Determination: Retail Domestic Mobile Telephony Market Definition

May 2024

TATT: 2/10/02

Maintenance History		
Date	**Change Details**	**Version**
23rd July 2020	Issued for the first round of public consultation	1.0
29th September 2023	Issued for the second round of public consultation	1.1
13th May 2024	Final Determination published	2.0

This document may be cited as Telecommunications Authority of Trinidad and Tobago (TATT 2024) *Determination: Retail Domestic Mobile Telephony Market Definition* (May 2024). Barataria, Trinidad.

Table of Contents

List of Tables

List of Figures

Abbreviations

3G/4G/5G	3rd/4th/5th generation mobile communications standards
ARPU	average revenue per user
CUG	closed user group
DIS	Digital Inclusion Survey
EC	European Commission
GCC	Gulf Cooperation Council
ICT	information and communications technology
LTE	Long Term Evolution
MB/GB	megabyte/gigabyte
Mbps	megabits per second
MiFi	mobile Wi-Fi
MMS	Multimedia Messaging Service
MNO	mobile network operator
MVNO	mobile virtual network operator
OECD	Organisation for Economic Co-operation and Development.
OTT	over-the-top
PAYG	pay as you go
SMB	small or medium-sized business
SME	small or medium enterprise
SMS	Short Messaging Service (text message)
SOHO	small office/home office

SSNIP	small but significant non-transitory increase in price
TATT	Telecommunications Authority of Trinidad and Tobago
VAT	value-added tax
Wi-Fi	Wireless Fidelity

Definitions

Average revenue per user	This 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.
Bolt-on/add-on	A form of supplementary mobile service or functionality added to a mobile service subscription, which offers some combination of mobile call minutes, messages and/or data for a specified price
COVID-19	Coronavirus disease 2019 (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus.
Closed user group	This is a supplementary service provided by mobile service operators, typically to business customers, offering benefits such as unmetered calls and/or messages from any member associated within the group.
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 regulations 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 regulations after an event has occurred rather than setting regulations to be followed.
GCC	Gulf Cooperation Council (GCC) is an alliance of six Middle Eastern countries, namely, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates (UAE).
Mobile access	This refers to a retail service which allows users to receive calls and messages on a mobile device. In other words, mobile access is the service enabled by having a SIM without necessarily purchasing calls or messages.
MiFi	A wireless router that provides the functionality of a mobile Wi-Fi hotspot (i.e., access to the Internet for multiple users)
MVNO	A mobile virtual network operator is a mobile service provider that does not own and operate its own end-to-end mobile network

	infrastructure to service its end users but relies instead on wholesale access to a mobile network operator's physical infrastructure and spectrum.
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. For the purpose of this Determination, OTT services are, typically, mobile applications, such as Skype or WhatsApp, which may offer similar and additional functionality over traditional voice and messaging services and rely on end users' Internet connections.
SOHO	Small office/home office. A term used to refer to small businesses, many of which operate out of homes.
SSNIP	The term "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.
Standalone service	A standalone service refers to a single service offered by an operator.
Wi-Fi	A form of wireless local access network (WLAN) to allow multiple users access to the Internet.

Executive Summary

The Telecommunications Authority of Trinidad and Tobago (the Authority) commissioned this document, *Determination: Retail Domestic Mobile Telephony Market Definition* (the Determination), to assess the need to update the definition of the relevant market(s) for retail domestic mobile services established in the Authority's *2021 Determination: Retail Domestic Mobile Telephony Market Definition* (Mobile Market Definition 2021). Market definition exercises are conducted throughout many jurisdictions globally and describe the assessment by which a regulatory or competition authority determines the set of products or services that are considered to be in the same economic market, for the purpose of its assessments, investigations and interventions.

Determinations of market definitions, applied from an ex ante perspective, provide a useful starting point for ex post interventions (for example, for merger assessments, investigations into alleged anti-competitive conduct, and determinations of market dominance[1]). This market definition exercise was conducted using qualitative and quantitative information, a customer survey, and quantitative analysis, to discern mobile services consumers' preferences for various price and non-price factors[2].

This Determination is divided into six sections. Section 1 provides a background statement and a description of the process the Authority has followed to reach its determination. Section 2 highlights the Authority's approach. Sections 3 to 5 set out the Authority's market definition assessment, and section 6 presents the Authority's conclusions.

The Authority concludes that there is a single relevant economic market for retail domestic mobile telephony services, including over-the-top services (OTTs) which are substitutes for mobile voice and messaging services. Fixed broadband service and mobile data services will also form separate markets given limited substitution between both services and full complementarity with OTT services. The full scope of the retail domestic mobile service market is set out in Table 1.

The mobile telephony market is a single, national market covering all retail mobile services (i.e., mobile access services, domestic call and mobile messaging services, and mobile data

[1] This principle is recognised across many jurisdictions. For example, the European Commission, whose regulation applies to 28 countries, sets this concept out in its Significant Market Power (SMP) Guidelines for the telecommunications sector. According to The European Commission Competition Policy (2022), market definition remains an important step in the assessment of mergers and most antitrust cases, in an attempt to understand the competitive environment in static and dynamic states.
Source: https://ec.europa.eu/transparency/documents-register/detail?ref=COM(2021)713&lang=en

[2] In the absence of sufficient data on price and/or other variables, qualitative evidence has been relied on in EU case law and the European Commission's practice. 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).

services) and OTT services which are substitutes for mobile voice and messaging services on a call or usage basis[3], periodically, across all the relevant customer segments (i.e., both prepaid and postpaid, and both residential and business). Mobile data services will also form a separate national market across all the relevant customer segments due to full complementarity with OTT services, no substitutability with OTT services, and only limited substitutability with fixed broadband service.

Table 1 List of services included in the retail domestic mobile service market

Product Scope	Customer Segments	Geographic Scope
Retail mobile access services	Prepaid/postpaid mobile tariff offerings	National
Retail domestic call services	Prepaid/postpaid mobile tariff offerings	
Retail domestic mobile messaging services	Business/residential tariff offerings	
Retail mobile data services	Business/residential tariff offerings	
OTT messaging, voice, and video call services	Mobile data/fixed and public Wi-Fi networks	

This market definition is noted to be dependent on customer data networks (i.e., fixed or mobile data networks) and usage preferences, based on market information generated between the period 2018 and 2022.

Following the Authority's assessment, different degrees of substitution between the various services were considered.

The Authority concludes that retail fixed voice and fixed broadband services do not form part of the same product market as retail domestic mobile services. These services are not supply-side substitutes, as they require distinct licences and are delivered over different network technologies. Demand-side substitution is also limited due to significant differences in the preferences of end users and in product features. This is also confirmed by the TATT-KCL Mobile Customer Survey results, where only a small share of the survey respondents stated

[3] This refers to a reduction in the consumption of traditional mobile calls or customers who would *"*make fewer calls but use OTT call and messaging services*"*.

that they would switch to a fixed broadband offering if there is a price increase in their mobile data services.

Regarding OTT services, the Authority notes that there is considerable uptake of OTT voice and messaging services in Trinidad and Tobago, with 70%–90% of TATT-KCL Mobile Customer Survey respondents using their smart phone to access, amongst other services, OTTs. OTT services/prices therefore represent an important factor in the competitive landscape of the communications sector and a potential competitive constraint to operators in the domestic retail mobile market.

According to the evidence considered by the Authority, OTT services are seen as demand-side substitutes on a call or usage basis (i.e., 33% of TATT-KCL Mobile Customer Survey respondents with access to the Internet and OTT services would consider switching between both services when on an individual call basis). However, only 1% of respondents would switch away from their entire mobile plan (i.e., calls, messaging, data and mobile access), which suggests that customers do not perceive OTT services as perfect substitutes for mobile services.

The Authority is also of the view that the profitability of a price increase by a hypothetical monopolist providing mobile services (access, voice and data) in Trinidad and Tobago would be constrained by the significant reduction in the consumption of mobile services and customers switching to OTT voice and messaging services on fixed networks. This view is informed and evidenced by the following:

1. Steadily falling average revenues per subscription in mobile voice services (see Figure 16)

2. Steadily falling total revenue in mobile services (see Table 15)

3. Similar product characteristics (that is, the functional similarity between OTT voice and messaging services and mobile voice and messaging services, as presented in section 4.3.2.1)

4. The perceived low prices of OTT services (as per the TATT-KCL Mobile Customer Survey, Figure 31)

5. The high uptake of OTTs (see section 4.3.1.2)

6. Significant numbers of customers switching to OTT services using mobile and fixed networks on a call or usage basis (see section 4.3.1.4)

Therefore, in light of the foregoing, OTT services can be considered a relevant part of the retail domestic mobile telephony market. The profitability of a small and significant non-transitory increase in price (SSNIP) on mobile services (access, voice and data) will become increasingly

more difficult to sustain, where OTT service adoption rates and network preferences continue to persist or increase in the future.

The Authority reserves the right to review and amend its assessment of the retail domestic mobile market definition in accordance with market dynamics, and will continue to monitor the market and review this position on a three-to-five-year cycle, as the market progresses or as the need arises.

The Authority has revised its position from version 0.2 of this Determination and has included OTT services as a part of the relevant domestic retail mobile telephony market. This change was made considering the significant partial substitution observed (i.e., the reduction in consumption of voice services and the related increase in the uptake of OTTs as an alternative), which may constrain a hypothetical monopolist (HM) from profitably increasing the price of mobile voice and messaging services. This revision takes into consideration feedback received from stakeholders during consultation, additional operator metrics (including PAYG subscriptions, service tariffs and 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 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[4].

[4] European Commission Notice on the Definition of the Relevant Market for the Purposes of Union Competition Law (2022). Specifically, section 79 provides for the use of customer surveys on usage patterns and attitudes, data on customer purchasing patterns, to establish whether an economically significant proportion of customers considers two products as substitutable.

1. Introduction

In Trinidad and Tobago's retail telecommunications markets, ex ante price regulation is governed by section 29 of the Telecommunications Act, Chap. 47:31 (the Act) of 2001. The Authority must first identify the relevant market before demonstrating that one or more concessionaires hold(s) a dominant position in that market.

In addition to facilitating the introduction of ex ante price regulation, where appropriate, defined relevant markets may also serve as a reference point for monitoring competitive dynamics in retail markets. For example, during customary monitoring of domestic markets, early identification of potential issues with the functioning of the market may be facilitated and assessed, leading to more timely resolution once the market has been defined[5].

Having considered recent and likely future market trends in the relevant markets and, after careful economic analysis and due deliberation, the Authority has identified the relevant economic market for retail domestic mobile services. The relevant mobile market reflects that consumers of Trinidad and Tobago's mobile services perceive that mobile voice services are substitutable with mobile data services and over-the-top (OTT) voice and messaging services, but it establishes boundaries with fixed voice and fixed broadband services.

1.1 Background

The Act (amended by Act 17 of 2004) established the Authority as an independent regulator in July 2004. As part of its role, as defined by the Act, the Authority is responsible for regulating the fixed and mobile telecommunications sectors and the broadcasting sector. Market definitions are applied in several regulatory and competition-related contexts, one of which is to facilitate the imposition of ex ante price regulation in the retail telecommunications sector.

In the Trinidad and Tobago retail telecommunications markets, ex ante price regulation is governed by section 29 of the Act. The Act permits the Authority to impose ex ante price regulation in cases where the Authority has identified market failure in the relevant market, by demonstrating that one or more concessionaires hold(s) a dominant position in that market. This, in turn, requires the Authority to define the boundaries of the market 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

[5] It is noteworthy that a market defined for ex ante purposes will not necessarily also be appropriate in a subsequent ex post investigation. In such cases, the Authority may apply additional customer price and quality sensitivity tests (OECD, 2012).

Broadcasting Services[6] (the Concession). For domestic mobile services, the Concession lists the following market definition: Public Mobile Voice Origination Services (National).

As an initial step for assessing the need for any ex ante price regulation, this *Determination: Retail Domestic Mobile Telephony Market Definition* (the Determination) examines how the predetermined market definition set out above relates to the retail services considered in the context of this analysis. This is followed by a description of the market definition exercise conducted for retail domestic mobile services, confirming the relevant product scope, customer segmentation and geographic scope, and taking into account demand-side and supply-side considerations in the context of the telecommunications market in Trinidad and Tobago.

Section 2 describes the Authority's approach to defining the relevant markets. Sections 3 to 5 apply this approach, considering the specific market information and the data consolidated by the Authority.

In reaching its determination, the Authority collated a range of both qualitative and quantitative information for analysis, mostly obtained from the four sources described below:

1. In July 2018, 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 users[7], traffic, revenues and costs, broken down into predetermined subcategories. The data requested covered the period 2014 to 2018. The data would be used to analyse competition in the market over the three-to-five-year period that followed, depending on the state of change in the mobile market dynamics during said period.

    A complete set of definitions was also included with the quantitative data requests, to provide context and requirements for the requested figures, and to ensure consistency across the concessionaires' submissions.

[6] Available at: https://tatt.org.tt/Portals/0/Generic%20Concession%20Document.pdf

[7] The term "end user" is used throughout the document for consistency. However, it is also used interchangeably with the terms "subscriber" and "customer", where these terms are more appropriate for the context, for example, where the concessionaires refer to "end users" as "subscribers", or the text refers to customer segmentation

2. In addition, the Authority commissioned market research firm, Caribbean Market Research (CMR), to undertake a consumer survey titled TATT-CMR Quantitative Market Research Study: Mobile Retail Services (TATT-CMR Survey). The survey comprised a sample[8] of 1,000 end users of retail mobile services in Trinidad and Tobago, using a random intercept[9] survey. 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 end users 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.

3. Respondents were asked about their use of telecommunications services, covering their current consumption of such services (volumes and prices paid, as well as the factors they consider most important when making consumption decisions) and their perceived 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).

4. The Authority also examined the tariff plan information available on the concessionaires' websites.

5. Market data sourced from the Authority's annual market reports, available on its website, were also utilised.

The Authority published this Determination for a first round of stakeholder consultation over the period 23rd July 2020 to 4th September 2020. Operators requested an extension of the deadline, which was then pushed back to 2nd October 2020. The Authority reviewed and

[8] The sample size of 1,000 respondents is deemed adequate for the derivation of a representative subset of the Trinidad and Tobago population of 1.4 million subscribers under standard statistical sample requirements. The sample was further stratified by demographics in respect of gender, location, age and social class for additional representativeness. Standard random sampling requirements for a population of 1.4 million necessitates a sample size of 370 interviewees at the 95% confidence interval.

[9] Under the stratified random probability methodology, the sample frame was stratified based on clusters of dwelling units systematically selected in two stages, by municipalities in Trinidad and parishes in Tobago. One thousand selection is 0.073% of the 1,367,558 population of Trinidad and Tobago and was drawn from the 585 electoral districts and 14 municipalities in Trinidad, and the seven parishes in Tobago.

provided responses to the operators' comments, articulated in its decisions on recommendations (DORs) matrix, and a revised document with the DORs as an appendix was published.

Based on the feedback from the operators, the Authority also found it prudent to re-administer a customer survey and update the Determination with current industry market data before issuing it for a second round of consultation.

In revising this Determination, the Authority collated a range of both qualitative and quantitative information for analysis, mostly obtained from the following four sources:

1. In December 2021, the Authority issued a follow-up request for information to all the concessionaires offering mobile retail telecommunications services in Trinidad and Tobago, following a similar structure as the previous request:

    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 concessionaires to provide time-series data on subscribers/end users[10], traffic, revenues and costs, broken down into subcategories. The data requested covered the period 2018 to 2022. The data would be used to analyse competition in the market over the following three-to-five-year period, depending on the state of change in the mobile market dynamics during said period.

    A complete set of definitions was again included with the quantitative data requests, to provide context and requirements for the requested figures, and to ensure consistency across the concessionaires' submissions.

2. In addition, the Authority commissioned market research firm, Kairi Consultants Limited (KCL), to undertake a consumer survey titled *Customer Survey in the Domestic Retail Mobile Market* (TATT-KCL Mobile Customer Survey). The survey comprised a sample of 1,000 end users of retail mobile services in Trinidad and Tobago, using a national probability sample survey. Similar to the sample size adopted in the CMR Survey, 1,000 end users took into account the universal standard 95% percent confidence level and 5% for the relative margin of error as recommended by the *UN Practical Guidelines for Designing Household Survey Samples* (UN, 2005).

[10] The term "end user" is used throughout the document for consistency. However, it is also used interchangeably with the terms "subscriber" and "customer", where these terms are more appropriate for the context, for example, where the concessionaires refer to "end users" as "subscribers", or the text refers to customer segmentation.

Respondents were asked about their usage of telecommunications services, covering both their current consumption of such services (volumes and prices paid, as well as the factors they considered most important when making consumption decisions) and their perceived 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 and usage of OTTs).

3. Tariff plan information available on the concessionaires' websites.

4. Market data sourced from the Authority's annual market reports available on its website.

In revising the Determination, the Authority has considered the responses it received to the information requests, together with other evidence it gathered and the analysis it undertook. With particular reference to qualitative information, the Authority notes that, although all qualitative information submitted has been reviewed and taken into careful consideration during the course of the Authority's analysis, not all the information submitted has been referred to explicitly in this document. Furthermore, Digicel marked much of the information provided within their qualitative submissions as "proprietary" and "confidential"[11], which prevented the Authority from making explicit reference to specific statements or bodies of evidence in this public document.

1.2 Data Collated

The concessionaires responded to the requests for information, guided by frequent communication with the Authority. Further details were also provided to clarify the format and quantity of data that would be required in order for the Authority to conduct specific tests.

After the last updated responses to the data requests were received, the data available at the time of preparing this document[12] were consolidated and used as inputs for the analysis.

[11] Indeed, Digicel's entire qualitative submission was marked as such, thereby restricting any reference to specific statements made by this concessionaire in this document.

[12] Qualitative evidence has been relied on in EU case law and the European Commission practice in the absence of sufficient data on price and/or other variables. Particularly in treating with zero-rated digital commodities, relevant markets were established solely on qualitative evidence, including the functionality and/or uses of the services (CORE, 2018).

1.3 Purpose

Historically, for the purpose of price regulation, where arising, the Authority outlined the following market definitions in the draft *Price Regulation Framework for Telecommunications Services for Trinidad and Tobago*, with respect to the domestic retail mobile markets:

1. Voice service origination
2. Voice service termination
3. Messaging services
4. Narrowband Internet
5. Broadband Internet
6. Roaming

Additionally, for the purpose of dominance and, until such time as the Authority has defined the relevant market, section A 23 (e) of the Concession prescribes the definitions of the telecommunications markets reviewed by the Authority.

Taking into account significant developments in domestic retail mobile services, the Authority found it prudent to perform an updated review of the relevant boundaries of the domestic retail mobile markets, to take into account, in particular:

1. the significant nominal consumer price increases observed in the domestic retail mobile market.

2. the importance of the mobile market to the telecommunications sector's sustainability and the development of the national economy.

3. global developments in technology which may hold the potential to affect domestic mobile markets.

4. changes in various market share indicators and the sector's general level of duopoly competitiveness.

5. changes in consumer usage patterns, including the impact of COVID-19 pandemic.

The Authority has expanded on each of these as follows.

1. Price Changes[13]

It is the Authority's mandate to review tariffs (prices and terms and conditions), in accordance with section 29 of the Act. This task is performed on an ongoing basis and involves prior notification of consumer price increases or changes by concessionaires. The average nominal and real price increases or changes across retail mobile services across the last five years annually, for which data is available, are listed in Table 2.

Table 2 Mobile service price changes 2018–2022

Year	Annual Inflation	Nominal Price Change	Real Price Change
2018	1%	39%	38%
2019	1%	11%	10%
2020	0.6%	-2%	-1.4%
2021	2.1%	30%	28%
2022	5.8%	15%	9%

The Authority considers that these price increases are significant and warrant further investigation.

2. Importance of the mobile market to the overall sustainability of the telecommunications sector

Reviewing the sustainability of the telecommunications sector in Trinidad and Tobago is in accordance with the Authority's mandate for the protection of consumers, accessibility, and affordability of telecommunications services, pursuant to sections 3 (a), (b), (c), and (d) of the Act. Additionally, mobile services reportedly contribute to the following aspects of the Sustainable Development Goals — engender environmental protection[14], disaster risk management best practices[15], and sustainability globally[16].

[13] Note that these calculations incorporate all domestic retail mobile services for which there was a change in price for the respective period.

[14] https://www.itu.int/en/action/environment-and-climate-change/Pages/ITU-in-the-UN-Environmental-Agenda.aspx#:~:text=ITU%20addresses%20Goal%207%3A%20Affordable,and%20mitigation%2C%20improving%20energy%20efficiency%2C
Accessed on 21st October 2020

[15] https://blog.huawei.com/2020/08/05/how-itu-standardization-supports-climate-action/
Accessed on 21st October 2020

[16] https://news.itu.int/icts-united-nations-sustainable-development-goals/
Accessed on 21st October 2020

This further supports the Authority's need to ensure that mobile markets in Trinidad and Tobago function well.

3. Global developments in technology which may affect domestic mobile markets

The Authority considers that global developments in technology, such as the proliferation of OTT services and the advancement of 4G and 5G technologies, are of direct relevance to the mobile market[17], and must be taken into account when determining the relevant boundaries of the domestic retail mobile market of Trinidad and Tobago.

4. Changes in market share indicators

Given that market shares will inevitably change to some degree over time, the Authority is of the view that it is important to consider the implications, if any, that such changes might have for the relevant market definitions in Trinidad and Tobago.

5. Changes in consumer usage patterns

Consumer usage patterns are a key factor in determining the relevant boundaries of retail service markets (since they reflect the decisions made by consumers) and, ultimately, which set of products/services belong in the same market. As usage patterns and overall consumer preferences inevitably evolve over time, an analysis of the ways in which they have changed is important for the Authority's understanding of the relevant market definitions in Trinidad and Tobago.

1.4 Legislative Basis

In accordance with its legal mandate, which emphasises the establishment of conditions for an open market that promotes fair competition, the Authority is obligated to appropriately define and assess markets for conditions of unfair competition, including dominance.

In respect of price regulation, the Authority is empowered to regulate the prices of telecommunications services provided by dominant operators, in accordance with sections 29 (2) and 29 (8) of the Act, as follows:

[17] Indeed, the expected increase in demand for data has driven plans for both capacity and coverage upgrades to LTE networks, as reflected in the qualitative submissions.

Section 29(2):

> "The Authority may establish price regulation regimes, which may include setting, reviewing and approving prices, in any case where –
>
> …(b) a concessionaire operating a public telecommunications network or providing a public telecommunications service cross-subsidises another telecommunications service provided by such concessionaire; or
>
> (c) the Authority detects anti-competitive pricing or acts of unfair competition."

Section 29(8):

> "For the purposes of this Part (price regulation) and wherever the issue of dominance otherwise arises in the Act, the Authority may determine that an operator or provider is dominant where, individually, or jointly with others, it enjoys a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers and for such determination, the Authority shall take into account the following factors:
>
> (a) the relevant market,
>
> (b) technology and market trends,
>
> (c) the market share of the provider
>
> (d) the power of the provider to set prices
>
> (e) the degree of market differentiation among services in the market;
>
> (f) any other matters that the Authority deems relevant.

The Authority's review of the boundaries of the domestic retail mobile market will provide further insight into the relevance of the markets, as a first principle to market regulation and for ensuring the development and the sustainability of fair competition in same.

2. Approach to Determining Relevant Markets and Dominance in the Relevant Markets

Section 29 (8) of the Act establishes that:

> the Authority may determine that an operator or provider is dominant where, individually or jointly with others, it enjoys a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers…

and further states that:

> the Authority shall take into account the following factors: … the relevant market…

In general, there are three dimensions to defining relevant markets, as follows:

1. Product scope, whereby the relevant product market consists of all services or products which enough end users regard as sufficiently interchangeable to render a significant increase in price unprofitable (described in more detail in section 2.1)

2. Customer segmentation, whereby the customer market considers 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 define that area as a relevant market[18]

[18] This analysis only considers service provisions within Trinidad and Tobago. The Authority does not have jurisdiction beyond the borders of Trinidad and Tobago and, moreover, this assessment concerns domestic services offered to residents of the country for domestic use. In addition, concessionaires in Trinidad and Tobago typically only hold licences to provide services within the national geographic boundaries. However, the assessment takes into account some communications service providers based/incorporated outside of Trinidad and Tobago (such as OTT providers like Skype). In the context of how these providers might influence the demand and supply of domestic mobile retail services in Trinidad and Tobago, the assessment only considers the markets established within the country. This approach is in line with international precedent, with regulatory authorities across the region (for example, FTC Barbados, Ofreg Cayman, RA Bermuda, and URCA Bahamas) and beyond adopting a similar approach.

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 their having similar product characteristics and/or prices[19]. 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.

The standard method for defining a product market is to perform a small but significant and non-transitory increase in price (SSNIP) test, also referred to as the hypothetical monopolist test. This test considers the likely impact of a hypothetical monopolist slightly increasing the price 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 effect, it would be unprofitable for the hypothetical monopolist to keep prices at this new higher level, since the margins lost from the fall in volumes would more than offset the increase in margins 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 to 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 market[20].

