



Annual Market Report 2015

Telecommunications and Broadcasting Sectors

10th
EDITION

*Journey Towards
a Digital Society*



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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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FOREWORD

This year marks the tenth edition of the Annual Market Report published by the Telecommunications Authority of Trinidad and Tobago. This report presents key information on the performance of each market within the telecommunications and broadcasting sectors. This includes data on the uptake of telecommunications and broadcasting services, gross revenues generated by the sectors, and consumption patterns related to the number of calls and minutes as well as the level of concentration in the relevant markets.

From market liberalisation to present, the Annual market reports have chronicled the journey of Trinidad and Tobago to a digital society over the past 10 years. As a result, this report has been the most comprehensive compilation of telecommunications and broadcasting statistics in Trinidad and Tobago.

Looking back to when the first Annual Market report was published in 2006, the

telecommunications and broadcasting sectors moved from generating TT\$ 3.3 billion in revenues to TT\$ 5.59 billion in 2015. This is evident by steady growth in the number of subscriptions observed over the last decade.

One of the standout areas of 2015 was the growing demand for Internet services, both fixed and mobile. Both these services experienced double digit growth signifying the ever increase demand for data services. The internet market continues to be dynamic as consumers demand even higher fixed broadband speeds and mobile internet users move to mobile broadband.

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 presents its 10th Annual Market Report: Telecommunications and Broadcasting Sectors. This report covers performance statistics observed within the telecommunications and broadcasting industry during the period January to December 2015 and market trends over the past five (5) years.

Minimal decrease in revenues observed within the Telecommunications and Broadcasting Sectors

The year 2015 showed a decrease in revenues within the telecommunications and broadcasting sectors. This is the first decline in revenues observed since 2009. Total revenues generated by the industry decreased by 0.6% in 2015 when compared to the previous year to record TT\$5.59 billion. As observed in prior years, the telecommunications sectors accrued the majority of the revenues, with an estimated 80.2% share of the total industry revenues.

Despite experiencing its first decline in revenues, the mobile market continued to be the leading source of revenues within the sectors, generating an estimated TT\$1.99 billion or 35.6% of total industry revenues. This was followed by Internet services which generated an estimated TT\$1.35 billion.

Mobile voice subscriptions increase as fixed voice continue to fall

In 2015, mobile subscriptions rose to 2.12 million, an increase of 7% from 2014. This increase was also reflected in a similar 6% increase in the mobile penetration rate, which in 2015 stood at 157.3.

Fixed voice subscriptions continued its downward trend observed in previous years with an estimated decrease of 6% in 2015. Likewise, its household penetration also decreased from in 56.6 2014 to 52.5 in 2015.

Similar to the fixed voice market, the international voice market continues to decline. Both the number of incoming and outgoing minutes declined in 2015.



Increased uptake of Internet services as consumers utilize higher broadband speeds and increased usage of mobile Internet services

Fixed and mobile Internet subscriptions continued to record favourable growth, both recording double digit growth in 2015. Fixed Internet subscriptions rose to approximately 280 thousand while mobile Internet rose to 645 thousand, a 12% and 13% increase respectively. In 2015, it is estimated that 65 out of every 100 households use the Internet in Trinidad and Tobago while 48 out of every 100 persons use Mobile Internet services.

Customers are also utilizing higher Internet speeds for both fixed and mobile Internet services. Fixed Internet speeds in the category ‘equal to or greater than 10Mb’ were the most popular among consumers. The uptake of Mobile Broadband Internet is also growing as it now accounts for 67% of all mobile internet users.

The ‘Free to Air’ television and radio markets increase while Pay TV growth slowed

Revenues in both the Free to Air television and radio markets increased by 16% and 10% respectively in 2015. The growth in the number of subscriptions in the Pay TV market slowed to 1.7%, recording approximately 233 thousand at the end of 2015.

Operators continue to employ a mix of technology for Internet Services

In 2015, 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-coax networks utilising DOCSIS 3.0 technology, as well as a mix of Fibre to the Curb (FTTC), Fibre to the Business (FTTB) or Home (FTTH) topologies.

On the other hand, fixed wireless Broadband Internet operators employ WiMAX technologies. More recently, LTE technologies was used to offer an alternative means of broadband Internet access and to augment the wired access network.

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

Movements in market concentrations observed for some markets

Market concentrations as measured by the Hirschman Herfindahl Index (HHI), varied the markets in the telecommunications and broadcasting sectors. While the HHI in the mobile market remained relatively constant over the past five (5) years, a minimal increase in the HHI was observed during 2015. HHI in the mobile market recorded 5,141 at the end of 2015.

The level of concentration the both the fixed voice and fixed Internet markets were fairly stable as only a minor decrease was observed for the period. HHI in the fixed voice and fixed Internet recorded 8,267 and 4853 respectively. Steady quarterly decreases in the HHI were observed in the Pay TV market, as this market experienced a 7% average reduction in its level of concentration in 2015 to record 4,493 as at the end of the year.

Significant movements in the HHI were observed in the 'Free to Air' radio and television markets during the year. The 'Free to Air' television market experienced a 24% increase in the level of concentration for 2015. In the 'Free to Air' radio market, the level of concentration based on the number of concessions decreased by 8% while the HHI based on the number of concessionaires increased by 7% in 2015. HHI based on concessions and concessionaires recorded 506 and 1,292, respectively.

1. OVERALL MARKET REVIEW

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

The data presented is based primarily on the results of completed questionnaires by operational concessionaires within the telecommunications and broadcasting sectors for the period 1st January to 31st December 2015, 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: <http://www.tatt.org.tt>.

1.1. Total Authorisation

Under the Telecommunications Act Chap. 37:42, the Authority is responsible for making recommendations to the Minister responsible for telecommunications and broadcasting for the granting of concessions to telecommunications and broadcasting operators (Section 21(5)). To date, one hundred and twenty-four (124) concessions have been granted by the Minister based on the Authority's recommendations (see Appendix II). While this figure represents the

OVERALL MARKET HIGHLIGHTS

- ✓ Telecommunications and Broadcasting sectors generate \$5.59 billion in revenues
- ✓ Mobile market dominates; contributing 36% to total revenues
- ✓ Internet revenues continued to increase its percentage contribution to telecommunications revenues
- ✓ Broadcasting revenues increase as Pay TV remains the main revenue generator
- ✓ Total subscriptions grows to 3.6 million
- ✓ Penetration of mobile and Internet services deepens

number of authorisations granted, it may not reflect the total number of telecommunications and broadcasting service providers currently operating in the industry.

Table 1 provides a list of the number of operational concessionaires in the various markets as at December 2015.

TABLE 1: NUMBER OF OPERATIONAL CONCESSIONAIRES BY MARKET AS AT DECEMBER 2015

Network Category	Service Provided	Operational Concessionaires
International Telecommunications	Network only	1
	Services only	1
	Network and Services	5
Mobile Telecommunications	Mobile voice and Internet services	2
Fixed Telecommunications ¹	Fixed Telephony	4
	Fixed Internet	8
Pay TV (Subscription TV)		12
‘Free to Air’ Radio Broadcasting		38
‘Free to Air’ Television Broadcasting		7
TV Broadcasting via Cable		8

A detailed list of concessions granted by the Authority can be found in Appendix II and on the Authority’s website.

In addition to the granting of concessions, under Section 36 of the Telecommunications Act, the Authority is also authorised and responsible for the granting of licences. In accordance with its legislative powers, for the period January to December 2015, the Authority granted a total of 398 licences. Table 2 lists the categories and the number of licences granted during the year 2015.

TABLE 2: NUMBER OF LICENCES GRANTED DURING THE YEAR 2015

Type of Licence		2015
Spectrum	Cellular Mobile	0
	Land Mobile	125
	Point-to-Point	30
	Point-to-Multipoint	4
	SCADA	15
General Radiocommunications	Satellite Earth Stations	17
	Amateur Stations	100
	Maritime Stations	64
	Aeronautical Stations	24
Broadcasting (Special Events)		19
Total		398

1.2. Overview of the Telecommunications and Broadcasting Sectors

1.2.1. MARKET REVENUE CONTRIBUTIONS TO THE SECTORS

The Telecommunications and Broadcasting sectors generated an estimated TT\$5.59 billion² (US\$0.88 billion³) in 2015, which as a percentage of GDP⁴ equates to 3.4%. This represented a 0.6% decrease in total revenues generated by this industry compared to last year. Of total telecommunications and broadcasting revenues, mobile voice services accounted for the majority of revenues with TT\$1.99 billion (35.6%). This was followed by Internet services which contributed TT\$1.35 billion or 24.1%. The next highest revenue earners for the industry were Fixed⁵ Voice services and Pay TV services whose contributions totalled TT\$750.9 million (13.4%) and TT\$730.2 million (13.1%) respectively. International voice services was next in line, generating, TT\$230.2 million (4.1%) in revenues. The ‘Free to Air’ radio and television markets each contributed TT\$199.9 million (3.6%) and TT\$154.3 million (2.8%), respectively. Finally, other contributors included “other revenues”⁶ and “leased line services” with earnings of TT\$144.9 million and TT\$42 million respectively, with 2.6% and 0.8%.

To summarise the above information, Figure 1 below illustrates the revenues earned within the industry while Figure 2 shows the percentage revenue contribution by each market towards overall gross revenue of the industry.

² This figure includes revenues from telecommunications and broadcasting services offered to members of the general public and private leased line services.

³ Exchange rate US\$1=TT\$6.3778

⁴ Gross Domestic Product (GDP) at current market prices for 2015 TT\$165,286million (Source: Ministry of Finance Review of the Economy)

⁵ Fixed market revenues include revenues earned from fixed voice and access (excluding international) services.

⁶ Other revenues comprise revenues earned from both the telecommunications sector and the broadcasting sector such as revenues received from wholesale services and Production and Air time for local programming on Pay TV See sections 1.2.2 and 1.2.3 for further definitions.

FIGURE 1: INDUSTRY, SECTORS AND MARKETS REVENUES 2015

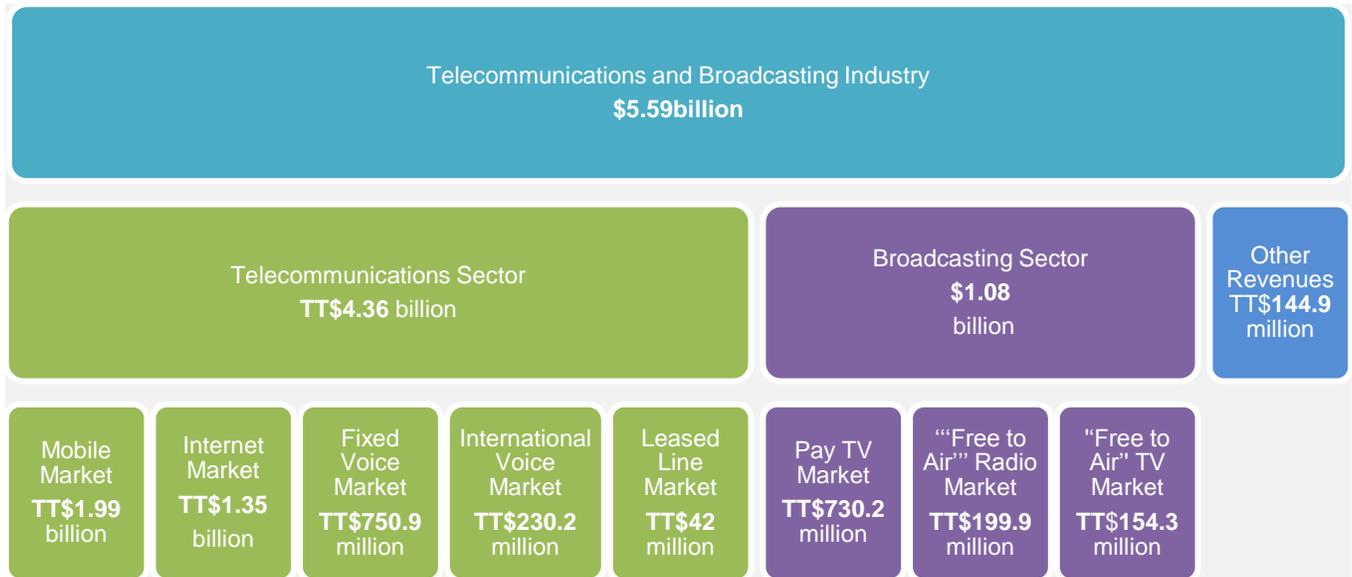
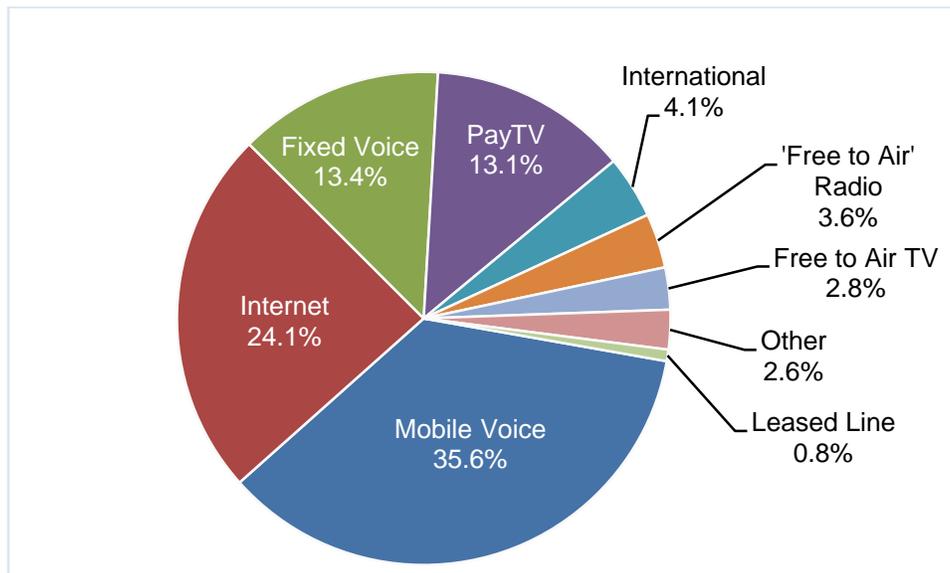


FIGURE 2: PERCENTAGE OF GROSS REVENUES CONTRIBUTED BY MARKETS - 2015



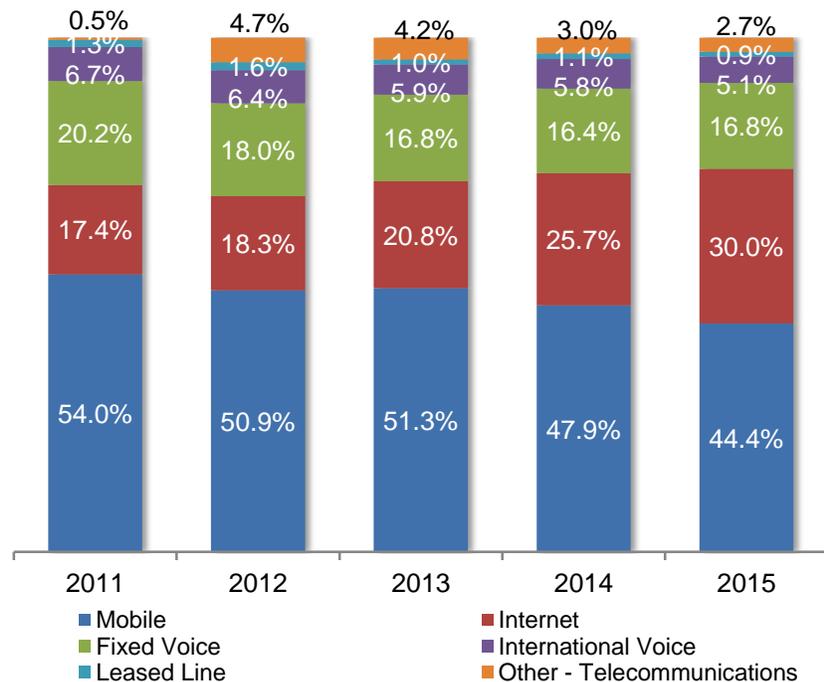
1.2.2. MARKET REVENUE TRENDS IN THE TELECOMMUNICATIONS SECTOR

For the 2015 period, the Telecommunications sector contributed TT\$4.36 billion or 80.2% to overall industry revenues. Of the five main markets within this sector, the mobile market continued to generate the majority of revenues, accounting for 44.4% of total telecommunications revenues. The Internet market generated the second highest with 30.0%, while revenues from the fixed voice services and international markets followed thereafter with 16.8% and 5.1% respectively. The leased line market earned 0.9% of telecommunications revenues and continued to be the smallest revenue contributor to the sector. ‘Other’ telecommunications revenues⁷ contributed 2.7% to total telecommunications revenues.

Figure 3 depicts the revenue contributions of the individual markets toward the total revenues generated from the telecommunications sector. As seen, the Internet market experienced a marked growth in its percentage contribution to total telecommunications revenues.

The Internet market increased its contribution to total telecommunications revenues from 25.7% in 2014 to 30.0% in 2015. The proportion of revenues generated by all other telecommunications services decreased slightly, with the exception of the fixed voice market.

FIGURE 3: PERCENTAGE CONTRIBUTIONS OF TELECOMMUNICATIONS MARKETS – 2011 TO 2015

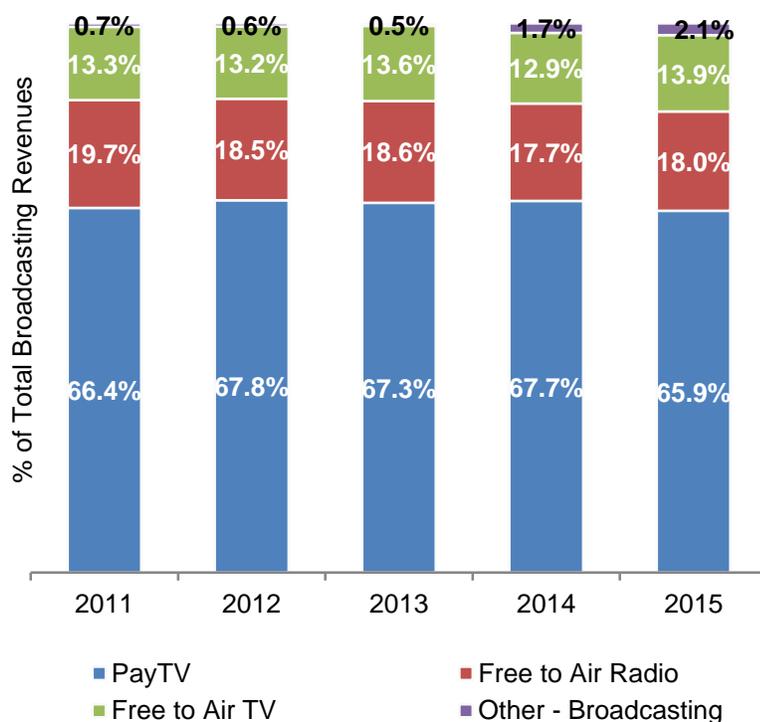


⁷ Other telecommunications revenues earned from service providers in the telecommunications sector include other wholesale services (excluding leased line), high capacity wireless links and two-way radios.

1.2.3. MARKET REVENUE TRENDS IN THE BROADCASTING SECTOR

For the review period, the broadcasting sector contributed TT\$1.10 billion, or 17.4% towards overall industry revenues. The broadcasting sector is divided into three main markets: Pay TV⁸, ‘Free to Air’ television and ‘Free to Air’ radio. Similar to the trends experienced over the last five years, the Pay TV market continued to earn the majority of revenues in the broadcasting sector, accounting for 65.9% of total broadcasting revenues for 2015. Trailing behind significantly were both the ‘Free to Air’ radio and ‘Free to Air’ television markets earning 18.0% and 13.9% of broadcasting revenues respectively. ‘Other’ broadcasting revenues⁹ contributed 2.1% 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 decreased its percentage contribution to revenues in the broadcasting sector from 67.7% in 2014 to 65.9% in 2015. The percentage of revenue earned from the ‘Free to Air’ radio and ‘Free to Air’ television markets increased marginally in 2015.

FIGURE 4: PERCENTAGE CONTRIBUTIONS OF THE BROADCASTING MARKETS – 2011 TO 2015



⁸ Also known as Subscription TV.

⁹ Other revenues earned from service providers in the broadcasting sector include Production and Air time for local programming on Pay TV.

1.2.4. TELECOMMUNICATIONS AND BROADCASTING SUBSCRIPTIONS

For the year ending December 2015, the number of subscriptions within the fixed voice, mobile voice, fixed Internet, mobile Internet and Pay TV market segments totalled approximately 3.3 million¹⁰. This represents an increase of 7.0% or 231.8 thousand subscriptions when compared to the same period in 2014.

The mobile voice market contributed 2,123 thousand subscriptions representing 59.8%, whereas the fixed voice market contributed 270 thousand subscriptions representing 7.6% of total subscriptions. Fixed Internet subscriptions stood at 280 thousand as at December 2015, contributing 7.9% to total subscriptions, whereas the number of Mobile Internet subscriptions totalled 645 thousand or 18.2% of total subscriptions. Pay TV services contributed 6.6% with 233 thousand subscriptions. Figure 5 compares total industry subscriptions for the period 2011-2015 while contributions by the various market segments towards total industry subscriptions as at December 2015 are shown in Figure 6.

FIGURE 5: MARKET SHARE OF TOTAL SUBSCRIPTIONS BY SERVICE FROM 2011 TO 2015

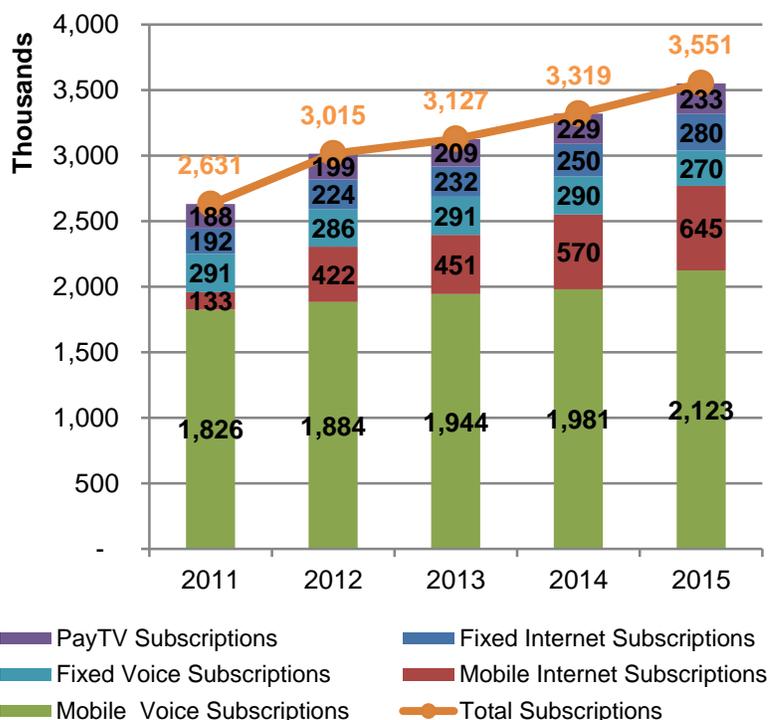
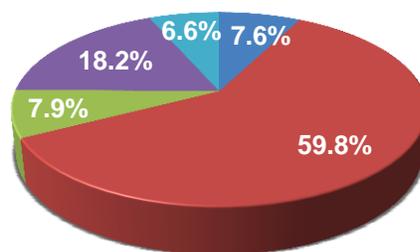


FIGURE 6: MARKET SHARES OF TOTAL INDUSTRY SUBSCRIPTIONS BY SERVICE AS AT DECEMBER 2015

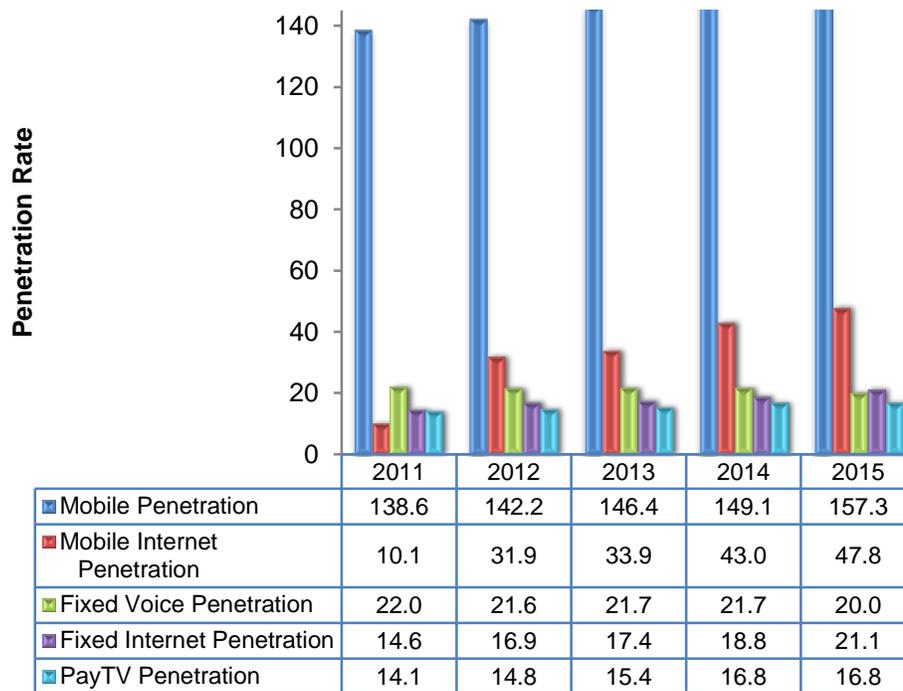


¹⁰ The significant increase in the number of Mobile Internet subscriptions in 2012 mainly is due to the Authority's revision of the calculation of the Mobile Internet Penetration to include actual prepaid Internet subscriptions.

1.2.5. SUBSCRIPTION PENETRATION RATE

As seen in Figure 7, the penetration rates for all subscription-based markets increased for the 2015 period, with the exception of fixed voice and Pay TV. Mobile voice penetration sustained its dominant position increasing from 149.1 in 2014 to 157.3% in 2015. The level of Mobile Internet penetration in the country maintained its second place with a penetration rate of 47.8%. Fixed Internet also increased in 2015 to record 21.1. The level of penetration for fixed voice services decreased to 20.0 while Pay TV penetration remained constant at 16.8%.

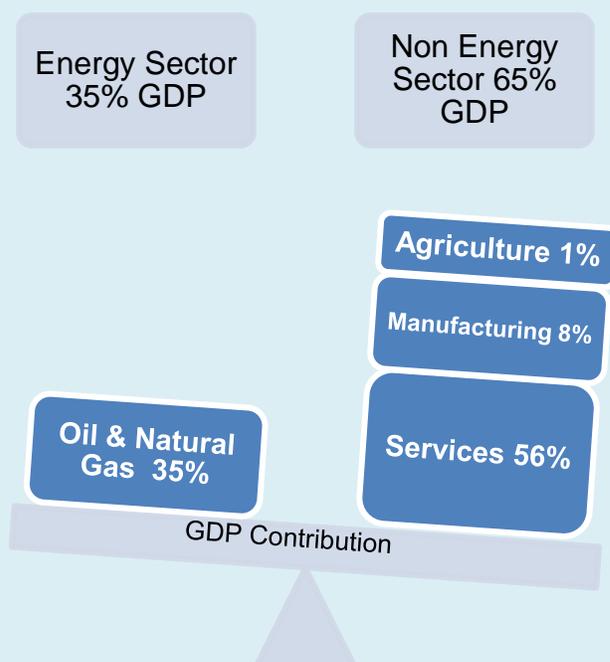
FIGURE 7: PENETRATION RATE OF SUBSCRIPTIONS 2011 TO 2015



BOX 1: REVIEW OF THE DOMESTIC ECONOMY

In response to plummeting tax revenue and foreign exchange earnings from the petroleum based sector, the Trinidad and Tobago economy is estimated to have contracted by 5.4% in 2015¹¹, following relatively slow growth of 2.6% in 2014. While the long-term price equilibrium of the global energy market remains indiscernible and so too, by extension, the resource's future contribution to the local economy, the slowly but steadily increasing contribution of the country's non-energy sector has demonstrated, in the very short-term, some small but significant buffering effect to the overall economy. In 2015, the non-energy sector's contribution grew by TT\$1.4 Billion and accounted for an estimated 64.7% of the country's GDP¹². Of this contribution, the Services sector was projected to account for 87% or 56% of total GDP¹³. Notably the Transport, Storage and Communications commercial grouping was estimated to have contributed over 16% of the Services sector's total or 9.2% of the country's GDP total, becoming one of only three commercial groups to contribute in excess of 9% to the national output¹⁴ in the year.

The following panel illustrates the key contributors to GDP by sector.



Despite the growth of the non-energy sector's contribution to national output, other key areas of economic activity were less spared by the contraction of the economy's traditional breadwinner. The

¹¹ Source: Trinidad and Tobago Ministry of Finance (TT MOF)

¹² Based on Constant 2000 prices, Source TT MOF

¹³ Source: TT MOF

¹⁴ The others were Finance, Insurance & Real Estate etc. (16.7%), Distribution and Restaurants (13.85) and Exploration and Production

country's trade balance demonstrated significant energy risk, with both current and capital accounts posting negative balances of TT\$ 643 Million and TT\$ 9,037 Million, which, represented increases in outflow of 127% and 250% respectively year-on-year.

