



Determination: Domestic Retail Fixed Telephony and Fixed Broadband Market Definitions

Maintenance History		
Date	Change Details	Version
14 th April 2009	Determination of Market Definitions in the Retail Domestic Fixed Voice Sector of T&T published	1.0
6 th September 2023	First draft issued for consultation	1.1
13 th May 2024	Revised consultative document based on comments and recommendations received in the first round of consultation. Second draft issued for consultation	1.2
30 th October 2024	Final Determination published	2.0

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This document may be cited as Telecommunications Authority of Trinidad and Tobago (TATT 2024). *Determination: Domestic Retail Fixed Telephony and Fixed Broadband Market Definitions* (30th October 2024). Barataria, Trinidad and Tobago.

Table of Contents

List of Figures	vii
Abbreviations	viii
Definitions of Terms	ix
Executive Summary	xi
1. Introduction.....	1
1.1. Background to the Determination	2
2. Approach to Determining Relevant Markets	7
2.1. Relevant Product Scope	7
2.1.1. Determining the Focal Product	9
2.1.2. Demand-Side Substitution	10
2.1.3. Supply-Side Substitution.....	10
2.2. Customer Segmentation	11
2.3. Relevant Geographic Scope	12
2.4. Considerations.....	13
3. Assessment of Separate Markets for Different Domestic Retail Fixed Services	14
3.1. Are Fixed Line Access and Managed VoIP-Based Fixed Services in the Same Product Market? 15	
3.1.1. Demand-Side Substitution	15
3.1.2. Supply-Side Substitution.....	18
3.1.3. Conclusions.....	18
3.2. Are Fixed Line Access and Domestic Fixed Call Services in the Same Product Market? ...	19
3.2.1. Demand-Side Substitution	19
3.2.1.1. Product Characteristics	19
3.2.1.2. Uptake and Usage Trends	21
3.2.1.3. Relative Prices	24
3.2.2. Supply-Side Substitution.....	27
3.2.3. Conclusions.....	27
3.3. Are Fixed Broadband Access Services in the Same Product Market as Fixed Voice Services? 28	
3.3.1. Demand-Side Substitution	29

3.3.1.1.	Product Characteristics	29
3.3.1.2.	Uptake and Usage Trends	31
3.3.1.3.	Relative Prices	33
3.3.1.4.	Switching Behaviour.....	36
3.3.2.	Supply-Side Substitution.....	38
3.3.3.	Further Considerations.....	39
3.3.4.	Conclusions.....	39
3.4.	Are Residential and Business Services in the Same Product Market?.....	40
3.4.1.	Demand-Side Substitution	41
3.4.1.1.	Standalone Fixed Voice Services.....	43
3.4.1.2.	Standalone Fixed Broadband Services.....	46
3.4.1.3.	Multi-Play Bundles	49
3.4.2.	Supply-Side Substitution.....	53
3.4.3.	Further Considerations.....	53
3.4.4.	Conclusions.....	53
3.5.	Geographic Scope of the Product Markets.....	54
3.5.1.	Conclusions.....	56
4.	Assessment of the Need to Extend the Market Beyond Fixed Services	57
4.1.	Are Mobile Voice Services in the Same Product Market as Fixed Voice Services?	57
4.1.1.	Demand-Side Substitution	58
4.1.1.1.	Product Characteristics	58
4.1.1.2.	Uptake and Usage Trends	61
4.1.1.3.	Relative Prices	64
4.1.1.4.	Switching Behaviour.....	67
4.1.2.	Supply-Side Substitution.....	70
4.1.3.	Conclusions.....	71
4.2.	Are Mobile Data Services in the Same Product Market as Fixed Broadband Services?	71
4.2.1.	Demand-Side Substitution	72
4.2.1.1.	Product Characteristics	72
4.2.1.2.	Uptake and Usage Trends	74
4.2.1.3.	Relative Prices	75
4.2.1.4.	Switching Behaviour.....	78
4.2.2.	Supply-Side Substitution.....	78

4.2.3.	Conclusions.....	79
4.3.	Are OTT Services in the Same Product Market as Fixed Voice Services?	79
4.3.1.	Demand-Side Substitution	80
4.3.1.1.	Product Characteristics	80
4.3.1.2.	Service Availability, Usage and Uptake	81
4.3.1.3.	Relative Prices	82
4.3.1.4.	Switching Behaviour.....	83
4.3.2.	Supply-Side Substitution.....	85
4.3.3.	Conclusions.....	86
5.	Conclusion	87

List of Tables

Table 1 List of services included in the relevant markets	xii
Table 2 Fixed line access and call bundles for residential customers.....	17
Table 3 Fixed voice bundled offerings for residential customers	20
Table 4 PAYG offerings and per minute charges for residential customers (TT\$)	21
Table 5 Comparison of fixed voice bundles and implied PAYG monthly prices (TT\$)	25
Table 6 Standalone fixed broadband offerings for residential customers	30
Table 7 Standalone fixed voice, broadband and multi-play offerings for residential customers.....	34
Table 8 Standalone fixed voice service offerings for residential and SME customers.....	44
Table 9 Standalone fixed broadband offerings for residential and SME customers	48
Table 10 Multi-play bundle offerings for residential and business customers	50
Table 11 Coverage (% of populated areas unless stated otherwise), by concessionaire in the domestic retail fixed market	55
Table 12 Prepaid mobile plans.....	60
Table 13 Postpaid mobile plans	61
Table 14 Comparison of fixed and mobile voice plan prices.....	65
Table 15 Residential PAYG per minute charges (TT\$, VAT inclusive) for fixed and mobile voice calls.	67
Table 16 Comparison of fixed standalone and multi-play broadband bundles and prepaid/postpaid mobile offerings	76
Table 17 Comparison of PAYG charges for fixed-to-fixed and fixed-to-mobile calls, and OTTs.....	83
Table 18 List of services included in the relevant markets	88

List of Figures

Figure 1 Distribution of uses of fixed broadband service (first, second, third and fourth ranked use).....	17
Figure 2 PAYG and fixed voice bundled subscriptions.....	21
Figure 3 PAYG and fixed voice bundled subscriptions (% of standalone fixed voice subscriptions).....	22
Figure 4 Distribution of uses of fixed landline service (first, second and third ranked use)	23
Figure 5 Monthly fixed voice bundled and PAYG domestic call minutes per user.....	24
Figure 6 Fixed voice service prices 2018–2023.....	26
Figure 7 Fixed voice and fixed broadband subscriptions.....	32
Figure 8 Fixed voice and fixed broadband standalone and multi-play bundle subscriptions	32
Figure 9 Share of standalone fixed voice and fixed broadband subscriptions in total fixed voice and fixed broadband subscriptions.....	33
Figure 10 Actions that would be taken if fixed landline service price was increased, by monthly expenditure.....	36
Figure 11 Distribution of actions that would be taken if fixed broadband service price was increased, by monthly expenditure	37
Figure 12 Actions that would be taken if fixed landline service price was increased, by monthly expenditure.....	38
Figure 13 Standalone fixed voice subscription by customer segment	43
Figure 14 Standalone fixed broadband subscriptions by customer segment	47
Figure 15 Standalone and multi-play bundle subscriptions for SME customers (% of SME fixed voice subscriptions)	49
Figure 16 Distribution of main advantages of fixed voice services compared to mobile cellular services	62
Figure 17 Mobile and fixed voice subscriptions, 2017–2021	63
Figure 18 Main advantages of fixed broadband compared to MiFi and mobile smartphone data services	63
Figure 19 Customer response to a 5% SSNIP in fixed voice service	69
Figure 20 ARPU – fixed voice services.....	70
Figure 21 Distribution of fixed broadband subscribers, by speed tier	73
Figure 22 Distribution of advantages of fixed broadband services compared to MiFi and mobile smartphone data services (first and second ranked).....	74
Figure 23 Mobile and fixed broadband subscriptions, 2017–2021	75
Figure 24 Advantages of fixed landline services compared to OTT services (first and second ranked)....	81
Figure 25 Distribution of actions that would be taken if fixed landline service price was increased.....	84
Figure 26 OTT impact on usage of fixed voice and broadband services.....	85

Abbreviations

2P/3P/4P+	“2P” stands for double-play bundles, “3P” stands for triple-play and “4P+” refers to quadruple-play bundles, collectively referred to as multi-play bundles.
ARPU	average revenue per user
EC	European Commission
ED	enumeration district
GCC	Gulf Cooperation Council
FWA	fixed wireless access
HBS	Household Budgetary Survey
HFC	hybrid fibre-coaxial
ICT	information and communications technology
ITU	International Telecommunication Union
IP	Internet Protocol
MB/GB	megabyte/gigabyte
Mbps	megabits per second
MICS	Multiple Indicator Cluster Survey
MiFi	mobile Wi-Fi device
NGN	next generation network
OECD	Organisation for Economic Co-operation and Development
OTT	over the top
PAYG	pay as you go
PSTN	public switched telecommunications network
SME	small or medium enterprise
SSNIP	small but significant non-transitory increase in price
TATT	Telecommunications Authority of Trinidad and Tobago
TSTT	Telecommunications Services of Trinidad and Tobago
VAS	value-added service
VoIP	voice over Internet Protocol

Wi-Fi Wireless Fidelity

Definitions of Terms

ARPU	Average revenue per user refers to the average revenues, typically monthly, that a service provider earns from its retail customer base, expressed on a per user/customer/connection basis.
Dongle	A small, portable modem that allows a single user to connect wirelessly to the Internet (for example, via a laptop)
Ex ante	Occurring before the event. For example, ex ante regulation refers to the setting of regulation to be followed, rather than imposing regulation after an event has occurred.
Ex post	Occurring after the event. For example, ex post regulation refers to imposing regulation after an event has occurred rather than setting regulation to be followed.
FWA/FWI	Fixed wireless access (FWA) uses wireless signals transmitted over fixed terrestrial points which provide connectivity to end users. FWA uses radio spectrum to provide wireless broadband connectivity. It enables fixed broadband access using radio frequencies instead of cables and can be used to connect homes and businesses to the Internet. Fixed wired Internet (FWI) refers to wired technologies like fibre, cable, and digital subscriber line (DSL) that can be used to provide connectivity.
GCC	The Gulf Cooperation Council is an alliance of six Middle Eastern countries, namely, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates (UAE).
Managed VoIP	Managed VoIP services are fixed access and call services offered by a licensed service provider over a broadband connection which may be via coaxial cable, fibre or fixed wireless networks.
MiFi	A mobile Wi-Fi device refers to a wireless router that provides the functionality of a mobile Wi-Fi hotspot).

Multi-play bundle	Multi-play bundle refers to a service provider offering several products or services for sale as one combined product using a singular tariff and may include any combination of fixed landline, fixed broadband and/or pay TV services.
OECD	The Organisation for Economic Co-operation and Development is an international organisation with 36 member states that collaborate on key global issues.
Off-net	A term used to describe voice communication between customers on different networks
On-net	A term used to describe voice communication with others on the same network
OTT	Over-the-top services are, typically, applications, such as Skype or WhatsApp, which may offer similar and additional functionality over traditional services and rely on end users' Internet connections.
PAYG	“Pay as you go” refers to tariffs on which customers pay for (fixed voice/line) services as they consume them (i.e., on a per minute basis), rather than purchasing, or agreeing to purchase, a set amount of the said service in advance.
Standalone service	A standalone service refers to a single service offered by an operator.
SSNIP	A “small but significant non-transitory increase in price” refers to a test used in market definition exercises, which aims to estimate the reactions of end users and prospective suppliers to a 5% – 10% price increase, from a hypothetical monopolist, in the focal product under consideration.
Wi-Fi	Wireless Fidelity refers to a form of wireless local access network (WLAN) that allows multiple users access to the Internet.
COVID-19	Coronavirus disease 2019 (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus ¹ .

¹ Source: https://www.who.int/health-topics/coronavirus#tab=tab_1 (accessed 10th March 2023)

Executive Summary

Market definition exercises are conducted in many jurisdictions globally². They describe the process by which regulatory or competition authorities determine the set of products or services that are considered to be in the same economic market. Market definitions serve as a valuable foundation for market analyses, including merger assessments, investigations into alleged anti-competitive conduct, and determinations of market dominance³.

The Telecommunications Authority of Trinidad and Tobago (the Authority) initially defined the relevant market(s) for domestic retail fixed services in its 2009 *Determination of Market Definitions in the Domestic Retail Fixed Voice Sector of T&T* (Fixed Market Definition 2009). Given the time that has elapsed since the publication, along with trends in fixed broadband tariffs, shifts in customer adoption, and advancements in the telecommunications industry, the Authority considered it necessary to conduct another review of domestic retail fixed services. Consequently, the Authority has developed an updated (2024) version, *Determination: Domestic Retail Fixed Telephony and Fixed Broadband Market Definitions* (the Determination) to assess the need to revise the market definitions that were established in the 2009 document.

The Determination describes the process used by the Authority to determine the relevant markets for domestic retail fixed telephony and fixed broadband services. It assesses the relevant product scope, customer segments and geographic scope of the domestic fixed telephony and broadband markets, to identify the smallest scope of services, irrespective of geographic origin, which provides sufficient competitive constraint to domestic retail fixed telephony and fixed broadband services. Key to this approach is assessing potential demand-side substitution and supply-side substitution of the focal service (that is, the narrowest list of service constituents considered to be a relevant service by customers). Additionally, the Determination evaluates the need for separate markets for different domestic retail fixed services. It also considers expanding the fixed market to include mobile services and emerging technologies, such as OTT services.

The assessment was conducted using qualitative and quantitative information, a customer survey, and quantitative analyses to discern fixed service consumers' preferences for various price and

² OECD (2012) Market Definition Policy Roundtable (DAF/COMP(2012)19) and European Commission (2022) Draft Revised Market Definition Notice

³ This is a generally accepted principle, recognised across many jurisdictions. For example, the European Commission, whose regulation applies to 28 countries, set out this concept in its Significant Market Power (SMP) Guidelines for the telecommunications sector.

non-price factors⁴. The Authority has determined the existence of three economic markets for domestic retail fixed telephony and fixed broadband services. All three, defined nationally, and the services offered under each, are presented in Table 1.

Table 1 List of services included in the relevant markets

Market	Product Scope	Customer Segment	Geographic Scope
Domestic fixed telephony services (i.e., fixed line rental and fixed voice bundled services) and mobile voice services	<ul style="list-style-type: none"> - Fixed line rental services - Fixed-to-fixed calls (on-net and off-net), offered on a PAYG basis or monthly subscription - Fixed-to-mobile calls offered on a PAYG basis or monthly subscription - Managed VoIP services - Calls to special numbers (e.g., non-geographic numbers, directory enquiries, emergency services, and other free services) - Mobile-to-fixed calls offered on a PAYG packaged plan, or monthly subscription. - Value-added service (VAS)⁵ 	<p>Residential and SME business end users</p> <p>Enterprise Business customers</p>	National
Standalone fixed broadband services	<ul style="list-style-type: none"> - Fixed wired/wireless Internet services 	<p>Residential and SME business end users</p> <p>Enterprise Business customers</p>	National
Multi-play bundles (2P/3P/4P+) which include domestic fixed telephony and/or fixed broadband services	<ul style="list-style-type: none"> - Fixed line rental services - Fixed-to-fixed calls (on-net and off-net) - Fixed-to-mobile calls - Calls to special numbers (e.g., non-geographic numbers, directory enquiries, emergency services, and other free services) - VAS - Fixed broadband Internet access 	<p>Residential and SME business end users</p> <p>Enterprise Business customers</p>	National

The Authority considers that the domestic retail fixed market definitions identified in the Determination represent the present-day usage of the respective services by consumers of telecommunications services in Trinidad and Tobago. The Authority is aware that the market

⁴ In the absence of sufficient data on price or other variables, qualitative evidence has been relied on in EU case law. In dealing with zero-rated digital commodities in particular, relevant markets were defined solely on qualitative evidence on the functionality and uses of the commodities (CORE, 2018).

⁵ Retail services that operators provide to their fixed call service customers in addition to their core offering, such as caller ID, hold number, call trace, hold call waiting, speed calling, call blocking and voicemail.

definitions identified in the Determination are gradually evolving, and the competitive state of some markets is volatile. However, the Determination captures the main, overarching and underlying trends in the market, as at a specific point in time (i.e., the date of the publication of this Determination).

Based on recent and likely future trends in the relevant markets, and after careful economic analysis, the Authority has revised its position from version 1.1 of the Determination and has included mobile voice services as a part of the relevant domestic retail fixed voice market definition. This change was made considering the significant partial substitution (i.e., the reduction in consumption of fixed voice services and the related increase in the consumption of mobile voice service on a call basis) that may constrain a hypothetical monopolist (HM) from profitably increasing the price of fixed voice and messaging services; it also necessitated that mobile voice form part of the smallest scope of substitutable services, as per the standard requirement for establishing a relevant markets internationally⁶. This revision takes into consideration feedback from stakeholders during consultation; additional operator metrics (including significant customer switching on a call or usage basis; constant service tariffs; and declining financial earnings) and international best practices. In addition, the Authority specifically notes the revised European Commission Notice (2022) on the definition of the relevant market for the purposes of EU competition law, which permits taking into account usage metrics (partial substitution) and does not require the exclusive use of access metrics (perfect substitution) for market definitions.

⁶ Source: “Approach to market definition in a digital platform environment” (ITU , 2020) and the “Commission Notice on the definition of the relevant market for the purposes of Union competition law”, European Commission Notice (2022).

1. Introduction

Market definition is an exercise widely conducted in many jurisdictions around the world⁷, including the European Union (EU), the Gulf Cooperation Council (GCC) and some Caribbean territories⁸. It describes the process by which regulatory or competition authorities determine the set of products or services that are considered to be in the same economic market, for the purposes of conducting assessments, investigations, and interventions.

Market definition is considered by the International Telecommunication Union (ITU) to be a prerequisite for assessing dominance and carrying out any regulatory intervention (ITU , 2020). For example, a market must be defined in order for a regulatory authority to accurately assess inefficiencies, distortions or market failures.

Prices for telecommunications services in Trinidad and Tobago are determined by the forces of demand and supply. However, if one or more concessionaires hold(s) a dominant position in a relevant market or abuses that dominance, the Authority may implement price regimes in accordance with section 29 of the Telecommunications Act, Chap. 47:31 (the Act). This provision requires the Authority to first define the boundaries of that market. Therefore, before any market intervention including price regimes can be applied, it is important to identify market failures, competitive threats or distortions, such as an abuse of dominance or anti-competitive conduct, where any operator is found dominant in the relevant market.

In 2009, the Authority published the *Determination of Market Definitions in the Retail Domestic Fixed Voice Sector of T&T* (the Fixed Market Definition 2009). Cognisant of the time that has passed since that publication, the advancements in telecommunications networks and services, trends in fixed broadband service tariffs, and changes in customer uptake and usage metrics, the Authority considers it appropriate to review and update the market definitions for fixed telephony and fixed broadband services, where required. Consequently, the Authority has developed an updated (2024) version, *Determination: Domestic Retail Fixed Telephony and Fixed Broadband Market Definitions* (the Determination) to assess the need to revise the market definitions that were established in the 2009 document. It is imperative to accurately identify the relevant fixed market definitions for performing subsequent competition analyses, conducting market tests, and assessing any market failures.

⁷ OECD (2012) Market Definition Policy Roundtable (DAF/COMP(2012)19) and European Commission (2022) Draft Revised Market Definition Notice

⁸ Refers to the Gulf Cooperation Council region (e.g., Qatar, Saudi Arabia and other countries), The Bahamas and Bermuda, among others

The methodology adopted in the Authority’s market definition exercise used the internationally recognised SSNIP (a small but significant non-transitory increase in price) test; data specific to Trinidad and Tobago (including domestic customer surveys and operators’ data submissions); future trends and factors including product characteristics, uptake and usage trends; and comparative prices of focal and prospective product substitutes such as digital platforms, fixed and mobile broadband services, multi-play bundles, and mobile voice services.

The Authority’s previous market definition exercise (namely, the Fixed Market Definition 2009) and its associated dominance assessment⁹ concluded that Telecommunications Services of Trinidad and Tobago (TSTT) was a dominant operator in the retail fixed narrowband markets for access and fixed calls in Trinidad and Tobago. The aim of the 2024 market definition exercise was to update the Fixed Market Definition 2009, by conducting another review of the domestic retail fixed telephony and fixed broadband market(s). Going forward, the outcomes of this market definition exercise will inform determination(s) of dominance and, if applicable, assessments of abuse of dominance in the relevant market(s).

Collectively, these three elements (market definitions, determinations of dominance, and assessments of abuse of dominance) will facilitate efficient and well-functioning market(s) that benefit both consumers and producers. For example, in the event that the results of future competition assessments indicate no market distortions or market failure, then there would be no intervention required by the Authority.

The market definitions arrived at in the 2024 exercise will also provide the Authority with a reference point for monitoring competitive dynamics in retail markets, for example, during regular monitoring of market dynamics, and facilitate early identification of potential issues with the functioning of a market, once that market has been defined.

1.1. Background to the Determination

The Authority was established as an independent regulator by the Act in July 2004. As part of its mandate, the Authority is responsible for regulating the fixed and mobile telecommunications and the broadcasting sectors.

In accordance with section 29 of the Act, the Authority is required to define market boundaries or use the predetermined markets, set out in the Concession for the Operation of a Public Telecommunications Network and/or Provision of Public Telecommunications and/or

⁹ TATT (2010) *Determination: Dominance in Retail Domestic Fixed Telephony Markets*

Broadcasting Services¹⁰ (the Concession), as the first step towards identifying market failure, by facilitating assessments that will demonstrate if one or more concessionaires hold a dominant position in the relevant market.

Pursuant to the above, in the Fixed Market Definition 2009, the Authority defined relevant markets for the domestic retail fixed telephony services as two product markets, both at the national level:

1. A market for fixed narrowband (voice¹¹) access, which included narrowband access to a public telephone network at a fixed location (regardless of the technology used to provide access) by an individual for the purpose of accessing voice telephony services, including the following services:
 - a) Residential narrowband (voice) access: narrowband fixed dedicated connection to a public fixed telecommunications network to residential customers
 - b) Business narrowband (voice) access: narrowband fixed dedicated connection to a public fixed telecommunications network to business customers
2. A market for fixed domestic retail voice services, which included publicly available local and/or national retail telephone services¹¹ provided at a fixed location (regardless of the technology used to provide the service), including the following retail services:
 - a) Domestic fixed-to-fixed calls: voice calls originating from a fixed access connection and terminating on another fixed access connection in Trinidad and Tobago and including both on-net calls (i.e., those terminating on the same fixed access network) and off-net calls (i.e., those terminating on another fixed access network in Trinidad and Tobago)
 - b) Domestic fixed-to-mobile calls: voice calls originating from a fixed access connection and terminating on any mobile network in Trinidad and Tobago
 - c) Public pay phone: voice calls originating from a public pay phone and terminating on any fixed access network or mobile network in Trinidad and Tobago

The Authority did not consider that retail fixed broadband access connections formed part of the same market as retail fixed telephony services, since the former services were not used primarily

¹⁰ TATT (2007) Concession for the Operation of a Public Telecommunications Network and/or Provision of Public Telecommunications and/or Broadcasting Services.

¹¹ In this Determination, fixed voice services and fixed telephony services are used interchangeably.

for making or receiving voice calls and were generally seen as complements to narrowband voice connections. Instead, the Authority indicated that a third market for retail fixed broadband access (including both broadband access for business and residential customers) may be defined at a later stage.

In the Fixed Market Definition 2009, the Authority concluded that TSTT was a dominant operator in the retail fixed narrowband markets for access and fixed domestic retail voice services in Trinidad and Tobago. This 2024 market definition exercise and subsequent competition assessment are aimed at reviewing and reassessing that determination.

As a starting point for assessing any market distortions in the fixed retail services, this Determination examines whether the market definitions set out in the Fixed Market Definition 2009 need to be updated, given the latest market developments (e.g., the launch of fibre-based services and multi-play bundles, acquisitions, tariff trends and OTT-based communication services).

Section 2 describes the Authority's approach to defining the relevant markets. Sections 3 to 5 apply this approach, taking into account the specific market information and the data consolidated by the Authority. The Authority analysed a range of both qualitative and quantitative information, mostly obtained from the following four sources:

1. In April 2021, the Authority issued the following requests for information to all the concessionaires offering fixed and mobile retail telecommunications services in Trinidad and Tobago:
 - a) Qualitative requests. These asked for concessionaires' views on issues such as market outlooks, consumer preferences/behaviour, and comparability of products.
 - b) Quantitative requests. These requests, in the form of templates, asked the concessionaires to provide time-series data on subscribers/end users¹², traffic, revenues, and costs, broken down into predetermined subcategories.

A complete set of definitions was also included with this request, to provide context and ensure consistency across the concessionaires' responses.

2. The Authority commissioned market research firm, Kairi Consultants Limited, to undertake a survey, *Customer Survey in the Domestic Retail Fixed and Mobile Markets of*

¹² Depending on the context, the terms "end user", "subscriber" and "customer" are used in this document interchangeably. For example, the term "customer" is used when referring to customer segmentation.

Trinidad and Tobago – Survey Process and Methodology (TATT-KCL Fixed Customer Survey).

Kairi Consultants surveyed a representative sample of 1,000 households in Trinidad and Tobago. The survey sample represented 0.073% of the population and covered 585 enumeration districts, 14 municipalities in Trinidad, and seven parishes in Tobago, ensuring the sample's representativeness was national and across various demographics (e.g., age, sex and income). Furthermore, the sample size of 1,000 households took into account the universal standard 95% confidence level and 5% for the relative margin of error. This sample satisfies the United Nations (UN) statistical recommended rate of 5%–10% relative errors for main indicators and falls below the suggested maxima 12%–15% relative margin of error contained in the *UN Practical Guidelines for Designing Household Survey Samples* (UN, 2005). Additionally, the sample size adopted in the survey was substantially larger than the 400 threshold proposed for populations exceeding 100,000 in published statistical tables relating to the 95% confidence level (International Journal of Economics, 2014). This sample size thereby increases the precision of the estimates.