However, market definition exercises in the telecommunications sector, particularly those undertaken in a regulatory context, are often not conducted quantitatively. This reflects the difficulty of accurately estimating cross elasticities between goods. In addition, where there is ex ante regulation of tariffs in place – particularly in a regime where the tariff rebalancing

[19] This assumes that prices are set at a level which would be consistent with those in a competitive market.

[20] 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 a SSNIP unprofitable, this may be taken as evidence that the good in question and the substitute good form part of the same economic market.

process is not completed[21] – 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 rely on more qualitative assessments of the degree of potential switching between products. Indeed, given the data available, the Authority believes it is appropriate to rely on a range of evidence on the likely responses of end users and suppliers to a SSNIP for domestic mobile services. This approach is in accordance with international best practice. However, where a comprehensive cost model exists, quantitative data may be preferred but only for the determination of the impact on concessionaires' profitability following a change in the price and/or the terms of their services. Therefore, the use of both qualitative and quantitative data provides a useful check and balance for the determination of consumer preferences and their impact on firms' profitability in the event of a SSNIP.

2.1.1. Determining the Focal Product

When undertaking a market definition exercise for the purpose of designing ex ante regulation, it is useful to start with a list of markets[22] and then analyse the extent to which these market boundaries are appropriate. 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 consider both demand-side and supply-side considerations.

2.1.2. Demand-Side Substitution

Demand-side substitution looks at the extent to which prices[23] for the focal telecommunications services in a market (i.e., the service(s) in the market to which the SSNIP test is being applied)

---

[21] 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).

[22] This is in line with the approach adopted for similar exercises undertaken by telecoms regulators in other jurisdictions. See the European Commission's 2022 draft revised Market Definition Notice (available here: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_6528), the retail mobile market review issued by the URCA in the Bahamas in 2022 (available here: https://www.urcabahamas.bs/wp-content/uploads/2022/07/Final-Determination-Retail-Cellular-Mobile-Market-Review-Under-S.39-of-the-Comms-Act-2009-15-July-2022.pdf), and the Market Definition, Designation, and Dominance Report published by the CITC in Saudi Arabia in 2017 (available here: https://www.cst.gov.sa/en/reportsandstudies/Reports/Documents/PL-SP-317-E-Market%20Definition%20Designation%20and%20Dominance%20Report.pdf)

[23] 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

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 retail domestic mobile services to other services, the Authority analysed, amongst other things, the following factors:

1. The functionality and non-price characteristics of the relevant retail services and products available in Trinidad and Tobago

2. Quality of service information on these services

3. Uptake and usage trends

4. Available information on customers' switching behaviour for these services[24]

2.1.3. Supply-Side Substitution

Even in the absence of demand-side substitution, supply-side substitution may still constrain a service provider's ability 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 the service provider to start offering the relevant service in the short term, in response to the increase in price of the focal product to above the competitive level. To be able to do so, that service provider must be able to switch or enter the market without incurring significant additional costs or risks.

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

1. Historical evidence of entry and expansion in the mobile service market in Trinidad and Tobago

2. The characteristics of retail domestic mobile services, in terms of any legal, regulatory, or economic barriers for new concessionaires to enter the market (i.e., barriers to entry and/or expansion), including any regulatory measures or commercial models that may reduce any prevailing barriers to entry (regulated network access, MVNO hosting, etc.)

price increase may be sustained by examining quantitatively and qualitatively the responsiveness of consumer demand (ITU World Bank, 2020).

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

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, there is a need 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 retail domestic mobile services, the relevant considerations are whether:

1. service offerings for residential and non-residential end users form part of the same relevant product market.

2. prepaid and 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 account of the following information:

1. The demand characteristics of each customer segment.

2. The commonality of the 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 serving another).

3. The range and characteristics of mobile services provided by the relevant concessionaires, Digicel and bmobile to different customer segments.

4. The prices charged by Digicel and bmobile for retail domestic mobile services provided to different customer segments. Prices used for this assessment are VAT inclusive and rounded to the nearest Trinidad and Tobago dollar (TT$).

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 line with the geographic scope of the service licences/concessions and international precedent from the ITU's dominance guidelines[25] (ITU World Bank, 2022).

The need for geographic submarkets then depends on whether there are significant differences in the competitive dynamics between different parts of the country, and whether such boundaries are stable[26]. In line with the approaches taken in other jurisdictions[27], as part of market definition exercises when determining the geographic scope of each market, the Authority's default assumption 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 market for retail domestic mobile services, 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 mobile services provided by the relevant concessionaires i.e., Digicel and bmobile, within specific geographical regions and the extent to which these may differ across the country

3. The geographic scope of service licences and concessions

4. The prices charged by concessionaires, Digicel and bmobile, for retail domestic mobile services and the extent to which these may differ across the country

5. The range of mobile telephony services available to consumers in Trinidad and Tobago from domestic and international service providers

[25] In accordance with international guidelines on determining dominance, the general propensity of telecommunications regulation is to define relevant geographic markets as national, unless there are demonstrable regional variations in supply or demand. Source (ITU World Bank, 2022)

[26] This would avoid situations where changes in geographic boundaries could lead to geographic market definitions being outdated over time and the wrong regulatory remedies being applied.

[27] 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. Stages to Determine the Relevant Product Market(s) for Domestic Retail Mobile Services

In determining dominance, it was first necessary to assess how the retail domestic mobile services considered in this analysis differed from those in the market definition set out in the concession (i.e., mobile voice origination services). In undertaking the assessment, the Authority was guided by the following key considerations:

1. In the context of defining a retail market, voice termination is a wholesale service. These termination services are necessary to support the provision of end-to-end retail mobile services. At the retail level, end-to-end call services are considered (i.e., both the origination and termination legs), in line with how these services are offered to end users.

2. Retail domestic mobile services commonly include a wider range of services, beyond voice. In particular, most mobile concessionaires offer end users voice, messaging (SMS/MMS) and data services. This is also the case in Trinidad and Tobago, as further discussed in section 3. As such, the Authority considered the entire range of retail domestic mobile services currently offered by concessionaires when defining the relevant boundaries for retail domestic mobile service market(s), particularly as they are often sold jointly and provided over common infrastructure.

3. As a final step, the Authority also assessed whether other, non-mobile telecommunications services should form part of the relevant product market for domestic retail mobile services. As discussed further in section 4, these included fixed voice and fixed Internet access services as well as OTT voice and messaging services. These services offer consumers alternative means to make and receive calls and/or message (as well as other services). As such, it is important to understand whether any of these services constitute substitutes to domestic retail mobile services in Trinidad and Tobago.

2.5. Conclusions

Given the above, there are several considerations to be made when defining the relevant market relating to retail domestic mobile services. These are as follows:

1. Whether different types of domestic mobile services (i.e., mobile access[28]-only products[29], domestic calls, messaging, and mobile data-only services[30]) are in the same product market

2. Whether mobile services offered to different customer segments are in the same product market (i.e., prepaid, and postpaid service offerings and residential and business service offerings)

3. Whether other (non-mobile) telecommunications services are a substitute for retail domestic mobile services, namely:

    a) Fixed services (considering both voice calls and Internet access)

    b) OTT services (considering both voice, video-call and messaging)

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 them in the event of a SSNIP of the focal product.

[28] Mobile access relates to a retail service. Specifically, it refers to the service which allows users to receive calls and SMSs. In other words, mobile access is the service enabled by having a SIM but without purchasing calls, messages, or data (either via bundles or allowances or on a PAYG basis).

[29] In some instances in this Determination, mobile access-only products are referred to as "access-only", to ensure the document is reader friendly. For example, "end users who subscribe to mobile access-only products" may be described as "access-only end users". Use of the term "mobile access" alone refers to mobile access more generally, for example, in reference to mobile access as a component of a bundled service, and does not necessarily refer to the standalone mobile access-only product, unless otherwise specified.

[30] For the avoidance of doubt, mobile data-only services comprise both the access component required to offer mobile data services on a "standalone" basis and the data service itself.

3. Assessment of the Need for Separate Markets for Different Domestic Mobile Services

Retail domestic mobile services include mobile access, mobile domestic calls (off-net and on-net)[31], mobile messaging (MMS/SMS) and mobile data services[32]. These services can be offered to different groups of end users and using different payment mechanisms (i.e., prepaid and postpaid methods). Therefore, it is necessary to determine whether there is a need to define separate product markets for any of these services, or subsets thereof, or indeed, whether domestic mobile services actually form part of a wider economic market.

This analysis was conducted by starting with the retail mobile access-only product 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. The Authority first considered whether retail mobile access and domestic call and messaging services are in the same product market (see subsection 3.1). The Authority then considered whether retail mobile data-only services should also form part of that product market (see subsection 3.2). This was followed by an assessment of whether there are separate product markets for prepaid and postpaid offerings (see subsection 3.3) and services provided to residential and business users (see subsection 3.4).

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

3.1. Are Mobile Access and Domestic Call and Messaging Services in the Same Product Market?

The purpose of this subsection is to assess whether mobile access services should be considered part of the same product market as mobile call and messaging services.

3.1.1. Demand-Side Considerations

In Trinidad and Tobago, end users must purchase an access service (i.e., SIM card) and handset in order to make and receive domestic calls and domestic SMSs/MMSs. It is pertinent to note that most mobile service plans contain monthly allowances of both domestic mobile call and messaging services. Therefore, when end users choose among the different offers available, they are likely to consider the overall price (i.e., any fixed cost of the access, plus the total cost

[31] In this document, the terms “domestic mobile calls”, “mobile calls” and “calls” are used interchangeably, according to the context.

[32] For the purpose of this Determination, mobile data services, like mobile call and SMS services, encompass mobile access services.

of expected domestic calls and SMS/MMS usage)[33] and characteristics (e.g., coverage, quality of service and flexibility) of both access and domestic call/messaging services together. Thus, when comparing the functionalities and characteristics of retail mobile access, call and messaging services, these services are more likely to be complements than substitutes.

The combination of mobile access and calls/SMSs is provided through prepaid and postpaid offers sold by both concessionaires. Digicel and bmobile both offer postpaid tariff plans. These are taken by 24% of all mobile end users[34], and all contain bundles that include mobile access, call/SMS, and data services. Neither concessionaire advertises any offer on its website allowing end users to purchase a postpaid mobile plan without any monthly allowance for calls, messages, or data usage. This is in line with the general demand for two-way communication (i.e., where an end user wishes to both make and receive calls and messages). This means that even an end user wishing to only receive calls/messages would have to purchase a bundled offer that includes mobile access and calls/SMS services.

For prepaid offers, which are taken by 76% of all mobile end users, [redacted].[Redacted]

Digicel, on the other hand, allows end users to buy prepaid mobile access on a standalone basis (a mobile access-only product), by purchasing a SIM card without any pre-loaded credit for TT$49[35]. Under this option, end users who wish to make calls or send messages have to purchase credit and are charged prepaid rates (prepaid PAYG contract) for usage.

However, despite having this option, the available evidence, presented in Figure 1, suggests that it is unlikely that end users in Trinidad and Tobago would decide to purchase mobile access-only products alone. Of the approximately 1,000 respondents to the TATT-KCL Mobile Customer Survey, only 5% stated that they use their mobile phone to receive calls and text messages, but not make them (i.e., no outbound usage), with 95% using their mobile phone to make calls[36].

Figure 1 shows the proportion of respondents to the TATT-KCL Mobile Customer Survey who use their mobile device to exclusively receive, as opposed to make, calls and text messages. Given this, a consumer would have no incentive to purchase a SIM card without any credit on

[33] Prices throughout the document are VAT inclusive and rounded to the nearest TT dollar unless otherwise is expressly stated. This does not impact the general findings of the analysis.

[34] TATT quarterly market submissions for 2022

[35] https://support-tt.digicelgroup.com/hc/en-us/articles/115013188727-Sim-Card-Management

[36] TATT-KCL Mobile Customer Survey, S3AQ9

it unless they could purchase the credit separately for less or from another concessionaire. Indeed, it is currently not possible to buy a SIM card from one concessionaire and add credit from another concessionaire.

In addition, it is more expensive to buy a mobile access-only product and then rely on PAYG rates for calls and SMS, than to buy access in combination with a package (prepaid or postpaid) plan[37].

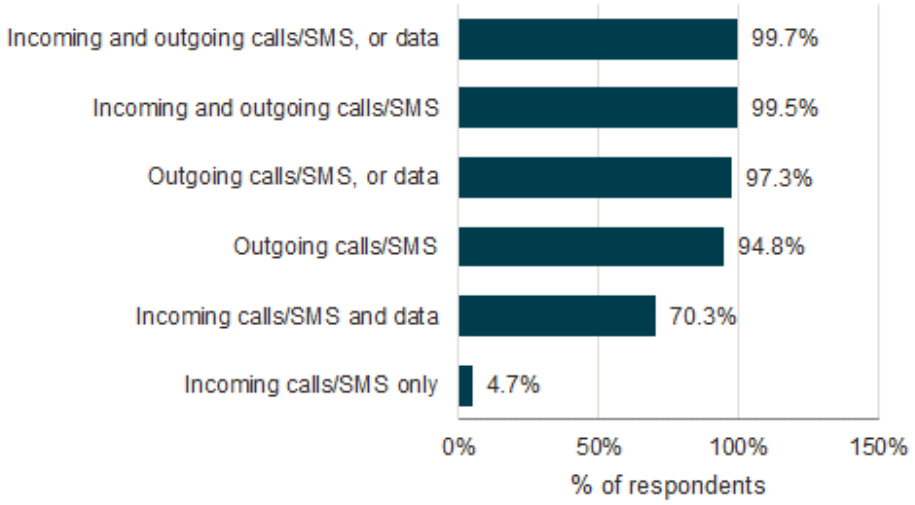


Figure 1 For which of the following do you use your mobile phone mostly?

Source: TATT- KCL Mobile Customer Survey 2022, S3AQ9

The Authority considered data from concessionaires on mobile end users' consumption patterns but is of the view that it is reasonable to assume that access-only end users are likely to form part of the wider group of customers that primarily use PAYG tariffs (as they mostly value the access component and not any call allowances within mobile bundles). Average monthly domestic call volumes of PAYG end users were approximately 70 minutes per connection in mid-2018[38]. This suggests that these end users not only value receiving calls but also use their mobile phones to make calls, increasing the likelihood of them considering mobile access-only and bundled services as substitutes in the case of a SSNIP by a hypothetical monopolist. This position is also supported by the findings of the TATT-KCL Mobile Customer Survey which highlighted that almost all (99.7%) of mobile service respondents not

[37] PAYG users may have a greater incentive to engage in Wi-Fi offloading (i.e., using Wi-Fi networks where available, rather than mobile data) compared, for example, to other groups of end users who subscribe to plans which provide large or possibly unlimited data allowances, thereby, potentially narrowing the effective differences in prices for a given level of usage. This effect may become stronger as the extent of Wi-Fi availability in Trinidad and Tobago increases.

[38] Based on data provided by operators

only value receiving calls but also use their mobile phones to make calls, send SMS/MMS messages and utilise mobile data services[39].

The Authority, therefore, concludes that, on balance, mobile access, call, and messaging services are likely to be part of a single product market, due to the demand-side considerations set out above.

3.1.2. Supply-Side Considerations

The Authority also considers mobile access and domestic call and messaging services to be supply-side substitutes. Globally, mobile concessionaires generally deploy mobile network infrastructure to enable them to provide both mobile access and domestic call and messaging services (and other mobile services). This is also the case in Trinidad and Tobago, with both Digicel and bmobile offering mobile access, domestic mobile calls, and messaging services via their mobile networks.

To determine whether mobile access-only products and other mobile services are supply-side substitutes, it is necessary to consider whether a concessionaire offering only mobile access services could feasibly begin to offer domestic call and messaging services in the event of a SSNIP by a hypothetical monopolist in domestic call and messaging services. Since mobile networks are generally designed and deployed to provide access, call and messaging services, any concessionaire hypothetically offering only access (or offering all services except access) would also be able to easily offer the full suite of retail mobile services, including domestic call and messaging services, without the need for network expansion, in the event of a SSNIP.

3.1.3. Conclusions

The assessment above suggests that retail mobile access and domestic mobile calls/messaging should be considered in the same product market. End users purchase these services considering the characteristics of both access and call/messaging services. This is because most end users buy these services jointly as part of a single mobile plan (as opposed to mobile access only). Furthermore, as explained in subsection 3.1.1, the TATT-KCL Mobile Customer Survey provides evidence that no less than 95% of respondents make outgoing calls or messages (i.e., do not use their mobile to only receive calls).

This is also reflected in the way these services are offered in Trinidad and Tobago, where both concessionaires predominantly offer mobile access, call, and messaging services as product bundles and PAYG service offerings. On the supply side, concessionaires use the same infrastructure and sales channels to provide access and call/messaging services and are required

[39] TATT-KCL Mobile Customer Survey S3AQ9

to provide both in order to be able to compete for end users. The above conclusion on defining a single product market for mobile access, call and messaging services is also in line with international precedent from, for example, Bermuda, Europe and the Gulf Cooperation Council (GCC) region[40, 41, 42, 43].

3.2. Are Mobile Data Services in the Same Product Market as Mobile Access, Call and Messaging Services?

The purpose of this subsection is to assess whether mobile data services should be considered part of the same product market as mobile access, call, and messaging services which was defined in subsection 3.1.

Mobile data services can be split into two main products:

1. Mobile data usage over smartphones, with data access being sold as PAYG plans or as part of a bundled offer containing calls, messaging, and data services

2. Dedicated mobile broadband services which allow users to access the Internet using a SIM card or dongle via their laptops, tablets, and smartphones

Of these, category 1 currently dominates services in Trinidad and Tobago, with mobile data services sold as part of a PAYG plan or bundle accounting for a significant proportion of data usage. In contrast, mobile data-only plans in Trinidad and Tobago are offered by only one of the two concessionaires, with limited uptake to date. It was also observed that 3.2% of respondents indicated that they subscribed to mobile data-only plans[44].

---

[40] The Regulatory Authority of Bermuda found access and call services to be in the same market. See: https://rab.bm/documents/preconsultation-market-review-a-pdf-2/?wpdmdl=11768&refresh=5c8bae277b51c1552657959

[41] As part of its recent merger investigations into mobile network concessionaires, the EC has defined mobile voice and data services to be part of a single market for retail mobile telecommunications services. This has predominantly been based on supply-side substitutability and end users' common usage of mobile devices to make calls and access the Internet. See, for example: http://ec.europa.eu/competition/mergers/cases/decisions/m6992_20140528_20600_4004267_EN.pdf

[42] As part of their market reviews, regulatory authorities in Bahrain, Oman, Qatar, Saudi Arabia, and the UAE have all defined a single product market for retail mobile services, covering mobile access, call, messaging, and data services.

[43] The Utilities Regulation and Competition Authority (URCA) of The Bahamas found access and call services to be in the same market. See: https://www.urcabahamas.bs/wp-content/uploads/2022/07/Final-Determination-Retail-Cellular-Mobile-Market-Review-Under-S.39-of-the-Comms-Act-2009-15-July-2022.pdf

[44] TATT-KCL Mobile Customer Survey

Although the nature of the data service provided under both products is identical, there are some differences in the features of the demand for these services. The Authority, therefore, assessed the extent of demand-side substitution between mobile data services and mobile access, call, and messaging services, separately for each mobile data product group, as set out in subsection 3.2.1[45]. On the other hand, data services can be supplied along with other mobile services, so the Authority, therefore, considered these products jointly in the assessment of supply-side substitution. (This is discussed in subsection 3.2.2.)

3.2.1. Demand-Side Considerations

In assessing potential demand-side substitution, the Authority first examined the characteristics of mobile data products.

3.2.1.1. Product Characteristics

End users in Trinidad and Tobago have two ways of accessing mobile data services, described below.

Smartphone offers: These are sold in PAYG plans (without any monthly allowances), prepaid plans with monthly allowances, and postpaid plans with monthly allowances. Under the PAYG options, end users are charged per MB of data used, with these offers only being available to prepaid users[46] who are not subscribed to a plan, or to prepaid and postpaid mobile end users who exceed their plan's data allowance[47]. Bundles, on the other hand, contain a combination of mobile data, calls, and SMS allowances (after which a PAYG charge would apply).

Data-only/mobile broadband offers (dongles): These are data-only packages which allow end users to access the Internet via a dongle, MiFi modem, etc. Usually, there are no call or messaging allowances included in these plans[48]. In Trinidad and Tobago, both operators offer

[45] The Authority notes that, given the limited uptake and mobile data-only service offerings available to date, it is difficult to fully assess whether these are in the same product market as other mobile services. As such, the remainder of subsection 3.2.1. focusses mostly on mobile data services offered as part of mobile bundles.

[46] Prepaid PAYG users are charged for the ability to make and receive calls, send and receive SMS, and use data over the validity period of the credit. The credit will be deducted from the prepaid balance as used. Prepaid PAYG consumers of data, therefore, also have mobile access, calls, SMS and data services.

[47] In the case of prepaid plans, end users need to have sufficient credit on their phone to consume anything beyond the plan allowance.

[48] This not the case for one of the two mobile operators in Trinidad and Tobago, as there are allowances for persons subscribing to these plans to access a capped amount of on-net SMSs. https://bmobile.co.tt/faq/what-are-the-mifi-postpaid-plans-2/

dongle/MiFi plans[49],[50]. Digicel offers a postpaid hotspot plan with 150 GB per month of 4G/LTE data for the price of TT$394 per month. Additionally, Digicel offers two prepaid dongle/MiFi 4G/LTE plans with capped data components: a 30-day 4G prepaid dongle/MiFi modem plan with 30 GB of data priced at TT$296, and a 30-day 4G prepaid dongle data plan with 10 GB priced at TT$163. bmobile offers two MiFi plans, with capped data components that can be accessed by prepaid and postpaid customers. bmobile's MiFi plans[51] offer potential subscribers 40 GB and 200 GB of data priced at TT$280 and TT$393, respectively. Thus, all dongle/MiFi plans on offer are within the price range of TT$163 and TT$393 per month. The device cost is advertised as "free" by at least one of the providers of this service. Note that all prices are inclusive of VAT and rounded to the closest TT dollar.

Table 3 and Table 4 show the prepaid and postpaid mobile (smartphone/bundled) plans that include a data allowance and present all the prepaid and postpaid residential mobile bundles currently offered in Trinidad and Tobago.

Table 3 Residential prepaid mobile bundled plans

Concessionaire	Product	Validity Period	Price	Data Included	Minutes Included	SMS/MMS Included
Digicel	Prime Ultra Bundle	30 days	$415	100 GB Any use LTE	400 anywhere minutes	Free (local)
	Prime Plus Bundle	30 days	$355	50 GB Any use LTE	300 anywhere minutes	Free (local)
	Prime Value Bundle	30 days	$295	25 GB Any use LTE	200 anywhere minutes	Free (local)
	Prime Essential Bundle	30 days	$235	10 GB Any use LTE	150 anywhere minutes	Free (local)
	Prime Bundle	10 days	$150	30 GB	150 anywhere minutes	Free (local)
	Prime Bundle	7 days	$120	20 GB	150 anywhere minutes	Free (local)

[49] https://bmobile.co.tt/mifi-faq/

[50] https://www.digicelgroup.com/tt/en/MiFi-Plans.html

[51] These plans also offer roaming data and 20 free on-net SMSs.

Concessionaire	Product	Validity Period	Price	Data Included	Minutes Included	SMS/MMS Included
	Prime Bundle	3 days	$60	30 GB	90 anywhere minutes	Free (local)
	Prime Bundle	1 day	$30	20 GB	60 anywhere minutes	Free (local)
bmobile	Prepaid Plan 6	30 days	$393	Unlimited 4G LTE	400 anywhere minutes	All unlimited
	Prepaid Plan 5	30 days	$269	Unlimited 4G LTE	200 anywhere minutes	All unlimited
	Prepaid Plan 4	7 days	$111	Unlimited 4G LTE	175 anywhere minutes	All unlimited
	Prepaid Plan 3	3 days	$54	Unlimited 4G LTE	75 anywhere minutes	All unlimited
	Prepaid Plan 2	1 day	$33	Unlimited 4G LTE	60 anywhere minutes	All unlimited
	Prepaid Plan 1	1 day	$28	20 GB	60 anywhere minutes	

Sources: The following concessionaire websites, accessed 22nd February 2023
Digicel: https://www.digicelgroup.com/tt/en/prepaid.html
bmobile: https://bmobile.co.tt/mobile/

Table 4 Residential postpaid mobile bundled plans (TT$)

Concessionaire	Product	Requirements	Monthly Subscription Price (TT$)	Data Allowance	Call Allowance	SMS/ MMS Allowance
Digicel	Postpaid Prime Ultra	Security deposit	$415	400 GB Any use LTE	Free Digicel to Digicel & anywhere minutes	Free
	Postpaid Prime Value	Security deposit	$295	25 GB Any use LTE	Free Digicel to Digicel minutes	Free
bmobile	Elite	None	$591	Unlimited 4G LTE	Unlimited bmobile and anywhere minutes	Unlimited worldwide
	Choice	None	$449	Unlimited 4G LTE	Unlimited bmobile and anywhere minutes	Unlimited worldwide

Concessionaire	Product	Requirements	Monthly Subscription Price (TT$)	Data Allowance	Call Allowance	SMS/ MMS Allowance
	Select	None	$393	Unlimited 4G LTE	Unlimited bmobile and anywhere minutes	Unlimited worldwide
	Star	None	$269	35 GB 4G LTE	Unlimited bmobile minutes and 200 anywhere minutes	Unlimited worldwide

Sources: The following concessionaire websites, accessed 22nd February 2023
Digicel: https://www.digicelgroup.com/tt/en/prepaid.html
bmobile: https://bmobile.co.tt/mobile/

Table 4 also shows that end users with high data demand (150 GB per month or more) incur a similar monthly cost of TT$400 or more between prepaid and postpaid bundles and MiFi packages. Similarly, those with lower demand (35 GB or less) incur a similar monthly cost of TT$160 to TT$300 on either prepaid and postpaid bundles, and MiFi packages. This suggests that these end users may be indifferent to the differences between the two offers, and base their subscription decision on non-price factors, for example, any devices which might be included in the offer.

