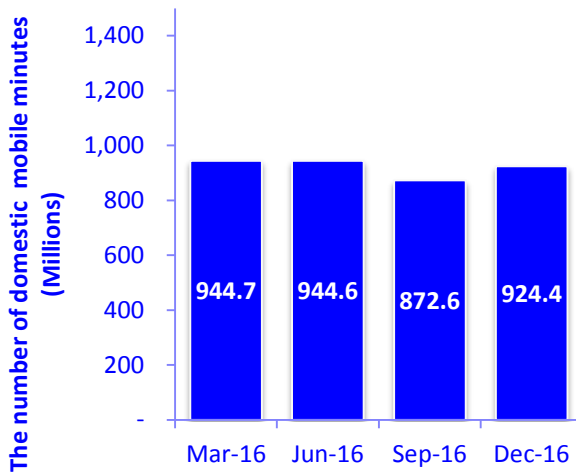


Figure 43. Quarterly mobile voice minutes 2016

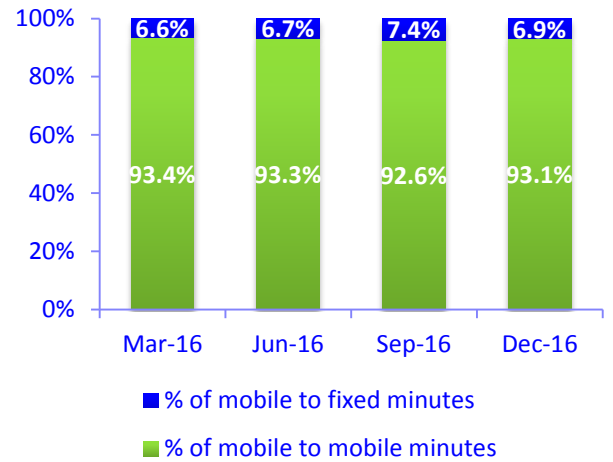


Figure 44. Quarterly mobile voice minutes by type 2016

### 3.3.4. Domestic Mobile Short Messaging Service (SMS)

The number of domestic SMS in 2016 declined significantly by 35.1% in 2016 when compared to 2015. Total SMS sent decreased from 908.3 million in 2015 to 589.8 million SMS in 2016. Of this 589.8 million SMS, 519.4 million were on-net and 70.4 million were off-net. Both on-net and off-net SMS decreased significantly by 37.1% and 15.5%, respectively. Figure 45 illustrates this.



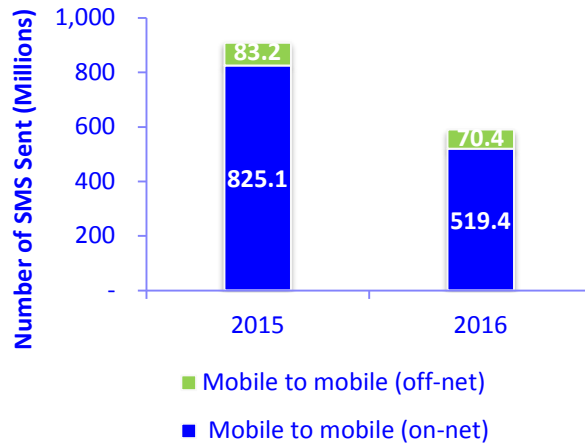


Figure 45. Number of on-net and off-net SMS sent in 2016

### 3.4. Mobile Voice Revenues

#### 3.4.1. Annual Revenues from Mobile Voice Services<sup>55</sup>

The annual revenue trend for mobile voice<sup>56</sup> services from 2012 to 2016 is illustrated in Figure 46. Total revenues from mobile voice services amounted to TT\$1,890 million in 2016, the lowest recorded in the past five years and represents a 5.1% decrease over the previous year. Following an increase in 2013, mobile voice revenues experienced three consecutive declines from 2014 to 2016.

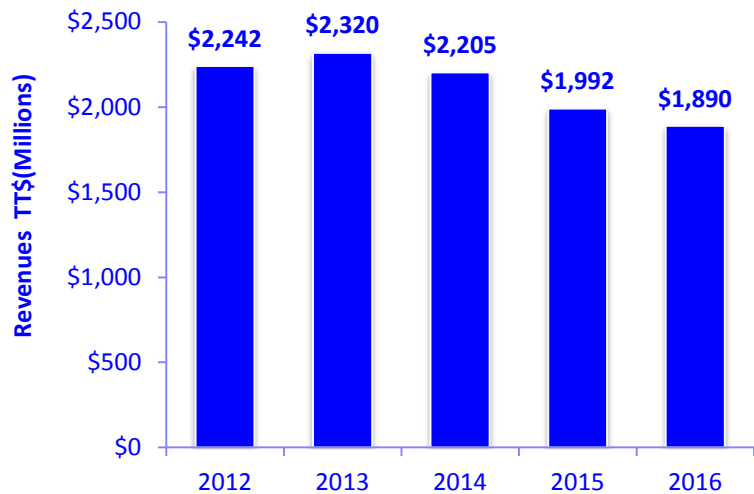


Figure 46. Annual revenues from mobile voice services 2012 - 2016

<sup>55</sup> These revenues exclude mobile Internet revenues, which is reported within the Internet section of this report.

<sup>56</sup> Mobile voice revenues include revenues from SMS services.

Of the TT\$1,890 million earned from the mobile voice market, prepaid, postpaid and other<sup>57</sup> services generated TT\$1,427 million, TT\$330 million and TT\$133 million in revenues, respectively. Prepaid and postpaid mobile voice revenues contributed 75.5% and 17.5% of the market, respectively, while other revenues accounted for 7.0%. Figure 47 shows the percentage breakdown of revenues from mobile voice services.

Figure 48 shows the five-year trend in prepaid and postpaid revenues. During this review period, postpaid revenues gradually declined, while prepaid revenues peaked in 2014 and steadily declined thereafter.

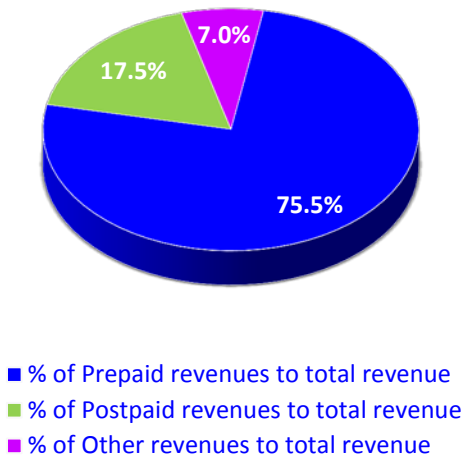


Figure 47. Percentage of prepaid and postpaid revenues from mobile voice services for 2016

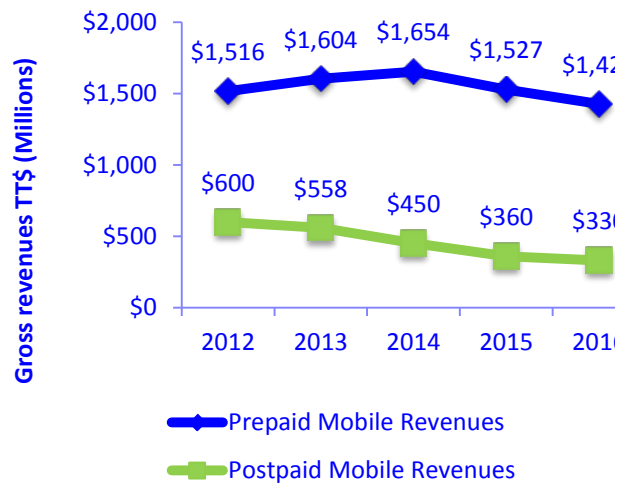


Figure 48. Revenues from mobile voice services-prepaid and postpaid 2012 - 2016

<sup>57</sup> Other revenues comprise earnings generated from equipment sales, SIM card sales and administrative charges.

### 3.4.2. Quarterly Revenues from Mobile Voice Services

Minimal quarterly fluctuations in mobile voice revenues were observed during 2016. Revenues increased marginally from TT\$459.7 million in the first quarter to TT\$477.4 million in the second quarter. Revenues subsequently decreased in the third quarter, to record TT\$469.7 million and increased again in the fourth quarter, amounting to TT\$482.8 million, notably the highest earning

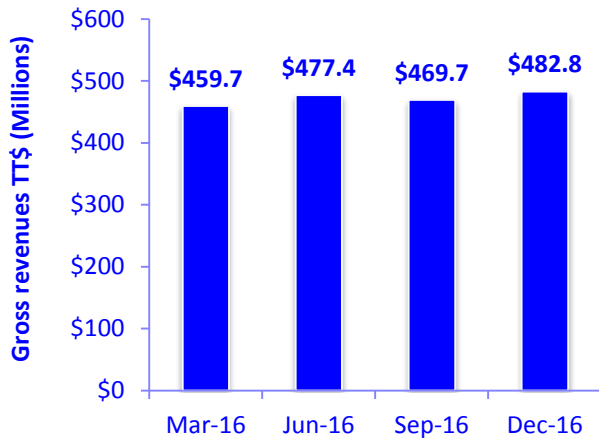


Figure 49. Quarterly revenues from mobile voice services 2016

quarterly revenue for 2016. Figure 49 illustrates these quarterly changes in revenues for 2016.

Prepaid mobile revenues experienced quarter-on-quarter fluctuations throughout the year. The second quarter recorded the largest decrease of TT\$35.1 million, moving from TT\$364.5 million in the first quarter to TT\$329.4 million in the second quarter. Revenues increased to TT\$368.2 million in

the third quarter and then decreased marginally to TT\$364.7 million in the fourth quarter.

Postpaid mobile revenues increased sharply in the second quarter from TT\$74.0 million to TT\$114.2 million. Subsequently, a downward trend was observed for the remaining quarters of 2016, recording TT\$72.3 million in the third quarter and TT\$69.6 million in the last quarter (Figure 50 illustrates).

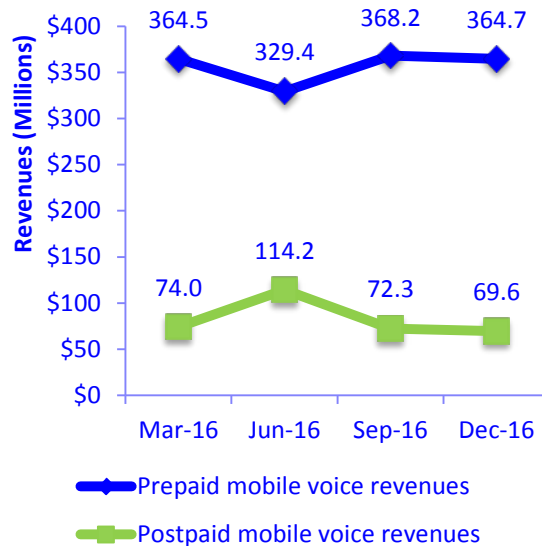
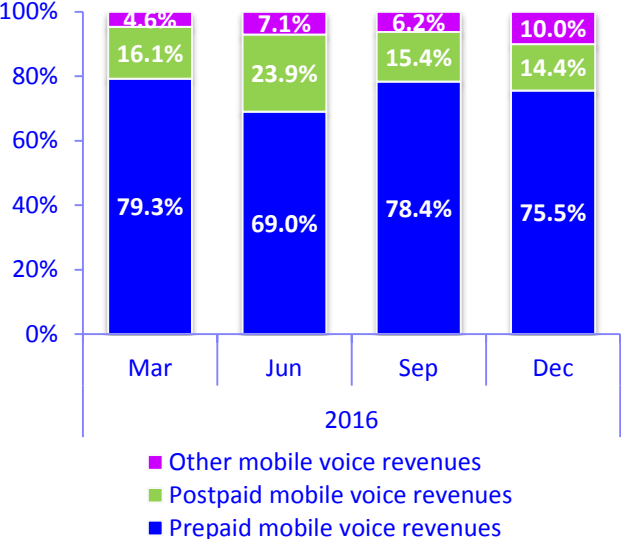


Figure 50. Quarterly prepaid and postpaid mobile voice revenues 2016

During the 2016 period, prepaid subscriptions generated the majority of the revenues in the mobile voice market with a quarterly average of 75.6%, while postpaid averaged 17.5%. Other mobile voice revenues accounted for an average of 7.0%. As Figure 51 shows, the proportion of prepaid, postpaid and other revenues was relatively stable during 2016, with the exception of the second quarter where a notable increase in the proportion of postpaid revenues was observed.



**Figure 51. Percentage of revenues contributed by prepaid and postpaid mobile voice subscriptions 2016**

### 3.5. Mobile Market Concentration

Using the Hirschman-Herfindahl Index (HHI)<sup>58</sup>, the Authority calculated the level of concentration in the mobile voice market of Trinidad and Tobago for the year ending December 2016. Comparing the last five years, Figure 52 shows that the HHI has been relatively stable with roughly 5000 points being achieved over the period. During 2016, minimal changes in the HHI were observed, as illustrated in Figure 53. The level of concentration in the mobile voice market decreased in the second quarter from 5,122 to 5,101, increasing in the third quarter to 5,107 and decreasing again in the fourth quarter to record 5,104.

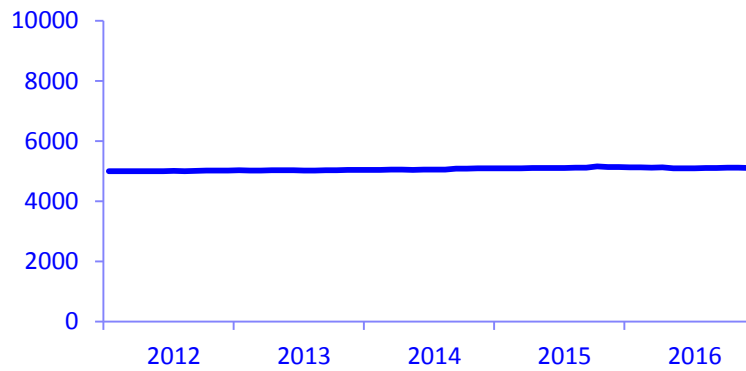


Figure 52. HHI for the mobile voice market 2012 - 2016

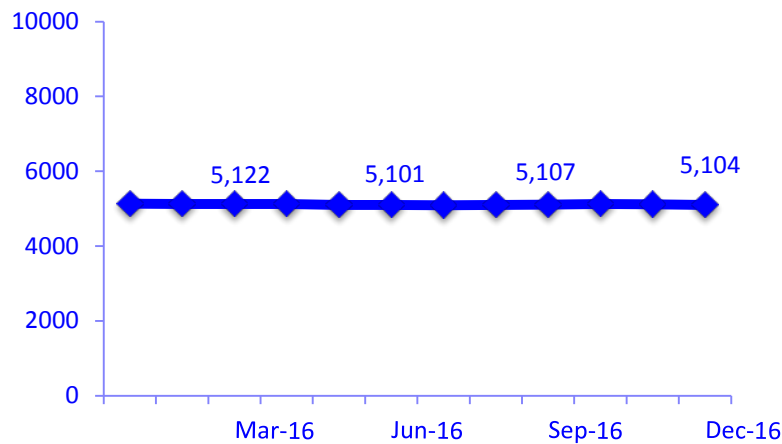


Figure 53. HHI for the mobile voice market 2016

<sup>58</sup> The number of subscriptions was used to determine market share for the service providers.

### 3.6. Mobile Market Average Revenue per User

With increasing subscriptions and falling revenues in the mobile voice market, the average revenue per user (ARPU) decreased in 2016. The ARPU in this market fell by TT\$66 (7.0%) as mobile customers spent an average of TT\$872 for mobile voice services<sup>59</sup> in 2016. For prepaid mobile subscriptions, the ARPU stood at TT\$823 – a decrease of TT\$50 (5.7%) when compared to 2015. The ARPU generated for postpaid subscriptions was TT\$764 – a decrease of TT\$199 (20.7%). Figure 54 highlights total ARPU for mobile services, while Figure 55 compares the ARPU earned for prepaid and postpaid subscriptions over the past five years.

Over this period, it was observed that the variation between prepaid and postpaid ARPU was reduced, with the ARPU for both service options being almost equivalent in 2015 and 2016. Also of significance, prepaid ARPU was greater than postpaid ARPU for the first time over the 2012 to 2016 period.

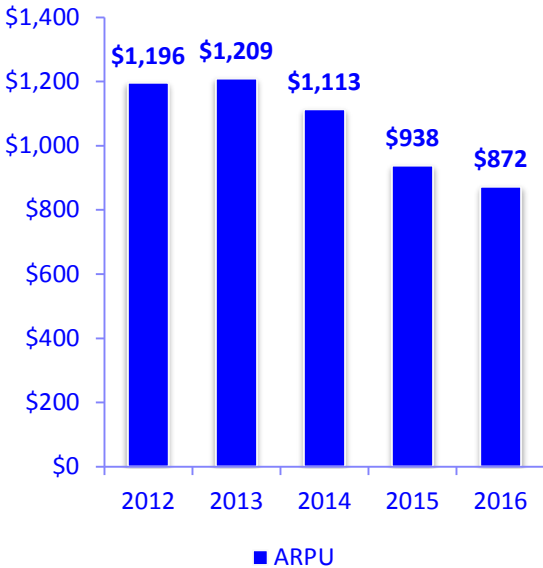


Figure 54. ARPU for mobile voice services 2012 - 2016

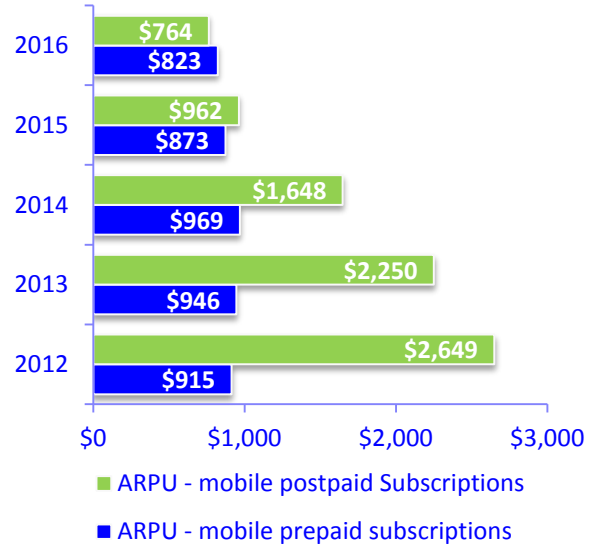


Figure 55. ARPU for prepaid and postpaid mobile voice subscriptions 2012 - 2016

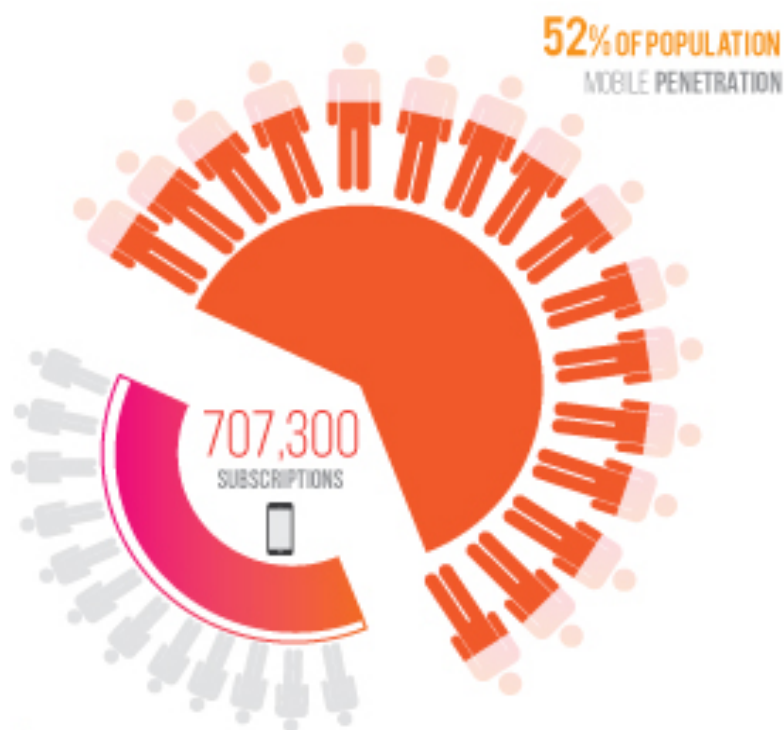
<sup>59</sup> The ARPU from mobile voice services includes mobile voice and SMS.