The sample frame was derived from the 2011 Population and Housing Census, which was updated based on the relisting of dwelling units and households conducted in 2019 for the Multiple Indicator Cluster Survey (MICS) and the Household Budgetary Survey (HBS).

The sample was designed using a two-stage stratified sampling approach, based on the number of households in each census enumeration district (ED) of every municipality/region of the country, and a multi-dimensional poverty index developed at the community level.

Respondents were asked questions about their use of telecommunications services, covering both their current use of such services (i.e., volumes and prices paid, as well as the factors they consider most important when making consumption decisions), and their observed behaviour in the event of changes to the characteristics of those services, for example, whether they would change providers or adjust their usage following changes in prices. The Fixed Customer Survey questionnaire is attached as Appendix I.

3. Tariff plan information available on concessionaires' websites
4. Market data sourced from the Authority's annual market reports, available on Authority's website

In reaching its current determination, the Authority has, therefore, considered the responses it received to the information requests, together with other evidence it gathered and analysis it undertook.

The concessionaires largely responded to the Authority's information requests, guided by frequent communication from the Authority. Details were also provided to them to clarify the format and quantity of data that would be required, as a minimum, in order to conduct specific tests.

After the Authority received the last updated responses to the data requests, the data available were consolidated and used as inputs for the analysis.

2. Approach to Determining Relevant Markets

In general, there are three dimensions to defining relevant markets¹³:

1. **Product scope**, where the relevant product market consists of all services or products that a sufficient number of end users regard as interchangeable, thereby rendering a significant increase in price unprofitable (described in more detail in subsection 3.1)
2. **Customer segmentation**, whereby the customer market is assessed to determine whether there is a need to define separate relevant markets for any subset of end users, such as business and residential end users
3. **Geographic scope**, whereby the relevant geographic market is defined as the area over which competitive conditions are sufficiently similar to identify that area as a relevant market¹⁴

2.1. Relevant Product Scope

As an initial step, it is important to determine which products and services are considered possible substitutes by end users or suppliers, for example, as a result of them having similar product characteristics and/or prices¹⁵. Defining the relevant product market is important, as a service provider's ability to influence the price of a product will depend, amongst other things, on the availability and pricing of potential substitutes for this product, looking at both the demand and supply of potentially similar products.

¹³ ICT Market analysis and determination of dominance guidelines (2022)

¹⁴ This analysis only considers service provision within Trinidad and Tobago, including communications service providers incorporated and resident outside of Trinidad and Tobago (such as OTT service providers like Skype), based on how these providers might influence the demand and supply of domestic retail fixed services in Trinidad and Tobago

¹⁵ This assumes that prices are set at a level that would be consistent with those in a competitive market.

The standard method for defining a product market is to perform a SSNIP test, also referred to as the hypothetical monopolist test (HMT). This test considers the likely impact of a hypothetical monopolist (HM) slightly increasing the price¹⁶ of a “focal product” (i.e., the product under consideration) from the competitive level. If a sufficient number of end users would be encouraged to switch to buying alternative products (i.e., there is sufficient demand-side substitution) and/or sufficient suppliers would be encouraged to switch to supplying the focal product (i.e., there is supply-side substitution), then such a price rise could not be profitably maintained. In assessing demand-side substitution, the Authority additionally reviewed product characteristics; features and capabilities; the degree of service proliferation through the evaluation of uptake and usage trends; and analyses of the relative prices of the focal service against its prospective substitutes.

In effect, it would be unprofitable for the monopolist to keep prices at this new higher level, since the lost margins from a fall in volumes sold by the HM would more than offset the increase in margin on the volumes it continues to sell. If this is the case, then the other products to/from which the end users/suppliers would be expected to switch can be considered sufficiently close substitutes for the focal product and hence part of the same economic market. Consequently, this test helps determine the product boundaries of the market.

Assessing the extent of possible demand-side and supply-side substitution is central to the market definition exercise. It is possible to determine quantitatively the necessary degree of substitution for a SSNIP to become unprofitable and hence the extent to which two or more products are in the same market. This can then be compared to estimated cross elasticities of demand and supply to determine if, in effect, a group of products are in the same market¹⁷. However, market definition exercises in the telecommunications sector, particularly those undertaken in a regulatory context, are often not conducted quantitatively¹⁸. This reflects the difficulty of accurately estimating cross elasticities between goods. In addition, where there is a review of tariffs or in a regime where the

¹⁶ The SSNIP test is conducted using increments of price increases between 5% and 10%. The price increase of 5% to 10% is chosen pursuant to international standards, to identify the smallest set of services upon which a price increase may be sustained by examining quantitatively and qualitatively the responsiveness of consumer demand (ITU World Bank, 2020).

¹⁷ Cross elasticity of demand (supply) measures the extent to which demand (supply) of one good can be expected to change following a change in the price of another good. If the estimated cross elasticity of demand (supply) between two goods is greater than the estimated degree of substitution necessary to make SSNIP non-profitable, this may be taken as evidence that the good in question and the substitute good form part of the same economic market.

¹⁸ For example, according to the European Commission, implementing the SSNIP test quantitatively requires a large amount of high-quality data, which is not available in most cases, and therefore it is most useful as a conceptual framework that guides the analysis (EU 2002, Market Definition in the Telecoms Industry).

tariff rebalancing process is not completed¹⁹ it may be the case that the current prices do not reflect competitive levels. This can add further difficulty to quantifying the SSNIP test, where the price increase should be assumed to be from the competitive level.

Given these challenges, market definition exercises typically also rely on more qualitative assessments of the degree of potential switching between products. Indeed, given the evidence available, the Authority believes it is appropriate to rely on a range of evidence to inform views on the likely responses of end users and suppliers to a SSNIP for domestic fixed services. This approach is in accordance with international best practice²⁰.

The following subsections describe the main elements required to define the product scope. Once the focal product was determined, the Authority assessed the degree of substitutability between this and other products, both in terms of demand-side and supply-side substitution.

2.1.1. Determining the Focal Product

When undertaking a market definition exercise for the purpose of determining dominance, it is useful to start with a narrow list of markets and then analyse the extent to which these market boundaries are appropriate (i.e., whether there is the need for expanding these markets by including other products or services). Subject to the result of the SSNIP test, the dimensions of each market will then be adjusted in an iterative process until an appropriate set of relevant economic markets has been identified. This analysis should take into account both demand-side and supply-side considerations.

In accordance with international best practice²¹, the starting point for this market definition exercise is the relevant markets identified by the Authority in its Fixed Market Definition 2009, which are the markets under review. This market definition was examined by reviewing recent key market trends to ascertain whether an update is required.

¹⁹ This mostly relates to retail fixed telephony services where, traditionally, fixed line rental tariffs were, at times, offered below cost and then cross-subsidised by other retail fixed services (such as international outgoing calls).

²⁰ As defined by the OECD (2014) *Defining the Relevant Market in Telecommunications*, whose regulation applies to 38 countries, and the European Commission's Significant Market Power (SMP) Guidelines for the telecommunications sector, whose regulation applies to 28 countries.

²¹ OECD (2014) *Defining the Relevant Market in Telecommunications, EU 2002, Market Definition in the Telecoms Industry*, and CMA (2004) Market definition: OFT403

2.1.2. Demand-Side Substitution

Demand-side substitution looks at the extent to which prices for the focal telecommunications services or related products in a market (i.e., the service(s) in the market to which the SSNIP test is being applied) are constrained by the availability of other telecommunications services or related products. Demand-side substitution can typically provide a more immediate competitive constraint than supply-side substitution or the threat of potential competition.

In assessing potential demand-side substitution from domestic retail fixed telephony and fixed broadband services to other services, the Authority has analysed, amongst other things, the following factors:

1. The functionality, price and non-price characteristics of the relevant retail services and products available
2. The quality of service
3. Take-up and usage (partial substitution) trends
4. Available information on customers' switching behaviour for these services²²

2.1.3. Supply-Side Substitution

Even in the absence of demand-side substitution, supply-side substitution may still constrain the ability of a service provider to increase its prices. An examination of supply-side substitution looks at the extent to which the price of a service is constrained by the ability of a provider to start offering the relevant service in the short term, in response to the increase in price of the focal product above the competitive level. To do so, that service provider must be able to switch or start production without incurring significant additional costs or risks.

In assessing possible supply-side substitution in relation to domestic retail fixed services, the Authority has analysed the following factors:

1. Historical evidence of entry and expansion in the domestic retail fixed telephony and fixed broadband market in Trinidad and Tobago
2. The characteristics of retail domestic fixed telephony and fixed broadband services, in terms of any legal, regulatory, or economic barriers for new concessionaires to enter the

²² This is based on responses to the TATT-KCL Fixed Customer Survey and also on market evidence. The Authority also asked concessionaires, in qualitative information requests, about customers' switching patterns.

market (i.e., barriers to entry and/or expansion), including any regulatory measures or commercial models that may reduce any prevailing barriers to entry (for example, regulated network access).

2.2. Customer Segmentation

The relevant customer dimension of any product market will again be assessed in terms of demand-side and supply-side substitutability. On the demand side, it is necessary to assess whether there are differences in demand from different customer segments, which would constrain end users' ability to substitute between services aimed at different groups of end users. On the supply side, there is a need to assess whether suppliers of services to one customer segment are easily able to switch to providing services to other customer segments.

In the context of domestic retail fixed telephony and fixed broadband, the relevant considerations are:

1. whether service offerings for residential and business end users form part of the same relevant product market.
2. whether pay as you go (PAYG²³) and packaged postpaid service offerings form part of the same relevant product market (taking into consideration that different groups of end users might opt for different service offerings).

The Authority's assessment, therefore, takes the following information into account:

1. The demand characteristics of each customer segment
2. The commonality of customer sales channels used by providers to serve different groups of end users (and therefore the ability of a provider to switch capacity from serving one group of end users to another)
3. The range and characteristics of fixed telephony and fixed broadband services provided by the relevant concessionaires to different customer segments
4. The prices charged by concessionaires for domestic retail fixed telephony and fixed broadband provided to different customer segments. Prices throughout this document are expressed inclusive of value-added tax (VAT) and rounded to the nearest TT dollar.

²³ Subscribers who pay rental charges and consume fixed voice minutes at a per minute rate

5. The contractual terms offered to different customer segments and any other likely barriers to switching between the offerings for these customer segments

2.3. Relevant Geographic Scope

In addition to defining product markets, it is also important to define the geographic boundaries of each market. Typically, in the telecommunications sector, these markets are defined nationally (in accordance with the geographic scope of the service licences/concessions).

The need for geographic sub-markets then depends on whether there are significant differences in the competitive dynamics between different parts of the country, and whether such boundaries are stable²⁴. In accordance with approaches taken as part of market definition exercises in other jurisdictions²⁵, the Authority's default assumption when determining the geographic scope of each market is that, in the absence of evidence to the contrary, markets are national. This is due to the operating licences/concessions also being granted on a national level. Furthermore, even when there are differences in the competitive dynamics (i.e., due to differences in network coverage between concessionaires), national pricing tends to constrain concessionaires in areas where competition may appear, at first, less intense.

In assessing the relevant geographic scope for domestic retail fixed telephony and fixed broadband markets, the Authority considered the following information:

1. Network coverage data for each licensed concessionaire, describing the areas and proportion of the population covered by their network
2. The range of retail fixed telephony and fixed broadband services provided by the relevant concessionaires within specific geographical regions, and the extent to which these may differ across the country
3. The prices charged by concessionaires for domestic retail fixed telephony and fixed broadband services, and the extent to which these may differ across the country

²⁴ This would enable avoidance of situations where changes in geographic boundaries could lead to geographic market definitions being outdated over time and the wrong regulatory remedies being applied.

²⁵ See, for example, page 20 of the 2018 EC *Staff Working Paper - Guidelines on market analysis and the assessment of significant market power* (SMP) under the EU regulatory framework for electronic communications networks and services.

2.4. Considerations

There are several considerations to be made when defining the relevant markets relating to domestic retail fixed telephony and fixed broadband services. These are as follows:

1. Whether different types of domestic retail fixed services, i.e., fixed (narrowband) voice access²⁶ (fixed line access services hereafter), fixed telephony/voice services, fixed broadband services, etc., are in the same product market
2. Whether domestic retail fixed services offered on a standalone basis, and as part of multi-play bundled offerings (i.e., “double-play” bundles which include fixed voice and broadband services and/or “triple-play” bundles which include fixed voice, broadband and pay TV services), are in the same product market
3. Whether domestic retail fixed services offered to different customer segments are in the same product market (i.e., residential and business, and prepaid and postpaid service offerings)
4. Whether other (non-fixed) telecommunications services are a substitute for domestic retail fixed telephony and/or fixed broadband services, namely:
 - a) Mobile services (considering both mobile voice and mobile data services)
 - b) OTT voice and messaging services

In sections 3 to 5, the Authority considers each of the above in turn, examining the likely extent of demand-side and supply-side substitution for each in the event of a SSNIP in the focal product. These sections build upon the Authority’s background and approach to determining dominance in the relevant fixed market(s) in Trinidad and Tobago, captured in sections 1 and 2.

²⁶ In some instances in this Determination, retail access at a fixed location to (a) the local and national voice call and (b) the broadband Internet network is referred to as “access only”, to ensure the document is reader friendly. For example, “end users who subscribe to fixed access-only products” may be described as “access-only end users”. Use of the term “fixed access” alone refers to fixed access more generally, for example, in reference to fixed access as a component of a bundled service and does not necessarily refer to the standalone fixed access-only product, unless otherwise specified.

3. Assessment of Separate Markets for Different Domestic Retail Fixed Services

Domestic retail fixed telephony and fixed broadband services include fixed line services, fixed calls (including fixed-to-fixed off-net and on-net, and fixed-to-mobile calls) and fixed broadband services. These services can be offered to different groups of end users (residential or business), on a standalone basis (PAYG or single-play bundles²⁷) of fixed and monthly fixed call allowances. In addition, service providers offer multi-play bundles that include fixed telephony, fixed broadband and subscription TV services. Therefore, it is necessary to determine whether there is a need to define separate product markets for each standalone service (PAYG and single-play bundles) and for multi-play bundles, or whether they all form part of a wider economic market.

The Authority conducted this analysis by starting with fixed line access services²⁸ as the focal product, and then applying the SSNIP test concept to determine whether this forms a product market on its own or should be widened to include any of the other services. In doing so, the Authority addressed the following key considerations:

1. Whether fixed line access and managed voice over Internet Protocol (VoIP)²⁹ based fixed voice services are in the same product market (subsection 3.1)
2. Whether fixed line access and domestic fixed call services are in the same product market, which included an assessment of whether fixed line access with domestic PAYG fixed call services, and fixed line access with call bundled offerings should be considered in the same product market (subsection 3.2)
3. Whether retail fixed broadband services should also form part of that product market, which required an assessment of whether standalone fixed telephony, fixed broadband services and multi-play bundles should be part of the same market (subsection 3.3)
4. Whether service offerings for residential and business end users form part of the same relevant product market (subsection 3.4)
5. Whether relevant markets should still be considered at the national level or if there is a need to define sub-national markets (subsection 3.5)

²⁷ Subscribers who pay a predetermined fee for a given volume of minutes

²⁸ Fixed line access services comprise the access or rental services (including geographic number and commonly a handset) which allows the end user to make and receive calls to the geographic number from a fixed location.

²⁹ Managed VoIP services are fixed access and call services offered by a licensed service provider over a broadband connection which may be via coaxial cable, fibre or fixed wireless networks.

The question of whether the market should be widened further to include non-fixed services is considered separately, in section 4.

3.1. Are Fixed Line Access and Managed VoIP-Based Fixed Services in the Same Product Market?

Traditionally, fixed line access services refer to telecommunications connections that use physical cables, which includes services provided over a public switched telecommunications network (PSTN), and offering services such as Internet, telephone and television. However, voice services can also be provided over broadband infrastructure using managed VoIP which may be via coaxial cable, fibre, or fixed wireless connections.

In the Fixed Market Definition 2009, the Authority concluded that managed VoIP and domestic fixed call services were part of the same market as its approach to authorisation and regulation is technology neutral, and both services offered the same functionalities to customers. At the time, the Authority also concluded that narrowband and broadband access should form part of separate product markets, as customers mainly used broadband connections to access non-voice applications, whilst narrowband connections were used primarily for voice services by a small section of the market. The purpose of this subsection (3.1) is to assess whether these conclusions still hold, based on recent developments in the market and the latest available information.

3.1.1. Demand-Side Substitution

Comparing the functionalities and characteristics of fixed line access and managed VoIP services, the Authority's conclusion is that there is a high degree of substitution between both services. This is because both managed VoIP-based and PSTN-based fixed voice services provide the same basic functionalities. In fact, as explained in Figure 1, there is evidence that consumers use their broadband connections to make fixed calls through VoIP-based services, along with other non-voice applications. Additionally, service providers offer both services at around the same price, which can encourage customers to switch to managed VoIP services in case of a SSNIP in fixed line access services.

In Trinidad and Tobago, fixed line access and fixed call services are provided by the following six concessionaires:

1. Amplia and Digicel offer both PAYG and VoIP-based call bundled offerings through their gigabit-capable passive optical networks.

2. Flow offers both PAYG and VoIP-based call bundled offerings through its hybrid fibre-coaxial (HFC) network.
3. Lisa Communications provides VoIP-based call service bundled offerings only to business end users, through a virtual PBX service based on its own fixed wireless network.
4. Prism Services offers VoIP-based bundled offerings only to business end users through a virtual PBX service based on the fixed wireless networks of other concessionaires.
5. TSTT offers both PAYG and fixed line access and call bundles through its PSTN but is migrating customers to its fixed wireless network, or Amplia's network.

Currently, the overall end-user experience is the same between traditional fixed telephony and managed VoIP services, as they provide the same basic functionality to end users (i.e., consumers are able to make and receive fixed calls using a telephone handset and are assigned a geographic or non-geographic number). Therefore, end users are commonly unable to distinguish between these services. Furthermore, it is likely that the quality of managed VoIP calls has improved considerably due to increases in broadband speeds (see subsection 4.2 for further detail)³⁰.

In the Fixed Market Definition 2009, one of the main arguments for the Authority to consider narrowband and broadband access as part of separate product markets was that end users mainly used broadband connections to access the Internet. Recent evidence from the TATT-KCL Fixed Customer Survey suggests that this is no longer the case, as customers used their broadband connection for different purposes, including for making fixed calls through managed VoIP services. As indicated in Figure 1, 63% of survey respondents using standalone broadband services stated that they mostly use their broadband connection for managed VoIP calls and third-party application voice calls; 52% to participate in social networks, 43% to stream or download content, or play games, and 35% to send and receive emails.

³⁰ According to the TATT-KCL Fixed Customer Survey, the percentage of Digicel (managed VoIP), Flow and TSTT (PSTN) end users who mentioned that quality is one of the main advantages of their fixed voice service compared to mobile/OTT services is similar.

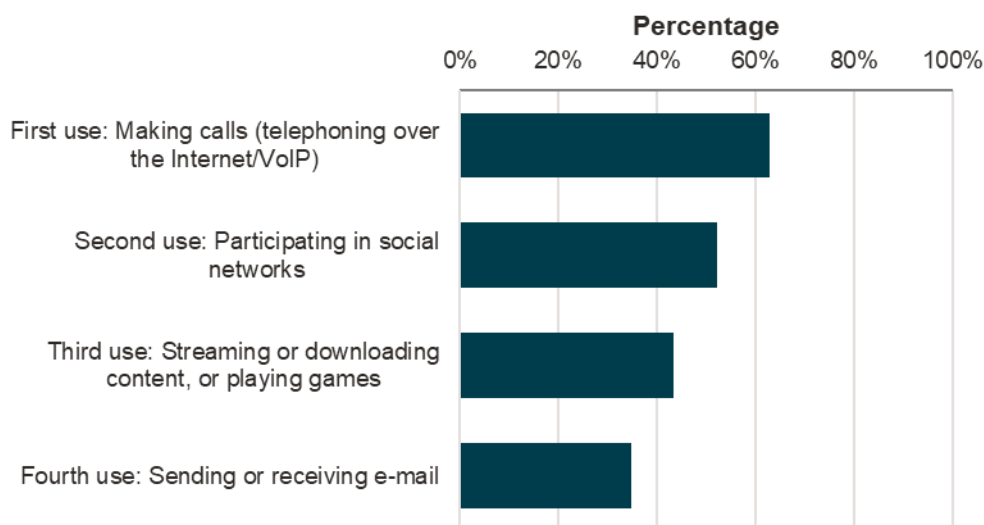


Figure 1 Distribution of uses of fixed broadband service (first, second, third and fourth ranked use)

Source: TATT-KCL Fixed Customer Survey

End users can purchase traditional fixed telephony and managed VoIP services at around the same price, as shown in Table 2. For example, TSTT’s “Residential Voice Package 1”, which includes unlimited fixed-to-fixed calls to any network, costs TT\$100.13, while Amplia’s “Essential Talk Plan”, which offers the same call allowance, is provided at TT\$100.00.

Table 2 Fixed line access and call bundles for residential customers

Concessionaire	Product	Minutes Included	Monthly Price (TT\$)
Amplia	Essential Talk Plan	Unlimited fixed-to-fixed, any network	\$100.00
Digicel	Home & Away 500	Unlimited fixed-to-fixed on-net plus 500 fixed-to-fixed off net, fixed-to-mobile (Digicel mobile) and selected countries	\$99.00
TSTT	bmobile Residential Voice Package 1	Unlimited fixed-to-fixed, any network	\$100.13

Source: Operators’ websites (accessed on 12th February 2023) and TATT’s Fixed Voice Prices³¹

³¹ Fixed voice (residential only) prices for concessionaires in Trinidad and Tobago as of 15th December 2022

Based on the demand-side considerations set out above, the Authority concludes that traditional fixed line access services and managed VoIP-based services should form part of a single product market.

3.1.2. Supply-Side Substitution

In the Fixed Market Definition 2009, the Authority considered that supply-side substitution between fixed line access and managed VoIP services was unlikely. This resulted from the significant barriers that broadband providers faced to start offering access to fixed line services (through a PSTN) due to the substantial sunk costs involved in the deployment of fixed line networks.

The Authority is of the view that these barriers are no longer significant, as recent technological developments have allowed all six concessionaires to deploy their own networks and expand their provision of managed VoIP services instead. Domestic retail fixed service providers in Trinidad and Tobago use a mix of network technologies to provide both fixed voice and broadband services, both wired (i.e., HFC or FTTx) and fixed-wireless (i.e., FWA LTE and WiMax). TSTT is the only provider that is phasing out this copper access network and migrating customers to either its new FWA network or Amplia's fibre network.

3.1.3. Conclusions

Given the reasons stated above, the Authority concludes that fixed line access and managed VoIP services should be considered part of the same product market. Due to improvements in the quality of broadband connection speeds, both managed VoIP-based and PSTN-based fixed voice services provide the same basic functionalities and customer experience. According to the TATT-KCL Fixed Customer Survey, end users in Trinidad and Tobago use their fixed broadband connections to access the Internet as well as make fixed calls through managed VoIP services. Furthermore, both services are offered at similar retail prices, which is likely to result in end users switching to managed VoIP services in the case of a SSNIP in fixed line access services.

On the supply side, recent technological developments have allowed concessionaires to deploy their own networks to provide managed VoIP services. Currently, most concessionaires in Trinidad and Tobago offer fixed voice services through managed VoIP connections.

3.2. Are Fixed Line Access and Domestic Fixed Call Services in the Same Product Market?

As part of the Fixed Market Definition 2009, separate product markets were defined for fixed line access and domestic fixed call services. The purpose of this section (3.2) is to assess whether fixed line access services should be considered part of the same product market as domestic fixed call services. This takes into account a range of evidence, including product characteristics, trends in take-up and usage, relative prices, customer switching, and the infrastructure required to deliver these services.

3.2.1. Demand-Side Substitution

Comparing the functionalities and characteristics of fixed line access and domestic call services, these services are more likely to be complements than substitutes. End users must purchase a fixed line access product and handset in order to make and receive fixed calls. Therefore, the demand for fixed calls is likely to be positively correlated to the number of fixed line access subscriptions. Similarly, a reduction in the number of fixed lines accessed is likely to lead to a decrease in the volume of domestic fixed originated calls. This suggests that, when end users choose between these services, they are likely to consider the overall price (i.e., any fixed cost of the line access, plus the total cost of expected fixed calls) and product characteristics (e.g., accessibility, reliability and convenience) of both fixed line access and bundled fixed voice services together.

3.2.1.1. Product Characteristics

End users in Trinidad and Tobago have two ways of using fixed line access and fixed call services:

1. PAYG fixed call services, where subscribers pay rental charges (if applicable) and consume fixed call minutes at a per minute rate
2. Fixed voice bundled offerings, where subscribers pay a predetermined fee for a given volume of minutes, after which a PAYG charge would apply³²

³² Along with these services, residential customers can also purchase add-ons to their plans, such as caller ID, call waiting, voicemail and call tracing.

Both PAYG-based and fixed voice bundled offerings (either through a cabled line connection or VoIP) offer the same, or very similar, characteristics for calling services (i.e., both give the end user the ability to make and receive fixed calls) as detailed in the following:

1. As shown in Table 3, all fixed line access and fixed voice bundled offerings contain monthly allowances for fixed calls, including fixed-to-fixed on-net or off-net minutes, and fixed-to-mobile minutes.
2. As indicated in Table 4, with the exception of TSTT, all concessionaires provide PAYG offerings that include unlimited fixed-to-fixed on-net call minutes.
3. The Authority recognises that for some services other billing arrangements may apply. For example, TSTT’s PAYG fixed-to-fixed on-net call charges depend on the geographic distance between the calling and receiving parties. For all concessionaires offering PAYG fixed voice plans, off-net fixed-to-fixed and fixed-to-mobile calls incur a per minute rate.