End users requiring only an Internet connection might not see bundles as attractive. However, in the case of a SSNIP in mobile data-only products, they have the option to switch to a bundle and use the Internet connection via their smartphone, potentially using that to tether to other devices. A mobile data-only user could also, if faced with a SSNIP in that product, switch to a PAYG plan, as this also allows the customer to use mobile data only. The scope for this is further discussed below.

Moreover, since mobile data services are predominantly offered and purchased in bundles (rather than as individual service components, as discussed in subsection 3.2.1.2), the Authority considers it appropriate to focus on an assessment of demand-side substitution at that level (i.e., with bundled services as the initial focal product, which is then widened to also include mobile data services)[52].

Therefore, in terms of product features, the Authority provisionally concludes that data services appear to be used jointly with calls and SMS (for those end users valuing all three services),

[52] The Authority notes that this approach is in line with that taken by other competition and regulatory authorities, in the context of (1) recent market reviews in Bermuda, The Bahamas, Kenya, Malaysia, South Africa, and in a range of GCC countries; and (2) recent European Commission mobile merger cases in Germany, Ireland, Italy, the Netherlands and the UK.

while mobile access (offered as part of a mobile bundle or a mobile data-only connection) is necessary to access data services. These product characteristics suggest that the three may be part of the same market due to end users' need and preference to purchase the services together.

3.2.1.2. Uptake and Usage Trends

The Quarterly Market Update for Q3 2022, published by the Authority in January 2023[53], shows that penetration of mobile Internet services (i.e., as part of the smartphone plan) were stable around 58%. On the other hand, the TATT-KCL Mobile Customer Survey[54] shows that only 32 of the 1,000 respondents (3.2%) use standalone mobile data only (MiFi services) as opposed to as part of their mobile smartphone plans. Additionally, around two-thirds of the mobile broadband users in the survey sample stated that mobile broadband is not the only service they use to access the Internet, with a third of this sub-group also using mobile data services on their phones. This suggests that end users in Trinidad and Tobago prefer accessing mobile data services in combination with mobile calls and SMSs (i.e., via smartphone plans) rather than data as a standalone product.

Furthermore, the vast majority (92%) of all survey respondents have a smartphone or tablet. The high mobile penetration rate in Trinidad and Tobago[55] and the national coverage of mobile data services suggest that mobile data services are readily available to all mobile service end users. The only way for end users to access smartphone-based, mobile data-only services on a standalone basis is through PAYG or mobile broadband-only packages, which are discussed further in subsection 3.2.1.3[56].

[53] TATT (2023). Quarterly Market Update July – September 2022, p.20. See: *https://tatt.org.tt/DesktopModules/Bring2mind/DMX/API/Entries/Download?Command=Core_Download&EntryId=1735&PortalId=0&TabId=222*

[54] TATT-KCL Mobile Customer Survey, Table 5

[55] Mobile penetration stands at 146% (TATT Annual Market Report 2021).

[56] As noted in subsection 3.1.1, PAYG users may have a greater incentive to engage in Wi-Fi offloading compared to end users with large or unlimited data allowances, which could have the effect of narrowing the effective difference in prices for a given level of usage. However, as detailed in that subsection, the Authority notes that many end users with large or unlimited data allowances are also likely to use Wi-Fi where possible, and the importance of mobility, particularly to access mobile services while away from areas with a Wi-Fi presence, is likely to limit this effect.

3.2.1.3. Relative Prices

To meet their mobile data needs, end users can reasonably choose between the following services:

1. PAYG options, which charge end users based on actual usage

2. Mobile bundles which provide end users with predetermined allowances of calls, SMSs and data

3. Data-only/mobile broadband offers discussed above

From a comparison of the minimum costs incurred by end users to meet the average mobile data needs[57] of 7.2 GB/month[58], the Authority concludes that mobile broadband/data-only bundles may represent a more economical option compared to PAYG packages or mobile bundles. In particular, based on Table 3 and 4, the following packages represent the minimum costs that end users would have to incur to meet their average usage demands across the different offerings:

1. Postpaid: "Star" product offered by bmobile, which provides 35 GB for 30 days at TT$269

2. Prepaid/PAYG: "Prime Essential Bundle" offered by Digicel, which provides 10 GB for 30 days at TT$235

3. Mobile broadband (MiFi): 4G prepaid Dongle data plan which offers 10 GB for 30 days at TT$163

MiFi is therefore the cheapest option for end users to meet their average data needs.

On the basis of these relative prices alone, there may be scope for demand-side substitutability between mobile broadband and mobile bundles. However, as discussed above, the Authority has observed that mobile broadband/data-only services may account for a very small proportion

[57] This value is obtained considering the bundle with the lowest data allowance, assuming that the entire price of the bundle only refers to the amount of data available. This seems reasonable given the average data usage per connection was approximately 7.2 GB per month in 2021, based on market data highlighting the average data usage per subscription.

[58] Average data usage per subscription was calculated by total mobile Internet data used in 2021 divided by total mobile Internet subscriptions in 2021, derived on a monthly basis; that is, 70,843,878/819,844/ 12= 7.20 GB/month.

of total mobile end users[59]. This low take-up may be as a result of widespread access to high speed fixed broadband services, among other reasons[60]. Indeed, the TATT-KCL Mobile Customer Survey shows that 80% of respondents utilise fixed Internet services[61].

3.2.1.4. Conclusions on Demand-Side Substitution

Considering the analysis of product characteristics, relative pricing and uptake and usage trends, the Authority provisionally concludes that, from a demand-side perspective, mobile data services offered as part of a smartphone plan should be considered a complement to the other services within these plans (i.e., mobile access, regular calls, and messaging).

With regard to mobile data-only service offerings, given the prevailing limited uptake, it is difficult to fully assess if they are demand-side substitutes for other mobile services. Based on the limited information available, the Authority considers this to be the case, mostly due to these services being offered at similar prices to the mobile data service included within mobile bundles.

3.2.2. Supply-Side Considerations

From a supply-side perspective, mobile data services are provided through the same infrastructure used for access, call, and messaging services, as well as through the same sales channels. This holds for both types of mobile data services (i.e., data as part of mobile bundles and mobile data-only services). In line with the arguments set out in subsection 3.1, on mobile access, call, and messaging services, this makes them supply-side substitutes.

3.2.3. Conclusions

Taking demand and supply considerations together, the Authority provisionally concludes that mobile data services belong to the same market as mobile access, domestic call and messaging services; they are substitutes from the supply side and, on the demand side, offer similar functionality to end users. This conclusion on defining a single market for mobile access, call,

[59] At the time of writing, only one operator offered standalone mobile data products.

[60] The Authority is of the view that standalone mobile data services is likely to increase significantly in the future. The Authority reserves the right to conduct periodic and timely reviews of the market and all submarkets, as it deems necessary, for accurate regulatory decision making, in accordance with its regulatory functions and mandate.

[61] TATT-KCL Mobile Customer Survey, Table 5

messaging, and mobile data services is, again, in line with international precedent from, for example, Bermuda[62], Europe[63] and the GCC region[64].

3.3. Are Prepaid and Postpaid Mobile Services in the Same Product Market?

This subsection considers whether prepaid and postpaid domestic mobile services can be considered in the same product market.

3.3.1. Demand-Side Considerations

In line with the approach taken in subsection 3.2.1.1., the Authority first examined the characteristics of the products in question.

3.3.1.1. Product Characteristics

Both postpaid and prepaid mobile services allow end users to make and receive mobile calls, send SMS/MMSs, and access the Internet. However, there are some differences in the way these services are provided to end users, which should be considered in an assessment of whether the two products are effective demand-side substitutes. The two main differences are as follows:

1. **Billing Arrangements**

    a) End users on prepaid plans can pay upfront for credit, which they can then use to buy mobile access and/or pay-per-unit rates for usage, based on a standard tariff

[62] https://rab.bm/documents/market-review consultation/?wpdmdl=13600&refresh=5c9de7dc1a3d31553852380

[63] In recent ex post competition merger control investigations across Europe, the following authorities have considered mobile voice and broadband services to be within a single product market:
- Ireland H3G-O2 merger (2014). The European Commission (EC) defined a single market for retail mobile telecommunications services due to supply-side substitutability.
- Germany O2-E-plus merger (2014). The EC again defined a single market for retail mobile telecommunications services due to supply-side substitutability.
- UK BT–EE merger (2015). A single market for mobile (voice, messaging and Internet access) services was considered, predominantly due to supply-side substitutability. This was supplemented with target analysis of specific segments (i.e., fixed-mobile bundles, business end users and packages, including high speeds and generous data allowances).

[64] As mentioned before, as part of their market reviews, regulatory authorities in Oman, Qatar, Saudi Arabia, and the UAE have all defined a single product market for domestic retail mobile services, including mobile data services.

(prepaid and prepaid PAYG for Digicel and bmobile[65]). They can also purchase one-off bundles of calls, messages, and data[66].

b) Postpaid end users are billed a fee at the end of each month, with bills comprising the fixed subscription price for their chosen plan (which commonly covers both the access service and a monthly call, messaging, and data allowance) and charges based on "out of bundle" rates for any usage exceeding the monthly allowance.

2. Requirements

While prepaid services are available to anyone (subject to proof of identification), there are some criteria that prospective end users must meet in order to access postpaid services. These are:

a) Deposits: Digicel's postpaid end users have to submit a deposit depending on their credit score[67].

b) Credit limits and credit checks: Both Digicel and bmobile postpaid end users are asked to set a credit limit for their subscriptions. This is accomplished when the customer selects his/her preferred plan[68], which must then be approved by the concessionaire. In addition, end users can be subject to credit checks to access the service[69]. This may present a marginal barrier to substitution between customer segments.

c) Contract length: The minimum contract length for postpaid plans for both concessionaires is 12 months, whereas prepaid plans have a validity period of 1, 7 or 30 day(s).

d) Usage allowances: Prepaid and postpaid offerings are increasingly becoming alike, with both services now being offered as mobile bundles (comprising varying allowances of data, domestic calls and SMSs). Prepaid services can, however, also be

[65] Digicel: https://www.digicelgroup.com/tt/en/mobile/plans-services/prepaid/prepaidrate.html
bmobile: https://bmobile.co.tt/mobile/ bmobile: https://bmobile.co.tt/mobile/

[66] All the bundles provided in Trinidad and Tobago include a combination of the three services.

In the case of Digicel, this also applies to both prepaid and postpaid users who do not satisfy the credit checks. See https://bmobile.co.tt/post-paid-and-prepaid-terms-and-conditions/

[68] It is noteworthy that the customer's choice of the preferred plan is based on the cost, and terms and conditions of the packages available.

[69] In some cases, these credit checks are waived if a security deposit has been paid. See, for example: https://bmobile.co.tt/post-paid-and-prepaid-terms-and-conditions/

accessed on a PAYG basis (meaning that end users are provided calls, SMSs, and data on a standalone basis) without the need for a plan subscription.

Despite the differences described above, there appear to be some relevant similarities in prepaid and postpaid plans, which suggest they are demand substitutes. First, the credit limits for postpaid services give financial control to these end users, which mimics the financial control of a prepaid plan subscription. In addition, in both cases, end users can arrange for their credit limits to be set above the monthly price of their plan so they can "top up" their allowances by purchasing additional packages of services. These top-up packages might comprise only calls, only data[70], or a bundle of minutes, SMSs, and data.

The top-up options for postpaid and prepaid services offered by Digicel are called "add-ons". They have similar characteristics in terms of the number of additional allowances. They differ only in the payment method: upfront for prepaid end users and in arrears on a monthly basis for postpaid end users. Similarly, although bmobile does not offer specific add-ons to prepaid end users, it does allow them to purchase bundles with a very short contract length (as short as 24 hours), which can be used as top ups. bmobile's postpaid end users, on the other hand, are offered different add-on options, with these being equivalent to Digicel's postpaid add-ons.

There are some differences in the product features of prepaid and postpaid services. However, these seem to be outweighed by the numerous similarities. Therefore, based on the product characteristics alone, prepaid and postpaid services appear to be comparable and potential demand substitutes. It was thus important to examine for possible evidence of actual substitution between these two payment methods.

3.3.1.2. Uptake and Usage Trends

The majority of end users in Trinidad and Tobago subscribe to prepaid mobile plans. As of March 2022, prepaid plans made up around 75% of total mobile connections – down from approximately 77% in January 2020[71]. This is indicative of a longer-term decline in prepaid mobile connections which fell from more than 1.7 million in 2015/16 to approximately 1.5 million in 2022[72] (see Figure 2). On the other hand, total mobile postpaid connections increased slightly over the same period, from just under 0.4 million to 0.48 million[73]. However, a

[70] An SMS-only option is not currently available from any of the concessionaires.

[71] Concessionaire data submitted to the Authority

[72] The number of prepaid mobile connections declined by approximately 10% between January 2020 and March 2022 (TATT 2022).

[73] The number of postpaid mobile connections decreased by approximately 4% between January 2020 and March 2022 (TATT 2022).

comparison of the size of the decline in prepaid subscribers against the growth in postpaid subscribers suggests that switching from prepaid to postpaid was unlikely to be the primary reason for the decline in prepaid subscribers, since the decline in prepaid is significantly greater than the increase in postpaid. This reduction in the total number of subscriptions (owing to the relatively higher rate of change in prepaid subscriptions) could be indicative of some consumers opting to have only one mobile subscription.

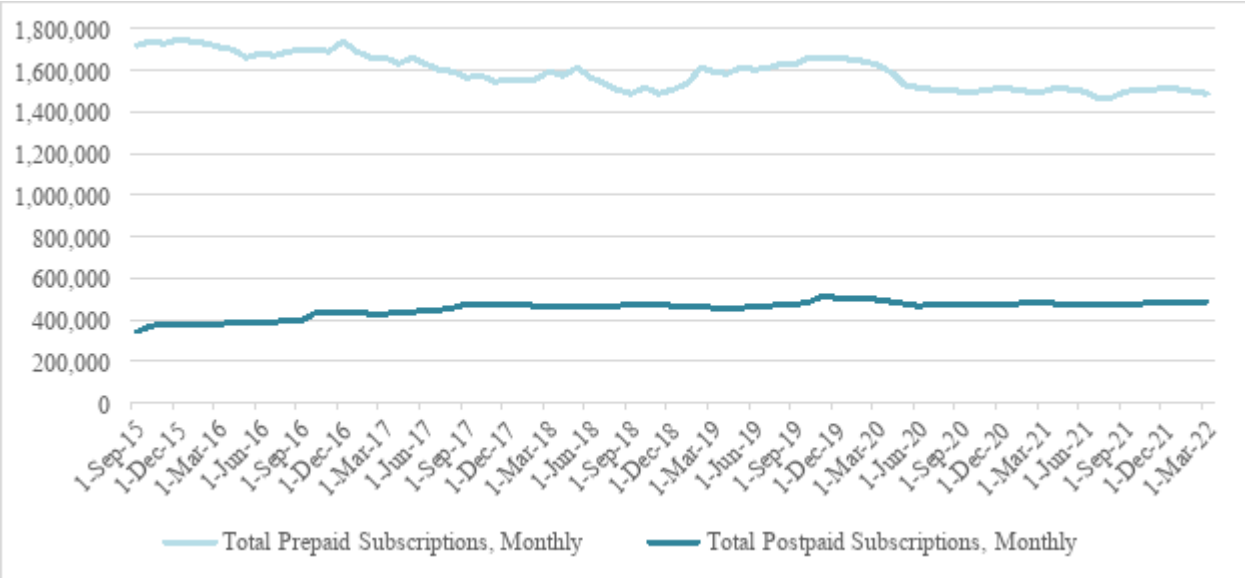


Figure 2 Prepaid versus postpaid connections, total mobile market

Source: Concessionaire data submitted to the Authority, Annual Market Report 2021

3.3.1.3. Relative Prices

Prices of prepaid and postpaid domestic mobile services, summarised in Table 5 and Table 6, are similar, meaning that users are generally charged comparable amounts for a given level of usage. Prepaid plans offer lower monthly allowances than postpaid plans but more flexibility in terms of minimum usage and with a reduced contract length (as opposed to the minimum term of 12 months in all postpaid contracts), targeted at more price-sensitive end users with a lower usage profile. In contrast, postpaid plans often require higher minimum monthly payments for a higher monthly allowance, targeting those less budget-sensitive end users with a higher usage profile. However, despite these differences, and as shown in Table 5 and Table 6, prices across both service types are broadly similar.

Table 5 Residential prepaid plans (TT$)

Concessionaire	Product	Validity Period	Price (TT$)	Data Included	Minutes Included	SMS/MMS Included
Digicel	Prime Ultra Bundle	30 days	$415	100 GB Any use LTE	400 anywhere minutes	Free (local)
	Prime Plus Bundle	30 days	$355	50 GB Any use LTE	300 anywhere minutes	Free (local)
	Prime Value Bundle	30 days	$295	25 GB Any use LTE	200 anywhere minutes	Free (local)
	Prime Essential Bundle	30 days	$235	10 GB Any use LTE	150 anywhere minutes	Free (local)
	Prime Bundle	10 days	$150	30 GB	150 anywhere minutes	Free (local)
	Prime Bundle	7 days	$120	20 GB	150 anywhere minutes	Free (local)
	Prime Bundle	3 days	$60	30 GB	90 anywhere minutes	Free (local)
	Prime Bundle	1 day	$30	20 GB	60 anywhere minutes	Free (local)
bmobile	Prepaid Plan 6	30 days	$393	Unlimited 4G LTE	400 anywhere minutes	All unlimited
	Prepaid Plan 5	30 days	$269	Unlimited 4G LTE	200 anywhere minutes	All unlimited
	Prepaid Plan 4	7 days	$111	Unlimited 4G LTE	175 anywhere minutes	All unlimited
	Prepaid Plan 3	3 days	$54	Unlimited 4G LTE	75 anywhere minutes	All unlimited
	Prepaid Plan 2	1 day	$33	Unlimited 4G LTE	60 anywhere minutes	All unlimited
	Prepaid Plan 1	1 day	$28	20 GB	60 anywhere minutes	

Sources:The following concessionaire websites, accessed 23rd February 2023:
Digicel x :https://www.digicelgroup.com/tt/en/prepaid.html
bmobile y: https://bmobile.co.tt/mobile/

Table 6 Residential postpaid mobile plans (TT$)

Concessionaire	Product	Requirements	Monthly Subscription Price (TT$)	Data Allowance	Call Allowance	SMS/ MMS Allowance
Digicel	Postpaid Prime Ultra	Security deposit	$415	400 GB Any use LTE	Free Digicel to Digicel and anywhere minutes	Free
	Postpaid Prime Value	Security deposit	$295	25 GB Any use LTE	Free Digicel to Digicel minutes	Free
bmobile	Elite[74]	None	$591	Unlimited 4G LTE	Unlimited bmobile and anywhere minutes	Unlimited worldwide
	Choice	None	$449	Unlimited 4G LTE	Unlimited bmobile and anywhere minutes	Unlimited worldwide
	Select	None	$393	Unlimited 4G LTE	Unlimited bmobile and anywhere minutes	Unlimited worldwide
	Star	None	$269	35 GB 4G LTE	Unlimited bmobile minutes and 200 anywhere minutes	Unlimited worldwide

Sources: The following concessionaire websites, accessed 23rd February 2023:
Digicel: https://www.digicelgroup.com/tt/en/prepaid.html
bmobile: https://bmobile.co.tt/mobile/

The absolute price of postpaid plans typically being above that of prepaid plans reflects the higher usage allowances in those plans. Indeed, end users whose usage is in the range for which prepaid and postpaid plans are both offered may consider the two as substitutes.

A detailed look at the prepaid and postpaid offers available reveals some similarity between the prices at different levels of data allowance. For example, Digicel offers both a prepaid Prime Value bundle and a postpaid Prime Value bundle, for $295, with a data cap of 25 GB and a validity of 30 days. Similarly, bmobile offers prepaid bundles with unlimited data usage and 30-day validity within the range of $269 and $393. In comparison, bmobile offers its Select

[74] The difference between the Elite, Choice, and Select bundles is primarily with regard to the roaming data allowance.

postpaid bundle with unlimited data usage at a price of $393. It is also important to note that the postpaid and prepaid tariff offerings provisioned by both operators were similar. This non-trivial overlap within Digicel, the respective prepaid and postpaid tariff plan offerings from both operators, facilitates substitution between these services.

The Authority therefore concludes that prepaid and postpaid services have very similar characteristics and similar prices by operators[75] for a given level of usage. What differs is the target group of end users and their willingness to pay[76]. However, it seems reasonable to assume that, if a SSNIP were to be implemented by a hypothetical monopolist on prepaid plans, some end users might decide to switch to postpaid contracts, and vice versa. This suggests that, despite certain limitations, prepaid and postpaid mobile plans can be considered as demand-side substitutes.

3.3.2. Supply-Side Considerations

In general, domestic prepaid and postpaid mobile services are likely to be supply-side substitutes, as they offer the same core functionality (i.e., they allow the end user to make and receive calls, send and receive SMS, and access the Internet). As a result, the network infrastructure and the technology required to deliver the two services do not differ.

Sales channels for prepaid and postpaid services are the same, as both concessionaires require end users to apply and register online or in person at a retail outlet. Prepaid bundles, bill payments and credit top ups can be purchased online or over the phone via the concessionaire's customer service centre, as well as from third-party suppliers, such as small retailers, petrol stations and supermarkets. This would suggest that concessionaires require a retail sales network for both prepaid and postpaid services and, thus, there are unlikely to be high costs associated with switching from supplying one service to another[77].

Finally, although there are a few differences in terms of network infrastructure and billing – with the provision of postpaid (but not prepaid) services requiring billing, revenue collection and bad debt management – the cost of these activities does not appear to be sufficiently large to represent a barrier to supply-side switching. Therefore, in the event of a SSNIP by a hypothetical monopolist offering prepaid services, a supplier of postpaid services could switch

[75] This applies in both operators' prepaid and postpaid tariff plan offerings.

[76] This is also acknowledged by one concessionaire which, in its qualitative submission, identified that prepaid subscribers are typically more price sensitive ("value driven") whilst postpaid subscribers are typically more sensitive to other factors ("service driven").

[77] The Authority notes that postpaid subscriptions are subject to greater administrative requirements (for example, the need to undertake credit checks or other verification processes for new customers) but considers that the associated costs are likely to be immaterial compared to network costs.

to the supply of prepaid services and vice versa, without substantial additional expenditure or investment.

3.3.3. Conclusions

On the demand side, postpaid end users, on average, spend and use more than prepaid end users[78], and are subject to more stringent credit requirements. However, the functionality of both service types is identical. Consequently, the Authority does not consider that customer segmentation for mobile services is clear cut but, rather is of the view that there is certain overlap between the prepaid and postpaid products, particularly at the higher end of prepaid services and entry-level postpaid services, where the terms of these services (i.e., the level of spend and bundled volumes) are generally similar or competitive. Therefore, the Authority concludes that prepaid and postpaid mobile services are in the same product market.

Additionally, prepaid and postpaid mobile services are also deemed to be supply-side substitutes, as the nature of the services offered and underlying infrastructure are comparable. Therefore, both concessionaires could switch from offering one to the other in the case of a SSNIP.

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

The OECD 2014 *Guidelines on Defining the Relevant Market in Telecommunications*[79] suggests that, depending on the product, some business users have needs that are very different from residential users' needs. However, not all businesses might fit into a single category, given their differing nature and size. For example, when considering fixed telecommunications in particular, it is possible that small and medium enterprises (SMEs) will have needs more similar to those of residential users than of large enterprises[80]. Large multinational firms, on the other hand, typically have more complex and often bespoke needs. In the case of mobile services, for example, a potential special requirement for larger business users might be being able to communicate within a closed user group (CUG).

---

[78] As measured by ARPU over time, as well as usage across all services

[79] https://www.oecd.org/daf/competition/Defining_Relevant_Market_in_Telecommunications_web.pdf

[80] 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.
Commerce Commission, New Zealand (2012), Vodafone New Zealand Limited and TelstraClear Limited (2012) NZCC 33. Available at: https://comcom.govt.nz/__data/assets/pdf_file/0027/76176/NZCC-33-2012-Vodafone-TelstraClear-clearance-public-decision-29-October-2012.pdf

The focus of this subsection is, therefore, to assess whether retail domestic mobile services provided to residential and business end users should form part of the same product market in Trinidad and Tobago. In doing the assessment, the Authority again considers end users' characteristics and how these affect their inducements and ability to switch between each group of services, as well as the implications for the concessionaires' supply of such services.

