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Evolution of telecommunication market in South America

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Abbreviations.

AMBA	Metropolitan region of Buenos Aires
Anatel	Agência Nacional de Telecomunicações
ARPU	Average Revenues Per User
CAT	Compañía Argentina de Teléfonos
CET	Compañía Entrerriana de Teléfonos
COINTEL	Compañía Internacional de Telecomunicaciones
Contel	Conselho Nacional Telecomunicações
CTB	Companhia Telephonica do Brasil
CTI	Compañía de Teléfonos del Interior
CTMR	Telefónica Melhoramento e Resisência
DDD	Discagem Direta à Distância
Embratel	Empresa Brasileira de Telecomunicações
EMTA	Empresa Mixta Telefónica Argentina
ENACOM	Ente Nacional de Comunicaciones
ENTel	Empresa Nacional de Teléfonos
GDP	Gross Domestic Product
ITT	Telephone and Telegraph Corporation
ITU	International Telecommunication Union
MSE	Mean Squared Error
Light	Toronto Traction Light and Power
PPP	Purchasing Power Parity
SCT	Sociedad Cooperativa Telefónica
TE	Dirección General de Teléfonos del Estado
Telebras	Telecomunicações Brasileiras SA
UT	Unión Telefónica del Río de la Plata

1 Introduction.

This is a Final Thesis of Laurea Magistrale in Engineering and Management. It is organized in three main parts.

Firstly, it describes general data of the South American continent such as countries' surface and inhabitants. The population of this part of the world has communicative needs that must be fulfilled. Since the large extension of the region, two countries were selected to be analysed; Argentina and Brazil.

The second part introduces the establishment of new companies that provided fixed and mobile services in the Argentina and Brazil. In addition, it mentions firms acquisition done over the years. Timelines were added to clarify the milestones in the telephony history.

Moreover, it tabulates the total number of mobile and fixed accesses per year from 2000 to 2016 and forecasts the ones for 2017 and 2018. For doing that, the methodology used was explained.

Thirdly, a current mobile market analysis is done. This part explains the commercial strategies adopted and the promotions offered by the mobile firms operating in Argentina and Brazil. Additionally, it presents the main elements like the firm's logo, the capital structure and estimates its market share based on assumptions and the forecasted data.

Finally, the work ends with a conclusion that briefly summarizes the power of the companies, the market composition, the reasons why certain strategies were adopted, and it suggests the reasons of the price gap between South America and Europe.

2 General information of South America.

The American continent was discovered in 1492 by the Spanish people and its vast majority was colonized by them. The Portuguese, the Dutch, the French and the English people colonized the territory some years after its discovery by the Spanish. America can be divided into North America, Central America and South America. This work focuses on the Southern area which is constituted by the Argentine Republic, the Plurinational State of Bolivia, the Republic of Chile, the Republic of Colombia, the Republic of Ecuador, the Republic of Guyana, the Republic of Paraguay, the Republic of Peru, the Republic of Suriname, the Oriental Republic of Uruguay and the Bolivarian Republic of Venezuela.

2.1 South America surface.

As regard its surface, South America has 18,541,433 km^2 and the 45.93% of the area belongs the Brazilian territory. Secondly, Argentina covers the 20.29% of South America, followed by Peru (6.93%), Colombia (6.16%), Bolivia (5.93%), Venezuela (4.92%), Chile (4.08%), Paraguay (2.19%), Ecuador (1.38%), Guyana (1.16%), Uruguay (0.95%) and Suriname (0.09%). Figure 2.1 and Figure 2.2 represent the surface of each country and were made on the basis of information from the United Nations Statistics Division and the site of the Government of Argentina.

Figure 2-1:Surface of South American countries.