Other performance measures of Trinidad and Tobago economic activity are given below for the five-year period 2011 to 2015:

Economic Indicator	2011	2012	2013	2014	2015
¹⁵ Real GDP Growth (current prices, % Δ)	15.4	1.3	3.1	2.6	-5.4
¹⁶ Energy Sector (% Δ)	-3.9	-2.8	1.3	-2.4	-3.4
Non-energy Sector (% Δ)	3.2	2.3	2.6	0.1	2.3
Inflation Rate (%)	5.1	9.2	5.1	5.8	0.7 ¹⁷
Unemployment Rate (%)	5.0	4.9	3.7	3.3	3.7
¹⁸ Exports (% Δ)	13.3	-12.8	-0.4	-3.8	-1.4
¹⁹ Imports (% Δ)	21.7	-2.5	-0.9	-1.2	55.3*
²⁰ Current Account Balance (% of GDP)	11.4	3.2	7.3	4.6	-5.4
²¹ Overall BOP (MM- TT\$)	4,794	-3962	5024	8456	-9676
²² Moody	Baa1	Baa1	Baa1	Baa1	Baa2
²³ Exchange Rate (USD)	6.37	6.37	6.39	6.36	6.33
²⁴ Gross National Savings (% GDP)	24.8	16.6	20.7	18.1	8.01
Net Official Reserves (MM- US\$)	9,822	9,200	9,987	11,318	9,788
⁷ Population ('000's)	1,328	1,335	1,340	1,345	1,350
⁷ GDP (current Prices -MM-TT\$)	163,008	165,203	170,371	174,757	165,286
⁷ GDP per capita (Current Prices –US\$)	19,180	19,322	19,809	20,344	19,311

¹⁵ Source: TT MOF "revised"

¹⁶ Source: TT MOF, sectoral GDP percentage change(constant 2000 prices)

¹⁷ Source: TT MOF, refers to the period Jan-July 2015 only

¹⁸ Source: International Monetary Fund (IMF), percentage change year-on-year

¹⁹ Source: International Monetary Fund (IMF), percentage change year-on-year

²⁰ Source: International Monetary Fund "revised" estimate

²¹ Source: Central Bank of Trinidad and Tobago

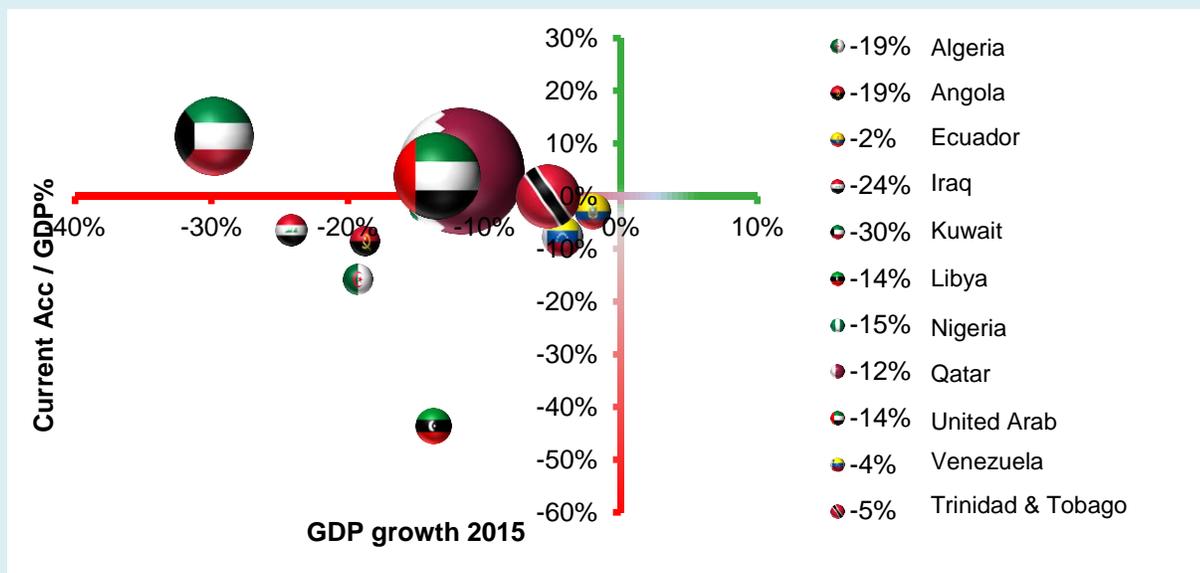
²² Source: TT MOF, ROE 2015, local currency short-term,

²³ Source: Central Bank of Trinidad and Tobago, US Buying

²⁴ Source: International Monetary Fund Revised

Performance Comparison:

The following graph illustrates Trinidad and Tobago’s economic performance in comparison to other net energy exporting territories. The graph pairs Trinidad and Tobago’s and ten OPEC member states²⁵ current account performance against their GDP per capita growth rate in 2015 and compares each territory GDP per capita, by the relative size of the bubbles. The graph shows that Trinidad and Tobago’s current account deficit, as a percentage of GDP and its negative growth rate are significantly milder than those incurred by the majority of oil exporting countries considered. Moreover, the country’s position on the graph illustrates the extent of damages aversion provided to the country’s trade balances and national income by the local services sector *et al* and further signals the presence of material economic diversity in the twin island state, over the one-year period considered.



TRINIDAD AND TOBAGO, TRADE, GROWTH & GDP PER CAPITA, PERFORMANCE ²⁶

Outlook:

Although the macroeconomic contribution of the domestic Services sector has been notable in 2015, business intelligence forecasts of sustained energy price uncertainty and market glut (IMF, Mackenzie, Deloitte 2016) and international credit rating agencies negative country outlook (Moody’s and S&P 2015), indicate that the worst may still be ahead for the twin island economy, *ceteris paribus*. Therefore, to avert continued decline in Trinidad and Tobago’s national revenue and foreign reserve

²⁵ OPEC member states Saudi Arabia, Gabon and Iran were excluded due to data unavailability

²⁶ Source: IMF estimates, 2015 GDP at current prices US\$

replacement ratios, accelerated growth from the Services sector, as the new economic mainstay, is of paramount importance.

The Services sector's ability to sustain or further its growth, in wake of its own challenges of disruptive innovation, local mid-term energy risk maturity and global competition *et al*, will be heavily influenced by its commercial stakeholders' of all size ability to innovate, find new market opportunities and compete efficiently and effectively in the global market space.

The domestic telecommunications and broadcasting sectors has and continues to respond admirably to both local and global competition and macroeconomic pressures with innovative market based and collaborative solutions. Thus, the domestic telecommunications and broadcasting sector continues to demonstrate its investment worthiness for increased foreign and local direct investment, as the new macroeconomic equilibrium emerges.

Citation

<http://www.woodmac.com/reports/oil-markets-global-macro-oils-long-term-outlook-h2-2015-30277198>

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https://www.moodys.com/research/--PR_344429

<http://www.finance.gov.tt/wp-content/uploads/2015/10/ROE-2015.pdf>

<http://www.central-bank.org.tt/>

Over the past decade, the Telecommunications Authority of Trinidad and Tobago (the Authority) has consistently produced and published the Annual Market Report (AMR) - a comprehensive compilation of statistics on the telecommunications and broadcasting sectors of Trinidad and Tobago. This document highlights key statistics and information on prevailing market trends. The first edition of the AMR was published in 2006. Looking back, this sector has undergone several industry changes – from market liberalization to technological development. Overall, the performance of this sector has been stable; generating positive growth despite a protracted period of economic slowdown in the domestic economy.

Let us take a look at some of the key market milestones over the past decade.

Mobile Market Milestone

Mobile voice market increased by 7% in 2015, recording two (2) million subscriptions.

Significant uptake of Mobile Broadband Internet Services

Consumers embraced the introduction of mobile internet services. Just one year after its introduction, mobile broadband users moved from 96,000 to 236,000.

Fixed Internet: Closing the Digital Divide

The number of households in Trinidad and Tobago that had a fixed Internet connection reached 50% in 2011.

Internet Growth Spurt

Internet subscriptions (fixed & mobile) increased by 84% over 2008. This is the highest growth rate ever recorded for this market.

Fixed Voice Subscriptions start to fall.

Fixed voice market declined for the first time since 2000, decreasing by 6% in 2007. To date a decreasing trend is still observed.

Digital Pay TV poised to overtake analogue

Pay TV market surged forward in 2008 as digital subscriptions almost equaled analogue. Digital Pay TV subscriptions increased by 12%, the highest growth rate observed over the 10 year period.

Mobile Market Liberalization

A new operator commenced operations in May 2006; citizens of Trinidad and Tobago experienced competition in the mobile market for the first time, increasing consumer choice. Within a few months of liberalization, the mobile market increased by 79% to record 1.6 million subscriptions at the end of 2006 when compared to 2005.

Sustainable Growth in the Telecommunication and Broadcasting Sectors

For the past decade, revenues generated in the Telecommunication and Broadcasting Sectors increased steadily, representing approximately 3% as a percentage of Trinidad and Tobago's GDP each year.

Launch of 4G Mobile Internet

The introduction of HSPA+ paved the way for the provision of improved services at enhanced mobile broadband Internet access speeds; a significant step up from the 2.5G technology.

A Great Year for Broadcasting

In 2010, FTA Television broadcasting revenues increased by 25%, generating TT\$132m; FTA Radio broadcasting revenues increased by 9%, generating TT\$167m.



2. FIXED VOICE MARKET REVIEW

As at December 2015, there were seventeen (17) operators authorised to provide fixed domestic telecommunications services to the public over wired and/or wireless facilities as listed below.

TABLE 3: OPERATORS AUTHORISED TO PROVIDE PUBLIC FIXED DOMESTIC TELECOMMUNICATIONS SERVICES AS AT DECEMBER 31ST 2015

Name of Provider		
1. Air Link Communications	2. Columbus Communications Trinidad Limited (FLOW)	3. Digicel (Trinidad & 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 (Trinidad) Limited
10. Network Technologies Limited	11. Open Telecom Limited	12. Prism Services (Trinidad) Limited
13. RVR International Limited	14. Santa Flora Cable Network Ltd	15. Telecommunications Services of Trinidad and Tobago (TSTT)
16. TRICO Industries Limited	17. Wireless Telecommunications Ltd.	

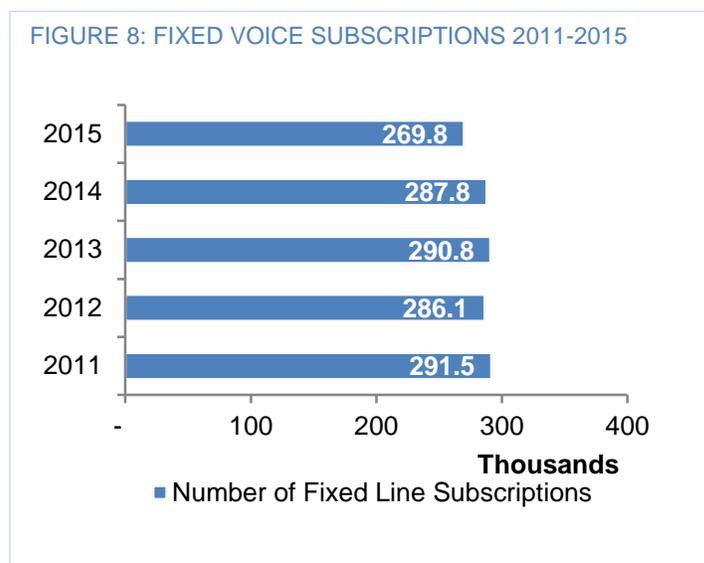
While the above seventeen (17) operators were authorised by the Authority to provide fixed telecommunications services, only four (4) operators offered domestic fixed voice services in 2015. TSTT offered fixed voice services through their Public Switched Telephone Network, FLOW via their Hybrid Fibre Coax network and Massy Communications Limited provided fixed voice services through its Gigabit Passive Optic Network (GPON).

FIXED VOICE MARKET HIGHLIGHTS

- ✓ Fixed lines continue to fall.
- ✓ Down by 6%, there were 269.8 thousand subscriptions.
- ✓ More residential customers giving up fixed voice subscriptions than business customers.
- ✓ Revenues also fell; \$750.8 million generated in 2015
- ✓ Just over 50% of households have fixed voice services.

2.1. Annual Fixed Voice Telephony Subscriptions

The fixed voice market experienced its second consecutive decrease in the number of subscriptions. Down by 18 thousand or 6% when compared to 2014, subscriptions to fixed voice services stood at 269.8 thousand in 2015. Figure 8 illustrates a five (5) year trend for fixed voice subscriptions.



2.1.1. ANNUAL RESIDENTIAL AND BUSINESS FIXED VOICE SUBSCRIPTIONS

Figure 9 below 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 2015, there were 210.8 thousand residential subscriptions and 59 thousand business subscriptions in this market. When compared to 2014, there were fewer residential and business fixed voice subscriptions at the end of 2015. Residential fixed subscriptions decreased by 8% while the number of subscriptions in the business market for fixed voice services fell by 2%. Reviewing the five year trend depicted in Figure 9, there was an 8% or 17.5 thousand fall in residential subscriptions in 2015; this is significant when compared to the preceding period (2011-2014) of relatively small fluctuations.

Figure 10 depicts the proportion of residential and business subscriptions in the fixed voice market in 2015. Residential fixed voice subscriptions accounted for 78.1% of the share of total subscriptions in this market while the proportion of business subscriptions accounted for the remaining 21.9%.

FIGURE 9: RESIDENTIAL AND BUSINESS FIXED VOICE SUBSCRIPTIONS 2011-2015

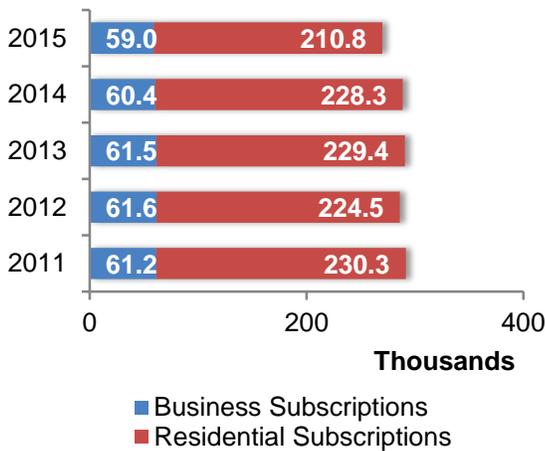
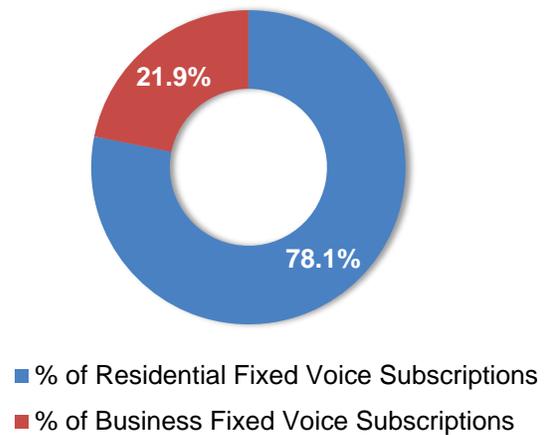


FIGURE 10: RESIDENTIAL AND BUSINESS FIXED VOICE SUBSCRIPTIONS 2015

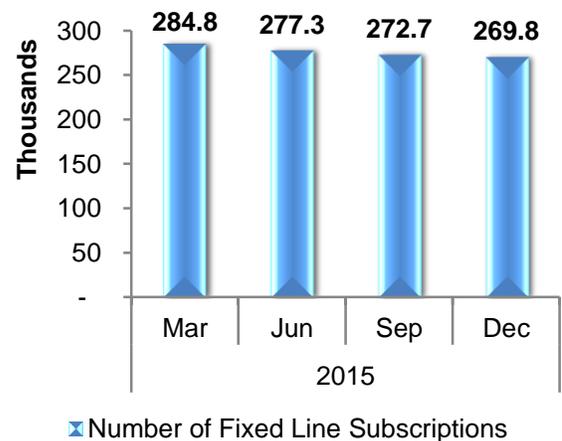


2.1.2. QUARTERLY FIXED VOICE SUBSCRIPTIONS

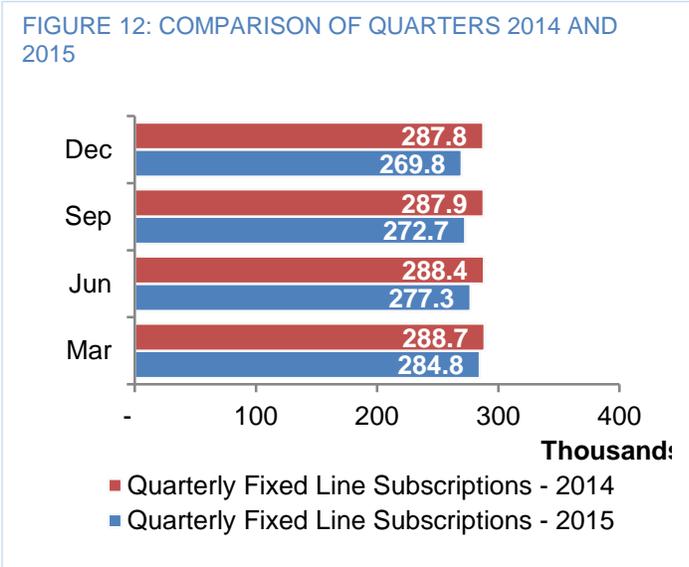
A decreasing quarterly trend was observed for fixed voice subscriptions during 2015. Recording 284.8 thousand subscriptions at the end of the first quarter, fixed voice subscriptions reached 269.8 thousand in the fourth quarter, representing a 5% fall in subscriptions between these quarters. During the year, subscriptions decreased by approximately 3% in the second quarter, 2% in the third quarter and 1% in the fourth quarter. Figure 11 shows the quarterly trend in fixed voice subscriptions in 2015.

The fixed voice market performed less favourable in 2015, with fewer subscriptions being recorded in each quarter when compared to 2014. There were 284.8 thousand subscriptions in the first quarter of 2015, compared to 288.7 thousand subscriptions for the corresponding period in

FIGURE 11: QUARTERLY FIXED VOICE SUBSCRIPTIONS 2015

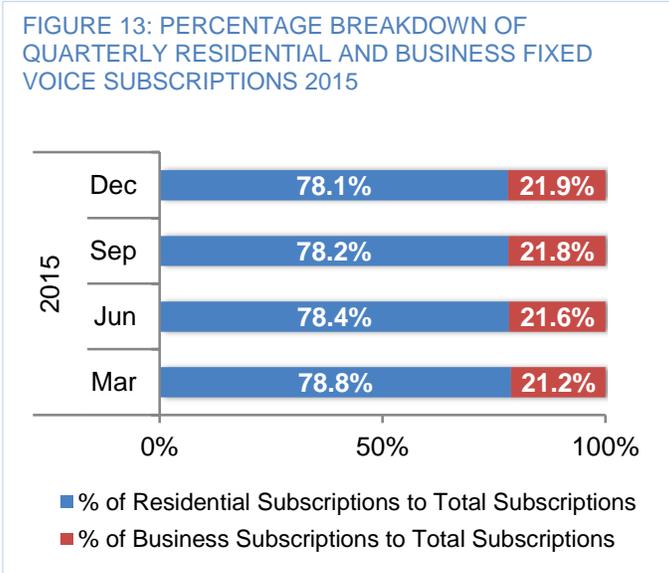


2014. In the fourth quarter, subscriptions stood at 269.8 thousand in 2015, compared to 287.8 thousand subscriptions 2014. Figure 12 highlights this year on year comparison of fixed voice subscriptions during 2014 and 2015.

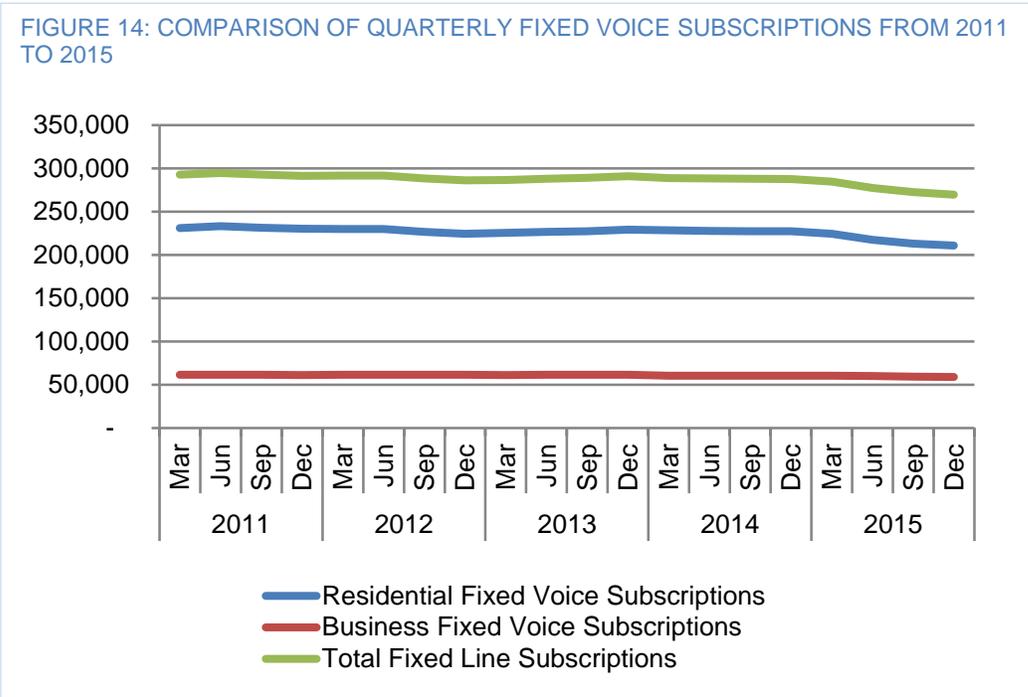


2.1.3. QUARTERLY RESIDENTIAL AND BUSINESS FIXED VOICE SUBSCRIPTIONS

Figure 13 shows a percentage breakdown of residential and business fixed voice subscriptions at the end of each quarter of 2015. At the end of the first quarter, residential fixed voice subscriptions captured 78.8% of the market while business accounted for 21.2%. During the year, the proportion of residential and business subscriptions varied slightly. At the end of the year, the ratio of residential to business subscriptions stood at 78.1 to 21.9.

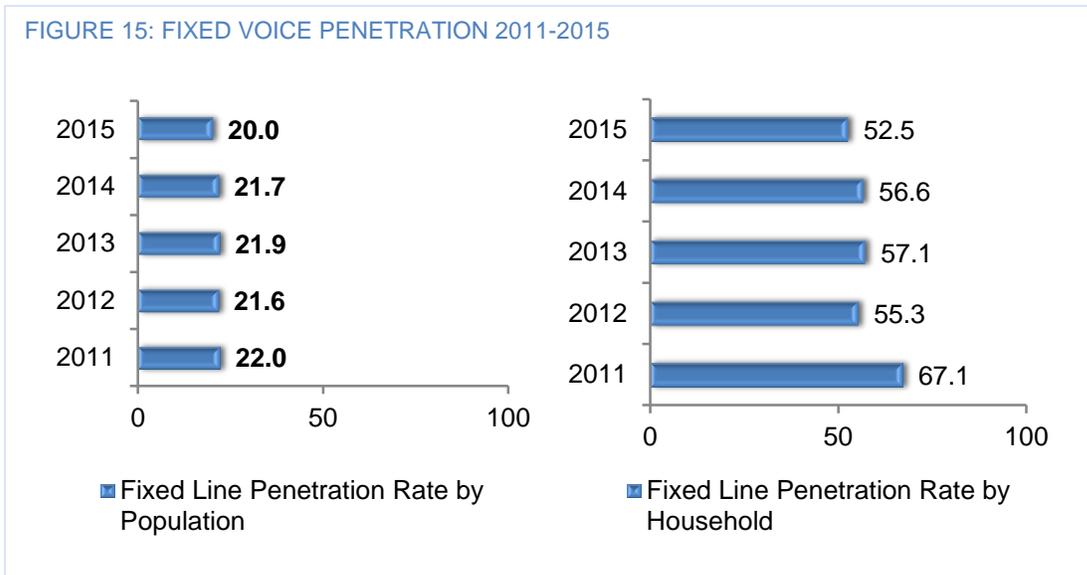


Over the past five years, there was an overall downward trend in the total number of fixed voice subscriptions. As seen in Figure 14, residential subscriptions declined slowly over the years while business subscriptions remained relatively stable.



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 penetration²⁷ is calculated using the number of fixed voice subscriptions per 100 of the population. As at December 2015, fixed voice penetration was calculated at 20.0. This implies that in 2015 there were approximately 20 fixed voice subscriptions to every 100 persons in Trinidad and Tobago. Fixed line household penetration²⁸ was also calculated to assess the number of households with fixed voice telephone services. In 2015, the fixed line household penetration was 52.5. This figure suggests that out of every 100 households, approximately 53 households had access to fixed voice services in Trinidad and Tobago. An illustration of the fixed voice penetration trend from 2011 to 2015 is given in Figure 15 for both population and household. Both indicators decreased in 2015 when compared to the previous year.

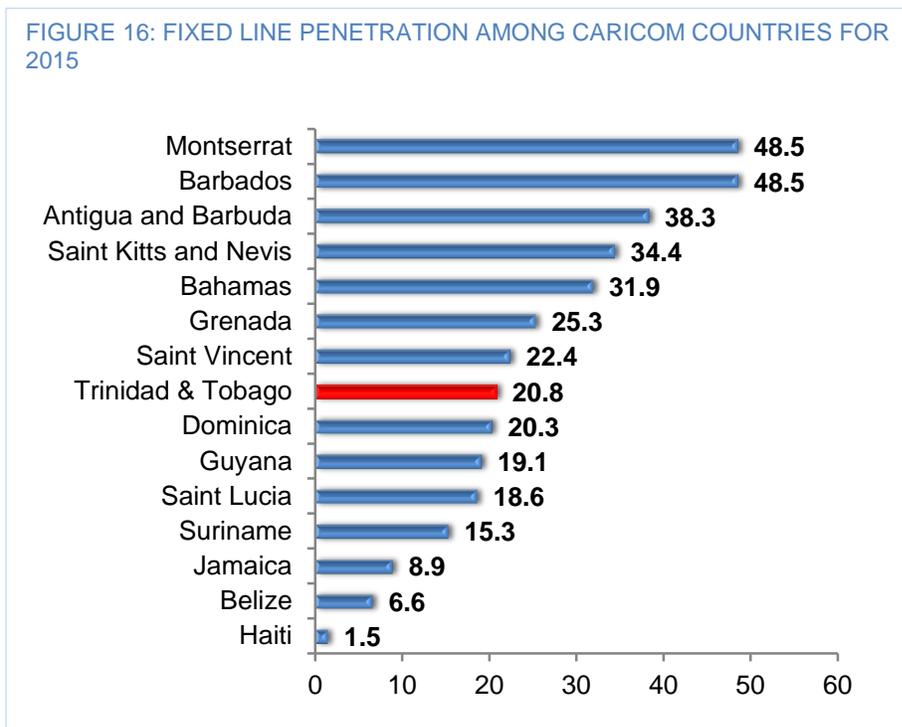


²⁷ Fixed line penetration = (number of residential fixed voice subscriptions / total population) *100
Total population used from the Central Statistical Office's midyear population estimate.

²⁸ Fixed line household penetration = (number of residential fixed voice subscriptions / total number of households) *100.
Number of households from the Central Statistical Office's Trinidad and Tobago 2011 Population and Housing Census, Demographic Report.

2.2.1. FIXED PENETRATION RATES CARICOM CARIBBEAN COUNTRIES

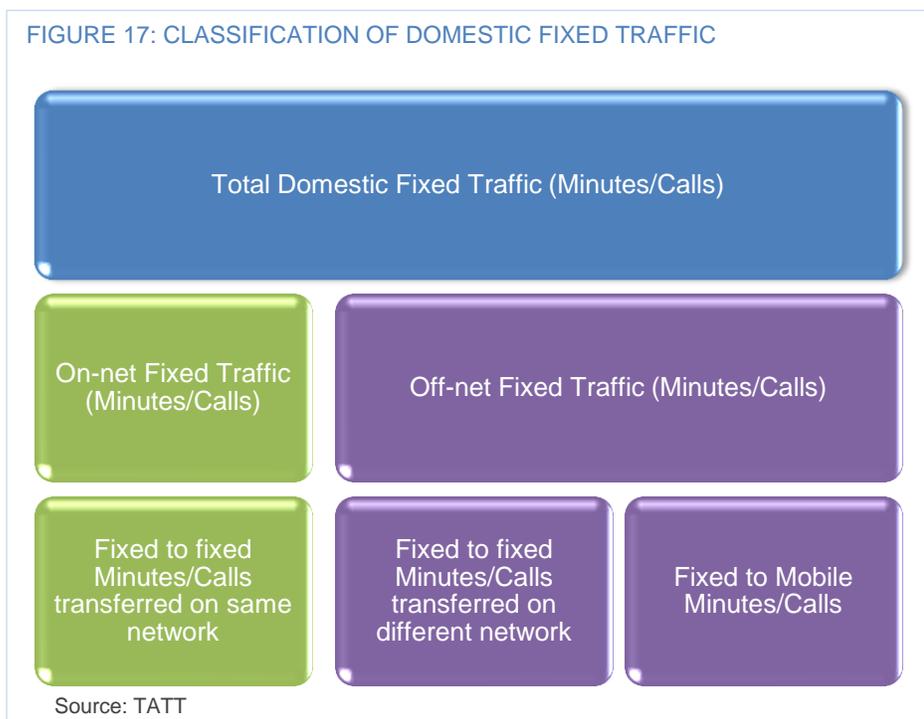
A comparison among CARICOM countries places Trinidad and Tobago eight (8th) in terms of fixed line penetration. Based on data from Business Monitor International²⁹, Barbados and Montserrat ranks first (1st) with a fixed line penetration of 48.5, followed behind by Antigua and Barbuda (38.3). According to BMI, Trinidad and Tobago's fixed line penetration stood at 20.8 and is similar to that in Saint Vincent and Dominica. Figure 16 illustrates.



²⁹ Data sourced from Business Monitor International database, accessed June 12th 2015

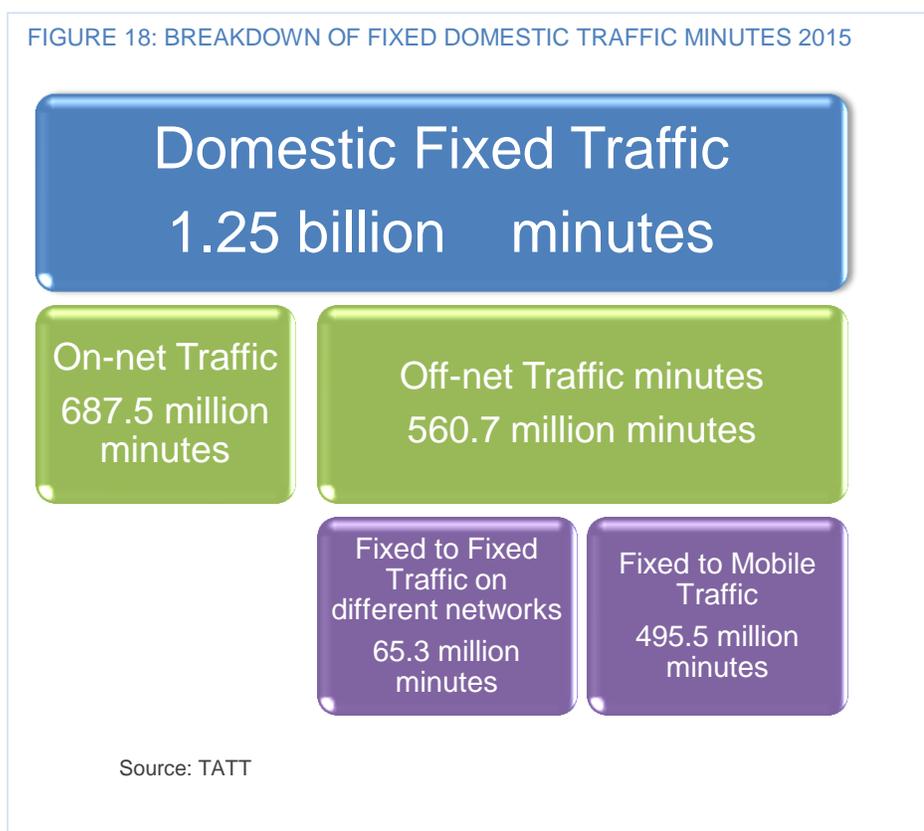
2.3. Domestic Fixed Voice Traffic

Domestic fixed voice traffic refers to the number of domestic minutes or calls originating and terminating on local fixed networks. This traffic can be categorised by the following traffic-types in Figure 17:



2.3.1. ANNUAL DOMESTIC FIXED VOICE TRAFFIC IN MINUTES

There were 1.25 billion fixed voice traffic minutes in 2015; on-net³⁰ and off-net³¹ minutes accounted for 687.5million and 560.7million respectively. Fixed to fixed minutes transferred on different networks (off-net) recorded 65.2million minutes and fixed to mobile minutes was 495.55 million minutes as at December 2015. The number of fixed voice minutes by traffic types is given in Figure 18 below.