3.4.1. Demand-Side Considerations

The first consideration in the Authority's demand-side analysis is a comparison of the characteristics of services offered to residential end users with those offered to business end users.

3.4.1.1. Product Characteristics

From submissions received from both concessionaires, the Authority notes that there are some potential differences in the characteristics and requirements of business and residential users of domestic mobile services in Trinidad and Tobago. For example, business users may be more sensitive to quality of service levels. Indeed, Digicel's qualitative evidence submission[81] reports that "corporate end users place even greater focus (than retail end users) on service resiliency and customer aftercare". Equally, bmobile declares that "corporate/business service demand is channeled via a specific sales team"[82].

Furthermore, Digicel[83] also posited that "in the corporate space, quality and reliability of service is a key component as business are dependent on telecoms solutions to facilitate their operations and drive their revenue streams". It was also observed by Digicel that "Price has steadily grown to become a leading factor in decision-making, particularly in the small and medium enterprise (SME) space with its importance rising sharply post COVID lockdown as businesses attempt to recover from the economic difficulties experienced during the pandemic".

In addition, business users can require solutions specific to their needs, such as managed Wi-Fi, managed security, and unified communications across mobile and fixed services[84]. There is also a layer of management and dedicated support required that would be surplus to residential needs.

[81] Qualitative evidence submitted by operator x, March 2019

[82] Qualitative evidence submitted by operator y, December 2018

[83] Qualitative evidence submitted by operator x, September 2022

[84] This is also documented in the qualitative evidence submitted by operator x. For example, operator x states, in said submission, that its business subscribers are offered managed services, which are not offered.

However, these differences may not be sufficient to prevent demand-side substitution between business and residential mobile services. This is particularly the case for small businesses, which are unlikely to have the same demand characteristics as described above for (large) corporate end users.

Furthermore, it is reasonable to assume that it is difficult for the concessionaires to prevent business end users from signing up for residential services, and vice versa. This is particularly true for small businesses, which could easily register as retail end users using their home address rather than their business address, especially as they are also less likely to require business-specific solutions. Larger businesses, on the other hand, would find it more difficult to register as residential end users. However, as mobile devices are given to individual staff members, this is likely to reduce any potential differences in the use case relative to residential end users.

As part of its submission, bmobile explained that it is able to distinguish between customer types based on a series of checks to verify the user's status, service location and demand for advanced ICT solutions[85]. However, the Authority considers that this could be difficult to enforce for small businesses, for the reasons given above.

Digicel, instead, stated that "there is no obligation for corporate end users to take business products", and that this results in "fierce competition in the corporate side of the business from both Digicel's own retail offering and the offering of its competitors, particularly in the growing base of SMB/SOHO[86] end users".

[85] Based on the following responses to data requests issued by the Authority:
"Corporate/business clients are distinguished by the following: (1) The customer's status as a registered business (based on documents such as VAT Registration Number, Company Registration Number, etc.); (2) The service location (whether it is commercial or residential) and (3) The customer's demand for advanced ICT solutions and these demands are subject to higher service level agreements.

Residential end-users are distinguished by the following: (1) The customer's status as a private citizen and not a business; (2) The service location (whether is commercial or residential); (3) The customer's service request; and (4) The customer's consumption patterns".

[86] Small office/home office (SOHO) is a term used to refer to small businesses, many of which operate out of homes. SMB refers to small- and medium-sized businesses.

Figure 3 suggests that [redacted] puts more emphasis than [redacted] does on business end users, who represent a consistent (but decreasing) share of the former's postpaid mobile end users ([redacted]), whilst [redacted] share of business customers among its total postpaid end-user base [redacted] during this period[87].

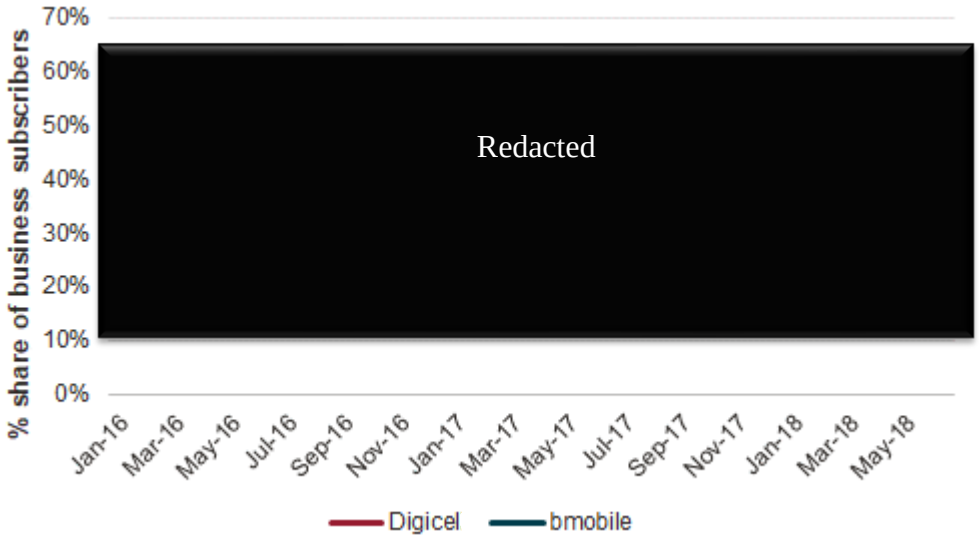


Figure 3. Share of business subscribers in total postpaid connections for operators [redacted]

In summary, the evidence available suggests that, although the features of demand for residential and business customer segments might present some differences, the possibility of some demand substitutability exists. [redacted] offers those customers the same set of product plans as residential end users. [redacted] end users based on a set of checks.

However, the Authority understands that, in practice, this could be difficult to enforce for small businesses, which may result in small businesses, in practice, using residential tariff plans[88]. Indeed, the Authority believes that small businesses could consider residential offers to be

[87] The difference observed between both concessionaires may, in part, be as a result of [redacted] not offering [redacted] end users.

[88] For instance, small business or home office owners are likely to use a mobile connection for both business and personal purposes. In these cases, it is reasonable to assume that it is difficult for the mobile service providers to prevent business users from signing up for residential services, or vice versa. This is particularly true for small businesses which could easily register as retail end users, using their home as residency rather than their business site, especially as they are also less likely to require business-specific solutions.

viable substitutes for a number of reasons, such as being a more cost-effective way to meet their demand, and including prepaid plans (which are not available for business-specific plans).

3.4.1.2. Uptake and Usage Trends

Two services exhibiting opposing demand trends over time may, under certain conditions[89], be an indication that those services are, to some degree, demand-side substitutes. However, Figure 4 shows limited net substitution between residential postpaid and corporate postpaid subscriptions[90]. In particular, the number of residential subscriptions increased gradually until January 2018, while the corporate segment has been largely stable since January 2016. Therefore, no strong conclusions can be derived from this figure for the period under review.

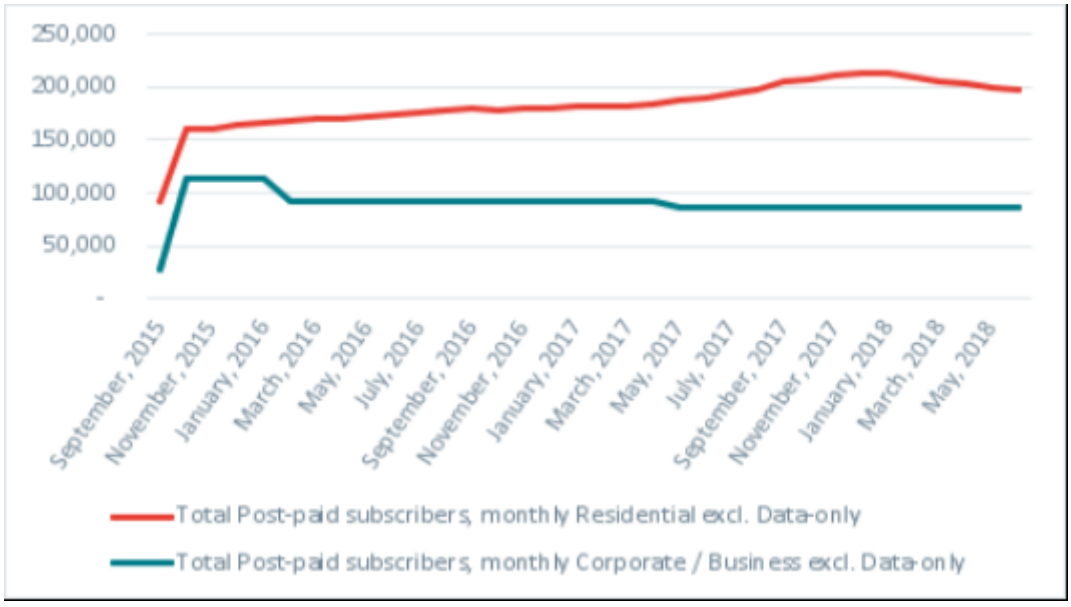


Figure 4 Residential versus business subscriber numbers

Source: Concessionaire data submitted to the Authority (December 2018–January 2019)

3.4.1.3. Relative Prices

There is limited available data on tariff plans offered to business end users publicly, as these are not published on the concessionaires' websites. Instead, these customers are managed by

[89] For example, stable demand for both services and a relative price change during the period under consideration. Note that opposing demand trends alone are not sufficient to indicate substitution; completely unrelated services can exhibit opposing trends but not be in the same market. Equally, an absence of opposing demand trends does not necessarily show that services are not substitutes.

[90] Prepaid subscription volumes cannot be compared between residential and business end users, as business end users can only access postpaid contracts.

a dedicated sales team, with prices being negotiated bilaterally. This is not the case for residential tariffs, which are published on concessionaires' websites. As such, business end users are able to compare their tariff plans to those available to residential customers and could switch from the corporate to the residential segment, if desirable, as it is difficult for the concessionaires to check to which segment end users belong. Indeed, Digicel's statements above on fierce competition between residential and business customer segments, and the fact that Digicel offers the same set of product plans to its business end users as residential end users, suggest that there is demand substitutability between residential and business offers.

3.4.2. Supply-Side Considerations

In general, domestic mobile services for residential and business end users are likely to be supply-side substitutes, as the same network infrastructure and inputs are used to deliver both services.

There are, however, a few differences between the retail marketing and customer service activities used for residential and those for business. In particular, larger business customers are likely to be offered greater levels of customer support, such as dedicated customer service representatives or specific marketing channels. Digicel also posits that the scale of business operations versus residential can be massive, and standard solutions would be insufficient. For example, both bmobile and Digicel explain that separate sales teams are assigned to residential and business end users (or prospective end users)[91].

However, the investments and changes to the sales team structures, which are required in order to target and service these customer segments, do not appear to be sufficiently large to represent a barrier to supply-side switching. Therefore, in the event of a SSNIP by a hypothetical monopolist offering residential services, a supplier of business services could switch to the

[91] Based on both operators' qualitative RFI submissions

supply of residential services, and vice versa. This is in line with the recent market definition exercises performed in The Bahamas[92], Bermuda[93] and Oman[94].

3.4.3. Conclusions

From a demand-side perspective, there is some limited evidence to support demand-side substitution, as some business end users, particularly SMEs, may be able to switch from business to residential service offerings[95]. From a supply-side perspective, the two products are supply-side substitutes since similar inputs are used to deliver both business 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 a hypothetical monopolist.

Given the information available and having considered the differences between the two customer segments in terms of both demand and supply, the Authority, therefore, concludes that residential and business services appear to be substitutes. Therefore, it is reasonable to conclude that mobile services offered to residential and business users belong to the same product market for domestic mobile services.

3.5. Key Conclusion

In this subsection, the Authority has considered whether retail mobile access forms a product market on its own (i.e., mobile access-only products) or should be widened to include any of the other domestic mobile services, such as domestic call, messaging, and data services. The Authority has further assessed whether there are separate product markets for prepaid and postpaid offerings and services provided to residential and business users.

---

[92] The document linked below shows that there is no separation between business and residential mobile voice and data services are defined in the same relevant market: https://www.urcabahamas.bs/wp-content/uploads/2022/07/Final-Determination-Retail-Cellular-Mobile-Market-Review-Under-S.39-of-the-Comms-Act-2009-15-July-2022.pdf

[93] The Regulatory Authority of Bermuda. Market Review of the Electronic Communications Sector (2020). https://rgb-prod-public-pdfs.s3.us-east-2.amazonaws.com/RG422921924.pdf; The Regulatory Authority of Bermuda. Market definition and significant market power, General determination, 2013. http://bermudalaws.bm/laws/Annual%20Laws/2013/Statutory%20Instruments/Regulatory%20Authority%20(Market%20Definition%20and%20Significant%20Market%20Power)%20General%20Determination%202013.pdf

[94] The latest Market Definition and Dominance Report, linked here, shows that retail mobile services have been defined as belonging to a single market, with no separation between the business and residential segment: https://tra.gov.om/pdf/8-mdd-Report.pdf

[95] Vice versa would not be formally possible for operator y end users, but there would also be no incentive for residential users to switch to business offers, as these are typically either more expensive or inclusive of services which are not relevant for residential users.

Having considered both demand-side and supply-side considerations in each case, the Authority concludes that all these services form part of a single product market for retail domestic mobile services. This conclusion is based predominantly on all these services being supply-side substitutes and is in line with international precedents from the Caribbean, European and GCC regions, amongst others.

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

Section 3 presents the Authority's determination of which domestic mobile services should form part of the relevant market. The purpose of this section (Section 4) is to assess whether that market also includes services other than traditional mobile voice, broadband and SMS services. In particular, the Authority considers whether:

1. retail fixed voice and/or broadband services should form part of the same product market as retail domestic mobile services.

2. OTT voice and messaging services should form part of that product market.

As was done in section 3, in examining these questions, the Authority assesses demand-side and supply-side factors.

4.1. Are Domestic Retail Fixed Voice and Mobile Voice Services in the Same Product Market?

Domestic voice services accessed via mobile and fixed devices share some functional similarities, in that they both enable end users to receive calls and call other end users on both mobile and fixed devices. However, there are also non-trivial differences between them, both in terms of price and non-price characteristics and how the services are delivered to end users.

4.1.1. Demand-Side Considerations

Domestic fixed voice services may, to some extent, be demand-side substitutes for mobile access and domestic call services. However, for the reasons set out below, the Authority considers that the actual extent of this substitution is likely to be limited.

4.1.1.1. Product Characteristics

In terms of product characteristics, both fixed line and mobile access and domestic call services allow end users to make and receive calls to and from other end users of fixed and mobile devices. However, there are still significant differences in the product characteristics which are likely to constrain the substitutability of mobile services with fixed services.

A significant limitation to demand-side substitutability between these services is the underlying difference in mobility. Domestic mobile services are not fixed to a determined geographic

location[96] and are specific to the end user, whilst domestic fixed voice services are tied to a location, typically in the home, and are often consumed by more than one user within a specific household. The flexibility offered by domestic mobile services appears to be an important factor for end users in Trinidad and Tobago. For example, 89% of all respondents to the TATT-KCL Mobile Customer Survey[97] stated "mobility" as the most important advantage of their domestic mobile service compared to fixed voice services (see Tables 7 and 8).

This supports the hypothesis that most mobile service end users in Trinidad and Tobago would be unwilling to compromise on the mobility feature. This, in turn, would prevent significant levels of switching away from domestic mobile services to domestic fixed services, in the event of a SSNIP for domestic mobile services[98]. Table 7 and 8 provides the rankings of the key advantages of current mobile service compared to fixed landline service for PAYG and prepaid and postpaid plans subscribers respectively.

Table 7 Ranking of two key advantages of current mobile service compared to fixed landline service (prepaid PAYG plans)

Advantages	Ranking	
	First	Second
	%	
Mobility (being able to make and receive calls on the move)	88.6	7.9
Price (for the numbers I call, mobile calls are less expensive than fixed calls)	1.2	28.3
Quality of service (call quality, fewer dropped calls, etc.)	2.8	34.2
Service availability (I cannot access fixed line services at home)	1.2	8.6
Customer service offered (the customer service offered from my mobile provider is better than those offered by fixed line providers)	0.0	1.4
Being able to make calls during power outages	0.3	14.9
No advantage	1.8	0.0
Other[99]	0.7	4.7
Don't know	3.0	0.0
Not stated	0.3	0.0
Total	**100.0**	**100.0**
	N=726	***N=352***

Source: TATT-KCL Mobile Customer Survey

[96] 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.

[97] TATT-KCL Mobile Customer Survey, Table 9

[98] Since there is a higher chance of contacting someone via their mobile device rather than a fixed line (as the latter requires them to be at home), this benefit may also limit switching away from mobiles entirely (even if end users were to reduce their usage).

[99] Twenty-two responses were provided for the category "Other". Responses included Internet connectivity, convenience, ability to use apps including OTT calls, smaller size of device, ability to send text, privacy, and better control of expenditure.

Table 8 Ranking of two key advantages of current mobile service compared to fixed landline service (prepaid PAYG plans)

Advantages	Ranking	
	First	Second
	%	
Mobility (i.e., being able to make and receive calls on the move)	88.2	7.8
Price (i.e., for the numbers I call, mobile calls are cheaper than fixed calls)	3.1	40.1
Quality of service (i.e., call quality, fewer dropped calls, etc.)	2.3	20.1
Service availability (i.e., I cannot access fixed line services at home)	0.6	7.6
Customer service offered (i.e., the customer services offered from my mobile provider is important to me and much better than those offered from fixed line providers)	0.6	4.7
Being able to make calls during power outages	0.6	15.2
No advantage	0.9	0.0
Other[100]	0.8	4.5
Don't know	2.1	0.0
Not stated	0.8	0.0
Total	**100.0**	**100.0**
	N=334	***N=208***

Source: TATT-KCL Mobile Customer Survey

Moreover, as discussed in subsection 3.1, domestic retail mobile services in Trinidad and Tobago are predominantly purchased jointly. In particular, 70% of the respondents to the TATT-KCL Mobile Customer Survey use their mobile phones to do all of the following:

1. Make voice calls and text messages
2. Receive voice calls and text messages
3. Use mobile data services[101]

Only 3% of the respondents using mobile broadband-only packages suggests that a large proportion of end users purchase mobile data services jointly with other mobile services.

This is not currently the case for retail domestic fixed services in Trinidad and Tobago. In March 2021, 75% and 63% of total fixed voice and fixed broadband subscriptions, respectively, were on standalone tariff plans, suggesting low take up of fixed bundles[102].

[100] Thirteen responses were received in the "Other" category. Responses included accessing information on the go, convenience and ease of access, Internet access, unlimited calls, and unlimited data, and using social media platforms.

[101] TATT-KCL Mobile Customer Survey S3AQ9

[102] Concessionaires' quantitative data submissions and TATT market report database (2021)

Whilst the three major fixed concessionaires – bmobile, Digicel and Flow – all offer end users the option to subscribe to domestic fixed voice services, either as a standalone voice plan or as part of a bundle with fixed broadband services, end users often purchase fixed voice and broadband services separately.

Mobile end users who value access to all of these services using a single device and tariff plan are unlikely to give up the entire mobile tariff plan in favour of subscribing to use fixed services instead, in the case of a SSNIP.

4.1.1.2. Service Availability and Uptake

Both domestic fixed and mobile voice services are available throughout Trinidad and Tobago. Fixed voice uptake (penetration) was 60%[103] of total households, and the mobile penetration was 145%[104] of total population[105]. This suggests a sizeable proportion of the population in Trinidad and Tobago are likely to have access to both domestic mobile and fixed services, which would allow them to consider switching between these services on a call-by-call basis, if they wish to do so[106]. As stated earlier, opposing trends in the uptake of two services may be a result of services being substitutes. However, it may also reflect a more fundamental shift in customer preferences, or technology obsoletion.

Figure 5 and Figure 6 present the trends in the uptake and average usage for fixed and mobile services.

[103] Source: Quarterly Market Submissions 2021https://tatt.org.tt/DesktopModules/Bring2mind/DMX/Download.aspx?Command=CoreDownload&EntryId=1173&PortalId=0&TabId=222, accessed 27th February 2023

[104] Ibid.

[105] 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.

[106] However, the Authority also notes that this is not the case for 40% of the total households, as they currently are not subscribed to fixed line services. These households would need to first acquire a fixed voice service in order for the end user to be able to consider switching between these services on a call-by-call basis. An assessment of the prevailing differences in the price and non-price terms discussed above and below suggests this is unlikely.

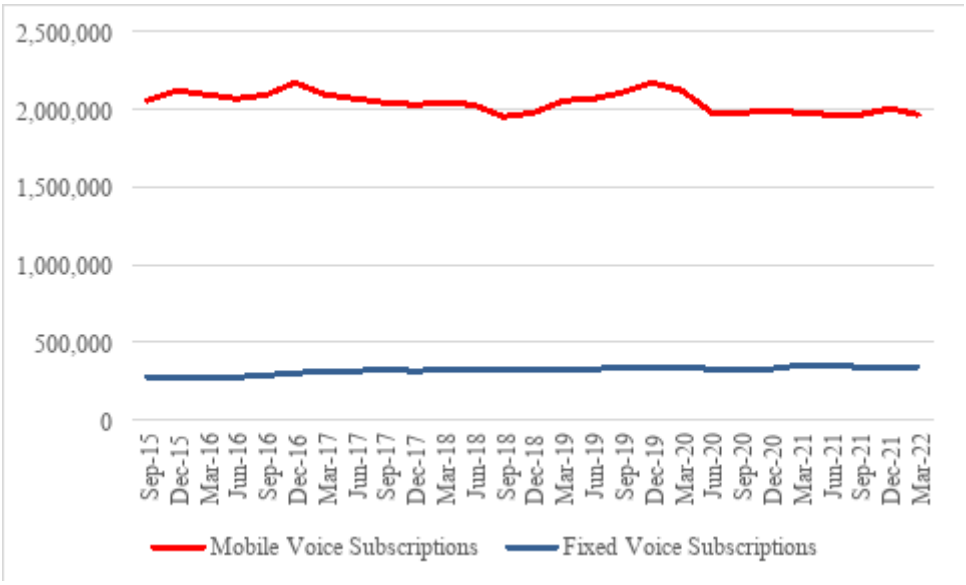


Figure 5 Fixed versus mobile subscriptions

Source: Annual Market Report 2021

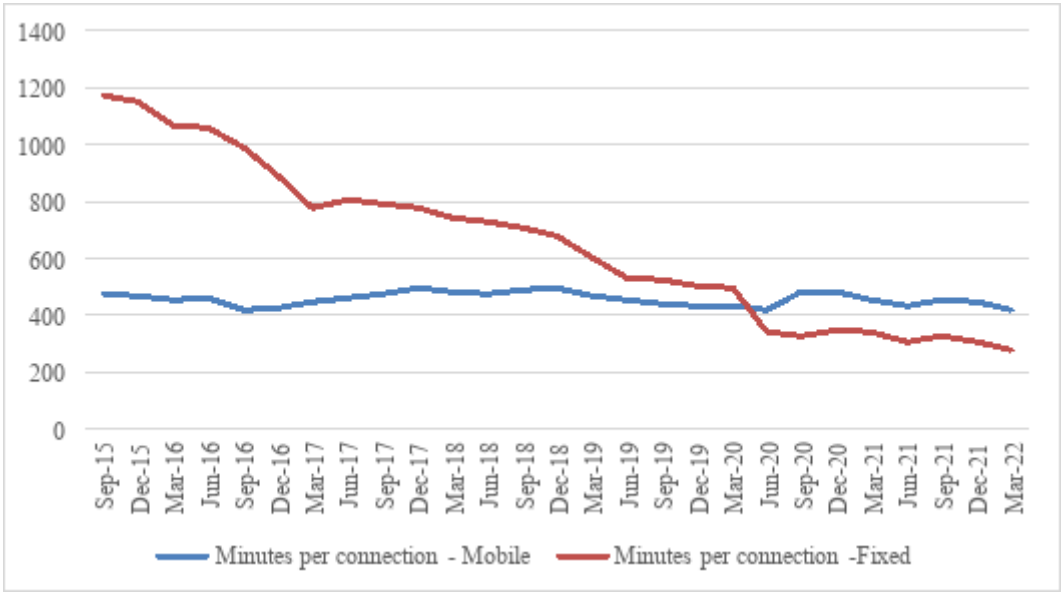


Figure 6 Average monthly domestic call minutes per fixed/mobile connection

Source: Annual Market Report 2021

The figures show that the number of mobile subscriptions has been continually higher than the number of fixed subscriptions, with both services showing a fairly stable trend over the last seven years.

The average usage for fixed voice services, as measured by the number of monthly voice call minutes per subscription, has been declining at a rapid rate between 2015 and 2022, whereas average mobile voice usage has remained fairly constant. This suggests that, despite maintaining fixed line subscriptions, people are making fewer calls using their fixed lines. The lack of a countervailing increase in the number of minutes per mobile connection, or the number of mobile subscriptions, suggests that this fall in fixed voice usage is less likely to be driven by a substitution from fixed to mobile but is, rather, a structural shift away from fixed voice calls. This is because, if there was stronger substitution between the two, the Authority would expect to see an increase in the number of minutes per mobile connection in response to a fall in the number of fixed minutes per mobile connection.