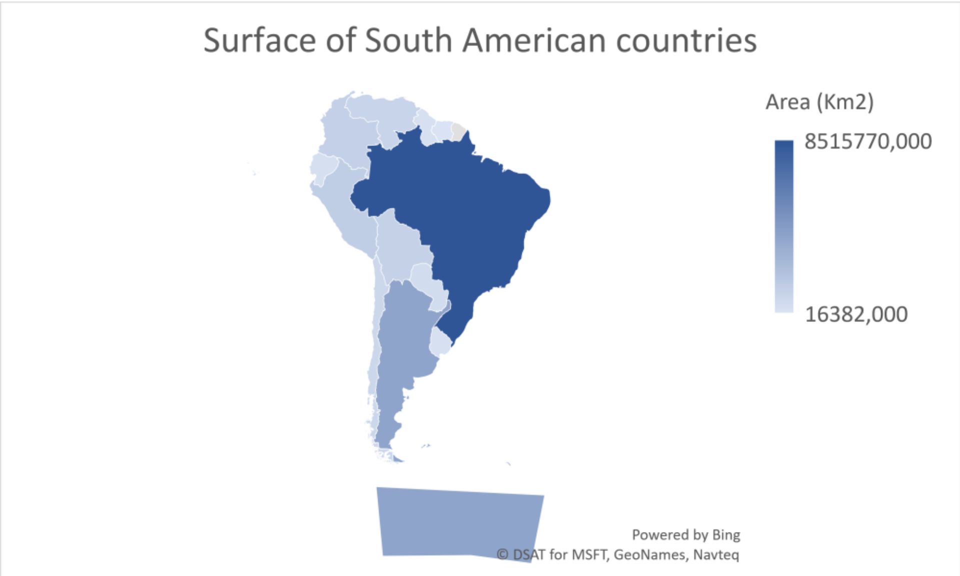
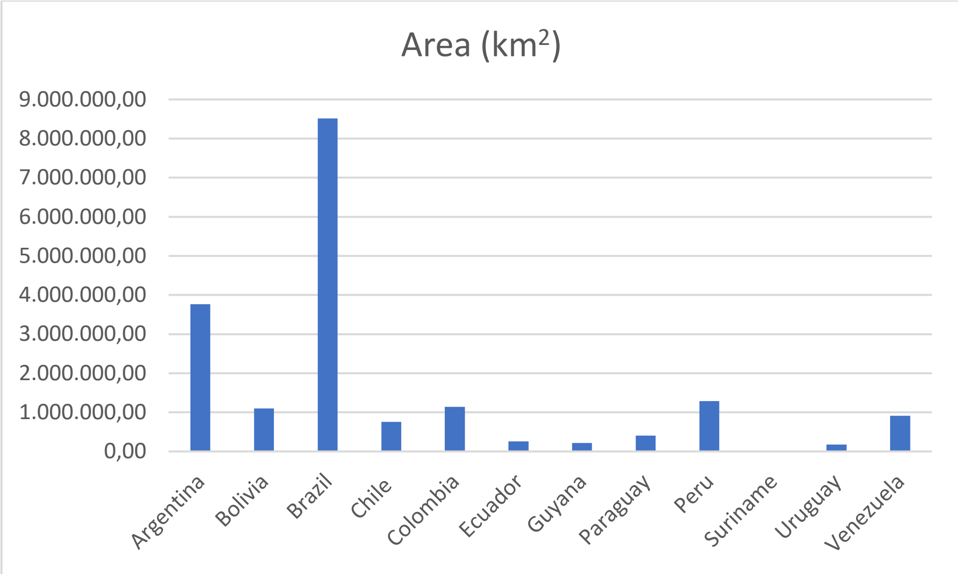