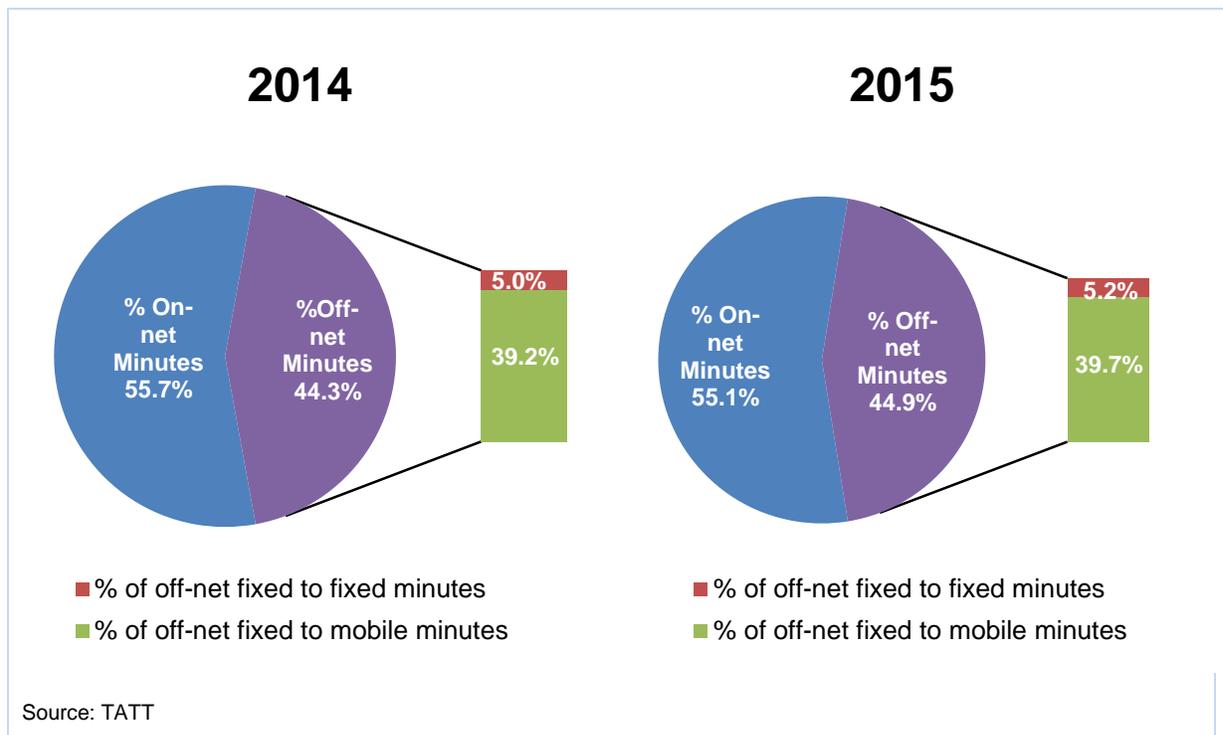
Consumers' consumption patterns for fixed voice minutes remained relatively unchanged in 2015 when compared to 2014. On-net traffic minutes in 2015, contributed 55.1% of total minutes in the fixed voice market and off-net traffic contributed 44.9%. Furthermore, off-net fixed to mobile minutes comprised the majority of total off-net minutes with 39.7% of total fixed voice traffic minutes. Alternatively, off-

³⁰ On-net fixed traffic refers to traffic originating on a service provider's fixed network and terminating on the same fixed network.

³¹ 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.

net fixed to fixed minutes comprised the minority with 5.2% of total fixed voice traffic minutes. The proportion of on-net traffic and off-net traffic minutes was relatively stable when compared to traffic data for 2014. While both categories of off-net minutes experienced a 1% change, there was a decrease in on-net traffic minutes by 4%. This percentage breakdown of minutes by traffic-types over the last 2 years is shown in Figure 19 below.

FIGURE 19: TOTAL DOMESTIC FIXED TRAFFIC MINUTES BY TRAFFIC-TYPES 2014 AND 2015



2.3.2. QUARTERLY DOMESTIC FIXED VOICE TRAFFIC IN MINUTES

Total fixed voice traffic minutes experienced a steady quarter-on-quarter decline, as customers spent less time on domestic fixed telephone calls. Recording 331.3 minutes in the first quarter, domestic fixed voice minutes gradually decreased to 309.5 million minutes in the fourth quarter. Figure 20 shows the quarterly decline in fixed voice minutes during 2015.

In terms of quarterly fixed voice minutes by traffic type, both on-net and off-net fixed voice minutes decreased steadily during 2015. The quarterly trend by traffic-type is depicted in Figure 21. Total on-net minutes recorded 200.1 million in the first quarter. During the year, on-net minutes decreased by approximately 3% in the second quarter and by 2% in the third quarter. In the fourth quarter on-net minutes amounted to 183.8 million; a 4% decrease when compared to the third quarter.

The decrease was relatively smaller for off-net minutes. Total off-net minutes recorded 131.2 million in the first quarter and subsequently decreased by 0.7% in the second quarter and 2% in the third quarter. In the fourth quarter off-net minutes amounted to 125.7 million; a 1% decrease when compared to the third quarter.

FIGURE 20: QUARTERLY FIXED VOICE TRAFFIC 2015

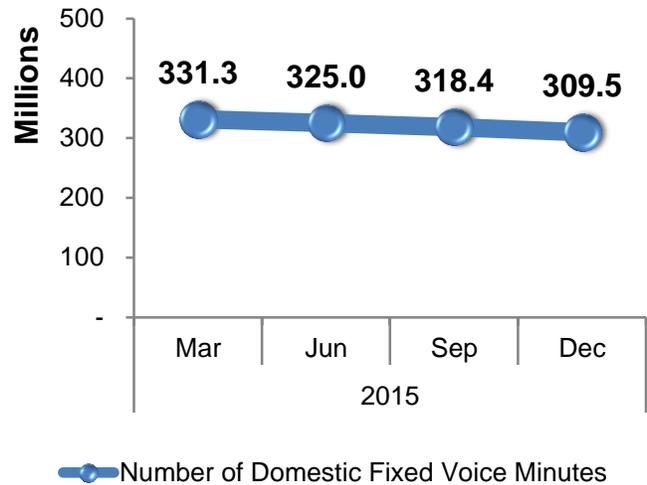
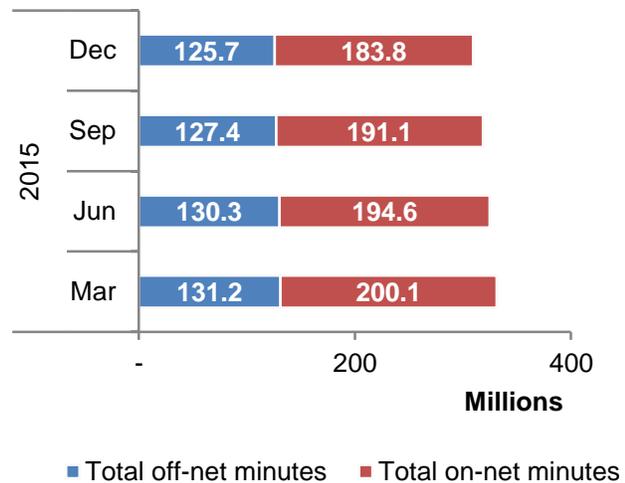


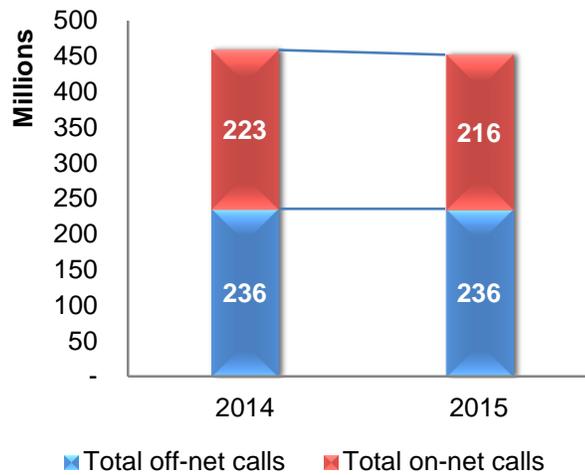
FIGURE 21: QUARTERLY FIXED VOICE TRAFFIC MINUTES BY TYPE 2015



2.3.3. ANNUAL DOMESTIC FIXED VOICE CALL VOLUMES

In addition to the reduction in domestic fixed voice minutes observed in 2015, the number of domestic calls also decreased. There were 452 million domestic fixed voice calls during the 2015 period; a 1% decrease when compared to the 459 million calls recorded for 2014. Total on-net calls accounted for 216 million (48%) of total fixed voice calls while total off-net calls accounted for 236 million calls (52%) of total fixed voice calls in 2015. When compared to 2014, on-net calls decreased by 3% while the number of off-net calls remained relatively unchanged. Figure 22 below provides a breakdown of domestic fixed line calls from 2014 to 2015.

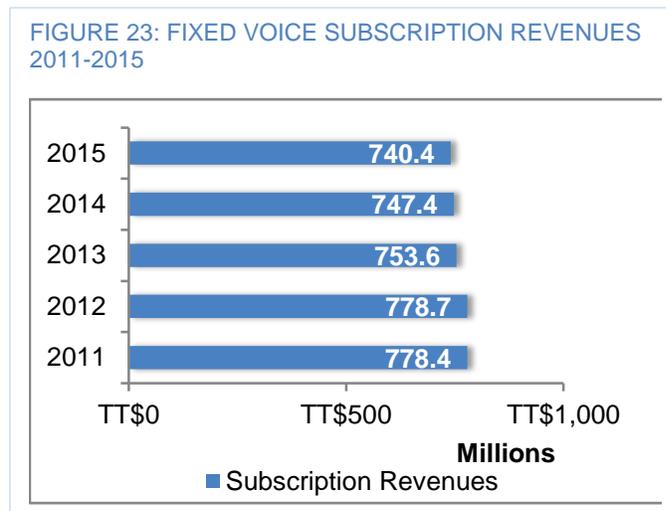
FIGURE 22: COMPARISON OF DOMESTIC CALL VOLUME TRAFFIC TYPE 2014-2015



2.4. Fixed Telephony Revenues

2.4.1. ANNUAL FIXED VOICE REVENUES

Gross revenues received from all fixed voice services³² totalled TT\$750.8 million in 2015 as compared to TT\$756.2 million in 2014; a \$5.4 million or 1% 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 2015 amounted to TT\$740.4 million, a decrease of approximately TT\$7 million or 1% from the previous year. 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 2011 to 2015 is illustrated in Figure 23.



During 2015, both residential and business subscription revenues decreased by 1%. Residential subscriptions contributed TT\$359.6 million or 48.6%, while business subscriptions accounted for TT\$380.8 million or 51.4%. Figure 24 below shows the separation of annual revenues derived from residential and business categories over the past 5 years while Figure 25 illustrates the percentage of revenue contribution for the 2015 period.

³² Fixed voice services include revenues from voice subscriptions and auxiliary fixed voice services including payphones, calling cards, and miscellaneous services.

FIGURE 24: PERCENTAGE OF RESIDENTIAL AND BUSINESS REVENUES - 2015

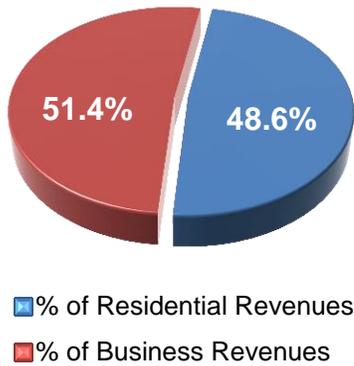
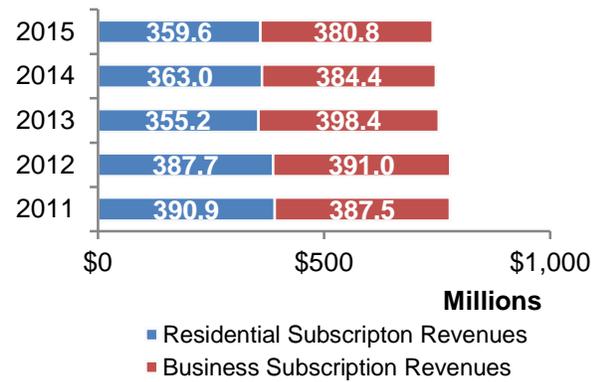


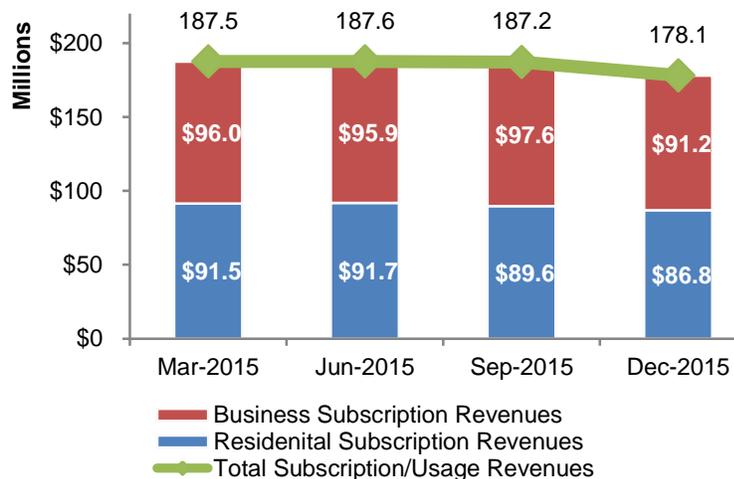
FIGURE 25: ANNUAL RESIDENTIAL AND BUSINESS FIXED VOICE SUBSCRIPTION REVENUES 2011-2015



2.4.2. QUARTERLY FIXED VOICE SUBSCRIPTION REVENUES

Quarterly fixed voice revenues experienced a general downward trend during 2015, notwithstanding the minor increase observed in the second quarter. Subscription revenues decreased from TT\$187.5 million in the first quarter to TT\$178.1 million in the fourth quarter. Comparing the composition of this revenue, both residential and business subscription revenues fluctuated during the period, averaging TT\$89.9 million and TT\$95.1 million respectively. The quarterly residential and business subscription revenues for 2015 are depicted in Figure 26 below.

FIGURE 26: QUARTERLY RESIDENTIAL AND BUSINESS VOICE SUBSCRIPTION REVENUES - 2015



2.5. Fixed Market Concentration

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 shares of all firms within a particular market and ranges from approximately 0 to 10,000. On comparing the last five years, Figure 27 below shows that the HHI for the fixed voice market has been generally declining.

The HHI for the fixed voice market recorded 8,267.1³³ as at December 2015; a 1% decrease when compared to the same period last year. During the year, the level of concentration gradually decreased from a HHI of 8,345.1 in the first quarter to 8,267.1 in last quarter. This decrease in the level of concentration implies a minor shift in the proportion of subscriptions between the players in the fixed voice market. Figure 28 below shows the HHI for the period January to December 2015.

FIGURE 27: HHI FOR THE FIXED VOICE MARKET 2011-2015

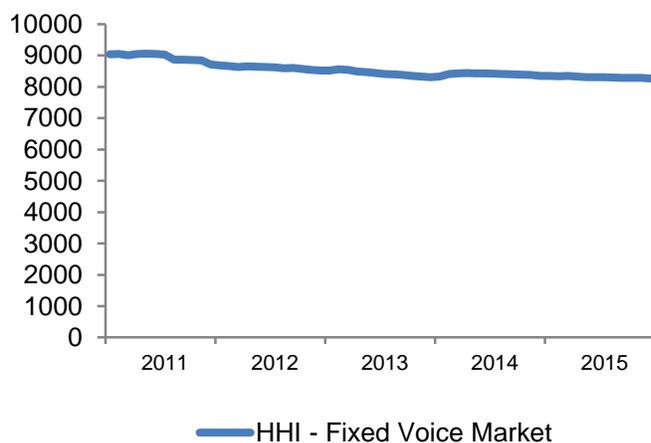
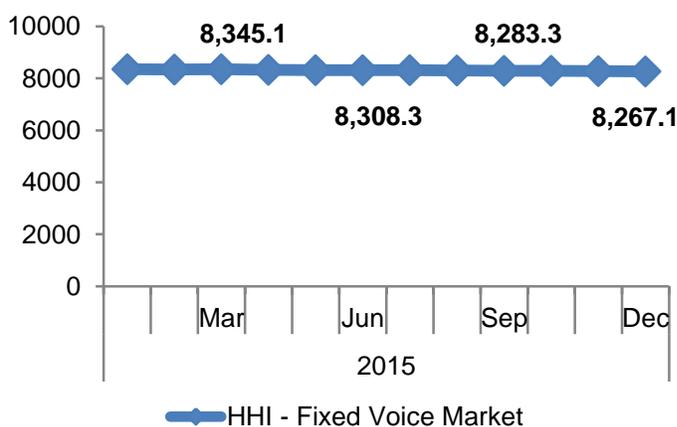


FIGURE 28: HHI FOR THE FIXED VOICE MARKET - 2015



³³ Based on subscription market share

2.6. Fixed Voice Average Revenue per User (ARPU)

On average, each consumer spent TT\$2,705 annually in 2015 for fixed voice services. This represents an increase of TT\$83.0 or 3.2% in the average revenue per user (ARPU)³⁴ over the amount recorded for 2014. The changes in ARPU for the last five years are highlighted in Figure 29.

Residential consumers spent an average of TT\$1,652 annually on fixed voice subscription services in 2015, an increase of 3.7% over 2014. Business consumers spent an average of TT\$6,365 annually on fixed voice subscription services, an increase of 1%. The trend in ARPU for residential and business consumers is illustrated in Figure 30.

FIGURE 29: ARPU FIXED VOICE SERVICES 2011-2015

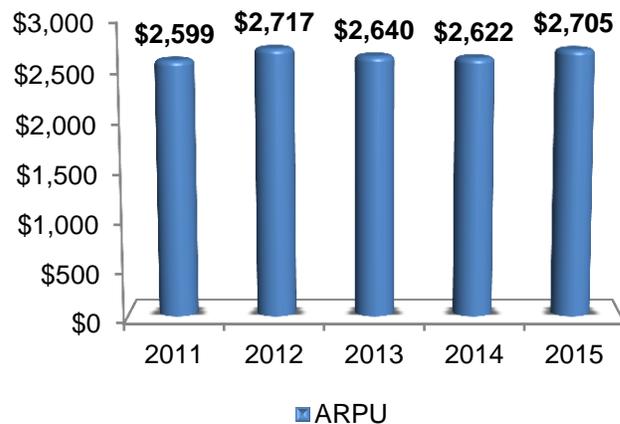
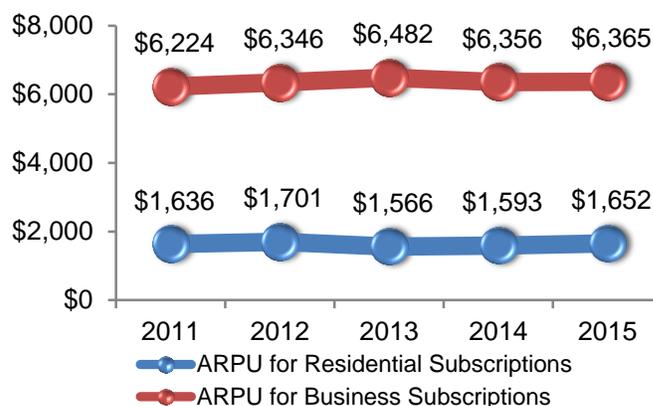


FIGURE 30: ARPU FOR FIXED RESIDENTIAL AND BUSINESS VOICE SERVICES 2011- 2015



³⁴ ARPU measures the average revenue generated by one subscriber. It is calculated = (Total revenues for fixed voice subscriptions / Total number of fixed subscriptions).

3. MOBILE VOICE MARKET REVIEW³⁵

Trinidad and Tobago's public domestic mobile telecommunication services, for the period January to December 2015, were provided by the two authorised mobile service providers:-

1. Telecommunication Services of Trinidad and Tobago (bmobile);
2. Digicel (Trinidad & Tobago) Limited.

The 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 SUBSCRIPTIONS³⁶

3.1.1. ANNUAL MOBILE SUBSCRIPTIONS

As illustrated in Figure 31 below, mobile voice subscriptions increased 7% from 1.98 million in 2014 to reach 2.12 million in 2015. Compared to the last three years, this represents a significant increase. While this market increased moderately during 2012 to 2014, the number of mobile subscriptions soared to over 2 million in 2015.

This significant increase in the number of mobile subscriptions was mainly attributable to a sharp increase in postpaid subscriptions. Of the 2.12 million mobile voice subscriptions, approximately 1.749 thousand were prepaid customers (where customers purchase credit prior to service use) while 374 thousand were postpaid customers (where customers enter into a contractual billing arrangement with a mobile service provider).

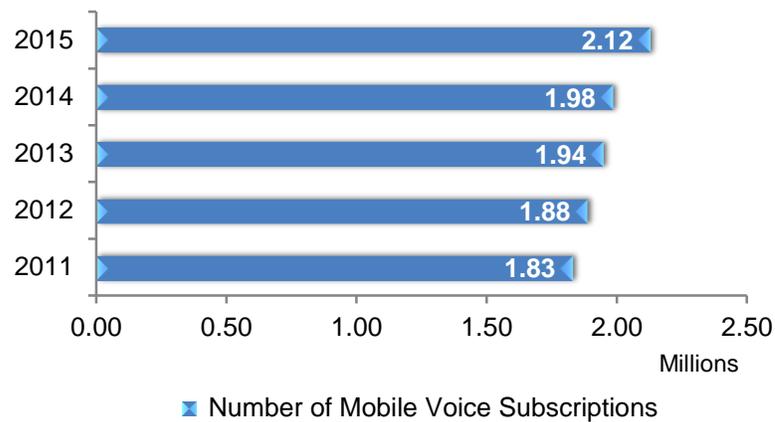
³⁵A mobile voice subscription includes SMS services

³⁶A mobile voice subscription refers to an activated (prepaid or postpaid) SIM card that enables the user to make and/or receive a call or SMS/MMS.

MOBILE VOICE MARKET HIGHLIGHTS

- ✓ **Over 2 million mobile voice subscriptions.**
- ✓ **Mobile revenues fall despite growth in subscriptions.**
- ✓ **Sharp increase in postpaid subscriptions; 37% increase.**
- ✓ **Prepaid to postpaid migration continues.**
- ✓ **Number of mobile calls and minutes decrease.**
- ✓ **Mobile voice penetration rate stand at 157%.**

FIGURE 31: MOBILE SUBSCRIPTIONS 2011 - 2015



Source: TATT

During 2012 to 2014, a steady upward trend was observed for prepaid subscriptions, recording an average increase of approximately 2% during this period (Figure 32). This trend continued in 2015 with prepaid subscriptions experiencing a 2% increase to record 1,749 thousand in the review period. During the same period (2012 to 2014), the growth rate for postpaid subscriptions was higher than prepaid, recording an average increase of 8% during this period. This trend intensified in 2015, with postpaid subscriptions increasing significantly by 37% to record 374 thousand.

Prepaid subscriptions continued to constitute the majority of the mobile market, accounting for 82.4% of total mobile voice subscriptions (down from the 86.2% previously recorded in 2014). Postpaid subscriptions made up the remaining 17.6% (up from the 13.8% previously recorded in 2014). Figure 33 shows the percentage breakdown of mobile subscriptions in 2015.

FIGURE 32: MOBILE PREPAID AND POSTPAID SUBSCRIPTIONS 2011-2015

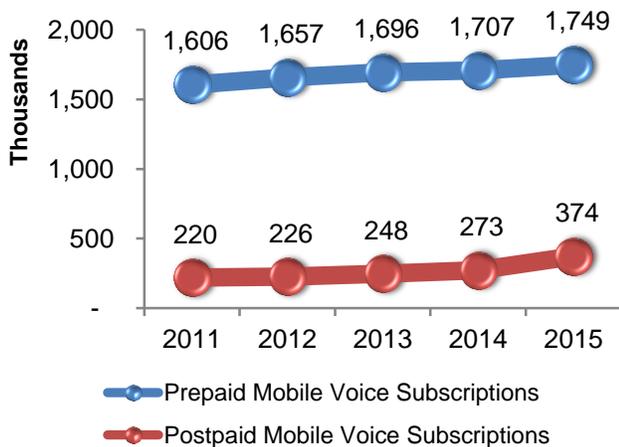
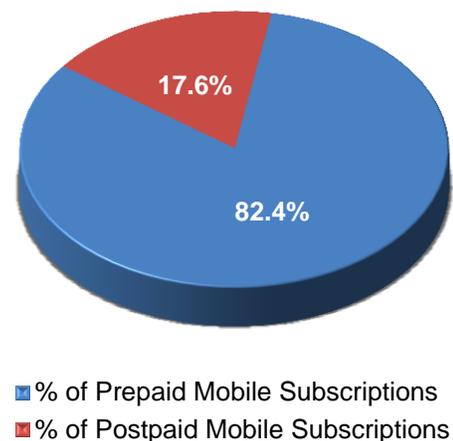
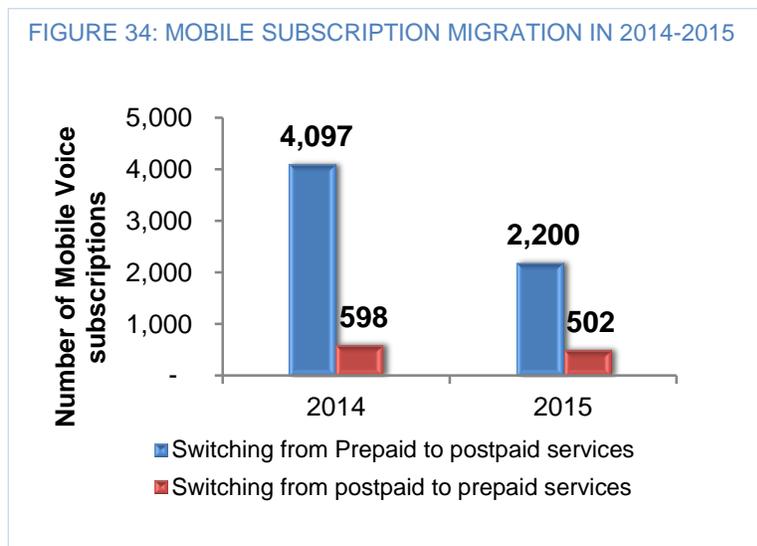


FIGURE 33: PERCENTAGE OF PREPAID AND POSTPAID SUBSCRIPTIONS 2015

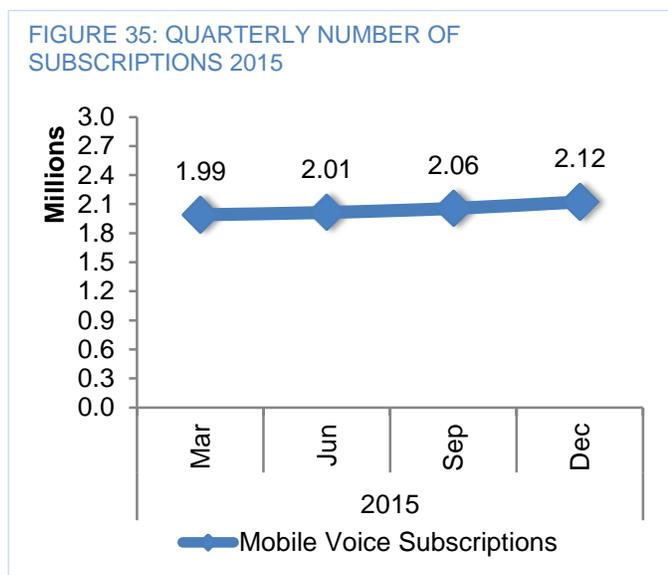


The change in the proportion of prepaid and postpaid subscriptions reported above is consistent with the significantly higher increase in postpaid subscriptions compared to the minimal increase in prepaid. Another contributor to the observed change in this proportion may be reflected in the number of customers switching between the two service options. Figure 34 below illustrates consumers switching in 2014 and 2015. In both periods, there were a greater number of consumers switching from prepaid to postpaid services. Notably, the number of persons switching from prepaid to postpaid services reduced by almost 50% in 2015 as compared to 2014. Notwithstanding this significant reduction, the number of prepaid to postpaid migration far exceeded that of postpaid to prepaid migration. During the 2015 period, there were 2,200 subscriptions migrating from prepaid services to postpaid services in contrast to 502 subscriptions migrating from postpaid to prepaid services.



3.1.2. QUARTERLY MOBILE SUBSCRIPTIONS

As illustrated in Figure 35, quarterly mobile subscriptions increased steadily in the mobile voice market during 2015. There was a minimal increase in subscriptions from 1.98 million in the fourth quarter of 2014 to 1.99 million in the first quarter of 2015. Subsequently, there were gradual improvements during the remaining quarters of 2015; from 1.99 million to 2.12 million



subscriptions by the end of the fourth quarter of 2015. Notably, the largest increase was observed in the fourth quarter, where mobile subscriptions increased by 3% from the third quarter.

During 2015, prepaid subscriptions remained relatively stable while a marked increase in postpaid subscription was observed in this period.

There was a temporary decrease in prepaid subscriptions in the first quarter of 2015, from 1,707 in the fourth quarter of 2014 to 1,693 thousand subscriptions. Prepaid subscriptions increased gradually in the second quarter to 1,704 thousand. By the third quarter, prepaid subscriptions recovered, increasing to 1,717 thousand and subsequently to 1,749 by the fourth quarter. Figure 36 shows a relatively steady quarter-on-quarter growth for prepaid subscriptions over the period 2014-2015.

Overall, there was a steady upward trend in postpaid subscriptions over the past two years. Postpaid subscriptions increased sharply from 273 thousand at the end of 2014 to 297 thousand in the first quarter of 2015. The rate of growth slowed slightly in the second quarter, increasing to 310 thousand, a 4% increase. This growth picked up again in the third and fourth quarters, increasing by 9 and 10% respectively. At the end of the year, postpaid subscriptions stood at 374 thousand subscriptions (Figure 37).

FIGURE 36: QUARTERLY PREPAID SUBSCRIPTIONS: 2014 – 2015

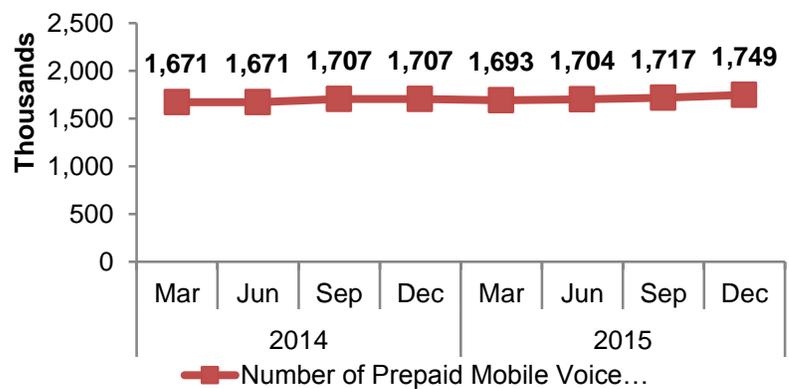
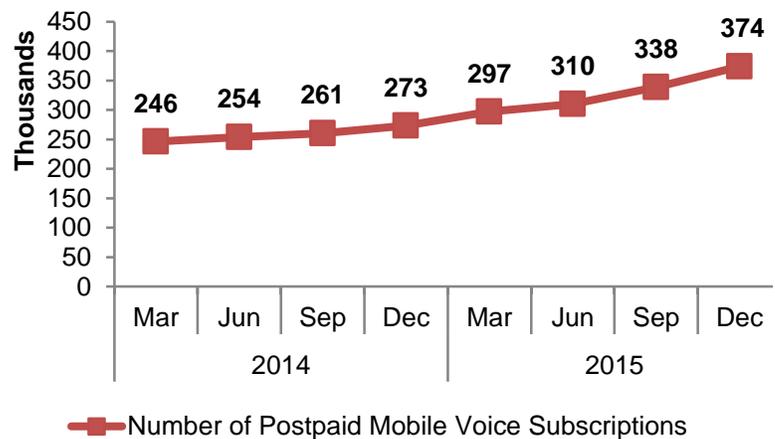


FIGURE 37: QUARTERLY POSTPAID SUBSCRIPTIONS: 2014 – 2015

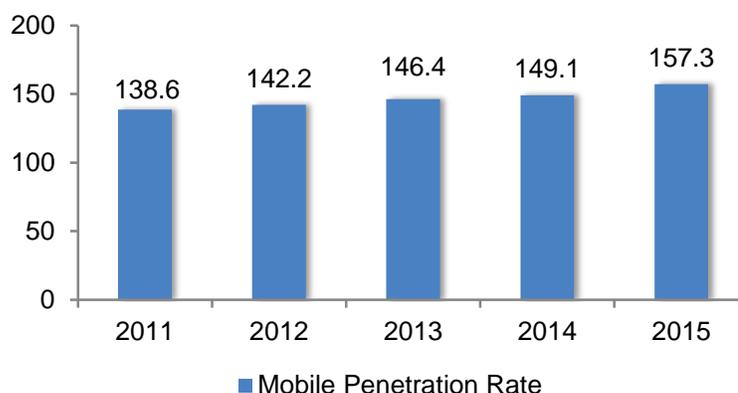


3.2. Mobile Penetration

3.2.1. MOBILE PENETRATION RATE IN THE DOMESTIC MARKET

The increase in mobile subscriptions observed in 2015 is also reflected in an increase in the mobile penetration rate. The mobile penetration³⁷ rate in the mobile voice market stood at 157.3 as at December 2015, representing a 5% increase over 2014. This implies that there were approximately 157 mobile subscriptions per 100 inhabitants in Trinidad and Tobago as at the end of 2015. Figure 38 highlights the mobile penetration rate from 2011 to 2015.