The Authority also analyses the rate of switching from mobile voice services to fixed voice services in subsection 4.1.1.4 and reaches a similar conclusion of a limited degree of switching.

Given joint uptake of both (mobile and fixed voice) services and limited data indicating customer switching from mobile service to fixed voice service, 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 domestic mobile and fixed retail services in Trinidad and Tobago.

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 line rental/access and domestic call prices. Furthermore, it is important to distinguish between prepaid and postpaid mobile plans.

Subsection 3.3.1 describes how end users on prepaid mobile plans can use pre-loaded credit to pay for usage, either on a PAYG basis or via purchasing one-off bundles of calls, messages, and data. For example, as shown in Table 9, Digicel offers a capped data allowance (50 GB), free on-net calls, 300 anywhere minutes, and free local SMS for TT$355. bmobile, however, offers unlimited SMS, unlimited data, and unlimited on-net calls, 400 anywhere minutes, and 3 GB roaming data for TT$393. Similar packages with smaller allowances are priced from TT$235 to TT$270 for both operators.

Postpaid mobile users pay monthly fees for plans that include some combination of domestic and/or international calls, SMS/MMS, and a data allowance. For example, as shown in 9, Digicel offers a capped data allowance (25 GB) any use LTE, free on-net calls, 300 anywhere minutes, and free SMS for TT$295. bmobile offers a postpaid plan with a capped data allowance (35 GB), 4G LTE, unlimited on-net minutes and global SMS, 400 anywhere minutes, and 1 GB of roaming data for TT$270. Postpaid bundles with larger allowances are priced between TT$390 and TT$591 for both operators.

The prices for prepaid and postpaid mobile plans are compared for bmobile and Digicel in Table 9. For example, against a fixed voice bundle from Digicel that is available for TT$99 per month. This includes 500 local landline and mobile minutes. A fixed voice bundle from bmobile is available for TT$197 per month, including unlimited minutes to both domestic landlines and mobiles[107].

Based on the prices above, it appears that both the average prepaid and postpaid mobile end user would be able to meet his/her monthly demand for calls at a lower cost when using at least one of the fixed bundled services outlined. In other words, there appears to be a premium paid by mobile customers relative to fixed customers, for the same minutage levels. This premium could be the result of the mobility afforded by mobile voice calls, among other things. In particular, an average prepaid mobile end user consumes around 146 minutes of calls per month, while an average postpaid mobile end user consumes around 165 minutes per month (TATT Annual Market Report 2021)[108]. To meet these average usage levels, both prepaid and postpaid customers would have to incur a minimum cost of TT$295 with Digicel and TT$270 with bmobile. This compares to a lower monthly cost of TT$197 for unlimited domestic calls.

Table 9 Comparison of selected fixed and mobile plan prices

Type of Plan	Monthly Price (TT$)	Calls	Messages	Data
Digicel Mobile Prepaid	$355	Free on-net and 300 anywhere minutes	Free (local)	50 GB
bmobile -Mobile Prepaid	$393	Unlimited on-net and 400 anywhere minutes	Unlimited	Unlimited
Digicel Mobile Postpaid	$295	Free on-net and 200 anywhere mins	Free (local)	25 GB
bmobile Mobile Postpaid	$270	Unlimited on-net and 200 anywhere minutes	Unlimited	35 GB
bmobile Fixed	$197	Unlimited domestic	-	-
Digicel Fixed	$99	Unlimited on-net and 500 anywhere	-	-

Source: The following concessionaires' websites, accessed 1st March 2023:
Digicel: https://www.digicelgroup.com/tt/en.html
bmobile (mobile): https://bmobile/mobile/
bmobile (fixed): https://bmobile/landline/

[107] Concessionaires' websites suggest that fixed voice services are postpaid only and there are no prepaid options available.

[108] The total minutes presented in the Annual Market Report 2021 have been averaged over a 12-month period.

With respect to domestic call prices, which apply when end users exceed their monthly call allowance, the Authority has again considered the difference between prepaid and postpaid plans in pricing mobile domestic calls, and the pricing of fixed originated domestic calls (shown in Table 9). This is to assess whether there may be demand-side substitution between call services on an individual/marginal call basis (rather than end users switching between overall bundles).

For prepaid mobile plans, Digicel offers PAYG rates of TT$1.52 per minute for mobile-to-mobile and mobile-to-fixed domestic calls and bmobile offers TT$1.56 (see Table 10). However, the effective unit prices of calls offered as part of prepaid and postpaid mobile plans are lower than this, as discussed below.

For postpaid mobile plans, Digicel has add-on offers in addition to its mobile postpaid plans, with 100 additional minutes costing TT$50, which equates to TT$0.50 per minute (assuming that a customer uses all these minutes). bmobile also offers local minutes that are only available to postpaid customers. Thus, it may be inferred that, based on a price of TT$44 for 100 additional minutes, a call costs a postpaid customer on bmobile's network TT$0.44 per minute. This inference is made due to the fact that is not clear to the Authority if bmobile's out-of-bundle mobile domestic call charge of TT$0.65 per minute still obtains but without a requirement to purchase add-ons in advance. It is important to note, however, that bmobile offers 50 additional minutes at TT$23, or TT$0.44/minute. There is also a 200-minute bundle on offer at TT$89, or TT$0.44/minute.

When postpaid mobile plans include a certain volume of domestic calls in the monthly subscription charge, the effective domestic call rates are typically lower. For example, Digicel's postpaid mobile plan offers 300 anywhere minutes (domestic off-net and foreign calls) at a monthly charge of TT$295 for the entire bundle (including mobile access and the allowances for calls, SMS and data). Before considering the value of SMSs and data included in the bundle, this equates to TT$1.02 per minute (assuming that all minutes are used in a given month on domestic off-net calls).

The above mobile domestic call rates compare against fixed domestic call rates that range from TT$0.15 to TT$0.45 per minute for fixed-to-fixed calls[109] and TT$0.66 to TT$0.90 per minute for fixed-to-mobile calls, depending on the call type.

[109] Excluding the rates which apply to on-net calls, which are typically cheaper and subject to change pending average customer consumption and requirements around unlimited on-net calls offered in some cases.

Table 10 Comparison of selected domestic fixed and mobile out-of-plan call prices

Type of Call	Unit Price (TT$)
Mobile prepaid: PAYG rate	1.52–1.56/minute
Mobile postpaid: add-on effective rate and per-minute charge	0.44–0.50/minute
Fixed-to-fixed: PAYG rate	0.15–0.45/minute
Fixed-to-mobile: PAYG rate	0.66–0.90/minute

Note: All of these rates apply to calls to domestic fixed and mobile numbers.
Sources: The following concessionaires' websites, accessed 1st March 2023:
Digicel: https://support-tt.digicelgroup.com/hc/en-us/articles/115013343128-What-add-ons-are-available-for-the-Freedom-Plans-
bmobile (mobile): https://bmobile.co.tt/mobile/mobile-plan-extras/#local-minutes-data
bmobile (fixed): https://bmobile.co.tt/landline/fixed-line-rates/

Differences in non-price characteristics are likely to outweigh price differences and indeed limit the substitution observed in practice. In particular, end users in Trinidad and Tobago, in line with other jurisdictions, place significant value on the mobility of mobile services (as discussed earlier in this section). This is likely to constitute a high barrier to switching, as end users might not be willing to compromise on the ability to make and receive calls and messages when they are not at home.

End users who have access to both fixed and mobile services may be indifferent to making a marginal call from a mobile phone versus a fixed line whilst at home, based on the relative convenience and marginal cost of making a call from each device in those particular circumstances[110]. However, this is unlikely to be sufficient for mobile end users to switch away from a domestic mobile service to using only fixed services in the event of a SSNIP in domestic mobile services, due to additional factors such as the importance of mobility discussed above. This is also supported by the evidence of switching discussed in subsection 4.1.1.4.

[110] The Authority has not been able to validate whether this holds for mobile end users in Trinidad, as it does not have the required usage data.

4.1.1.4. Further Survey Evidence

The TATT Quarterly Market Update for Q2 2022[111] states that fixed-line voice services have a penetration of approximately 71% in Trinidad and Tobago, which suggests that many end users with a mobile phone also have a fixed landline. However, the TATT-KCL Mobile Customer Survey[112] states that only 14% of respondents make fixed-line voice calls. In addition, the survey also suggests very limited switching from mobile call services to fixed call services among both PAYG users and all other mobile service users.

PAYG users (726 respondents): The TATT-KCL Mobile Customer Survey shows that just over 1% of PAYG users stated that they would stop using mobile services in response to a 5%–10% increase in the price of mobile calls. This is highlighted in Figure 7.

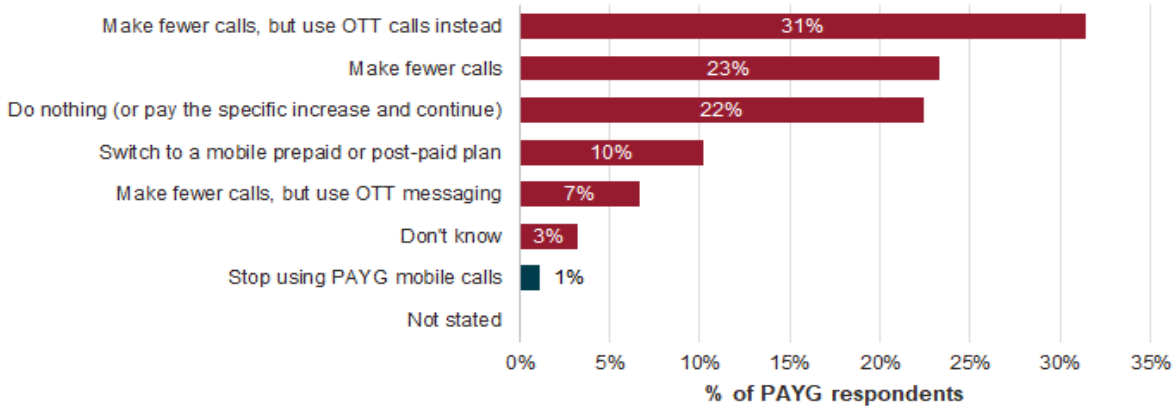


Figure 7 Action that would be taken in response to an increase the price of mobile calls

Source: TATT-KCL Mobile Customer Survey, Table 8

Prepaid and postpaid users (334 respondents): The TATT-KCL Mobile Customer Survey shows that under 2% of the prepaid and postpaid users stated that they would stop using mobile services in response to a 5%–10% increase in the price of their mobile package[113]. This finding is presented in Figure *8*.

[111] TATT (2023). Quarterly Market Update. July to September 2022, p.7

[112] TATT-KCL Mobile Customer Survey, Table 5

[113] TATT-KCL Mobile Customer Survey, Table 20

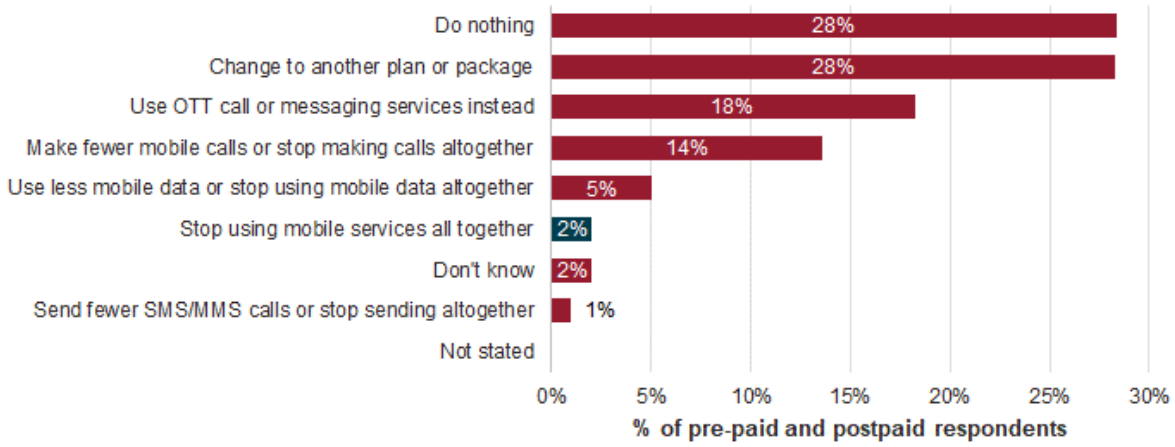


Figure 8 Action that would be taken in response to an increase the price of mobile plan

Source: TATT-KCL Mobile Customer Survey, Table 20

In other words, users of voice services in Trinidad and Tobago are likely to choose one service over the other (i.e., choose between making calls using a mobile or fixed service), depending on the context, such as whether they are calling someone available on a fixed line or mobile (which may affect which is most cost effective to make the call from), and/or whether they are at home with access to a fixed line at the time.

This is in contrast to a situation in which end users decide between using either of the two services but not both. In many cases, the end user retains both a mobile and fixed service/subscription and uses both in different situations as seen in
Figure 9.

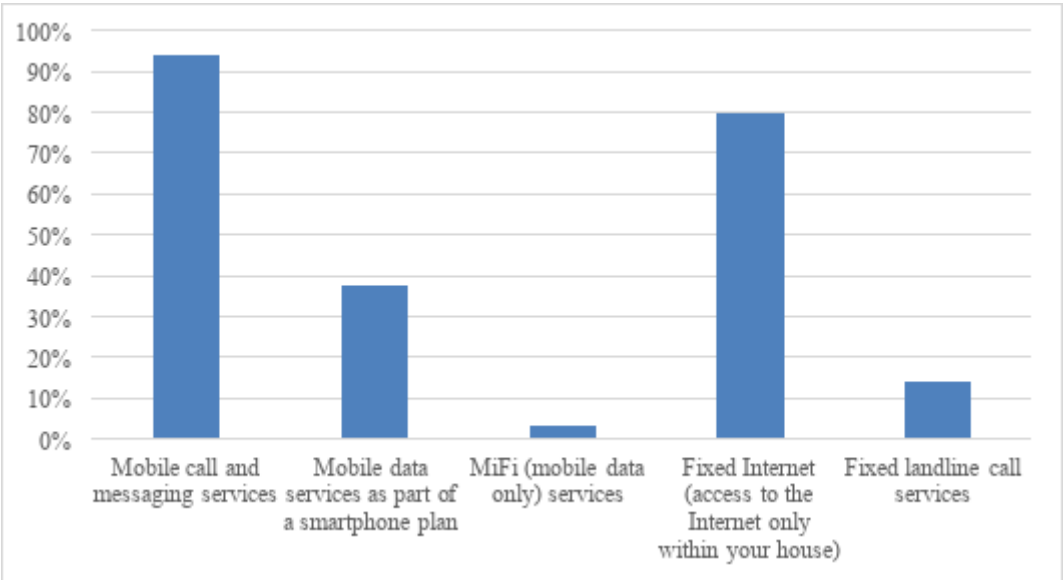


Figure 9 Proportion of survey respondents that use key mobile and fixed telecommunications services

Source: TATT-KCL Mobile Customer Survey, Table 5

4.1.2. Supply-Side Considerations

There is no supply-side substitution between domestic retail fixed and mobile services in Trinidad and Tobago. A hypothetical operator with only a fixed service licence would not be able to switch, easily and at low cost, to offering mobile telephony services. Both services use different network infrastructures, and the fixed investment cost and significant amount of time required to deploy a mobile network are considerable. Moreover, 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 additional barriers to entry.

Given the time, investment, need for spectrum and licence requirements, the Authority considers it highly unlikely that a concessionaire not already offering mobile services[114] would be willing and able to deploy a mobile network following a SSNIP in domestic mobile services.

4.1.3. Conclusions

Based on the assessment above, the Authority concludes that domestic fixed voice services do not form part of the same product market as domestic mobile services. For domestic mobile 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 likely to be only limited demand-side substitutability from mobile-to-fixed services, as end users consider it important to be able to use a mobile device to make and receive calls outside the home (which is not available with domestic fixed services).

4.2. Are Fixed Broadband Services in the Same Product Market as Mobile Data 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 fixed players[115]. The concessionaires' websites

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

[115] Both mobile concessionaires, along with the third major provider, Flow, also offer fixed broadband services. Smaller national providers of fixed services include Amplia Communications, Lisa Communications, PBS Technology Group Limited, Open Telecom, Prism Services (Trinidad) and RVR International. There are also smaller providers operating regionally.

show that mobile data and fixed broadband services are currently available on a standalone basis as well as bundled with other products[116].

4.2.1. Demand-Side Considerations

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

4.2.1.1. Product Characteristics

There are significant differences in the product characteristics of fixed broadband and mobile data services. Those that are likely to limit substitution away from mobile to fixed services are set out below.

Mobile data services allow end users to access the Internet regardless of their location (assuming network coverage), while access to fixed broadband services is restricted to within a short distance of the router (almost always indoors). As for voice services, mobility appears to be an important factor for mobile data end users in Trinidad and Tobago. For example, the TATT-KCL Mobile Customer Survey[117] reveals that 88% of respondents stated "mobility" as the most important advantage of mobile data-only services compared to fixed broadband services[118]. In addition, fixed broadband is only available on a postpaid basis and subject to minimum contract lengths. This restriction is likely to constrain substitution for prepaid mobile data end users[119].

[116] As discussed in previous sections, mobile bundles generally include mobile access, calls, SMSs, and data services, whereas fixed concessionaires often bundle fixed voice and broadband services and sometimes pay-TV services.

[117] TATT-KCL Mobile Customer Survey, Table 31

[118] Whilst fixed broadband penetration is high in Trinidad in Tobago (i.e., 80.4% of total households, as of Q4 2018), this does not mitigate the mobility difference between mobile data and fixed broadband services (i.e., the latter can still only be accessed within a home with a fixed broadband connection, whilst the former allows Internet access anywhere within a mobile network coverage area). The Authority recognises that there is an increasing presence of public Wi-Fi networks in Trinidad and Tobago and operators' mobile data speed offerings have significantly improved by introducing 4G LTE services. However, this also does not impact the mobility advantage of mobile data services over fixed broadband services, since it allows mobile data end users to offload their traffic only whilst in areas which currently enjoy Wi-Fi network coverage. Restricted rollout, password requirements and limitations on the terms of use may also curb the extent to which users can offload their data traffic onto Wi-Fi networks.

[119] The ability of mobile users to offload data usage onto Wi-Fi networks may reduce the substitutability of fixed broadband, as it may lower the cost to mobile users of meeting a given level of demand for data usage. Future developments may, therefore, impact the substitutability of fixed broadband services. For example, an increase

Some differences between these types of services are not likely to limit substitution away from mobile services, as described below.

Mobile data services are packaged differently from fixed broadband services. In particular, fixed broadband services are differentiated by download/upload speeds but have no usage allowances (i.e., they have unlimited data usage). 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 not usually 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 guaranteed[120].

Fixed network technologies allow the provision of higher (download/upload) speeds compared to mobile data services. For example, Amplia offers the fastest advertised Internet connection speeds, of up to 1 Gbps, which is considerably higher than the maximum speed for mobile data services of 150 Mbps offered by Digicel (via a dongle). Similarly, there is a significant difference in actual observed download speeds, with average mobile download speeds of around 28 Mbps comparing to fixed download speeds of around 88 Mbps[121]. As such, this should not constrain potential substitution from mobile data services to fixed broadband services[122].

4.2.1.2. Service Availability and Uptake

As discussed previously, end users enjoy nationwide broadband coverage from mobile networks and, in many areas, fixed networks[123, 124]. Fixed broadband service uptake in Trinidad

in the availability of public Wi-Fi hotspots could further increase the likelihood of users switching from mobile data to fixed broadband services.

[120] The speeds that mobile end users experience depend, to a large extent, on the congestion on the relevant mobile cell site, which is likely to vary with the number of end users also utilising that cell site at the time.

[121] Source (March 2023): https://www.speedtest.net/global-index/trinidad-and-tobago#market-analysis

[122] The Authority further notes that, although many mobile data users may have unlimited download allowances, this is almost always the case for fixed broadband services.

[123] Although nationwide 4G coverage in Trinidad and Tobago is currently only available from operator x (as of July 2018), with operator y covering around 60% of the country, this still provides end users throughout the country with a choice between 4G mobile and fixed broadband services. In addition, 3G services are sufficient to support many applications (but at a lower speed) and are available throughout the country.

[124] Fixed broadband coverage is available nationwide via the three major concessionaires (operator x, operator y and operator z) and the majority of smaller concessionaires.

and Tobago reached approximately 71% of total households as of the third quarter of 2022[125]. This has also decreased marginally, by 2.9%, year on year.

Both services are offered on a standalone basis and as part of a wider product bundle. The vast majority of mobile data service users in Trinidad and Tobago are using data services as part of a mobile bundle or plan[126]. This is likely to constrain the substitutability between fixed broadband and mobile data services, as these end users are likely to value the entire range of services offered as part of the relevant bundle or plan and, thus, given the conclusion above that fixed voice and mobile voice services are not demand-side substitutes, will be less willing to give up the entire mobile bundle or plan and switch to a fixed broadband service, in the case of a SSNIP in mobile services.

In addition, 68% of the relevant respondents to the TATT-KCL Mobile Customer Survey[127] stated that their mobile data-only/broadband connection[128] is not their only Internet connection, with 66% of these end users also having a subscription to fixed broadband services[129]. This suggests that a large number of end users prefer to use both mobile data and fixed broadband instead of viewing them as substitutes.

4.2.1.3. Relative Prices

The advertised download speeds offered by the three main fixed broadband providers exceed those currently achieved on mobile data services in Trinidad and Tobago (i.e., 28 Mbps, as described in subsection 4.2.1.1).

Digicel offers three standalone fixed broadband packages with maximum speeds ranging from 100 Mbps to 500 Mbps, priced between TT$285 and TT$865 per month, as well as at least[130] four bundled packages, all of which include telephony, broadband and TV elements. The tariff range depends on the maximum download and upload speeds (either 100 download/100 upload Mbps or 250 download/125 upload Mbps), and how many channels the bundled TV

[125] 2022 Q3 TATT quarterly market update, available here: https://tatt.org.tt/DesktopModules/Bring2mind/DMX/API/Entries/Download?Command=Core_Download&EntryId=1735&PortalId=0&TabId=222

[126] TATT-KCL Mobile Customer Survey, Table 5 suggests that only 3.2% of respondents use standalone mobile data only services.

[127] TATT-KCL Mobile Customer Survey, Figure 33

[128] In line with the low uptake of mobile data-only services, the relevant sample size was 132 out of 1,000 respondents (i.e., 13.2%).

[129] The remaining 34% access the Internet via mobile data services.

[130] The Authority notes that operator x may offer 2P bundles and also offer its customers the option of building their own bundle.

subscription includes. For these services, monthly prices range between TT$375 and TT$1,005.

Flow offers three standalone fixed broadband packages with download speeds ranging from 100 Mbps to 500 Mbps, and related prices ranging between TT$275 and TT$675 per month. Operator z's offer also includes a choice of six bundles of fixed broadband, telephony and (in most of the cases) TV services, with maximum download speeds ranging from 100 Mbps to 500 Mbps, and monthly tariffs within the TT$285 to TT$749 range.

bmobile offers three standalone fixed broadband plans, with speeds ranging from 6 Mbps to 20 Mbps and prices ranging from TT$168 to TT$280 per month. Its additional two bundles offer broadband combined with telephony. Again, the speeds range from 6 Mbps to 10 Mbps, with monthly prices varying between TT$224 and TT$280.

However, when factoring in the differences in speeds[131], fixed broadband plans offer a cheaper means to access the Internet than mobile data services. For example, the cheapest available fixed broadband package that is comparable, although not a perfect comparison to the 28 Mbps speed experienced on mobile data services, is a 20 Mbps fixed broadband plan from bmobile costing TT$280 per month. This compares to TT$394 per month for Digicel's hotspot postpaid 150 Mbps MiFi plan, or TT$393 for bmobile's bundled MiFi plan which has a data allowance of 200 GB[132].

4.2.1.4. Evidence of Switching

Any evidence of end users switching, or indicating a willingness to switch, from mobile data to fixed broadband services is useful to inform any assessment of substitutability. As discussed earlier, opposing uptake trends over time can, in some cases, be indicative of demand-side substitution. However, this is not clearly reflected in the observed trends of the uptake of fixed broadband and mobile data services in Trinidad and Tobago.
Figure 10 compares the uptake of mobile[133] data services and fixed broadband services over time. This shows that the uptake of both mobile data services and fixed broadband services has increased recently.

[131] The Authority acknowledges that the comparison of achieved (mobile) and advertised (fixed) broadband speeds may be an imperfect one, although it considers the comparison of a 20 Mbps advertised speed against an average achieved speed of 28 Mbps to be reasonable. However, this comparison is done, for the purposes of assessing the fixed plan that a mobile user would need to choose, in order to enjoy a user experience similar to that experienced using a mobile connection. This refers to data-only contracts as well as bundles.

[132] Lower-priced plans contain, at most, between 10 GB and 40 GB of data per month at TT$280 per month (VAT inclusive).

[133] According to the TATT-KCL Mobile Customer Survey, Table 5, 3.2% of respondents utilised mobile data-only services.