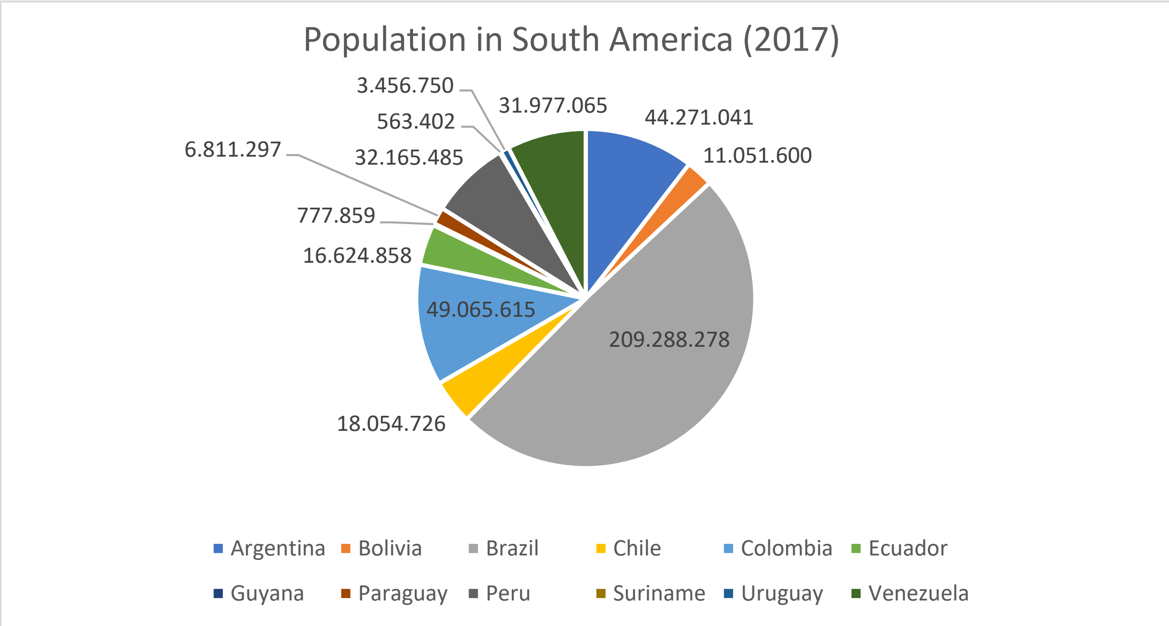
Figure 2-2: Surface of South American countries.



2.2 Population of South America.

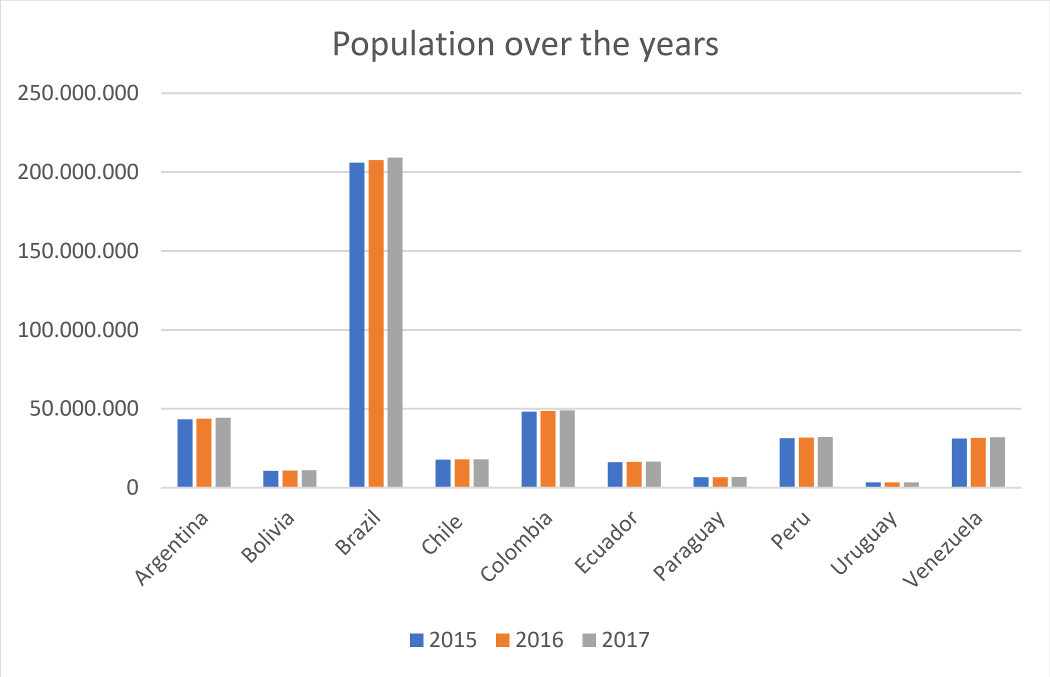
By the end of 2017, South America had a population of 424,107,976 inhabitants according to the World Population Prospects 2017 of the United Nations DESA/Population Division. The data was estimated by the organism since, in some countries, such as Argentina the last official population census was carried out in 2011. The information has been summarized into a pie chart (Figure 2.3), showing that Brazil has the 45.35% of the total inhabitants of South America, followed by Colombia with the 11.57% and Argentina with the 10.44%. The countries that had between 10% and 2% of the total number of inhabitants were Peru (7.58%), Venezuela (7.54%), Chile (4.26%), Ecuador (3.92%) and Bolivia (2.61%). The population rank is followed by the countries that have less than the 2% of the total inhabitants: Paraguay (1.61%), Uruguay (0.82%), Guyana (0.18%) and lastly Suriname with a 0.13% of the total amount of South American citizens.