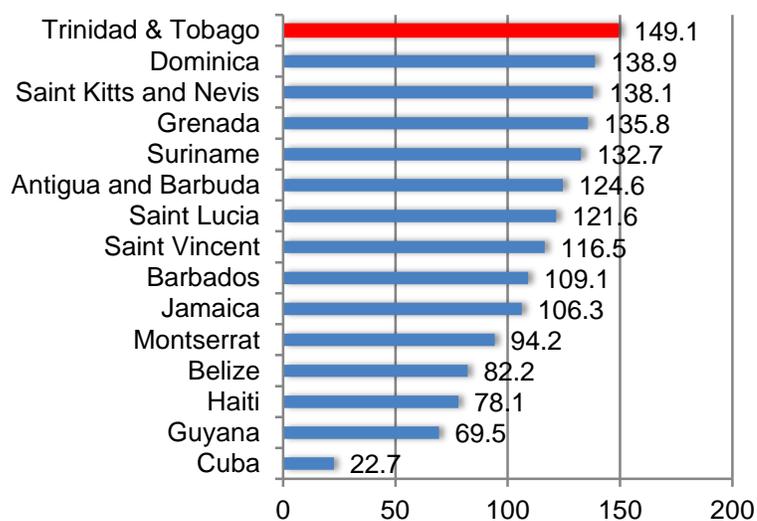
FIGURE 38: MOBILE PENETRATION PER 100 INHABITANTS 2011-2015



3.2.2. REGIONAL MOBILE PENETRATION RATES

Figure 39 compares the mobile penetration rates among CARICOM Countries. Trinidad and Tobago recorded the highest mobile penetration rate of 157.3 for the 2015 period. According to Business Monitor International³⁸, Dominica ranks second in mobile voice penetration with approximately 139.9 mobile subscriptions per 100 of its population. Following closely behind, was Saint Kitts and Nevis, recording a mobile penetration rate of 138.1.

FIGURE 39: MOBILE PENETRATION AMONG CARICOM COUNTRIES – 2015



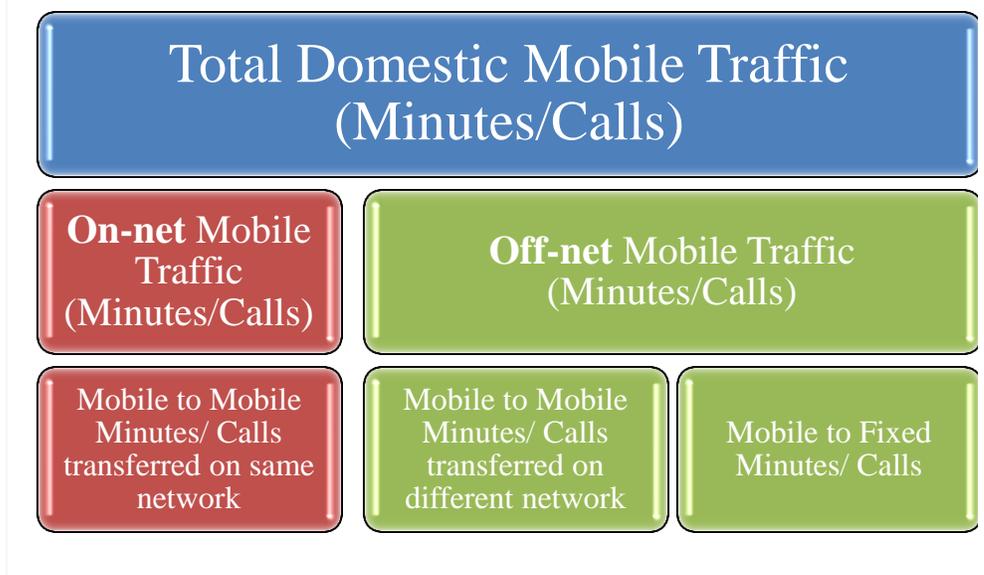
³⁷ Mobile Penetration is calculated = (number of mobile subscriptions / total population * 100). Total population used from the Central Statistical Office's midyear population estimate.

³⁸ Data sourced from Business Monitor International database, accessed June 12th 2015

3.3. Domestic Mobile Voice Traffic

Domestic mobile voice traffic refers to the number of minutes or calls originating on domestic mobile networks. This traffic can be categorised as depicted in Figure 40. Consumers made a total of 3,337 million mobile telephone calls, with a total duration of 3,914 million minutes in 2015.

FIGURE 40: CLASSIFICATION OF DOMESTIC MOBILE TRAFFIC



3.3.1. ANNUAL DOMESTIC MOBILE VOICE TRAFFIC IN MINUTES

Of the 3,914 million minutes of domestic mobile traffic recorded for 2015, on-net³⁹ traffic totalled 3,107 million minutes while off-net⁴⁰ traffic recorded 807 million minutes. Off-net mobile to mobile minutes totalled 546 million, while off-net mobile to fixed minutes totalled 261 million minutes.

When compared to 2014, total domestic traffic (on-net and off-net minutes) decreased in 2015 by 6.1% or 255 million. It was also observed that on-net traffic minutes decreased by 7.6% (257 million minutes), while off-net traffic increased minimally by 0.3% (2 million minutes). Figure 41 illustrates the breakdown of domestic mobile traffic minutes for 2015 and Table 4 compares 2014-2015 domestic mobile traffic in minutes.

³⁹ On-net mobile traffic refers to traffic originating on a service provider's mobile network and terminating on the same mobile network.

⁴⁰ 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.

FIGURE 41: BREAKDOWN OF DOMESTIC MOBILE TRAFFIC MINUTES 2015

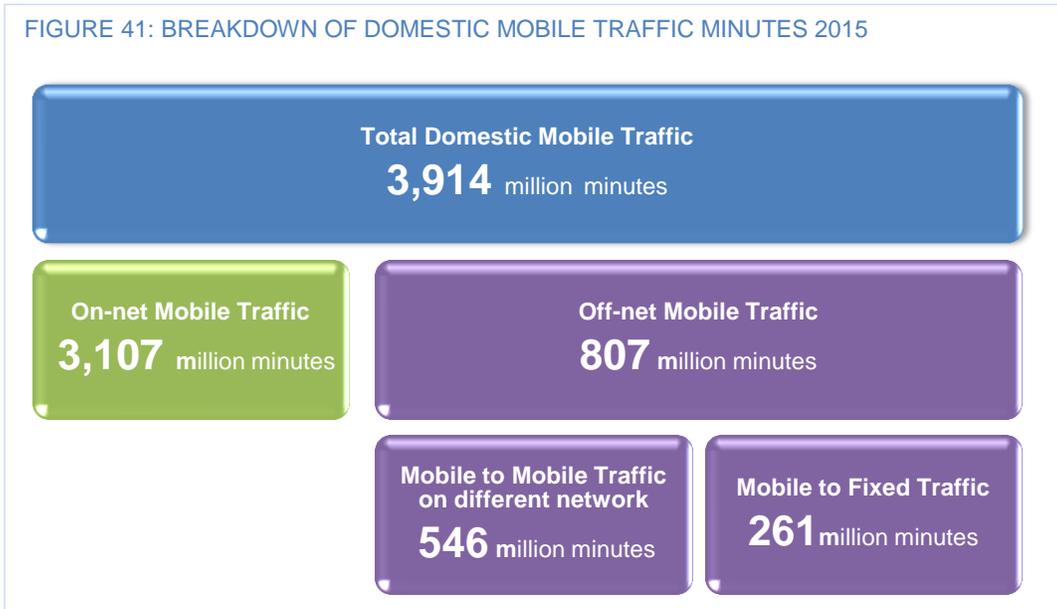
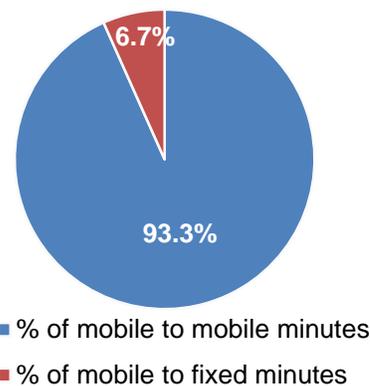


TABLE 4: BREAKDOWN OF DOMESTIC MOBILE TRAFFIC MINUTES 2014-2015

	2014 (millions)	2015 (millions)
On-net Mobile Traffic	3,363.7	3,107
Off-net Mobile Traffic:-	805.3	807
<i>Mobile-to-Mobile Traffic on different network</i>	<i>551.8</i>	<i>546</i>
<i>Mobile-to-Fixed Traffic</i>	<i>253.5</i>	<i>261</i>
Total Domestic Mobile Traffic	4,169.0	3,914

The percentage of total domestic mobile voice minutes terminating on a domestic mobile network continued to account for the majority of mobile minutes, comprising 93.3%. The number of domestic mobile minutes terminating on a domestic fixed network represented 6.7%. Figure 42 gives a representation of this percentage contribution.

FIGURE 42: PERCENTAGE OF MOBILE TO MOBILE AND MOBILE TO FIXED MINUTES - 2015



3.3.2. ANNUAL DOMESTIC MOBILE VOICE CALL VOLUMES

In 2015, domestic mobile voice calls amounted to 3,337 million. Down by 3.3% when compared to 2014, domestic mobile voice calls comprised 2,490 million on-net calls, representing 74.6% of total domestic mobile calls. Off-net traffic recorded 847 million calls, accounting for 25.4% of total domestic mobile calls. Of 847 million off-net traffic calls, approximately 175 million were mobile to fixed, which represented 5.3% of total domestic mobile calls, while the remaining 671 million mobile to mobile off-net traffic accounted for 20.1% of total domestic mobile calls. While the number of domestic mobile calls for each subcategory decreased minimally, there was no major change in the ratios when compared to 2014. A breakdown of the subcategories of traffic by number of calls is shown in Figure 43 while Table 5 compares 2014-2015 domestic mobile call volumes.

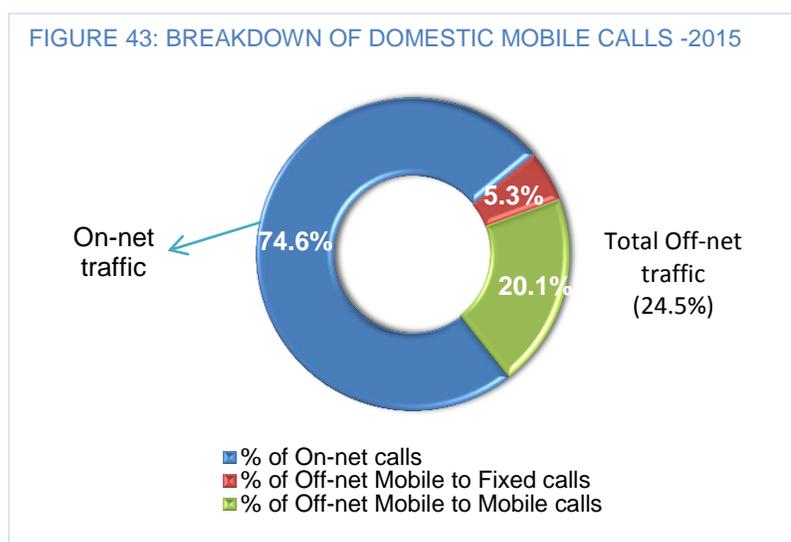


TABLE 5: BREAKDOWN OF DOMESTIC MOBILE CALLS 2014-2015

	2014 (Millions)	2015 (Millions)
On-net Mobile Voice Calls	2,616.7	2,490
Off-net Mobile Voice Calls:-	851.3	847
<i>Off-net Mobile-to-Fixed Calls</i>	<i>182.7</i>	<i>175</i>
<i>Off-net Mobile-to-Mobile Calls</i>	<i>668.6</i>	<i>671</i>
Total Domestic Mobile Voice Calls	3,468.1	3,337

3.3.3. QUARTERLY DOMESTIC MOBILE VOICE MINUTES

Domestic mobile voice minutes fluctuated for each quarter in 2015 as shown in Figure 44. The first quarter recorded the highest domestic mobile voice traffic (990 million minutes) in 2015. Mobile minutes subsequently decreased in the second quarter by 2% to 970 million minutes. In the third quarter, traffic remained relatively flat and then rose by 1.0% to 984 million minutes in the fourth quarter. Overall, there was a decrease in minutes during 2015. As Figure 45 illustrates, these fluctuations did not significantly change the ratio of mobile to fixed minutes and mobile to mobile minutes, as this remained relatively stable during the year.

FIGURE 44: QUARTERLY MOBILE VOICE MINUTES 2015

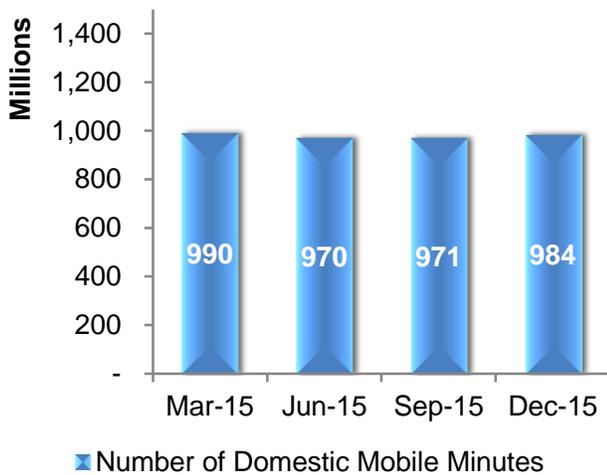
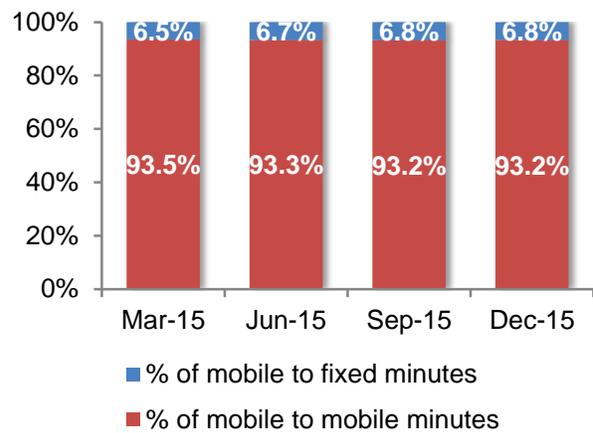


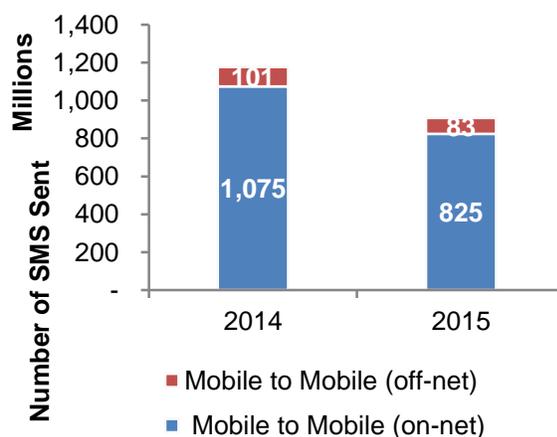
FIGURE 45: QUARTERLY MOBILE VOICE MINUTES BY TYPE 2015



3.3.4. DOMESTIC MOBILE SHORT MESSAGING SERVICE (SMS)

Following a minimal increase in the number of domestic SMS in 2014, there was a sharp decline of 23% in 2015. Down from 1,176.1 million in the previous year, total SMS sent totalled 908 million SMS in 2015. Of this, 825 million SMS were on-net and 83 million off-net, as depicted in Figure 46. Both on-net and off-net SMS decreased significantly by 23% and 18%, respectively.

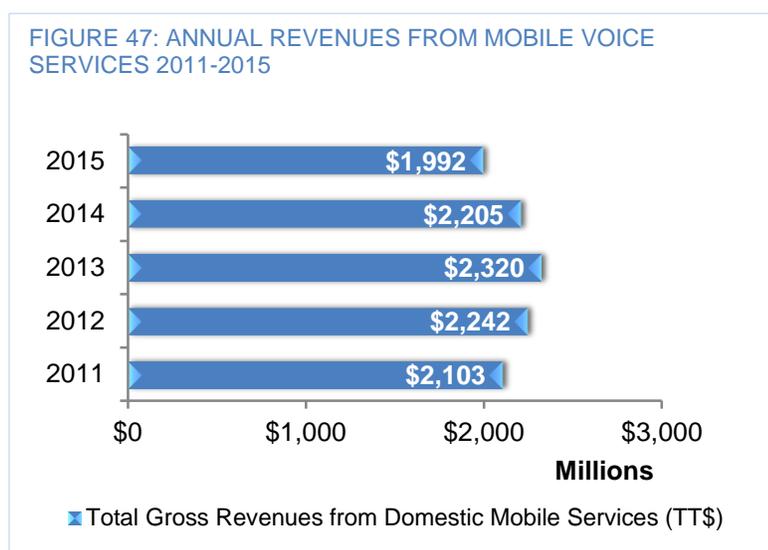
FIGURE 46: NUMBER OF ON-NET AND OFF-NET SMS SENT IN 2015



3.4. Mobile Voice⁴¹ Revenues

3.4.1. ANNUAL REVENUES FROM MOBILE VOICE SERVICES⁴²

The annual revenue trend for mobile voice services from 2011 to 2015 is illustrated in Figure 47. In 2015, total revenues from mobile voice services amounted to TT\$1,992 million; the lowest recorded in the past five (5) years and represents a 10% decrease over the previous year. Following a steady increase in annual revenues from 2011 to 2013, mobile voice revenues experienced two (2) consecutive declines in 2014 and 2015.



Of the TT\$1,992 million earned from the mobile voice market, prepaid, postpaid and other⁴³ services generated TT\$1,527 million, TT\$360 million and TT\$105 million in revenues respectively. Prepaid and postpaid mobile voice revenues contributed 77% and 18% of the market, respectively. Other revenues accounted for 5%. Figure 48 illustrates the percentage breakdown of revenues from mobile voice services while Figure 49 shows the five (5) year trend in prepaid and postpaid revenues. For the review period, it was observed that postpaid revenues experienced three (3) consecutive declines from 2013 to 2015. Alternatively, prepaid revenues experienced its first decline in 2015, following a steady year on year increase from 2011 to 2014.

⁴¹ Mobile voice revenues include revenues from SMS services.

⁴² These revenues exclude mobile Internet revenue which is reported within the Internet section of this report.

⁴³ Other revenues comprise earnings generated from equipment sales, SIM card sales and administrative charges.

FIGURE 48: PERCENTAGE OF PREPAID AND POSTPAID REVENUES FROM MOBILE VOICE SERVICES FOR 2015

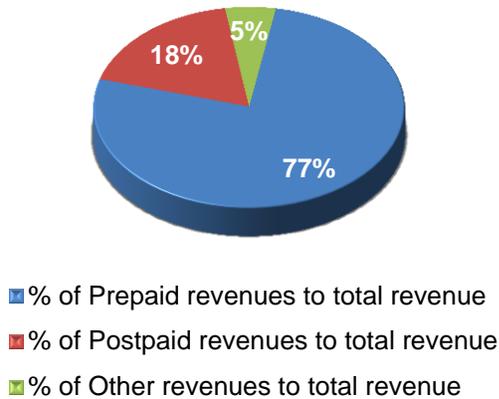
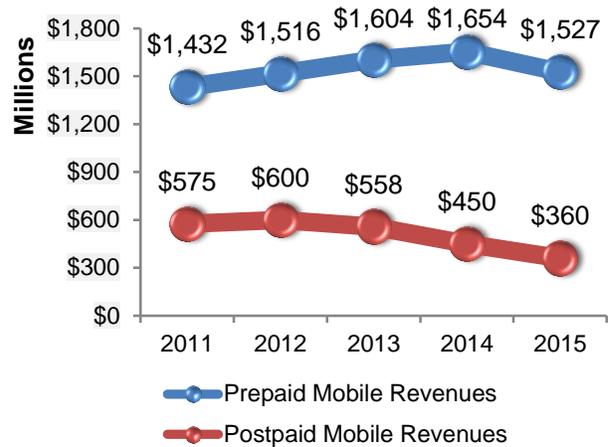


FIGURE 49: REVENUES FROM MOBILE VOICE SERVICES-PREPAID AND POSTPAID 2011-2015



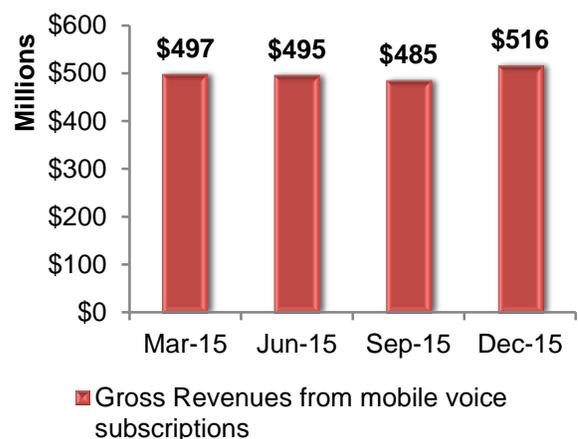
3.4.2. QUARTERLY REVENUES FROM MOBILE VOICE SERVICES

Similar to previous years, quarterly fluctuations in mobile voice revenues were observed for 2015. Revenues decreased marginally from TT\$497 million in the first quarter to TT\$495 million in the second quarter. Revenues continued to decrease in the third quarter, to record TT\$485 million. Subsequently revenues increased in the fourth quarter by TT\$31 million, where quarterly revenues recorded TT\$516 million; notably the highest earning quarterly revenue for 2015. Figure 50 illustrates these quarterly changes in revenues for 2015.

Prepaid revenues remained relatively stable throughout the year, with marginal quarter on quarter fluctuations. The second quarter recorded a decrease of TT\$10 million moving from TT\$382 million to TT\$372 million. Revenues increased to TT\$380 million and then increased again to TT\$393 million at the end of the third and fourth quarters respectively. Postpaid

revenues depicted a gradual downward trend recording TT\$102 million in the first quarter to TT\$97 million in the second quarter.

FIGURE 50: QUARTERLY REVENUES FROM MOBILE VOICE SERVICES 2015



Postpaid revenues continued to decline in the third and fourth quarters, reaching its lowest in the fourth quarter with TT\$74 million being generated. Figure 51 below illustrates.

Prepaid subscriptions generated the majority of the revenues in the mobile voice market with a quarterly average of 77%, while postpaid averaged 18% during the 2015 period. Other mobile voice revenues accounted for an average of 5%. As Figure 52 below illustrates, the proportion of prepaid, postpaid and other revenues were relatively stable during 2015.

FIGURE 51: QUARTERLY PREPAID AND POSTPAID MOBILE VOICE REVENUES – 2015

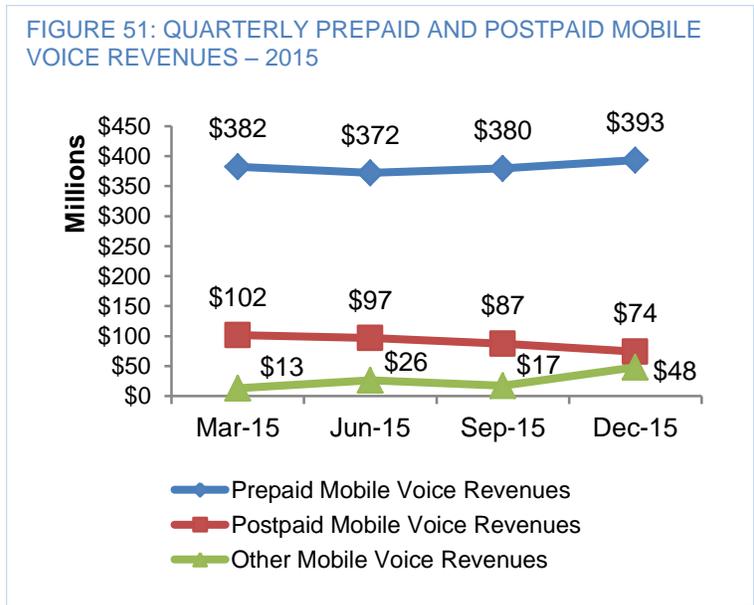
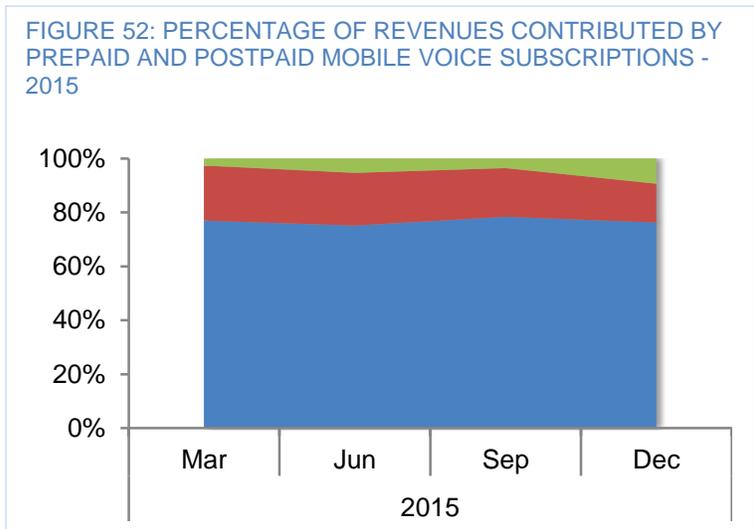
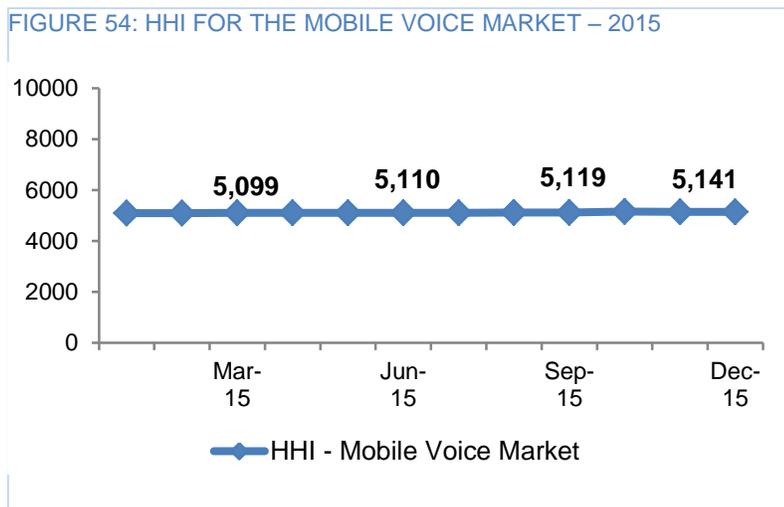
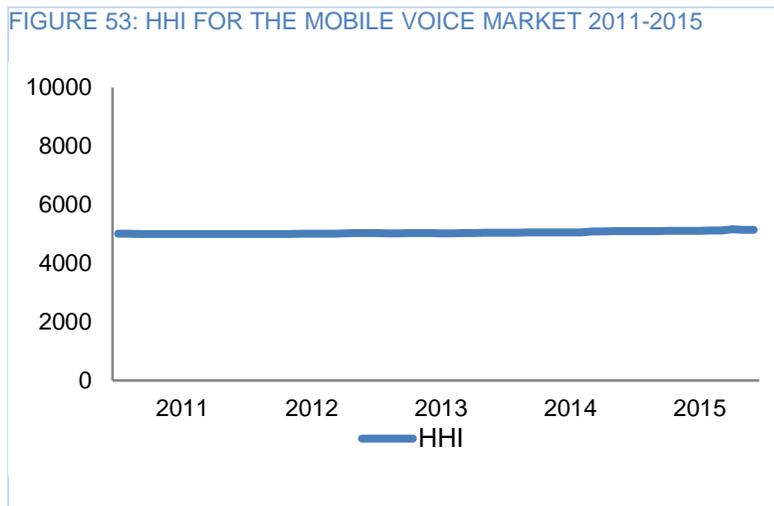


FIGURE 52: PERCENTAGE OF REVENUES CONTRIBUTED BY PREPAID AND POSTPAID MOBILE VOICE SUBSCRIPTIONS - 2015



3.5. Mobile Market Concentration

Using the Hirschman-Herfindahl Index (HHI)⁴⁴, the Authority calculated the level of concentration in the mobile voice market of Trinidad and Tobago for the year ending December 2015. On comparing the last five years, Figure 53 shows that the HHI has been relatively stable with roughly 5000 points being achieved over the period. Notably, a minimal increase in the HHI was observed in 2015 with a steady, albeit moderate increase in the level of concentration. As illustrated in Figure 54, the HHI in the mobile voice market increased from 5,099 in the first quarter to 5,141 in the fourth quarter.



⁴⁴ 'Number of subscriptions' was used to determine market share for the service providers.

3.6. Average Revenue per User

With increasing subscriptions and falling revenues in the mobile voice market, the average revenue per user (ARPU) decreased significantly in 2015. The ARPU in this market fell by TT\$175 (16%) as mobile customers spent an average of TT\$938 for mobile voice services⁴⁵ during 2015. For prepaid mobile subscriptions, the ARPU stood at TT\$873; a decrease of TT\$96 (10%) when compared to 2014. The ARPU generated for postpaid subscriptions was TT\$962; a marked decrease of TT\$686 (42%). Figure 55 highlights total ARPU for mobile services while Figure 56 compares the ARPU earned for prepaid and postpaid subscriptions over the past five years.