2016 ANNUAL MARKET REPORT  
INTERNET MARKET





19% OF POPULATION  
FIXED PENETRATION



52% OF POPULATION  
MOBILE PENETRATION

10.3%  
increase over 2015

**\$1,485.5M**  
INTERNET MARKET REVENUES



## 4. Internet Market Review

This review of Trinidad and Tobago's Internet market for the 2016 reporting period examines the delivery of Internet services over fixed (wired and wireless) and mobile domestic public telecommunications networks. The country has 16 authorised fixed domestic telecommunications services concessionaires; 11 of those provide fixed Internet services:

1. Air Link Communications Limited
2. Columbus Communications Trinidad Limited (CCTL)
3. Digicel (Trinidad and Tobago) Limited
4. Diversified Technologies Limited
5. Green Dot Limited
6. Lisa Communications Limited
7. Massy Communications Limited
8. Massy Technologies (Infocom) Trinidad Limited
9. Open Telecom Limited
10. RVR International Limited
11. Telecommunications Services of Trinidad and Tobago Limited (TSTT)

These operators used a mix of technologies to provide fixed wired and wireless broadband Internet services to the public. Fixed wired broadband Internet services employ ADSL2+ over copper cables, Hybrid Fibre Coaxial Networks utilising DOCSIS 3.0 technology, as well as a mix of Fibre to the Curb (FTTC), Fibre to the Business (FTTB) or Fibre to the Home (FTTH) topologies. Fixed wireless broadband Internet operators employ WiMAX and LTE technologies to support the need for services demanding higher speeds on the access network.

Two mobile operators were authorised to provide domestic mobile telecommunications services, including the provision of Internet services:

1. Telecommunications Services of Trinidad and Tobago Limited (bmobile)<sup>60</sup>
2. Digicel (Trinidad & Tobago) Limited

Mobile Internet operators offered customers mobile broadband Internet services utilising Evolved High Speed Packet Access (HSPA+) as well as Long Term Evolution (LTE). Mobile Internet services via 2.5G technology, i.e., Enhanced Data Rates for GSM Evolution (EDGE), were also offered during this reporting period.

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<sup>60</sup> bmobile is the mobile services division of TSTT, so their Internet services are recorded as one concessionaire.

## 4.1. Fixed Internet Subscriptions

Following four years of steady growth, the number of subscriptions in the fixed Internet market decreased substantially in 2016. Approximately 255,600 fixed Internet subscriptions were recorded in December 2016 – a 9.5% reduction when compared to the same period in 2015. Figure 56 illustrates the trend for fixed Internet subscriptions over the last five years.

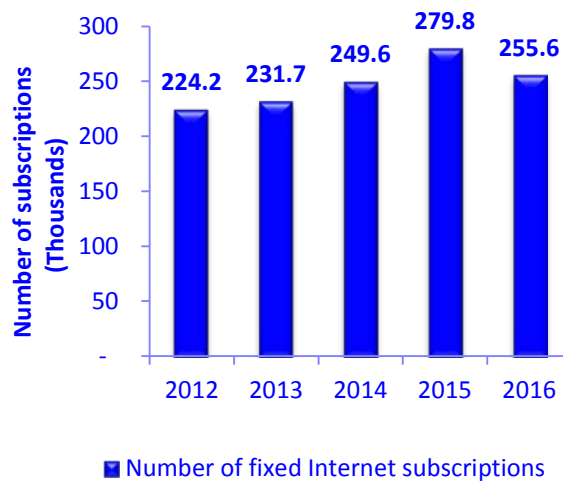


Figure 56. Fixed Internet subscriptions 2012 - 2016

Trinidad and Tobago has reached a significant milestone, as fixed broadband<sup>61</sup> Internet subscriptions now constitute nearly all of the subscriptions in the fixed Internet market. There were approximately 70 fixed narrowband subscriptions in 2016 – a decrease of 94.5%, or 1,200, when compared to the previous year. Down by 9.5%, or 22,900 subscriptions when compared to 2015, fixed broadband subscriptions stood at 255,600 as at December 2016.

As illustrated in Figures 57 and 58, fixed narrowband<sup>62</sup> Internet subscriptions decreased consistently over the past five years, while there was an overall increase in fixed broadband Internet subscriptions.

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<sup>61</sup> Broadband can be defined as speeds > 256 kbps.

<sup>62</sup> Narrowband can be defined as speeds ≤ 256 kbps.

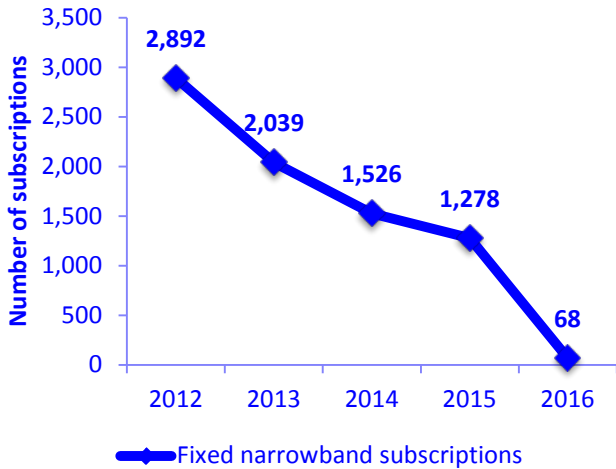


Figure 57. Fixed narrowband subscriptions 2012 - 2016

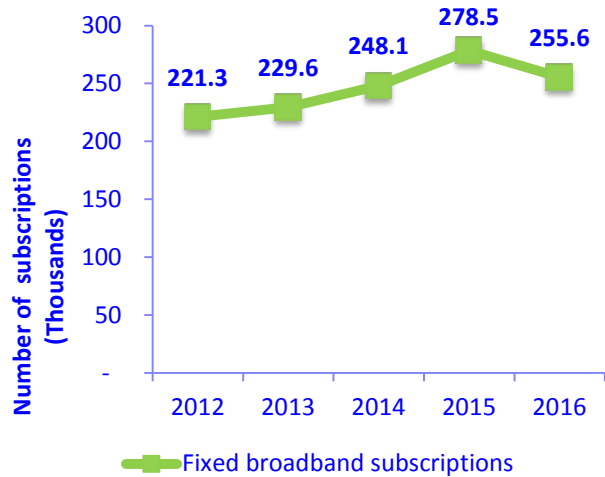


Figure 58. Fixed broadband subscriptions 2012 - 2016

#### 4.1.1. Fixed Internet Subscriptions – Residential and Business

The number of fixed Internet subscriptions can be further subdivided into residential and business categories. In 2016, both residential and business subscriptions declined, with residential subscriptions showing a moderately higher percentage decrease. Figures 59 and 60 depict the five-year trend of total residential and business fixed Internet subscriptions, respectively.

Total residential subscriptions amounted to approximately 239,200, decreasing by 9.0%, or 23,500 subscriptions from 2015. Total business subscriptions measured 16,400, reflecting a decrease of 4.1%, or 700 subscriptions.

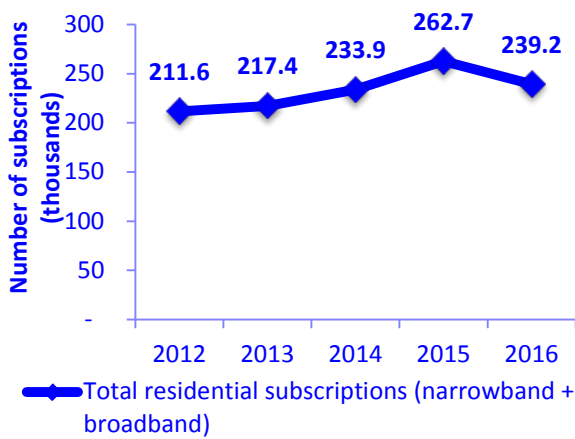


Figure 59. Residential fixed Internet subscriptions 2012 - 2016

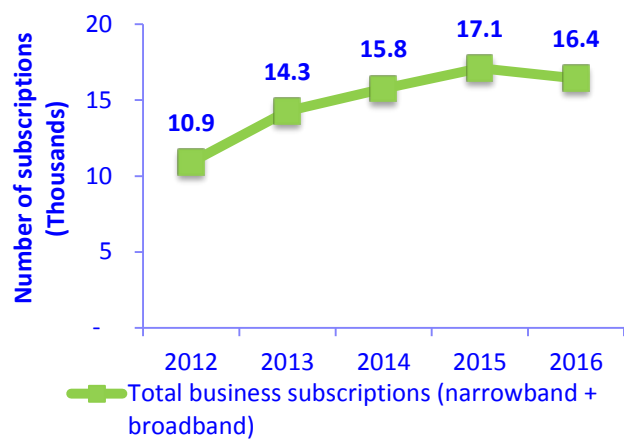


Figure 60. Business fixed Internet subscriptions 2012 - 2016

#### 4.1.2. Residential Fixed Broadband Internet Subscriptions by Speed

In 2016, residential broadband customers subscribed to Internet speeds<sup>63</sup> from 256 kbps up to 350 Mbps. This is a significant improvement from the maximum broadband speed available to residential customers of 150 Mbps in 2015 and signifies the increasing demand for higher Internet speeds by residential customers. Figure 61 summarises residential broadband subscriptions into the following Internet speed categories:

- I. equal to or above 10 Mbps
- II. 2 Mbps to less than 10 Mbps
- III. 256 kbps to less than 2 Mbps

The broadband Internet speed category equal to or above 10 Mbps remained the most popular choice for residential customers as observed over the past three years. Recording 127,100 subscriptions, this speed category continued to experience steady growth as evidenced by the 6.7% growth rate achieved in 2016.

Internet speeds between 256 kbps to less than 2 Mbps were the least popular among residential customers as demonstrated by the downward trend observed over the past five years. Recording 24,700 subscriptions, this speed category contracted substantially by 58.5% in 2016.

The speed category between 2 Mbps to less than 10 Mbps maintained its second-placed ranking attained in 2015, with 87,300 subscriptions as at December 2016. Demand for this Internet speed category increased significantly by 11.8% and represents a possible alternative for consumers in the 256 kbps to less than 2 Mbps category seeking higher speeds.

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<sup>63</sup> Refers to advertised download speeds

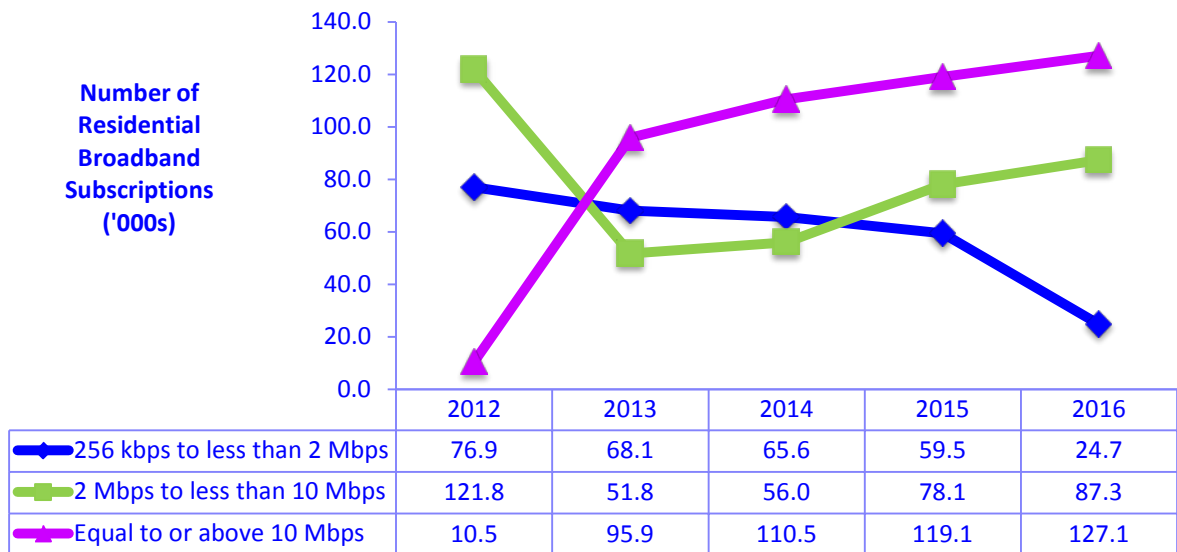


Figure 61. Number of residential broadband subscriptions by download speed 2012 - 2016

Figure 62 shows the proportion of subscriptions for each broadband Internet speed category over the period 2012 to 2016. The proportion of subscriptions in the equal to or above 10 Mbps and the 2 Mbps to less than 10 Mbps categories increased by approximately six percentage points each in 2016 and accounted for 53.1% and 36.5% of total residential broadband subscriptions, respectively. In the 256 kbps to less than 2 Mbps speed category, the proportion of subscriptions decreased significantly by approximately 13 percentage points and now accounts for only 10.3% of total residential broadband subscriptions.

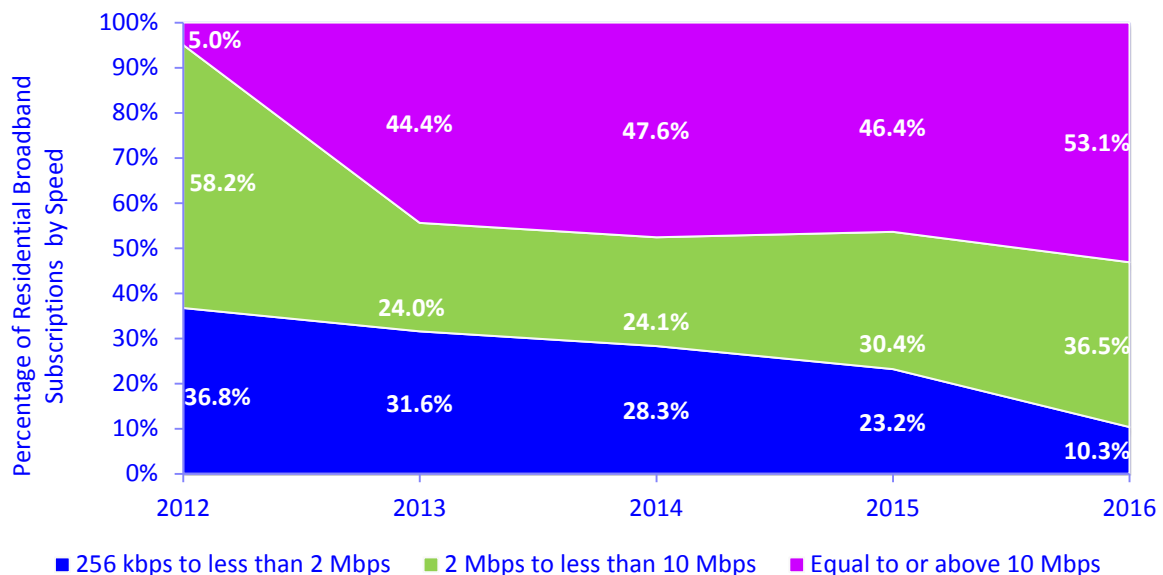


Figure 62. Proportion of residential broadband subscriptions by download speed 2012 - 2016

### 4.1.3. Business Fixed Broadband Internet Subscriptions by Speed

The number of business broadband customers subscribing to Internet speeds equal to or above 10 Mbps increased in 2016, while there was a marked decrease in those subscribing to 2 Mbps to less than 10 Mbps and 256 kbps to less than 2 Mbps. The demand for Internet within the speed category equal to or above 10 Mbps increased by 13.8% to record 10,700 subscriptions. Broadband Internet speeds of 256 kbps to less than 2 Mbps continued to be the least popular among business customers and declined at a faster rate in 2016 when compared to the previous year. Subscriptions in this Internet speed category decreased by 21.1% in 2016 compared to the 10.5% reduction observed in 2015, recording only 1,500 at the end of 2016. Figure 63 shows the number of business broadband subscriptions by download speed.