Figure 2-3: Estimated population in South America in 2017.



Another important fact to consider is population growth represented by Figure 2.4 during the period 2015-2017 for each country. Hence, with this information it was possible to calculate a percentile growth. The result shown that Bolivia had the highest rate of population growth with a 3.05%, secondly Ecuador with 2.98%, Venezuela with a 2.64%, followed by Paraguay with 2.58% and Peru with an increase in its population around the 2.51% from 2015 to 2017. Moreover, for those countries whose population growth ranged between 1.5% and 2%, the calculation showed that Argentina had a growth in population of 1.97%, Suriname a 1.84%, Colombia 1.74%, Chile 1.64% and Brazil 1.61%. Finally, Guyana and Uruguay had less than 1.5%, with 1.22% and 0.73%, respectively.

Figure 2-4: Population growth (2015-2017)[1].



2.3 South America countries as developing economies.

According to the United Nations, South American countries are developing economies and for that reason, it is important to analyze their GDP. The Gross Domestic Product of a country determines its production of goods and services during a certain period of time and this is relevant to this work as meeting the telecommunications needs is done via a service produced in a country. The information to compare the GDP of the countries was provided by the World Factbook of the Central Intelligent Agency, on the basis of the Purchasing Power Parity. According to the CIA (in its website), the "GDP (purchasing power parity) compares the gross domestic product (GDP) or value of all final goods and services produced within a nation in a given year. A nation's GDP at purchasing power party (PPP) exchange rates is the sum value of all the goods and services produced in the country at prices prevailing in the United States. (2016)"[2] The data collected for the year 2016 is presented in Table 2.1 and the country with the highest GDP in the region is Brazil, followed by Argentina and Colombia. Besides, the nation con highest GDP per capita is Chile, the second place held by Argentina, and then followed by Colombia and Brazil.

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[1] Guyana and Suriname were excluded from de graph because its populations were small in relation to the other countries.

[2] https://www.cia.gov/library/publications/the-world-factbook/rankorder/2001rank.html

Table 2-1: GDP and GDP per capita of South American countries.