FIGURE 56: ARPU FOR MOBILE VOICE SERVICES 2011-2015

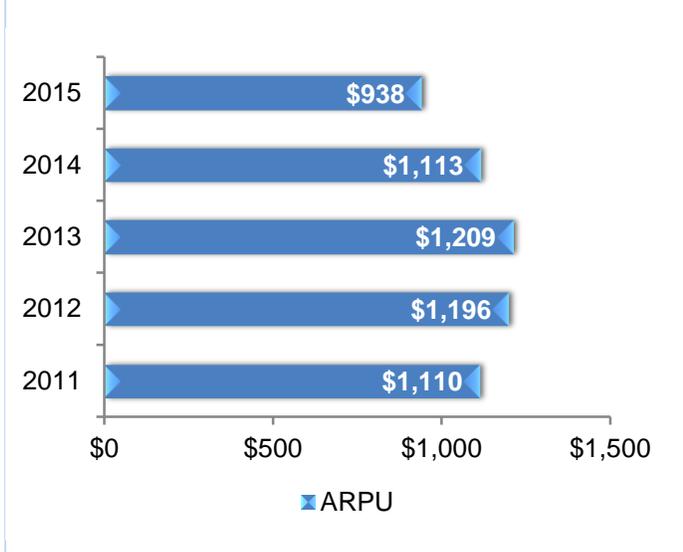
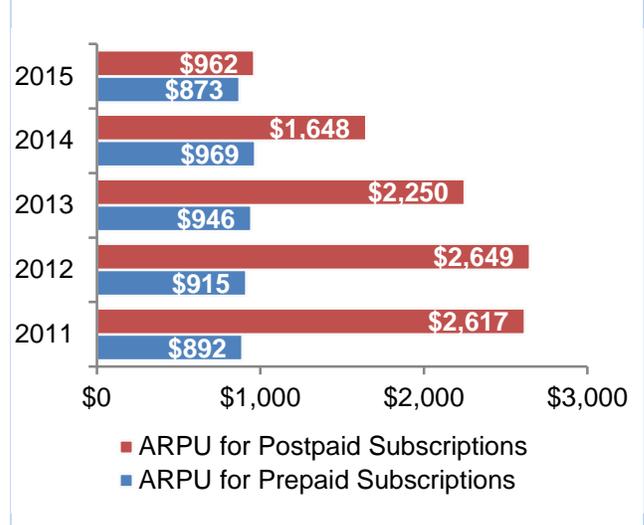


FIGURE 55: ARPU FOR PREPAID AND POSTPAID MOBILE VOICE SUBSCRIPTIONS 2012 - 2015



⁴⁵ ARPU from mobile voice services includes Mobile voice and SMS.

4. INTERNET MARKET REVIEW

This section reviews the performance of Trinidad and Tobago's Internet market for the 2015 reporting period. The delivery of Internet services over fixed (wired or wireless) and mobile domestic public telecommunications networks were compiled and presented. Of the sixteen (16) authorised fixed domestic telecommunications services concessionaires, eight (8) provided fixed Internet services:-

- Air Link Communications;
- Columbus Communications Trinidad Limited (CCTL);
- Diversified Technologies Limited;
- Green Dot Limited;
- Lisa Communications Limited;
- Massy Technologies Limited;
- Open Telecom Limited;
- Telecommunications Services of Trinidad and Tobago (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-coax networks utilising DOCSIS 3.0 technology, as well as a mix of Fibre to the Curb (FTTC), Fibre to the Business (FTTB) or Home (FTTH) topologies. On the other hand, fixed wireless Broadband Internet operators employ WiMAX and LTE technologies to support the need for services demanding higher speeds on the access network.

INTERNET MARKET HIGHLIGHTS

- ✓ **Double digit growth in both fixed and mobile Internet**
- ✓ **Growth in residential fixed internet subscriptions exceeds business**
- ✓ **More customers subscribing to Internet speeds 'equal to or greater than 10Mb'**
- ✓ **Almost 100% of Fixed Internet subscriptions are broadband**
- ✓ **67% of mobile Internet subscriptions use broadband**
- ✓ **40% of mobile customers used mobile Internet**
- ✓ **65% of households connected to fixed Internet**
- ✓ **12% growth in total Internet revenues**

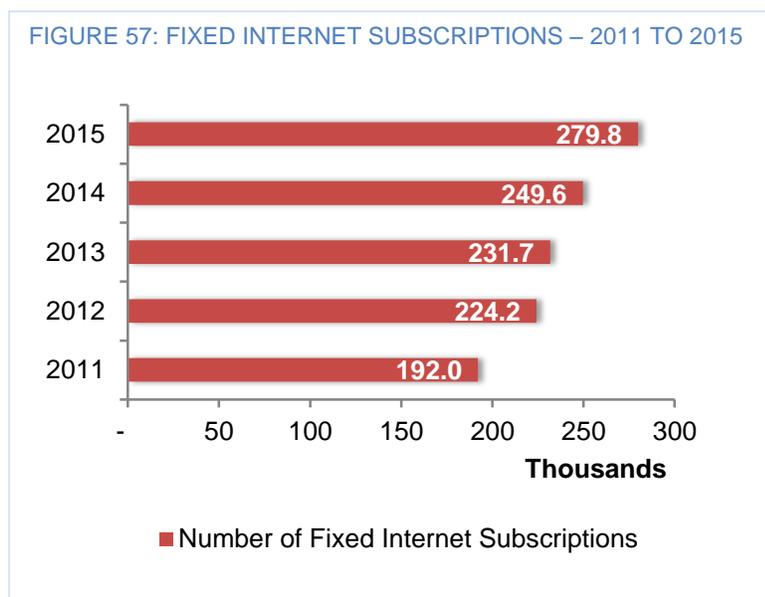
Two (2) mobile operators were authorised to provide domestic mobile telecommunications services, including the provision of Internet services to the public:-

- Telecommunications Services of Trinidad and Tobago (bmobile)⁴⁶;
- Digicel (Trinidad & Tobago) Limited.

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

4.1 Fixed Internet Subscriptions

Subscriptions to fixed Internet services in Trinidad and Tobago continued to show favourable growth in 2015. Figure 57 illustrates this increasing trend for fixed Internet subscriptions over the last five years. Approximately 279.8 thousand fixed Internet subscriptions were recorded as at December 2015. Following a 7.8% increase in 2014, this market continued to experience significant growth, increasing by 12% in 2015.



⁴⁶ bmobile is the mobile services division of TSTT, therefore their Internet services are recorded as one concessionaire.

4.1.1 FIXED BROADBAND AND FIXED NARROWBAND INTERNET SUBSCRIPTIONS

Fixed broadband Internet subscriptions continued to constitute the majority of subscriptions in the fixed Internet market. As illustrated in Figure 58 below, fixed broadband⁴⁷ Internet subscriptions accounted for 99.5% of total fixed Internet subscriptions in 2015, while fixed narrowband⁴⁸ Internet subscriptions represented a mere 0.5%.

The downward trend in fixed narrowband subscriptions continued as the upward trend in fixed broadband subscriptions intensified in 2015. Narrowband subscriptions stood at a low of 1.3 thousand subscriptions; a 16% or 0.2 thousand decrease in subscriptions from last year. Up by 12% or 30.4 thousand subscriptions when compared to 2014, broadband subscriptions stood at 278.3 thousand as at December 2015. Figure 59 illustrates a five year line graph of the drastic decline in fixed narrowband subscriptions while Figure 60 shows the increasing trend for fixed broadband subscriptions.

FIGURE 58: PERCENTAGE OF BROADBAND AND NARROWBAND FIXED INTERNET SUBSCRIPTIONS 2015

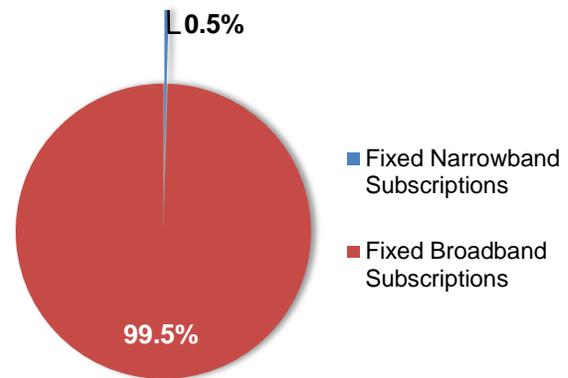


FIGURE 59: FIXED NARROWBAND SUBSCRIPTIONS – 2011 TO 2015

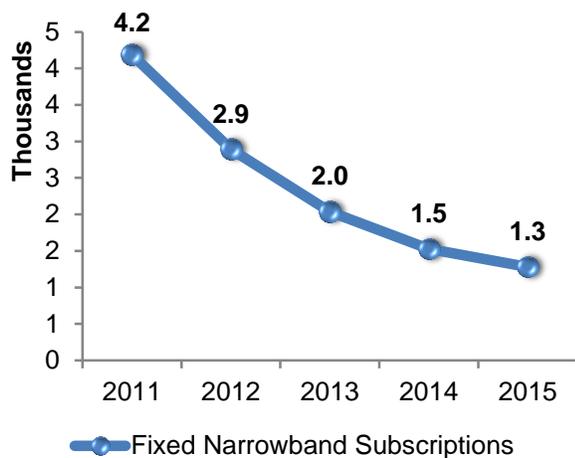
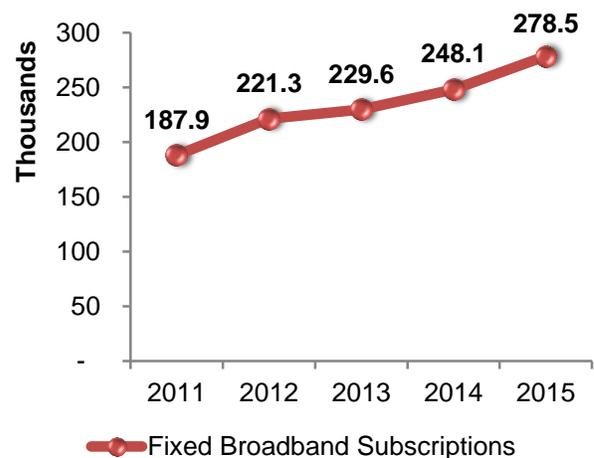


FIGURE 60: FIXED BROADBAND SUBSCRIPTIONS – 2011 TO 2015



⁴⁷ Broadband can be defined as speeds > 256 kbits per second.
⁴⁸ Narrowband can be defined as speeds ≤ 256 kbits per second

The number of fixed Internet subscriptions can be further subdivided into residential and business categories.

Of the 1.3 thousand narrowband subscriptions, approximately 0.9 thousand were residential while 0.4 thousand were business. Noticeably, business narrowband subscriptions remained unchanged when compared to 2014 and 2013, while residential fell by 0.2 thousand subscriptions. The subdivision of fixed narrowband Internet subscriptions into residential and business is illustrated in Figure 61 below.

Similarly, Figure 62 illustrates the proportion of business and residential subscriptions for broadband Internet. Compared to 2014, business subscriptions increased by 9%, recording 16.7 thousand in 2015. Up by 12%, residential broadband subscriptions stood at 261.8 thousand.

FIGURE 61: RESIDENTIAL AND BUSINESS FIXED NARROWBAND INTERNET SUBSCRIPTIONS – 2011 TO 2015

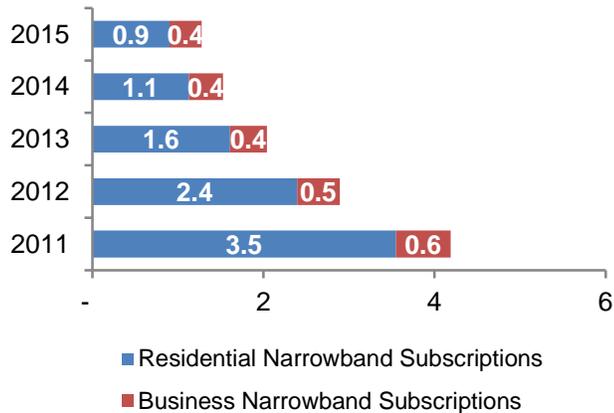


FIGURE 62: RESIDENTIAL AND BUSINESS FIXED BROADBAND INTERNET SUBSCRIPTIONS – 2011 TO 2015

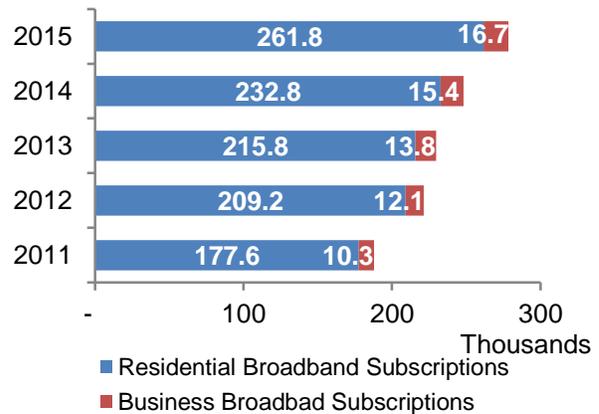
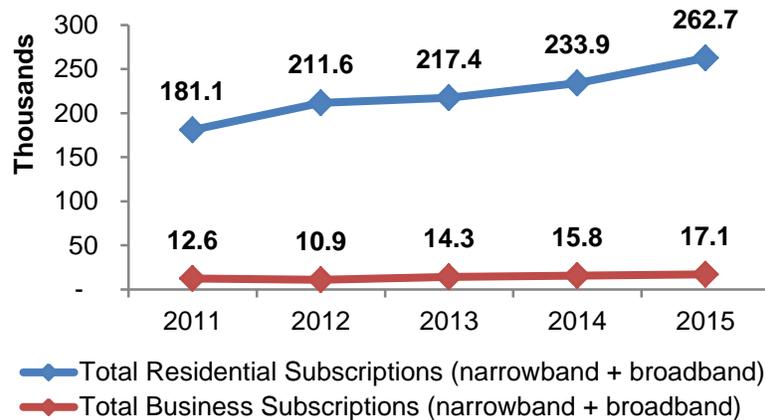


Figure 63 depicts a five year trend of total residential and business subscriptions for fixed Internet. Total residential subscriptions, including narrowband and broadband, amounted to approximately 262.7 thousand, growing by 12.3% or 29 thousand subscriptions from 2014. Total business subscriptions measured close to 17.1 thousand, increasing by 8.6% or 1.4 thousand subscriptions.

FIGURE 63: TOTAL RESIDENTIAL AND BUSINESS FIXED INTERNET SUBSCRIPTIONS – 2011 TO 2015



4.1.2 RESIDENTIAL FIXED BROADBAND INTERNET SUBSCRIPTIONS BY SPEED

In 2015, residential broadband customers subscribed to Internet speeds⁴⁹ from 256 kbps up to 150 Mbps. This section summarises residential broadband subscriptions into the following Internet speed categories:

- equal to or above 10 Mbps
- 2 Mbps to less than 10 Mbps
- 256 kbps to less than 2 Mbps

Broadband Internet speeds ‘equal to or above 10 Mbps’ remained the most favourable choice for residential customers, as similarly observed in 2013 and 2014. In this speed category, subscriptions experienced a significant increase of 13.0%, recording 125.7 thousand subscriptions at the end of 2015.

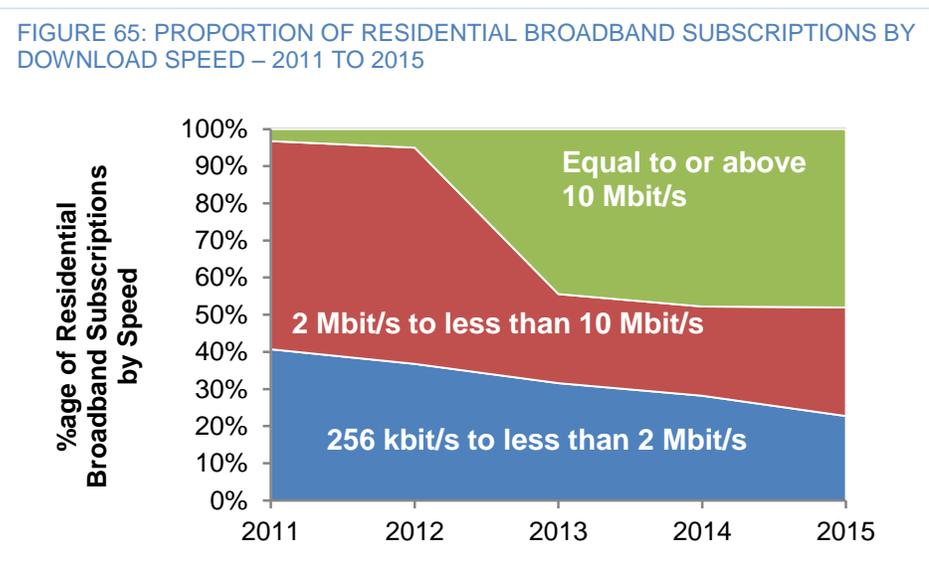
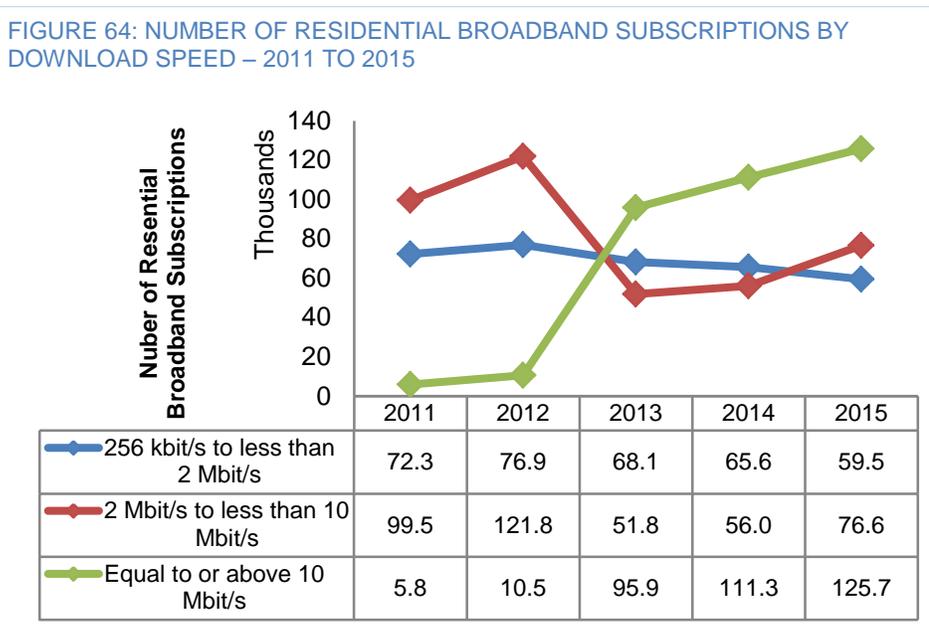
Internet speeds between ‘256 kbps to less than 2 Mbps’ were the least popular among residential customers. Subscriptions in this Internet speed category decreased significantly by 9.4% to record 59.6 thousand. Consequently, this reduction in subscriptions moved this Internet speed category from its second placed rank in 2014 to third place in 2015.

The speed category between ‘2 Mbps to less than 10 Mbps’ ranked second among the residential speed categories reviewed for 2015. Representing approximately 29% of total residential broadband

⁴⁹ Refers to advertised download speeds.

subscriptions, this category experienced a sharp increase to recorded 76.6 thousand subscriptions as at December 2015; a 36.9% increase from last year.

Figure 64 below shows a likely movement of subscribers in the ‘256 kbps to less than 2 Mbps’ speed category to speeds ‘2 Mbps to less than 10 Mbps’. Accordingly, the proportion of customers in ‘256 kbps to less than 2 Mbps’ decreased to 23% when compared to 2014, while the speed category ‘2 Mbps to less than 10 Mbps’ increased to 29%. The speed category ‘equal to or above 10 Mbps’ remained the same at 48%. Figure 64 shows data for residential broadband customers, while Figure 65 depicts the proportion of same.



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 2015 while there was a moderate 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 28.6%, recording 9.4 thousand. Broadband Internet speeds of ‘256 kbps to less than 2 Mbps’ continued to be the least popular among business customers and declined further in 2015 when compared to 2014. Subscriptions in this Internet speed category decreased by 10.5% to record only 1.9 thousand. Figure 66 shows the number of business broadband subscriptions by download speed.

In 2015, the proportion of business broadband customers who utilised speeds ‘equal to or above 10 Mbps’ was approximately 56% as Figure 67 below illustrates. This represented an improvement from the 47% calculated in 2014. Cumulatively, it was noted that 88% of business broadband customers subscribed to speeds between ‘2 Mbps to above 10 Mbps’.

FIGURE 66: NUMBER OF BUSINESS BROADBAND SUBSCRIPTIONS BY DOWNLOAD SPEED – 2011 TO 2015

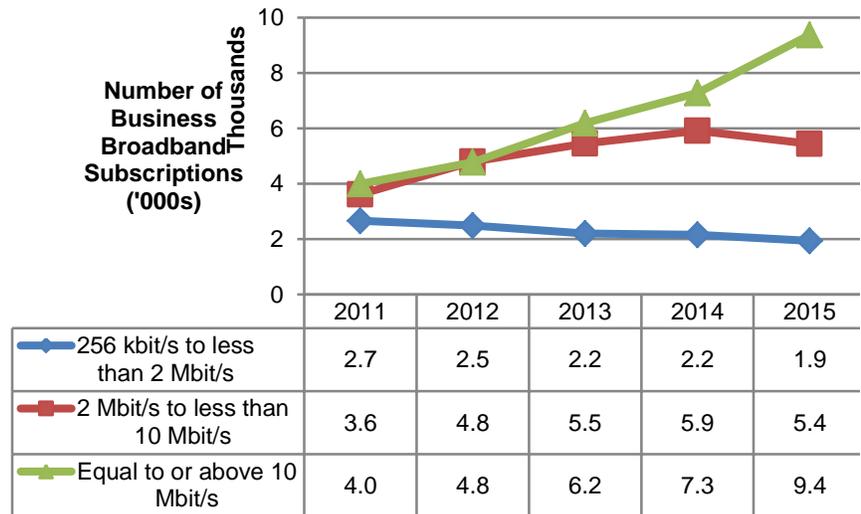
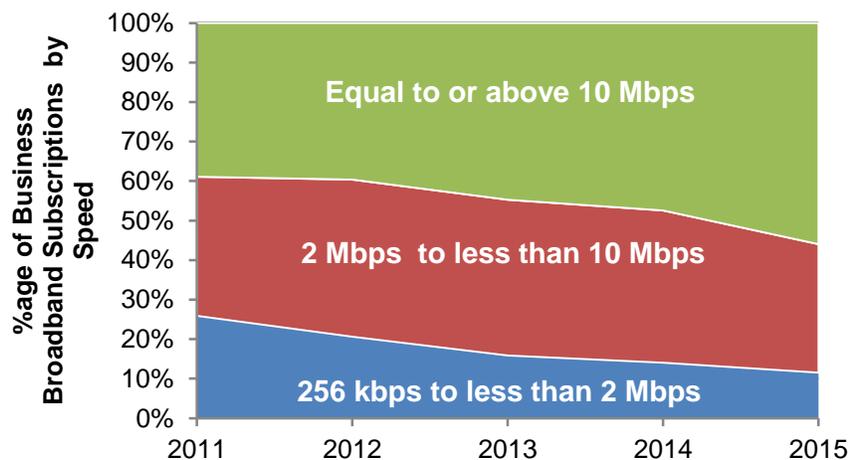


FIGURE 67: PROPORTION OF BUSINESS BROADBAND SUBSCRIPTIONS BY DOWNLOAD SPEED – 2011 TO 2015

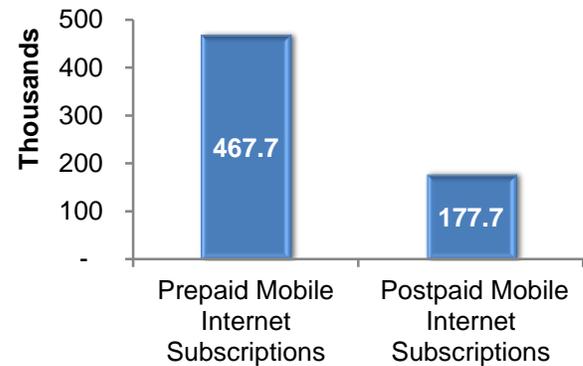


4.2 Mobile Internet Users

With 2.12 million mobile voice subscriptions in 2015, approximately 1.53 million had the potential to use mobile data services on their handsets. Of the 1.53 million potential mobile Internet users, 645.4 thousand or 40% used mobile Internet services via their handset devices in 2015. This represented a 13% increase over the number of mobile Internet users recorded in 2014.

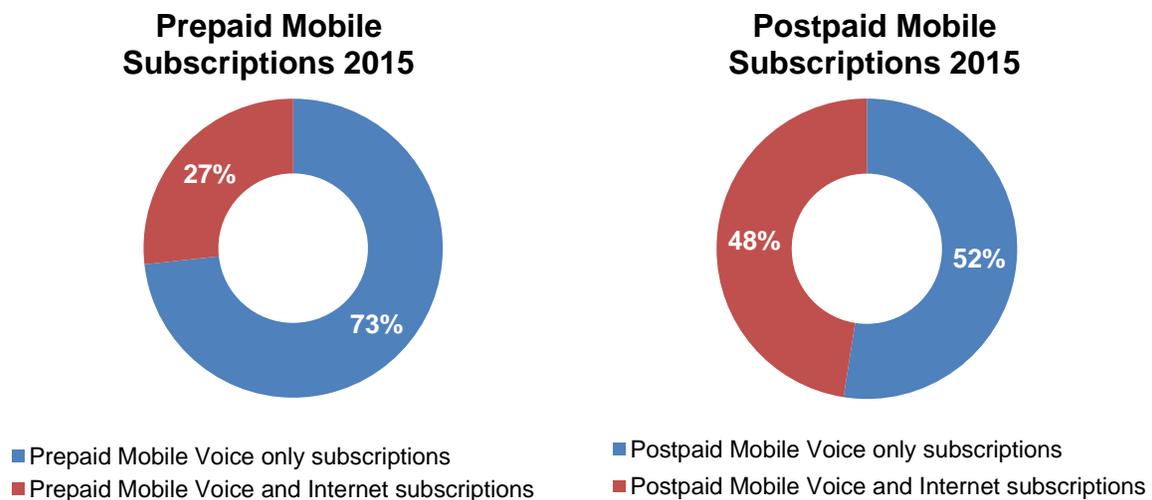
Consistent with the proportion of prepaid mobile voice subscriptions, the number of prepaid mobile Internet users also exceeded that of postpaid. As shown in Figure 68, there were 467.7 thousand prepaid mobile Internet users compared to 177.7 thousand postpaid mobile Internet users at the end of 2015.

FIGURE 68: MOBILE INTERNET SUBSCRIPTIONS BY PREPAID AND POSTPAID – 2015



Although there were more prepaid mobile Internet users, it was noted that a greater proportion of postpaid subscriptions used mobile Internet in 2015. Out of the 1,749 thousand prepaid subscriptions in 2015 (see Figure 32); only 27% used mobile Internet services while the other 73% used only voice and SMS services. With respect to the 374 thousand postpaid subscriptions, 48% used mobile Internet services. The foregoing is illustrated in Figure 69 below, which compares prepaid and postpaid mobile subscriptions sub-divided by mobile voice only

FIGURE 69: COMPARISON OF PREPAID AND POSTPAID MOBILE INTERNET SUBSCRIPTIONS 2015

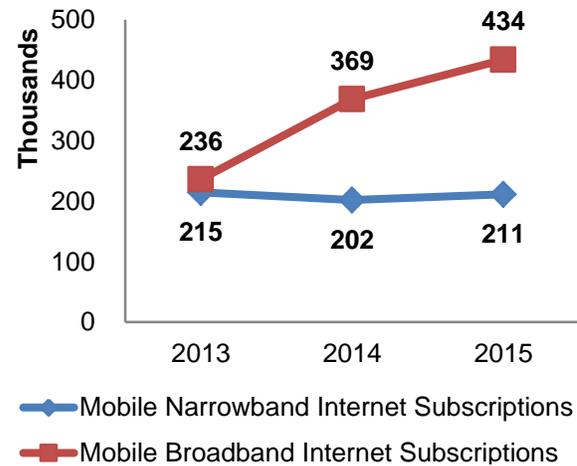


Source: TATT

users and mobile voice and Internet users, for 2015.

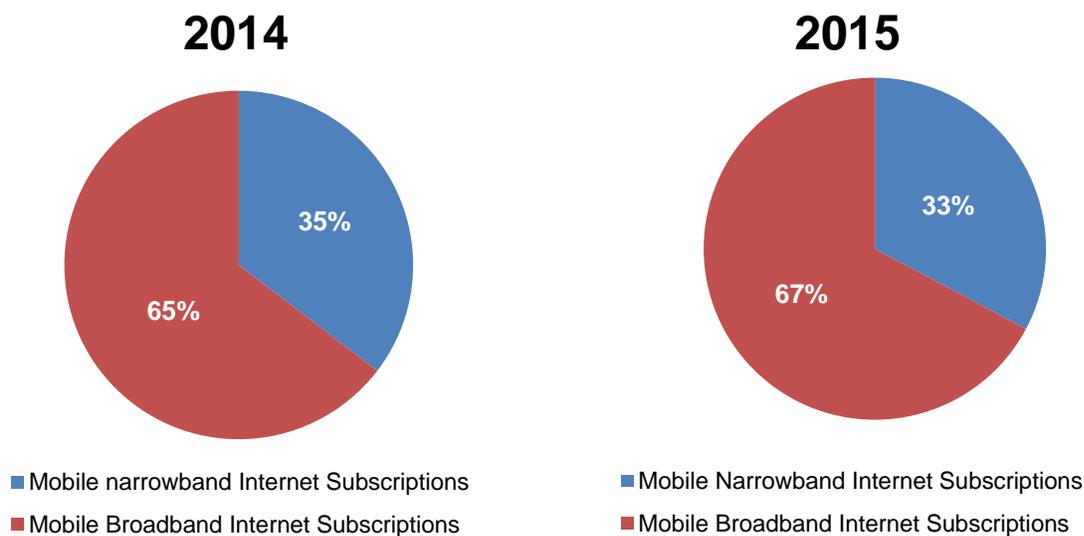
Reviewing the growth pattern of the mobile Internet market subsequent to the launch of mobile broadband Internet services to the public in 2012, it is anticipated that the demand for mobile broadband service by both prepaid and postpaid customers would continue to be favourable, with narrowband (2.5G) subscriptions remaining marginal. At the end of 2013, the number of mobile Internet utilizing both narrowband and broadband were relatively equal. Over time, while the growth in narrowband has declined marginally, mobile broadband Internet has experienced substantial growth, increasing sharply over the past three years (See Figure 70).

FIGURE 70: NARROWBAND AND BROADBAND MOBILE INTERNET USERS 2013 TO 2015



Mobile broadband Internet users now account for 67% of all mobile Internet users, as compared to the 65% recorded last year. At 35% in 2014, the proportion of narrowband internet users declined, and presently accounts for 33% of the market in 2015. Figure 71 illustrates below.

FIGURE 71: PERCENTAGE OF NARROWBAND AND BROADBAND MOBILE INTERNET 2014 - 2015



Source: TATT

4.3 Internet Penetration

In Trinidad and Tobago, approximately 21 out of every 100 persons had a fixed Internet subscription and 48 out of every 100 persons were using mobile Internet services at the end of 2015.

The above suggests that a consolidated Internet penetration rate of 69 was achieved. This implies that approximately 69 out of every 100 persons in Trinidad and Tobago had either a fixed Internet subscription and/or a mobile Internet subscription at the end of 2015. Figure 72 below highlights the Internet penetration over the last five years.

Internet household penetration⁵⁰ is used to measure the proportion of households with a fixed Internet subscription. Up from 58%, Internet household penetration measured approximately 65 in 2015. This indicated that approximately 65 out of every 100 households in Trinidad and Tobago subscribed to a fixed Internet service. Moreover, it can be inferred that approximately 65% of households in Trinidad and Tobago have access to fixed Internet services. Figure 73 depicts Internet household penetration for the period 2011 to 2015.