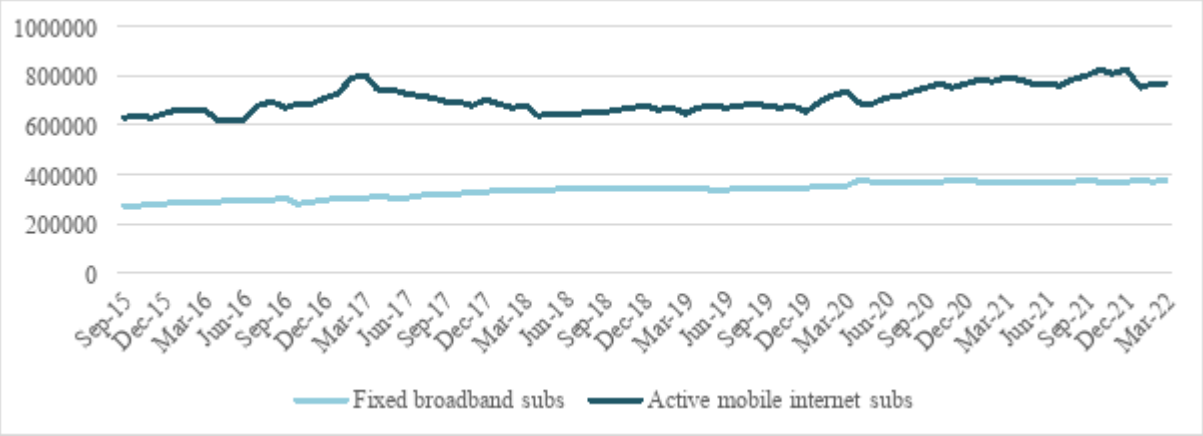


Figure 10 Comparison of Internet connections on fixed and mobile devices

Source: Analysis based on Annual Market Report 2021

The TATT-KCL Mobile Customer Survey also provides information on the rate of switching from mobile data to fixed broadband options in response to an increase in the price of mobile data.

PAYG users who use mobile data services as part of a smartphone plan (153 respondents): The TATT-KCL Mobile Customer Survey[134] suggests that, in response to a 5% to 10% increase in the price of mobile data, 23% of PAYG users who use mobile data services as part of their smartphone plan would use less mobile data, by offloading to Wi-Fi where possible, as illustrated in Figure 11. However, the Authority notes that this translates to only 35 respondents[135], which is a relatively small sample size.

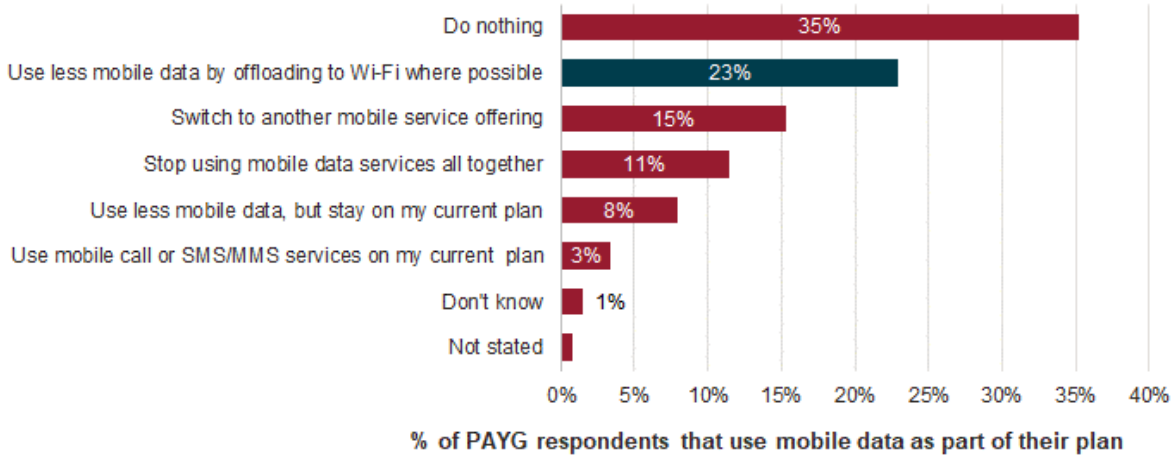


Figure 11 Action to be taken in response to an increase in the price of mobile data

Source: TATT-KCL Mobile Customer Survey, Table 17

[134] Source: TATT-KCL Mobile Customer Survey, Table 17

[135] 23% of 153 respondents to this question

Mobile data-only users (32 respondents): For mobile data-only services, the TATT-KCL Mobile Customer Survey[136] reveals that none of the respondents reported that they would consider switching to a fixed broadband offering[137] if there is a price increase. In particular, as shown in
Figure *12*, in the event of a small price increase, none of the survey respondents with a mobile data-only service stated that they would switch to a fixed broadband service, whilst 43% of the relevant respondents would switch to mobile data as part of their subscription service[138]. However, again, this is based on 32 respondents only and, as such, must be interpreted with caution.

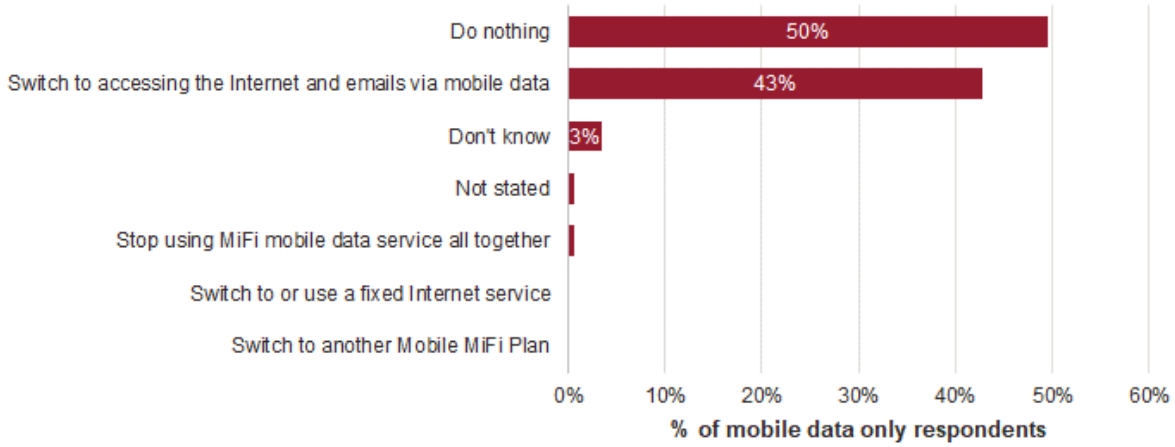


Figure 12 Action to be taken in response to an increase in the price of mobile data-only plan

Source: TATT-KCL Mobile Customer Survey, Table 30

The Authority notes that end users commonly aim to limit their data consumption on mobile bundles or plans by using Wi-Fi networks when at home or where publicly available (i.e., Wi-Fi offloading). Whilst this could be considered a form of mobile-to-fixed substitution of data usage, end users are unlikely to give up their mobile data services altogether because of it (i.e., fixed services may be complements, to an extent, rather than perfect substitutes). This was evidenced in the TATT-KCL Mobile Customer Survey, which shows that, of the PAYG respondents who stated that they would switch to using OTT calls in response to a 5%–10%

[136] TATT-KCL Mobile Customer Survey, Table 30

[137] This refers to data-only contracts as well as bundles.

[138] However, the survey does not reveal how users would behave if prices of services offered by all mobile broadband providers were to increase by the same amount. As part of the survey questionnaire design, there was a concern that, given its hypothetical and theoretical nature, asking the standard SSNIP test question to end users might have led to confusion and, hence, inaccurate responses. Instead, a simpler wording of the SSNIP question was used.

increase in the price of mobile calls (31% of total PAYG respondents)[139], 54% indicated they would do so using their fixed Wi-Fi service or a public Wi-Fi service[140, 141].

In summary, the available evidence suggests that mobile data and fixed broadband services may be seen by end users as comparable in terms of prices (as similar speeds are actually offered for a similar price). However, the differences in product characteristics – particularly the mobility of mobile data services – as well as the available evidence of switching, strongly indicate that fixed broadband services are not considered to be demand-side substitutes for mobile data services at this time. Therefore, this indicates that fixed broadband services and mobile data services do not form part of the same market and suggests that mobile data service forms a separate market on its own, given limited demand-side substitutability.

4.2.2. Supply-Side Considerations

As in the case of domestic voice services, discussed in subsection 4.1.2, 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, as well as access to spectrum for mobile data services[142]. Given the requisite time, investment and licences, the Authority considers it highly unlikely that, following a SSNIP in mobile data services, a fixed licensee would deploy a mobile network and start offering mobile data services.

4.2.3. Conclusions

Based on the assessment above, the Authority concludes that retail fixed broadband services do not form part of the same product market as retail domestic mobile services. For mobile data 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 significant complementarity, given customer uptake trends and usage patterns depicting increasing demand for both services, and limited demand-side substitution, due to considerable differences in product features and end users' preferences, which suggest that mobile data

[139] TATT-KCL Mobile Customer Survey, Table 8

[140] TATT-KCL Mobile Customer Survey, Figure 22

[141] This is equivalent to 17% of the entire sample.

[142] In theory, providers could enter the mobile market as mobile virtual network operators (MVNOs) by accessing the mobile concessionaires' networks, or via co-location of equipment. Either of these may reduce the barriers to supply-side substitutability. However, the absence of any MVNO entry in Trinidad and Tobago to date suggests this business model is not a commercially attractive option for prospective providers of mobile services.

service forms a separate market. However, the Authority is of the view that significant increases in Wi-Fi accessibility can affect demand-side substitutability[143].

4.3. Are OTT Services in the Same Product Market as Retail Domestic Mobile Services?

The recent, widespread uptake of smartphones globally has facilitated the spread of OTT applications for communication purposes. OTT services have been the conduit through which economic development and social transformation domestically have occurred. The proliferation of these services has not only facilitated the shift from traditional means of communication but, in so doing, has fueled the demand for and uptake of data and broadband services. Total mobile Internet users represent 61%[144] of the local population and 4.4. billion[145] people globally. This uptick in acceptance is indicative of a willingness of the citizenry to participate in the digital economy and foretells the impact of these platforms on the telecommunications sector.

OTT services provide messaging, voice, and video-call services over the Internet. For end users to use these services from their smartphones[146], they must install the OTT provider's software/application (app), which enables them to access the voice and messaging services that are transmitted as data packages (i.e., they use mobile data[147]).

The Authority considers that the relevant avenue of assessment of whether OTT services form part of the same product market as retail domestic mobile services is at the aggregated mobile service level (i.e., including mobile access, voice, SMS and data), rather than the individual service level (i.e., voice and/or SMS). This is for two main reasons, discussed below.

In section 3, the Authority establishes that mobile voice, SMS and data services, along with mobile access, form part of a single product market for retail domestic mobile services. In other words, when making choices about traditional mobile or OTT services, end users in Trinidad and Tobago base their decisions on the full bundle of mobile services, including mobile access,

[143] The requirement imposed during the COVID-19 pandemic for the population to remain indoors accentuated this fact, as those mobile customers with access to fixe broadband services at home were able to rely on those for connecting to the Internet/accessing digital content.

[144] https://tatt.org.tt/wp-content/uploads/2023/10/Annual-Market-Report-AMR-2022-Final.pdf

[145] The Mobile Economy 2023 *"By the end of 2022...4.4 billion people used the mobile internet…"* https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/03/270223-The-Mobile-Economy-2023.pdf Accessed 27th February, 2024

[146] OTT services can also be accessed by installing the OTT provider's app on a computer.

[147] If the mobile user is within a Wi-Fi coverage area, the Internet access can also be achieved via that Wi-Fi network.

as opposed to a single mobile service. It is therefore procedurally correct to carry out the relevant market assessment against the overall product market defined, as opposed to a subset of the market (such as voice or SMS).

In addition, since the use of OTT services requires access to the Internet, which is generally achieved through a mobile data connection (which, in turn, requires mobile access service), from a demand perspective, OTTs and traditional mobile calls and SMS are more likely to be considered complements than substitutes. In particular, OTT calls are likely to be originated by end users who have access to both traditional mobile calls and mobile data services, either through a mobile bundle or through separate PAYG subscriptions for the individual services. Indeed, the TATT-KCL Mobile Customer Survey shows that approximately 70% of respondents use their mobile phone to make calls/SMS, receive calls/ SMS, and access the Internet[148], suggesting that a large majority of end users use these services in combination. Additionally, of the respondents who use their smartphone to make OTT calls and messages, more than 80% use their phone to access the Internet[149], further supporting the complementarity between the two services. Therefore, the majority of end users who can access OTT services also have traditional mobile services available to them. Indeed, end users would be more likely to opt for traditional mobile calls when there is no Internet connection available (but mobile calls are possible).

As such, end users cannot fully isolate their decision making and choose between traditional mobile voice and OTT voice, or traditional mobile messaging and OTT messaging, since they need to consider the full portfolio of mobile services.

This is also supported by
Figure *13*, which shows that the average minutes (prepaid or postpaid) per connection on traditional voice calls have stayed stable over the last eight years. Strong substitutability between OTT voice and traditional voice may have manifested as an ongoing decline in traditional voice calls, coinciding with an increase in OTT voice calls.

[148] TATT-KCL Mobile Customer Survey, S3AQ9

[149] TATT-KCL Mobile Customer Survey, S3AQ9

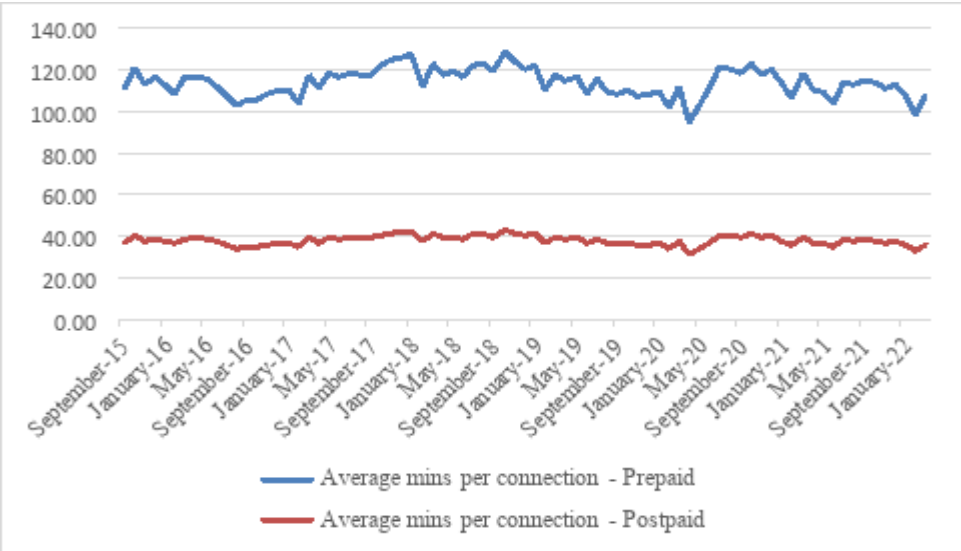


Figure 13 Average domestic mobile call minutes per connection

Source: Annual Market Report 2021

For the reasons above, the Authority believes that this is a more relevant assessment than an assessment at the individual service level. However, to ensure that the Authority is presenting a complete assessment and is consistent with the approach adopted in previous market reviews, subsections 4.3.1.2 and 4.3.1.3 evaluate, in turn, whether OTT and traditional mobile voice (audio and video)[150] and messaging services belong to the same product market as mobile voice and mobile messaging services, respectively. However, the Authority reiterates that this assessment of service level substitutability is being undertaken for purposes of completeness and transparency, and the Authority does not place a large weight on this in its final determination.

4.3.1. Demand-Side Considerations

In its assessment of the potential inclusion of OTT services in the relevant market for retail domestic mobile services, the Authority considers potential demand-side substitutability between OTT voice services and traditional mobile services in this subsection, followed by potential supply-side substitutability in subsection 4.3.2.

[150] Note that all references to OTT voice are to both audio and video voice calls.

4.3.1.1. Aggregated Assessment of OTT Services

Based on the available evidence, the Authority believes that any substitution between OTT services and the portfolio of mobile services is likely to be partial. This observation is supported by the TATT-KCL Mobile Customer Survey. The responses of mobile PAYG users and prepaid plan and postpaid users are evaluated below.

PAYG users (726 respondents): The TATT-KCL Mobile Customer Survey[151] revealed that, on average, just less than a third of PAYG users would make fewer domestic mobile calls and instead make an increased number of OTT calls, if faced with a 5%–10% rise in the price of their PAYG mobile calls (compared, for example, to ceasing to use mobile voice services at all, or switching to another mobile provider). This is presented in Table 11. PAYG mobile customers represent 73% of respondents.

The Authority notes that although, as per the survey, under a third of PAYG users would switch some of their mobile calls to OTT calls in response to an increase in the price of mobile calls, this is insufficient to conclude that they are full or perfect substitutes. This is because, for such a conclusion, a substantial proportion of customers would have to substitute away from mobile calls entirely (i.e., stop making traditional mobile calls) and give up their overall PAYG plan. Only 1% of PAYG respondents have said that they would do so[152]. This is required because, as discussed above, the Authority has defined the relevant market to include mobile access, mobile calls, SMS, and data services altogether as belonging in the same relevant mobile telephony market. This is highlighted in Figure 14.

Table 11 Intention to substitute some mobile for OTT calls following a 5%–10% increase in the price of mobile calls

Monthly expenditure on mobile services	Share of total users in monthly expenditure band	Share of users willing to switch to using OTT voice within each monthly expenditure band
Under $200	67%	33%
$200–$399	25%	31%
$400–$599	6%	33%
Above $600	1%	0%
Weighted average		31%

Source: TATT-KCL Mobile Customer Survey, Table 8

[151] TATT-KCL Mobile Customer Survey, Table 8

[152] Ibid.

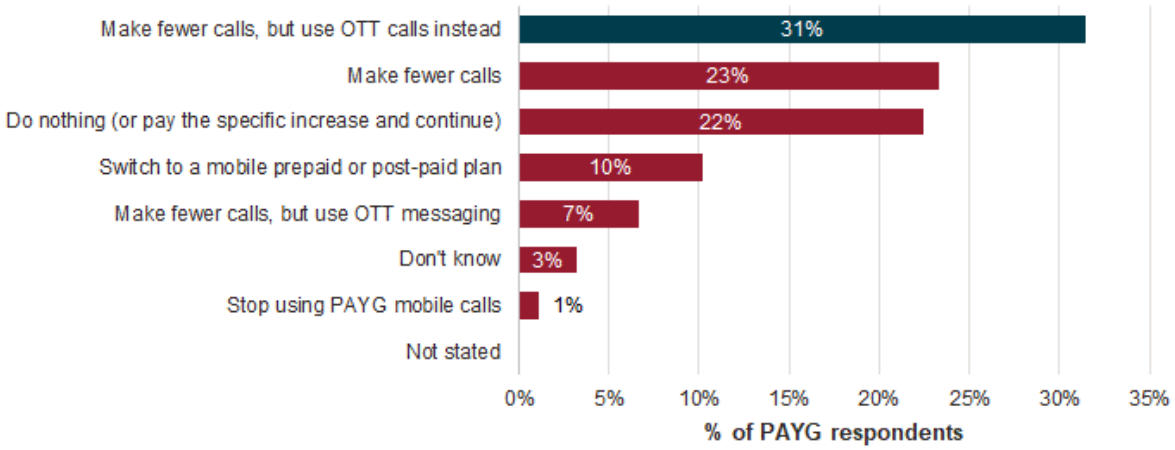


Figure 14 Action that would be taken in response to an increase in the price of mobile calls

Source: TATT-KCL Mobile Customer Survey, Table 8

- **Prepaid plan and postpaid users (334 respondents):** The TATT-KCL Mobile Customer Survey[153] reveals that, on average, only 18% of all prepaid plan and postpaid respondents would make fewer domestic mobile calls and would, instead, make an increased number of OTT calls if faced with a 5%–10% rise in the price of their overall mobile plan (compared, for example, to ceasing to use mobile voice services at all, or switching to another mobile provider). This is presented in Table 12. Additionally,
- Figure *15* illustrates the proportion of respondents with prepaid and postpaid plans that will use OTT call or messaging services on account of a 5% to 10% increase in the price of their mobile plan. Prepaid and postpaid mobile service customers represent 34% of the respondents.

Table 12 Intention to substitute mobile for OTT calls following a 5%–10% increase in the price of mobile plan

Monthly expenditure on mobile services	Share of total users in monthly expenditure band	Share of prepaid plan and postpaid users willing to switch to using OTT voice within each monthly expenditure band
Under $200	67%	17%
$200–$399	25%	22%
$400–$599	6%	22%
Above $600	1%	7%
Weighted average		18%

Source: TATT- KCL Mobile Customer Survey, Table 20

[153] TATT-KCL Mobile Customer Survey, Table 20

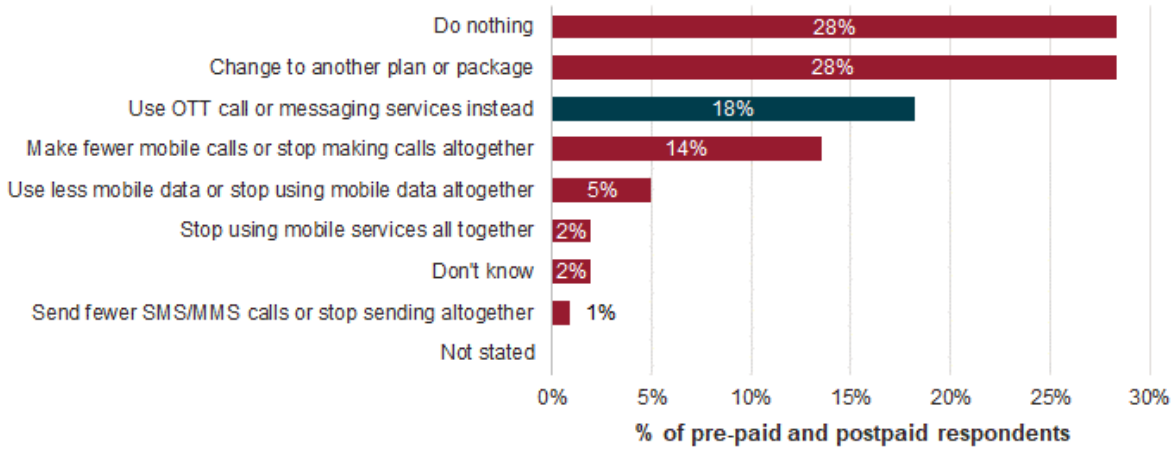


Figure 15 Action that would be taken in response to an increase in the price of overall mobile plan

Source: TATT-KCL Mobile Customer Survey, Table 20

The Authority does note that there is substitutability between OTT services for individual mobile services, such as voice calls or messaging, for a proportion of end users. However, the nature of OTT voice services is such that increases in overall take-up of these services are unlikely to render them full or perfect substitutes for mobile services. This is because even if end users consider switching between OTT services and domestic mobile services on a usage basis, the reliance of OTT services on a mobile data connection for some (almost half) of its users[154] suggests that OTT services cannot fully substitute retail mobile services. Accordingly, customers will not give up their mobile service plan entirely. The Authority therefore concludes that, given the reliance of OTT services on mobile access and data services among almost half of mobile bundle users as well as PAYG users, and the slight majority of end users opting to substitute away from their mobile plan in the event of a 5%–10% increase in the price of an individual mobile service, there is likely to be partial scope for demand-side substitution between OTT services and traditional mobile services.

4.3.1.2. Consideration of OTT and Mobile Voice Services

For completeness, the Authority also assessed the potential demand-side substitutability between OTT voice services and traditional mobile services, based on the availability and uptake of the services; the difference in individual product characteristics; their relative prices; and evidence of switching from the TATT-KCL Mobile Customer Survey. However, for the avoidance of doubt and for the reasons given in subsection 4.3, this conclusion has no impact

[154] TATT-KCL Mobile Customer Survey indicates that 44% of PAYG and 46% of prepaid and postpaid users would use OTTs using their mobile service plan instead.

on whether or not OTT services should form part of the product market for retail mobile voice services, as defined in section 3. The following reviews the difference in individual product characteristics; relative prices; and evidence of switching between OTT voice services and traditional mobile services.

1. Product characteristics

The TATT-KCL Mobile Customer Survey reports that, when end users were asked to compare OTT and traditional mobile domestic voice calls, they stated that traditional mobile calls generally have a higher price but provide much greater accessibility[155]. In other words, respondents felt that it was easier to reach the people they wanted to through the use of mobile voice calls compared to OTT calls.

The Authority notes that OTT services often provide users with enhanced features and functionalities relative to traditional mobile voice services, such as the ability for multiple users to join a group call and video call. These characteristics are valued by users, as demonstrated by the increased uptake of OTT services in Trinidad and Tobago in recent years.

However, the Authority notes equally that there are some disadvantages to OTT services relative to traditional mobile voice services. For example, OTT apps may not always synchronise well with the user's contact details stored on his/her mobile device. There are also functional differences between OTT calls and traditional mobile calls, like the fact that the calling party needs to know whether the receiver is able to receive calls on a given OTT app.