Table 3 Fixed voice bundled offerings for residential customers

Concessionaire	Product	Minutes Included	Monthly Price (TT\$)
Amplia	Essential Talk Plan	Unlimited fixed-to-fixed, any network	\$100.00
Amplia	Ultra Talk Plan	Unlimited fixed-to-fixed and fixed-to-mobile	\$200.00
Digicel	Home & Away 500	Unlimited fixed-to-fixed on-net plus 500 fixed-to-fixed off net, fixed-to-mobile (Digicel mobile) and selected countries	\$99.00
Digicel	Home & Away Unlimited	Unlimited fixed-to-fixed, fixed-to-mobile and selected countries	\$149.00
Flow	Voice 100	Unlimited fixed-to-fixed on-net 100 minutes fixed-to-fixed off-net	\$25.00
Flow	Voice 125	Unlimited fixed-to-fixed on-net 125 minutes fixed-to-fixed off-net and fixed-to-mobile	\$50.00
TSTT	bmobile Residential Voice Package 1	Unlimited fixed-to-fixed, any network	\$100.00
TSTT	bmobile Residential Voice Package 2	Unlimited fixed-to-fixed any network and fixed-to-mobile	\$197.00

Source: Operators’ websites (accessed on 12th February 2023) and TATT’s Fixed Voice Prices

Table 4 PAYG offerings and per minute charges for residential customers (TT\$)

Type of Call	Digicel	Flow	TSTT
Fixed-to-fixed on-net calls	Unlimited	Unlimited	\$0.28
Fixed-to-fixed off-net calls	\$0.15	\$0.15	\$0.45
Fixed-to-mobile calls	\$0.75	\$0.59	\$0.90
Monthly rental charge	N/A ³³	N/A	\$34.88

Source: Operators’ websites (accessed on 12th February 2023) and TATT’s Fixed Voice Prices³⁴

3.2.1.2. Uptake and Usage Trends

Between March 2017 and March 2021, growth in the fixed line access and fixed voice bundled offerings was relatively stable, increasing by 0.19% annually. During this period, PAYG-based subscriptions increased by 11%, while fixed voice bundled offerings increased by 4%.

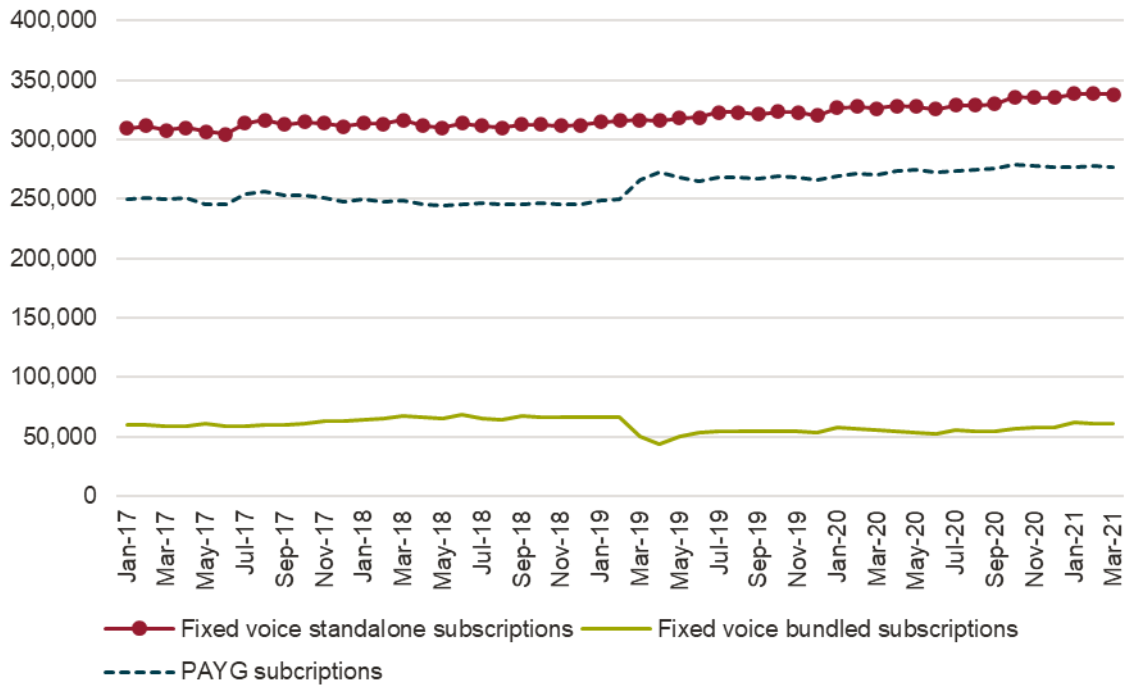


Figure 2 PAYG and fixed voice bundled subscriptions

Source: Concessionaires’ quantitative data submissions

³³ N/A denotes that fixed line rental service is not available and may indicate that the service provider does not supply fixed line rental as a standalone service.

³⁴ Fixed Voice (RESIDENTIAL ONLY) Prices for Concessionaires in Trinidad and Tobago as of 15th December 2022

The Authority also observed that, as of March 2021, PAYG-based plans remained the largest share of standalone fixed voice services. As shown in Figure 3, in March 2021, 82% of standalone fixed voice subscriptions were on PAYG-based plans, and this share was relatively stable over the five-year period under review.

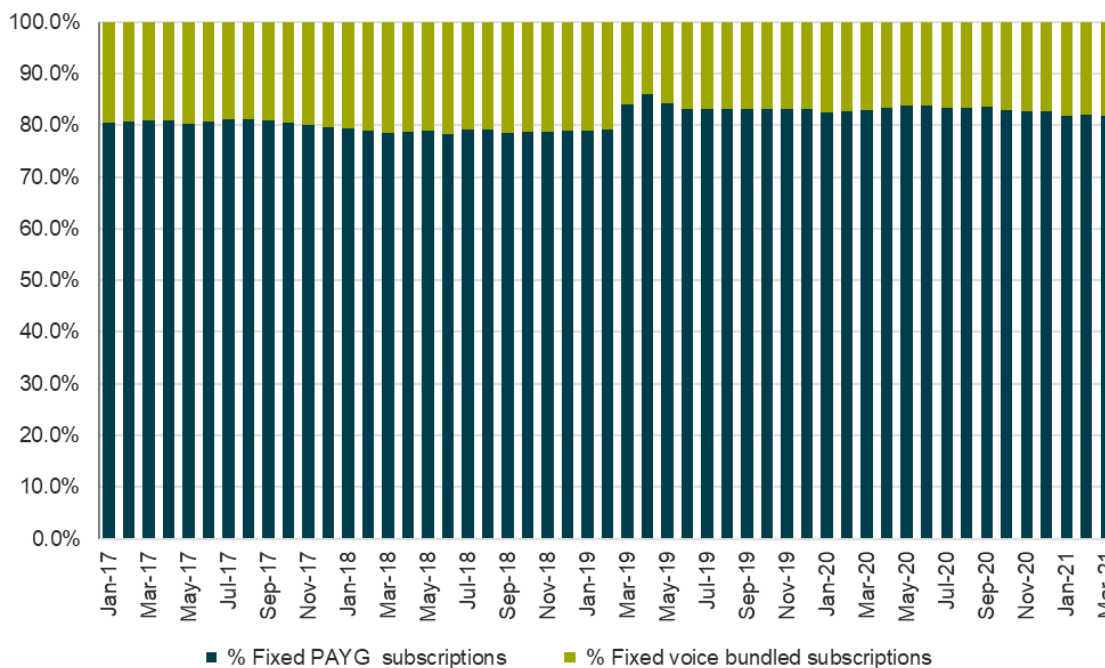


Figure 3 PAYG and fixed voice bundled subscriptions (% of standalone fixed voice subscriptions)

Source: Concessionaires’ quantitative data submissions

However, the high uptake of PAYG plans does not mean that fixed line access and fixed voice bundled offerings should not be considered part of the same product market. This is because it is currently not possible to buy a standalone fixed voice product from one concessionaire and consume minutes at a per minute rate from another concessionaire (i.e., there is no two-stage dialing nor are there prepaid calling cards available in Trinidad and Tobago).

Additionally, evidence from the TATT-KCL Fixed Customer Survey suggests that, even though most customers of standalone fixed voice services are subscribed to PAYG-based plans, they still use their standalone service to receive and make fixed calls.

As indicated in Figure 4, whilst 75% of the survey respondents using standalone fixed voice services stated that they mostly use their landline to receive calls (first use), this does not imply that these respondents do not also value making domestic fixed calls from their landline. More than 50% also used their landline to call other fixed landline customers, either in their same

networks or in other networks (second and third uses). Additionally, only 6% of the survey respondents using standalone fixed voice services reported no weekly outbound usage of their fixed line.

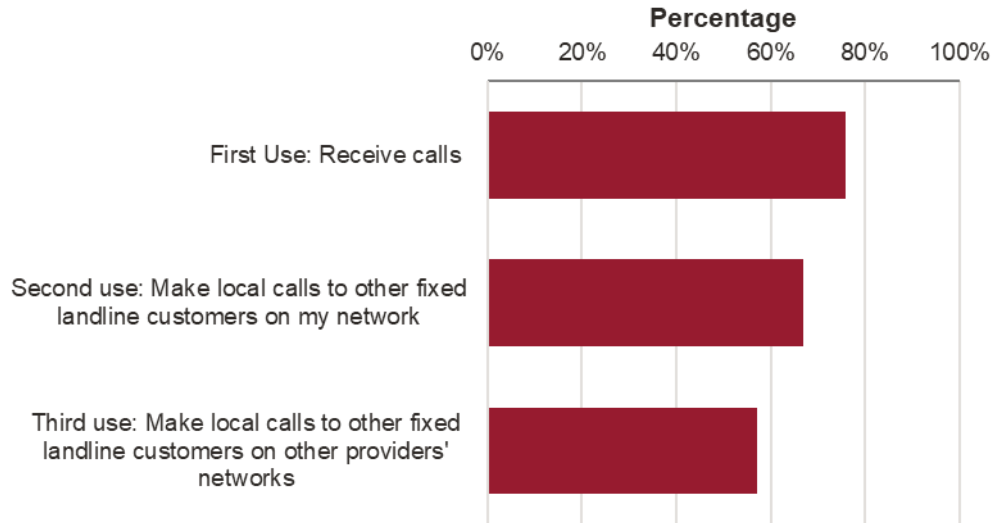


Figure 4 Distribution of uses of fixed landline service (first, second and third ranked use)

Source: TATT-KCL Fixed Customer Survey

The Authority also considered quantitative data from concessionaires on consumption patterns. As Figure 5 indicates, there was a decreasing trend in average monthly usage for both PAYG and fixed voice bundled customers over the five-year period under review. However, in March 2021, PAYG fixed voice end users still consumed, on average, 72 minutes of fixed calls, while fixed voice bundled customers consumed more than 400 minutes of fixed calls³⁵. This confirms the results from the TATT-KCL Fixed Customer Survey, set out in Figure 4, that fixed voice end users value both the ability to make and receive fixed calls from their fixed landline.

³⁵ Based on concessionaires' quantitative data submissions. This value is obtained by dividing total PAYG minutes over the total PAYG subscriptions.

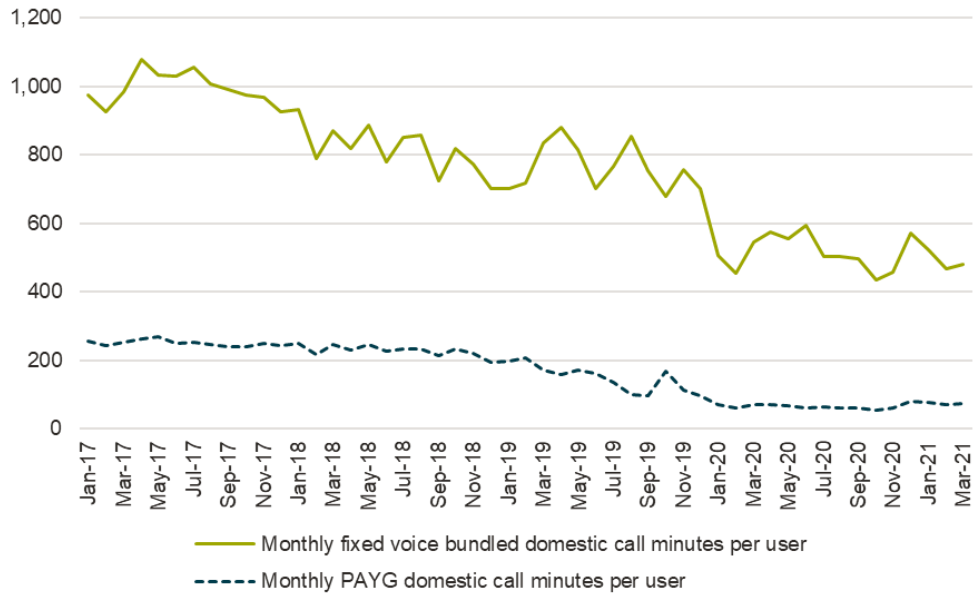


Figure 5 Monthly fixed voice bundled and PAYG domestic call minutes per user

Source: Concessionaires’ quantitative data submissions

3.2.1.3. Relative Prices

A customer would have no incentive to purchase a fixed line access product without any associated package minutes unless they could purchase this separately for less, or from another concessionaire.

The Authority has examined the prices for PAYG and fixed voice bundled offerings available in the market against the current average consumption of domestic fixed-to-fixed and fixed-to-mobile call minutes³⁶. As depicted in Table 5, end users can purchase PAYG-based and fixed voice bundled offerings at around the same price from both Flow and TSTT [REDACTED]. Based purely on relative prices, the Authority concludes that, at least for the average end user, a fixed line access-only customer may have no preference for either plan and thus will be able to switch from one to the other in the case of a SSNIP in the PAYG charges³⁷.

³⁶ Based on operators’ data submissions, the average consumption of a fixed line access and call service user is 73 minutes for fixed-to-fixed on-net calls; 10 minutes for fixed-to-fixed off-net calls; and 54 minutes for fixed-to-mobile calls.

³⁷ The Authority notes that this analysis focuses on the average usage of a fixed voice bundled customer only. The results of the relative price comparison may differ for end users with lower or higher demand levels.

Table 5 Comparison of fixed voice bundles and implied PAYG monthly prices (TT\$)

Type of Call/Concessionaire	Digicel	Flow	TSTT
Name of package	Home & Away	Voice 100	Mobile Residential Voice Package 1
Fixed-to-fixed on-net calls	Unlimited	Unlimited	Unlimited
Fixed-to-fixed off-net calls	500 (any landline, Digicel mobile and international – USA, Canada, and UK)	100	Unlimited
Fixed-to-mobile calls	USA, Canada, and UK)	Not included	Not included
Fixed voice bundle monthly price (TT\$)	\$99.00	\$25.00	\$100.00
Implied PAYG (TT\$) monthly price	\$42.00	\$33.00	\$108.00

Source: Operators' websites accessed 12th February 2023

Note: PAYG charges are calculated based on average consumption of fixed-to-fixed and fixed-to-mobile minutes. All prices are rounded to the nearest TT dollar.

Figure 6 shows the prices of domestic fixed voice PAYG services, including on-net, off-net and fixed-to-mobile call destination tariffs, over the period 2018 to 2023.

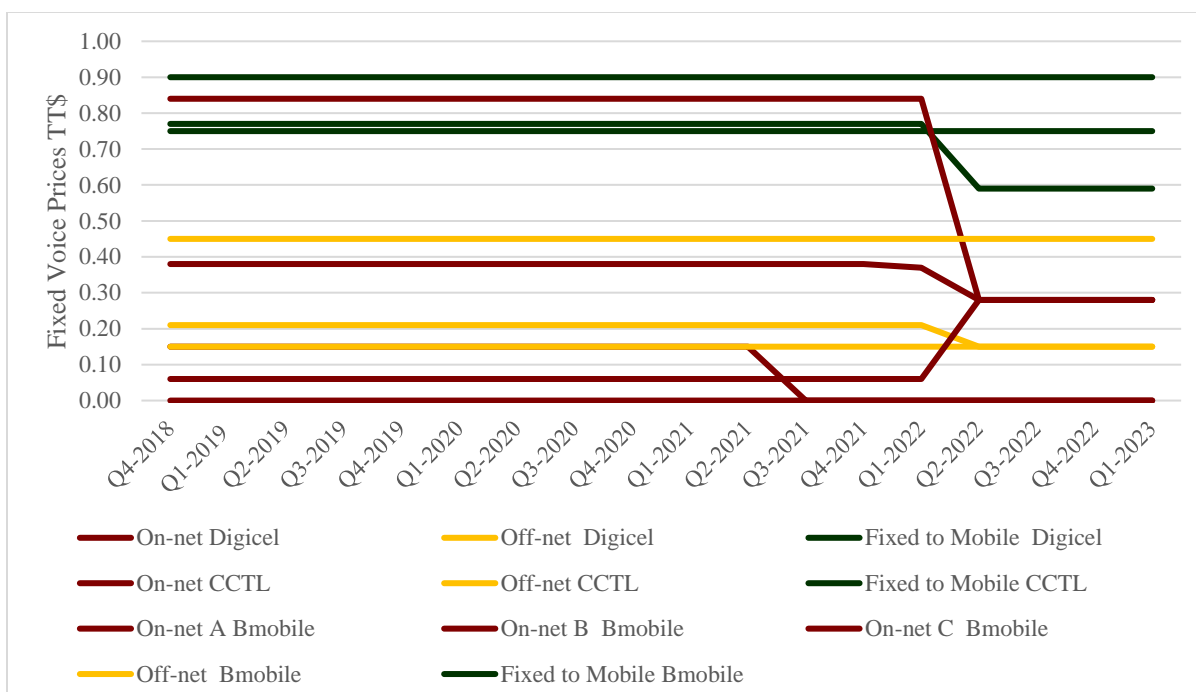


Figure 6 Fixed voice service prices 2018–2023

The prices for fixed voice service (per talk-minute) have remained largely constant or have decreased over the period, save one exception, namely, bmobile’s on-net subgroup’s (zone B) one time increase in Q2 2022. The constant and decreasing trend in fixed voice service prices is noted to be consistent across PAYG and packaged minute plans (TATT , 2023). Figure 6 also illustrates the occurrence of zero-rated, on-net fixed voice tariffs over the period 2018 to 2023 by CCTL (the flat line at TT\$0.00 over the time series).

Given the nationwide availability of PAYG and fixed voice plans, the Authority does not think that customers will face any significant barriers to switching from PAYG to fixed voice bundled plans, especially when switching plans with the same provider, as terms and conditions for both services (including installation requirements) are similar in terms of contract lengths, termination penalties, and other administrative requirements³⁸. Moreover, switching between different service providers will be easier once fixed number portability is implemented in Trinidad and Tobago³⁹.

³⁸ Including, but not limited to, proof of identification, proof of address, credit rating assessment, and security deposit

³⁹ TeleGeography, Judge orders TSTT to implement fixed number portability (August 2021), What Justice Seepersad’s ruling on fixed number portability means - Trinidad and Tobago Newsday (August 2021)

Based on the demand-side considerations set out above, the Authority is of the view that fixed line access and fixed calls should form part of a single product market.

Whilst they are complementary in nature, end users are expected to make a joint purchasing decision on both services.

3.2.2. Supply-Side Substitution

The Authority also considers that fixed line access and fixed calls are supply-side substitutes. Internationally, fixed network operators generally deploy fixed network infrastructure to enable them to provide both fixed access and domestic fixed call services. This is also the case in Trinidad and Tobago, with Amplia, Digicel, Flow, Lisa Communications and TSTT offering fixed access and domestic fixed call services via their own fixed networks. Additionally, even though marketing strategies might differ between fixed line access and fixed call services, there is no evidence that concessionaires use different sales channels to promote and provide these services.

To determine whether fixed line rental and domestic fixed call services are supply-side substitutes, it is necessary to consider whether a concessionaire offering only domestic fixed call services could feasibly begin to offer fixed line access services in the event of a SSNIP by an HM in fixed line access services. Since fixed networks are generally designed and deployed to provide access and call services, any concessionaire hypothetically offering only access (or offering all services except access) would also be able to offer the full suite of retail fixed services easier or without network expansion (including domestic call services), in the event of a SSNIP by an HM.

3.2.3. Conclusions

The assessment above suggests that fixed line access and fixed call services should be considered in the same product market. End users purchase these services either as PAYG or fixed voice bundled offerings, taking into account the characteristics of both fixed lines and fixed calls. The Authority recognises that there is still a high share of PAYG fixed voice subscriptions. However, PAYG-based fixed voice subscribers also use their fixed line to not only receive fixed calls but also to make fixed calls, and they currently cannot choose to do so by purchasing domestic fixed call services from another provider.

This conclusion is further supported by the TATT-KCL Fixed Consumer Survey 2022 which shows that survey respondents not only use their landline to receive calls but also to call other fixed landline customers. Moreover, only 6% of respondents with a fixed voice service reported no weekly outbound usage of their fixed landlines (i.e., 94% of the relevant group of respondents

made outbound fixed calls on a weekly basis). This result is also reflected in the way these services are offered in Trinidad and Tobago, where concessionaires predominantly offer packaged plans that contain monthly allowances for fixed calls, and most PAYG subscriptions include unlimited fixed-to-fixed on-net calls.

On the supply side, concessionaires use the same infrastructure and sales channels to promote and provide fixed access and calls services and must provide both in order to compete for end users. The above conclusion on defining a single product market for fixed line access and fixed call services is also in line with international precedent from, for example, The Bahamas, Bermuda⁴⁰ and the GCC⁴¹ region (e.g., Saudi Arabia⁴², Qatar⁴³ and other countries).

3.3. Are Fixed Broadband Access Services in the Same Product Market as Fixed Voice Services⁴⁴?

As part of the Fixed Market Definition 2009, the Authority did not consider that fixed broadband services formed part of the same market as fixed voice services. Moreover, in line with the nature of service offerings at the time, the Authority did not distinguish between fixed voice services provided on a standalone or bundled basis (multi-play bundles, hereafter). This has changed since then, as multi-play bundles have become widely available in Trinidad and Tobago.

The purpose of this subsection (3.3) is to assess whether domestic fixed line access and domestic fixed call services, as defined in subsection 3.2, should be considered part of the same product market as fixed broadband services. Therefore, the starting point for this assessment is defining standalone fixed voice services as the focal product (i.e., fixed voice services without any broadband access or other telecommunications services). It then applies the SSNIP test to determine whether this forms a product market on its own or should be widened to include any effective substitutes, including fixed broadband services.

As part of this overall assessment the Authority also determines whether standalone fixed voice services and multi-play bundles (including fixed voice services) should be part of the same product market.

⁴⁰ RAB (2020) Market Review of the Electronic Communication Sector

⁴¹ GGC region refers to the Gulf Cooperation Council member states.

⁴² CST (2017) Market Definition, Designation and Dominance (MDDD) Report

⁴³ CRA (2016) Market Definition and Dominance Designation (MDDD) Review

⁴⁴ In this analysis, the domestic fixed voice service is the focal product, which includes fixed line rental and fixed voice bundled offers (both managed VoIP and PSTN-based call services), as defined in subsections 3.1 and 3.2.

3.3.1. Demand-Side Substitution

Retail broadband Internet access from a fixed location (fixed broadband services, hereafter) provides end users with a connection to the Internet, irrespective of the fixed network technology used. In Trinidad and Tobago, these connections are offered as wired (i.e., HFC, or FTTx) or fixed wireless (i.e., WiMax, and FWA LTE) connections.

Comparing the functionalities and characteristics of standalone fixed voice and fixed broadband services, the Authority concludes that there is limited demand-side substitution between these services. In addition, as explained in more detail in subsection 3.3.1.4, it is expected that a sufficient number of customers purchasing standalone fixed voice or fixed broadband services would not switch to multi-play bundles following a SSNIP in the standalone services.

3.3.1.1. Product Characteristics

Regardless of the technology used, both fixed broadband and fixed voice services are sold in Trinidad and Tobago on a standalone basis and as part of multi-play bundled offers. Multi-play bundled offers also include other retail services, such as subscription TV and/or mobile services⁴⁵, explained as follows:

1. Amplia, Digicel, Flow and TSTT all offer both fixed broadband and fixed voice on a standalone basis and as part of double-play and triple-play bundles, with subscription TV.
2. Airlink, Novo Communications, PBS Technologies and RVR International offer fixed broadband services only, both on a standalone basis and as part of double-play bundles with pay TV.
3. Lisa Communications offers standalone fixed broadband and voice services only.

As Table 6 depicts, all standalone fixed broadband plans from the main concessionaires offer unlimited data allowances, although they differ in terms of download speed⁴⁶. Amplia, Digicel and Flow offer higher broadband speeds (i.e., up to 1 Gbps) than TSTT which offers comparatively very low speeds (ranging from 6 to 20 Mbps) as part of their 4G LTE fixed wireless plans.

⁴⁵ Based on concessionaires' quantitative data submitted to the Authority and information found on their websites

⁴⁶ The list of tariffs for domestic fixed broadband services can be accessed using the weblink: <https://tatt.org.tt/market-information/prices/internet-service/>

Table 6 Standalone fixed broadband offerings for residential customers

Concessionaire	Product	Download Speed	Monthly Price (TT\$)
Amplia	Essential Internet 150	150 Mbps	\$260.00
Amplia	Select Internet 300	300 Mbps	\$450.00
Amplia	Premium Internet 500	500 Mbps	\$625.00
Amplia	Ultra Internet 1 GIG	1 GB	\$750.00
Digicel	Broadband Internet 100	100 Mbps	\$285.00
Digicel	Broadband Internet 250	250 Mbps	\$560.00
Digicel	Broadband Internet 500	500 Mbps	\$865.00
Flow	Internet Standard	100 Mbps	\$275.00
Flow	Internet Select	300 Mbps	\$450.00
Flow	Internet Premium	500 Mbps	\$675.00
TSTT	Unlimited 4GLTE Wireless Data	6 Mbps	\$168.00
TSTT	Unlimited 4GLTE Wireless Data	10 Mbps	\$201.00
TSTT	Unlimited 4GLTE Wireless Data	20 Mbps	\$224.00

Source: Operators' websites, accessed on 11th February 2023

The Authority considers that there is limited demand-side substitution between fixed broadband and fixed voice services, based on their functionalities and characteristics. According to the TATT-KCL Fixed Customer Survey, there is a high proportion of survey respondents subscribed to standalone broadband services that mostly use their broadband connection for managed VoIP and OTT calls (see subsection 3.1.1 for further details). However, end users also use both services for different purposes, e.g., using their broadband connection to access the Internet (for social media, streaming and downloading content, sending or receiving emails, etc.)