FIGURE 72: FIXED AND MOBILE INTERNET PENETRATION – 2011 TO 2015

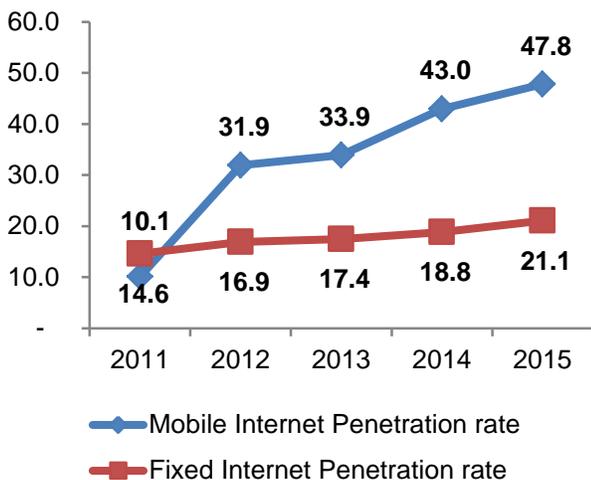
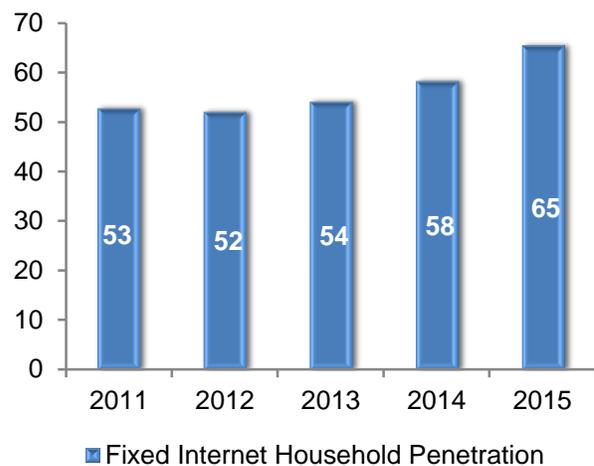


FIGURE 73: INTERNET HOUSEHOLD PENETRATION – 2011 TO 2015



⁵⁰ Internet household penetration = (number of residential fixed Internet subscriptions / total number of households) * 100. The number of households increased from 343,180 in 2000 to 406,198 in 2012.

4.3.1 INTERNET USERS

The number of Internet users⁵¹ is another useful indicator to measure progress toward 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 persons residing within a household⁵². For 2015, this approximates to 851 thousand fixed Internet users. Additionally, there were 645 thousand mobile Internet users. It is noted that fixed Internet users may also be mobile Internet users. Figure 74 shows the steady growth in the number of fixed and mobile Internet users over the last four years.

Compared regionally, Trinidad and Tobago ranked first in terms of Broadband Internet subscribers per 100 inhabitants. According to data from Business Monitor International (BMI)⁵³, approximately 60 out of every 100 persons in Trinidad and Tobago subscribed to broadband Internet services. Based on BMI's definition, an Internet subscriber includes fixed and mobile connections. Trinidad and Tobago leads the Caribbean in this indicator, with more than half the population subscribing to broadband Internet services. Saint Kitts and Nevis ranked second with 30 broadband Internet subscribers per 100 inhabitants. Figure 75 illustrates.

FIGURE 74: INTERNET HOUSEHOLD PENETRATION – 2012 TO 2015

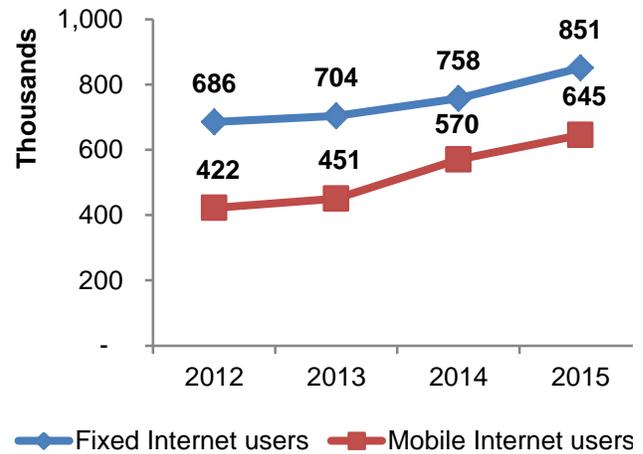
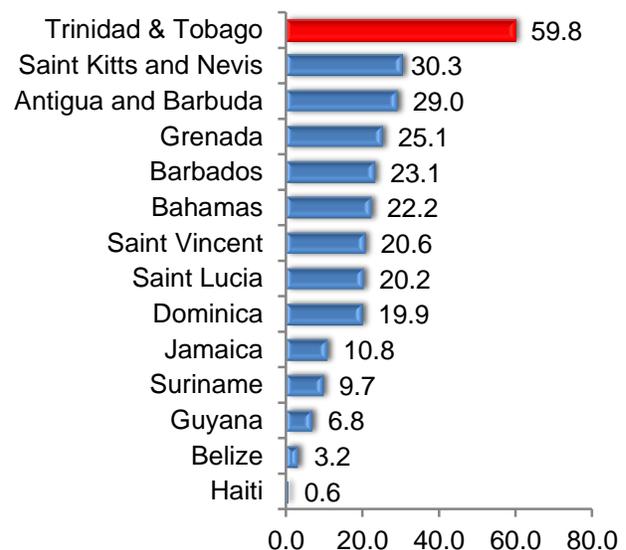


FIGURE 75: BROADBAND INTERNET SUBSCRIBERS PER 100 INHABITANTS AMONG CARICOM COUNTRIES – 2015



⁵¹ Internet users are persons who regularly used Internet services. A person does not have to have a personal Internet subscription to be considered an Internet user. This indicator has been revised for the period 2010 to 2014.

⁵² The Central Statistical Office estimated that an average of 3.24 persons reside within a household in its 2011 Census Report.

⁵³ Data sourced from Business Monitor International database, accessed June 3rd 2016

4.4 Total Internet Revenues

Fixed and mobile (prepaid and postpaid) Internet services generated TT\$1,346.4 million in revenues for 2015. The continued rise in revenues is attributed to the favourable growth in both fixed and mobile Internet subscriptions. Revenues increased by TT\$16.5 million or 14.0%, when compared to 2014 (Figure 76).

Although fixed Internet revenues continued to comprise the majority of revenues, the growth in mobile Internet revenues has been greater than fixed Internet revenues over the past five years. This is highlighted by the increasing proportion of revenues generated by Mobile Internet revenues. As Figure 77 depicts, the proportion of Mobile Internet revenues increased from 39% in 2014 to 43% of total Internet revenues in 2015. This trend is consistent with the significant growth in the number of mobile Internet subscriptions over the same period.

FIGURE 76: TOTAL INTERNET REVENUES 2011-2015

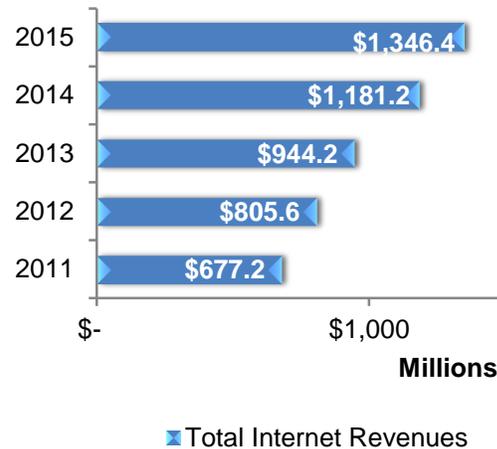
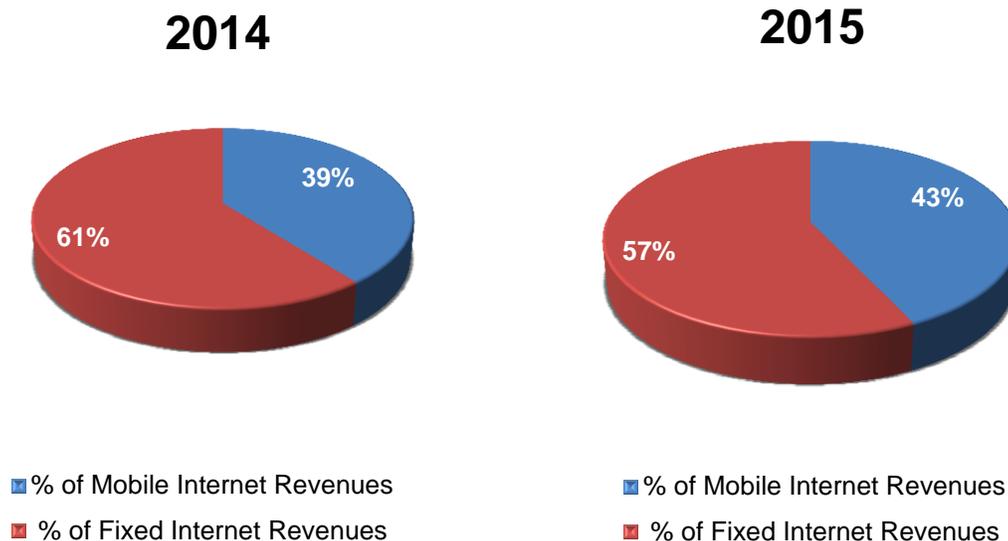


FIGURE 77: PERCENTAGE OF FIXED AND MOBILE CONTRIBUTIONS TO INTERNET REVENUES 2014 AND 2015



Source: TATT

4.4.1 FIXED INTERNET REVENUES

For the period under review, the total estimated gross revenues for the fixed Internet market amounted to TT\$767.8 million; an increase of TT\$52.3 million or 7.3% from the previous year. Of this total, narrowband Internet accounted for TT\$3.1 million while broadband Internet contributed TT\$764.7 million. As the migration of subscriptions from narrowband to broadband services continues, fixed narrowband revenues decreased by TT\$1.2 million or 27.4%. Fixed broadband revenues remained the main revenue generator in this market, growing steadily by TT\$53.4 million or 7.5% when compared to the 2014 period. Figure 78 shows the annual revenue trend in the fixed Internet market over the last five years, while Figure 79 compares narrowband and broadband revenues for the same period.

FIGURE 78: FIXED INTERNET REVENUES – 2011 TO 2015

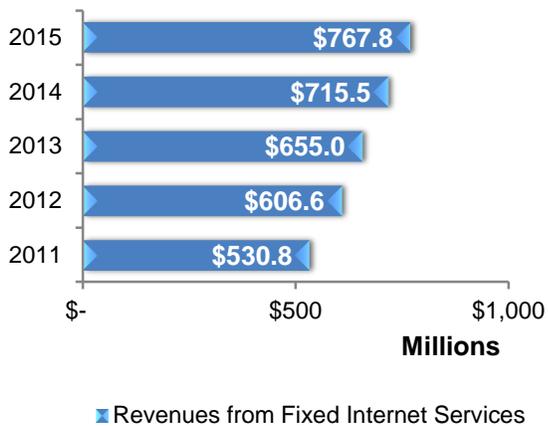
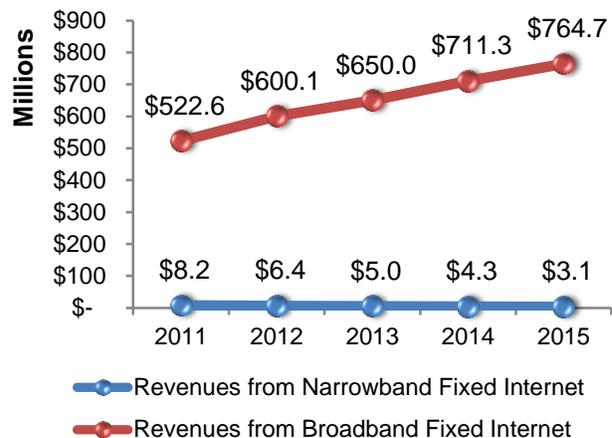
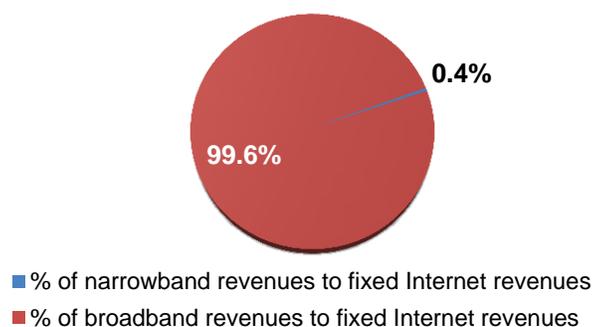


FIGURE 79: REVENUES FROM FIXED NARROWBAND AND BROADBAND SUBSCRIPTIONS – 2011 TO 2015



Conclusively, broadband Internet is the predominant choice of service in the market, contributing almost 100% of total fixed internet revenues. Of these revenues, broadband and narrowband Internet contributed 99.6% and 0.4% respectively in 2015. This is portrayed in Figure 80.

FIGURE 80: PERCENTAGE OF NARROWBAND AND BROADBAND REVENUES 2015



Revenues generated from residential fixed broadband Internet subscriptions accounted for the majority of fixed broadband revenues, as shown in Figure 81. Of total fixed broadband revenues, residential broadband subscriptions contributed TT\$481.9 million (63.0%), while revenues from business broadband subscriptions totalled TT\$ \$282.8 million (37.0%).

Over the five year period 2011-2015, a steady upward trend was observed for both residential and business fixed broadband Internet. In 2014, the growth in business fixed broadband revenues was higher than that of residential fixed broadband revenues. However, in 2015 residential fixed broadband revenues experienced a higher growth rate than business fixed broadband revenues. Residential fixed broadband revenues increased by 7.5%, while business fixed broadband revenues increased by only 2.1% in 2015. Figure 82 shows the upward trend in fixed broadband revenues for both categories over the last five years.

FIGURE 81: BROADBAND REVENUES BY RESIDENTIAL AND BUSINESS 2015

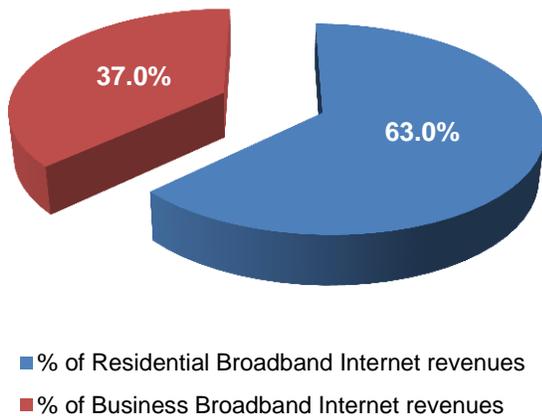
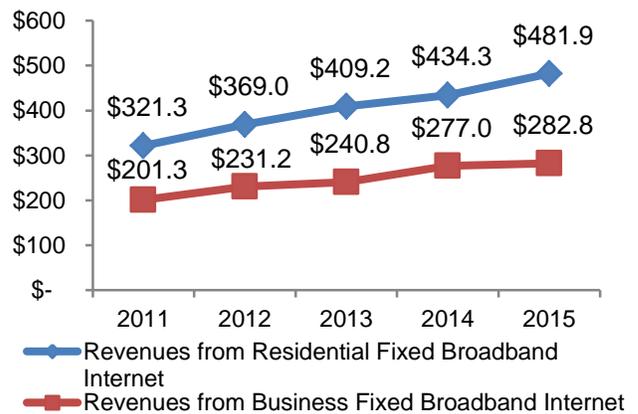


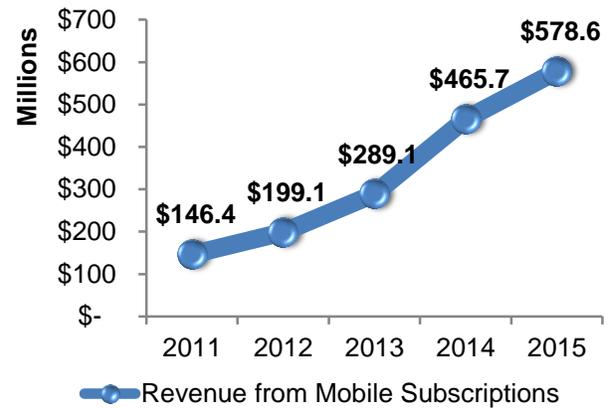
FIGURE 82: REVENUES FROM RESIDENTIAL AND BUSINESS FIXED BROADBAND SUBSCRIPTIONS – 2011 TO 2015



4.4.2 MOBILE INTERNET REVENUES

The revenues generated from mobile Internet services continued to be a significant contributor to revenues in the Internet market. Following its marked double digit growth over the past four years, total gross revenues from mobile Internet services maintained its strong growth rate in 2015. Mobile Internet revenues rose from TT\$465.7 in 2014 to TT\$578.6 in 2015; a 24.2% growth. Although this growth represents the lowest recorded% since 2011, the mobile Internet market continues to be the most dynamic market segment with significant growth in both the number of users and revenues generated. Figure 83 highlights the annual trend for gross revenues generated by mobile Internet users.

FIGURE 83: TOTAL MOBILE INTERNET REVENUES – 2010 TO 2014



Prepaid and postpaid mobile Internet subscriptions totalled TT\$131.1 million and TT\$447.4 million, respectively. While the growth in prepaid Internet revenues has been relatively stable over the past five years, postpaid Internet revenues experienced exponential growth during this period. Furthermore, although there was a greater number of prepaid mobile internet users, the revenue generated from postpaid mobile internet users far exceeded that of prepaid. These now account for 77.3% of total mobile Internet revenues. Figure 84 shows the prepaid and postpaid revenues earned from 2011 to 2015, while Figure 85 depicts the proportion of prepaid and postpaid mobile Internet revenues for 2015.

FIGURE 84: PREPAID AND POSTPAID MOBILE INTERNET REVENUES – 2011 TO 2015

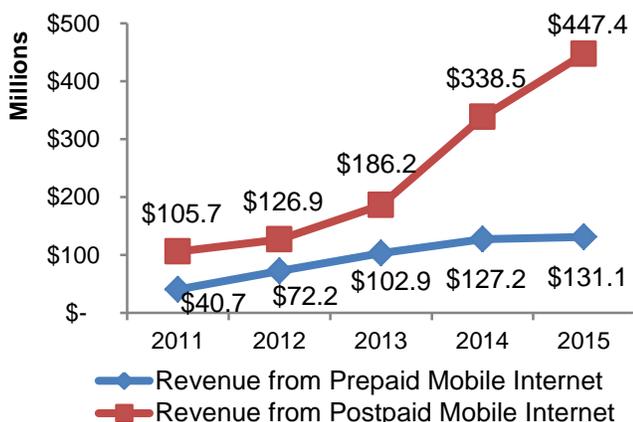
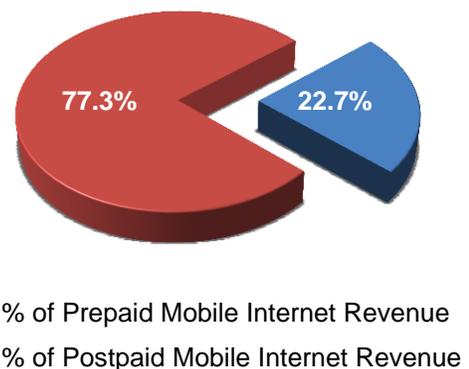


FIGURE 85: PERCENTAGE OF PREPAID AND POSTPAID MOBILE INTERNET REVENUES IN 2015



4.5 Fixed Internet Market Concentration

Using the Hirschman-Herfindahl Index (HHI), the Authority calculated the level of concentration in the fixed Internet market⁵⁴ of Trinidad and Tobago for 2015. The level of concentration at the end of the year stood at 4,853, with an average of 4,858 for the entire year. This represented a 0.4% decrease over the previous year. As reflected in Figure 86, the HHI remained relatively stable during the year.

Annual fixed Internet HHI has been fairly stable with marginal movements being observed during the 2011 to 2015 period. Overall, a slight downward trend in the level of concentration was observed over the five year period; Figure 87 illustrates.

FIGURE 86: HHI OF FIXED INTERNET MARKET JANUARY–DECEMBER 2015

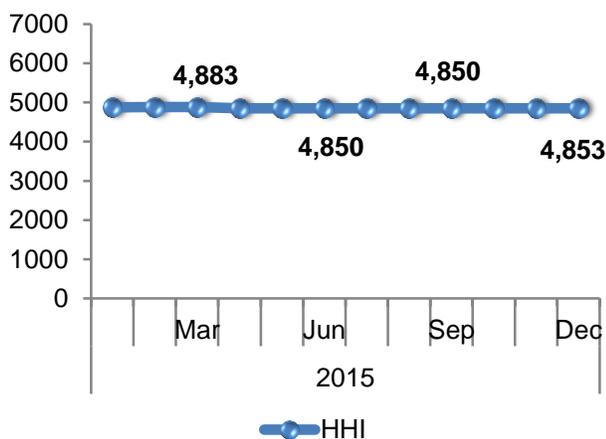
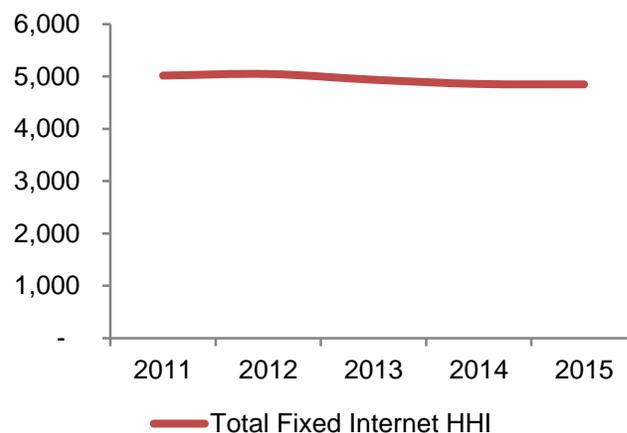


FIGURE 87: 4 HHI OF TOTAL FIXED INTERNET SERVICES – 2011 TO 2015



⁵⁴ Subscriber market share was used in the calculation of the HHI.

4.5.1 HHI FOR BROADBAND AND NARROWBAND SERVICES

The HHI for the fixed broadband market and the fixed narrowband market was separately examined to determine the level of concentration in both types of service. The results showed that the fixed narrowband market is more concentrated than the fixed broadband market.

The calculation for fixed broadband services showed an average HHI of 4,861 during 2015. The level of concentration in this market decreased minimally from the first quarter to the third quarter, thereafter increasing slightly in the fourth quarter to end the year at 4,854 (Figure 88 shows). The fixed narrowband Internet market recorded an average HHI of 9,301 in 2015. The level of concentration, as measured by the HHI, increased sharply in the second quarter to 9,917, as a result of the discontinuation of narrowband Internet services by one of the operators in this market. Figure 89 illustrates the fixed narrowband HHI throughout the year.

FIGURE 88: HHI FOR FIXED BROADBAND SERVICES 2015

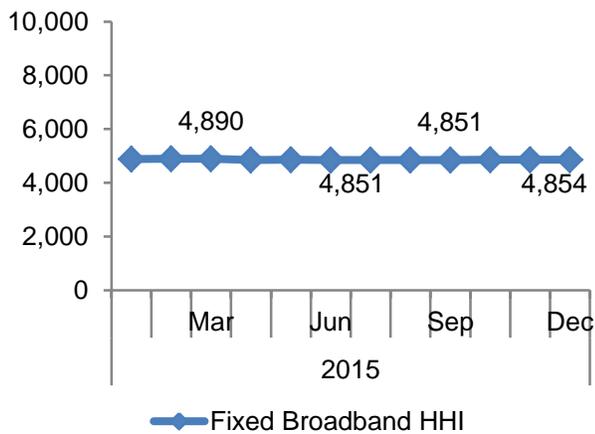
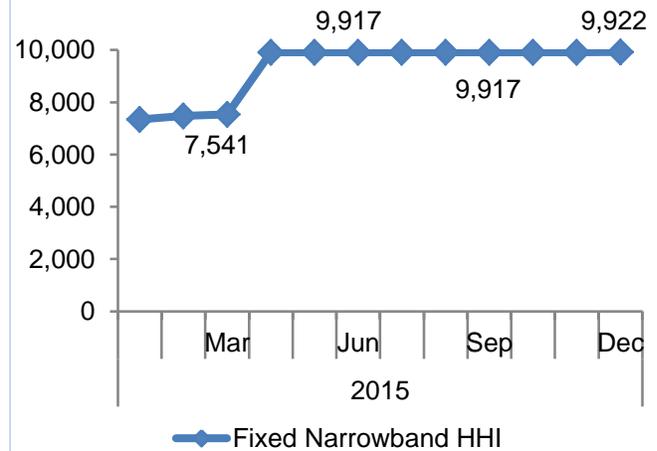


FIGURE 89: HHI FOR FIXED NARROWBAND SERVICES 2015



4.6 Average Revenue per User (ARPU)

Average revenue per user⁵⁵ in the Internet market increased minimally, as the growth in total Internet revenues was marginally higher than the growth in total Internet subscriptions in 2015. During the review period, customers with Internet (fixed and mobile) subscriptions spent an average of TT\$1,445 for Internet services; an increase of \$15 or 1.0% when compared to 2014. This minimal increase is attributed to a marked increase in mobile Internet ARPU offsetting a decrease in Fixed Internet ARPU.

Fixed Internet ARPU experienced a marginal decline of TT\$122, with customers spending approximately TT\$2,744⁵⁶ (a 4% decrease) during 2015. For mobile Internet services, customers spent an average of TT\$896⁵⁷ in 2015, an increase of TT\$80 or 10%. Figures 90 and 91 show the ARPU trends for the individual categories over the last five years.

FIGURE 90: ARPU FOR TOTAL INTERNET SERVICES – 2011 TO 2015

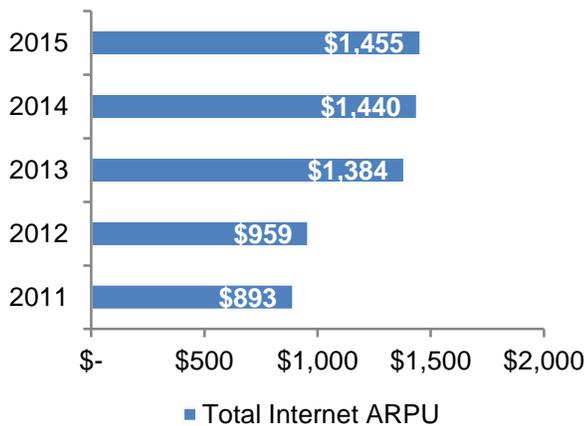
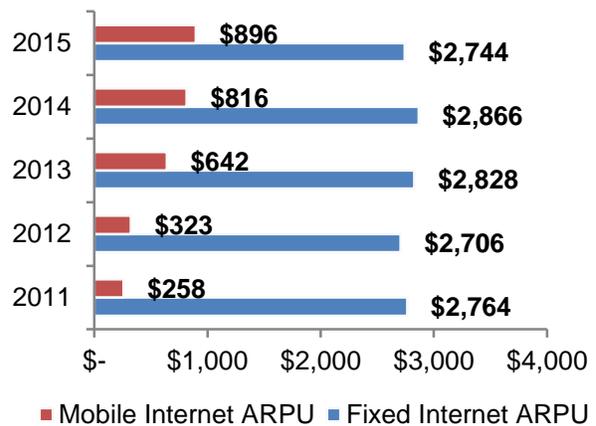


FIGURE 91: ARPU FOR FIXED AND MOBILE INTERNET SERVICES – 2011 TO 2015



⁵⁵ ARPU for fixed and mobile Internet subscriptions combined.

⁵⁶ ARPU for fixed Internet services is measured by the revenue generated by one subscription. It is calculated = (Total revenues from fixed Internet subscriptions / Total number of fixed Internet subscriptions)

⁵⁷ ARPU for mobile Internet services is calculated = (Total revenues from prepaid and postpaid subscriptions with Internet access / Total number of mobile prepaid and postpaid subscriptions with Internet access)

5. INTERNATIONAL VOICE MARKET REVIEW

Ten (10) concessionaires were authorised to provide international telecommunications services to the public in 2014, which included the provision of international voice services. These operators included:

- Columbus Communications Trinidad Limited;
- Digicel (Trinidad & Tobago) Limited;
- Green Dot Limited;
- Lisa Communications Limited;
- Massy Communications Limited;
- Massy Technologies Limited.
- Open Telecom; and
- Telecommunications Services of Trinidad and Tobago, TSTT.

However, Green Dot Limited and Massy Technologies Limited were not operational in the international voice market for the review period. Also, the Authority had not received any information from Open Telecom.

INTERNATIONAL VOICE MARKET HIGHLIGHTS

- ✓ **Both incoming and outgoing international minutes decrease**
- ✓ **4 year consecutive decline in total international revenues**
- ✓ **Incoming revenues fall 12% while outgoing revenues increase 3%**

5.1 International Voice Traffic (Incoming and Outgoing Minutes)

Incoming traffic volumes continued its downward trend, as the number of incoming international minutes declined significantly in 2015. Down by 15% (35 million minutes), incoming minutes recorded 199.2 million minutes in 2015, as shown in Figure 92.

Following consecutive decreases in 2013 and 2014, outgoing international minutes also decreased in 2015. Outgoing minutes decreased by 7.9% (21.2 million minutes) to record 247.2 million minutes in 2015, as shown in Figure 93.

FIGURE 92: INCOMING INTERNATIONAL TRAFFIC (MINUTES) – 2011 TO 2015

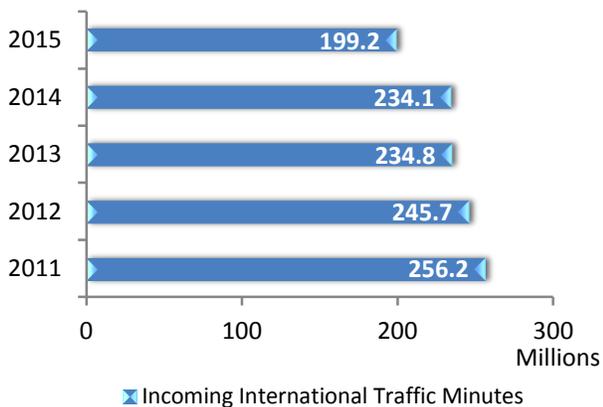
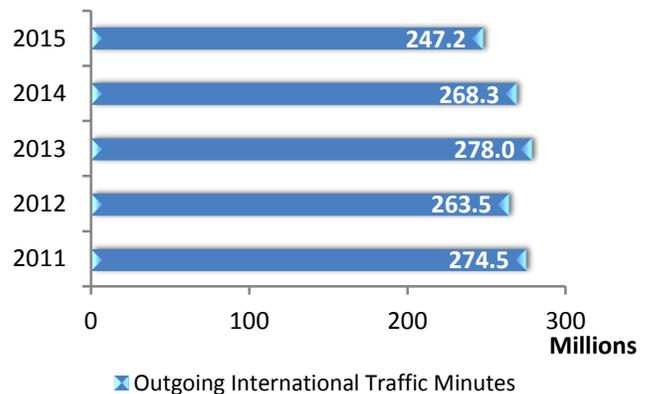


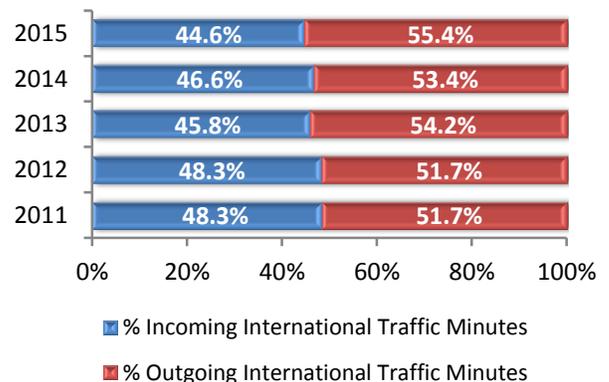
FIGURE 93: OUTGOING INTERNATIONAL TRAFFIC (MINUTES) – 2011 TO 2015



The decrease in the volume of international incoming and outgoing minutes may be indicative, inter alia, of consumers increasing use alternative technologies to conduct international communications

Similar to previous years, the proportion of minutes generated by outgoing international calls surpassed the proportion of minutes generated by incoming international calls in 2015. Outgoing traffic (minutes) accounted for 55.4% of total international minutes while incoming minutes comprised the remaining 44.6%. Figure 94 illustrates the proportion of incoming traffic compared to outgoing traffic over the past five years.