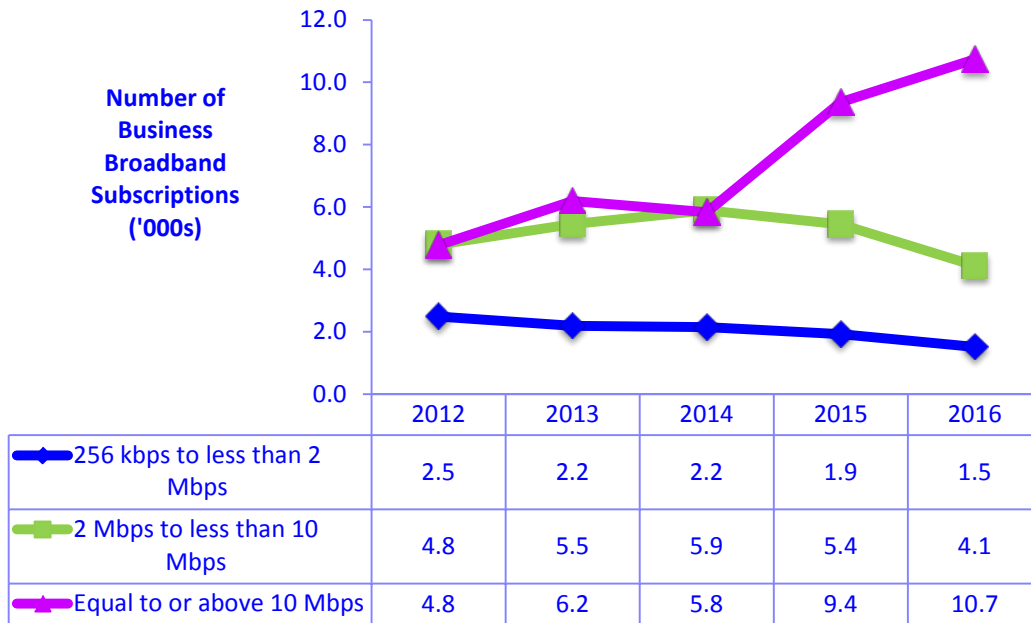


Figure 63. Number of business broadband subscriptions by download speed 2012 - 2016

The growth observed in the equal to or above 10 Mbps Internet speed category is also reflected in the significant increase in the proportion of subscriptions in this category. In 2016, the proportion of business broadband customers who utilised speeds equal to or above 10 Mbps increased by approximately 10 percentage points, to account for 65.6% of total business broadband subscriptions.

This result is illustrated in Figure 64, which also highlights the decreasing trend over the past five years in the proportion of business subscriptions to broadband Internet speeds between 256 kbps to less than 2 Mbps and 2 Mbps to less than 10 Mbps.

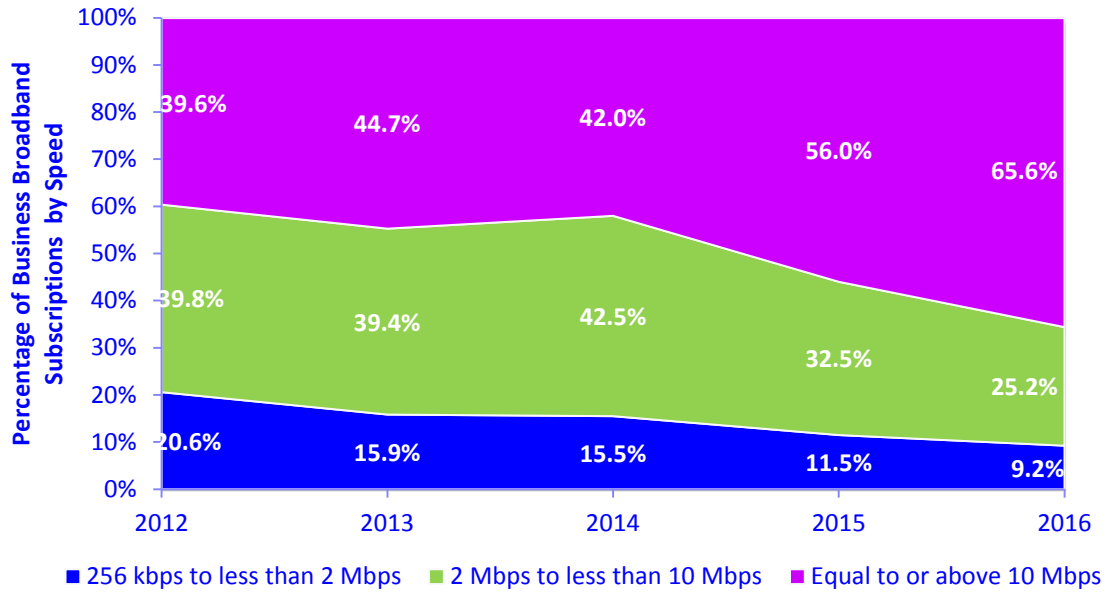


Figure 64. Proportion of business broadband subscriptions by download speed 2012 - 2016



## 4.2.Mobile Internet Users

With 2.17 million mobile voice subscriptions in 2016, approximately 1.35 million had the capability to access mobile Internet services. Of this 1.35 million, 707,300 were mobile Internet users<sup>64</sup> – an increase of 9.6% from the previous year.

Consistent with the proportion of prepaid mobile voice subscriptions, the number of prepaid mobile Internet users also exceeded that of postpaid. As shown in Figure 65, there were 531,300 prepaid mobile Internet users compared to 176,000 postpaid mobile Internet users at the end of 2016. The five-year trend in prepaid and postpaid mobile Internet users show a general steady upward trend, indicating an increasing demand for mobile Internet services over the period.

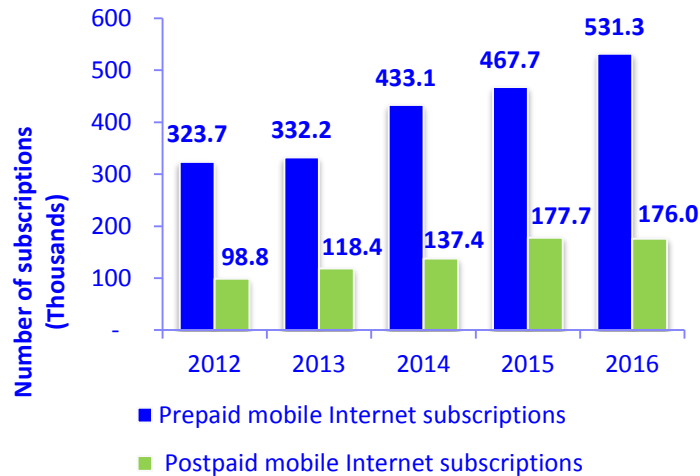
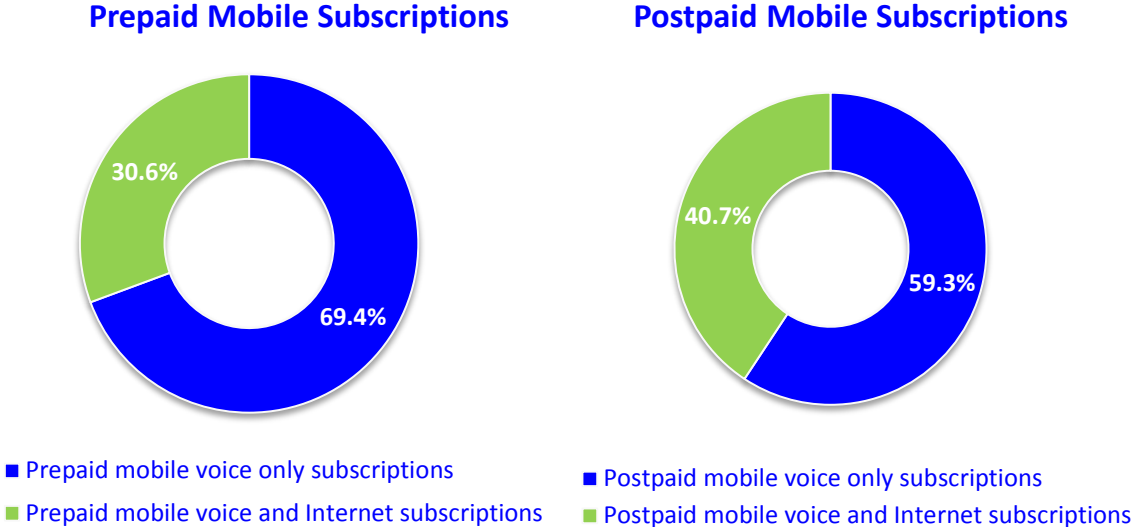


Figure 65. Mobile Internet subscriptions by prepaid and postpaid 2012 - 2016

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<sup>64</sup> Mobile Internet users are defined as active mobile Internet users.

Although there were more prepaid mobile Internet users, it was noted that a greater proportion of postpaid subscriptions used mobile Internet in 2016. Out of the 1.7 million prepaid mobile subscriptions in 2016 (see Figure 32), 30.6% used mobile Internet services while the other 69.4% used only voice and SMS services. With respect to the 432,000 postpaid mobile subscriptions, 40.7% used mobile Internet services. The foregoing is illustrated in Figure 66, which compares prepaid and postpaid mobile subscriptions subdivided by mobile voice-only users and mobile voice and Internet users for 2016.



**Figure 66. Comparison of prepaid and postpaid mobile Internet subscriptions 2016**

The year 2016 was pivotal for mobile Internet users as the migration from narrowband to broadband mobile Internet subscriptions intensified. The demand for faster mobile Internet speeds by consumers in Trinidad and Tobago is reflected in the significant increase in the number of active mobile broadband Internet users. Active mobile broadband Internet users increased by 47.0% to 637,800 at the end of 2016. Conversely, a significant reduction (67%) in the number of active mobile narrowband (2.5G) Internet users was observed for the same period, with 69,500 subscriptions recorded at the end of 2016.

As Figure 67 illustrates, there was rapid growth in the adoption of mobile broadband Internet services over the five-year period, while mobile narrowband Internet services dropped dramatically.

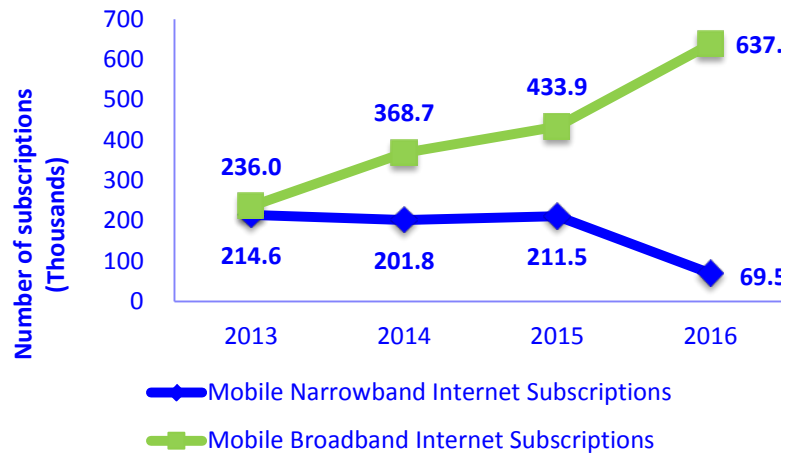


Figure 67. Narrowband and broadband mobile Internet users 2013 - 2016

Subsequent to the increase observed in the number of mobile broadband Internet users and the concomitant decrease in mobile narrowband Internet users, mobile broadband Internet users now account for 90% of all mobile Internet users, as compared to the 67.1% recorded last year. At 32.8% in 2015, the proportion of narrowband Internet users declined drastically and accounted for 9.8% of the market in 2016. The proportion of mobile broadband and narrowband in 2015 and 2016 is illustrated in Figure 68.

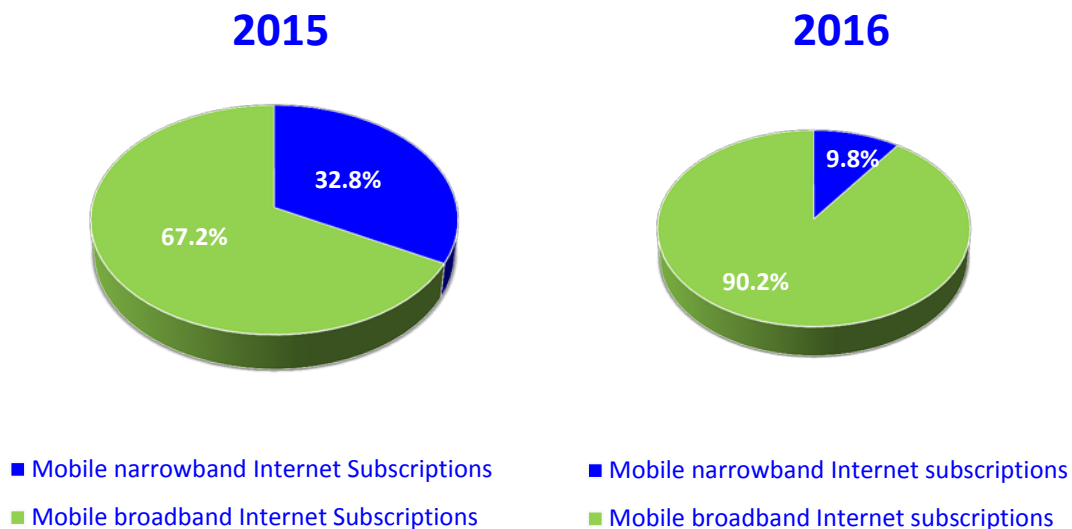


Figure 68. Percentage of narrowband and broadband mobile Internet 2015 - 2016

### 4.3. Internet Penetration

At the end of 2016, approximately 19 out of every 100 persons had a fixed Internet subscription and 52 out of every 100 persons were using mobile Internet services Figure 69 depicts the Internet penetration over the last five years.

Internet household penetration<sup>65</sup> is used to measure the proportion of households with a fixed Internet subscription. Approximately 60 out of every 100 households subscribed to a fixed Internet service in 2016 – a decrease from the 65 calculated in 2015. Figure 70 shows fixed Internet household penetration for the period 2012 to 2016.

#### 4.3.1. Internet Users

The number of Internet users<sup>66</sup> is another useful indicator to measure progress towards achieving an information society with universal access. The Authority estimates the number of fixed Internet users as the number of residential fixed Internet subscriptions for the year multiplied by the average number of

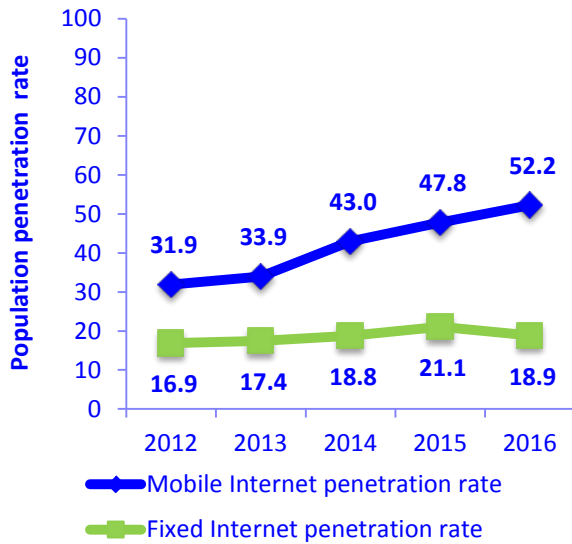


Figure 70. Fixed and mobile Internet penetration 2012 - 2016

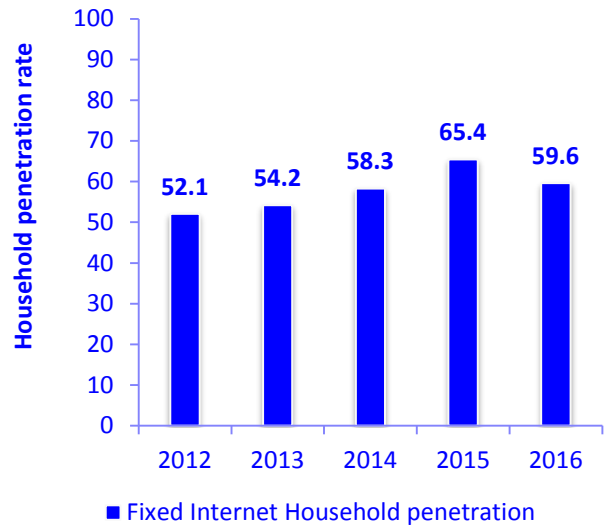


Figure 69. Internet household penetration 2012 - 2016

<sup>65</sup> Internet household penetration is calculated as the number of residential fixed Internet subscriptions divided by the total number of households, multiplied by 100.

<sup>66</sup> Internet users are persons who used the Internet. A person does not have to have a personal Internet subscription to be considered an Internet user.

persons residing within a household<sup>67</sup>. For 2016, this approximated to 775,100 fixed Internet users. Additionally, there were 707,300 mobile Internet users. It is noted that fixed Internet users may also be mobile Internet users. Figure 71 shows the steady growth in the number of mobile Internet users as well as the trend in fixed Internet users over the last five years. As illustrated in this figure, fixed Internet users decreased in 2016, following four years of steady growth, narrowing the gap over time between the number of mobile and fixed Internet users.

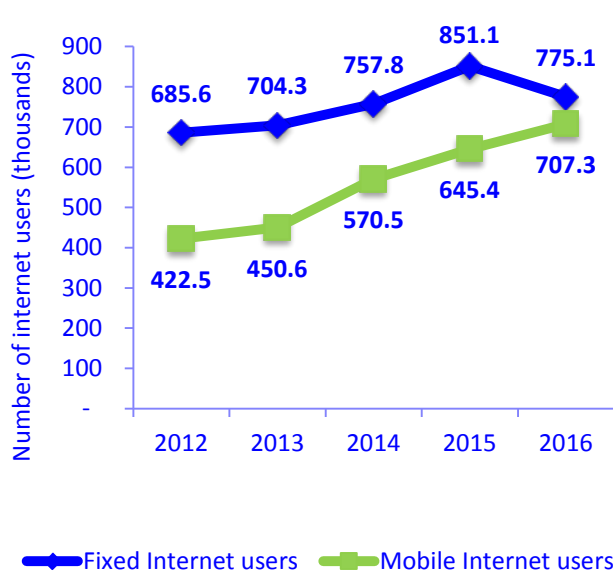


Figure 71. Internet household penetration rates 2012 - 2016

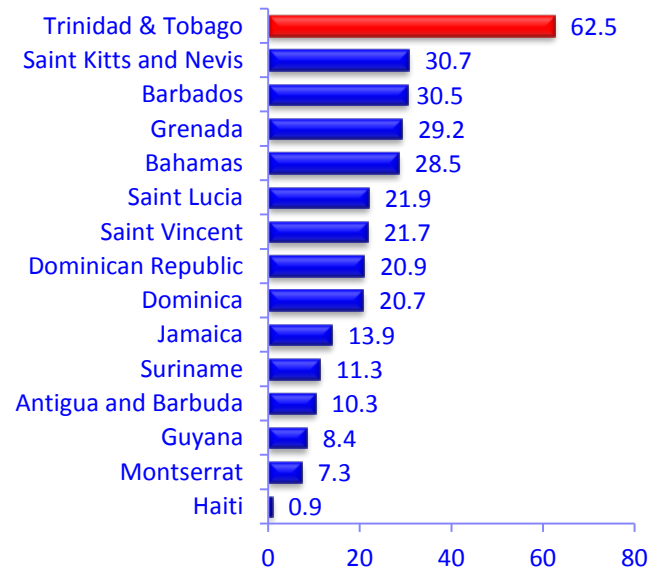


Figure 72. Broadband Internet subscribers per 100 inhabitants among CARICOM countries 2016 (Source: BMI)

Compared regionally, in 2016 Trinidad and Tobago was ranked first in terms of broadband Internet subscribers per 100 inhabitants, according to data from BMI<sup>68</sup>. Based on BMI’s definition, broadband Internet subscribers include fixed and mobile connections. Approximately 63 out of every 100 persons in Trinidad and Tobago subscribed to broadband Internet services; almost double that of second-placed St Kitts and Nevis. Figure 72 compares the number of broadband subscribers per 100 inhabitants among the CARICOM countries.