Given that users opting for OTT services to make some of their voice calls require a data connection to do so, the ability of consumers to substitute away from traditional mobile services can be restricted significantly in cases of limited fixed broadband access. This degree of "complementarity" between OTT services and traditional mobile data services is discussed in subsection 4.3.1[156].

The reliance on the speed and stability of an Internet connection further limits mobile calls' substitutability by OTT voice services. A poor Internet connection negatively impacts the ability of people to make and receive voice calls using OTT services. This might result in end users being unable to reach the people they want to call via an OTT service and be forced to opt for mobile calls. Indeed, a large proportion of survey respondents cited greater reach and

[155] TATT-KCL Mobile Customer Survey, Tables 11 and 14

[156] Local mobile service provider, Digicel, was observed to offer its own OTT voice application. However uptake of that service was not captured in the TATT-KCL Mobile Customer Survey.

accessibility as one of the main advantages of mobile calls relative to OTT services[157]. Concessionaires also acknowledged that quality of service/network was a key factor in the decisions made by consumers purchasing retail mobile telecommunications services.

2. Service availability, usage, and uptake

Smartphones and tablets capable of connecting to the Internet are common in Trinidad and Tobago, with 92% of the TATT-KCL Mobile Customer Survey respondents owning at least one of these devices[158]. This provides a strong foundation for the widespread use of OTT services in Trinidad and Tobago. In addition, just under 90% of respondents to the TATT-KCL Mobile Customer Survey [159] stated that they use OTT third-party applications "several times a day".

Also, per the TATT-KCL Mobile Customer Survey[160], voice and video calls were the most common use of OTT services in Trinidad and Tobago, making up 63% of the total use of these services, compared to 24% for messaging[161]. Despite this, the Authority believes that OTT voice services are not complete or perfect substitutes for mobile voice services. This is because, from a demand perspective, OTT and traditional mobile calls are more likely to also be considered by some consumers as complements rather than pure substitutes, as discussed above and shown in
Figure *15*. Most OTT calls are likely to be originated by end users who have access to both traditional mobile calls and mobile data services (either within one subscription as a bundle, or through separate PAYG subscriptions for the individual services), and will therefore substitute to OTTs, on a usage basis only. This suggests that the majority of end users who can access OTTs also have traditional mobile services available to them (refers to the complementarity effect) and will not give up their mobile service access but would substitute to OTTs, on a call or usage basis (refers to the substitution effect). This signifies that mobile voice users who also use OTT services will maintain active SIMs (for example maintaining minimum balances or credit top-ups). However, consumers of OTT services will reduce their use of mobile voice services by switching from voice calls to OTT applications (on fixed broadband and mobile data) instead.

[157] Although concessionaires offer nationwide coverage across various technologies, Table 11 of the TATT-KCL Mobile Customer Survey shows that 52% of the relevant respondents cited "accessibility and reach" as the main advantage of mobile voice services compared to OTT voice services.

[156] TATT-KCL Mobile Customer Survey, Figure 10

[159] TATT-KCL Mobile Customer Survey, Figure 39

[160] TATT-KCL Mobile Customer Survey, Figure 37

[161] These proportions are not out of total number of users but are calculated based on the total number of responses to this multi-response question.

3. Relative prices

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. For common-platform OTT calls, generally no charge is applied (other than any implicit cost for the data usage)[162].

Some OTT apps, however, like 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 seen in Table 13, calls to a mobile number in Trinidad and Tobago can be made at less than half the price (per minute) via Skype compared to prepaid PAYG charges[163]. However, calls made via Viber incur a unit price almost double that charged by concessionaires. On the other hand, as Table 14 shows, calls made to a fixed line in Trinidad and Tobago are significantly cheaper when made via Skype, but comparable between Viber and the prices charged by concessionaires.

Table 13 Calls to domestic mobiles, MNOs and prepaid PAYG offers versus OTTs

Provider	**Unit Price (TT$)**
Digicel	1.52/minute
Skype	0.73/minute
bmobile	1.56/minute
Viber	2.78/minute

Sources: OTTs' and concessionaires' websites, accessed 6th March 2023

[162] The Authority notes that the prices of common-platform OTT services are significantly lower than the prices of traditional mobile services, sometimes with the direct marginal cost to the end user of a call or message being zero (although, depending on the subscription plan, there may be a non-zero marginal cost or opportunity cost of data incurred by the end user as a result of their use of the OTT platform). This is reflective of the business/operational plans of OTT service providers being significantly different from those of mobile concessionaires. This is also reflected in the higher prices for OTT calls to fixed or mobile numbers which incur a termination charge by the OTT provider to the relevant terminating party. Note that these remarks apply to both call and messaging services.

[163] The comparison focuses on prepaid PAYG and OTT call services, as both offer unit prices for calls to domestic mobile and fixed lines.

Table 14 Calls to domestic fixed lines, MNOs and prepaid PAYG offers versus OTTs

Provider	Unit Price (TT$)
Digicel	1.52/minute
Skype	0.33/minute
bmobile	1.56/minute
Viber	1.47/minute

Sources: OTTs' and concessionaires' websites, accessed 6th March 2023

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 mobile call services depends on the call scenario, with both services offering calls at zero marginal costs (e.g., intra-platform OTT calls over a Wi-Fi network or where an end user has unlimited data and mobile calls within their monthly allowance). 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, in turn, will depend on whether that end user can use the data within his or her monthly allowance or uses 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.

4. Evidence of switching

As shown in
Figure *15*, domestic mobile call volumes (both prepaid and postpaid) have been generally stable within the last three years and have not declined in similar proportion to the extent that the demand for OTT call volumes is likely to have increased[164].

This observation is further supported by the TATT-KCL Mobile Customer Survey[165] which revealed that, on average, 31% of all PAYG respondents would use OTT voice instead of domestic mobile voice for a proportion of their calls, if faced with a 5%–10% rise in mobile call prices (compared, for example, to ceasing to use mobile voice services at all, or switching

[164] The Authority notes that data on the growth of OTT voice calls and minutes domestically were not available at the time of writing. Furthermore, it is noted that additional information would be required to assess how mobile traffic might have evolved in the absence of OTT services.

[165] TATT-KCL Mobile Customer Survey, Table 8

to another mobile provider)[166, 167]. This switching response varied across the different consumption levels, as shown in Table 15. Additionally, the share of PAYG respondents willing to switch to using OTT voice if there is a price increase in mobile call services is the lowest among users making less than 20 minutes of calls each week (29%) and those making more than 2 hours of calls each week (24%).

It is worth noting that the former group (respondents who make less than 20 minutes of calls each week) represent just under half of the sample size.

Table 15 Intention to substitute some mobile for OTT calls following a 5%–10% increase in the price of mobile voice service plans

Monthly expenditure on mobile voice services	Share of total users in monthly expenditure band	Share of PAYG users willing to switch some of their mobile voice to using OTT voice within each monthly expenditure band
Under $200	67%	33%
$200–$399	25%	31%
$400–$599	6%	33%
Above $600	1%	0%
Weighted average		31%

Source: TATT-KCL Mobile Customer Survey, Table 8

It was also observed that the average revenue generated per subscription for mobile voice and data services, individually and collectively, had declined over the period 2018 to 2022. This suggests that the market power held by providers of mobile voice, messaging and data services may be constrained by consumers switching away from mobile services, on a call basis, to alternative services, as opposed to foregoing their mobile subscription entirely.

[166] The Authority cautions that the questions posed in the TATT-KCL Mobile Customer Survey cannot necessarily be translated directly into a SSNIP test (and should not be interpreted as such). The Authority also emphasises that the survey was not necessarily designed to elicit such results; it seeks mainly to understand consumers' switching decisions more generally, given the options available to them, and not in the case of a hypothetical monopolist, as would be reflected in a SSNIP test. As such, for the avoidance of doubt, the proportion of respondents stating how they would adjust their behaviour in response to price changes cannot, and should not, be interpreted as SSNIP test results.

[167] Note that, in order for respondents to consider switching to OTT voice calls, they do not necessarily need to be already subscribed to, or have downloaded, the relevant app. Therefore, the proportion of respondents willing to switch some usage in the event of a price increase may be higher than the proportion of respondents who currently use OTT services at all.

Furthermore, as illustrated in Figure 15, at least 62% of survey respondents would reduce using mobile PAYG voice service[168]; 1% would stop using the service; and 31% would reduce mobile calls and switch to OTT calls (the largest of any alternative service) in the event of a 5% to 10% increase in the price of mobile voice services. This implies that the change in demand for OTT call services (31%), due to an increase (5%–10%) in the price of mobile voice services, is elastic, or that cross elasticity of demand between mobile voice and OTT voice services is strong. However, although the majority of consumers would reduce their usage of mobile voice in response to the SSNIP, they would not forego their mobile subscription entirely, which suggests that the use of mobile voice service is price elastic, while the demand for mobile subscription is highly price inelastic.

Furthermore, given that over half the respondents switching to OTTs calls would do so on fixed networks (for example, fixed and public Wi-Fi services[169]), mobile operators may have some difficulty in profitably increasing the prices of mobile voice service by a SSNIP, given customers' responsiveness (elastic demand) and their use of OTTs (which was the modal or most selected switching alternative).

Based on the TATT-KCL Mobile Customer Survey, in the event of a SSNIP, just under a third of mobile service customers would reduce mobile calls and use OTT services instead. The TATT-KCL Mobile Customer Survey also shows that less than 1% of the population did not use OTTs[170], and the National Digital Inclusion Survey (DIS 2021) cites that 83% of the population stated that they use OTTs. Furthermore, the TATT-KCL Mobile Customer Survey indicates that the majority of respondents (54% PAYG and 48.9% prepaid and postpaid customers) switching to OTTs in the event of a SSNIP, would do so using fixed networks (fixed and public Wi-Fi services).

This suggests that usage of OTT services is prevalent in Trinidad and Tobago and that a sizeable proportion of mobile voice customers would substitute mobile calls with OTT voice and messaging services using fixed or public Wi-Fi service in the event of a price increase by a small but significant size.

Therefore, the market power or ability to raise prices, held by authorised providers of mobile voice services in Trinidad and Tobago, would be considerably constrained by customers simply reducing demand and switching to OTT voice services on fixed networks. This is also

[168] Based on the TATT-KCL Mobile Customer Survey, PAYG customers represent 73% of respondents and 78% of prepaid customers. Prepaid customers accounted for 88% of the TATT-KCL Mobile Customer Survey respondents and 75% of the mobile service subscriptions.

[169] See TATT-KCL Mobile Customer Survey, Figure 34. Ways to reduce number of calls made on account of an increase in cost of monthly mobile calls subscription by using OTTs, which shows that 52.7% of mobile customers indicated they would make fewer calls and use their fixed Wi-Fi service to make calls on OTTs instead.

[170] Source: TATT-KCL Mobile Customer Survey, Figure 58. OTT application(s) used on mobile devices

evidenced by the falling revenue per subscription in both mobile voice and mobile Internet services over the period reviewed (see Table 16 and Figure 16).

Table 16 Mobile voice and data service revenue (2016–2022)

Year	Mobile Voice (TT$)	Mobile Internet (TT$)	Total Revenue (TT$)
2016	1,890, 000,000	601,000,000	2,491,000,000
2017	1,565,000,000	643,000,000	2,208,000,000
2018	1,200,000,000	841,000,000	2,041,000,000
2019	1,051,000,000	904,000,000	1,955, ,000,000
2020	877,000,000	934,000,000	1,811,000,000
2021	958,000,000	932,000,000	1,890,000,000
2022	948,000,000	989,000,000	1,937,000,000

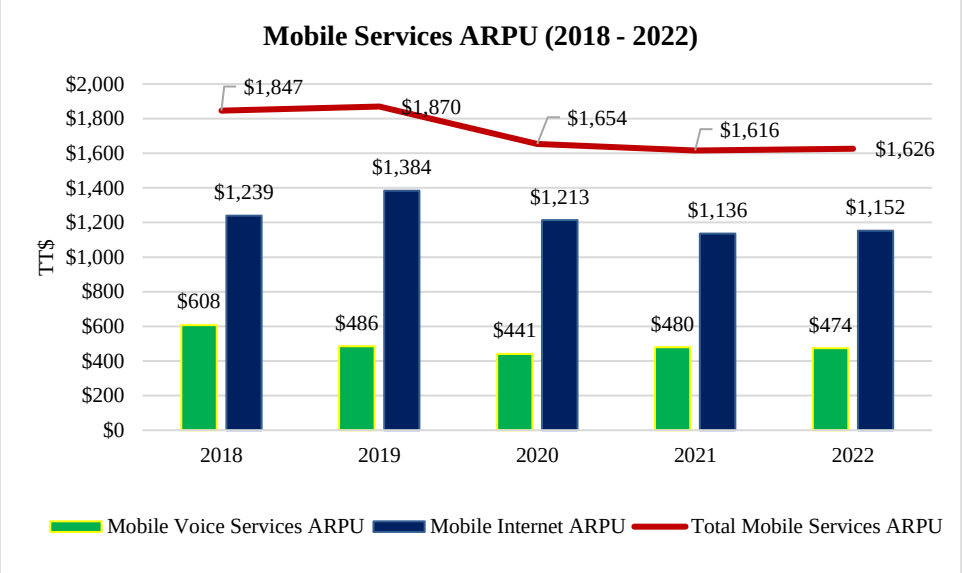


Figure 16 ARPU for mobile services, 2018–2022

Table 16 and Figure 16 show falling total revenue and average revenue per subscriber in both mobile voice and mobile Internet services over the period. This indicates that revenue generated from mobile services (voice and Internet combined) declined over the period, although a marginal increase in 2022 in total revenue and average revenue per subscriber is observed.

Although this evidence suggests that a share of end users of mobile voice services do consider OTT voice services to be a viable alternative to traditional mobile voice calls, the Authority is of the view that, in practice, end users may substitute between domestic mobile services and OTT services, on a call basis or partial basis, and not entirely forego their mobile service in Trinidad and Tobago, for the following reasons:

1. The degree of substitution has not been significant, with 78% of OTT users in the TATT-KCL Mobile Customer Survey[171] stating that consumption of such services has not reduced their usage of traditional mobile services.

2. Mobile voice services provide greater accessibility and reach than OTT services, given the general requirements for OTT users to use the same application to send and receive calls and messages.

3. The TATT-KCL Mobile Customer Survey[172] suggests that, in the event that users are faced with an increase in the price of mobile calls, 31% of the PAYG respondents said they would reduce their call volumes instead by using OTT calls. PAYG represents approximately 73% of mobile customer respondents.

4. Customer demand for mobile calls is price sensitive, i.e., responsive to changes in price. The TATT-KCL Mobile Customer Survey (see Figures 14 and 15) suggests that just over half, or the slight majority, of mobile customers will reduce demand for mobile call service in the event of an increase in the price of their service by a SSNIP of 5%–10%. This suggests that demand for mobile calls is price elastic and infers that attempts by a hypothetical monopolist to increase revenue may be constrained by customer responsiveness and switching.

5. However, the Authority concludes that substantial or overwhelming proportion (99%) of users would not substitute away from mobile calls entirely (i.e., stop making traditional mobile calls) and give up their overall PAYG plan because, as discussed above, the Authority has defined the relevant market as encompassing mobile access, mobile calls, SMS, and data services. This implies that the overwhelming majority of mobile customers would not substitute their mobile service for OTTs entirely but would substitute from their mobile service to OTTs on a call basis, with the majority using fixed and public Wi-Fi services. The Authority is therefore of the view that, for a significant portion of customers, OTTs are not full or perfect substitutes for mobile service (access, voice and data) but partial substitutes.

[171] TATT-KCL Mobile Customer Survey, Figure 42

[172] TATT-KCL Mobile Customer Survey, Table 8

4.3.1.3. Consideration of OTT and Mobile Messaging Services (SMS)

As with OTT voice, the Authority's assessment of the potential demand-side substitutability between OTT messaging services and traditional messaging services (carried out for completeness only) considers the availability and uptake of the services, the difference in individual product characteristics, their relative prices, and evidence of switching from the TATT-KCL Customer Survey.

The Authority concludes that declines in SMS trends suggest a limited impact of the price of traditional messaging on end-users' decisions when purchasing mobile services (especially as mobile access, calls, SMS, and data services are commonly purchased jointly and the relative importance of SMS in that is ever decreasing). The assessment criteria are discussed below.

1. **Product characteristics**

OTT messaging applications often have additional functionality compared to traditional mobile messaging services. Indeed, OTT messaging has "instant messaging" features which are not available with traditional mobile messaging services. End users can, for example, see when another end user is online, when he/she is typing, when he/she last accessed the platform and (in some cases) whether their messages have been read. End users can also interact within group messaging chats, whereas conversations over traditional mobile messaging services (SMS/MMS) are restricted to bilateral communication. There are also functional differences between OTT messaging services and traditional mobile messaging services, such as the ability to share documents, videos, and sound recordings more easily. Similar to what is described in relation to OTT voice services, end users may value these features offered by OTT messaging services.

However, as noted in subsection 4.3.1.2, OTT apps may bring accessibility issues which restrict the extent to which users consider the services to be similar or are able to switch between them. Indeed, some respondents to the TATT-KCL Mobile Customer Survey[173] stated "convenience of use" as one of the big advantages of traditional mobile services compared to OTT messaging services.

Access to the Internet is another requirement. However, compared to voice services, effective communication through OTT messaging does not require that both sender and receiver simultaneously have a good Internet connection. Under extreme conditions of poor Internet connectivity or delayed Internet availability for the receiver, messages arrive late rather than fail to be delivered (although when messages are no longer pertinent, this is equivalent to non-delivery). This is not the case for traditional mobile messages (SMSs), which do not require an

[173] TATT-KCL Mobile Customer Survey, Table 27

Internet connection, only a minimum level of coverage. This could, therefore, limit substitution between both services. In any case, as also described in section 4.3.1.1, users opting for OTT services to send some of their messages require a mobile data (or Wi-Fi) connection to do so, restricting the ability of consumers to substitute away from traditional mobile services.

This requirement or potential restriction is supported, to an extent, by the TATT-KCL Mobile Customer Survey[174] , where some respondents pointed to "quality of service" (which might include service availability) as one of the key advantages of mobile messaging compared to OTT messaging services. This could again limit substitution and could suggest that there are different situations in which end users would choose to send one type of message or another. For example, SMSs are required in situations where no Internet connection is available.

2. Service availability and uptake

The Authority notes that SMS usage has been continually declining over the last few years in Trinidad and Tobago.
Figure 17 shows that the total annual number of SMSs sent per mobile subscription in Trinidad and Tobago has declined from almost 600 per subscription in 2014 to just under 60 per subscription in 2021 – a reduction of 90%[175].

Even though some of this decline in SMS usage may be the result of increases in the penetration of mobile Internet services (and thus access to OTT services), the degree of the decline suggests that not all the reduction in usage is as a result of the increased uptake of mobile data.

[174] Ibid.

[175] TATT annual market reports 2011–2021

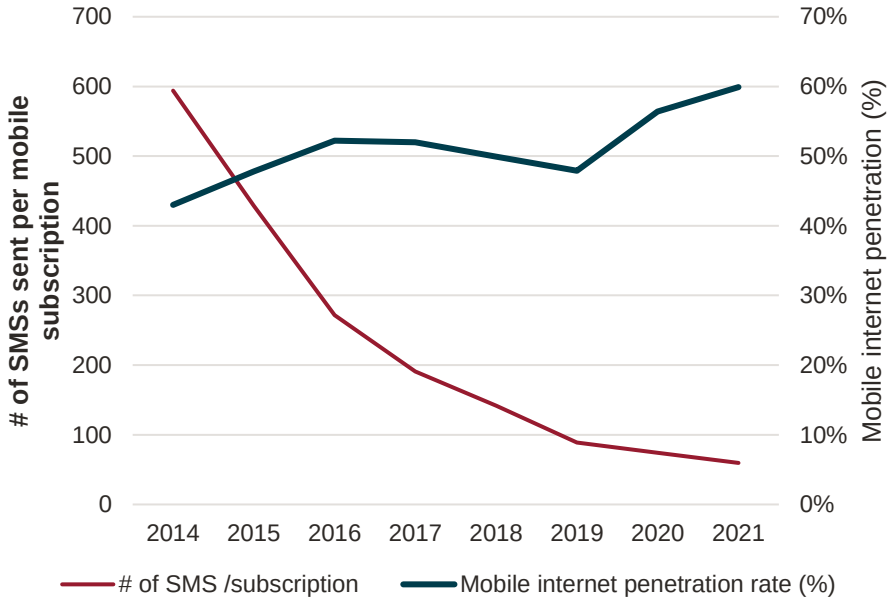


Figure 17 SMS per mobile connection and mobile Internet penetration per year

Source: Annual market reports 2014–2021

This implies a continual reduction of the impact and importance of SMS services on end users when they are deciding to subscribe to a mobile plan. Indeed, the TATT-KCL Mobile Customer Survey stated that just 33% of all survey respondents send more than seven SMSs/MMSs per week (i.e., at least one SMS per day, on average)[176]. In other words, end users are unlikely to rely heavily on the price and quality of traditional messaging services when making decisions on subscriptions, and an increase in the price of mobile messaging is unlikely to be sufficient for end users to substitute away from their mobile plan.

With respect to OTT messaging, as mentioned above, 92% of the respondents to the TATT-KCL Mobile Customer Survey stated that they use OTT third-party-based applications. Of those who use OTT services, more than 50% stated that they send more than ten messages a day[177] .

[176] TATT-KCL Mobile Customer Survey, Figure 17

[177] TATT-KCL Mobile Customer Survey, Figure 40

3. Relative prices

The potential price differential between OTT messaging and domestic mobile messaging services depends on the messaging scenario, with both services potentially offering messages at zero marginal costs.

OTT messaging services do not attract a per-message charge but end users may face the mobile data-related costs of sending the OTT message. This will depend on whether that end user can use the data within their monthly allowance (in which case there is no extra cost); has to pay the out-of-bundle data charge; is on a PAYG plan; or is using a fixed (private or public) WiFi service.

This cost waiver, also holds for domestic mobile messaging services, as many mobile bundles include unlimited SMSs, which results in the marginal cost for traditional (SMS) mobile messaging services faced by end users also being zero. For all other mobile users, a per-message charge will apply.

4. Evidence of Switching

According to the TATT-KCL Mobile Customer Survey[178], 38% of all PAYG respondents would send fewer mobile messages and increase their usage of OTT messaging services in response to a 5%–10% increase in mobile messaging prices[179]. This response is lowest amongst respondents with expenditure levels under TT$200 and above TT$600, which represents more than two thirds of the sample, as can be seen in Table 17.

[178] TATT-KCL Mobile Customer Survey, Table 14

[179] It is pertinent to note that, according to data submitted by the concessionaires, SMS and MMS traffic volumes in Trinidad and Tobago have exhibited a downward trend in recent years. There is insufficient information available to conclude the reasons behind this trend with any certainty, although it is likely to be driven by a number of factors, over and above any increased uptake of OTT services. These might include, inter alia, a degree of substitution from SMS/MMS to voice calling; OTT messaging or voice services; lower overall levels of communication via telephony (for example, in lieu of email communication or increased face-to-face interaction); and changes in messaging habits (for example, sending fewer longer SMSs rather than many shorter SMSs).

Table 17 Intention to substitute some mobile for OTT messages following a 5%–10% price increase in mobile messaging services

Monthly expenditure on mobile messaging services	Share of total users in the monthly expenditure consumption band	Share of PAYG users willing to switch some SMS usage within each monthly expenditure band
Under $200	67%	35%
$200–$399	25%	46%
$400–$599	6%	52%
Above $600	1%	32%
Weighted average		38%

Source: TATT-KCL Mobile Customer Survey, Table 14

As discussed, when assessing similar evidence for domestic voice call services, although this evidence suggests that a share of end users of domestic mobile messaging services do consider OTT messaging services to be an alternative option, the Authority is of the view that, in practice, the scope for end users substituting away from domestic messaging services to OTT services is likely to be partial (i.e., on a usage basis) and not perfectly substitutable (that is, where customers give up their mobile service entirely).

As mentioned above, demand for traditional mobile messaging services is in sharp decline, with the total number of SMSs sent per mobile subscription in 2021 being equivalent to just over 10% of those sent in 2014.

Moreover, and more importantly, the majority (79%) of the survey respondents using OTT applications reported that availability of these services had not affected their usage of mobile services[180].

In addition, 90% of respondents who use OTT services stated that they use them several times a day. Of these 90% (824 respondents), almost two-thirds send fewer than seven SMS per week (fewer than one per day on average), and only 2% send more than 50 SMS a week[181].

[180] Source: TATT-KCL Mobile Customer Survey, Figures 42 and 43. For the remaining 21% who did report a change in consumption of traditional mobile services, only half revealed that this change included sending fewer traditional mobile messages (SMSs/MMSs).