Furthermore, managed VoIP services are marketed by concessionaires as fixed voice plans (either on a standalone basis or as part of single- or multi-play bundles). It is also unlikely that customers would purchase a standalone broadband service from one provider and managed VoIP services from another provider, or a double-play bundle including both broadband and managed VoIP services, for the only purpose of making and receiving fixed calls. Therefore, managed VoIP and broadband services should not be considered part of the same market. This conclusion is for two primary reasons:

1. According to the TATT-KCL Fixed Customer Survey, only 4% of survey respondents are subscribed to standalone fixed voice and standalone fixed broadband services from different providers⁴⁷.
2. It would be cheaper for customers willing to make and receive fixed calls to purchase PAYG or fixed voice bundled services, instead of a combination of standalone broadband and standalone VoIP-based services, or a double-play bundle⁴⁸.

3.3.1.2. Uptake and Usage Trends

As illustrated in Figure 7, between September 2018 and September 2023, growth in take-up of both standalone fixed voice and broadband services was relatively stable, although declining marginally in the last two years. However, in the five years under review, there was a clear trend towards customers taking bundled service offerings in Trinidad and Tobago (e.g., double-play and triple-play). Over this period, standalone fixed voice and broadband connections increased annually at the rates of 0.19% and 0.39%, respectively, while multi-play bundle subscriptions that include fixed voice increased by 2.76% and multi-play bundle subscriptions that include fixed broadband services increased by 2.19%.

⁴⁷ The overwhelming majority of these end users are subscribed to TSTT's PAYG or fixed voice bundled services, and a broadband service from another provider. However, these results are based on a small sample of respondents.

⁴⁸ For example, TSTT's "Residential Voice Package 1", including unlimited fixed-to-fixed calls to any network, is offered at TT\$100.13. Flow's two-play bundle "Connected Starter" is sold at TT\$285. Purchasing Digicel's "Broadband Internet 100" and Flow's VoIP "Voice 100" together would cost the customer TT\$315.

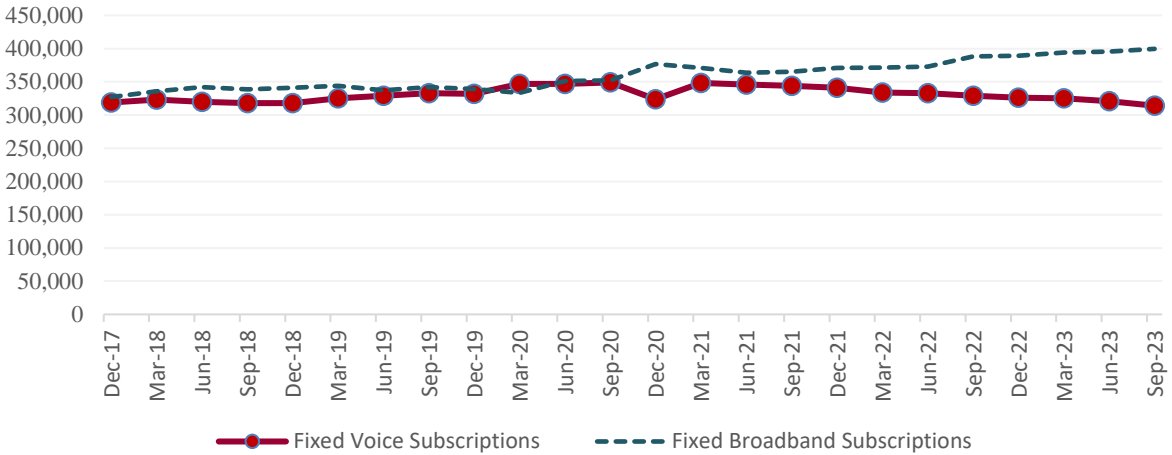


Figure 7 Fixed voice and fixed broadband subscriptions

In March 2021, multi-play bundles were around three times more than five years before. Evidence on the type of multi-play bundles shows that 89% included fixed voice and fixed broadband (either as double-play or triple-play); 10% was double-play including fixed broadband and subscription TV; and 1% was double-play including fixed line rentals and calls, and subscription TV.

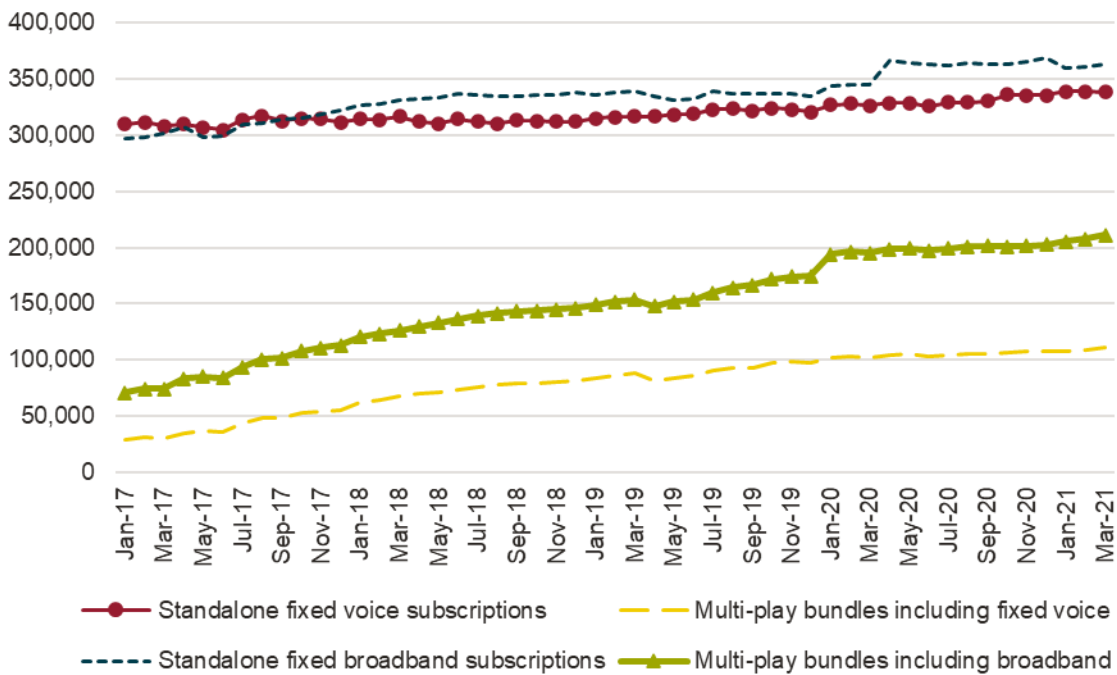


Figure 8 Fixed voice and fixed broadband standalone and multi-play bundle subscriptions

Source: Concessionaires' quantitative data submissions

However, despite the recent growth in multi-play bundles, take-up of both standalone fixed voice and broadband services remains high. In March 2021, 75% of total fixed voice and 63% of fixed broadband subscriptions were on standalone tariff plans. However, this trend has been declining in the five years under review, as shown in Figure 9.

Additionally, according to the TATT-KCL Consumer Survey 2022, 48% of end users who subscribed to multi-play bundles stated that these included both fixed broadband and fixed landline services.

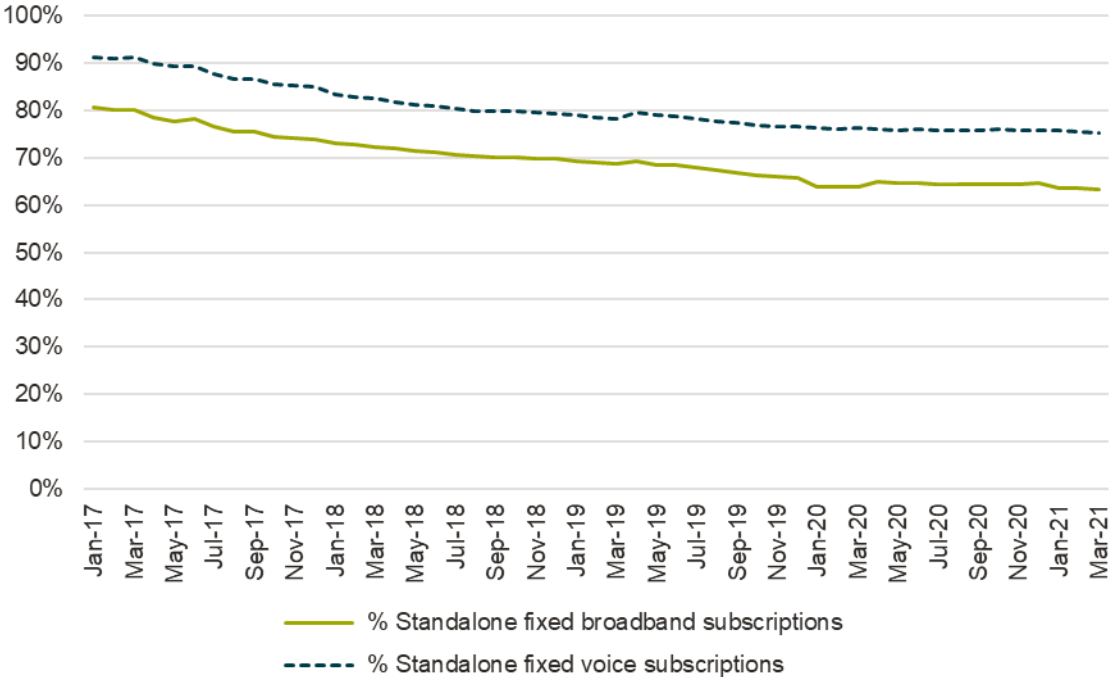


Figure 9 Share of standalone fixed voice and fixed broadband subscriptions in total fixed voice and fixed broadband subscriptions

Source: Concessionaires’ quantitative data submissions and TATT’s market report database (2021)

3.3.1.3. Relative Prices

Given the prevailing high take-up of standalone fixed voice and broadband services, customers subscribed to these services appear to be a distinct user group that values each of the standalone offerings separately and are thus unlikely to switch between each service; additionally, they would be unlikely to switch to multi-play bundles in the case of a SSNIP in their standalone services.

This trend is likely to be driven by concessionaires’ pricing strategies. From the data presented in Table 7, the Authority observes that there are non-trivial differences in the prices of standalone fixed voice and fixed broadband offerings purchased separately, and double-play bundles. For example, standalone fixed voice offers currently cost around TT\$100.00 per month or less, whereas standalone fixed broadband ranges from TT\$168.00 to TT\$285.00 per month and double-play bundles range from TT\$224.00 to TT\$285.00 per month.

Given the current price levels of standalone fixed voice services, it is unlikely that end users on standalone fixed voice plans would revert to either standalone fixed broadband for the purpose of making calls, or multi-play bundles in the case of a SSNIP in standalone voice plans (as explained in more detail in subsection 3.3.1.4, Figure 10).

However, given that some standalone fixed broadband services and double-play bundles are priced fairly similarly, customers might not have a preference for either offering and would therefore be able to switch from one to the other in the case of a SSNIP in standalone fixed broadband charges. The following table shows standalone fixed voice, broadband and multi-play offerings for residential customers.

Table 7 Standalone fixed voice, broadband and multi-play offerings for residential customers

Concessionaire	Product	Type of Plan	Data Included	Download Speed	Minutes Included	Monthly Price (TT\$)
Amplia	Essential Talk Plan	Standalone fixed voice			Unlimited fixed-to-fixed, any network	\$100.00
Amplia	Essential Internet 150	Standalone broadband	Unlimited	150 Mbps		\$260.00
Amplia	Essential Internet 150 + Essential Talk Plan	2P ⁴⁹ bundle	Unlimited	150 Mbps	Unlimited fixed-to-fixed, any network	\$275.00
Digicel	Home & Away 500	Standalone fixed voice			Unlimited fixed-to-fixed on-net plus 500 fixed-to-fixed off-net, fixed-to-mobile (Digicel mobile)	\$99.00

⁴⁹ “2P” stands for double-play bundles containing two fixed services, such as fixed telephony and broadband bundles. “3P” stands for triple-play and “4P+” refers to quadruple-play bundles.

Concessionaire	Product	Type of Plan	Data Included	Download Speed	Minutes Included	Monthly Price (TT\$)
					and selected international	
Digicel	Broadband Internet 100	Standalone broadband	Unlimited	100 Mbps		\$285.00
Digicel	Modern Fibre 100 Mbps + add-on Home & Away	3P bundle	Unlimited	100 Mbps	Same as Home & Away	\$474.00
Flow	Voice 100	Standalone fixed voice			Unlimited fixed-to-fixed on-net 100 minutes fixed-to-fixed on-net	\$25.00
Flow	Broadband Standard	Standalone broadband	Unlimited	100 Mbps		\$275.00
Flow	Connected Starter	2P bundle	Unlimited	100 Mbps	Unlimited fixed-to-fixed on-net 100 minutes fixed-to-fixed on-net	\$285.00
TSTT	bmobile Residential Voice Package 1	Standalone fixed voice			Unlimited fixed-to-fixed any network	\$100.00
TSTT	Unlimited 4G LTE Wireless Data	Standalone broadband	Unlimited	6 Mbps		\$168.00
TSTT	Double Connect Wireless	2P bundle	Unlimited	6 Mbps	Unlimited fixed-to-fixed, any network	\$224.00

Source: Operators' websites, accessed on 12th February 2023

Given the resulting cost savings for domestic calls relative to purchasing standalone fixed broadband for the purposes of making calls, the Authority considers that it is unlikely that those end users would substitute between standalone fixed voice and broadband in the event of a SSNIP in fixed voice calls. End users who value both services are likely to be already subscribed to a multi-play bundle containing both services.

3.3.1.4. Switching Behaviour

In determining whether standalone and bundled offerings form part of the same market, it is important to assess if customers would switch, in sufficient numbers, following a SSNIP in the price of the standalone products, assuming prices are currently at competitive levels. The TATT-KCL Fixed Customer Survey suggests that it is unlikely that end users would switch to other plans in the event of a SSNIP. As indicated in Figure 10, if faced with a price increase, most respondents with only a fixed landline and call services mentioned they would either stop using their fixed landline to make calls (i.e., forego access to the service), make fewer calls (i.e., substitute on a partial basis), or do nothing regardless (i.e., carry out no substitution) of their monthly expenditure. This group of 56 survey respondents who would do nothing are assumed to be price inelastic and, therefore, they would not switch should the service provider increase its prices. Only a small proportion of these end users (i.e., less than 3% of the relevant respondents) mentioned they would switch to a multi-service bundle.

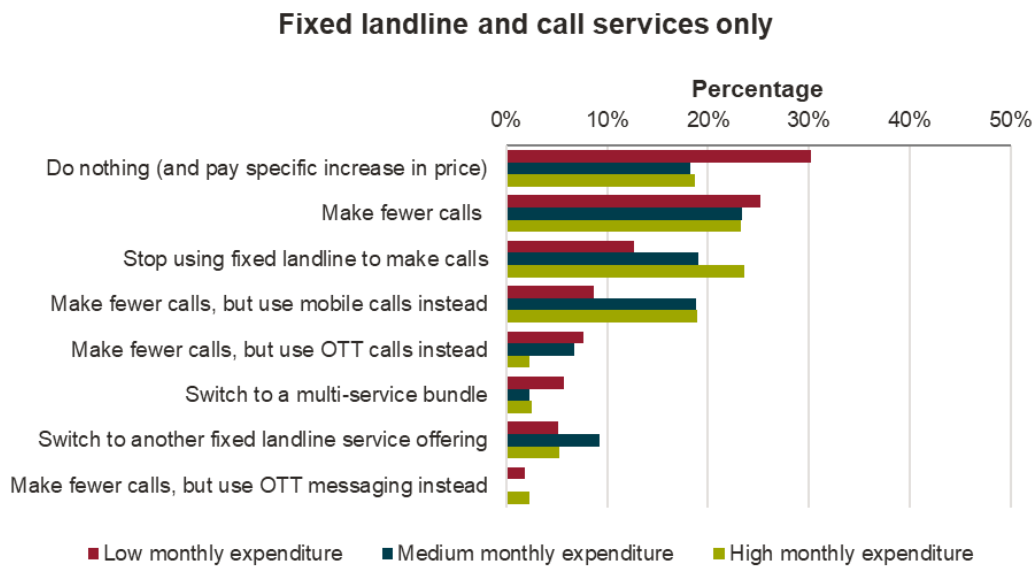


Figure 10 Actions that would be taken if fixed landline service price was increased, by monthly expenditure

Source: TATT-KCL Fixed Customer Survey

Note: Monthly expenditure categories are low (TT\$100–TT\$199), medium (TT\$200–TT\$299) and high (TT\$400–TT\$599), representing 61% of end users of only fixed landline and call services.

Similarly, as shown in Figure 11, if faced with a price increase, most respondents with broadband-only services mentioned they would do nothing, or move to another standalone fixed broadband plan, or cancel their current plan (i.e., forgo access completely), regardless of their monthly expenditure.

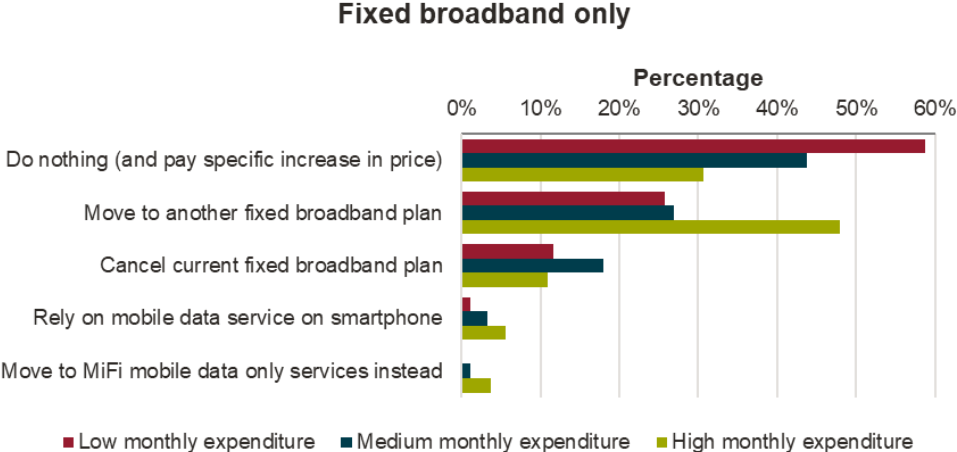


Figure 11 Distribution of actions that would be taken if fixed broadband service price was increased, by monthly expenditure

Source: TATT-KCL Fixed Customer Survey

Note: Monthly expenditure categories are low (under TT\$250), medium (TT\$250–TT\$399) and high (TT\$400–TT\$600), which represent 96% of fixed broadband end users.

Figure 12 shows that, if faced with a price increase, most respondents with a multi-play bundle stated they would do nothing, cancel their current plan, or move to another multi-play bundle. Those with the highest monthly expenditure are more likely to switch to a standalone fixed landline or fixed broadband plan, but they represent a small proportion of total respondents.

Multi-play bundles

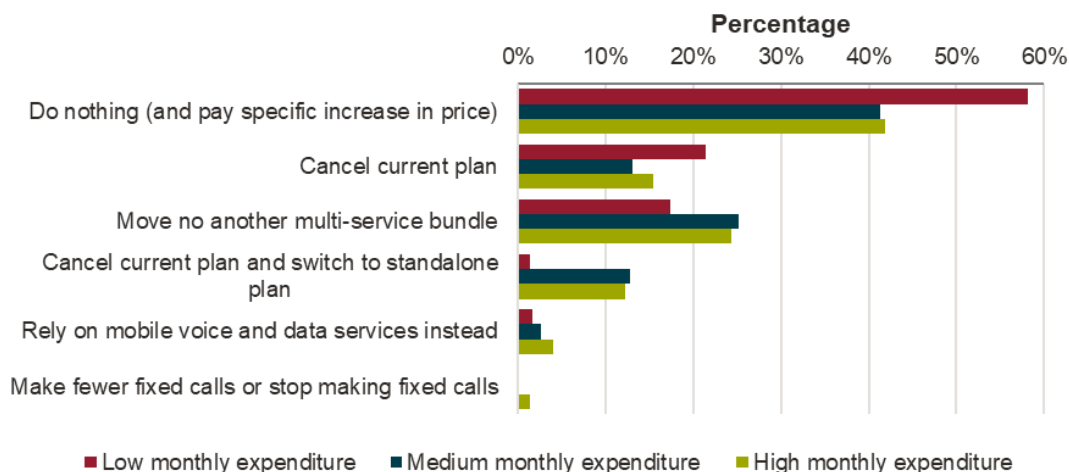


Figure 12 Actions that would be taken if fixed landline service price was increased, by monthly expenditure

Source: TATT-KCL Fixed Customer Survey

Note: Monthly expenditure categories are low (under TT\$300), medium (TT\$300–TT\$499) and high (TT\$500–TT\$700), which represent 90% of multi-play bundles end users.

Based on the demand-side considerations set out above, the Authority is of the view that standalone fixed broadband and multi-play bundles do not form part of the same product market as standalone fixed voice services.

3.3.2. Supply-Side Substitution

The Authority preliminarily considers that there is supply-side substitution between fixed voice and fixed broadband services in Trinidad and Tobago, irrespective of whether these are sold on a standalone basis or as part of multi-play bundles.

From a technological point of view, due to the emergence of VoIP, traditional fixed voice and VoIP services can be delivered through similar infrastructure that shares common components, that is, in an IP/NGN network, both calls and data services are conveyed in the same way and end users are commonly unable to distinguish whether their calls are conveyed as data packets or not. Thus, there is increasing supply substitution between these services.

Fixed operators in Trinidad and Tobago use a mix of technologies to provide fixed voice and broadband, both wired (i.e., FTTx and HFC) and fixed-wireless (i.e., FWA LTE and WiMax), with the rollout expected to continue in the coming years. Currently, only TSTT still operates a traditional copper (PSTN/xDSL) network (as well as an FWA LTE network) over which it offers fixed voice and broadband services. All other concessionaires have deployed an IP/NGN network. The Authority notes that even TSTT is currently phasing out its copper access network and migrating customers to either its FWA network or Amplia's fibre network.

Given all of this, the Authority considers there to be supply-side substitution between fixed voice and fixed broadband services.

3.3.3. Further Considerations

In addition to the demand-side and supply-side considerations described above, the market structure and competitive dynamics for the provision of standalone fixed voice and fixed broadband, and multi-play bundles are sufficiently different for these services to be considered part of separate markets. For example, TSTT has a larger market share in fixed voice services than in fixed broadband services. Differences between these markets are more noticeable in the provision of standalone services than for multi-play bundles which are provided mainly by other concessionaires – Digicel and Flow in particular.

The Authority notes that the fixed multi-play market was not previously identified as a separate market in the Fixed Market Definition 2009. However, multi-play bundle service is now observed to constitute a market of its own. The Authority thus finds it prudent to recognise this structural development in the domestic telecommunications and broadcasting landscape.

3.3.4. Conclusions

Considering the arguments stated above, the Authority concludes that it is reasonable to define three separate markets for standalone fixed voice (including both fixed line rental and fixed voice bundled services), standalone fixed broadband, and multi-play bundles. Although, in recent years, the take-up of multi-play bundles has increased in Trinidad and Tobago, standalone services still represent a high proportion of total fixed voice and fixed broadband subscriptions, and this trend has been relatively stable in the five years under review.

Furthermore, there are large price differentials across standalone fixed voice and fixed broadband offerings purchased separately, and double-play bundles. Given this, it appears unlikely that customers subscribed to standalone services would switch to multi-play bundles in the case of a

SSNIP in their standalone plan (especially as they are unlikely to place any value on the additional service(s) included in the multi-play bundle). The TATT-KCL Fixed Customer Survey confirms these results, as the majority of respondents with standalone products would not change to multi-play plans after a small increase in the price of their standalone product.

On the supply-side, the Authority concludes that fixed voice and fixed broadband services are substitutes, as both can be delivered through similar technologies (especially given the high prevalence of managed VoIP services in Trinidad and Tobago).

3.4. Are Residential and Business Services in the Same Product Market?

In subsection 3.3, the Authority concludes that it is reasonable to define three separate markets for standalone fixed voice, standalone fixed broadband, and multi-plays bundles. In the Fixed Market Definition 2009, both the market for domestic fixed narrowband (voice) access and the market for domestic fixed retail voice services covered services offered to both residential and business end users.

The purpose of this subsection (3.4) is to assess whether the three markets defined (in 3.3) should be separated into two distinct segments for residential and business end users. The OECD's 2014 *Defining the Relevant Market in Telecommunications* suggests that, depending on the product, some business users may have different needs to residential users. However, not all businesses might fit into a single category, given their different nature and size.

In Trinidad and Tobago, the main four fixed concessionaires (namely, Amplia, Digicel, Flow and TSTT) provide services to both residential and business customers. Standalone fixed broadband services are also provided by a number of smaller players⁵⁰. All of them differentiate business end users into two groups: small and medium enterprises (SMEs), and corporate/enterprise customers. Fixed voice and broadband services provided to SMEs are typically similar to those targeted at residential customers⁵¹.

Concessionaires also offer more advanced telecommunications business solutions, typically targeted at larger corporate/enterprise customers who require multiple fixed lines (e.g., PRI and SIP trunk, dedicated Internet access, WAN/LAN and ISDN) and dedicated connectivity services (leased lines) connecting multiple locations. These solutions are often tailored to the customer's

⁵⁰ AirLink, Lisa Communications, Novo Communications, PBS Technologies and RVR International

⁵¹ For example, in the New Zealand Commerce Commission's decision to clear the merger between Vodafone and TelstraClear, the Commission found that the telecommunications products purchased by certain categories of businesses (businesses operating from home and small business with their own premises) form part of the residential market, as they are typically equivalent to products purchased by residential end users.

overall communications/connectivity needs, and not based on published tariff plans/list prices. A key characteristic of these services is that they offer “higher quality” than fixed broadband services (which are commonly provided on a “best effort” basis), such as guaranteed bandwidth, low latency, dedicated connectivity between sites, and guaranteed symmetric upload and download speeds. In addition, corporate enterprise customers usually benefit from dedicated contact lines and certain segments may also benefit from service level agreements (SLAs) relating to network operational parameters.