<sup>67</sup> In its 2011 Census Report, the Central Statistical Office estimated that an average of 3.24 persons reside within a household.

<sup>68</sup> Data sourced from Business Monitor International database, accessed June 23<sup>rd</sup> 2016.

#### 4.4. Total Internet Revenues

Fixed and mobile Internet services generated TT\$1,485.5 million in revenues for 2016. Similar to previous years, there was strong growth in total Internet revenues in 2016, with an increase of TT\$139.1 million, or 10.3%, when compared to 2015

(Figure 73). This growth is attributed to the favourable growth in revenues generated by both fixed and mobile Internet subscriptions.

Fixed Internet revenue growth strengthened in 2016, sustaining its position as the main revenue contributor to total Internet revenues. As Figure 74 depicts, the percentage of fixed Internet revenues increased from 57.0% in 2015 to 59.5% in 2016. On the other hand, the proportion of mobile Internet revenues decreased from 43.0% in 2015 to 40.5% of total Internet revenues in 2016.

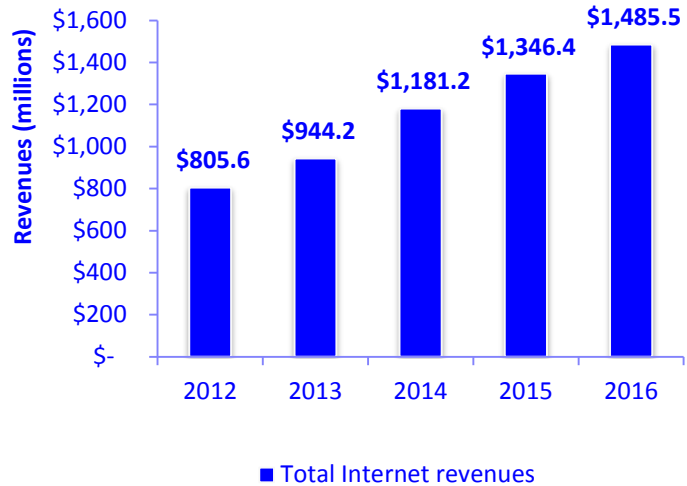


Figure 73. Total Internet revenues 2012-2016

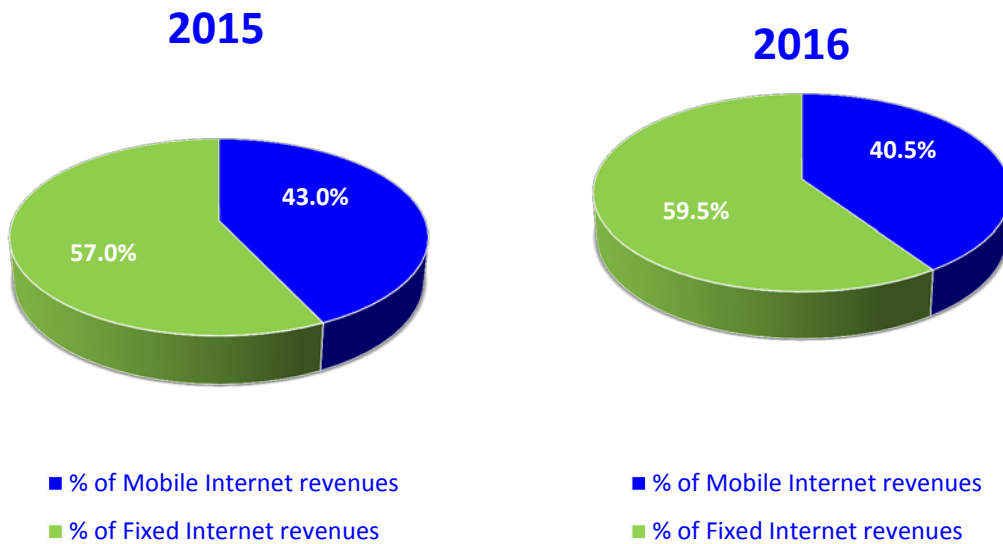


Figure 74. Percentage of fixed and mobile contributions to Internet revenues 2015 and 2016

#### 4.4.1. Fixed Internet Revenues

For the period under review, the total gross revenues for the fixed Internet market amounted to TT\$884.1 million, reflecting an increase of TT\$116.3 million, or 15.1%, from the previous year. Of this total, narrowband Internet accounted for TT\$2.2 million, while broadband Internet contributed TT\$881.8 million.

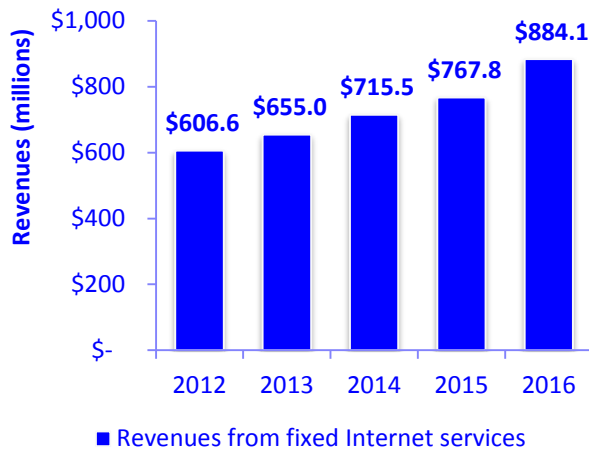


Figure 75 Fixed Internet revenues 2012 - 2016

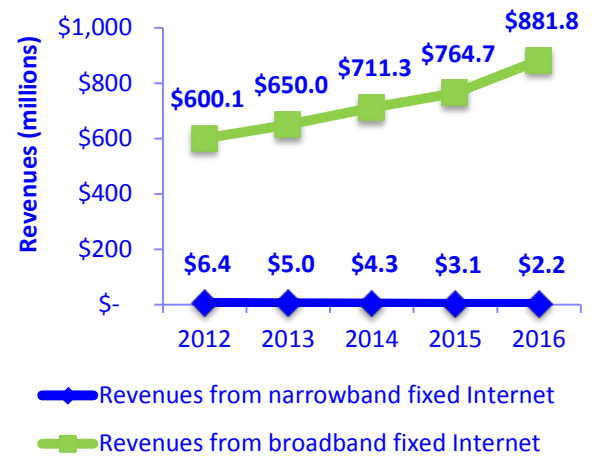


Figure 76. Revenues from fixed narrowband and broadband subscriptions 2012 - 2016

As the migration of subscriptions from fixed narrowband to broadband services continued, fixed narrowband revenues decreased by TT\$850,000, or 27.5%. Fixed broadband revenues remained the main revenue generator in this market, growing significantly by TT\$117.1 million, or 15.3%, compared to the 2015 period. Figure 75 shows the annual revenue trend in the fixed Internet market over the last five years, while Figure 76 compares narrowband and broadband revenues for 2016

Broadband Internet remains the predominant choice of service in the market, generating almost 100% of total fixed Internet revenues. Of these revenues, broadband and narrowband Internet contributed 99.7% and 0.3%, respectively, in 2016, as portrayed in Figure 77.

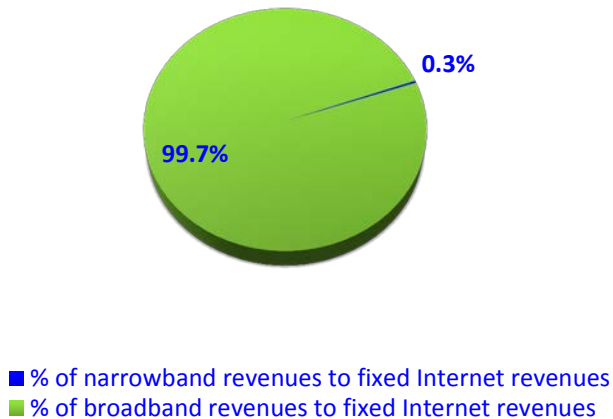


Figure 77. Percentage of narrowband and broadband revenues 2016

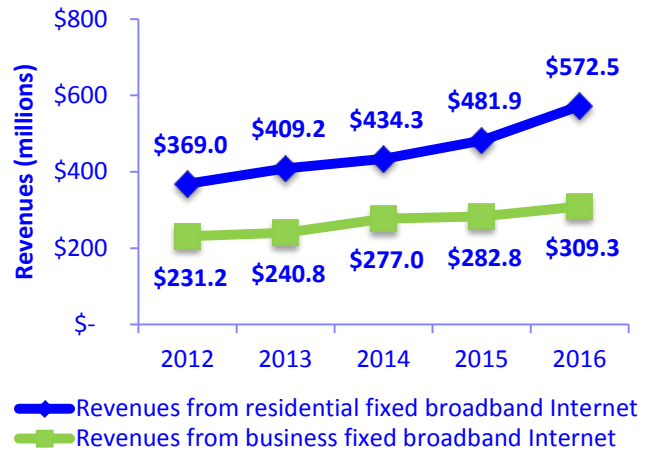


Figure 78. Revenues from residential and business fixed broadband subscriptions 2012 - 2016

Over the period 2012 to 2016, a steady upward trend was observed for both residential and business fixed broadband Internet revenues. Similar to 2015, residential fixed broadband revenues reflected a higher growth rate in 2016 than business fixed broadband revenues. Residential fixed broadband revenues increased by 18.8%, while business fixed broadband revenues increased by 9.4%. Figure 78 shows the upward trend in fixed broadband revenues for both categories over the past five years.

Revenues generated from residential fixed broadband Internet subscriptions accounted for the majority of fixed broadband revenues, as shown in Figure 79. Of total fixed broadband revenues, residential broadband subscriptions contributed TT\$572.5 million (64.9%), while revenues from business broadband subscriptions totalled TT\$ \$309.3 million (35.1%).

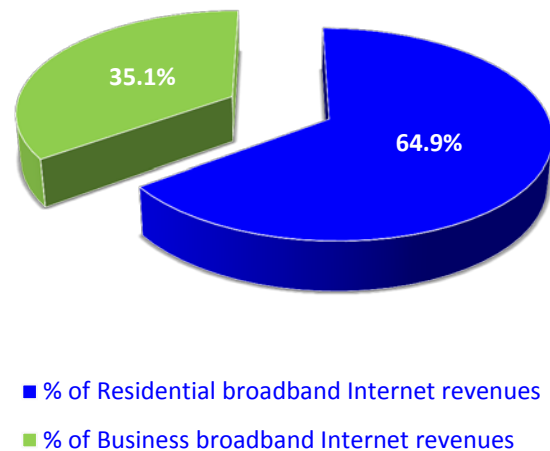


Figure 79. Broadband revenues by residential and business 2016



#### 4.4.1.1. Mobile Internet Revenues

Following its marked double-digit growth over the past four years, the increase in total gross revenues from mobile Internet services slowed in 2016. Notwithstanding that, the revenues generated from mobile Internet services continued to be a significant contributor to revenues in the Internet market. Mobile Internet revenues rose from TT\$578.6 million in 2015 to TT\$601.4 million in 2016, i.e., a 3.9% increase. Although this growth represents the lowest recorded percentage over the five-year period, the mobile Internet market continues to be a dynamic market segment with significant growth in both the number of users and revenues generated. Figure 80 highlights the annual trend for gross revenues generated by mobile Internet users.

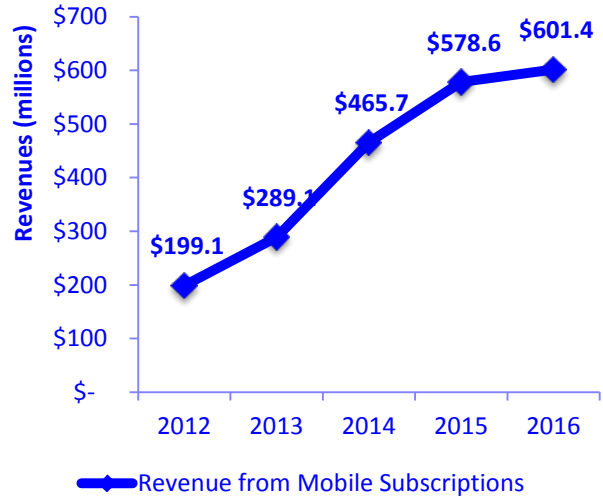


Figure 80. Total mobile Internet revenues 2012 - 2016

In 2016, prepaid and postpaid mobile Internet revenues totalled TT\$113.5 million and TT\$487.9 million, respectively. There was a marked decrease in prepaid mobile Internet revenues, while postpaid revenues continued an upward trend and accounted for 77.3% of total mobile Internet revenues. Figure 81 shows the prepaid and postpaid revenues earned from 2012 to 2016, while Figure 82 depicts the proportion of prepaid and postpaid mobile Internet revenues for 2016.

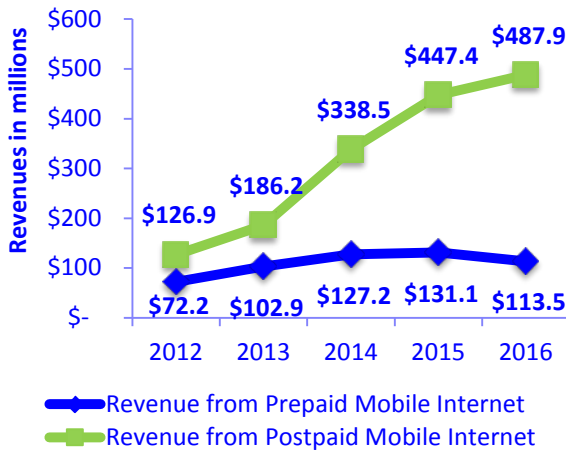


Figure 81. Prepaid and postpaid mobile Internet revenues 2012 - 2016

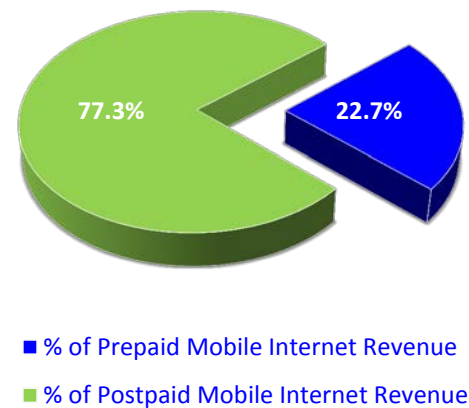


Figure 82. Percentage of prepaid and postpaid mobile Internet revenues in 2016

### 4.5.Fixed Internet Market Concentration

Using the Hirschman-Herfindahl Index (HHI), the Authority calculated the level of concentration in the fixed Internet market<sup>69</sup> of Trinidad and Tobago for 2016. The level of concentration at the end of the year stood at 4,599, decreasing from the 4,711 calculated in December 2015. This represented a 5.2% decrease over the previous year. As reflected in Figure 83, the level of concentration declined moderately during the year.

Overall, the annual fixed Internet HHI has been trending downward over the five-year period, with a marked decline being observed in 2016. Figure 84 illustrates this.

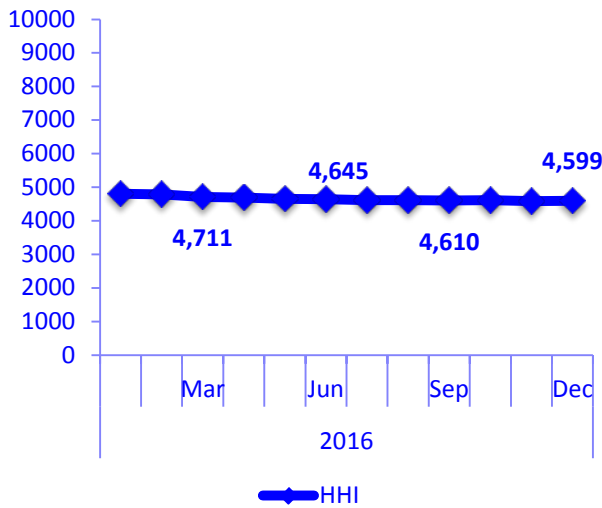


Figure 83. HHI of fixed Internet market January – December 2016

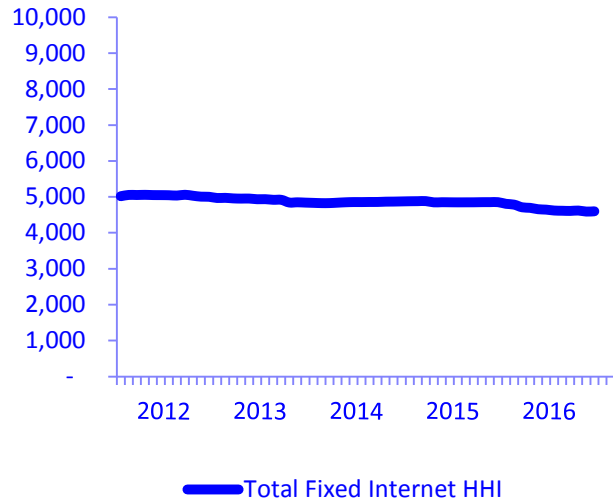


Figure 84. HHI of total fixed Internet services 2012 - 2016

### 4.6. Average Revenue per User (ARPU)

Average revenue per user<sup>70</sup> in the Internet market increased significantly, as the growth in total Internet revenues outweighed the growth in total Internet subscriptions in 2016. During the review period, customers with Internet (fixed and mobile) subscriptions spent an average of TT\$1,543 for Internet

<sup>69</sup> Market share based on the number of subscriptions was used in the calculation of the HHI.

<sup>70</sup> ARPU for fixed and mobile Internet subscriptions combined

services, which was an increase of \$87, or 6.1%, when compared to 2015. This increase is attributed to the significant rise in fixed Internet ARPU offsetting a minimal decrease in mobile Internet ARPU during the year.

Internet ARPU increased markedly by 26.0%, (TT\$714), with each subscription contributing approximately TT\$3,458<sup>71</sup> during 2016. For mobile Internet services, customers spent an average of TT\$850<sup>72</sup> in 2016 – a decrease of TT\$46, or 5.1%. Figures 85 and 86 show the ARPU trends for the individual categories over the last five years.