FIGURE 94: INCOMING AND OUTGOING INTERNATIONAL TRAFFIC (MINUTES) - 2012 TO 2015



5.2 International Traffic Revenues

Gross revenues⁵⁸ generated by incoming and outgoing international telecommunications voice services decreased in 2015. Revenues in this market fell by approximately TT\$344 million or 12.9% when compared to the previous year, recording TT\$230.2 million in 2015. Figure 95 depicts the trend in revenues generated by the international voice market from 2011 to 2015.



In reviewing the composition of international revenues, incoming international revenues decreased to record TT\$147.1 million, while outgoing international revenues increased, recording TT\$98.6 million. Notably, the fall in incoming international revenues significantly outweighed the marginal increase in outgoing international revenues from 2014 to 2015. While revenues earned from incoming international revenues fell by 12.6% (TT\$21.3 million), outgoing international revenues increased by only 3.0% (TT\$2.9 million). Incoming and outgoing international voice revenues over the past five years are illustrated below in Figure 96 and 97 respectively.

⁵⁸ 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.

FIGURE 96: REVENUES FROM INCOMING INTERNATIONAL TRAFFIC (MINUTES) – 2011 TO 2015



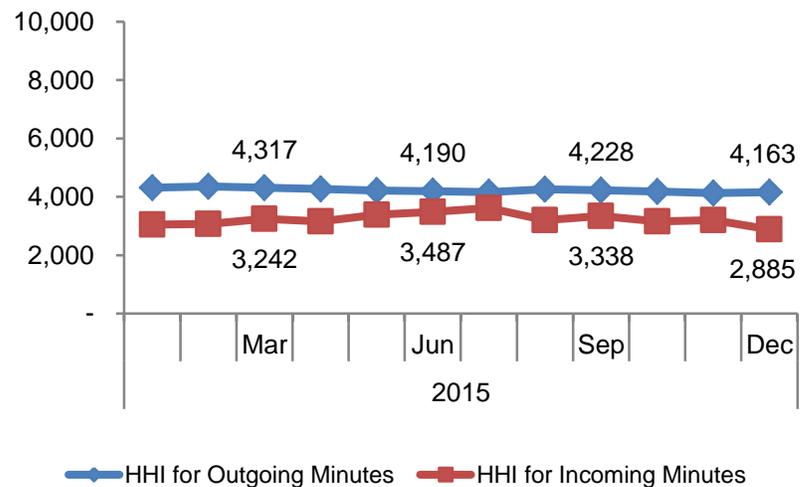
FIGURE 97: REVENUES FROM OUTGOING INTERNATIONAL TRAFFIC (MINUTES) – 2011 TO 2015



5.3 International Voice Market Concentration

The Authority calculated the level of concentration for the international voice market of Trinidad and Tobago. The market share used in the calculation of the Hirschman-Herfindahl Index (HHI) was defined in terms of the number of international outgoing and incoming minutes. The HHI for the outgoing market stood at 4,163 at the end of the fourth quarter of 2015, while the incoming market computed a HHI of 2,885; evidently smaller than the outgoing value. This inferred that the international outgoing minutes' market was more concentrated than that of the incoming market. During the period, there was minimal variation in the HHI values for outgoing minutes. However, there was a slight increase observed in the HHI for incoming minutes in the second quarter of 2015. Figure 98 below shows the HHI values for outgoing and incoming minutes in the year 2015.

FIGURE 98: HHI OF INTERNATIONAL OUTGOING AND INCOMING MINUTES – 2015



A Global Snapshot of ICT Access at 2015 year end

The ICT sector is a dynamic one as it continues to grow at an astounding rate in a fast-paced global environment. Thus, in the following section we seek to highlight the various advances in this sector across the globe for the year 2015.

Households with Internet Access

- Just about half of the world's households are equipped with Internet access, with the vast majority (82%) coming from developed countries and those with lower access (7%) coming from Lesser Developed Countries (LDCs), while about 34% of households in the developing world have Internet access.

Individuals using the Internet

- Though roughly 82% of individuals residing in developed countries use the Internet, the opposite is seen in LDCs as a mere 10% penetration rate was recorded. By year end 2015, less than half of the world's population were recorded as using the Internet, while Internet penetration in developing countries stood at 35%.

Mobile broadband subscriptions

- Mobile broadband subscriptions are markedly higher in developed countries as opposed to the same in developing countries and LDCs at the end of 2015. This has been referred to as the most dynamic market segment globally as penetration rates have been recorded at 47% the world over.

Fixed broadband subscriptions

- An approximate 11% penetration has been recorded globally, with 29% of this statistic representing penetration rates in developed countries, 7% in developing countries and less than 1% in LDCs. It is interesting to note that the statistics show that percentage of mobile broadband subscriptions outweigh that of fixed broadband subscriptions globally.

2G mobile cellular

- At year end (2015), about 95% of the global population were covered by a 2G mobile cellular network.

3G mobile broadband

- 69% of the world's 7.4billion population (2015) now benefit from the rapid growth/prevalence of 3G mobile coverage. So great is the reach of this service, that 29% of rural areas globally are now able to access this amenity.
-

Source: <http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2015.pdf>

6. BROADCASTING MARKET REVIEW

The number of operators in the broadcasting market increased in 2015. There were three (3) additional concessionaires in the broadcasting market. Digicel (Trinidad & Tobago) Limited was granted a concession to provide Pay TV services while the Environment Management Authority and Ice Media Group Limited were granted concessions to provide television broadcasting via cable services. Changes were also observed in the 'Free to Air' radio market as Guardian Media Limited surrendered one of its licenses. In the 'Free to Air' Television Market Gayelle Limited changed its service to television broadcasting via cable.

TABLE 6: NUMBER OF CONCESSIONS IN THE BROADCASTING MARKET – 2011 TO 2015

Types of Broadcasting Concessions	Number of Concessions				
	2011	2012	2013	2014	2015
“Free to Air” Television	9	9	9	8	7
National	6	6	6	6	6
Major Territorial	3	3	3	2	1
Subscription Television	9	10	11	13	14
National	4	4	5	7	8
Major Territorial	1	1	1	1	1
Niche	3	4	4	4	4
Minor Territorial	1	1	1	1	1
TV Broadcasting via Cable	1	2	6	7	10
National	1	2	6	6	8
Major Territorial				1	2
“Free to Air” Radio	37	38	39	39	38
National	30	30	31	31	30
Major Territorial	6	6	6	6	6
Minor/ Niche Territorial	1	2	2	2	2
Total	56	59	65	67	69

BROADCASTING MARKET HIGHLIGHTS

- ✓ **Free to Air’ television revenues**
- ✓ **16% increase in “Free to Air’ television revenues**
- ✓ **10% increase in ‘Free to Air’ Radio revenues**
- ✓ **Growth in Pay TV subscriptions slows; 1.7% increase to record 232 thousand**
- ✓ **95% of Pay TV subscriptions are digital**
- ✓ **57% of households subscribe to Pay TV services**
- ✓ **Pay TV revenues increase by 5%**

6.1. 'Free to Air' Television Broadcasting Market

In 2015, the market for 'Free to Air' TV broadcasting service comprised seven (7) operational concessionaires. They were:

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

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. Gayelle Limited
5. IBN Communications Company Limited
6. Ice Media Group Limited
7. IETV Limited
8. Living Water Community
9. Sankhya Television Limited
10. Synergy Entertainment Network 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' market and the television broadcasting services via cable. Thus, all references to 'Free to Air' television below include 'Free to Air' market and the television broadcasting services via cable.

6.1.1 'FREE TO AIR' TELEVISION REVENUES

Gross revenues in the 'Free to Air' television market increased in 2015. Up by 16% when compared with 2014, total gross revenues for this market amounted to TT\$154.3 million in 2015. As illustrated in Figure 99, revenues for the 'Free to Air' television broadcasting market fluctuated over the past five years.

FIGURE 99: GROSS REVENUES FOR 'FREE TO AIR' TELEVISION BROADCASTING SERVICE PROVIDERS – 2011 TO 2015

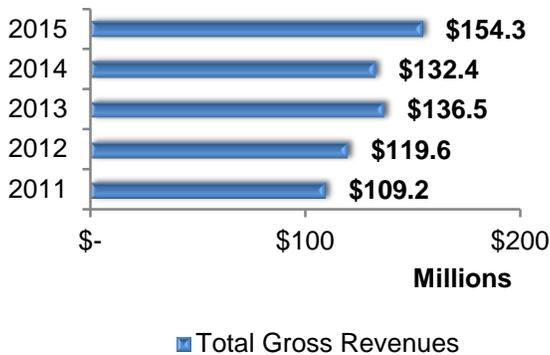
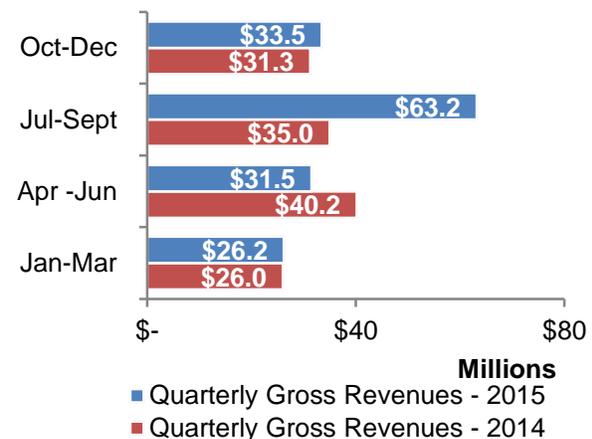


FIGURE 100: QUARTERLY GROSS REVENUES 'FREE TO AIR' TELEVISION SERVICE PROVIDERS 2014 AND 2015



Quarterly gross revenues earned in the 'Free to Air' television market for 2014 and 2015 are compared in Figure 100 above. When quarterly earnings for 2014 and 2015 were compared, it was observed that quarter on quarter increases and decreases in revenues were relatively small with the exception of the second and third quarters. When comparing second quarter revenues, the 'Free to Air' generated fewer revenues in 2015 when compared to the same period in 2014; a decrease of 22%. When comparing third quarter revenues, revenues generated in 2015 increased significantly, from \$35 million in 2014 to \$63 million in 2015. This represented an 81% increase 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 increased sharply in 2015, recording 4,252 points at the end of December 2015. This represented approximately a 24% increase in the level of concentration. The quarterly trend showed significant upward movements in the HHI, albeit the minor decrease observed in the third quarter. The HHI increased 14%, quarter on quarter, in both the second and fourth quarters as highlighted in Figure 101 below.

FIGURE 101: HHI FOR 'FREE TO AIR' TELEVISION BROADCASTING MARKET – 2015

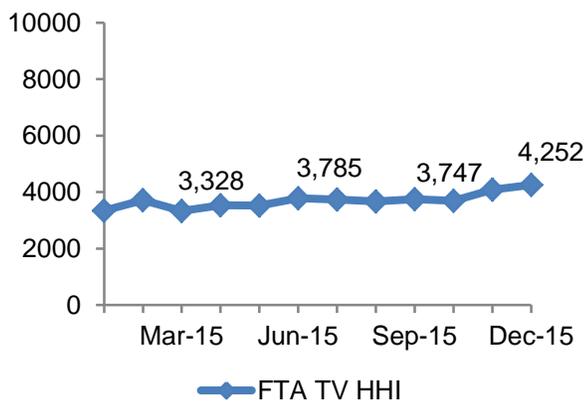
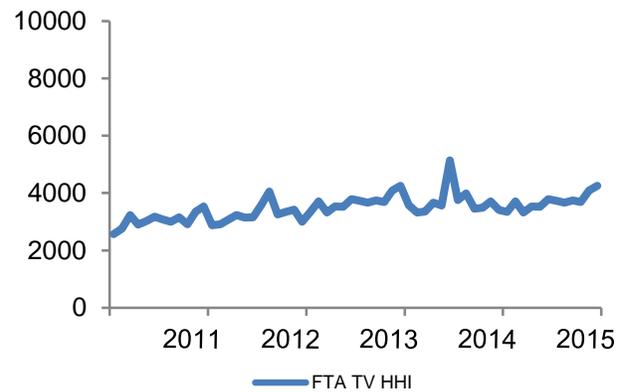


FIGURE 102: HHI FOR 'FREE TO AIR' TELEVISION MARKET 2011 TO 2015



Over the last five years, HHI in the 'Free to Air' Market experienced several fluctuations with a general upward trend being observed. Figure 102 above highlights the five year trend in the HHI for the 'Free to Air' market.

6.2 'Free to Air' Radio Broadcasting Market

In 2015, the 'Free to Air' radio broadcasting market consisted of thirty-eight (38) 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 2015, the 'Free to Air' radio broadcasting market earned an estimated TT\$199.9 million in gross revenues when compared with the previous year's earning of TT\$181.8 million. This represented a 10% increase, when compared to gross revenues generated in 2014. Revenue earnings in the 'Free to Air' radio broadcasting market for the past five years are compared in Figure 103 below.

FIGURE 103: GROSS REVENUES FOR 'FREE TO AIR' RADIO SERVICE PROVIDERS – 2011 TO 2015

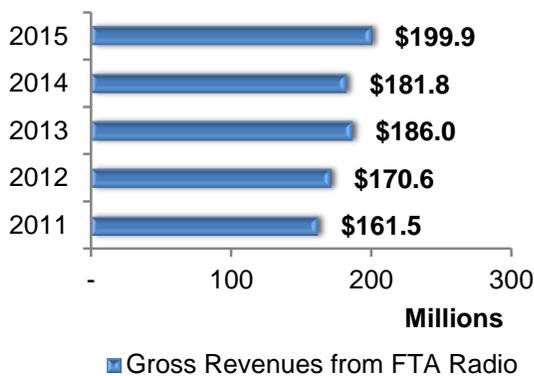


FIGURE 104: GROSS REVENUES FOR 'FREE TO AIR' RADIO SERVICE PROVIDERS – 2011 TO 2015

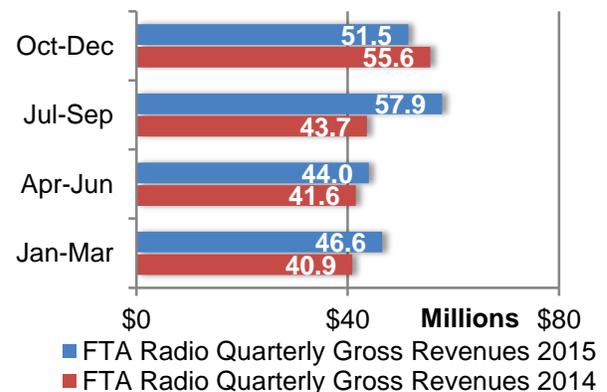


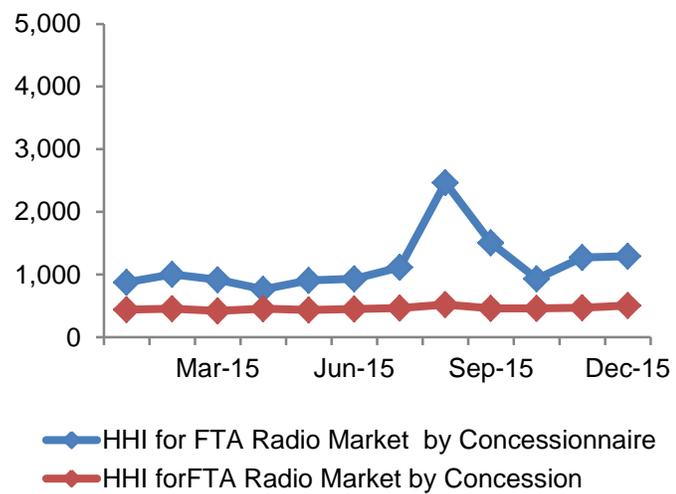
Figure 104 above highlights the quarterly gross revenues earned by concessionaires in the 'Free to Air' radio broadcasting market during 2015. Gross revenues generated in the first quarter of 2015 totalled TT\$46.6 million increasing from TT\$40.9 million in the previous quarter. In the second and third quarters of 2015, gross revenues subsequently increased recording TT\$44 million and TT\$57.9 million respectively. Notably, revenues were the highest in the third quarter, increasing 31% when compared to the same period in 2014. Gross revenues subsequently declined in the fourth quarter of 2015 recording TT\$51.5 million.

6.2.2 MARKET CONCENTRATION 'FREE TO AIR' RADIO

Using the revenues generated, the Authority calculated the level of concentration for the 'Free to Air' radio broadcasting market based on both number of concessions and concessionaires in the market.

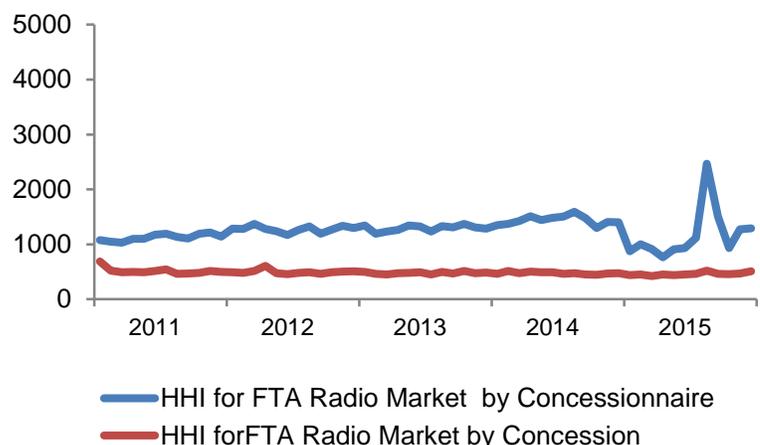
The HHI based on concessions decreased while the HHI based on concessionaires increased in the 'Free to Air' market. Down by 8%, the HHI based on the number of concessions in the market recorded 506.9 points as at December 2015. Alternatively, the HHI based on the number of concessionaires in the market increased by 7%, recording 1,292 points as at December 2015. As shown in Figure 105, the level of concentration based on the number of concessionaires in the 'Free to Air' market experienced a sharp increase in the third quarter, reaching a high of approximately 2,500 points. Notably, the level of concentration based on the number of concessions in the market remained relatively stable during 2015.

FIGURE 105: HHI IN THE 'FREE TO AIR' RADIO BROADCASTING MARKET – 2015



Over the last five years, HHI based on concessionaires in the 'Free to Air' radio broadcasting market experienced several fluctuations with a steep increase being observed in 2015. Based on concessions, the HHI has been relatively stable as Figure 106 illustrates.

FIGURE 106: HHI IN THE "FREE TO AIR" RADIO BROADCASTING MARKET – 2011 TO 2015



6.3 Pay Television ('Subscription TV') Broadcasting Market

For the 2015 period the Pay TV market comprised fourteen (14) authorised service providers; eleven (11) of which were operational as at December 2015⁵⁹. These operators provided Pay TV services to various coverage areas within Trinidad and Tobago, as listed in Table 2 below. Of these eleven (11) operators, five (5) used analogue technology to provide their services, three (3) used digital and three (3) used both analogue and digital.

TABLE 7: LIST OF OPERATIONAL PAY TV PROVIDERS IN 2015

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

6.3.1 TOTAL 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 required to first subscribe to this basic package before subscribing to any additional packages, including premium packages offered by the operator.

The Pay TV market experienced steady growth over the past five years as evidenced by the increasing number of subscriptions in this market. Up by 1.7%, the number of subscriptions recorded approximately 232.8 thousand at the end of December 2015 compared to 228.8 thousand in 2014. Notably, the rate of increase in subscriptions slowed in 2015, recording its lowest growth over the last five years. Figure 107 illustrates the trend in the number of subscriptions in the Pay TV market for the period 2011 to 2015.

FIGURE 107: NUMBER OF PAY TV SUBSCRIPTIONS (BASIC) – 2011 TO 2015

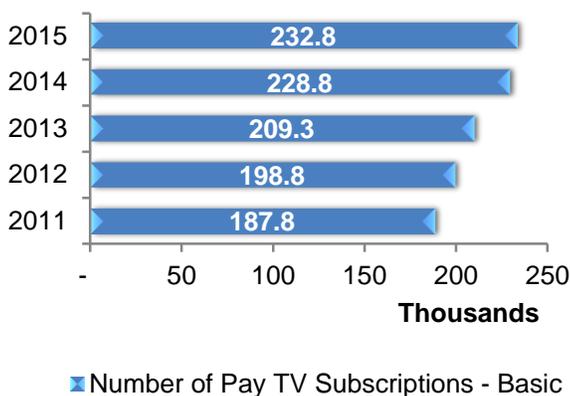
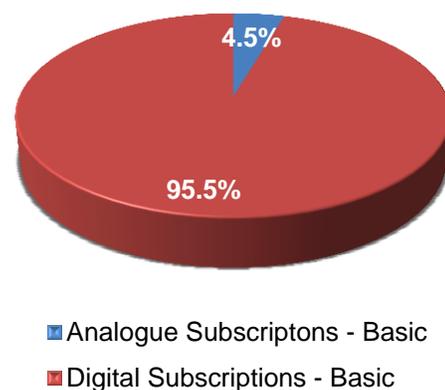


FIGURE 108: PAY TV SUBSCRIPTIONS (BASIC PACKAGE SUBSCRIPTIONS) BY PLATFORM FOR 2015



In 2015, digital subscriptions continued to comprise the majority of the Pay TV market as shown in Figure 108 above; analogue subscriptions represented 4.5% (10.5 thousand) while digital subscriptions contributed 95.5% (222.1 thousand).

Similar to the past five years, digital subscriptions continued to increase while the number of analogue subscriptions decreased in 2015. There were 222.2 and 10.5 thousand digital and analogue Pay TV subscriptions respectively as at December 2015. Digital subscriptions increased by 5.7 thousand (2.7%) from 2014 to 2015. Analogue subscriptions however, decreased by 1.7 thousand (14.4%) for the same period under review. Figure 109 illustrates the annual trend in the number of subscriptions by platform while Table 7 highlights the change in subscribership over the past two (2) years.

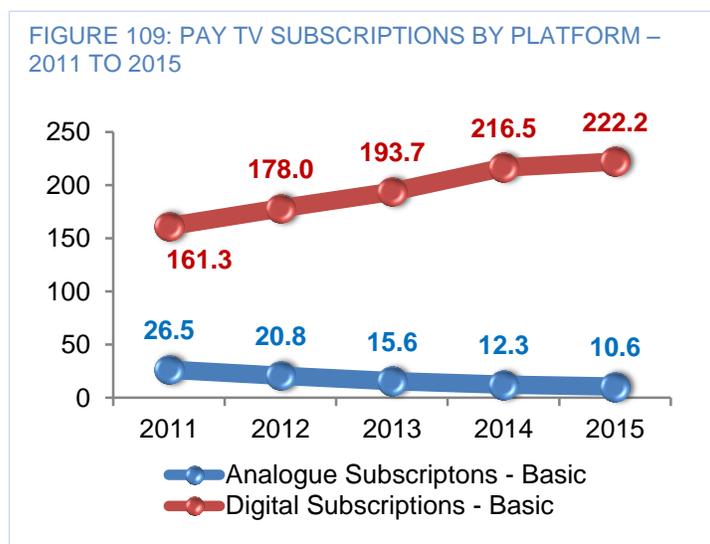


TABLE 8: GROWTH RATE OF PAY TV SUBSCRIPTIONS BY PLATFORM 2015

Type of Platform	Change in Basic Pay TV Subscriptions – 2015 ('000)	Percentage change between 2014 and 2015
Analogue	-1.7	-14.4%
Digital	5.7	2.7%

6.3.2 PREMIUM PACKAGES SUBSCRIPTIONS

All pay TV customers are required to first subscribe to a basic package. As a result, premium package subscriptions represent a subset of total Pay TV subscriptions. A premium package subscriber may also subscribe to more than one premium package. As at December 2015, there were approximately 116.7 thousand premium package subscriptions, an increase of 7.1 thousand subscriptions (6.5%) over the 2014 period. As illustrated in Figure 110 the demand for premium packages has grown steadily from 2011 to 2015.

FIGURE 110: NUMBER OF PREMIUM PACKAGE SUBSCRIPTIONS 2011 – 2015

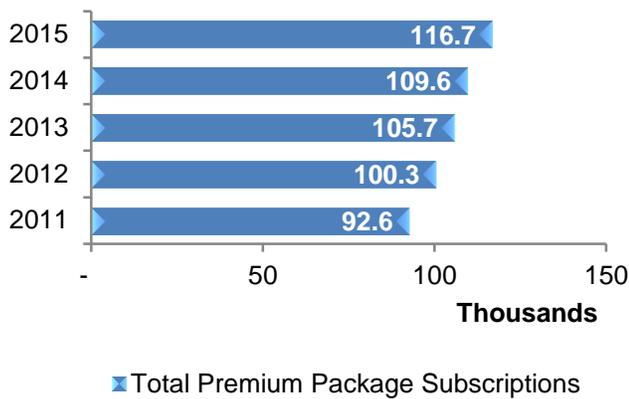
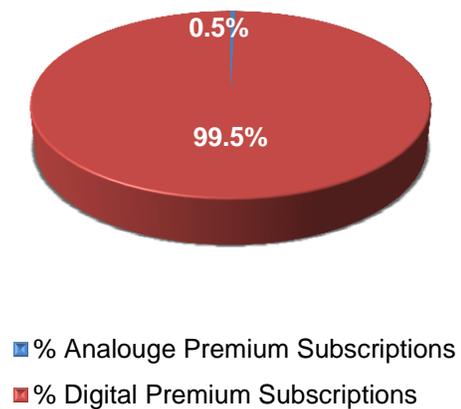
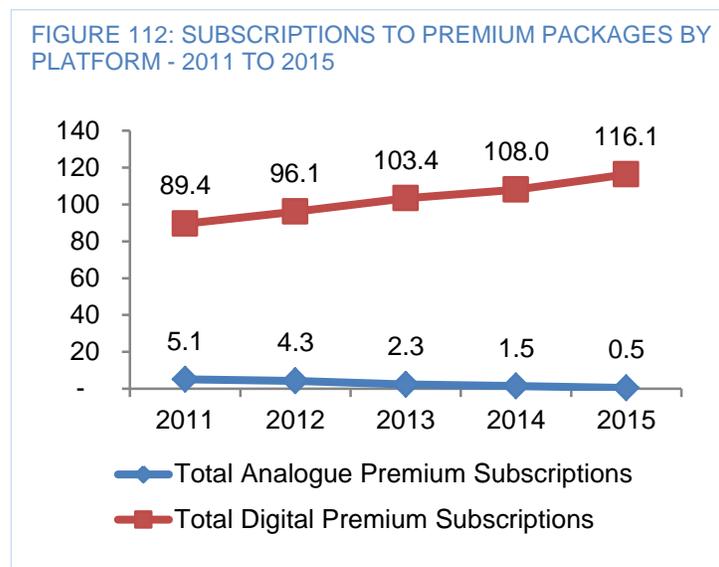


FIGURE 111: NUMBER OF PREMIUM PACKAGE SUBSCRIPTIONS BY PLATFORM - 2015



Similar to basic Pay TV subscriptions, premium package subscriptions can also be sub divided into analogue and digital. Consistent with the proportion of digital basic subscriptions, digital premium packages comprised the majority of all premium package subscriptions. Subscriptions to digital premium packages accounted for 99.5% (116.1 thousand) of total premium package subscriptions while analogue premium packages contributed the remaining 0.5% (543 thousand). Figure 111 above presents a percentage breakdown of the number of premium package subscriptions by platform for the period 2015.

Similar to the five year trend in basic subscriptions, digital premium package subscriptions experienced steady growth while analogue premium package subscriptions continued to decline. In 2015, subscriptions to digital premium packages increased by 7.5% while subscriptions to analogue premium packages decreased by 64.6%. The trend in subscriptions to digital and analogue premium packages over the last five years is illustrated in Figure 112 below.



6.3.3 PAY TV PENETRATION

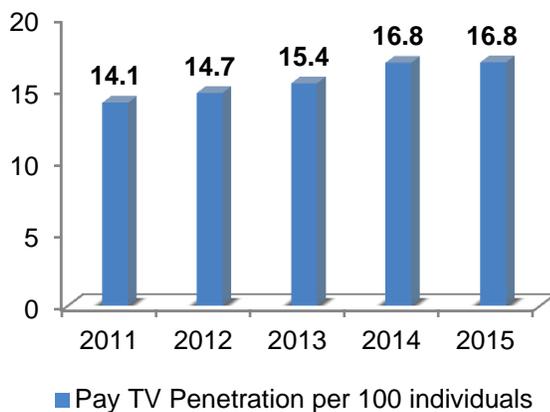
The market for Pay TV services has shown favourable growth as evidenced by increases in the proportion of persons and households subscribing to these services over the past five years.

As at December 2015, the penetration of Pay TV services (the number of Pay TV subscriptions per 100 inhabitants) was 16.8. This means that approximately 17 out of every 100 persons subscribed to these services in 2015. While the Pay TV penetration rate remained constant in 2014 and 2015, overall growth was observed from 2011 to 2015.

Following a significant increase in 2014, Pay TV household penetration (the number of subscriptions per 100 households⁶⁰) increased moderately from 55.7 in 2014 to 56.6 in 2015. This means that approximately 57 out of every 100 households subscribed to these services in 2015.

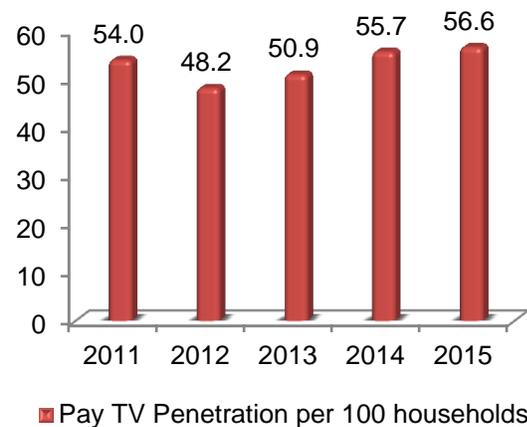
Figures 113 and 114 below highlight the trend in Pay TV penetration over the last five years.

FIGURE 113: PAY TV PENETRATION –2011 TO 2015



Source: TATT

FIGURE 114: PAY TV HOUSEHOLD PENETRATION - 2011 TO 2015



Source: TATT

6.3.4 PAY TV BROADCASTING REVENUES

Over the past five years, revenues in the Pay TV services increased steadily. In 2015, this market generated \$730.2 million in revenues, a 5.0% increase over the previous period. The majority of these revenues were generated from digital pay TV services; accounting for 96.2% (TT\$681.3 million). Analogue Pay TV subscriptions contributed 3.8% (TT\$27.0 million) to total revenues. The positive growth in revenues in this market over the last five years is shown in Figure 115 while the percentage breakdown of Pay TV revenues by platform is highlighted in Figure 116.