Country	GDP (Purchasing Power Parity) 2016	Population (2016)	GDP 2016 per capita
Argentina	874,100,000,000.00	43,847,430.00	19,935.03
Bolivia	78,660,000,000.00	10,887,882.00	7,224.55
Brazil	3,141,000,000,000.00	207,653,865.00	15,126.13
Chile	438,800,000,000.00	17,909,754.00	24,500.62
Colombia	739,400,000,000.00	48,653,419.00	15,197.29
Ecuador	183,600,000,000.00	16,385,068.00	11,205.32
Guyana	6,046,000,000.00	773,303.00	7,818.41
Paraguay	64,410,000,000.00	6,725,308.00	9,577.26
Peru	406,200,000,000.00	31,773,839.00	12,784.10
Suriname	7,887,000,000.00	558,368.00	14,125.09
Uruguay	76,950,000,000.00	3,444,006.00	22,343.17
Venezuela	427,000,000,000.00	31,568,179.00	13,526.28

2.4 Variables analysis.

Being the surface (km^2) of the country, the population and the GDP of the nation independent variables, a descriptive statistics analysis (Table 2.2) and a correlation analysis (Table 2.3) were done in Microsoft Excel.

The correlation analysis provided a correlation coefficient number near to one in all comparisons done for the three independent variables. This means that the variables have a positive strong relationship, so if the surface of the country is bigger, the number of inhabitants tends to be high and to have a higher GDP associated to the PPP. That is the reason why the maximum values correspond to the Brazilian data and the minimum values to the Suriname data except for the GDP.

Table 2-2: Statistics analysis of Area, Population and GDP.

Descriptive Statistics					
Area (km2)		*Population 2016*		*GDP 2016*	
Mean	1,545,119.417	Mean	35,015,035.08	Mean	5.37004E+11
Standard Error	695718.9163	Standard Error	16,392,244.79	Standard Error	2.50849E+11
Median	834,073	Median	17,147,411	Median	2.949E+11
Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	2,410,041.022	Standard Deviation	56,784,401.64	Standard Deviation	8.68965E+11
Sample Variance	5.8083E+12	Sample Variance	3.22447E+15	Sample Variance	7.551E+23
Kurtosis	7.187184724	Kurtosis	9.505051536	Kurtosis	8.764107708
Skewness	2.622906248	Skewness	2.971752704	Skewness	2.836036637
Range	8,499,388	Range	207,095,497	Range	3.13495E+12
Minimum	16,382	Minimum	558,368	Minimum	6046000000
Maximum	8,515,770	Maximum	207,653,865	Maximum	3.141E+12
Sum	18,541,433	Sum	420,180,421	Sum	6.44405E+12
Count	12	Count	12	Count	12

Table 2-3: Correlation analysis between Surface, Population and GDP.

Correlation Analysis			
	Area	*Population 2016*	*GDP 2016*
Area	1		
Population 2016	0.958179998	1	
GDP 2016	0.969806441	0.994362915	1

Taking into account all these considerations, the final project makes a deeper study of Brazil and Argentina because the countries have surface, population and GDP values over the means, therefore the telecommunications services must be more intense and further developed in those nations so as to serve all the entire of the country and their inhabitants' demands. Besides, the countries had the smaller population density and requires to provide a service with a huge scope and highest investment and developing cost.

Argentina and Brazil did not have a high increase in its population, so it is necessary to search if its telecommunications markets are stable and have established firms with a long-term strategy that are socially accepted, because some users have more than one active line and the service provided evolves according to customer requirements.

3 History of Telecommunications in Argentina.

Telecommunications in Argentina were developed over a long period in Argentina. The first telephone communication took place in Buenos Aires in February, 1878. True, the phone call was an experiment between the State's telegraph office and the newspaper La Prensa, and carried out by Cayol and Newman. Although the experience was successful, by the end of the 19th century (1881) telecommunications were expanded around the country due to the dominant role undertaken by English, Belgian and American investors. The former invertor founded Compañía de Teléfonos Gower-Bell, the second one Société du Pantélephone L. de Locht and the latter Compañía Telefónica del Río de la Plata. (Berthold, 1921)