[181] Source: TATT-KCL Mobile Customer Survey, Figure 39 and Question S3A-Q3A.12

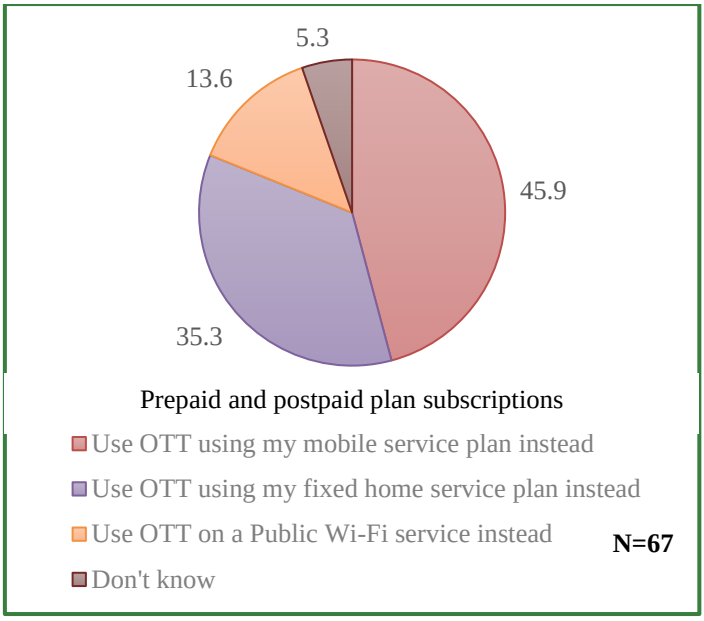
Altogether, the foregoing suggests that, even though the use of OTTs may be impacting their use of traditional SMS services, for a majority of customers it has had little impact on their use of mobile services as a whole. This is in line with the observation above that traditional messaging is playing an increasingly limited role in the overall purchasing decisions of customers.

In addition, even if there was sufficiently high switching between OTT messaging and traditional messaging, the very low rates of traditional messages sent by end users, as well as the evidence from the TATT-KCL Mobile Customer Survey, suggest that this switching would be unlikely to affect the use of mobile services as a whole.

4.3.1.4. Conclusions on the Demand-Side Substitutability between Traditional Mobile and OTT Services

In subsection 4.3.1, the Authority assessed whether there is sufficient demand-side substitutability between OTT services and retail domestic mobile services for them to be included in a single product market. As explained in subsection 4.3, the Authority believes that the correct approach for this analysis is to consider the full portfolio of retail domestic mobile services jointly (namely, voice, SMS, data, and mobile access).

Based on the evidence of reported switching as a result of a small but significant increase in the price of the mobile plan, as well as the complementarity between the use of OTT services and mobile data services, the Authority believes there is evidence of a degree of partial substitutability and full complementarity between OTT services and retail domestic mobile services (as defined in TATT-KCL Mobile Customer Survey Table 14). As shown in Figure *18*, in the instance of a SSNIP in the price of domestic mobile services, 44.1% of respondents stated that they would make fewer calls but use their mobile service plan to make OTT calls, thus showing the complementarity of the services. A total of 54% (52.7% + 1.3%) indicated that they would make fewer calls but use fixed Wi-Fi service to make OTT calls, thus showing a larger degree of substitutability. However, due to the need for mobile access, end users are unlikely to switch away from using their retail domestic mobile services (i.e., their mobile access, voice, messaging and data plan) to relying on OTT services solely, in the case of a SSNIP. As such, the Authority considers OTTs to be partial substitutes and a relevant part of the retail domestic mobile telephony market. This is based on the consideration that a hypothetical monopolist may be constrained in increasing revenue or profit following a SSNIP in mobile services, given customer responsiveness and switching to OTTs on fixed networks on a call or usage basis.



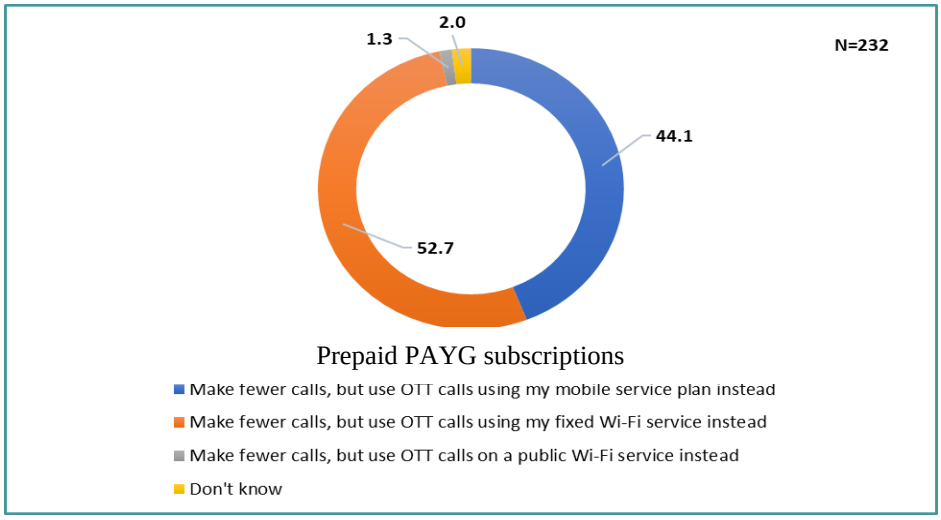


Figure 18 Response of prepaid (including PAYG) and postpaid subscribers to a 5%–10% increase in the price of domestic mobile services

Source: TATT-KCL Mobile Customer Survey

The Authority has also, for completeness, carried out this assessment at the service level for traditional mobile voice and SMS services.

From its assessment of OTT voice services, the Authority considers that there may be partial demand-side substitution between OTT voice services and domestic mobile call services, based on the reported rate of switching following an increase in the price of mobile calls to OTT

calling and messaging being used by 90.1% of respondents via a mobile smartphone[182]. However, given the evidence of stable voice minutes over the last eight years, as well as the requirement of mobile data services for the use of OTT voice applications, this substitution is likely to be only partial[183].

The Authority notes that the slightly higher share of survey respondents who stated a willingness to switch some of their mobile call usage to OTT calls in response to a 5%–-10% increase in the price of mobile calls for individuals that use PAYG services (31% of this subgroup, compared to 18% for all other mobile users) and those who have access to fixed or public Wi-Fi (23% of PAYG users who use mobile data through a smartphone plan would reduce mobile data usage by offloading to public Wi-Fi in response to a 5%–-10% increase).

Based on TATT-KCL Mobile Customer Survey, Table 11 on mobile plans currently subscribed to, PAYG are the overwhelming majority (73%) of mobile customers. As illustrated in Figure 14, in the event of a 5% increase in the price of mobile voice services, at least 62% of survey respondents would reduce using mobile PAYG voice service[184], 1% would stop using the service; and 31% would reduce mobile calls and switch to OTT calls (the largest of all alternative responses[185]). This implies that the change in demand for OTT call services (31%) due to a SSNIP in mobile voice services is elastic, or that cross elasticity of demand between mobile voice and OTT voice services is strong (340%)[186]. Although consumers will reduce their usage of mobile voice in response to the SSNIP, they will not forego their mobile subscription (i.e., access to their mobile service) entirely, which suggests that the use of mobile voice service is price elastic while the demand for accessing mobile subscription is highly price inelastic (20%)[187].

[182] Refer to the TATT-KCL Mobile Customer Survey, Figure 57 Types of mobile devices used for OTT calling and messaging

[183] The Authority notes that end users commonly could limit their data consumption on mobile bundles by using Wi-Fi networks when at home or where publicly available (i.e., Wi-Fi offloading). Whilst this could be considered a form of mobile-to-fixed substitution of data usage, end users are unlikely to give up their mobile data services altogether because of it.

[184] Based on the TATT-KCL Mobile Customer Survey, PAYG customers represented 73% of respondents and 78% of prepaid customers. Prepaid customers accounted for 88% of the TATT-KCL Mobile Customer Survey respondents and 75% of the mobile service subscriptions.

[185] European Commission Notice on the Definition of the Relevant Market for the Purposes of Union Competition Law (2022). Specifically, Section 30, provides that "alternative products are added to the candidate market in decreasing order of the degree to which the customers would substitute the products of the undertaking(s) involved with these alternative products".

[186] Cross elasticity of demand (XED) was calculated as the ratio of the percentage change in demand for OTT services (17%) and the percentage change in the price of mobile voice service (SSNIP-5%), where XED = $\%\Delta Qd / \%\Delta p = 17/5 = 3.4$.

[187] The price elasticity of demand (PED) was calculated as the ratio of the percentage change in the demand for mobile voice subscription (1%) and the percentage change in the price of mobile voice service (SSNIP-5%), where PED = $\%\Delta Qd / \%\Delta p = 1/5 = 20\%$.

Furthermore, given that over half of these respondents (53%) would switch to OTTs on fixed networks[188], mobile operators may be challenged to profitably increase the prices of mobile voice service by a SSNIP, given the widespread use of OTTs. Based on the TATT-KCL Mobile Customer Survey, over 90% of mobile customers use OTTs[189]. Similarly, DIS 2021 records that 83% of the sample population indicated that they use OTTs. This suggests widespread usage of OTT services and that a sizeable proportion of mobile voice customers would substitute mobile calls with OTTs voice and messaging services, using fixed or public Wi-Fi service in the event of a SSNIP.

Therefore, the market power or ability to raise prices, held by authorised providers of mobile voice services in Trinidad and Tobago, would be partially constrained by customers switching to OTT voice services. This is also evidenced by the falling revenue per subscription in mobile voice services (see Figure 16).

However, as stated above, substitutability at the service level does not necessarily translate to overall substitutability in a way that would impact the relevant market definition[190].

With regard to OTT messaging services, the Authority's view is that, due to the sharp decline in the use of traditional messaging services, any demand-side substitutability between OTT messaging and traditional messaging is unlikely to affect the purchasing and consumption decisions of end users. However, as mentioned previously, the Authority considers that the assessment of substitutability at the service level is incomplete for the purposes of market definition, and that any SSNIP tests must be applied at the level of the relevant market, as defined by the Authority, namely, mobile voice, SMS, and data services, as well as mobile access.

In view of all the above, including product characteristics (that is, the functional similarity of OTT voice and messaging services); the perceived low prices of OTT services; the high uptake of OTT services; and the sizeable proportion of customers switching to OTT services using mobile and fixed services (in the majority), the Authority considers that the profitability of a price increase by a hypothetical monopolist providing mobile services (access, voice and data) will be constrained by the significant reduction in mobile service consumption and by customers switching to OTT voice services on fixed networks. This is evidenced by steadily falling total revenue and average revenue per subscription in mobile services.

[188] See TATT-KCL Figure 34. Ways to reduce number of calls made on account of an increase in cost of monthly mobile calls subscription by using OTTs, which shows that 52.7% of mobile customers indicated that they would make fewer calls and use their fixed Wi-Fi service to make calls on OTTs instead.

[189] Source: Figure 57. Types of mobile devices used for OTT calling and messaging

[190] The Authority notes that end users commonly could limit their data consumption on mobile bundles by using Wi-Fi networks when at home or where publicly available (i.e., Wi-Fi offloading). Whilst this could be considered a form of mobile-to-fixed substitution of data usage, end users are unlikely to give up their mobile data services altogether because of it.

Therefore, in light of the foregoing, OTT services can be considered a relevant part of the retail domestic mobile telephony market. Specifically, the profitability of a SSNIP on mobile services (access, voice and data) will be difficult to sustain if the proliferation of OTT services, adoption rates and existing network preferences persist in the future, ceteris paribus[191] (e.g., where a significant proportion of customers switch to OTTs on Fixed Networks due to small increase in the price of mobile services i.e., by SSNIP).

4.3.2. Supply-Side Considerations

As was seen in the analysis of the substitutability between mobile and fixed services discussed above, there is no supply-side substitution between OTT and mobile services in Trinidad and Tobago. This is due to the high barriers to entry into the mobile services market, in terms of the need for providers to obtain a mobile service licence; gain access to mobile spectrum; deploy mobile network infrastructure; and develop a retail distribution network.

Given the time, investment and licence requirements, the Authority considers it unlikely that an OTT provider would enter the mobile service market following a SSNIP in mobile services and provide traditional mobile voice, messaging and data service[192].

4.4. Key Conclusions

In this section, the Authority determines whether the market for retail domestic mobile services, as defined in section 3, also includes other, non-mobile services. In particular, the Authority considers whether:

1. retail fixed voice and/or broadband services should form part of the same product market as retail domestic mobile services.

[191] Refers to the degree of substitution and complementarity between traditional mobile services and OTT services, which the evidence suggests that OTTs are more demand-side substitutes for mobile services than complements (i.e., the impact of the contraction on voice and messaging services revenues exceeds the growth impact on mobile data service revenue in Trinidad and Tobago over the period 2016–2022).

[192] It should be noted that supply-side substitutability specifically concerns the ability of a provider, who currently does not offer the focal product, to switch production/service provision to offer the focal product(s), which, in this case, are traditional mobile services (i.e., those services which are delivered directly over a mobile network and require a licence in the relevant country). Since OTT services do not meet these criteria, they are not considered to be supply-side substitutes to traditional mobile services. The requirement to provide traditional mobile services means that a provider would need either to operate their own mobile network or to operate as an MVNO using an MNO's network (i.e., using the infrastructure of one of the concessionaires), with both requiring a licence in the relevant country. The ability of OTT platforms/providers to pose a competitive constraint and, therefore, the consideration of whether they may belong in the same market as traditional mobile services, is captured in a test of demand-side substitutability, where one examines whether end users are likely to view these alternative services as viable substitutes to traditional mobile services in the case of a SSNIP in the latter. Note that this applies for both call and messaging services.

2. OTT voice and messaging services should form part of that product market.

Taking into account the demand- and supply-side considerations in both cases, the Authority concludes retail fixed voice and/or broadband services should not form part of the same product market as retail domestic mobile services. In particular, there is no supply-side substitutability, as retail domestic mobile services are provided under distinct licences and delivered via different network technologies, and utilise different tariff structures or business plans. There is partial demand-side substitutability between OTT voice and messaging services and these services are a relevant part of that product market due to:

1. strong uptake of OTTs in Trinidad and Tobago, with 70%–90% of TATT-KCL survey respondents using their smart phone to access, amongst others, OTT services.

2. similar demand-side functionality and product characteristics, as OTT services allow end users to generate voice/video calls or send messages.

3. the use of OTTs in Trinidad and Tobago

4. the TATT-KCL survey suggesting that the number of respondents who perceived OTT services to be lower priced is significant, with 70%–90% of respondents considering it more affordable than mobile call/messaging services.

5. 33% of the TATT-KCL survey respondents stating that they are likely to make fewer mobile calls and would instead rely on OTT services for these calls in the case of a SSNIP in their retail domestic mobile services. However, only 1% of respondents would stop using their mobile services altogether.

The above implies that OTT services/prices represent an important factor in the competitive landscape within the communications sector and a potential competitive constraint to operators in the domestic retail mobile market. The survey evidence presented under item (5) above suggests that OTT services are considered substitutes on a call basis (i.e. mobile users with access to the Internet and OTT services may consider switching between both services when on an individual call basis). But mobile users will not switch away from their entire mobile plan (i.e., calls, messaging, data and mobile access) to rely on OTT services instead.
The Authority also considers that the profitability of a price increase by a hypothetical monopolist providing mobile services (access, voice and data) in Trinidad and Tobago will be constrained by the significant reduction in mobile service consumption and customers switching to OTT voice services on fixed networks (fixed and public Wi-Fi). This view is also supported by steadily falling revenue per subscription and annual totals, in mobile voice service (see Figure 16) and further evidenced by product characteristics (that is, the functional similarity of OTT voice and messaging), perceived low prices of OTT services, high uptake of OTT services, significant customer switching to OTT services using mobile and fixed services on a call or usage basis.

Therefore, in light of the foregoing, OTT services can be considered a relevant part of the retail domestic mobile telephony market, as the profitability of a SSNIP on mobile services (access, voice and data) will become increasingly difficult where OTT services proliferation and adoption rate and network preferences persist or increases in the future, ceteris paribus (e.g., where a significant proportion of customers switch to OTTs on Fixed Networks due to small increase in the price of mobile services i.e., by SSNIP).

The Authority reserves the right to review and amend its assessment of the retail domestic mobile market definition in accordance with market dynamics and will continue to monitor and review this position in the future as the market progresses.

5. Geographic Scope of the Product Market

This section discusses the relevant geographic scope of the market for retail domestic mobile services. It follows the approach set out in subsection 2.3.

5.1. Assessment of the Relevant Geographic Markets

As set out in subsection 2.3, telecommunications markets are typically defined nationally, due to the geographic scope of service licences and concessions. Only if there is significant evidence to the contrary (i.e., due to differences in network coverage, service availability, pricing and/or competitive dynamics) will sub-national markets be defined. In general, the competitive dynamics on both the demand side and supply side need to be significantly different across Trinidad and Tobago (or within either island) to require separate geographic markets.

The Authority has not seen any evidence that the nature of the demand for retail domestic mobile services varies significantly at a sub-national level. This is despite the fact that demand is inherently local in nature.

In addition, the Authority is not aware of any observable differences in the characteristics of end users in different geographic areas, such as preference for specific technologies when accessing telecommunications services (e.g., preference for accessing domestic fixed services as opposed to domestic mobile services), which could affect the geographic scope of the demand for retail domestic mobile services.

Given both concessionaires' coverage and the national pricing of domestic mobile services, the relevant geographic scope of each product market is likely to be national. Compliance data held at the Authority indicates that, in 2022, Digicel covered approximately 92% of Trinidad and Tobago. Similarly, bmobile's coverage statistic for the same period, i.e., 2022, was approximately 93%[193]. However, in support of a national market, both offer 4G LTE services nationwide, which are typically sufficient to support mobile data usage. Therefore, it does not appear that, over the coming years, there will be any significant differences in geographic coverage from the main mobile concessionaires in Trinidad and Tobago. This is especially true as both mobile concessions are national in scope, and the Authority continues to support national coverage. Indeed, there are currently no regulatory or legal barriers to providing retail domestic mobile services under the same terms and conditions across Trinidad and Tobago.

Similarly, the retail offerings from both Digicel and bmobile do not differ within their relevant coverage areas, and pricing is national (i.e., uniform prices are set within the country). This further supports the hypothesis that the relevant geographic markets are national. Furthermore,

[193] Compliance data refers to April 2022 and September 2022 for operators Digicel and bmobile, respectively.

no submissions received from the concessionaires provided evidence to support sub-national markets.

Lastly, the above conclusion on defining a national market for retail domestic mobile services is in line with international precedent from Bermuda, Europe and the GCC region, amongst other jurisdictions.

5.2. Conclusion on Relevant Geographic Markets

Based on the assessment set out above, the Authority concludes that the geographic scope of the market for retail domestic mobile services, as defined in section 2 and subsection 2.3, is national.

6. Conclusions

Having collected information from the relevant concessionaires, considered their representations, and analysed the available information, the Authority concludes that there is a single relevant economic market for retail domestic mobile services, covering all customer segments (i.e., prepaid and postpaid plans for both residential and business customers) and OTT services which may substitute for mobile voice services on a call or usage basis, periodically. This market is national. The full scope of this market is set out in Table 18.

Table 18. List of services included in the retail domestic mobile service market

Product Scope	Customer Segments	Geographic Scope
Retail mobile access services	Prepaid/postpaid mobile tariff offerings	National
Retail domestic call services	Prepaid/postpaid mobile tariff offerings	
Retail domestic mobile messaging services	Business/residential tariff offerings	
Retail mobile data services	Business/residential tariff offerings	
OTT messaging, voice, and video call services	Mobile data/fixed and public Wi-Fi networks	

Table 18 lists all the retail domestic mobile services, described by product scope, customer segments and geographic boundaries, which are included within the relevant market. To further clarify the interpretation of the table, the relevant market is a single, national market covering all mobile products (i.e., mobile access services, domestic call and mobile messaging services, and mobile data services), across all the relevant customer segments (i.e., both prepaid and postpaid, and both residential and business). This conclusion has been reached in view of the findings described below, summarised from the Authority's market definition assessment conducted in sections 3 to 5 of this Determination. In particular, the Authority has determined the following:

1. Retail mobile access and domestic mobile calls/messaging should be considered in the same product market, as a result of end users purchasing these services, taking into account the characteristics of both access and call/messaging services, with the services providing complementary functionality and end users facing a requirement to procure

access and call/messaging from the same provider. Furthermore, concessionaires use the same infrastructure and sales channels to provide access and call/messaging services.

2. Mobile data services belong to the same market as mobile access, domestic call and messaging services, based on the supply-side substitutability of the services and similar functionality offered to end users on the demand side.

3. Prepaid mobile services are in the same market as postpaid mobile services. End-user functionality is fundamentally identical and, although there are differences in the services, the Authority notes that there is an overlap between the two types of products. Furthermore, prepaid and postpaid mobile services are supply-side substitutes, as the underlying infrastructure is identical.

4. Residential and business mobile services are in the same market. On the demand side, some end users may be able switch from business to residential service offerings. Moreover, the two products are supply-side substitutes, with similar inputs being used to deliver both business and residential services.

5. Domestic fixed voice services do not form part of the same product market as domestic mobile services. There is no supply-side substitutability since the services are provided under distinct licences and over different network technologies. Demand-side substitutability from mobile to fixed services is limited as a result of the importance end users place on the ability to use a mobile device to make and receive calls outside the home.

6. Retail fixed broadband services do not form part of the same product market as retail domestic mobile data services. Therefore, mobile data services form a separate and distinct market. As for fixed voice services, fixed broadband and mobile data services are not supply-side substitutes, as these services require distinct licences and are delivered over different network technologies. Demand-side substitution is also limited due to significant differences in the preferences of end users, customer usage trends and in-product features.

7. OTT services form part of the same product market as domestic mobile services. According to the evidence[194] considered by the Authority, OTT services are seen as significant demand-side substitutes on a call or usage basis (i.e., a sizeable proportion of mobile users with access to the Internet and OTT services would switch between both services on an individual call basis). But mobile users in Trinidad and Tobago

[194] Evidence in this instance is the qualitative/quantitative submissions utilised in the market definition assessment. Notwithstanding the determination of the market boundary, the Authority reserves the right to conduct periodic and timely reviews of the market and all submarkets, as it deems necessary, for accurate regulatory decision making, in accordance with the Authority's regulatory functions and mandate.

would not switch away from their entire mobile plan (i.e., calls, messaging, data and mobile access) to rely on OTT services instead. This indicates that a hypothetical monopolist may be constrained in increasing revenue or profit from a SSNIP in mobile access, voice and data services, due to customer responsiveness and switching to OTTs on fixed networks. However, there is no supply-side substitution, given the significant investments OTT players would have to make in order to begin offering traditional mobile services.

8. Although by definition OTT (voice, video and messaging) services are considered demand-side substitutes with mobile voice services, they are partially and not perfectly substitutable with mobile services. OTTs cannot be substituted with mobile data services but are considered complementary by end users. Furthermore, there is no supply-side substitution between OTT and mobile services in Trinidad and Tobago, as it unlikely that an OTT provider would enter the mobile service market following a SSNIP in mobile services, given the investment and licensing requirements.

9. Therefore, regarding the degree of substitution and complementarity between traditional mobile services and OTT services, the evidence suggests that OTTs are more demand-side substitutes with mobile services than complementary (i.e., the financial impact on voice and messaging services exceeds the financial impact on mobile data service over the period). The Authority considers that the overall trend in OTT services may change in the future and thus will continue to monitor the market and review this position on a three-to-five-year cycle, as the market progresses or as it deems necessary.

10. Moreover, OTTs also depend on existing mobile Internet passive and active networks infrastructure and resources, including the Internet backbone (or Internet access) and active SIMs, and hence are not fully or perfectly substitutable with mobile service. As a result, OTT services are neither similarly situated nor are they equivalent to mobile services (voice, messaging and or data services).

11. The relevant geographic market is national. Domestic markets may not be wider than national, and no evidence was provided to suggest that sub-national markets are appropriate. Both concessionaires provide nationwide coverage and set prices uniformly throughout Trinidad and Tobago.

The above implies that Trinidad and Tobago consumers of mobile services view mobile voice services (i.e., prepaid PAYG and prepaid plans and postpaid plans) to be substitutable with mobile data services and OTT voice and messaging services. However, consumers of mobile voice services establish boundaries with domestic retail fixed voice and fixed broadband (i.e., they do not find them substitutable).

Consequently, based on all the data and information assessed, the Authority has determined the existence of a single relevant economic market for retail domestic mobile telephony

services. This market definition is noted to be highly dependent on customer data networks (i.e., fixed or mobile data networks) usage preferences, as evidenced by the information reviewed herein for the period 2018 to 2022. Where customer usage preferences and trends change significantly from those in this assessment period, any regulatory decision drawn from this relevant market definition or Determination, will also be reviewed, revised or withdrawn, in the interest of the development of sustainable and competitive domestic telecommunications markets.

The Authority will try to conduct periodic reviews of the retail domestic mobile market on a three-to-five-year cyclical basis, or as it deems required, for accurate regulatory decision making and the fulfillment of the Authority's function and regulatory mandate in keeping with the Telecommunications Act and all its subsidiary legislation.

The Authority's revised position from version 0.2 of this determination, which includes OTT services as a part of the relevant domestic retail mobile telephony market, was arrived at in light of the significant partial substitution observed (i.e., the reduction in consumption of voice services and the related increase in the uptake of OTTs as an alternative), which may constrain an HM from profitably increasing the price of mobile voice and messaging services. This revision takes into consideration feedback received from stakeholders during consultation, additional operator metrics (including PAYG subscriptions, service tariffs and 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 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 Mobile Market Customer Survey