FIGURE 115: PAY TV GROSS REVENUES - 2011 TO 2015

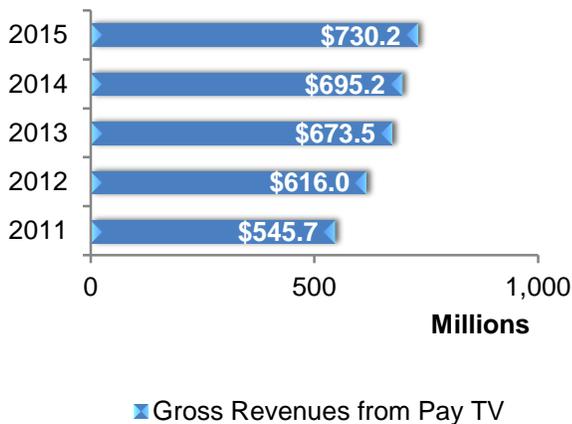
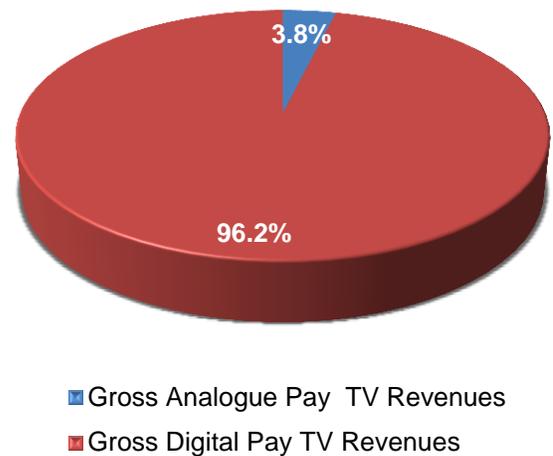


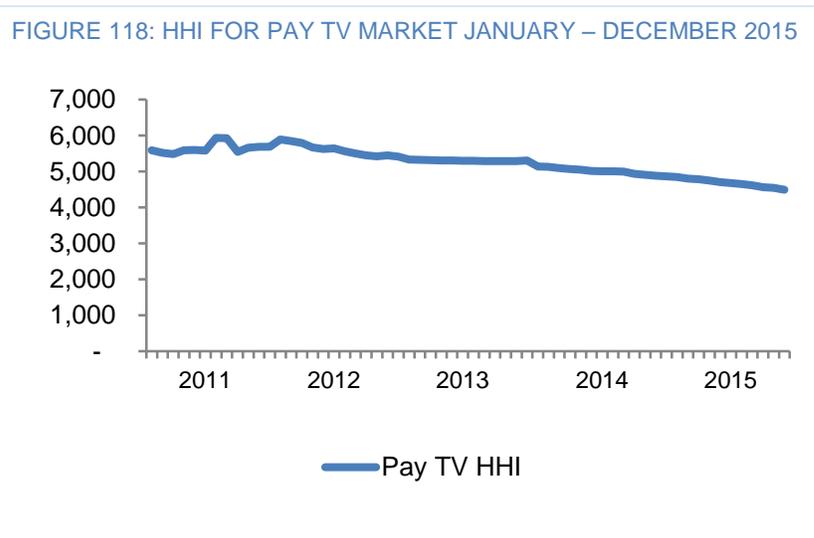
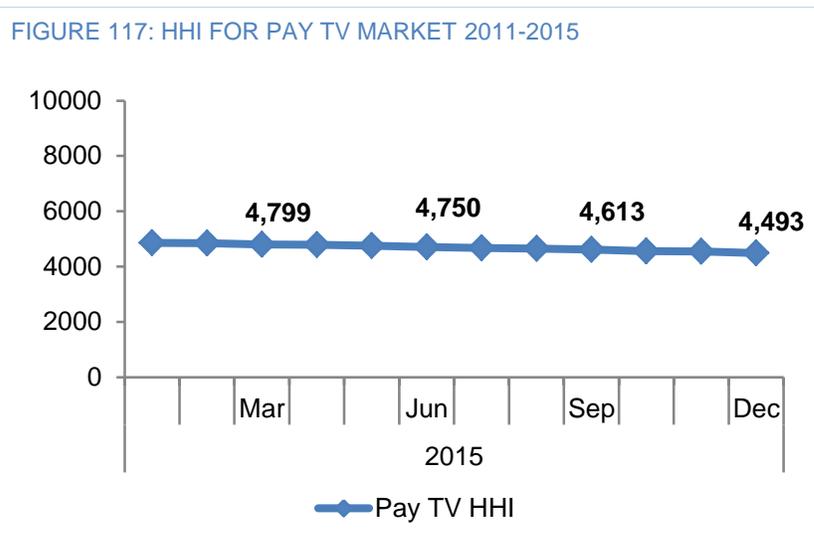
FIGURE 116: BREAKDOWN OF PAY TV REVENUES FOR 2015



6.3.5 PAY TV MARKET CONCENTRATION

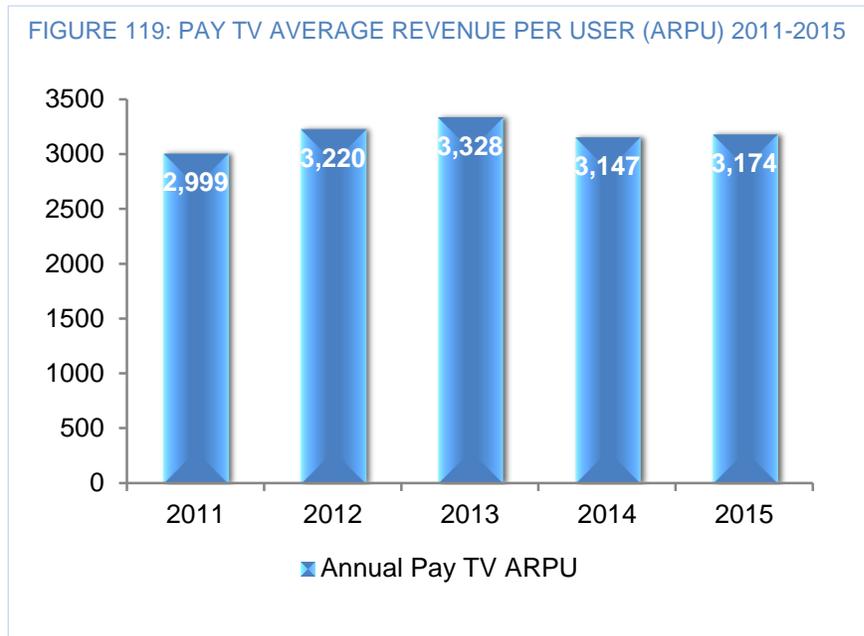
Using the Hirschman-Herfindahl Index (HHI), the Authority calculated the level of concentration for the Pay TV market. During 2015, the level of concentration in the Pay TV market decreased steadily. The HHI recorded 4,799 points at the end of the first quarter of 2015, decreasing consistently during each subsequent quarter and ending the year at 4,493 points. Figure 117 illustrates.

Overall, the HHI in the Pay TV market has been decreasing over the past five years, with several minor fluctuations being observed. In 2015, the average HHI for this market was 4,688; showing an average decrease of 7% from 2014.



6.3.6 PAY TV ANNUAL AVERAGE REVENUE PER USER (ARPU)

On average, each customer spent TT\$3,174 for Pay TV services in 2015 compared to the TT\$3,147 calculated in 2014. This represents a minor increase of TT\$27.2 or 0.9% in the annual average revenue per user (ARPU). Figure 119 below highlights the changes in ARPU over the last five years.



APPENDIX I: DOMESTIC TELECOMMUNICATIONS STATISTICS

TABLE 9: DOMESTIC TELECOMMUNICATIONS STATISTICS

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
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	1.3
	GDP per capita (US \$ millions) ⁶¹	7,166	8,246	8,470	11,560	14,576	16,683	21,408	15,067	15,924	17,042	19,018	27,855	28,183	
	Telecom revenue (US \$ million)	326.0	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
	Total telephone subscriptions ('000s)	592.2	683.3	849.3	1,246	1,844	1,817	2,121	2,150	2,815	2,118	2,700	2,235	2,270	2,393
	Total telephone penetration	45.5	52.4	65.0	95.2	140.8	138.7	163.1	165.3	167.2	160.7	164.7	168.3	171.4	180.7
	Average revenue per user ⁶² (ARPU) US \$	550.4	506.8	420.3	304.3	239.5	286.9	365.6	318.7	322.5	348.0	384.4	386.7	388.3	366.3
Fixed Voice	Fixed Voice subscriptions('000s)	308.3	317.3	318.9	322.3	325.5	307.3	314.8	303.2	293.3	292.0	286.1	291.3	288.7	269.8
	Fixed Voice penetration	23.7	24.4	24.4	24.6	24.9	23.5	24.1	23.2	22.3	22.0	21.6	21.9	21.7	20.0
	Fixed Voice household penetration	-	-	-	-	77.4	71.5	73.3	70.1	67.5	67.1	55.3	56.2	56.6	52.5
	Average revenue per user (ARPU) US \$	362.1	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
	Fixed Voice Subscription growth (%)	5.2	2.9	0.5	1.1	1.0	-5.6	2.4	-3.7	-3.3	-0.6	-1.9	1.6	-0.7	-6.3

⁶¹ GDP per capita is recorded at current market prices

⁶² ARPU is calculated as the total revenues generated from the service divided by the total number of subscriptions to the service

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Mobile	Mobile subscriptions ('000s)	284	366	530	924	1,519	1,510	1,806	1,846	1,894	1,826	1,880	1,944	198.1	2,123
	Mobile penetration	21.8	28.1	40.6	70.5	116	115	138	141	144	139	142	146	149.1	157.3
	Average revenue per user (ARPU) US \$	212	214	204	153	159	207	197	170	164	173	188	189	174.5	147.1
	Mobile subscription growth (%)	77	29	45	74	64	-0.6	20	2	2.6	-3.6	3.1	3.2	1.9	7
Internet	Total Internet subscriptions ⁶³ ('000s)	39.9	44.2	55.2	62.3	73.3	93.3	129.7	238.3	309.9	325.2	342.8	682.3	820.1	925.2
	Fixed Internet subscriptions ⁶⁴ ('000s)	39.9	44.2	55.2	62.3	73.3	82.6	114.1	145.0	171.1	192.0	224.1	231.7	249.6	279.8
	Mobile Internet subscriptions ⁶⁵ ('000s)	-	-	-	-	-	10.7	15.6	93.3	138.8	133.2	422.5	450.6	570.5	645.4
	Fixed Broadband subscriptions ⁶⁷ ('000s)	-	-	-	14.0	21.1	35.5	85.4	130.1	162.9	187.9	221.3	229.6	248.1	278.5
	Fixed Internet users ⁶⁸ ('000s)	138.0	153.0	160.0	185	198.4	429	456	580	684	768	726	751	758	851
	Total Internet penetration	3.1	3.4	4.2	5.5	5.7	7.1	9.9	18.2	23.5	24.7	25.9	51.4	61.8	68.5
	Fixed Internet penetration	3.1	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
	Mobile Internet penetration	-	-	-	-	-	0.8	1.2	7.1	10.5	10.1	9.0	33.9	43.0	47.8
	Fixed Internet users penetration	10.5	11.7	12.2	14.1	15.2	32.8	34.9	44.3	51.9	58.3	54.8	57	57	63
	Fixed Internet household penetration	-	-	-	-	-	4.9	21.4	40.1	49.9	52.8	52.1	54	58	65
	Average revenue per user (ARPU) US \$ for fixed Internet	-	-	-	-	392.3	552.3	491.8	433.2	409.9	431.9	422.8	440	449	431
	Fixed Internet subscription growth (%)	14.7	10.8	24.8	12.9	17.7	27.4	38.9	83.8	18.0	21.7	10.7	6	7.8	12.1

⁶³ Total Internet subscriptions is the sum of fixed Internet subscriptions and mobile postpaid Internet subscriptions

⁶⁴ Fixed Internet subscriptions – total number of subscriptions with fixed wired or fixed wireless Internet access

⁶⁵ Mobile Internet subscriptions – postpaid mobile customers who subscribe to monthly Internet airtime and who are billed accordingly

⁶⁶ Mobile Internet Subscriptions for 2012 includes prepaid and postpaid mobile Internet users

⁶⁷ Fixed Broadband subscriptions –the number of Internet subscribers with access to download speeds of 256kbps or above

⁶⁸ Fixed Internet users – the number of persons who regularly use fixed Internet services

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Traffic	International -Outgoing (min. million)	84.1	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
	International -Incoming (min. million)	279.0	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
	Inbound/Outbound int'l traffic ratio	3.3	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
Pay TV	Pay TV subscriptions ('000s)	82.4	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
	Pay TV penetration	6.3	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
	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
	Average revenue per user (ARPU) US \$	395.3	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
	Pay TV subscription growth (%)	4.5	12.3	11.7	27.3	6.2	8.1	12.5	10.2	-0.4	5.0	5.8	5.3	9.3	1.7

APPENDIX II: LIST OF CONCESSIONNAIRES AS AT DECEMEBER 2015

CONCESSIONS GRANTED (July 1, 2004 – December 31, 2015)

CONCESSIONAIRE	NETWORK AND/ OR SERVICE	TERRITORY	TYPE	TERM	DATE OF GRANT	EXPIRY DATE	FREQUENCY/ SPECTRUM
INTERNATIONAL TELECOMMUNICATIONS							
Columbus Communications Trinidad Limited	Public International Telecommunications Services	N/A	Type 4	DATE OF EXPIRY 04.01.2016	21 August 2009	4 January 2016	N/A
Columbus Networks International (Trinidad) Limited	Public International Telecommunications Network	N/A	Type 2	10 Years	16 February 2007	15 February 2017	N/A
Columbus Networks International (Trinidad) Limited	Public International Telecommunications Services	N/A	Type 2	10 Years	16 February 2007	15 February 2017	N/A
Digicel Trinidad and Tobago Limited	Public International Telecommunications Network	N/A	Type 2	10 Years	31 December 2015	30 December 2025	N/A
Digicel Trinidad and Tobago Limited	Public International Telecommunications Services	N/A	Type 2	10 Years	31 December 2015	30 December 2025	N/A
Green Dot Limited	Public International Telecommunications Network	N/A	Type 2	10 Years	1 October 2007	30 September 2017	N/A
Green Dot Limited	Public International Telecommunications Services	N/A	Type 2	10 Years	1 October 2007	30 September 2017	N/A
Lisa Communications Limited	Public International Telecommunications Network	N/A	Type 2	10 Years	1 September 2006	31 August 2016	N/A
Lisa Communications Limited	Public International Telecommunications Services	N/A	Type 2	10 Years	1 September 2006	31 August 2016	N/A
Massy Communications Limited	Public International Telecommunications Network	N/A	Type 2	10 Years	4 April 2006	3 April 2016	N/A
Massy Communications Limited	Public International Telecommunications Services	N/A	Type 2	10 Years	4 April 2006	3 April 2016	N/A
Open Telecom Limited	Public International Telecommunications Network	N/A	Type 2	10 Years	5 January 2006	4 January 2016	N/A

CONCESSIONAIRE	NETWORK AND/ OR SERVICE	TERRITORY	TYPE	TERM	DATE OF GRANT	EXPIRY DATE	FREQUENCY/ SPECTRUM
INTERNATIONAL TELECOMMUNICATIONS							
Open Telecom Limited	Public International Telecommunications Services	N/A	Type 2	10 Years	5 January 2006	4 January 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
Telecommunications Services of Trinidad and Tobago Limited	Public International Telecommunications Network	N/A	Type 2	10 Years	31 December 2015	30 December 2025	N/A
Telecommunications Services of Trinidad and Tobago Limited	Public International Telecommunications Services	N/A	Type 2	10 Years	31 December 2015	30 December 2025	N/A
'FREE TO AIR' RADIO BROADCASTING							
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 2006	22 February 2016	91.5 FM
Caribbean New Media Group Limited	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	91.1 FM
Caribbean New Media Group Limited	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	99.1 FM
Caribbean New Media Group Limited	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	100.1 FM
Central Broadcasting Services Limited	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	21 September 2006	20 September 2016	102.7 FM
Central Radio FM90 Limited	Broadcasting Services ('Free to Air' FM)	Major Territorial	Type 5	10 Years	23 February 2006	22 February 2016	90.5 FM
Family Focus Limited	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	98.1 FM
Guardian Media Limited (formerly Trinidad Publishing Company Limited)	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	95.1 FM
Guardian Media Limited (formerly Trinidad Publishing Company Limited)	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	105.1 FM
Guardian Media Limited (formerly Trinidad Publishing Company Limited)	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	106.1 FM

CONCESSIONAIRE	NETWORK AND/ OR SERVICE	TERRITORY	TYPE	TERM	DATE OF GRANT	EXPIRY DATE	FREQUENCY/ SPECTRUM
'FREE TO AIR' RADIO BROADCASTING							
Guardian Media Limited (formerly Trinidad Publishing Company Limited)	Broadcasting Services ('Free to Air' FM)	Major Territorial	Type 5	10 Years	23 February 2006	22 February 2016	106.5 FM
¹ Guardian Media Limited (formerly Wonderland Entertainment Limited)	Broadcasting Services ('Free to Air' FM)	Major Territorial	Type 5	10 Years	23 February 2006	22 February 2016	100.5 FM
⁵ Guardian Media Limited (formerly 21st Century Arts and Entertainment Limited)	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	99.5 FM
Heritage Communications Limited	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	101.7 FM
Kaisoca Productions Limited	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	92.7 FM
Kenny Phillips	Broadcasting Services ('Free to Air' FM)	Major Territorial	Type 5	10 Years	23 February 2006	22 February 2016	90.1 FM
Mohan Jaikaran	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	101.1 FM
Neil "Iwer" George	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	91.9 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 2006	22 February 2016	104.7 FM
Radio Five Limited	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	93.5 FM
² Radio Five Limited (formerly Citadel Limited)	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	95.5 FM
² Radio Five Limited (formerly Inner City Broadcasting Company Limited)	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	107.1 FM
² Radio Five Limited (formerly Sidewalk Radio Limited)	Broadcasting Services ('Free to Air' FM)	Major Territorial	Type 5	10 Years	23 February 2006	22 February 2016	92.3 FM
² Radio Five Limited (formerly The Q Corporation Limited)	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	96.7 FM
Radio News Network	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	104.1 FM
Radio Vision Limited	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	102.1 FM
Superior Infinite Productions Limited	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	94.1 FM
Telemedia Limited	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	97.1 FM

CONCESSIONAIRE	NETWORK AND/ OR SERVICE	TERRITORY	TYPE	TERM	DATE OF GRANT	EXPIRY DATE	FREQUENCY/ SPECTRUM
'FREE TO AIR' RADIO BROADCASTING							
Trico Industries Limited	Broadcasting Services ('Free to Air' FM)	Minor Territorial	Type 5	10 Years	11 October 2012	10 October 2022	89.5 FM
Trinidad and Tobago Citizen's Agenda Network	Broadcasting Services ('Free to Air' FM)	Minor Territorial/Niche - Toco and environs	Type 5	10 Years	1 March 2006	29 February 2016	106.7 FM
Trinidad and Tobago Radio Network Limited	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	96.1 FM
³ Trinidad and Tobago Radio Network Limited (formerly Marcel Mahabir)	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	107.7 FM
⁴ Trinidad and Tobago Radio Network Limited (formerly VL Communications Limited)	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	94.7 FM
United Cinemas Limited	Broadcasting Services ('Free to Air' FM)	National	Type 5	10 Years	23 February 2006	22 February 2016	103.5 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
Winfield Aleong Broadcasting Company Limited	Broadcasting Services ('Free to Air' FM)	Major Territorial	Type 5	10 Years	23 February 2006	22 February 2016	103.1 FM
MOBILE TELECOMMUNICATIONS							
Digicel Trinidad and Tobago Limited	Public Domestic Mobile Telecommunications Network	National	Type 2	10 Years	31 December 2015	30 December 2025	N/A
Digicel Trinidad and Tobago Limited	Public Domestic Mobile Telecommunications Services	National	Type 2	10 Years	31 December 2015	30 December 2025	N/A
Telecommunications Services of Trinidad and Tobago Limited	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	National	Type 2	10 Years	31 December 2015	30 December 2025	N/A

CONCESSIONAIRE	NETWORK AND/ OR SERVICE	TERRITORY	TYPE	TERM	DATE OF GRANT	EXPIRY DATE	FREQUENCY/ SPECTRUM
'FREE TO AIR' TELEVISION BROADCASTING							
Advance Community Television Network Limited	Broadcasting Services ('Free to Air' Television)	Major Territorial	Type 5	10 Years	1 March 2006	29 February 2016	UHF 25
C.C.N. Television Limited	Broadcasting Services ('Free to Air' Television)	National	Type 5	10 Years	1 March 2006	29 February 2016	VHF 6, UHF 18, 19
Caribbean New Media Group Limited	Broadcasting Services ('Free to Air' Television)	National	Type 5	10 Years	23 February 2006	22 February 2016	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 [formerly known as Trinidad Publishing Company Limited] (CNC3)	Broadcasting Services ('Free to Air' Television)	National	Type 5	10 Years	14 April 2008	13 April 2018	VHF 12, UHF 14, 22
Mohan Jaikaran	Broadcasting Services ('Free to Air' Television)	National	Type 5	10 Years	1 March 2006	29 February 2016	VHF 7, UHF 37, 39
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
SUBSCRIPTION TELEVISION BROADCASTING							
Air Link Communications	Subscription Broadcasting Service (over a Public Domestic Fixed Telecom. 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 Telecom. Network only)	National	Type 5	10 Years	5 January 2006	4 January 2016	N/A
Digicel Trinidad and Tobago Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecom. 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 2006	27 February 2016	N/A
Diversified Technologies Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecom. Network only)	Niche - Penal and Environs	Type 5	10 Years	11 October 2012	10 October 2022	N/A

CONCESSIONAIRE	NETWORK AND/ OR SERVICE	TERRITORY	TYPE	TERM	DATE OF GRANT	EXPIRY DATE	FREQUENCY/ SPECTRUM
SUBSCRIPTION TELEVISION BROADCASTING							
Green Dot Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecom. Network only)	National	Type 5	10 Years	11 July 2008	10 July 2018	N/A
Independent Cable Network of Trinidad & Tobago Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecom. Network only)	Major Territorial	Type 5	10 Years	1 November 2006	31 October 2016	N/A
Massy Communications Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecom. Network only)	National	Type 5	10 Years	24 August 2014	23 August 2024	N/A
Network Technologies Limited (Transferred from Computer Technologies and Services Limited)	Subscription Broadcasting Service (over a Public Domestic Fixed Telecom. Network only)	Niche - Mayaro and Guayaguayare	Type 5	10 Years	5 January 2006	4 January 2016	N/A
Open Telecom Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecom. 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 Telecom. 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 Telecom. 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 Telecom. Network only)	National	Type 5	10 Years	31 December 2015	30 December 2025	N/A
TRICO Industries Limited	Subscription Broadcasting Service (over a Public Domestic Fixed Telecom. Network only)	Minor Territorial	Type 5	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
TELEVISION BROADCASTING SERVICE VIA CABLE							
Central Broadcasting Services Limited	Broadcasting Service (over a Public Domestic Fixed Telecom. Network only)	National	Type 5	10 Years	18 March 2013	17 March 2023	N/A
Darut Tarbiyah	Broadcasting Service (over a Public Domestic Fixed Telecom. 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 Telecom. Network only)	National	Type 5	10 Years	3 September 2015	2 September 2025	N/A
Gayelle Limited	Broadcasting Service (over a Public Domestic Fixed Telecom. Network only)	Major Territorial	Type 5	10 Years	1 March 2006	29 February 2016	N/A
IBN Communications Company Limited	Broadcasting Service (over a Public Domestic Fixed Telecom. 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 Telecom. Network only)	National	Type 5	10 Years	12 August 2015	11 August 2025	N/A
IETV Limited	Broadcasting Service (over a Public Domestic Fixed Telecom. Network only)	National	Type 5				N/A
Living Water Community	Broadcasting Service (over a Public Domestic Fixed Telecom. 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 Telecom. 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 Telecom. Network only)	Major Territorial	Type 5	10 Years	14 April 2008	13 April 2018	N/A

CONCESSIONAIRE	NETWORK AND/ OR SERVICE	TERRITORY	TYPE	TERM	DATE OF GRANT	EXPIRY DATE	FREQUENCY/ SPECTRUM
FIXED TELECOMMUNICATIONS							
Air Link Communications	Public Domestic Fixed Telecommunications Network	Niche - Princes Town and Environs	Type 2	10 Years	1 May 2010	30 April 2020	N/A
Air Link Communications	Public Domestic Fixed Telecommunications Services	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 Network	National	Type 2	10 Years	5 January 2006	4 January 2016	N/A
Columbus Communications Trinidad Limited	Public Domestic Fixed Telecommunications Services	National	Type 2	10 Years	5 January 2006	4 January 2016	N/A
Digicel (Trinidad and Tobago) Limited	Public Domestic Fixed Telecommunications Network	National	Type 2	10 Years	1 May 2010	30 April 2020	N/A
Digicel (Trinidad and Tobago) Limited	Public Domestic Fixed Telecommunications Services	National	Type 2	10 Years	1 May 2010	30 April 2020	N/A
Digicel (Trinidad and Tobago) Limited	Public Domestic Fixed Telecommunications Network (Wired)	National	Type 2	10 Years	3 October 2014	2 October 2024	N/A
Digicel (Trinidad and Tobago) Limited	Public Domestic Fixed Telecommunications Services (Wired)	National	Type 2	10 Years	3 October 2014	2 October 2024	N/A
Diversified Technologies Limited	Public Domestic Fixed Telecommunications Network	Niche - Penal and Environs	Type 2	10 Years	11 October 2012	10 October 2022	N/A
Diversified Technologies Limited	Public Domestic Fixed Telecommunications Services	Niche - Penal and Environs	Type 2	10 Years	11 October 2012	10 October 2022	N/A
Green Dot Limited	Public Domestic Fixed Telecommunications Network	National	Type 2	10 Years	1 October 2007	30 September 2017	N/A
Green Dot Limited	Public Domestic Fixed Telecommunications Services	National	Type 2	10 Years	1 October 2007	30 September 2017	N/A
Independent Cable Network of Trinidad & Tobago Limited	Public Domestic Fixed Telecommunications Network	Major Territorial	Type 2	10 Years	1 November 2006	31 October 2016	N/A
Independent Cable Network of Trinidad & Tobago Limited	Public Domestic Fixed Telecommunications Services	Major Territorial	Type 2	10 Years	1 November 2006	31 October 2016	N/A
Lisa Communications Limited	Public Domestic Fixed Telecommunications Network	National	Type 2	10 Years	1 May 2010	30 April 2020	N/A
Lisa Communications Limited	Public Domestic Fixed Telecommunications Services	National	Type 2	10 Years	1 May 2010	30 April 2020	N/A

CONCESSIONAIRE	NETWORK AND/ OR SERVICE	TERRITORY	TYPE	TERM	DATE OF GRANT	EXPIRY DATE	FREQUENCY/ SPECTRUM
FIXED TELECOMMUNICATIONS							
Massy Communications Limited (formerly Three Sixty Communications Limited)	Public Domestic Fixed Telecommunications Network	National	Type 2	10 Years	1 December 2009	30 November 2019	N/A
Massy Communications Limited (formerly Three Sixty Communications Limited)	Public Domestic Fixed Telecommunications Services	National	Type 2	10 Years	1 December 2009	30 November 2019	N/A
Massy Technologies Infocom (Trinidad) Limited [formerly Illuminat (Trinidad & Tobago) Limited]	Public Domestic Fixed Telecommunications Network	National	Type 2	10 Years	1 May 2010	30 April 2020	N/A
Massy Technologies Infocom (Trinidad) Limited [formerly Illuminat (Trinidad & Tobago) Limited]	Public Domestic Fixed Telecommunications Services	National	Type 2	10 Years	1 May 2010	30 April 2020	N/A
Network Technologies Limited (Transferred from Computer Technologies and Services Limited)	Public Domestic Fixed Telecommunications Network	Niche - Mayaro and Guayaguayare	Type 2	10 Years	5 January 2006	4 January 2016	N/A
Network Technologies Limited (Transferred from Computer Technologies and Services Limited)	Public Domestic Fixed Telecommunications Services	Niche - Mayaro and Guayaguayare	Type 2	10 Years	5 January 2006	4 January 2016	N/A
Open Telecom Limited	Public Domestic Fixed Telecommunications Network	National	Type 2	10 Years	1 May 2010	30 April 2020	N/A
Open Telecom Limited	Public Domestic Fixed Telecommunications Services	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 Network	National	Type 2	10 Years	20 May 2014	19 May 2024	N/A
RVR International Limited	Public Domestic Fixed Telecommunications Services	National	Type 2	10 Years	20 May 2014	19 May 2024	N/A
Santa Flora Cable Network Ltd	Public Domestic Fixed Telecommunications Network	Niche - Santa Flora and Environs	Type 2	10 years	15 May 2014	14 May 2024	N/A
Santa Flora Cable Network Ltd	Public Domestic Fixed Telecommunications Services	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 Network	National	Type 2	10 Years	31 December 2015	30 December 2025	N/A
Telecommunications Services of Trinidad and Tobago Limited	Public Domestic Fixed Telecommunications Services	National	Type 2	10 Years	31 December 2015	30 December 2025	N/A

CONCESSIONAIRE	NETWORK AND/ OR SERVICE	TERRITORY	TYPE	TERM	DATE OF GRANT	EXPIRY DATE	FREQUENCY/ SPECTRUM
FIXED TELECOMMUNICATIONS							
TRICO Industries Limited	Public Domestic Fixed Telecommunications Network	Minor Territorial	Type 2	10 Years	1 September 2006	31 August 2016	N/A
TRICO Industries Limited	Public Domestic Fixed Telecommunications Services	Minor Territorial	Type 2	10 Years	1 September 2006	31 August 2016	N/A
Wireless Telecommunications Ltd	Public Domestic Fixed Telecommunications Network	National	Type 2	10 years	27 November 2013	26 November 2023	N/A
Wireless Telecommunications Ltd	Public Domestic Fixed Telecommunications Services	National	Type 2	10 years	27 November 2013	26 November 2023	N/A

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

²Concession 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 September 7, 2012.

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

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

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

APPENDIX III: TARIFFS

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

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

APPENDIX IV: GLOSSARY OF TERMS

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

Terms	Definition
Average Revenue per User	Measures the average revenue generated by one subscriber.
Broadband	Internet speeds > 256 Kbits/s.
Concession	A legal instrument granted by the Minister to authorise the operation of a public telecommunications network and/or the provision of any public telecommunications service or broadcasting service.
Gross Domestic Product	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.
Hirschman-Herfindahl Index	A tool that measures the concentration of firms within a particular market. It is computed as the sum of the squares of the market shares of all firms in the market.
Interconnection	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.

International settlement rate	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.
Licence	a legal instrument granted by the Authority to authorise the operation or use of any radiocommunication service or any radiotransmitting equipment, including that on board any ship, aircraft or other vessel in the territorial waters or airspace of Trinidad and Tobago.
Mobile voice subscription	Refers to an activated (pre-paid or post-paid) SIM card than enables the user to make and/or receive a call.
Narrowband	Internet speeds \leq 256 Kbits/s.
Off-net traffic	Refers to traffic originating on a service provider's network and terminating on another network.
On-net traffic	Refers to traffic originating on a service provider's network and terminating on the same network.
Penetration rate	Is 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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