3.1 First telecommunications monopolies arose.

In 1886, the three companies merged under British management created Unión Telefónica del Río de la Plata (UT). Consequently, a monopoly arose, the prices rose, and the quality of the service decreased. The following year Sociedad Cooperativa Telefónica (SCT) emerged, offering similar services but at a lower price. Throughout the years, SCT changed its ownership and legal personality to become a Company called Compañía Telefónica Argentina. (Petrazzini, 1993)

Progressively, in the decades of 1910 and 1920 new phone operators emerged since they focused on small unconnected towns without business prospections yet with the aim of serving a special market niche and fulfilling communication needs. Over time, the number of small telephone companies peaked at 94 operating firms in 1922, even though the 90% of the lines were concentrated in Buenos Aires and Unión Telefónica del Río de la Plata had the major market share. Lastly, the Swedish firm Ericsson bought shareholding in companies that did not operate in the same areas as the UT such as Compañía Entrerriana de Teléfonos (CET), founded in 1916, and Compañía Argentina de Teléfonos (CAT) established in 1927, since Ericsson's business ambition was to become a monopoly in the region.

Besides Ericsson, in 1927 the American Telephone and Telegraph Corporation (ITT) was interested in the Argentinian telecommunications market and thus bought Compañía Telefónica Argentina and other small enterprises. Two years later, ITT bought Unión Telefónica del Río de la Plata (UT) as a consequence, the merge of these operators worked under the name Unión Telefónica del Río de la Plata, performing a monopoly in the most crowded cities of Argentina.

3.2 Nationalization process.

While Unión Telefónica del Río de la Plata (UT), Compañía Entrerriana de Teléfonos (CET) and Compañía Argentina de Teléfonos (CAT) were the most important companies on the market, there was a shrinking from 94 to 43 operators in 1941. However, the number of lines increased from 205,000 in 1927 to 460,587 in 1941. During these years of strong competition, a national telephone network was impossible since there were no regulation for enforcing companies to build interconnected lines. For that reason, users could make calls to both, the United States and Europe, but not to and among different regions of Argentina. The main advantages for UT, CET and CAT employed to increase the market power were the economies of scale and net economies which tended to a natural monopoly and the vague legal framework to avoid the monopoly. (Belini, 2013)

On the one hand, with the nationalization process in telecommunications that began in 1946, the Argentinian government bought Unión Telefónica del Río de la Plata (UT) (Argentinian Law number 12864, passed on 28th September 1946). Both parties, UT and the government, were interested in the negotiation. The former because it was struggling with rate controls, expensive maintenance costs and unsatisfied demand; the latter due to the highest market share and earnings of the UT. After that, Empresa Mixta Telefónica Argentina (EMTA) was created and the service was expanded and improved.

On the other hand, between 1948 and 1952, the remaining operators except for CET and CAT were acquired and incorporated in Dirección General de Teléfonos del Estado (TE), a new state-entity under the jurisdiction of the Ministry of Telecommunications, as it had been done with EMTA.

Over the following years, new lines and new centrals were created increasing up to a 1.1 million of users in 1955 and allowing, in 1956, the establishment of a new state-owned company: Empresa Nacional de Teléfonos (ENTel). Thus, the new company was created due to the incorporation of small telecommunications firms to the national firm except for CET and CAT, under Ericsson's management. However, the State firm had a monopolist control of the telecommunications in Argentina, 90% of the total lines (1,080,000). The main aim of ENTel was to broaden the coverage and develop local equipment industries for all the telecommunications services under the centralized control of a common authority. In addition, the company served as a guide and rate maker. (Standard Electric, 1979)

Despite the boom in the demand of the communication service during the 34 years that the company lasted, the interconnection between national and international lines as it was outlined in the expansion plans, was never achieved because the strategies were not followed, and they were replaced by rapid solutions that deteriorated the quality of the service, unmet the demand and increased the operation and investment costs. Customers were unsatisfied as there was a delay around 12 to 15 years to get a line as ENTel was an early adopter of non-proved technology and had many suppliers that did not allow standardization.