For the purpose of this market definition exercise (and in line with the Fixed Market Definition 2009), the Authority only considers standard retail service offerings marketed to residential and SME customers, not any dedicated capacity and bespoke communications solutions offered to large corporate enterprise customers.

Therefore, the starting point for this assessment is defining each of the separate markets identified in subsection 3.2 as focal products, and then applying the SSNIP test to determine whether they should be disaggregated into residential and SME customer segments.

3.4.1. Demand-Side Substitution

From the qualitative submissions received from concessionaires, the Authority notes that there are potential differences in the characteristics of business and residential users of domestic fixed voice, fixed broadband, and multi-play bundles. For example, business users might be more sensitive to quality of service levels, and the additional technical support provided. Indeed, Amplia’s qualitative submission reports that “the major feature that differentiates residential from corporate segment is the technical support provided due to the complexity of the technology offered”⁵² (i.e., Metro, DIA and IPLC). Flow declares that “commercial products are designed to meet specific needs and can include customisation”⁵³.

However, these differences may not be sufficient to prevent demand-side substitution between business and residential fixed voice, fixed broadband, and multi-play bundles. This is particularly the case for SMEs, which are unlikely to have the same needs and requirements as large corporate end users (but more similar needs and requirements for domestic fixed voice and broadband service as residential end users).

The Authority has also considered whether there are contractual barriers to switching for residential customers. Currently, business customers must present a commercial registration

⁵² Qualitative evidence submitted by Amplia, November 2022

⁵³ Qualitative evidence submitted by Flow, September 2021

number to apply for any business plan. However, the Authority understands that, in some circumstances, concessionaires might sell business services to residential customers and vice versa. In fact, the terms and conditions for business and residential customers may seem to be the same, suggesting that demand-side substitution might be possible⁵⁴.

This is particularly the case, for example, for SMEs who could, in principle, switch to a residential service in the case of a SSNIP in the business plan they purchase, especially where a business is collocated at a residential address. This is in line with Amplia's statement in its qualitative submission that residential customers can access business services if they request them⁵⁵: "If requested by a residential subscriber these products [enterprise offers] are available". Lisa Communications indicated that "we do not prevent corporate customers from accessing our residential services, especially if it a small business for whom a residential package will suffice"⁵⁶. Larger businesses, however, will find it more difficult to register as residential customers (ignoring the fact that they would be unlikely to be able to meet their demands for fixed voice and broadband services based on residential tariff offerings).

In addition, Digicel declares that "distinct markets exist for low-capacity access paths (single or two access paths) and high capacity access paths (up to 30 access paths)" as "the high capacity access paths are associated with providing business related functionality" (i.e., PBV, hunting and, lead numbers) while "the low capacity voice access products are potentially usable by either customers or business and are substitutable functionality"⁵⁷.

The requirement for a customer to possess a commercial registration number to apply for any business plan may, in part, hinder demand-side substitution from residential customers. However, given current price differentials (explained in more detail in Table 7), it is unlikely that a residential user would seek to switch to a business tariff plan in the event of a SSNIP. Instead, substitution in the other direction (from business to residential) may be more likely, particularly for SMEs.

⁵⁴ TSTT Terms and Conditions of Service, accessed on 12th February 2023

⁵⁵ Qualitative evidence submitted by Amplia, November 2022

⁵⁶ Qualitative evidence submitted by Lisa Communications, October 2021

⁵⁷ Qualitative evidence submitted by Digicel, October 2021

3.4.1.1. Standalone Fixed Voice Services

In terms of take-up, as of March 2021, residential subscriptions represented 97% of fixed voice subscriptions⁵⁸. As shown in Figure 13, between March 2017 and March 2021, business fixed voice standalone subscriptions have been largely stable, while residential subscriptions dropped sharply at the onset of the COVID-19 pandemic but are returning to pre-COVID-19 figures.

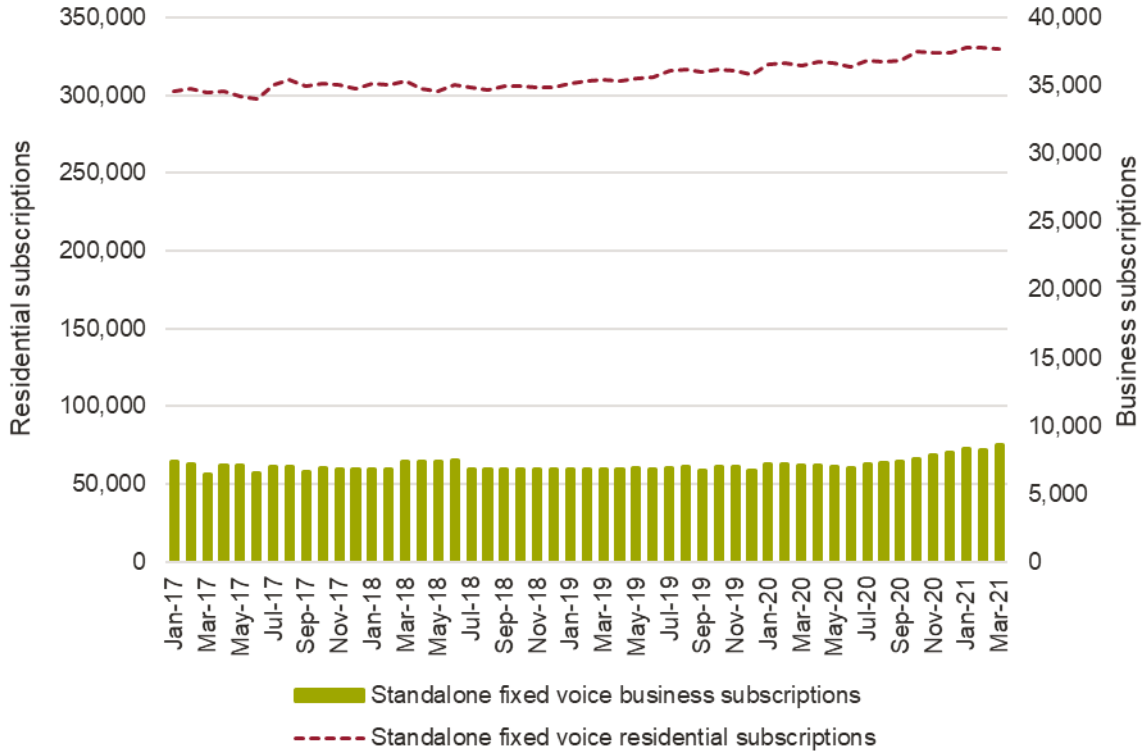


Figure 13 Standalone fixed voice subscription by customer segment

Source: Concessionaires’ quantitative data submissions

Note: This excludes PAYG fixed voice subscriptions, as these cannot be disaggregated between residential and business end users.

⁵⁸ Assuming all PAYG subscriptions belong to residential customers

The standalone fixed voice offerings provided to SME customers, available on the concessionaires' websites, as well as equivalent residential offerings are presented in Table 8⁵⁹, from which the following conclusions were derived:

1. Standalone fixed voice offerings to residential and SME customers are similar (i.e., they all include monthly allowances for fixed calls, including fixed-to-fixed and fixed-to-mobile minutes), although residential customers have a wider range of tariff plans and call allowances to choose from.
2. SME tariff offerings are also relatively more expensive, which limits the possibility of demand-side substitution in response to a SSNIP in the price of residential products. For example, Flow's "Talk Local Plus" business fixed voice standalone plan includes unlimited fixed-to-fixed minutes to any network, unlimited international fixed-to-fixed minutes, 500 fixed-to-mobile minutes and unlimited fixed-to-mobile minutes to selected countries, at TT\$230.00 per month. The most comparable residential plan is Digicel's Home & Away Unlimited, at TT\$149.00.

Table 8 Standalone fixed voice service offerings for residential and SME customers

Concessionaire	Product	Type of Customer	Minutes Included	Monthly Price (TT\$)
Amplia	Essential Talk Plan	Residential	Unlimited fixed-to-fixed, any network	\$100.00
Amplia	Ultra Talk Plan	Residential	Unlimited fixed-to-fixed and fixed-to-mobile	\$200.00
Digicel	Home & Away 500	Residential	Unlimited fixed-to-fixed on-net plus 500 fixed-to-fixed off-net, fixed-to-mobile (Digicel mobile) and selected countries	\$99.00
Digicel	Home & Away Unlimited	Residential	Unlimited fixed-to-fixed, fixed-to-mobile, and selected countries	\$149.00

⁵⁹ Based on the information provided on operators' websites, only Flow and TSTT seem to provide standalone fixed voice services to SMEs.

Concessionaire	Product	Type of Customer	Minutes Included	Monthly Price (TT\$)
Flow	Voice 100	Residential	Unlimited fixed-to-fixed on-net 100 minutes fixed-to-fixed off-net	\$25.00
Flow	Voice 125	Residential	Unlimited fixed-to-fixed on-net 125 minutes fixed-to-fixed off-net and fixed-to-mobile	\$50.00
Flow	Talk Local	SME	Unlimited fixed-to-fixed, any network 250 fixed-to-mobile minutes Unlimited international fixed-to-fixed minutes Unlimited fixed-to-mobile to US and Canada	\$230.00
Flow	Talk Local Plus	SME	Unlimited fixed-to-fixed, any network 500 fixed-to-mobile minutes Unlimited international fixed-to-fixed minutes Unlimited fixed-to-mobile to US and Canada	\$230.00
Flow	Talk Local Max	SME	Unlimited fixed-to-fixed, any network 1,000 fixed-to-mobile minutes Unlimited international fixed-to-fixed minutes Unlimited fixed-to-mobile to US and Canada	\$730.00

Concessionaire	Product	Type of Customer	Minutes Included	Monthly Price (TT\$)
TSTT	bmobile Residential Voice Package 1	Residential	Unlimited fixed-to-fixed, any network	\$100.00
TSTT	bmobile Residential Voice Package 2	Residential	Unlimited fixed-to-fixed, any network, and fixed-to-mobile	\$197.00
TSTT	Business Communications (including VoIP voice)	SME	n.d.	Quote by request

Source: Operators' websites, accessed on 12th February 2023⁶⁰

3.4.1.2. Standalone Fixed Broadband Services

In March 2021, 96% of standalone fixed broadband subscriptions were residential. As with standalone fixed voice services, this share remained stable between March 2017 and March 2021. Figure 14 shows that, over the same period, residential subscriptions increased gradually over time, while SME subscriptions dropped slightly between 2020 and 2021.

⁶⁰ The Authority acknowledges that there may have been revisions to the terms and conditions after the date of publication of this Determination. These revisions can be accessed using the following link: [Internet Services \(tatt.org.tt\)](http://tatt.org.tt)

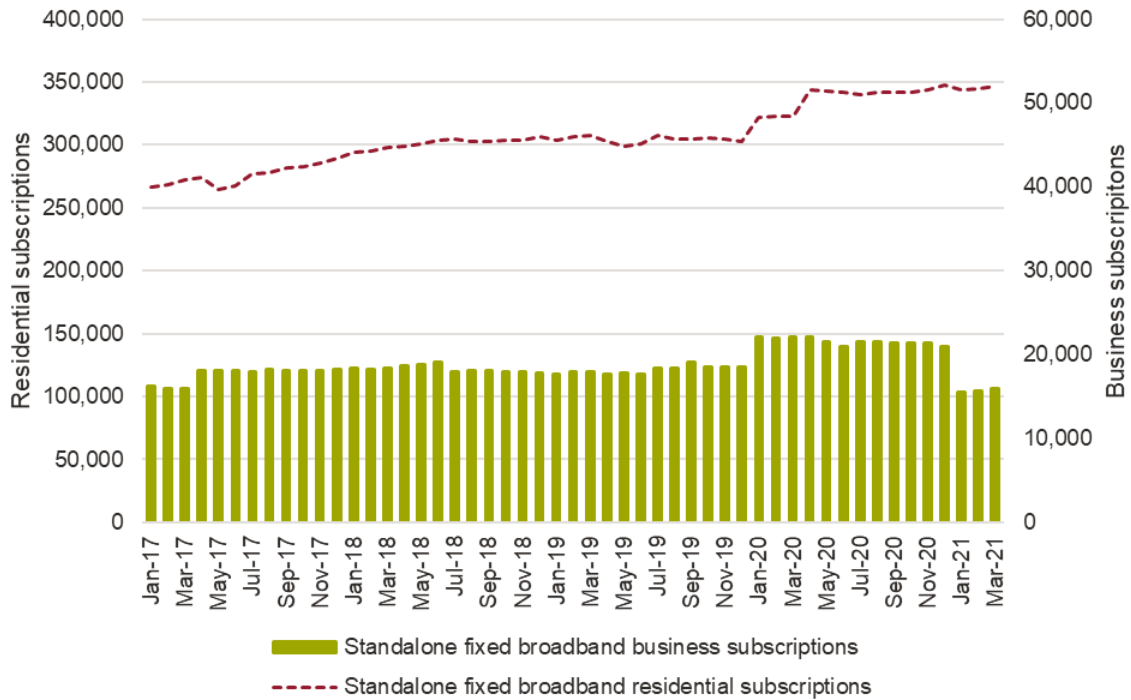


Figure 14 Standalone fixed broadband subscriptions by customer segment

Source: Concessionaires’ quantitative data submissions

Table 9 presents the standalone fixed broadband service offerings for residential and SME customers, available on the concessionaires’ websites. Based on this information, the Authority drew the following conclusions:

1. All major concessionaires provide standalone fixed broadband services to SMEs.
2. In terms of product characteristics, standalone fixed broadband offerings to residential and SME customers are similar in terms of speeds and monthly call allowances. Nevertheless, SME offerings are often complemented with other support services (e.g., digital help desk, cloud storage and business email) not offered to residential customers.
3. SME offerings are relatively more expensive, as in the case of standalone fixed voice plans. This limits the likelihood of residential customers switching to SME multi-play bundles in response to a SSNIP in residential offerings. For example, Amplia’s “Essential Internet 150” is similar to Flow’s “Internet 150” plan, as both offer unlimited data with a 150 Mbps download speed. However, Flow’s SME plan’s price is more than three times Amplia’s residential offering.

Table 9 Standalone fixed broadband offerings for residential and SME customers

Concessionaire	Product	Type of Customer	Download Speed	Monthly Price (TT\$)
Amplia	Essential Internet 150	Residential	150 Mbps	\$260.00
Amplia	Select Internet 300	Residential	300 Mbps	\$450.00
Amplia	Premium Internet 500	Residential	500 Mbps	\$625.00
Amplia	Ultra Internet 1 GIG	Residential	1 GB	\$750.00
Amplia	Small Business – Internet Basic	SME	35 Mbps	Quote by request
Amplia	Small Business – Internet Deluxe	SME	60 Mbps	Quote by request
Amplia	Small Business – Internet Premium	SME	120 Mbps	Quote by request
Digicel	Broadband Internet 100	Residential	100 Mbps	\$285.00
Digicel	Broadband Internet 250	Residential	250 Mbps	\$560.00
Digicel	Broadband Internet 500	Residential	500 Mbps	\$865.00
Digicel	Business broadband	SME	Up to 500 Mbps	Quote by request
Flow	Internet Standard	Residential	100 Mbps	\$275.00
Flow	Internet Select	Residential	300 Mbps	\$450.00
Flow	Internet Premium	Residential	500 Mbps	\$675.00
Flow	Internet 150	SME	Up to 150 Mbps	\$925.00
Flow	Internet 300	SME	Up to 300 Mbps	\$1,295.00
Flow	Internet 500	SME	Up to 500 Mbps	\$1,695.00

Concessionaire	Product	Type of Customer	Download Speed	Monthly Price (TT\$)
TSTT	Unlimited 4G LTE Wireless Data	Residential	6 Mbps	\$168.00
TSTT	Unlimited 4G LTE Wireless Data	Residential	10 Mbps	\$201.00
TSTT	Unlimited 4G LTE Wireless Data	Residential	20 Mbps	\$224.00

Source: Operators' websites, accessed on 12th February 2023

3.4.1.3. Multi-Play Bundles

In March 2021, 18% of all SME fixed voice subscriptions were multi-play bundles, which included fixed voice and broadband. This share increased considerably in the five years under review, as shown in Figure 15.

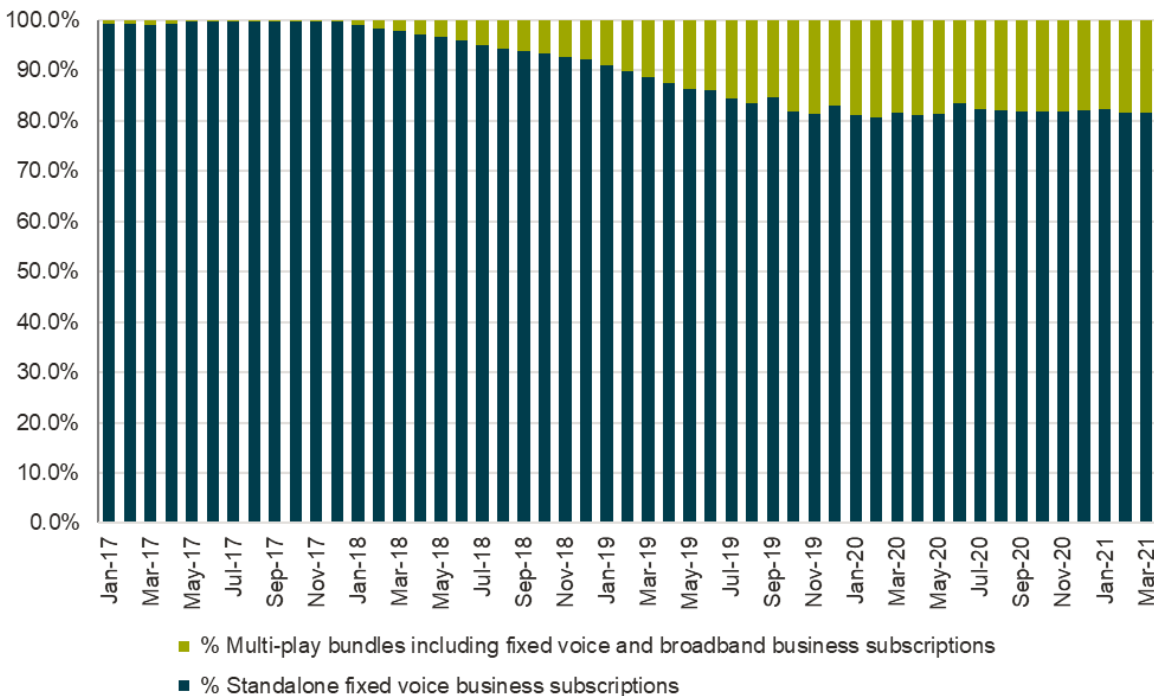


Figure 15 Standalone and multi-play bundle subscriptions for SME customers (% of SME fixed voice subscriptions)

Source: Concessionaires' quantitative data submissions

The multi-play bundles, which include fixed voice and/or fixed broadband provided to residential and SME customers, available on concessionaires’ websites, are described in Table 10⁶¹. From this information, the following conclusions can be drawn:

1. In terms of product characteristics, multi-play bundles offered to SME customers are similar to those offered to residential customers in terms of data allowances and download speeds. However, residential plans are more diverse, but commonly offer a smaller fixed-to-mobile call allowance.
2. There are non-trivial price differentials between comparable residential and SME business plans which limit demand-side substitution in response to a SSNIP in the price of residential products. Flow’s “Essential Business” double-play bundle includes unlimited data with a download speed of 150 Mbps, unlimited fixed-to-fixed minutes, and 200 fixed-to-mobile minutes at TT\$765.00 per month. The most comparable residential package in terms of price is Amplia’s “Essential Internet 150 + Ultra Talk” double-play bundle (TT\$ 375.00 per month. Amplia’s residential double-play bundle is less than half the price of Flow’s SME tariff plan.

Table 10 Multi-play bundle offerings for residential and business customers

Concessionaire	Product	Type of Customer	Type of Multi-play Bundle	Download Speed	Minutes Included	Monthly Price (TT\$)
Amplia	Essential Internet 150 + Essential Talk	Residential	2P bundle	150 Mbps	Unlimited fixed-to-fixed, any network	\$275.00
Amplia	Select Internet 300 + Essential Talk	Residential	2P bundle	300 Mbps	Unlimited fixed-to-fixed, any network	\$470.00
Amplia	Premium Internet 500 + Essential Talk	Residential	2P bundle	500 Mbps	Unlimited fixed-to-fixed, any network	\$615.00
Amplia	Ultra Internet 1 GIG + Essential Talk	Residential	2P bundle	1 GB	Unlimited fixed-to-fixed, any network	\$725.00

⁶¹ Based on the information provided on operators’ websites, only Flow and TSTT seem to provide standalone fixed voice services to SMEs.

Concessionaire	Product	Type of Customer	Type of Multi-play Bundle	Download Speed	Minutes Included	Monthly Price (TT\$)
Amplia	Essential Internet 150 + Ultra Talk	Residential	2P bundle	150 Mbps	Unlimited fixed-to-fixed and fixed-to-mobile	\$375.00
Amplia	Select Internet 300 + Ultra Talk	Residential	2P bundle	300 Mbps	Unlimited fixed-to-fixed and fixed-to-mobile	\$555.00
Amplia	Premium Internet 500 + Ultra Talk	Residential	2P bundle	500 Mbps	Unlimited fixed-to-fixed and fixed-to-mobile	\$700.00
Amplia	Ultra Internet 1 GIG + Ultra Talk	Residential	2P bundle	1 GB	Unlimited fixed-to-fixed and fixed-to-mobile	\$810.00
Digicel	Modern Fibre 100 Mbps + add-on Home & Away	Residential	3P bundle	100 Mbps	Same as Home & Away	\$474.00
Digicel	Modern Fibre 100 Mbps + add-on Home & Away Unlimited	Residential	3P bundle	100 Mbps	Same as Home & Away Unlimited	\$524.00
Digicel	Modern Fibre 250 Mbps + add-on Home & Away	Residential	3P bundle	250 Mbps	Same as Home & Away	\$659.00
Digicel	Modern Fibre 250 Mbps + add-on Home & Away Unlimited	Residential	3P bundle	250 Mbps	Same as Home & Away Unlimited	\$709.00
Digicel	Modern Fibre 500 Mbps + add-on Home & Away	Residential	3P bundle	500 Mbps	Same as Home & Away	\$964.00
Digicel	Modern Fibre 500 Mbps + add-on Home & Away Unlimited	Residential	3P bundle	500 Mbps	Same as Home & Away Unlimited	\$1,014.00
Flow	Connected Starter	Residential	2P bundle	100 Mbps	100 minutes fixed-to-fixed on-net	\$285.00

Concessionaire	Product	Type of Customer	Type of Multi-play Bundle	Download Speed	Minutes Included	Monthly Price (TT\$)
Flow	Choice 300	Residential	3P bundle	300 Mbps	100 minutes fixed-to-fixed on-net	\$409.00
Flow	Connected Premium	Residential	3P bundle	200 Mbps	Unlimited fixed-to-fixed on-net. 100 fixed-to-fixed off-net	\$499.00
Flow	Connected Home	Residential	3P bundle	300 Mbps	Unlimited fixed-to-fixed on-net. 100 fixed-to-fixed off-net	\$599.00
Flow	Connected Home Plus	Residential	3P bundle	500 Mbps	Unlimited fixed-to-fixed on-net. 100 fixed-to-fixed off-net	\$749.00
Flow	Essential Business	SME	2P bundle	150 Mbps	Unlimited fixed-to-fixed 200 minutes fixed-to-mobile	\$765.00
Flow	Advance Business	SME	2P bundle	300 Mbps	Unlimited fixed-to-fixed 500 minutes fixed-to-mobile	\$1,095.00
Flow	Premium Business	SME	2P bundle	500 Mbps	Unlimited fixed-to-fixed 500 minutes fixed-to-mobile	\$1,475.00
TSTT	Double Connect Wireless	Residential	2P bundle	6 Mbps	Unlimited fixed-to-fixed any network	\$224.00
TSTT	Double Connect Wireless 2o MBPS	Residential	2P bundle	20 Mbps	Unlimited fixed-to-fixed any network	\$280.00

Source: Operators' websites, accessed 12th February 2023

Based on the demand-side considerations set out above, the Authority is of the view that residential and SME tariff plan offerings should be considered as part of the same market for the three separate markets identified in subsection 3.2.

3.4.2. Supply-Side Substitution

The Authority notes that SME and residential services are provided over the same network that fosters supply-side substitution. In fact, there is no significant difference between a network designed to carry fixed services provided to business end users (SMEs especially) and a network designed to carry these services to residential users, as both customer groups are based in similar locations.

The Authority recognises that there are a few differences between the retail marketing and customer service activities used for the residential segment and those deployed for business. In particular, business users are likely to be offered greater levels of technical support, such as dedicated customer service representatives or specific marketing channels. However, the Authority does not consider that this is likely to create a sufficient barrier to supply-side substitution, since it should be possible for a hypothetical provider of residential fixed services to replicate such networks.

3.4.3. Further Considerations

The competitive dynamics for standalone fixed services provided to residential and SME customers are fairly similar. This means that defining a separate market for both of these customer segments would not likely lead to a different outcome in any dominance assessment within these markets. The Authority recognises that for multi-play bundles targeted at SME customers, Flow has a stronger position than other concessionaires. However, as mentioned in subsection 3.3.1, these offers represent a small proportion of overall SME subscriptions.

3.4.4. Conclusions

The assessment above suggests that residential and business offerings should be considered as part of the same market for the three separate markets identified in subsection 3.2. As outlined in the Fixed Market Definition 2009, the Authority considers that the decision to separate fixed residential and business services with different pricing schemes and terms of conditions is a strategic one and cannot be considered a structural feature of the market.