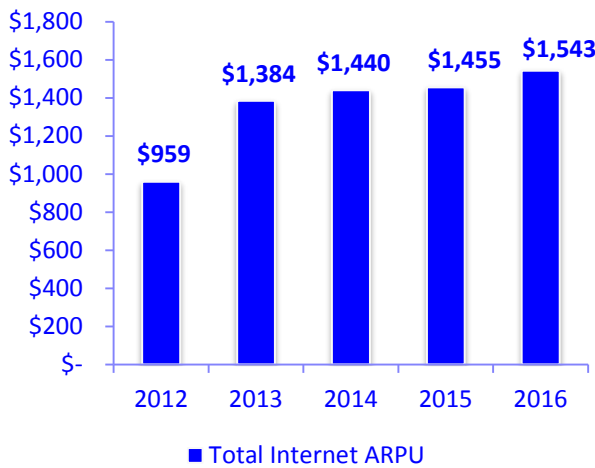


Figure 85. ARPU for total Internet services 2012 - 2016

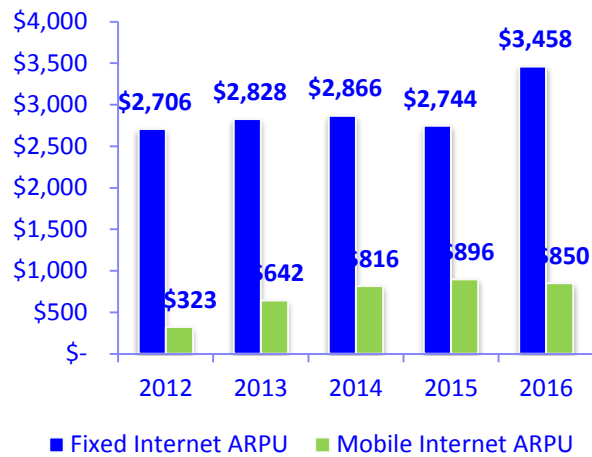


Figure 86. ARPU for fixed and mobile Internet services 2012 - 2016

<sup>71</sup> ARPU for fixed Internet services is measured by the revenue generated by one subscription. It is calculated as the total revenues from fixed Internet subscriptions divided by the total number of fixed Internet subscriptions.

<sup>72</sup> ARPU for mobile Internet services is calculated as the total revenues from prepaid and postpaid mobile subscriptions with Internet access divided by the total number of mobile prepaid and postpaid subscriptions with Internet access.

## **Box 2: ICT Insight 2016**

The move towards the implementation of the Sustainable Development Goals (SDGs) commenced in 2016. The ITU, through ICT solutions (and by extension their campaign #ICT4SDG), was earmarked to aid in facilitating the attainment of these goals across jurisdictions. Global trends in 2016 revealed the following:

### **1. The Digital Divide, 2016**

- a. Global statistics show that, as at year end 2016, close to one out of two persons (47%) was using the Internet. Mobile broadband penetration rates stood at 41% as the number of subscriptions in the developing world continues to grow at double-digit rates.
- b. By contrast, in least developed countries (LDCs), however:
  - only one out of seven persons were Internet users. 230 million households in China and 60 million households in India had Internet access compared to 20 million in the world's 48 LDCs.
  - Fixed broadband penetration is below 1% in Africa and in the LDCs.
- c. Herein lies the digital divide.

### **2. The World's Offline Population, 2016**

- a. Almost 53% of the world's population are not using the Internet.
- b. Global offline statistics are as follows: Africa - 75%, Europe - 21%, Asia & the Pacific - 58.1%, Arab States - 58.4%, the Americas and CIS regions - 33.3%.

### **3. Broadband Speeds**

- a. Early 2016 saw three out of four (75%) advertised fixed broadband subscriptions having speeds of 10Mbit/s or greater in developed countries. In the developing world, for similarly advertised speeds, two out of four (50%) were observed. However, in LDCs, only a mere 7% of fixed broadband subscriptions are advertised at speeds in excess of 10Mbit/s.

### **4. The Internet of Things (IoT)**

- a. Countries with the highest machine-to-machine (M2M) penetration rates are found to be amongst those that are industrialized with advanced economies.

Source: <http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2016.pdf>

2016 ANNUAL MARKET REPORT  
INTERNATIONAL VOICE MARKET



GROWTH 2015-2016

**INCOMING  
INTERNATIONAL  
VOICE**

**170.9M**  
MINUTES  
30.9% DECREASE

**\$216.8M**  
47.1% INCREASE

**OUTGOING  
INTERNATIONAL  
VOICE**

**202.7M**  
MINUTES  
1.8% DECREASE

**\$110.1M**  
13.2% INCREASE

**44.0%**  
increase over 2015

**\$331.4M**

INTERNATIONAL VOICE REVENUES

## **5. International Voice Market Review**

Eight concessionaires were authorised to provide international telecommunications services to the public in 2016, which included the provision of international voice services. These operators included:

1. Columbus Networks International (Trinidad) Limited
2. Digicel Trinidad and Tobago Limited
3. Green Dot Limited
4. Open Telecom Limited
5. Telecommunications Services of Trinidad and Tobago Limited
6. Lisa Communications Limited
7. Massy Communications Limited
8. Southern Caribbean Fibre Limited

Green Dot Limited, however, was not operational in the international voice market for the review period. In addition, the Authority did not receive any information from Open Telecommunications.

## 5.1. International Voice Traffic (Incoming and Outgoing Minutes)

International voice traffic includes minutes generated from both incoming international calls and outgoing international calls. Outgoing traffic volumes continued a downward trend, while the number of incoming international minutes increased in 2016. Down by 30.9% (76.3 million minutes), outgoing minutes were recorded at 170.9 million minutes in 2016, as shown in Figure 87. Following three years of consecutive decreases during 2013 to 2015, incoming international minutes increased minimally in 2016. Incoming minutes increased by 1.8% (3.6 million minutes) to be recorded at 202.7 million minutes in 2016, as shown in Figure 88.

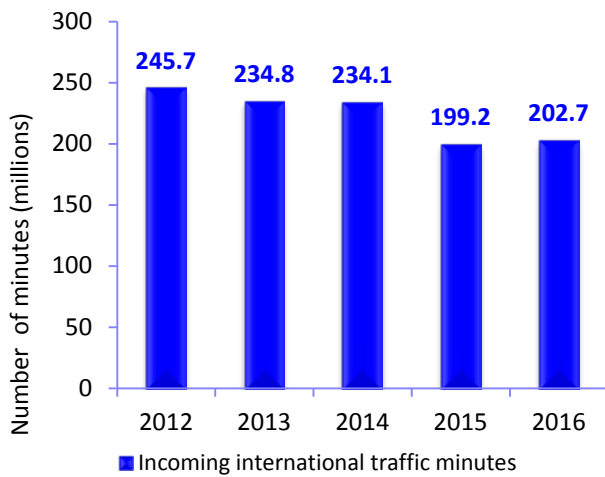


Figure 87. Incoming international traffic (minutes) 2012 - 2016

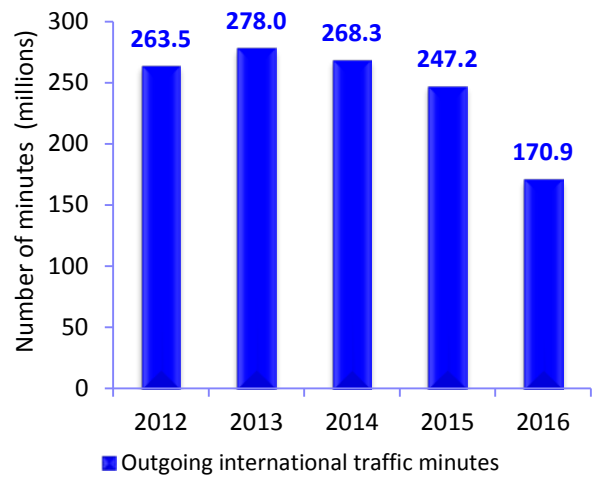


Figure 88. Outgoing international traffic (minutes) 2012 - 2016

In 2016, the proportion of minutes generated by incoming international calls surpassed that of outgoing international minutes. This is attributable to the increase in incoming international minutes coupled with the marked decline in outgoing international minutes. Figure 99 illustrates the proportion of incoming traffic compared to outgoing traffic over the past five years. Incoming minutes now account for 54.3% of total international minutes compared to the 44.6% generated in 2015. Outgoing traffic minutes accounted for 45.7% compared to the 55.4% generated in 2015.



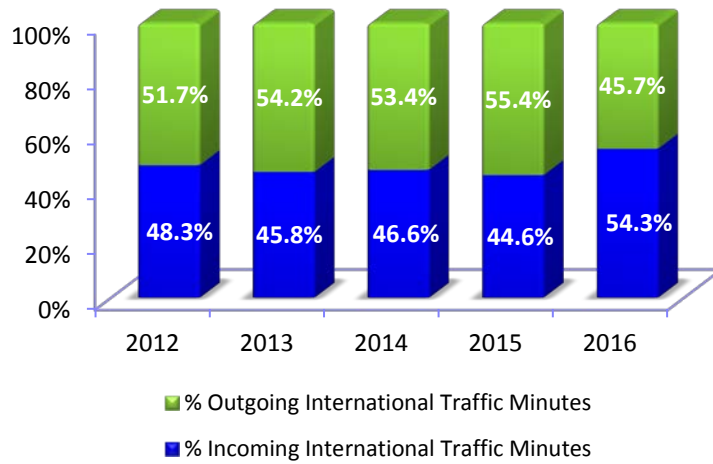


Figure 89 . Incoming and outgoing international traffic (minutes) 2012 - 2016

## 5.2. International Revenues

Gross revenues<sup>73</sup> generated by incoming and outgoing international telecommunications voice services increased sharply in 2016. Following a downward trend between 2012 and 2015, international revenues increased significantly by approximately \$101.2 million, or 44.0%, when compared to the previous year, recording \$331.4 million in 2016. Figure 90 depicts the trend in revenues generated by the international voice market from 2012 to 2016.



Figure 90 . Gross revenues from international (incoming and outgoing) voice services 2012 - 2016

<sup>73</sup> Gross revenues refer to the total amount of money earned from international calls. Outgoing international call revenues are revenues earned from residents making calls from the domestic network to persons abroad. Incoming international revenues are the settlement revenues earned from foreign exchange carriers who pay service providers to terminate calls locally.

It is noted that incoming international termination rates charged by domestic operators indicated a trend upwards over the 2015 to 2016 period. Specifically, international incoming settlement rates for the review period recorded an average increase of 29% and 27% in mobile and fixed network termination, respectively.

In reviewing the composition of international revenues, both incoming and outgoing international revenues increased in 2016. There was a marked increase in incoming revenues by \$69.4 million (47.1%) in comparison to 2015, while outgoing international revenues increased by \$12.8 million (13.2%). Incoming and outgoing international voice revenues over the past five years are illustrated in Figure 91 and 92, respectively.

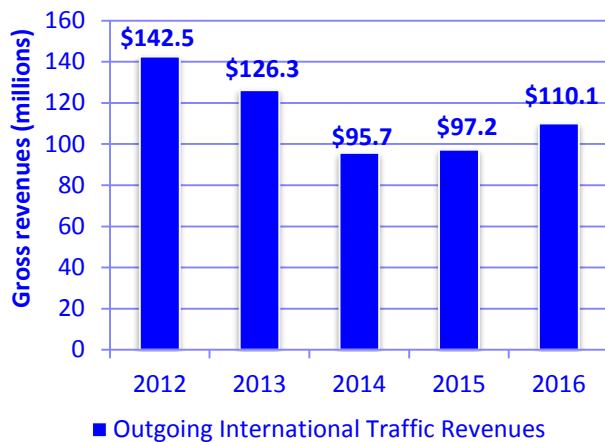


Figure 91. Revenues from outgoing international traffic (minutes) 2012 - 2016

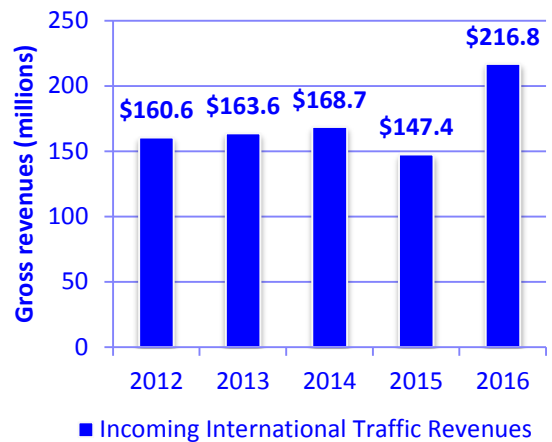


Figure 92. Revenues from incoming international traffic (minutes) 2012 - 2016

### 5.3. International Voice Market Concentration

The Authority calculated the level of concentration (HHI) for Trinidad and Tobago’s international voice market in terms of the number of international outgoing and incoming minutes. The HHI for the outgoing market stood at 4,335 at the end of the fourth quarter of 2016, while the HHI for the incoming market was 3,652. This indicates that the international outgoing market was more concentrated than the incoming market. During the period, there was minimal variation in the HHI values for outgoing

minutes. There was, however, a marked increase observed in the HHI for incoming minutes from the first quarter to the second quarter of 2015. Figure 93 shows the HHI values for outgoing and incoming minutes in the year 2016.

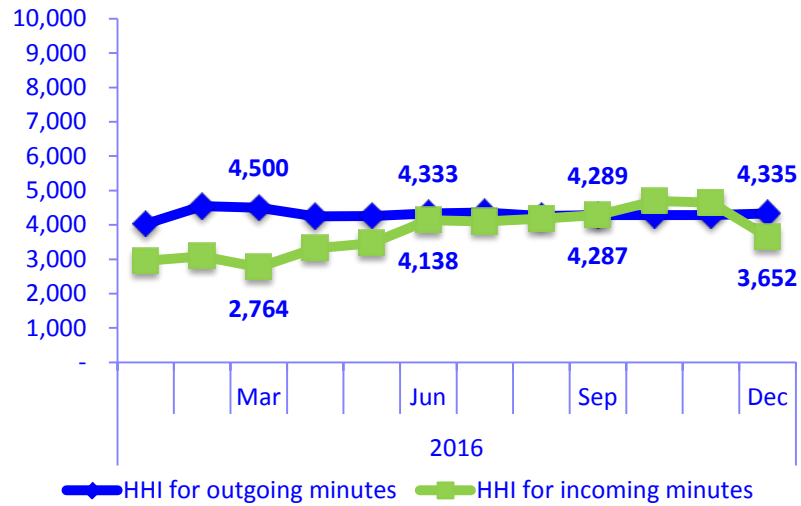


Figure 93. HHI of international outgoing and incoming minutes 2016



## Key Indicators for the Broadcast Market

GROWTH 2015-2016

**36.4%**  
decrease over 2015

**\$1.0B**

BROADCAST MARKET REVENUES

**\$167.0M**  
REVENUES  
**16.4% DECREASE**

FREE TO AIR  
**RADIO**

**\$718.4M**  
REVENUES  
**1.6% DECREASE**

**PAY  
TV**

**\$98.2M**  
REVENUES  
**36.4% DECREASE**

FREE TO AIR  
**TV**

## 6. Broadcasting Market Review

The number of operators in the broadcasting market decreased from 69 in 2015 to 66 in 2016. The overall decrease in the number of concessions granted stemmed from changes in all categories of concessions for broadcasting services, with the exception of subscription television. Table 6 outlines the number of concessions granted in the last five years.

**Table 6. Number of concessions in the broadcasting market 2012 - 2016**

Type of Broadcasting Concessions	Number of Concessions				
	2012	2013	2014	2015	2016
<b>Free-to-Air Television</b>	<b>9</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>
National	6	6	6	6	5
Major Territorial	3	3	2	1	1
<b>Subscription Television</b>	<b>10</b>	<b>11</b>	<b>13</b>	<b>14</b>	<b>14<sup>74</sup></b>
National	4	5	7	8	8
Major Territorial	1	1	1	1	1
Niche	4	4	4	4	4
Minor Territorial	1	1	1	1	1
<b>TV Broadcasting via Cable</b>	<b>2</b>	<b>6</b>	<b>7</b>	<b>10</b>	<b>9</b>
National	2	6	6	8	8
Major Territorial			1	2	1
<b>Free-to-Air Radio</b>	<b>38</b>	<b>39</b>	<b>39</b>	<b>38</b>	<b>37<sup>75</sup></b>
National	30	31	31	30	29
Major Territorial	6	6	6	6	6
Minor/Niche Territorial	2	2	2	2	2
<b>Total</b>	<b>59</b>	<b>65</b>	<b>67</b>	<b>69</b>	<b>66</b>

<sup>74</sup> Renewal concessions pending execution by the Minister: Independent Cable Network of Trinidad & Tobago Limited, Network Technologies Limited and Trico Industries Limited

<sup>75</sup> Renewal concessions pending execution by the Minister: Central Broadcasting Services Limited and Upward Trend Limited.

## **6.1.Free-to-Air Television Broadcasting Market**

In 2016, the market for free-to-air television (TV) broadcasting services comprised six operational concessionaires:

1. Advance Community Television Network Limited (ACTS 25)
2. CCN Television Limited (CCN TV6)
3. Caribbean New Media Group Limited (C TV)
4. Government Information Services Limited (GISL)
5. Guardian Media Limited (CNC3)
6. Parliament of the Republic of Trinidad and Tobago (Parliament Channel)

In addition to the above, the following concessionaires were authorised to provide television broadcasting services via cable:

1. Central Broadcasting Services Limited (Jaagriti TV)
2. Darut Tarbiyah
3. Environmental Management Authority
4. IBN Communications Company Limited
5. Ice Media Group Limited
6. Living Water Community
7. Sankhya Television Limited
8. Synergy Entertainment Network Limited
9. Video Associates Limited

At the time of publication of this report, the Environment Management Authority and Ice Media Group Limited had not yet launched services to the public.

The following section provides information on the performance of both the free-to-air and local television broadcasting services via cable. Thus, all references to free-to-air television below include free-to-air television broadcasting and television broadcasting services via cable.

### 6.1.1. Free-to-Air Television Revenues

Gross revenues from the free-to-air television market decreased significantly in 2016. Total gross revenues for this market amounted to TT\$98.2 million – a decrease of TT\$56.1 million, or 36.4%, when compared to the previous year. As illustrated in Figure 94, revenues from the free-to-air television broadcasting market fluctuated over the past five years.