By the end of 1969, ENTel took control of international communications, which were managed by foreign companies. At this point the major part of telecommunications was controlled by the Argentinian state, increasing in 1985 to 2.4 million lines and in 1988 to 2.8 million. However, the service was mainly centralized in Buenos Aires.

3.3 Telecom, Telefónica, Claro and Nextel in Argentina.

As in the rest of the world, on November, 1990 the Argentinian telecommunications company ENTel was sold to Telecom and Telefónica under the decrees 731/89 and 2332/90. The telephonic lines covered by these firms operated in different regions of the country. The transaction allowed a seven-year exclusivity in each coverage area.

A percentage ENTel was bought by Telecom Argentina. In addition, 60% of capital stock of Telecom Argentina was owned by Nortel Inversora S.A., by the end of 1997. This company had capitals from Telecom Italia, France Telecom, Pérez Companc S.A. and J.P. Morgan Bank, the last two withdrewing in 1999. Later in 2003, Grupo Werthein bought the shares of France Telecom. By the end of 2017, Telecom Argentina is under control of the group Fintech Telecom LLC due to the acquisition, first in 2016 of Telecom Italia's shares and lately in March 2017 the stocks of Grupo Werthein. Nowadays, Telecom Argentina S.A. provides national and international fixed and mobile telecommunication services, videoconferencing, data transmission, mobile radio communications services, voicemail, mobile Internet and sells mobile communication devices.

The remaining part of ENTel was bought by Telefónica España operating in 1990 in the south of the country as Telefónica Argentina. According to Telefónica Argentina's web site the capital of the firm is divided into 62.53% of class A shares and the 37,47% of class B. Since 2011, the major stockholder of the firm is Compañía Internacional de Telecomunicaciones (COINTEL). By the end of 2017 Telefónica Argentina has 4,221,900 fixed phone access.

Over the years, with Telecom and Telefónica providing the service in the country, the number of fixed lines rapidly increased, insofar as in 2008 there were more than 8 million lines installed and in 2014 there was one fixed line per four inhabitants. Although the telephone market had grown steadily over 120 years, since 2004 the demand of fixed phone lines was decreased because of the introduction of cellphones into the global market.

In Argentina, mobile communication services started in 1989 when Movicom, property of Motorola and Bell South companies, provided the service in Buenos Aires and the metropolitan region of Buenos Aires (AMBA) operating exclusively in the band B. In 1993, Miniphone, property of Telecom and Telefónica, started working in AMBA and operated in the band A. The remaining part of the country was covered in 1995 when Compañía de Teléfonos del Interior (CTI) awarded the north and the south parts of Argentina but in 1996, Miniphone was also allowed to cover the CTI´s zones.

By the year 1998, Nextel Communications Argentina had introduced another type of communication based on the Push to Talk technology that operates under iDEN networks, hence becoming the only operator in the country to use this kind of communication.

In 1999, Miniphone was split into Telecom Personal and Telefónica Comunicaciones Personales Unifon. The former was owned by Telecom Argentina and the latter by Telefónica. Besides, the mobile market competition was intensified because two new companies, CTI and Movicom, were allowed to operate in the whole country.

In 2003, a Mexican company named América Móvil acquired CTI, but the company continued working under the same name. Then, in 2005 Unifon bought Movicom Argentina's shares and began operating under Movistar, a commercial name with the aim of establishing the brand in Latin America and Spain. Moreover, another change of company denomination occurred in 2008 when América Móvil decided to change the name from CTI into Claro, by this way all the companies owned by the Mexican group had the same name throughout America.

Lastly, Tuenti is the newest company to have entered the Argentinian mobile telephone market. This happened in 2014 and it is a Telefónica firm that focuses on the young people niche and their communicative needs, leaving the older customers to Movistar.