From a demand-side perspective, there is some evidence to support demand-side substitution, as some businesses, particularly SMEs, would switch from business to residential service offerings. From a supply-side perspective, the two products are supply-side substitutes since similar inputs are used to deliver both SME and residential services. There appears to be some difference in sales channels, but these are not likely to be sufficient to impede substitution in the event of a SSNIP from an HM. For the purpose of this conclusion, large corporate enterprise customers are excluded due to the uniqueness and quantum of terms required, which can enhance customers buying power to negotiate customised terms and strengthen the operator's ability to charge premium prices for these services.

3.5. Geographic Scope of the Product Markets

Typically, in the telecommunications sector, the markets are defined nationally. This is to align with the geographic scope of the service concessions, with any subdivision into smaller sub-national markets then being driven by an analysis of regional differences. Therefore, the purpose of this section is to assess whether defining a single geographic market for these markets is appropriate or whether there is a need to define sub-national markets for any of the three product markets. For example, in the Fixed Market Definition 2009, both the market for retail fixed narrowband (voice) access, and the market for retail fixed domestic retail voice services were defined at the national level.

A key starting point is to check whether the coverage (i.e., percentage of populated areas where service is available to end users) of all concessionaires varies in different parts of the country, and whether services and/or price levels differ across Trinidad and Tobago. The Authority notes that most fixed concessionaires have national concessions⁶² and similar obligations in the provision of retail domestic fixed voice and fixed broadband service, irrespective of whether these are offered on a standalone or multi-play bundle basis or to residential and business customers. In particular, they are required to provide all retail tariff plans on the same price terms across the country. These obligations are set out in the concession document of each service provider.

Depending on the date on which the concession was granted, and the services provided, each concessionaire has a different network coverage target, set out in "Schedule D" of their concession document. This target needs to be achieved in each of the islands of Trinidad and Tobago. The Authority notes that most concessionaires have reached their targets, as indicated in Table 11, with audits conducted periodically. Indeed, both islands are effectively covered by most operators, and there is a large geographic overlap between their fixed networks. According to the information shared by operators in their qualitative submissions, most municipalities/regions of Trinidad are

⁶² With the exception of Airlink Limited

covered by at least the four main players in the market. This suggests that end users are able to choose amongst different providers across the country.

Table 11 Coverage (% of populated areas unless stated otherwise), by concessionaire in the domestic retail fixed market

Concessionaire	Coverage Target (% of Populated Areas)	Date of Compliance	Effective Coverage
Amplia	75%	2013	37% in both Trinidad and Tobago
AirLink	n.d.	n.d.	n.d.
Digicel	85%	2020	85% in both Trinidad and Tobago
Flow	85% of populated areas of Trinidad and 85% of households of Tobago	2021	85% in Trinidad and less than 10% in Tobago
Lisa Communications	85%	2025	75% in Trinidad and 35% in Tobago
Novo Communications	85%	2025	40% in Trinidad and 0% in Tobago
PBS Technologies	n.d.	n.d.	85% in Trinidad and 60% in Tobago
Prism Services	n.d.	n.d.	Virtual PBX service based on the coverage of other national PDFTN concessionaires
RVR International	85%	2019	40% in Trinidad and 0% in Tobago
TSTT	90% geographical coverage	n.d.	90% of Trinidad and expecting to reach 95% of Tobago ⁶³

Source: TATT 2023

Note: Target coverage, as defined in concession documents (Schedule D), requires that the concessionaire achieve the percentage required in each of the islands of Trinidad and Tobago.

It was observed that operators are also expanding their network coverage even further. For example, TSTT recently announced an investment plan of TT\$120 million to accelerate the deployment of fibre infrastructure throughout the country, which will cover 95% of Tobago. This

⁶³ <https://newsday.co.tt/2023/01/31/tsst-promises-high-speed-broadband-in-95-of-tobago/>

suggests that sub-national markets are not feasible from a practical point of view, as the boundaries need to be stable over time.

Based on the information available on the operators' websites and their qualitative submissions, there is no evidence of fixed service offerings varying by geographic location in terms of price (i.e., whether an end user pays a different price for the same domestic fixed telephony service in one geographic location within Trinidad and Tobago compared to another location) or quality (i.e., whether service quality offered varies systematically from one geographic location to another), at least within a given fixed network technology.

The Authority recognises that TSTT's charges differentiated PAYG fixed line rates based on three different destination codes⁶⁴. However, the Authority has not seen any evidence that the demand for retail fixed telephony and/or fixed broadband services varies significantly at a sub-national level. This is despite the fact that demand is inherently local in nature, as end users are unlikely to move to another location in reaction to a SSNIP in their fixed telephony and/or fixed broadband services.

Lastly, the Authority may consider whether the definition of sub-national markets is effective and convenient. A national market definition reduces uncertainty and allows an easier overview of fixed services in Trinidad and Tobago. Service providers already consider the market to be national, as most of them hold national concessions.

3.5.1. Conclusions

Based on the assessment set out above, the Authority is of the view that the three separate markets for fixed voice, fixed broadband, and multi-play bundles should be defined at the national level. This includes both residential and business offerings.

⁶⁴ Anytime rated for fixed line calls – fixed line rates

4. Assessment of the Need to Extend the Market Beyond Fixed Services

Section 3 presented the Authority's determination of which domestic retail fixed services should form part of the relevant markets. The Authority concludes that it is reasonable to define three separate markets: standalone fixed voice services (including fixed line rental and domestic fixed call services), standalone fixed broadband services, and multi-play bundles.

The purpose of this section is to assess whether any of these markets also include other (non-fixed) telecommunications services, namely, mobile services (considering both mobile voice and mobile data services), and OTT voice, audio-visual and messaging services. In doing so, the Authority considers the following:

1. Whether mobile voice services are in the same product market as fixed voice services (subsection 4.1)
2. Whether mobile data services are in the same product market as fixed broadband services (subsection 4.2)
3. Whether OTT voice, audio-visual and messaging services are in the same product market as fixed voice services (subsection 4.3)

As was done in section 3, in examining these questions, the Authority assesses demand-side and supply-side factors in the following subsections (4.1 to 4.3).

4.1. Are Mobile Voice Services in the Same Product Market as Fixed Voice Services?

In the Fixed Market Definition 2009, the Authority considered that there was not enough evidence available to suggest that fixed voice and mobile voice services should be in the same market. In the following sections, the Authority reassesses this decision based on the latest available information. In conducting this analysis, the Authority is assessing whether mobile services could be considered an effective substitute for fixed voice services (regardless of whether these services are provided on a standalone basis or as part of a multi-play bundle) and not the other way around.

4.1.1. Demand-Side Substitution

The Authority recognises that domestic fixed voice services may, to some extent, be demand-side substitutes for mobile access and voice services. However, there are also differences between these services that limit this substitutability. This is because end users in Trinidad and Tobago value some distinct product characteristics that fixed voice services offer compared to mobile voice services, that is, service reliability and availability. In addition, it is expected that a sufficient number of customers purchasing fixed voice services would not switch to mobile voice services following a SSNIP in the fixed voice plans, given the large price differentials between these services.

4.1.1.1. Product Characteristics

Both domestic fixed and mobile voice services enable end users to make and receive calls to other end users using fixed and mobile devices. However, there are non-trivial differences between these services, both in terms of price and non-price characteristics and how the services are delivered to end users, that limit this substitutability. In particular, end users are likely to use fixed and mobile voice services for different purposes.

Domestic mobile voice services are not fixed to a determined geographic location⁶⁵, and are specific to the end user, whilst domestic fixed services are tied to a location, typically in the home or business, and are often consumed by more than one user within a specific household⁶⁶. Therefore, demand for mobile call services tends to be at the level of the individual end user, while demand for fixed call services depends on household size and composition.

Moreover, according to the TATT-KCL Fixed Customer Survey, end users in Trinidad and Tobago associate a higher level of service availability and reliability (i.e., the ability to access landline call services more reliably than mobile call services where needed) of domestic fixed voice services compared to domestic mobile voice services. Mobile voice services might provide, on average, a lower quality of service than fixed calls due to dropped calls or other disruptions related to limited coverage in certain areas.

⁶⁵ Mobile end users' ability to make and receive calls depends on the extent of mobile network coverage. However, the Authority understands that complete geographic coverage is available in Trinidad and Tobago.

⁶⁶ This was also recognised in Digicel's qualitative submission where it stated that "the main demand side factor when choosing fixed over mobile is the fact it services a location and can be shared between multiple users".

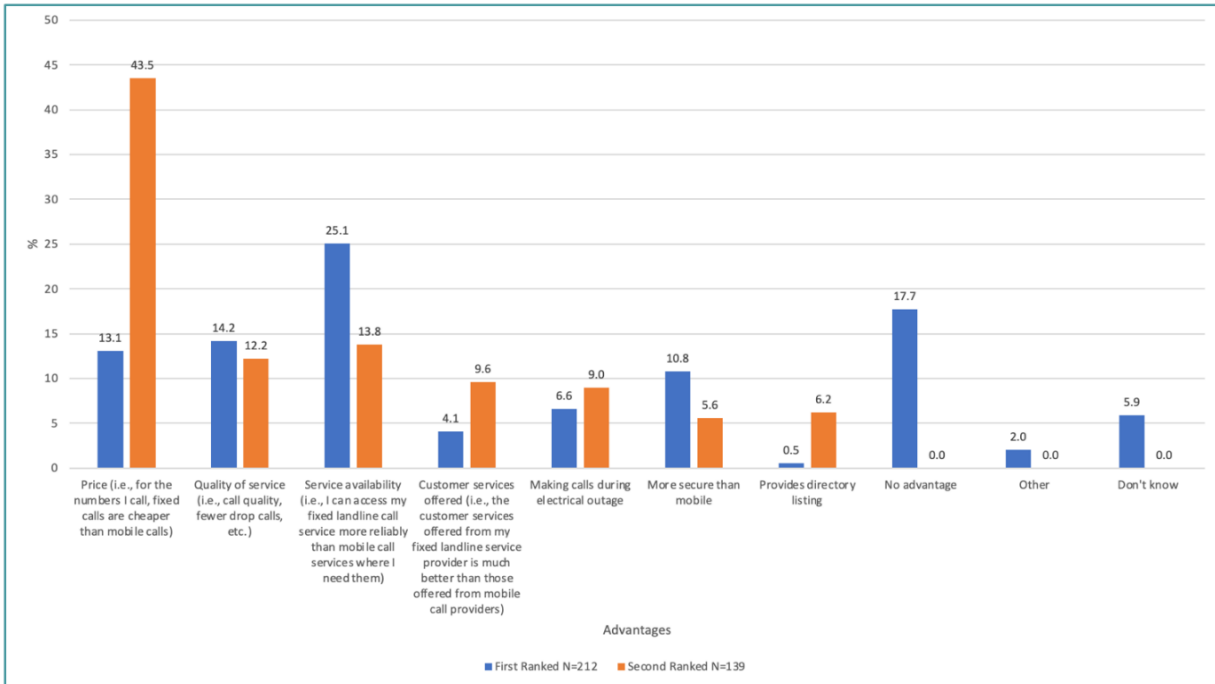


Figure 16 Distribution of main advantages of fixed voice services compared to mobile cellular services

Source: TATT-KCL Fixed Customer Survey

The prepaid and postpaid mobile offerings provided to residential customers, available on operators’ websites, are presented in Tables 12 and 13. Compared to fixed voice plans, there are few differences in product characteristics between mobile and fixed voice services in terms of the available minute allowances and user experience.

Fixed voice services are offered on a standalone basis (PAYG or single-play bundles of fixed rental and monthly fixed call allowances), and also as multi-play bundles which include other services such as fixed broadband and possibly subscription TV. However, as set out in subsection 3.2.1.2, 82% of fixed voice subscriptions are PAYG (see Figure 3).

Mobile services in Trinidad and Tobago are also available on a prepaid and postpaid basis but are mainly offered as part of bundles comprising mobile access and allowances for calls, messaging and data services.

With the exception of PAYG tariff plans, most fixed tariff voice plans offer unlimited fixed-to-fixed calls to any network and, in some cases, unlimited fixed-to-mobile calls (see Table 12). This also holds for mobile tariff plans. For example, all monthly mobile prepaid plans include call allowances (between 150 to 400 minutes to any network, depending on the plan) to any local

network. Some monthly mobile postpaid plans include call allowances (between 200 to 300 minutes to any network depending on the plan) but other plans also offer unlimited minutes.

Table 12 Prepaid mobile plans

Concessionaire	Product	Name	Data Included	SMS Included	Minutes Included	Minutes (Same Network)	Roaming Data	Monthly Price (TT\$)
Digicel	Prepaid	Prime Essential	10 GB (LTE)	Unlimited (local)	150 min (any local network and selected countries)	Unlimited		\$235.00
Digicel	Prepaid	Prime Value	25 GB (LTE)	Unlimited (local)	200 min (any local network and selected countries)	Unlimited		\$295.00
Digicel	Prepaid	Plus	50 GB (LTE)	Unlimited (local)	300 min (any local network and selected countries)	Unlimited		\$355.00
Digicel	Prepaid	Ultra	100 GB (LTE)	Unlimited (local)	400 min (any local network and selected countries)	Unlimited		\$415.00
TSTT	Prepaid	30 days	25 GB (4G network)	Unlimited	200 min (any local network and selected countries)	Unlimited	1 GB	269.00
TSTT	Prepaid	30 days	Unlimited (4G network)	Unlimited	400 min (any local network and selected countries)	Unlimited	3 GB	\$393.00

Source: Operators' websites, accessed on 2nd February 2023

Note: Only includes 30-day mobile plans

Table 13 Postpaid mobile plans

Concessionaire	Product	Name	Data Included	SMS Included	Minutes Included	Minutes (Same Network)	Roaming Data	Monthly Price (TT\$)
Digicel	Postpaid	Value	25 GB (LTE)	Unlimited	300 min (any local network and selected countries)	Unlimited	0 GB	\$295.00
Digicel	Postpaid	Ultra	400 GB (LTE)	Unlimited	Unlimited	Unlimited	3 GB	\$415.00
TSTT	Postpaid	STAR	35 GB (4G network)	Unlimited	200 min (any local network and selected countries)	Unlimited	1 GB	\$269.00
TSTT	Postpaid	Select	Unlimited (4G network)	Unlimited	Unlimited	Unlimited	3 GB	\$393.00
TSTT	Postpaid	Choice	Unlimited (4G network)	Unlimited	Unlimited	Unlimited	5 GB	\$449.00
TSTT	Postpaid	Elite	Unlimited (4G network)	Unlimited	Unlimited	Unlimited	10 GB	\$591.00

Source: Operators' websites, accessed on 2nd February 2023

Note: Only includes 30-day mobile plans

4.1.1.2. Uptake and Usage Trends

Both domestic fixed and mobile voice services are available throughout Trinidad and Tobago. Fixed voice uptake (penetration) by March 2021 was 72% of total households, and the mobile

penetration was 146%^{67,68}. Mobile voice subscriptions remain the highest of all retail telecommunications services domestically, recording a penetration rate of 148 per 100 inhabitants in 2023 (TATT QMR 2023⁶⁹). This suggests that a sizeable proportion of the population in Trinidad and Tobago is likely to have access to both domestic mobile and fixed voice services, which would allow them to consider switching between these services on a call-by-call basis. Taking into account forward-looking developments, the Authority considers that substitutability between fixed and mobile is likely to increase due to advances in technology including 4G penetration and 5G network buildout.

Opposing trends in the uptake of two services may be a sign of services being substitutes. However, this is not clearly reflected in the observed trends of uptake for fixed and mobile voice services, as shown in Figure 17.

According to the Annual Market Report 2021, between 2017 and 2021, the number of fixed voice subscriptions increased slightly, whereas total mobile voice subscriptions reached a peak in 2019 but returned to pre-COVID levels in 2021.

The average usage, traffic and revenues decreased for fixed and mobile voice services over the same period⁷⁰. However, the decline in average mobile traffic was less marked than for fixed calls.

Nonetheless, there does not appear to be sufficient evidence available on uptake rates and usage trends to support a conclusion on whether there is demand-side substitution between mobile and fixed voice services in Trinidad and Tobago.

⁶⁷ [TATT Annual Market Report 2022](#)

⁶⁸ The Authority notes that significantly higher penetration rates for mobile compared to fixed are not surprising and are, in fact, typical. This is largely a result of (1) there rarely being a reason to have multiple fixed lines in one residential premise; (2) many people having more than one mobile device (for example, separate work and personal phones) and (3) the uptake of device-based mobile phones, for example, for telemetry. In addition, some households will not have access to a fixed line but would still be covered by mobile services.

⁶⁹ TATT Third Quarter Market Report 2023

⁷⁰ [TATT Annual Market Report 2022](#)

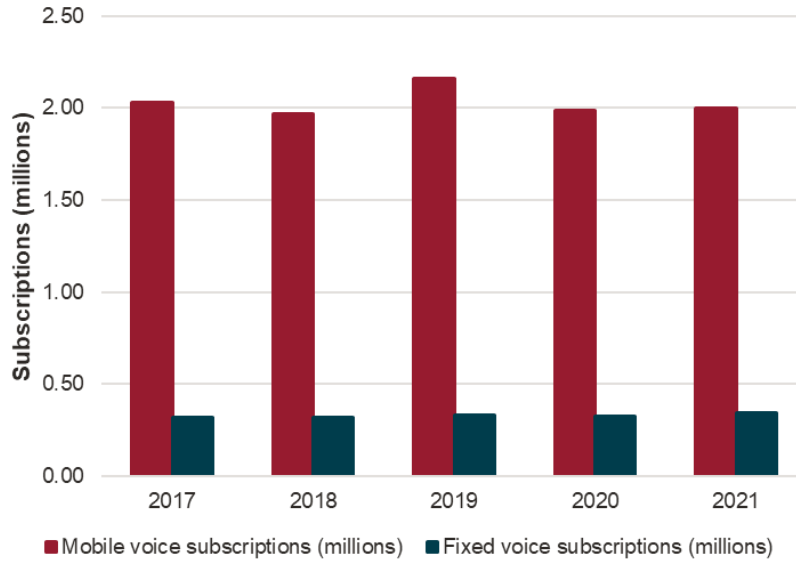


Figure 17 Mobile and fixed voice subscriptions, 2017–2021

Source: TATT Annual Market Report 2021

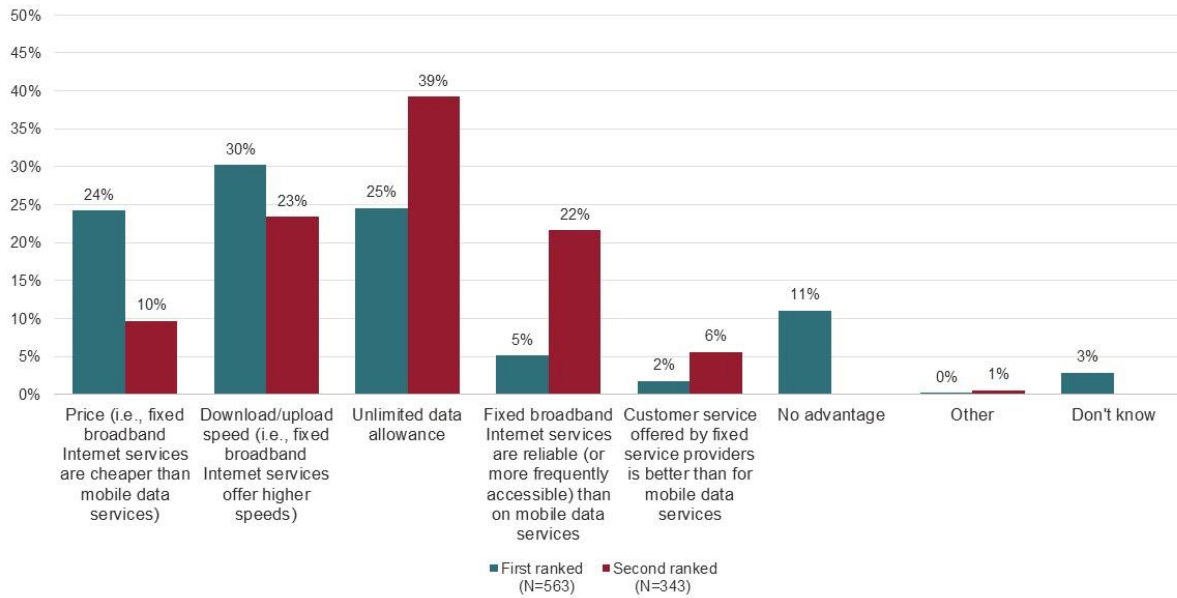


Figure 18 Main advantages of fixed broadband compared to MiFi and mobile smartphone data services

Source: TATT-KCL Fixed Customer Survey

As mentioned in subsection 4.1.1.1, most fixed voice plans offer unlimited fixed-to-fixed calls to any network and, in some cases, unlimited fixed-to-mobile calls. The share of fixed-to-fixed calls declined in the five years under review but still accounts for 55% of total domestic traffic. Conversely, the share of fixed-to-mobile calls increased considerably from 26% to 45% of total domestic traffic.

There is also an increasing bundling trend for residential fixed voice and fixed broadband customers (see Figure 7), which is likely to limit the substitution between fixed voice and mobile voice services for those customers going forward. In particular, triple-play bundles on fixed networks allow customers to access fixed line rental, fixed calls, unlimited broadband data and subscription TV service within a single package. This is currently not possible for mobile services, which do not offer the same Internet access or range of subscription TV services. However, the Authority recognises that the take-up of multi-play offers is still low in Trinidad and Tobago. Therefore, there is not enough evidence to conclude that this bundling trend is currently limiting the substitutability between fixed voice and mobile voice services.

4.1.1.3. Relative Prices

In order to ensure that prices are compared on a like-for-like basis, it is important to distinguish between prepaid and postpaid mobile plans. For both fixed voice and mobile voice users, the marginal cost of making a call might be zero as long as it lies within the customer's allowance. This could limit the substitution between fixed and mobile calls.

As shown in Table 14, fixed voice plans are a lower cost option than mobile prepaid and postpaid plans, for meeting the average monthly demand of a fixed telephony end user in Trinidad and Tobago⁷¹. An average fixed voice customer would incur at least \$269.00 and \$295.00 to meet their monthly call demand using either a prepaid or postpaid mobile plan, respectively. In contrast, fixed voice plans that cover this demand are offered at prices as low as \$99.00, at least 60% less expensive than mobile prepaid plans.

Other fixed voice plans with unlimited call allowances are offered at TT\$149.00 or TT\$197.00 – still lower than prepaid mobile plans. In fact, the cheapest mobile prepaid plan, which is still offered at a higher price than the most expensive fixed voice plan, includes call allowances that barely cover the average consumption of a fixed voice end user in Trinidad and Tobago. Therefore, end users with higher call demands would have limited incentives to switch to mobile prepaid plans following a SSNIP in fixed voice plans.

⁷¹ Based on concessionaires' data submissions, the average consumption of a fixed voice user subscribed to a plan is 143 minutes.

In the case of end users with a consumption of fixed voice services below the average demand, there are still fixed voice offers they can purchase that are significantly cheaper than the prepaid monthly mobile plans (e.g., TSTT’s PAYG-only rental offer at \$35.00, and Flow’s “Voice 100” at \$25.00). Moreover, these fixed voice plans are still cheaper than prepaid daily mobile plans offered by TSTT (\$28.00) and Digicel (\$30.00).

Mobile prepaid and postpaid plans including unlimited data, SMS and local minutes are also relatively more expensive than residential fixed voice offerings with unlimited fixed-to-fixed and fixed-to-mobile calls. For example, TSTT’s double-play bundle, which includes fixed voice and fixed broadband, is cheaper than Digicel’s postpaid and prepaid mobile offers. These results suggest that it is also unlikely that a fixed voice end user would switch to a mobile plan following a SSNIP in fixed voice services.

Table 14 Comparison of fixed and mobile voice plan prices

Concessionaire	Product	Name	Minutes Included	Minutes (Same Network)	Monthly Price (TT\$)
Digicel	Standalone fixed voice	Home & Away 500	Unlimited	500 min (any local network and selected countries)	\$149.00
Digicel	Standalone fixed voice	Home & Away Unlimited	Unlimited	Unlimited	\$149.00
Digicel	Prepaid	30 days Prime Essential	Unlimited	200 min (any local network and selected countries)	\$235.00
Digicel	Prepaid	30 days Prime Value	Unlimited	200 min (any local network and selected countries)	\$295.00
Digicel	Prepaid	30 days Plus	Unlimited	300 min (any local network and selected countries)	\$355.00
Digicel	Prepaid	30 days Ultra	Unlimited	400 min (any local network and selected countries)	\$415.00

Concessionaire	Product	Name	Minutes Included	Minutes (Same Network)	Monthly Price (TT\$)
Digicel	Postpaid	Value	Unlimited	300 min (any local network and selected countries)	\$295.00
Digicel	Postpaid	Ultra	Unlimited	Unlimited	\$415.00
TSTT	Standalone fixed voice	bmobile Residential Voice Package 2	Unlimited	Unlimited fixed-to-fixed local	\$100.00
TSTT	Standalone fixed voice	bmobile Residential Voice Package 2	Unlimited	Unlimited local	\$197.00
TSTT	2P bundle	Double Connect Wireless 20 MBPS	Unlimited	Unlimited fixed-to-fixed any network	\$280.00
TSTT	Prepaid	30 days	Unlimited	200 min (any local network and selected countries)	\$269.00
TSTT	Prepaid	30 days	Unlimited	400 min (any local network and selected countries)	\$393.00
TSTT	Postpaid	STAR	Unlimited	200 min (any local network and selected countries)	\$269.00
TSTT	Postpaid	Select	Unlimited	Unlimited	\$393.00
TSTT	Postpaid	Choice	Unlimited	Unlimited	\$449.00
TSTT	Postpaid	Elite	Unlimited	Unlimited	\$591.00

Source: Operators' websites, accessed on 2nd February 2023

Note: Only includes 30-day mobile plans

The Authority has also considered differences in the per minute prices of PAYG offers, which apply when end users pay rental line charges and consume fixed voice minutes at a per minute

rate, or when they exceed their monthly call allowance. This is to assess whether there may be demand-side substitutions between call services on an individual/marginal call basis. Fixed domestic minute rates range from \$0.28 to \$0.45 per minute for fixed-to-fixed calls, and \$0.75 to \$0.90 for fixed-to-mobile calls. As shown in Table 15, per minute rates for mobile calls are considerably more expensive.