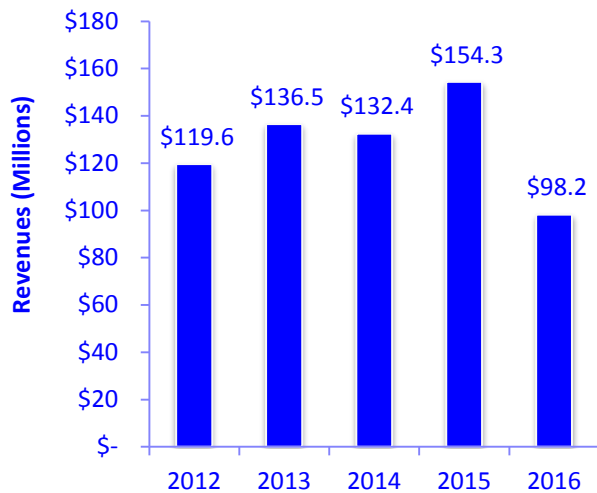


Figure 94. Annual gross revenues from free-to-air television 2012 -2016

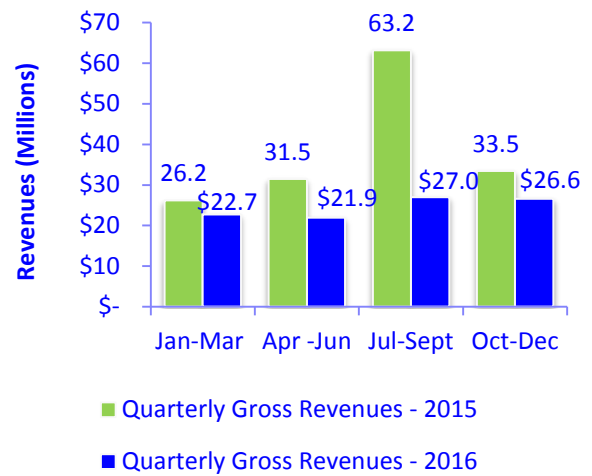


Figure 95. Quarterly gross revenues from free-to-air television 2015 and 2016

Quarterly gross revenues earned in the free-to-air television market for 2015 and 2016 are compared in Figure 95. It was observed that quarter-on-quarter decreases in revenues were relatively small with the exception of the second and third quarters. When comparing second quarter revenues, the free-to-air revenues in 2016 decreased from \$31.5 million in 2015 to \$21.9 million in 2016. This represents a 30.5% reduction in revenues generated in the second quarter of 2016 when compared to the same period in 2015. Revenues generated in the third quarter of 2016 also decreased significantly, from \$63.2 million in 2015 to \$27.0 million in 2016, representing a 57.3% decrease in revenues.



### 6.1.2. Market Concentration Free-to-air Television

Using the Hirschman-Herfindahl Index (HHI), the Authority calculated the level of concentration for the free-to-air television broadcasting market based on revenues generated in this market. The HHI for this market fluctuated during 2016, decreasing from 3,782 at the end of the first quarter to 3,667 in the second quarter. The HHI subsequently increased in the third and fourth quarters to record 3,769 and 3,905, respectively. The quarterly trend showed an upward movement overall in the HHI, notwithstanding the minor decrease observed in the third quarter. Figure 96 highlights the quarterly changes in the HHI for the free-to-air television broadcasting market during 2016.

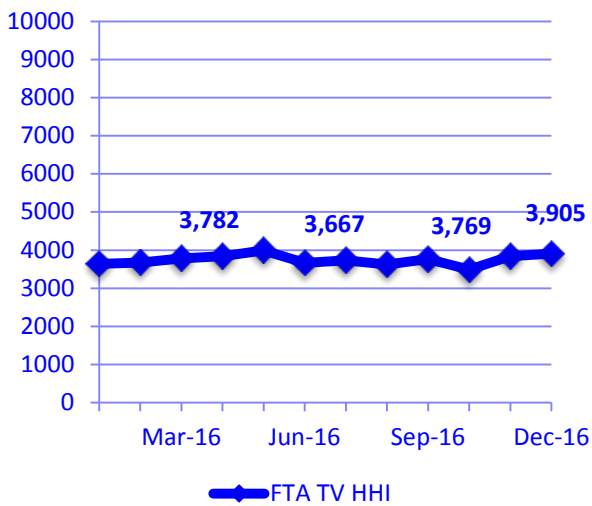


Figure 96. HHI for free-to-air television broadcasting market 2016

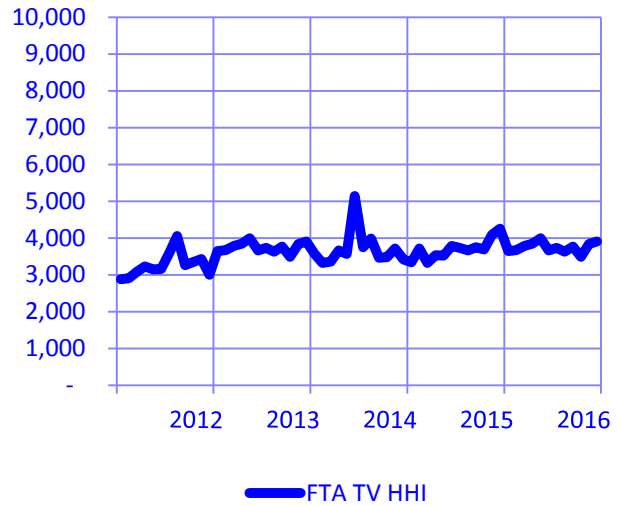


Figure 97. HHI for free-to-air television Market 2012 to 2016

Over the last five years, the HHI in the free-to-air television market experienced several marked fluctuations, with a general upward trend being observed. Figure 97 highlights the five-year trend in the HHI for the free-to-air television market.

## 6.2. Free-to-Air Radio Broadcasting Market

In 2016, the free-to-air radio broadcasting market consisted of 37 concessions. TRICO Industries was not operational during this period. It is noted that some concessionaries hold more than one concession and, as a result, operate more than one radio station.

### 6.2.1. Free-to-Air Radio Revenues

During 2016, the free-to-air radio broadcasting market earned TT\$167.0 million in gross revenues. When compared with the previous year's earnings of TT\$199.9 million, gross revenues generated in 2016 decreased by 16.5%. Revenue earnings in the free-to-air radio broadcasting market for the past five years are compared in Figure 98.

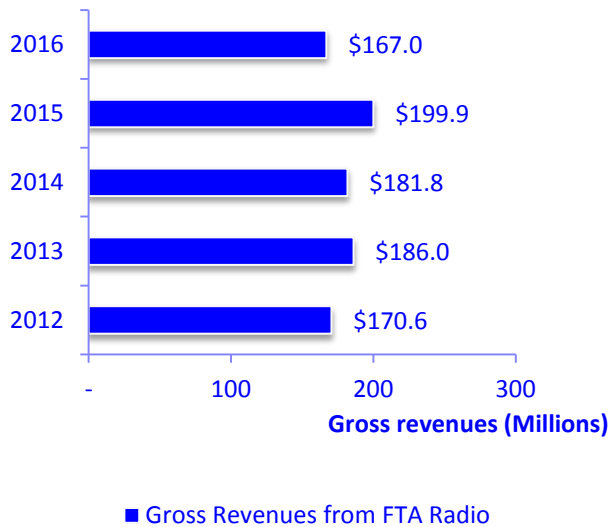


Figure 99. Gross revenues for free-to-air radio 2012 - 2016

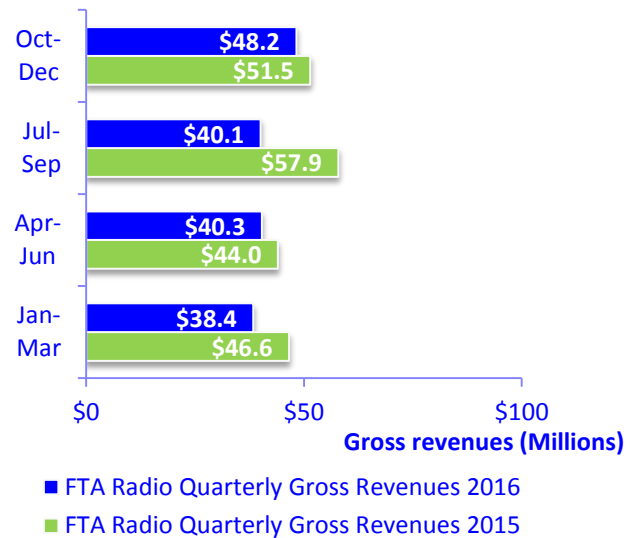


Figure 98. Quarterly revenues for free-to-air 2015 - 2016

Figure 99 highlights the quarterly gross revenues earned by concessionaires in the free-to-air radio broadcasting market during 2015 and 2016. When these quarterly revenues were compared, it was noted that revenues generated in each quarter of 2016 were less than those for the corresponding quarters of 2015. It was observed that these quarter-on-quarter decreases were relatively small with the exception of the third quarter. Revenues in the third quarter of 2016 were significantly lower when compared to the same period in 2015. Gross revenues in the free-to-air radio market generated TT\$40.1

million in the third quarter of 2016 – a 30.7% reduction in the revenues generated when compared to the third quarter of 2015.

### 6.2.2. Market Concentration Free-to-Air Radio

Using the revenues generated, the Authority calculated the HHI for the free-to-air radio market, based on both the number of concessions and the number of concessionaires in the market. Overall, the HHI results show that the level of concentration based on concessions decreased while the level of concentration based on concessionaires increased in the free-to-air radio market.

The HHI based on the number of concessionaires in the market increased from 1,484 in the first quarter to 1,549 in the second quarter. The HHI decreased in the remaining quarters of the year, recording 1,426 in the third quarter and 1,383 at the end of the fourth quarter of 2016. Overall, the level of concentration based on concessionaires in this market decreased, as Figure 100 illustrates.

On the other hand, the HHI based on the number of concessions in the market increased from 467 in the first quarter to 471 in the second quarter. The HHI subsequently decreased to 437 points in the third quarter and increased to 478 in the fourth quarter of 2016. The level of concentration in the free-to-air market based on concessions increased overall in 2016, as Figure 100 illustrates.

Over the last five years, HHI based on concessionaires in the free-to-air radio broadcasting market experienced several fluctuations, whereas the HHI based on concessions has been relatively stable over the period, as Figure 101 illustrates.

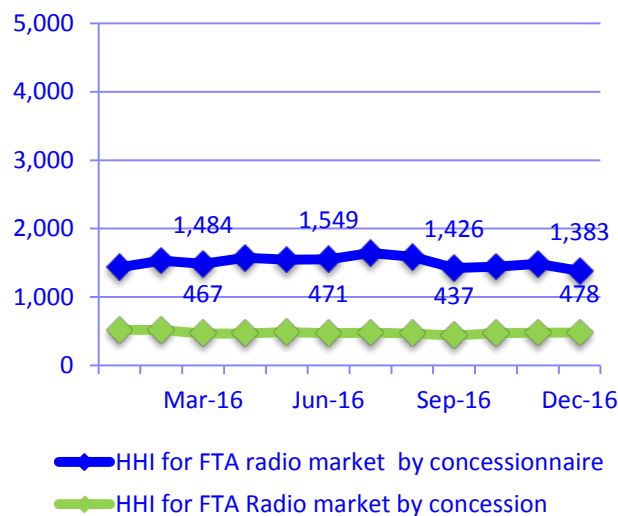


Figure 100. HHI in the free-to-air radio broadcasting market 2016

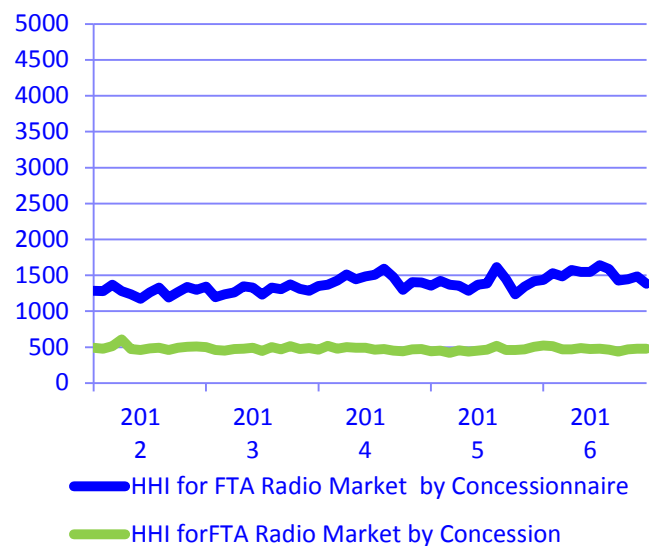


Figure 101. HHI in the free-to-air radio broadcasting market 2012 - 2016

### 6.3. Pay Television (Subscription TV) Broadcasting Market

For the 2016 period, the pay TV market comprised 14 authorised service providers, 13 of which were operational as at December 2016. These operators provided pay TV services to various coverage areas within Trinidad and Tobago, as listed in Table 7. Of these 13 operators, five used analogue technology to provide their services, six used digital and two used both analogue and digital.

Table 7. List of operational pay TV providers in 2016

Name of Provider	Type of Service	Authorised Coverage Area
<b>Columbus Communications Trinidad Limited</b>	Digital Pay TV (wired)	National
<b>Digicel Trinidad Limited</b>	Digital Pay TV (wired)	
<b>DirecTV Trinidad Limited</b>	Digital Pay TV (satellite)	
<b>Green Dot Limited</b>	Digital Pay TV (wireless terrestrial)	
<b>Massy Communications Limited</b>	Digital Pay TV (wired)	
<b>Telecommunications Services of Trinidad and Tobago Limited</b>	Digital Pay TV (satellite)	
<b>RVR International Limited</b>	Analogue Pay TV (wired)	
<b>Independent Cable Network of Trinidad and Tobago (ICNTT)</b>	Analogue Pay TV (wired)	Major Territorial
<b>Network Technologies Limited</b>	Analogue Pay TV (wired)	Niche - Mayaro and Guayaguayare
<b>Air Link Communications Limited</b>	Analogue and Digital Pay TV (wired)	Niche - Mayaro and Rio Claro
<b>Diversified Technologies Limited</b>	Analogue Pay TV (wired)	Niche - Penal and Environs
<b>Santa Flora Cable Network Limited</b>	Analogue Pay TV (wired)	Niche – Santa Flora and Environs
<b>TRICO Industries Limited</b>	Analogue and Digital Pay TV (wired)	Minor Territorial

#### 6.3.1. Pay TV (Subscription TV) Subscriptions

In order to distinguish their products and services, each operator in the pay TV market offered a different bundle of channels as part of their basic package. Customers were first required to subscribe to this basic package before subscribing to any additional packages, including premium packages offered by the operator.

The number of subscriptions in the pay TV market decreased from 232,800 subscriptions in 2015 to 206,700 in 2016. This result is in contrast to the trend observed in previous years. Following a reduced growth rate in 2015 relative to the strong growth rates observed in 2013 and 2014, the pay TV market contracted in 2016 by 11.2%. Figure 102 illustrates the trend in the number of subscriptions in the pay TV market for the period 2012 to 2016.

In 2015, digital subscriptions continued to comprise most of the pay TV market, as shown in Figure 103; analogue subscriptions represented 4.0% (8,300) while digital subscriptions contributed 96.0% (198,300).

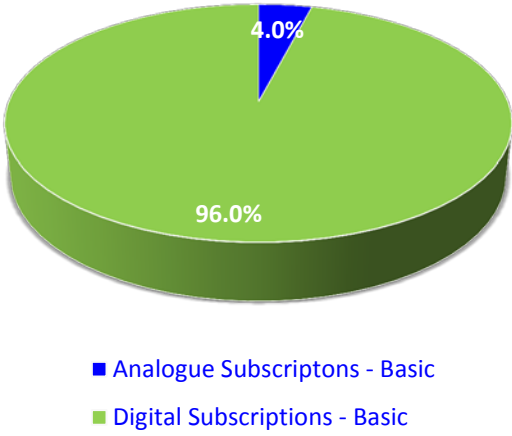
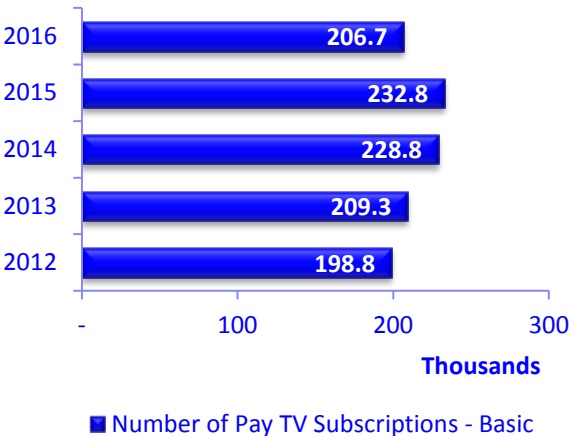


Figure 103. Number of pay TV subscriptions (basic) 2012 - 2016

Figure 102. Pay TV subscriptions (basic package subscriptions) by platform 2016

Analogue subscriptions decreased over the past five years while digital subscriptions increased from 2012 to 2015 then declined considerably in 2016. There were 8,300 and 198,300 analogue and digital pay TV subscriptions, respectively, as at December 2016. Analogue subscriptions decreased by 2,200 (21.0%) from 2015 to 2016, whereas digital subscriptions decreased by 26,100 (11.2%) during the same review period. Figure 104 shows the annual trend in the number of subscriptions by platform, while Table 8 highlights the change in subscribership over the past two years.

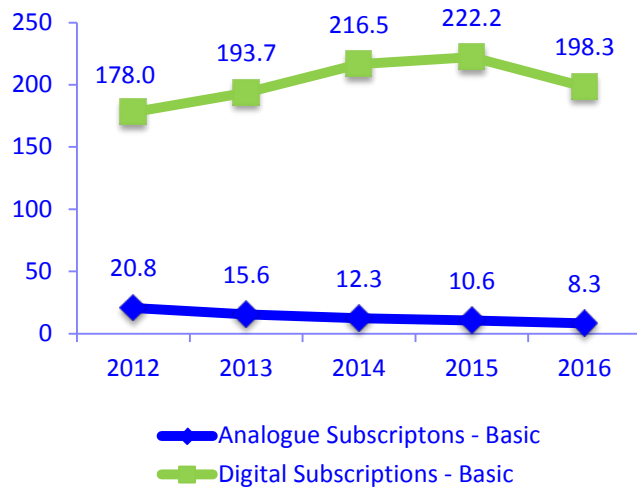


Figure 104. Pay TV subscriptions by platform 2012 - 2016

Table 8. Growth rates of pay TV subscriptions by platform 2016

Type of Basic Pay TV	Change in subscriptions between 2015 and 2016 ('000)	Percentage change between 2015 and 2016
Analogue	-2.2	-21.0%
Digital	-26.1	11.2%

### 6.3.2. Premium Package Subscriptions

A premium package subscription refers to a subscription to an additional channel or group of channels offered by the pay TV operator in addition to the basic package. A premium package subscriber may subscribe to more than one premium package. As at December 2016, there were approximately 118,900 premium package subscriptions, an increase of 2,200 subscriptions (1.9%) over the 2015 period. As illustrated in Figure 105, the demand for premium packages has grown steadily from 2012 to 2016.