Table 15 Residential PAYG per minute charges (TT\$, VAT inclusive) for fixed and mobile voice calls

Type of Call	Service	TSTT	Digicel
Fixed-to-fixed on-net calls	Fixed voice	\$0.28	“Free”
Fixed-to-fixed off-net calls	Fixed voice	\$0.45	\$0.15
Fixed-to-mobile calls	Fixed voice	\$0.90	\$0.75
Mobile-to-mobile or mobile-to-fixed on-net calls	Mobile	\$1.58	\$1.51
Mobile-to-mobile or mobile-to-fixed off-net calls	Mobile	\$1.58	\$1.51

Source: Operators’ websites, accessed 17th February 2023, and TATT’s Fixed Voice Prices⁷²

The large price differentials observed between fixed voice and mobile voice plans accords with the evidence from the TATT-KCL Fixed Customer Survey. As shown in Figure 16, one of the main advantages of fixed voice services recognised by survey respondents is the lower prices offered for these services compared to mobile voice services (e.g., “for the number I call, fixed calls are cheaper than mobile calls”). Based on the relative prices shown above, it was observed that the average fixed voice end user would be able to meet his/her monthly demand for fixed calls at a lower cost when compared to a prepaid and postpaid mobile plan.

4.1.1.4. Switching Behaviour

Any evidence of end users switching or indicating a willingness to switch is useful in any assessment of substitutability. In determining whether fixed voice and mobile voice services are part of the same product market, it is important to assess if fixed voice customers would switch, in sufficient numbers, following a SSNIP in the price of fixed voice services. There is evidence that

⁷² Fixed Voice (Residential Only) Prices for Concessionaires in Trinidad and Tobago as of 15th December 2022

customers currently do not consider fixed voice and mobile voice services as complete or perfect demand-side substitutes.

As mentioned in section 3.1.1 (see Figure 4), most respondents of the TATT-KCL Fixed Customer Survey using fixed landline and call-only services stated that they value using this service to receive and make calls. Moreover, end users in Trinidad and Tobago associate a higher level of service availability, accessibility and reliability with domestic fixed voice services compared to domestic mobile voice services, as they can “reach people via the fixed landline” (see Figure 16).

Also, as indicated in subsection 3.3.1 (see Figures 10 and 12), between 73% and 78% of survey respondents who subscribed to fixed landline and call-only services (i.e., standalone fixed voice services) would not completely switch to mobile voice services following a SSNIP, but would switch to mobile on a call-by-call basis⁷³. This result is consistent with the TATT-KCL Fixed Customer Survey (Table 1) which shows that, in the event of a SSNIP of 5% in the price of customers’ fixed landline service, 20% of customers would stop using the service and 15% would switch to mobile voice service (the largest uptake of any other alternative service) on a call basis. This suggests that most consumers would not give up their fixed voice line subscriptions entirely but, rather, would retain their fixed line subscription even with an increase in price. However, consumers would reduce their usage of fixed line minutes where the price of the service increased by a SSNIP, which suggests that the use of fixed line service is price elastic and persons would switch to using mobile voice minutes, on a call-by-call basis. This was observed despite the price differentials found in subsection 4.1.1.3, as fixed voice plans present a lower cost option than mobile prepaid and postpaid plans for meeting the average monthly demand of a fixed telephony end user in Trinidad and Tobago.

The Authority recognises that survey respondents with higher levels of expenditure have on average, a greater willingness to substitute fixed voice with mobile voice services. However, this group only accounts for less than 7% of the total number of respondents. On aggregate, respondents’ willingness to substitute fixed voice calls with mobile voice calls in the event of a SSNIP measured 300%⁷⁴ (that is, a cross-elasticity demand of value 3).

Consideration is also given to increasing substitution due to technological developments in product characteristics; widespread uptake and usage of mobile services (in particular, fixed-to-mobile calls and mobile voice calls); relative and constant fixed voice tariffs; and evidence of fixed voice customers switching including price and cross elasticity of demand.

⁷³ “Call-by-call basis” measures usage of the service.

⁷⁴ Cross elasticity of demand (XED) was calculated as the ratio of the percentage change in demand for mobile service (15%) and the percentage change in price of fixed voice service (SSNIP of 5%).
Where $XED = \% \Delta Qd / \% \Delta p = 15/5 = 3$ or percentage change in quantity of demand for mobile (i.e. $\% \Delta Qd$) of 300%

The Authority, therefore, preliminarily concludes that it is unlikely that a SSNIP in fixed access and call services would be profitable due to significant demand-side substitution to mobile voice services. Therefore, domestic mobile voice services can form part of the same product market as domestic fixed voice services, as there is significant demand-side substitutability from fixed-to-mobile voice services, as Figure 19 shows.

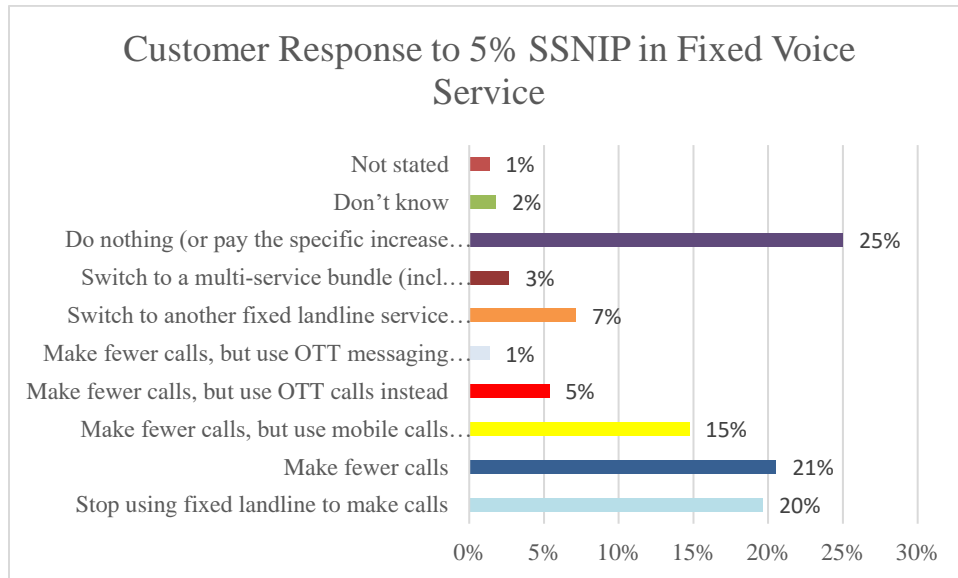


Figure 19 Customer response to a 5% SSNIP in fixed voice service

Figure 19 depicts fixed voice service customers' response to a SSNIP and indicates that at least 62% of respondents would reduce the use of their fixed line service; 20% would stop using the service; and 15% would reduce using fixed line and switch to mobile calls (the largest uptake of any alternate service), in the event of a 5% increase in the price of fixed voice services. Of customers switching to non-fixed voice services, persons switching to mobile calls accounted for 69% (the largest percentage of respondents switching from fixed voice services). This indicates that the power to raise prices, held by authorised providers of fixed voice services, in Trinidad and Tobago would be considerably constrained by customers switching to mobile voice services. The competitive constraint experienced by traditional fixed voice service providers is also evidenced by the falling revenue per subscription seen in the fixed voice service market, as Figure 20 shows.

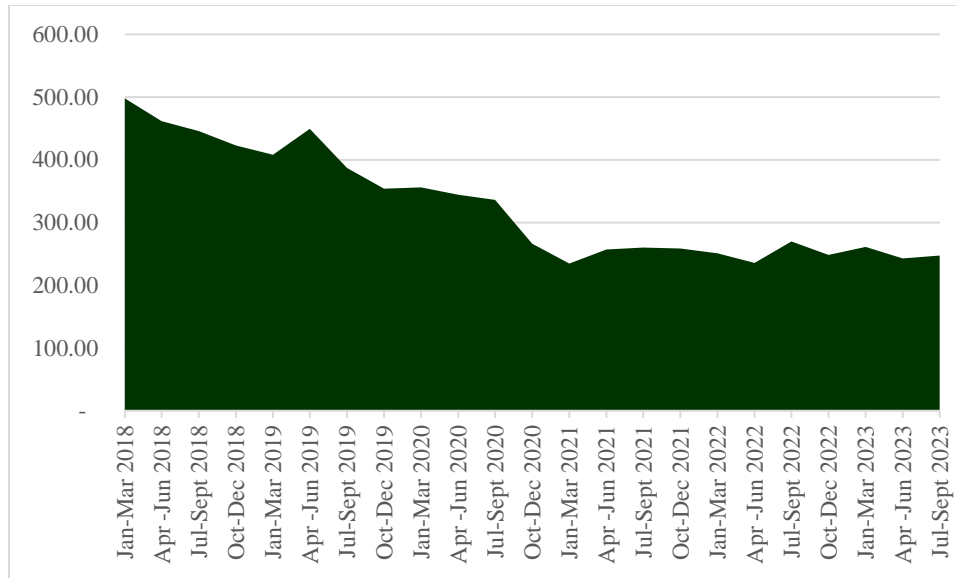


Figure 20 ARPU – fixed voice services

Source: TATT Quarterly Market Data

4.1.2. Supply-Side Substitution

There is no supply-side substitution between fixed and mobile voice services in Trinidad and Tobago. A hypothetical operator with only a mobile voice service concession and mobile network would not be able to easily and at low-cost switch to offering fixed voice services. This is due to the fact that both mobile and fixed voice services use different network technologies and infrastructures, and the fixed investment cost and significant amount of time required to deploy a fixed network are considerable. Most of the costs would be sunk (i.e., they cannot be recovered if the entrant later decides to leave the market) and this creates further barriers to entry. Additionally, there is currently no demand for local loop unbundling access to existing fixed networks in Trinidad and Tobago, which could alleviate the need for providers to deploy their own networks.

Given the time, investment, and licensing requirements involved, the Authority considers it highly unlikely that a concessionaire not already offering fixed voice services⁷⁵ would be willing and able to deploy a fixed network following a SSNIP in domestic fixed voice services.

⁷⁵ Two concessionaires, operator X and operator Y, provide both fixed and mobile retail services in Trinidad and Tobago. However, the substitutability test concerns the ability of a provider that currently does not already offer the focal product (in this case, retail domestic fixed voice services), nor own any inputs which would only be required to offer the focal products, such as a fixed service licence or fixed network infrastructure, to start offering that product in the case of a 5%–10% increase in the price of the focal product.

4.1.3. Conclusions

Based on the assessment above, the Authority concludes that domestic fixed voice services (i.e., fixed line access and fixed voice bundled services) partially form part of the same product market as domestic mobile voice services. Although domestic fixed services have no supply-side substitutability, as these services are provided under distinct licences and are delivered via different network technologies, there is significant demand-side substitution. There is sizeable access for customers wishing to switch between fixed and mobile voice services on a call-by-call basis, based on product characteristics and mobile service penetration rates domestically. Demand-side substitutability from fixed-to-mobile services may be reflected by current price differentials, including constantly low fixed voice prices and customers' preferences, which would hamper an HM's profitability from increasing its price by a SSNIP in fixed voice services.

Moreover, the results from the TATT-KCL Fixed Customer Survey show that, in the event of a SSNIP of 5% in the price of customers' fixed landline service, 20% of customers would stop using the service; over 60% would reduce the use of fixed voice service; and 15% would switch to mobile voice services on a call basis (the largest uptake of any alternative service). Thus, although the majority of survey respondents who were subscribed to fixed landline and call-only services would not have switched to mobile voice services completely following a SSNIP, a significant percentage would have switched to mobile, on a call-by-call basis. This suggests that mobile services are sufficiently substitutable with domestic fixed voice services.

4.2. Are Mobile Data Services in the Same Product Market as Fixed Broadband Services?

End users can access the Internet through fixed broadband and mobile data services. Although there are two mobile concessionaires in Trinidad and Tobago, there are several major fixed broadband providers, and a number of smaller players (as mentioned in subsection 3.1). The concessionaires' websites show that mobile data and fixed broadband services are currently available on a standalone basis as well as bundled with other products. Mobile bundles generally include mobile access, calls, SMS, and data services, whereas fixed multi-play bundles include fixed voice, fixed broadband and, in some cases, subscription TV. In this subsection, the Authority is assessing whether mobile data services could be considered an effective substitute for fixed broadband services, regardless of whether these services are provided on a standalone basis or as part of a multi-play bundle. This is because it is expected that the results will be the same in either case.

4.2.1. Demand-Side Substitution

In theory, an Internet connection at a given speed and provided over a mobile data connection or fixed broadband should offer the same functionality to an end user. However, there are differences between these services that are likely to restrict substitutability between mobile data services and fixed broadband services.

4.2.1.1. Product Characteristics

There are significant differences in the product characteristics of fixed broadband and mobile data services, in terms of the available download speeds, data cap limits, prices and user experience, that potentially limit the extent to which these services will be considered effective substitutes.

Access to fixed broadband services is restricted to within a short distance of the router (almost always indoors), while mobile data services allow end users to access the Internet regardless of their location, subject to network coverage. This increased mobility of mobile data services commonly comes at a financial cost (i.e., a “mobility premium” in relative prices, as discussed in subsection 4.2.1.3) and lower average speeds experienced (as the actual speed available on mobile data services depends, amongst other things, on the congestion of the cell site where the user is located).

Fixed broadband services are differentiated by download/upload speeds but have no usage allowances (i.e., they have unlimited data usage, subject to a fair user policy). Mobile data services, on the other hand, commonly have a usage allowance (which, if exceeded, would require an end user to pay extra or experience slower speeds), but the download/upload speed is commonly not advertised. This is related to the underlying differences in the network technologies over which the services are delivered, with network capacity being a key concern for mobile network concessionaires and download/upload speeds not being guaranteed⁷⁶.

Fixed network technologies allow for the provision of higher (download/upload) speeds compared to mobile data services. For example, as shown in Table 16, Amplia offered the fastest advertised download speed, of up to 1 Gbps, which was considerably higher than the 100 Mbps maximum speed marketed for mobile data services (i.e., LTE mobile data speeds which could vary depending on the customer’s location and data consumption). Similarly, there was a significant difference in actual observed download speeds, with average mobile download speeds of around 28 Mbps compared to fixed download speeds of around 88 Mbps⁷⁷.

⁷⁶ The speeds mobile end users experience depend, to a large extent, on the level of congestion on the relevant mobile cell site, which is likely to vary with the number of end users also using that site at that point in time.

⁷⁷ <https://www.speedtest.net/global-index/trinidad-and-tobago> (accessed February 2023)

In the last five years, demand for higher broadband speeds increased considerably. As depicted in Figure 21, broadband subscriptions that included broadband speeds equal to or above 100 Mbit/s increased considerably from 10% in 2017 to 60% in 2022. This could further limit substitution between fixed broadband and mobile data services, as it is a clear sign that end users are demanding speeds that current mobile plans cannot achieve.

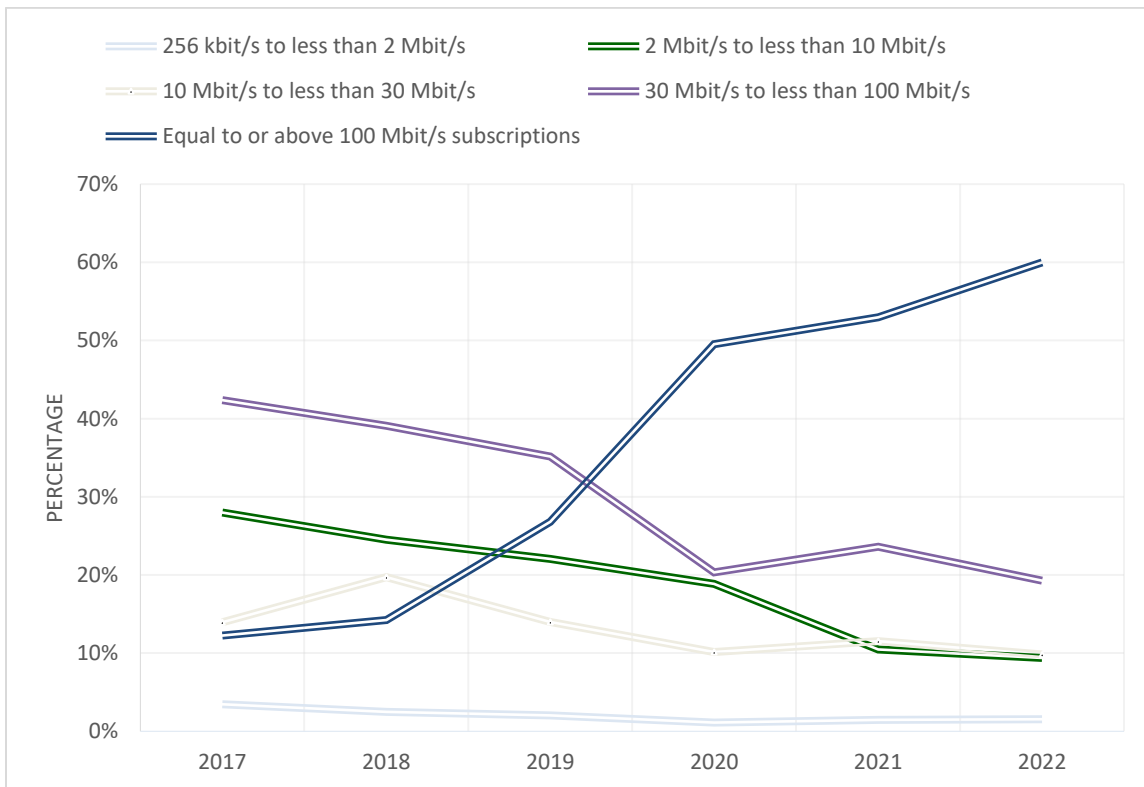


Figure 21 Distribution of fixed broadband subscribers, by speed tier

Source: TATT Annual Market Report 2022

According to the TATT-KCL Fixed Customer Survey, the download/upload speeds and the unlimited data allowances, presented in Figure 21, offered by domestic fixed broadband services are both relevant for end users in Trinidad and Tobago, compared to MiFi and mobile smartphones plans, as seen in Figure 22.

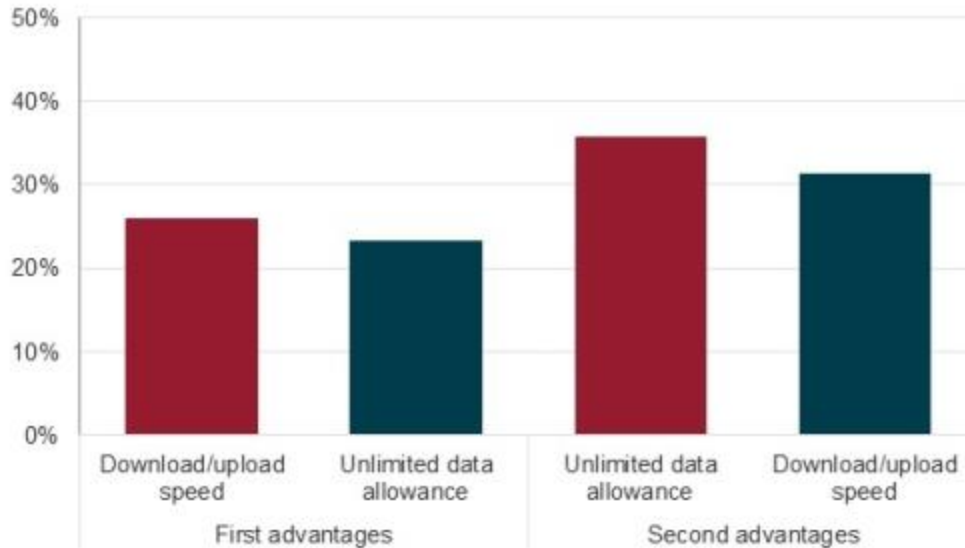


Figure 22 Distribution of advantages of fixed broadband services compared to MiFi and mobile smartphone data services (first and second ranked)

Source: TATT-KCL Fixed Customer Survey

4.2.1.2. Uptake and Usage Trends

Fixed broadband uptake (penetration) by March 2021 was 88% of total households and the mobile Internet penetration equivalent was 60% of the total population^{78,79}. End users enjoyed nationwide broadband coverage from mobile networks and, in many areas, from fixed networks (as indicated in subsection 3.4). This suggests that the majority of the population of Trinidad and Tobago is likely to access and use fixed broadband and mobile services.

According to the Annual Market Report 2021, between 2017 and 2021, the number of fixed broadband subscriptions increased gradually, whereas mobile subscriptions spiked in 2019 to return to pre-COVID-19 levels in 2021 (see Figure 23). This suggests that there is no sufficient evidence on uptake rates to support demand-side substitution between fixed broadband and mobile services.

⁷⁸ TATT (2022) Annual Market Report 2021

⁷⁹ The Authority advises that significantly higher penetration rates for mobile compared to fixed are not surprising and are, in fact, typical. This is largely as a result of (1) there rarely being a reason to have multiple fixed lines in one residential premise, and (2) many people having more than one mobile device (for example, separate work and personal phones). In addition, some households not having access to a fixed line would still be covered by mobile services.

Furthermore, according to the TATT-KCL Fixed Customer Survey, 70% of respondents were subscribed to fixed broadband-only services, and 62% to multi-play bundles with a fixed broadband service. These respondents stated that this was their only Internet connection, whilst 30% indicated that they combined it with their MiFi or mobile smartphone connection. This indicates that there was a group of customers that valued both services as complements rather than substitutes.

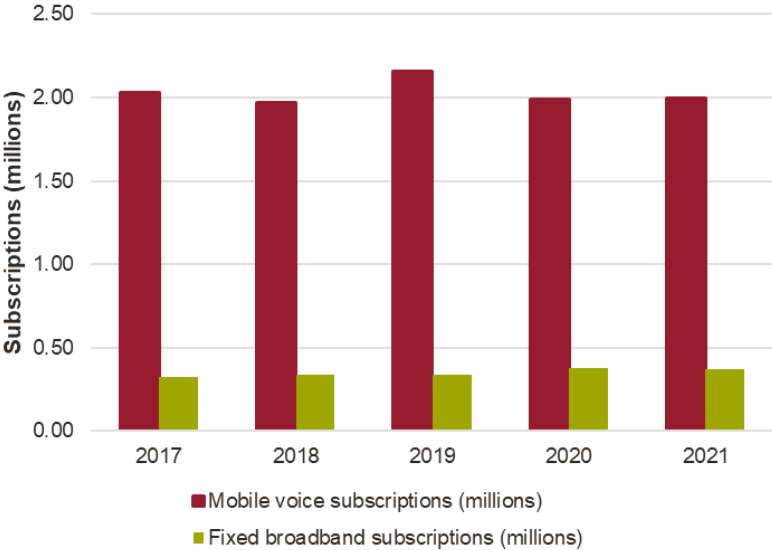


Figure 23 Mobile and fixed broadband subscriptions, 2017–2021

Source: TATT Annual Market Reports 2017–2021

4.2.1.3. Relative Prices

On average, the monthly data traffic per fixed broadband connection in Trinidad and Tobago is 286 GB⁸⁰. If a fixed broadband user with this average monthly data consumption profile were to buy a mobile plan to satisfy his/her demand, that would have cost at least TT\$393.00/month. By comparison, the cheapest fixed broadband plan with unlimited data allowance and speeds equal to and above 100 Mbps (i.e., Amplia’s “Essential Internet 150” in Table 16) was priced at TT\$260.00/month. This suggests that an average fixed broadband customer would not typically have substituted a fixed broadband connection for a mobile one to meet their total connectivity needs.

⁸⁰ According to the [ITU Digital Development Dashboard](#), in 2021, the average monthly fixed broadband traffic per fixed broadband connection was 286 GB.

Comparing plans with similar speeds (i.e., 100 Mbps), fixed broadband plans offer slightly cheaper means to accessing the Internet than mobile data services. For example, the cheapest available fixed broadband package to meet the 28 Mbps speed experienced on mobile data services is any of the 100 Mbps plans offered by Flow or Digicel at \$275 or \$285, respectively. This result compares to \$295 per month for Digicel’s “Prime Value” postpaid plan⁸¹.

There are also non-trivial price differentials between comparable fixed broadband plans and dongle/MiFi⁸² plans. For example, Digicel’s “Hotspot 150” MiFi postpaid plan was 51% more expensive than Amplia’s “Essential Internet 150” standalone broadband which also includes the same connection speeds. The cheapest MiFi is less expensive than the cheapest standalone broadband plan but the former only includes a monthly data allowance of 10 GB – which is significantly lower than the average monthly fixed broadband consumption per connection of 286.2 GB – while the latter includes access to unlimited data (subject to any fair use policy).

Table 16 Comparison of fixed standalone and multi-play broadband bundles and prepaid/postpaid mobile offerings

Concessionaire	Product	Type of Product	Data	Download Speed	Minutes Included	Monthly Price (TT\$)
Amplia	Essential Internet 150	Standalone broadband	Unlimited	150 Mbps		\$260.00
Amplia	Ultra Internet 1 GIG	Standalone broadband	Unlimited	1GB		\$750.00
Digicel	Broadband Internet 100	Standalone broadband	Unlimited	100 Mbps		\$285.00
Digicel	Broadband Internet 500	Standalone broadband	Unlimited	500 Mbps		\$865.00
Digicel	Modern Fibre 100 Mbps + add-on Home & Away	2P bundle	Unlimited	100 Mbps	Same as Home & Away	\$474.00

⁸¹ Lower-priced plans contain, at most, 3 GB of data per month and, at \$250 per month, do not cost significantly less than the plans containing an unlimited data allowance.

⁸² Data-only packages which allow end users to access the Internet via a MiFi modem. In Trinidad and Tobago, both Digicel and TSTT offer unlimited MiFi plans.