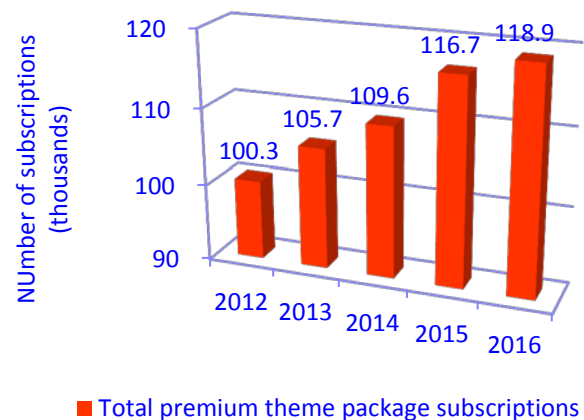


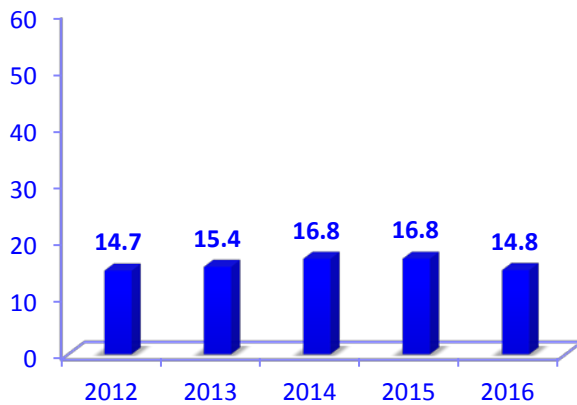
Figure 105. Number of premium package subscriptions 2012 – 2016

### 6.3.3. Pay TV Penetration

As at December 2016, the penetration of pay TV services (the number of pay TV subscriptions per 100 inhabitants) was 14.8. This means that approximately 15 out of every 100 persons subscribed to these services in 2016. This represents a decrease by two percentage points in the pay TV penetration rate when compared to 2015.

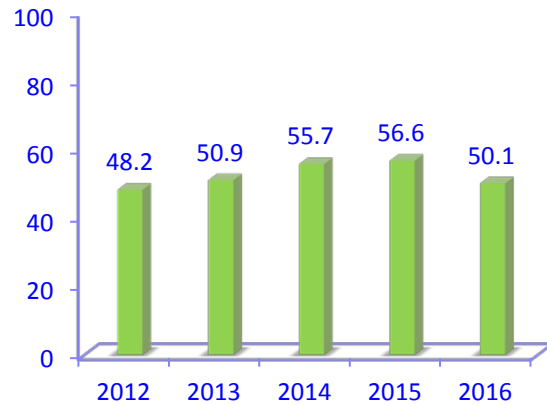
Pay TV household penetration (the number of subscriptions per 100 households) also decreased, from 56.6 in 2015 to 50.1 in 2016. This means that approximately 50 out of every 100 households subscribed to pay TV services in 2016.

Figures 106 and 107 highlight the trend in pay TV penetration over the last five years.



■ Pay TV Penetration per 100 individuals

Figure 106. Pay TV penetration 2012 - 2016



■ Pay TV Penetration per 100 households

Figure 107. Pay TV household penetration 2012 - 2016

### 6.3.4. Pay TV Broadcasting Revenues

Following four years of consecutive growth from 2012 to 2015, revenues from pay TV services decreased in 2016. In 2016, this market generated \$718.4 million in revenues – a 1.6% decrease over the previous period. The majority of these revenues were generated from digital pay TV services, accounting for 97.1% (TT\$697.9 million). Analogue pay TV subscriptions contributed 2.9% (TT\$20.5 million) to total revenues. Over the past five years, revenue growth in this market has trended upwards, as shown in Figure 108. The percentage breakdown of pay TV revenues by platform is highlighted in Figure 109.

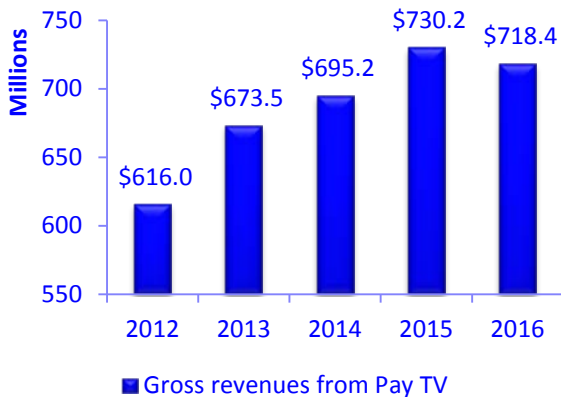


Figure 108. Pay TV gross revenues 2012 - 2016

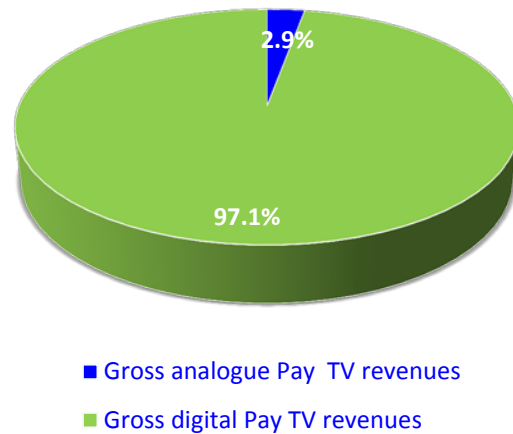


Figure 109. Breakdown of pay TV revenues 2016



### 6.3.5. Pay TV Market Concentration

Using the Hirschman-Herfindahl Index (HHI), the Authority calculated the level of concentration for the pay TV market. During 2016, the level of concentration in the pay TV market decreased steadily.

Recording 4,410 at the end of the first quarter of 2016, the HHI decreased consistently during each subsequent quarter and ended the year at 3,950, as Figure 110 illustrates. This marked decline in the level of concentration in this market is attributable in part to the increase in the number of operators providing pay TV services. In particular, two new concessionaires entered this market in 2016.

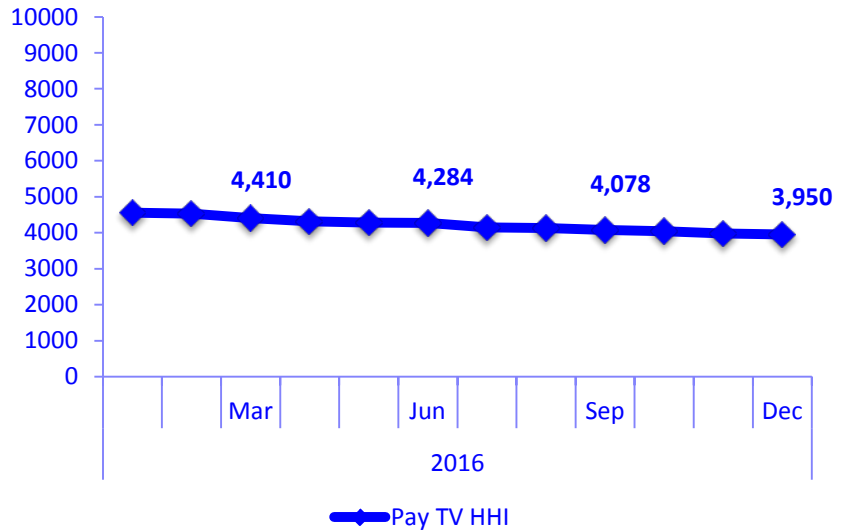


Figure 110. HHI for pay TV market January – December 2016

Overall, the HHI in the pay TV market has been decreasing over the past five years, with several minor fluctuations being observed. In 2016, the average HHI for this market was 4,225, showing an average decrease of 9.9% when compared to the average HHI in 2015.

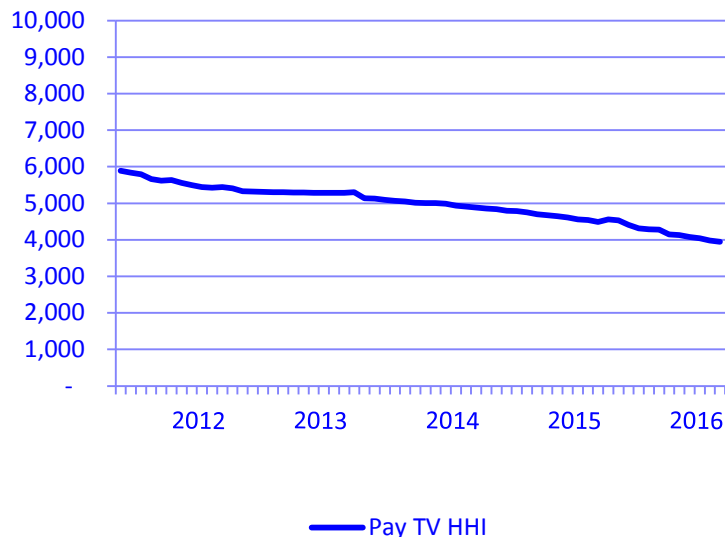


Figure 111. HHI for pay TV market 2012 - 2016

### 6.3.6. Pay TV Annual Average Revenue per User (ARPU)

On average, each customer spent TT\$3,281 for pay TV services in 2016 compared to the TT\$3,174 calculated in 2015. This represents a minor increase of TT\$107.5, or 3.4%, in the annual average revenue per user (ARPU). Figure 112 below highlights the changes in ARPU over the last five years.

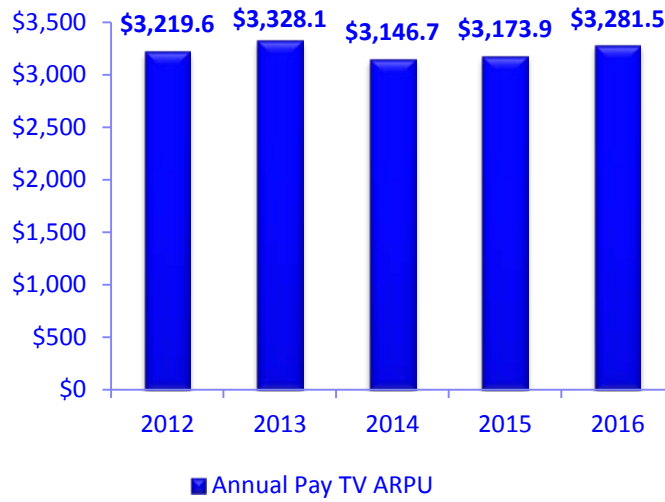


Figure 112. Pay TV average revenue per user (ARPU) 2012 - 2016

## Appendix I: Domestic Telecommunications Statistics

Table 9. Domestic Telecommunications Statistics

		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
General	Population (millions)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4
	GDP per capita (US \$ millions) <sup>76</sup>	8,246	8,470	11,560	14,576	16,683	21,408	15,067	15,924	17,042	19,018	27,855	28,183	19,311	<b>16,637</b>
	Telecom revenue (US \$ million)	346.3	357.0	379.3	497.9	521.3	775.3	685.2	713.1	737.0	834	864.4	881.5	876.7	<b>836.0</b>
	Total telephone subscriptions ('000s)	683.3	849.3	1,246	1,844	1,817	2,120.9	2,149.6	2,187.6	2,117.7	2,169.8	2,235.2	2,270.4	2,393.2	<b>2,437.1</b>
	Total telephone penetration	52.4	65.0	95.2	140.8	138.7	163.2.1	164.3	167.2	160.7	163.8	168.7	171.4	180.7	<b>184.0</b>
	Average revenue per user <sup>77</sup> (ARPU) US \$	506.8	420.3	304.3	239.5	286.9	318.9	326.0	340.8	348.4	384.4	386.7	388.3	366.3	<b>342.9</b>
Fixed Voice	Fixed Voice subscriptions('000s)	317.3	318.9	322.3	325.5	307.3	314.8	303.2	293.3	291.5	286.1	291.3	289.8	269.8	<b>271.9</b>
	Fixed Voice penetration	24.4	24.4	24.6	25.1	23.6	24.1	23.2	22.3	22.0	21.6	21.7	21.7	20.0	<b>20.1</b>
	Fixed Voice household penetration	-	-	-	77.4	71.5	73.3	70.1	67.5	67.1	55.3	56.2	56.6	52.5	<b>53.7</b>
	Average revenue per user (ARPU) US \$	267.9	254.8	272.1	277.9	422.4	486.5	403.5	411.5	417.3	430.5	413.1	410.7	424.2	<b>416.4</b>
	Fixed Voice Subscription growth (%)	<b>2.9</b>	<b>0.5</b>	<b>1.1</b>	<b>1.0</b>	<b>-5.6</b>	<b>2.4</b>	<b>-3.7</b>	<b>-3.3</b>	<b>-0.6</b>	<b>-1.9</b>	<b>1.6</b>	<b>-0.7</b>	<b>-6.3</b>	<b>0.8</b>

<sup>76</sup> GDP per capita is recorded at current market prices.

<sup>77</sup> ARPU is calculated as the total revenues generated from the service divided by the total number of subscriptions to the service.

		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Mobile	Mobile subscriptions ('000s)	366.0	530.0	924.0	1,518.8	1,511.1	1,806.1	1,846.3	1,894.2	1,826.2	1,883.7	1,943.9	1980.6	2,123.4	<b>2,165.8</b>
	Mobile penetration	28.1	40.6	70.5	117.0	115.9	138.0	141.1	143.8	138.6	142.2	146.4	149.1	157.3	<b>160.0</b>
	Average revenue per user (ARPU) US \$	214.0	204.0	153.0	159.0	207.0	197.0	170.0	164.0	173.0	188.0	189.0	174.5	147.1	<b>136.8</b>
	Mobile subscription growth (%)	29.0	45.0	74.0	64.0	-0.6	19.6	2.2	2.6	-3.6	3.1	3.2	1.9	7.2	<b>2.0</b>
Internet	Total Internet subscriptions <sup>78</sup> ('000s)	44.2	55.2	62.3	82.1	93.3	129.6	238.3	309.9	325.2	646.7	682.3	820.1	925.2	<b>962.9</b>
	Fixed Internet subscriptions <sup>79</sup> ('000s)	44.2	55.2	62.3	82.1	82.6	114.1	145.0	171.1	192.0	224.2	231.7	249.6	279.8	<b>255.6</b>
	Mobile Internet subscriptions <sup>80</sup> ('000s)	-	-	-	-	10.7	15.6	93.3	138.8	133.2	422.5 <sup>81</sup>	450.6	570.5	645.4	<b>707.3</b>
	Fixed Broadband subscriptions <sup>82</sup> ('000s)	-	-	14.0	21.1	35.5	85.4	130.1	162.9	187.9	221.3	229.6	248.1	278.5	<b>255.6</b>
	Fixed Internet users <sup>83</sup> ('000s)	153.0	160.0	185.0	198.4	429.0	456.0	579.8	639.3	724.5	685.6	704.3	757.8	851.1	<b>775.1</b>
	Fixed Internet penetration	3.4	4.2	5.5	5.7	6.3	8.7	11.1	13.0	14.6	16.9	17.4	18.7	21.1	<b>18.9</b>
	Mobile Internet penetration	-	-	-	-	0.8	1.2	7.1	10.5	10.1	31.9	33.9	43.0	47.8	<b>52.2</b>
	Fixed Internet users penetration	11.7	12.2	14.1	15.2	32.8	34.9	44.3	48.5	55.0	51.8	53.0	57.1	63.1	<b>57.2</b>
	Fixed Internet household penetration	-	-	-	-	4.9	21.4	40.1	49.6	52.8	52.1	54.2	58.3	65.4	<b>59.6</b>
	Average revenue per user (ARPU) US \$ for fixed Internet	-	-	-	392.3	552.3	491.8	433.2	409.9	431.9	422.8	442.5	448.6	430.3	<b>542.2</b>
<b>Fixed Internet subscription growth (%)</b>	<b>10.8</b>	<b>24.8</b>	<b>12.9</b>	<b>17.7</b>	<b>12.8</b>	<b>38.9</b>	<b>27.1</b>	<b>18.0</b>	<b>12.2</b>	<b>16.7</b>	<b>3.3</b>	<b>7.8</b>	<b>12.1</b>	<b>8.6</b>	

<sup>78</sup> Total Internet subscriptions is the sum of fixed Internet subscriptions and mobile postpaid Internet subscriptions.

<sup>79</sup> Fixed Internet subscriptions is the total number of subscriptions with fixed wired or fixed wireless Internet access.

<sup>80</sup> Mobile Internet subscriptions from 2003 to 2011 include postpaid mobile customers who subscribe to monthly Internet airtime and who are billed accordingly.

<sup>81</sup> Mobile Internet subscriptions from 2012 to 2016 includes prepaid and postpaid mobile Internet users.

<sup>82</sup> Fixed Broadband subscriptions is the number of Internet subscribers with access to download speeds of 256kbps or above.

<sup>83</sup> Fixed Internet users are the number of persons who regularly use fixed Internet services.

		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
International Traffic	International -Outgoing (min. million)	91.9	117.2	160.2	203.2	265.9	304.3	259.2	282.9	274.5	263.5	277.9	268.3	247.2	<b>170.9</b>
	International -Incoming (min. million)	328.4	379.2	337.8	296.5	323.0	375.4	399.4	358.5	256.2	245.7	234.8	234.1	199.2	<b>202.7</b>
	Inbound/Outbound int'l traffic ratio	3.6	3.2	2.1	1.5	1.2	1.2	1.5	1.3	0.93	0.93	0.84	0.87	0.81	<b>1.2</b>
Pay TV	Pay TV subscriptions ('000s)	92.5	103.4	131.6	139.8	151.2	163.0	179.6	178.9	187.8	198.7	209.3	228.8	232.8	<b>206.7</b>
	Pay TV penetration	7.1	7.9	10.1	10.7	11.6	14.2	13.7	13.6	14.1	14.8	15.4	16.8	16.8	<b>15.3</b>
	Subscription TV household penetration	27.0	30.1	38.3	40.7	44.0	47.5	52.3	52.1	54.0	48.2	50.9	55.7	56.6	<b>50.1</b>
	Average revenue per user (ARPU) US \$	380.9	376.5	337.3	318.9	344.9	337.0	404.9	431.2	468.6	505.5	520.8	493.2	497.7	<b>514.5</b>
	Pay TV subscription growth (%)	<b>12.3</b>	<b>11.7</b>	<b>27.3</b>	<b>6.2</b>	<b>8.1</b>	<b>12.5</b>	<b>10.2</b>	<b>-0.4</b>	<b>5.0</b>	<b>5.8</b>	<b>5.3</b>	<b>9.3</b>	<b>1.7</b>	<b>-11.2</b>

## Appendix II: List of Concessionaires as at December 2016

Concessions Granted (1 July 2004 – 31 December 2016)

Concessionaire	Network and/or Service	Territory	Type	Term	Date of Grant	Expiry Date	Frequency/ Spectrum
<b>International Telecommunications</b>							
Columbus Networks International (Trinidad) Limited	Public International Telecommunications Services via a Public International Telecommunications Network	N/A	Type 2	10 Years	16 February 2007	15 February 2017	N/A
Digicel Trinidad and Tobago Limited	Public International Telecommunications Services via a Public International Telecommunications Network	N/A	Type 2	10 Years	31 December 2015	30 December 2025	N/A
Green Dot Limited	Public International Telecommunications Services via a Public International Telecommunications Network	N/A	Type 2	10 Years	1 October 2007	30 September 2017	N/A
Open Telecom Limited	Public International Telecommunications Services via a Public International Telecommunications Network	N/A	Type 2	10 Years	5 January 2016	4 January 2026	N/A
Telecommunications Services of Trinidad and Tobago Limited	Public International Telecommunications Services via a Public International Telecommunications Network	N/A	Type 2	10 Years	30 December 2015	29 December 2025	N/A
<b>Free-to-Air Radio Broadcasting</b>							
British Broadcasting Corporation	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	15 June 2007	14 June 2017	98.7FM
Caribbean Broadcasting Systems and Services Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	91.5 FM
Caribbean New Media Group Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	91.1 FM
Caribbean New Media Group Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	99.1 FM
Caribbean New Media Group Limited	Broadcasting Services (Free to Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	100.1 FM
Central Radio FM90 Limited	Broadcasting Services (Free to Air FM)	Major Territorial	Type 5	10 Years	23 February 2016	22 February 2026	90.5 FM

Concessionaire	Network And/ Or Service	Territory	Type	Term	Date Of Grant	Expiry Date	Frequency/ Spectrum
<b>Free-To-Air Radio Broadcasting</b>							
Family Focus Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	98.1 FM
Gem Radio Five Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	93.5 FM
<sup>2</sup> Gem Radio Five Limited ( <i>formerly Citadel Limited</i> )	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	95.5 FM
<sup>2</sup> Gem Radio Five Limited ( <i>formerly Inner City Broadcasting Company Limited</i> )	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	107.1 FM
<sup>2</sup> Gem Radio Five Limited ( <i>formerly Sidewalk Radio Limited</i> )	Broadcasting Services (Free-to-Air FM)	Major Territorial	Type 5	10 Years	23 February 2016	22 February 2026	92.3 FM
<sup>2</sup> Gem Radio Five Limited ( <i>formerly The Q Corporation Limited</i> )	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	96.7 FM
Guardian Media Limited ( <i>formerly Trinidad Publishing Company Limited</i> )	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	95.1 FM
Guardian Media Limited ( <i>formerly Trinidad Publishing Company Limited</i> )	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	105.1 FM
Guardian Media Limited ( <i>formerly Trinidad Publishing Company Limited</i> )	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	106.1 FM
Guardian Media Limited ( <i>formerly Trinidad Publishing Company Limited</i> )	Broadcasting Services (Free-to-Air FM)	Major Territorial	Type 5	10 Years	23 February 2016	22 February 2026	106.5 FM
<sup>1</sup> Guardian Media Limited ( <i>formerly Wonderland Entertainment Limited</i> )	Broadcasting Services (Free-to-Air FM)	Major Territorial	Type 5	10 Years	23 February 2016	22 February 2026	100.5 FM
<sup>5</sup> Guardian Media Limited ( <i>formerly 21st Century Arts and Entertainment Limited</i> )	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	99.5 FM
Heritage Communications Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	101.7 FM

Concessionaire	Network And/ Or Service	Territory	Type	Term	Date Of Grant	Expiry Date	Frequency/ Spectrum
<b>Free-To-Air Radio Broadcasting</b>							
Kaisoca Productions Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	92.7 FM
KMP Music Group Limited ( <i>formerly Kenny Phillips</i> )	Broadcasting Services (Free-to-Air FM)	Major Territorial	Type 5	10 Years	23 February 2016	22 February 2026	90.1 FM
Parliament of the Republic of Trinidad and Tobago	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	1 March 2007	28 February 2017	105.5 FM
PBCT Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	104.7 FM
Radio News Network	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	104.1 FM
Radio Vision Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	102.1 FM
Superior Infinite Productions Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	94.1 FM
Telemedia Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	97.1 FM
Toco Multicultural Foundation for Integrated Development ( <i>formerly Trinidad and Tobago Citizen's Agenda Network</i> )	Broadcasting Services (Free-to-Air FM)	Minor Territorial/Niche - Toco and environs	Type 5	10 Years	1 March 2016	28 February 2026	106.7 FM
Trico Industries Limited	Broadcasting Services (Free-to-Air FM)	Minor Territorial	Type 5	10 Years	11 October 2012	10 October 2022	89.5 FM
Trinibashment Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	91.9 FM
Trinidad and Tobago Radio Network Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	96.1 FM
<sup>3</sup> Trinidad and Tobago Radio Network Limited ( <i>formerly Marcel Mahabir</i> )	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	107.7 FM



Concessionaire	Network And/ Or Service	Territory	Type	Term	Date Of Grant	Expiry Date	Frequency/ Spectrum
<b>FREE-TO-AIR RADIO BROADCASTING</b>							
<sup>4</sup> Trinidad and Tobago Radio Network Limited ( <i>formerly VL Communications Limited</i> )	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	94.7 FM
United Cinemas Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2016	22 February 2026	103.5 FM
Winfield Aleong Broadcasting Company Limited	Broadcasting Services (Free-to-Air FM)	Major Territorial	Type 5	10 Years	23 February 2016	22 February 2026	103.1 FM
<b>Mobile Telecommunications</b>							
Digicel Trinidad and Tobago Limited	Public Domestic Mobile Telecommunications Services over a Public Domestic Mobile Telecommunications Network	National	Type 2	10 Years	31 December 2015	30 December 2025	N/A
Telecommunications Services of Trinidad and Tobago Limited	Public Domestic Mobile Telecommunications Services over a Public Domestic Mobile Telecommunications Network	National	Type 2	10 Years	30 December 2015	29 December 2025	N/A
<b>Free-To-Air Television Broadcasting</b>							
Advance Community Television Network Limited	Broadcasting Services (Free-to-Air Television)	Major Territorial	Type 5	10 Years	1 March 2016	28 February 2026	UHF 25
CCN Television Limited	Broadcasting Services (Free-to-Air Television)	National	Type 5	10 Years	1 March 2016	28 February 2026	VHF 6, UHF 18, 19
Caribbean New Media Group Limited	Broadcasting Services (Free-to-Air Television)	National	Type 5	10 Years	23 February 2016	22 February 2026	VHF 9, UHF 13, 20
Government Information Services Limited	Broadcasting Services (Free-to-Air Television)	National	Type 5	10 Years	12 January 2010	11 January 2020	VHF 4, UHF 16
Guardian Media Limited [ <i>formerly Trinidad Publishing Company Limited</i> ] (CNC3)	Broadcasting Services (Free-to-Air Television)	National	Type 5	10 Years	14 April 2008	13 April 2018	VHF 12, UHF 14, 22
The Parliament of the Republic of Trinidad and Tobago	Broadcasting Services (Free-to-Air Television)	National	Type 5	10 Years	23 October 2008	22 October 2018	VHF 11, UHF 26, 29

Concessionaire	Network And/ Or Service	Territory	Type	Term	Date Of Grant	Expiry Date	Frequency/ Spectrum
<b>Subscription Television Broadcasting</b>							
Air Link Communications	Subscription Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	Niche - Princes Town and Environs	Type 5	10 Years	1 May 2010	30 April 2020	N/A
Columbus Communications Trinidad Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	5 January 2016	4 January 2026	N/A
Digicel Trinidad and Tobago Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	18 March 2015	17 March 2025	N/A
DirecTV Trinidad Limited	Subscription Broadcasting Service (direct from Satellite only)	National	Type 5	10 Years	28 February 2016	27 February 2026	N/A
Diversified Technologies Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	Niche - Penal and Environs	Type 5	10 Years	11 October 2012	10 October 2022	N/A
Green Dot Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	11 July 2008	10 July 2018	N/A
Massy Communications Limited (formerly 360 Communications Limited)	Subscription Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	24 August 2014	23 August 2024	N/A
Open Telecom Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	30 October 2013	29 October 2023	N/A
RVR International Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	20 May 2014	19 May 2024	N/A
Santa Flora Cable Network Ltd	Subscription Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	Niche - Santa Flora and Environs	Type 5	10 years	15 May 2014	14 May 2024	N/A
Telecommunications Services of Trinidad and Tobago Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	30 December 2015	29 December 2025	N/A

Concessionaire	Network And/ Or Service	Territory	Type	Term	Date Of Grant	Expiry Date	Frequency/ Spectrum
<b>Television Broadcasting Service Via Cable</b>							
Central Broadcasting Services Limited	Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	18 March 2013	17 March 2023	N/A
Darut Tarbiyah	Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	7 May 2013	6th May 2023	N/A
Environmental Management Authority	Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	3 September 2015	2 September 2025	N/A
IBN Communications Company Limited	Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	11 October 2012	10 October 2022	N/A
Ice Media Group Limited	Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	12 August 2015	11 August 2025	N/A
Video Associates Limited	Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	23 February 2016	22 February 2026	N/A
Living Water Community	Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	7 May 2013	6th May 2023	N/A
Sankhya Television Limited	Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5	10 Years	7 May 2013	6th May 2023	N/A
Synergy Entertainment Network Limited	Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	Major Territorial	Type 5	10 Years	14 April 2008	13 April 2018	N/A
<b>Fixed Telecommunications</b>							
Air Link Communications	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wired)	Niche - Princes Town and Environs	Type 2	10 Years	1 May 2010	30 April 2020	N/A
Columbus Communications Trinidad Limited	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wired)	National	Type 2	10 Years	5 January 2016	4 January 2026	N/A
Digicel (Trinidad and Tobago) Limited	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wireless)	National	Type 2	10 Years	1 May 2010	30 April 2020	N/A
Digicel (Trinidad and Tobago) Limited	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wired)	National	Type 2	10 Years	3 October 2014	2 October 2024	N/A

Concessionaire	Network And/ Or Service	Territory	Type	Term	Date Of Grant	Expiry Date	Frequency/ Spectrum
<b>Fixed Telecommunications</b>							
Diversified Technologies Limited	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wired)	Niche - Penal and Environs	Type 2	10 Years	11 October 2012	10 October 2022	N/A
Green Dot Limited	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wireless)	National	Type 2	10 Years	1 October 2007	30 September 2017	N/A
Lisa Communications Limited	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wireless)	National	Type 2	10 Years	1 May 2010	30 April 2020	N/A
Massy Communications Limited <i>(formerly Three Sixty Communications Limited)</i>	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wired)	National	Type 2	10 Years	1 December 2009	30 November 2019	N/A
Massy Technologies Infocom (Trinidad) Limited <i>[formerly Illuminat (Trinidad &amp; Tobago) Limited]</i>	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wireless)	National	Type 2	10 Years	1 May 2010	30 April 2020	N/A
Open Telecom Limited	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wireless)	National	Type 2	10 Years	1 May 2010	30 April 2020	N/A
Prism Services (Trinidad) Limited	Public Domestic Fixed Telecommunications Services	National	Type 4	10 years	29 July 2013	28 July 2023	N/A
RVR International Limited	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wired)	National	Type 2	10 Years	20 May 2014	19 May 2024	N/A
Santa Flora Cable Network Limited	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wired)	Niche - Santa Flora and Environs	Type 2	10 years	15 May 2014	14 May 2024	N/A
Telecommunications Services of Trinidad and Tobago Limited	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wired and Wireless)	National	Type 2	10 Years	30 December 2015	29 December 2025	N/A
Wireless Telecommunications Ltd	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wireless)	National	Type 2	10 years	27 November 2013	26 November 2023	N/A

Concessionaire	Network And/ Or Service	Territory	Type	Term	Date Of Grant	Expiry Date	Frequency/ Spectrum
<b>Renewal Concessions Pending Execution By The Minister</b>							
Lisa Communications Limited	Public International Telecommunications Services via a Public International Telecommunications Network	N/A	Type 2	10 Years	1 September 2006	31 August 2016	N/A
Massy Communications Limited (formerly 360 Communications)	Public International Telecommunications Services via a Public International Telecommunications Network	N/A	Type 2	10 Years	4 April 2006	3 April 2016	N/A
Southern Caribbean Fibre Limited	Public International Telecommunications Network	N/A	Type 1	10 Years	17 August 2006	16 August 2016	N/A
Central Broadcasting Services Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	21 September 2006	20 September 2016	102.7 FM
Upward Trend Entertainment Limited	Broadcasting Services (Free-to-Air FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	97.5 FM
Independent Cable Network of Trinidad & Tobago Limited	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network (Wired)	Major Territorial	Type 2	10 Years	1 November 2006	31 October 2016	N/A
Network Technologies Limited (Transferred from Computer Technologies and Services Limited)	Subscription Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	Niche - Mayaro and Guayaguayare	Type 5	10 Years	5 January 2006	4 January 2016	N/A
TRICO Industries Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	Minor Territorial	Type 5	10 Years	1 September 2006	31 August 2016	N/A
Independent Cable Network of Trinidad & Tobago Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	Major Territorial	Type 5	10 Years	1 November 2006	31 October 2016	N/A
Network Technologies Limited (Transferred from Computer Technologies and Services Limited)	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network	Niche - Mayaro and Guayaguayare	Type 2	10 Years	5 January 2006	4 January 2016	N/A
TRICO Industries Limited	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network	Minor Territorial	Type 2	10 Years	1 September 2006	31 August 2016	N/A

Concessionaire	Network And/ Or Service	Territory	Type	Term	Date Of Grant	Expiry Date	Frequency/ Spectrum
<b>Deemed Recommendations For Concessions Pending Execution By The Minister</b>							
Gayelle Limited	Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5				N/A
Guardian Media Limited	Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5				N/A
Liming Monkey	Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5				N/A
Mora's Weather Network	Public Domestic Fixed Telecommunications Services via a Public Domestic Fixed Telecommunications Network	Niche - Lopinot and environs	Type 2				N/A
WI Sports	Broadcasting Service (over a Public Domestic Fixed Telecommunications Network only)	National	Type 5				N/A

<sup>1</sup>Concession formerly held by Wonderland Entertainment has been transferred to Guardian Media Limited as of 9 June 2012.

<sup>2</sup>Concession obligations of Citadel Limited, Inner City Broadcasting Company Limited, Sidewalk Radio Limited and The Q Corporation Limited have been novated to Radio Five Limited as of 7 September 2012.

<sup>3</sup>Concession obligations of Marcel Mahabir have been novated to Trinidad and Tobago Radio Network Limited as of 22 April 2014.

<sup>4</sup>Concession obligations of VL Communications have been novated to Trinidad and Tobago Radio Network Limited as of 18 March 2014.

<sup>5</sup>Concession obligations of 21st Century Arts and Entertainment Limited have been novated to Guardian Media Limited as of 26 March 2015.

## Appendix III: Tariffs

Lists of tariffs offered by service providers can be found at the following websites:

- Airlink Communications: <http://airlinktt.net/>
- bmobile: <http://www.bmobile.co.tt/>
- Columbus Communications Trinidad Limited: <http://www.flowtrinidad.com/>
- Digicel: <http://www.digiceltt.com/>
- DirecTV Trinidad Limited: <http://www.directvcaribbean.com/tt/>
- Diversified Technologies Limited: <http://www.diversifiedtechltd.com/#!>
- Greendot: <http://www.gd.tt/>
- Independent Cable Network of Trinidad & Tobago Limited: <http://www.icntt.com/>
- Massy Communications : <http://www.massycommunications.com/>
- Massy Technologies Infocom (Trinidad) Limited: <http://www.illuminatnm.com/>
- Network Technologies Limited: <http://www.mayarocabletv.com/>
- Open Telecom: <http://www.opentelecomtt.com/>

## Appendix IV: Glossary of Terms

The following definitions are included to assist the readers of this report.

<b>Terms</b>	<b>Definition</b>
<b>Average Revenue per User</b>	Measures the average revenue generated by one subscriber
<b>Broadband</b>	Internet speeds > 256 Kbits/s
<b>Concession</b>	A legal instrument granted by the Minister responsible for Telecommunications to authorise the operation of a public telecommunications network and/or the provision of any public telecommunications service or broadcasting service
<b>Free-to-air</b>	Free-to-air (FTA) relates to television and radio services, broadcast in clear (unencrypted) form on standard public or commercial networks, for which viewers do not have to subscribe or pay.
<b>Gross Domestic Product</b>	A measure of the total value of all goods and services produced in a given country in a given time period, usually a year, excluding net property income from abroad
<b>Hirschman-Herfindahl Index</b>	A tool that measures the concentration of firms within a particular market. It is computed as the sum of the squares of the market share of all firms in the market.
<b>Interconnection</b>	The linking of public telecommunications networks and public telecommunications services, to allow the users of one provider of a public telecommunications service to communicate with the users of another provider of a public telecommunications service, and to access the services provided by such other provider



<b>International settlement rate</b>	The share of the accounting rate paid by the public telecommunications operator in another country to cover the costs of carrying the originating public telecommunications operator's traffic on its network
<b>Licence</b>	A legal instrument granted by the Authority to authorise the operation or use of any radiocommunications service or any radio-transmitting equipment, including that on board any ship, aircraft or other vessel in the territorial waters or airspace of Trinidad and Tobago
<b>Mobile voice subscription</b>	Refers to an activated (prepaid or postpaid) SIM card than enables the user to make and/or receive a call.
<b>Narrowband</b>	Internet speeds $\leq$ 256 Kbits/s
<b>Off-net traffic</b>	Refers to traffic originating on a service provider's network and terminating on another network
<b>On-net traffic</b>	Refers to traffic originating on a service provider's network and terminating on the same network
<b>Pay TV</b>	Pay TV service refers to terrestrial multichannel TV such as cable TV, Internet protocol television (IPTV), digital terrestrial TV (DTT) and Direct-to-home (DTH) satellite antenna multichannel TV receiving broadcasting directly from satellites. Pay TV is also known as subscription TV
<b>Penetration rate</b>	Defined as the number of persons per 100 inhabitants that subscribe to telecommunications and/or broadcasting services



## TELECOMMUNICATIONS AUTHORITY OF TRINIDAD AND TOBAGO

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