Concessionaire	Product	Type of Product	Data	Download Speed	Minutes Included	Monthly Price (TT\$)
Digicel	Modern Fibre 100 Mbps + add-on Home & Away Unlimited	2P bundle	Unlimited	100 Mbps	Same as Home & Away Unlimited	\$524.00
Digicel	Prime Value	Mobile postpaid	Unlimited	100 Mbps	Unlimited local + 300 anywhere minutes	\$295.00
Digicel	30-day 4G 30 GB	MiFi – Prepaid	10 GB	100 Mbps	-	\$163.00
Digicel	30-day 4G 10 GB	MiFi – Prepaid	30 GB	100 Mbps	-	\$296.00
Digicel	Hotspot 150 Plan	MiFi – Postpaid	150 GB	150 Mbps	-	\$394.00
Flow	Internet Standard	Standalone broadband	Unlimited	100 Mbps		\$275.00
Flow	Internet Premium	Standalone broadband	Unlimited	500 Mbps		\$675.00
Flow	Connected Starter	2P bundle	Unlimited	100 Mbps	100 minutes FtF on-net	\$285.00
TSTT	Unlimited 4G LTE Wireless Data	Standalone broadband	Unlimited	20 Mbps	-	\$168.00
TSTT	Select	Mobile postpaid	Unlimited		Unlimited	\$393.00
TSTT	Premium	MiFi	40 GB plus 250 MB roaming data	100 Mbps	-	\$280.00
TSTT	Select	MiFi	40 GB plus 250 MB roaming data	100 Mbps	-	\$393.00

Source: Operators' websites, accessed 17th February 2023

4.2.1.4. Switching Behaviour

There is evidence that customers currently do not consider mobile data and fixed broadband services as demand-side substitutes. In particular, it was observed that the majority of respondents⁸³ (depending on their monthly expenditure level) who subscribed to a fixed broadband-only service or a multi-play bundle indicated that they would cancel their current fixed broadband plan (i.e., forego access completely), or move to another (i.e., substitute on a partial basis), or do nothing (i.e., carry out no substitution) following a SSNIP in the price of the fixed broadband products (TATT-KCL Fixed Customer Survey). Only a small proportion of respondents (between 0% and 5%) stated that they would rely on MiFi or smartphone mobile data services (see Figure 11 for further details).

In summary, the available evidence suggests that fixed broadband and mobile data services may not be seen by end users as comparable in terms of prices (especially when taking into account the average monthly data usage of fixed broadband users). However, the differences in product characteristics – particularly the mobility of mobile data services – as well as the available switching evidence, strongly indicate that mobile data services are not considered to be demand-side substitutes for fixed broadband services at this time.

4.2.2. Supply-Side Substitution

As in the case of domestic fixed voice services discussed in subsection 4.1, the Authority preliminarily concludes that there is no supply-side substitution between retail fixed broadband and mobile data services in Trinidad and Tobago. Both services use different network technologies and require different service licences. Moreover, it is extremely costly and time intensive to deploy a fixed access network and currently there is no regulated access to existing fixed networks in Trinidad and Tobago, which could alleviate the need for providers to deploy their own networks.

Given the requisite time, investment and licences, the Authority considers it highly unlikely that, following a SSNIP in fixed broadband services, a mobile licensee would deploy a fixed network and start offering fixed broadband services.

⁸³ According to the TATT-KCL Fixed Customer Survey, between 89% and 96% of respondents used fixed broadband services, and between 80% and 97% of respondents used multi-play bundles.

4.2.3. Conclusions

Based on the assessment above, the Authority concludes that domestic retail mobile data services do not form part of the same product market as domestic retail fixed broadband services. For domestic retail fixed broadband services, there is no supply-side substitutability, as these services are provided under distinct licences and are delivered via different network technologies. There is also limited demand-side substitution, due to considerable differences in product features and end users' preferences.

4.3. Are OTT Services in the Same Product Market as Fixed Voice Services?

The widespread take-up of smartphones globally has facilitated the spread of OTT applications for communication purposes⁸⁴. OTT services provide messaging, voice, and video-call services over the Internet. OTT call service users require an Internet connection as well as a personal device (for example, a mobile phone, tablet, or laptop), and must install the OTT provider's software/application (app) in order to use those services. This applies to both the party making the call/message and the receiver of the call/message.

In conducting this analysis, the Authority has assessed whether OTT services could be considered an effective substitute for domestic fixed voice services^{85, 86}. These OTT services differ from the managed VoIP services offered by Amplia, Digicel and Flow, as the OTT provider does not offer the broadband connection required for the service, which needs to be purchased separately. Managed VoIP services allow for a user experience similar to using a traditional fixed landline (i.e., customers use a handset and there is no need to turn on the computer to make or receive calls) except that a pre-existing broadband connection is needed.

OTT services share some similarities with fixed voice services. However, whilst OTT voice services are commonly offered at a significantly lower price than fixed voice services, limited substitutability from the demand side and supply side indicates that they do not belong to the same relevant market.

⁸⁴ [Research and Markets \(2021\) Smartphones Market – Growth, Trends, COVID-19 Impact, and Forecasts \(2021–2026\)](#)

⁸⁵ In this analysis, the domestic fixed voice service is the focal product, which includes fixed line rental and fixed voice bundled offers, as defined in subsection 3.2.

⁸⁶ The focus here is on fixed voice services. However, the Authority notes that, according to the TATT-KCL Fixed Customer Survey, end users use fixed broadband services to make OTT calls (since an Internet connection is needed). This suggests that end users think of these services as complements rather than substitutes.

4.3.1. Demand-Side Substitution

4.3.1.1. Product Characteristics

The Authority acknowledges that OTT services have some similarities with domestic fixed voice services. OTT services allow users to make calls to and from both domestic and international destinations. However, this does not mean that these services are effective substitutes. As such, it is unlikely that demand-side substitution from fixed access and call services to OTT services would render a SSNIP in the former unprofitable.

OTTs offer users additional functionalities, including the ability to message and make video calls. However, most OTT customers are only able to receive calls from other users of the same OTT provider, due to the lack of a personal geographic number associated with the OTT platform. Furthermore, even where OTT users can receive calls originating from outside their OTT platform, these cannot be originated from other OTT apps, only from traditional fixed and mobile services (i.e., non-interoperability between OTT applications)⁸⁷.

Furthermore, while many common OTT apps (e.g., WhatsApp and FaceTime) only allow for intra-platform calls (i.e., a call can only be terminated on the same application in which it was initiated⁸⁸), certain OTT services allow calls to fixed and mobile numbers (e.g., Skype and Viber). This represents one of the main challenges to demand-side substitution between OTT and traditional fixed calls⁸⁹.

To use OTT services, a consumer needs access to an active Internet connection and a personal device. According to TATT's Annual Market Report 2022, 92% of households have a fixed Internet subscription. The TATT-KCL Fixed Customer Survey records that WhatsApp is the most popular application and TATT's 2021 Digital Inclusion Survey (DIS 2021) reports that 75% of the population use this application. These services no longer require the end user to open the OTT software to make a call resulting in a more convenient user experience with OTT services, thus improving customers' functional ability to switch between fixed telephony services and OTT services.

⁸⁷ Whilst some OTT services such as Microsoft Teams also allow users of traditional voice services to “dial in” to meetings arranged on the platform using traditional fixed (and mobile) voice services, these require meeting details to be arranged in advance and therefore users of traditional voice services who do not subscribe to the platform cannot simply contact users of the OTT services by placing a call. They must first subscribe to that service and add their contacts within the platform.

⁸⁸ This is also highlighted in the [Authority's consultative document on dominance in termination markets](#) (published in May 2018), (p.28, subsection 3.3.2.4).

⁸⁹ Whilst this does not constrain end users in making calls, it may influence their overall view on whether the OTT service is a substitute for fixed telephony services (as fixed users value both making and receiving calls).

The TATT-KCL Fixed Customer Survey indicates that 37.2% of respondents stated that the main advantage of fixed landline service compared to OTT call/messaging service is the service accessibility (i.e., to reach all people), followed by quality of service (i.e., more reliable). Furthermore, for a third of respondents, fixed landline service does not have any disadvantage compared to OTT call/messaging.

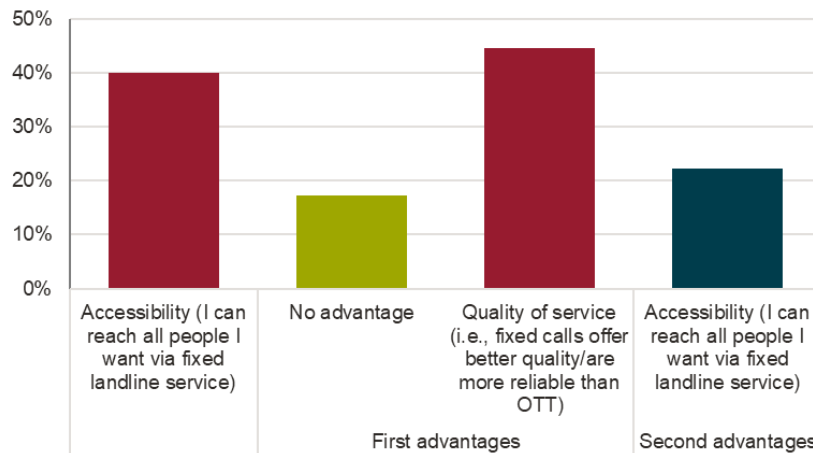


Figure 24 Advantages of fixed landline services compared to OTT services (first and second ranked)

Source: TATT-KCL Fixed Customer Survey

As OTT services are delivered over the open Internet, these services typically offer lower quality of service and provide very limited or no customer support. As indicated in Figure 24, 44.5% of TATT-KCL Fixed Customer Survey respondents stated that one of the main advantages of fixed landline services is the quality of the service, as fixed voice calls are more reliable than OTT calls.

4.3.1.2. Service Availability, Usage and Uptake

According to DIS 2021, a high proportion of the population of Trinidad and Tobago (83%) reported using OTT services, with the majority accessing them through fixed broadband connections at home (86%). The most common third-party applications used are WhatsApp (75%), followed by Facebook Messenger (43%), Zoom (26%) and Instagram (26%). Skype was only used by 2% of survey respondents. Most OTT consumers use the platforms to make intra-platform voice or video calls or send messages.

While fixed voice users could use OTT messaging, messaging services are not likely to be substitutes for fixed voice calls, as they do not offer immediate, interactive two-way conversations. Considering fixed voice services as part of a separate market than OTT messaging (and call) services is in line with international precedents⁹⁰.

The Authority notes that there is no evidence to suggest that end users are giving up fixed telephony services altogether. As mentioned in subsection 3.2.1 (see Figure 2), the total number of fixed voice subscriptions has continued to grow in recent years, at an annual rate of 0.19%.

The Authority recognises that there has been a reduction in average call volumes per user for traditional fixed voice services (as shown in Figure 5). However, the potential correlation to or impact of OTT call/messaging services is less clear or mixed. The TATT-KCL Fixed Customer Survey reveals that most fixed Internet users (62.9%) reported that they use the Internet for making VoIP calls, while amongst OTT users, the 60% majority of respondents indicated that the availability of these applications/services do not affect their use of fixed call or broadband services; the minority of respondents (40%) considered that the use of OTT services has impacted their use of fixed call services. Of those who altered their fixed service usage, 48.2% stated that they had acquired fixed broadband services in order to access OTTs. This suggests that the majority of end users think of these services as complements and as partial substitutes.

4.3.1.3. Relative Prices

Relative prices can limit demand-side substitutability between fixed voice and OTT services. In general, OTT applications are downloadable either free of charge or for a very low fixed fee (for example, WhatsApp previously cost US\$0.99 per year and is now free), in most cases, with no applicable charge per call or message sent or received. Instead, end users face an implicit charge for the data usage required to make calls or send messages. This means a consumer may be inclined to switch from a fixed voice service to an OTT service in the event of a SSNIP in domestic fixed voice services, if that consumer knows their contacts are on the same OTT platform⁹¹. Therefore, relative prices of OTT services can support demand-side substitutability between fixed voice and OTT services.

⁹⁰ For example, The Bahamas, Bermuda and countries in the GCC region

⁹¹ Low or non-existent OTT app fees, combined with free intra-platform calls, provide end users with the opportunity to download such apps and use them only for the types of calls where it is the most convenient or cost-effective solution. The potential price differential between OTT and domestic fixed voice services depends on the call scenario, with both services offering calls at zero marginal costs (i.e., intra-platform OTT calls over a Wi-Fi network, and as long as this call lies within the customer's allowance for fixed voice). This price differential also further depends on how much, if anything, the OTT end user has to pay for the data usage required to make the call. This will, in turn, depend on whether that end user can use the data within his or her monthly allowance or use Wi-Fi (in these cases, there is no extra cost), has to pay the out-of-bundle data charge, or is on a PAYG plan.

As mentioned in subsection 4.3.1.1, some OTT apps, such as Skype and Viber, allow calls to fixed and mobile numbers, which incur charges, depending on the length of the call. However, in general, these charges appear to vary significantly across different OTT services. For example, as Table 17 shows, calls to fixed or mobile numbers in Trinidad and Tobago via Skype attract a price (per minute) that is similar to the PAYG charges from concessionaires. However, calls made via Viber incur a unit price almost double that charged by concessionaires.

Table 17 Comparison of PAYG charges for fixed-to-fixed and fixed-to-mobile calls, and OTTs

Provider	Type of Call	Unit Price/Minute (TT\$)
Digicel	Fixed-to-fixed	\$0.15
Digicel	Fixed-to-mobile calls	\$0.75
Flow	Fixed-to-fixed	\$0.15
Flow	Fixed-to-mobile calls	\$0.59
Skype	Skype-to-landline	\$0.33
Skype	Skype-to-mobile	\$0.73
TSTT	Fixed-to-fixed	\$0.45
TSTT	Fixed-to-mobile calls	\$0.90
Viber	Viber Out landline	\$1.47
Viber	Viber Out mobile	\$2.78

Source: OTTs' and concessionaires' websites, accessed 15th February 2023

Note: The comparison focuses on prepaid PAYG and OTT call services, as both offer unit prices for calls to domestic mobiles and fixed lines.

4.3.1.4. Switching Behaviour

In assessing whether OTT services form part of the same market as domestic fixed voice, it is important to determine if customers would switch, in sufficient numbers, following a SSNIP in the price of the domestic fixed voice products, assuming prices are currently at competitive levels.

The TATT-KCL Fixed Customer Survey suggests that it is unlikely that end users would switch to OTT apps in the event of a SSNIP in domestic fixed voice services. As seen in Figure 25, only a small proportion of these end users (i.e., less than 10% of the relevant respondents) mentioned that they would make fewer calls but increase their consumption of OTT services. This suggests that the change in demand for OTT services due to an increase in the price of fixed voice services is not highly elastic, or that cross elasticity of demand between fixed voice and OTT services is not sufficiently strong at this time. This suggests limited substitutability between OTT services and fixed voice services. However, consumers would reduce their usage of fixed line minutes in response to the SSNIP, although they would not give up their fixed voice subscription, indicating that the use of fixed line service is price elastic, while the demand for fixed voice subscription is price inelastic.

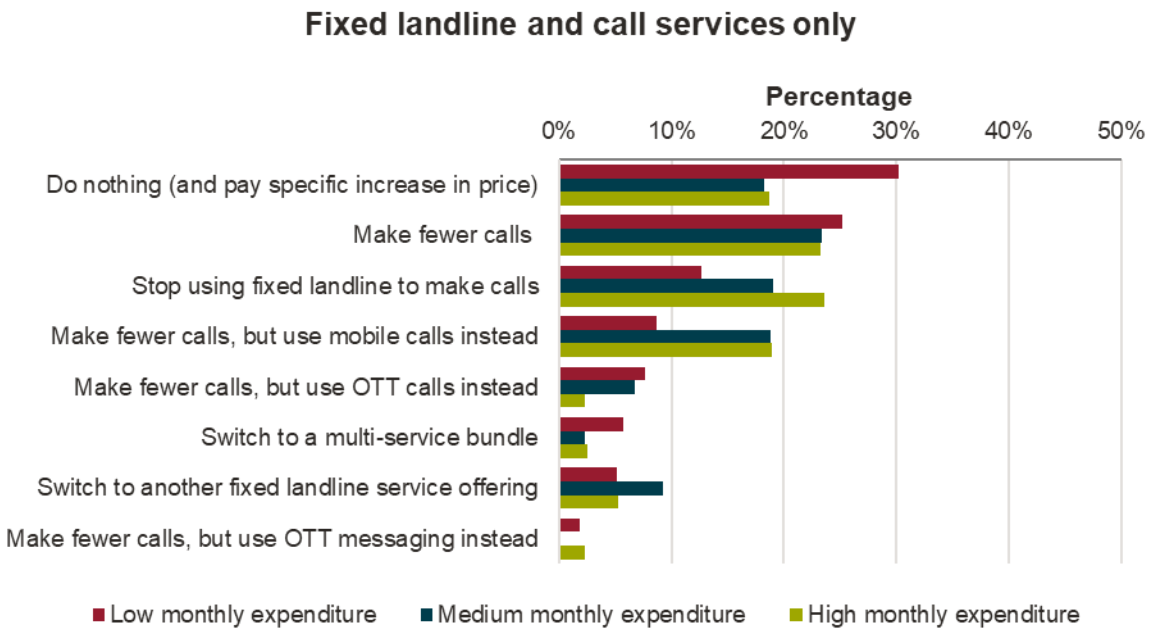


Figure 25 Distribution of actions that would be taken if fixed landline service price was increased

Source: TATT-KCL Fixed Customer Survey

Note: Monthly expenditure categories are low (\$100–\$199), medium (\$200–\$299) and high (\$400–\$599), which represent 61% of end users of only fixed landline and call services.

Furthermore, as illustrated in Figure 26, the majority (60%) of respondents using OTT applications also stated that the availability of these services had no effect on their usage of fixed voice services.

For the remaining 40%, who did report a change, only 28%⁹² mentioned making fewer fixed calls from their fixed landline. Therefore, the market power held by providers of fixed voice services may be only partially constrained by customers switching to OTT services on a call or usage basis.

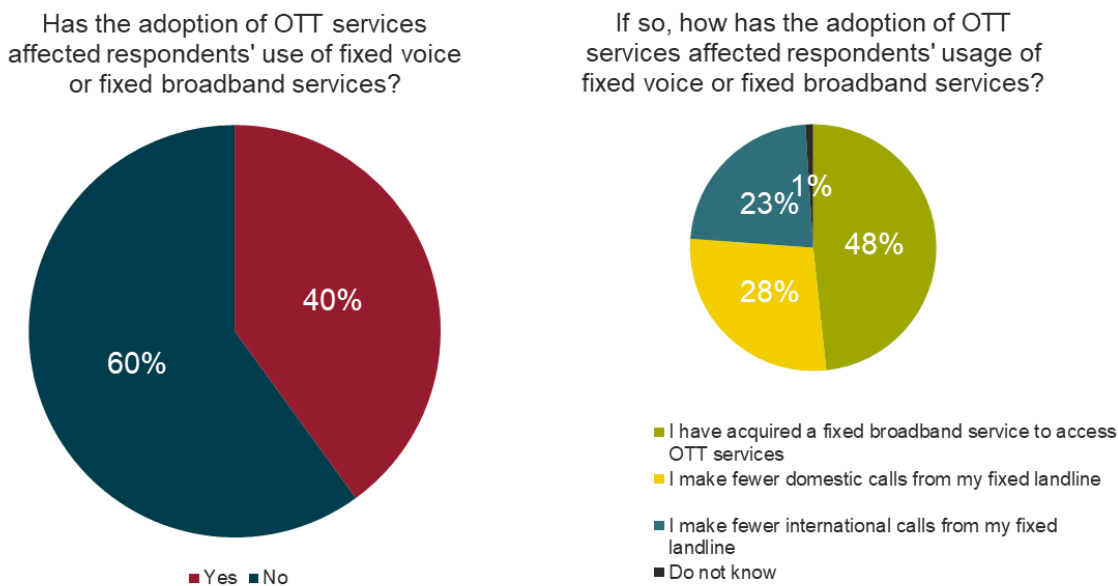


Figure 26 OTT impact on usage of fixed voice and broadband services

Source: TATT-KCL Fixed Customer Survey

Based on the demand-side considerations set out above, the Authority is of the view that OTT services should not be part of the same market as domestic fixed voice services.

4.3.2. Supply-Side Substitution

As was the case with the analysis of the substitutability between fixed and mobile services, discussed earlier, the Authority is of the view that there is no supply-side substitution between OTT and domestic fixed voice services in Trinidad and Tobago. This is due to the high barriers to entry to the fixed services market, in terms of the need to deploy fixed network infrastructure and develop a retail distribution network.

⁹² However, this result is based on a smaller sample of respondents whose consumption of fixed voice services was affected by the availability of OTT services.

From the supply-side perspective, the technology used to deliver OTT call services and fixed calls is different. In particular, an OTT provider would not be able to switch and provide domestic fixed call services in the short term, since it would need to develop its own network or buy the wholesale services of a fixed service provider.

4.3.3. Conclusions

Based on the assessment above, the Authority concludes that OTT voice services do not form part of the same product market as domestic fixed voice services, since there is insufficient demand-side or supply-side substitution. This position may change in the future as the market progresses.

The proliferation or adoption of OTT applications in the domestic fixed voice market is notable. The 2018 TATT-CMR Survey revealed that OTT service adoption approximated 132 of 1000 respondents or 10% of the population, whereas the TATT-KCL Fixed Customer Survey has reported an adoption rate of 63% of fixed Internet subscribers⁹³. This represents a major increase in OTT service adoption and supports the assertion that actual usage of OTTs has increased considerably domestically.

Although the number of persons willing to substitute from fixed voice to OTT voice and/or messaging services in the event of SSNIP was observed to be low at this time (as seen in Figure 25), the demand for OTT services by consumers in Trinidad and Tobago is likely to increase in the future.

In light of the above, and taking into account the dynamism of communication services and forward-looking developments in the fixed telephony and broadband markets, including shifts in consumption patterns in the post-pandemic era; future technological and market trends such as full mobile substitutability; and evolving trends in OTT applications, the Authority considers that the fixed voice market definition should be reviewed in the next three to five years.

⁹³ Based on the TATT-KCL Fixed Customer Survey Table 12 Ranking of the uses of fixed broadband Internet service, which indicated that a non-trivial amount (63%) of fixed broadband Internet service respondents use their fixed broadband Internet service for “making calls over the Internet”

5. Conclusion

Having considered recent and likely future market trends in the relevant markets, after careful economic analysis and due deliberation, the Authority has determined the existence of three economic markets for the domestic retail fixed telephony and fixed broadband services – all three defined nationally – as follows:

1. a market for standalone fixed telephony services (fixed line rental, managed VoIP and fixed calls) and mobile voice services
2. a market for standalone fixed broadband services
3. a market for multi-play bundles (2P/3P/4P+) which includes fixed telephony and/or fixed broadband services

These definitions exclude all non-fixed services, except mobile voice services, that have been evaluated in the Determination. The full scope of the relevant market is described in Table 17, which lists all the domestic retail fixed telephony and fixed broadband services included in the relevant market, by product scope, customer segments, and geographic boundaries.

For this conclusion, enterprise customers are excluded from residential and SME business customer segments, due to the quantum and uniqueness of the terms required. Enterprise customer groups are therefore separate from or outside the market boundaries or definitions listed in Table 18.

The Authority considers that, at this time, OTT voice and messaging applications do not form part of the domestic retail fixed voice market. The Authority will continue to monitor and review this position in the future as the market progresses.

Table 18 List of services included in the relevant markets

Market	Product Scope	Customer Segments	Geographic Scope
Domestic fixed telephony services (i.e., fixed line rental and fixed voice bundled services) and mobile voice service	<ul style="list-style-type: none"> - Fixed line rental services - Fixed-to-fixed calls (on-net and off-net), offered on a PAYG basis or monthly subscription - Fixed-to-mobile calls offered on a PAYG basis or monthly subscription - Managed VoIP services - Calls to special numbers (e.g., non-geographic numbers, directory enquiries, emergency services, and other free services) - Mobile-to-fixed calls offered on a PAYG packaged plan, or monthly subscription. - Value-added services (VASs)⁹⁴ 	<p>Residential and SME business end users</p> <p>Enterprise business customers</p>	National
Standalone fixed broadband services	<ul style="list-style-type: none"> - Fixed wired/ wireless Internet services 	<p>Residential and SME business end users</p> <p>Enterprise business customers</p>	National
Multi-play bundles (2P/3P/4P+) which include domestic fixed telephony and/or fixed broadband services	<ul style="list-style-type: none"> - Fixed line rental services - Fixed-to-fixed calls (on-net and off-net) - Fixed-to-mobile calls. - Calls to special numbers (e.g., non-geographic numbers, directory enquiries, emergency services, and other free services) - VAS - Fixed broadband Internet access 	<p>Residential and SME business end users</p> <p>Enterprise business customers</p>	National

In keeping with international best practices, by taking into account the dynamism of communication services, and other forward-looking developments in the fixed telephony and broadband markets, including shifts in consumption patterns in the post-pandemic era and evolving trends in OTT applications, the Authority will review this Determination within the next three to five years.

The Authority has revised its position from version 1.1 of this Determination and has included mobile voice services as a part of the relevant domestic retail fixed voice market definition. This change was made considering the significant partial substitution observed (i.e., the reduction in

⁹⁴ Retail services that operators provide to their fixed call service customers in addition to their core offerings, such as caller ID, hold number, call trace, hold call waiting, speed calling, call blocking and voicemail

consumption of fixed voice services and the related increase in the consumption of mobile voice service on a call basis, as an alternative), which may constrain an HM from profitably increasing the price of fixed voice and messaging services. This revision takes into consideration feedback received from stakeholders during consultation, additional operator metrics (including, significant customer switching on a calls or usage basis, constant service tariffs, and declining financial earnings) and international best practices. Specifically, the Authority notes the revised European Commission Notice on the definition of the relevant market for the purposes of EU competition law, which permits taking into account usage metrics (partial substitution) and does not require the exclusive use of perfect substitution (access metrics) for market definitions.

**Appendix I. Questionnaire – TATT Domestic Retail Fixed Market
Customer Survey**