Nowadays, there are many companies operating in the Argentinian telecommunications market, and for this reason in December 2015 under the decree 267, an autonomous and decentralized entity, Enacom (Ente Nacional de Comunicaciones), was created to control and ensure that all the Argentinian citizens could have access to the telecommunication services. [3]

[3] Based on the information collected from Argentinian laws and the magazine Papel Revista Fibra.

4 History of Telecommunications in Brazil.

In analysing the Brazilian telecommunication history, it is possible to classify the events, companies and facts into three big cycles: Empire and Concessions (between mid XIXth century and mid XXth century), Nationalization (between 1960 up to the end of XXth century) and Privatization and Globalization (from the beginning of the XXIst century up to the present). Each period in the communication history tried to expand as much as possible the scope of the service to reach a higher number of customers and increase the quality of the service. For this to be possible, investments were needed and, depending on the policy applied, the investors were either local or foreign.

4.1 Empire and Concessions.

Telephone communications in Brazil began with the installation of the first phone outside of the United States in 1877, just the previous year Alexander Graham Bell had patented phone. This was done in Rio de Janeiro to link the Palace with the ministers' houses and, it was possible thanks to the good relationship that existed between the patent holder and Dom Pedro II (Peter II, in English), the then and last ruler of the Brazilian Empire. Brazil, as an Empire, was the first country in South America that had a fixed phone installed.

On November 15th, 1879, Dom Pedro II authorized by a decree the establishment of the first telephone network in Brazil. This first concession was given to an American investor who represented the interests of Bell Telephone Company, Charles Paul Mackie. After joint efforts between the concessionaire and Western Telegraph Company, it was possible to connect a shop with the firefighter department. In 1880, a new telephone company, Companhia Telephonica do Brasil (CTB, in English: Telephone Company of Brazil) was established in Rio de Janeiro. The firm was the first to have an interurban net because it connected the cities of Rio de Janeiro and Petropolis.

The empire government also authorized CTB to install phone lines in the cities: Salvador de Bahia, Maceio, Porto Alegre, Rio Grande and Pelotas. Besides, the uncovered main cities such as: Sao Pablo, Pernambuco, Curitiba and Fortaleza, were then reached by the passing of new monarchical decrees. In addition, in 1881, Companhia União Telephonica do Brasil was created due to the merge of a messenger service firm and a telegraphic company.

By 1885, Brazil had seven telephone exchanges operating with 3,335 users. In the same year, Tropical American, which had previously bought Companhia União Telephonica do

Brasil, became the main stockholder of CTB and, by doing so, it turned into the major telecommunication company in Brazil.

On November 15th, 1889 Brazil became a republic, and its government was a constitutional democracy. One of the goals of the state was to order and control the telecommunications services, particularly the telephone one. During the years, the needs for communications increased, hence in 1908, Companhia Telefonica Riograndense was founded, which operated in region of Rio Grande do Sul.

In 1895, the government allowed Companhia União Telephonica do Brasil to serve Rio Grande and Porto Alegre too. Over the years, the company had financial problems and thus, in 1908, a huge number of users changed to Companhia Telefonica Riograndense, as both firms operated in the same area. This situation led to the end of the former enterprise because it was absorbed by the latter. Companhia Telefonica Riograndense operated for ten years more, but during that period the quality of the service decreased, and the prices increased; for that reason, in 1919, the Commercial Association of the Pelotas founded Telefônica Melhoramento e Resistência (CTMR) aiming to develop more telephone lines in Rio Grande do Sul. Despite this, the ITT was operating in Buenos Aires and tried unsuccessfully to buy CTMR, but it controlled other 200 small companies. This period was characterized by the strong competition between Companhia Telefonica Riograndense and CTMR.

Ten years after the declaration of Brazil as a Republic (1899), the German company, Brasilianische Eletricitats Gesellschaft, was awarded the rights to provide communications services between different cities in the country. In 1905, however, it was absorbed by the Toronto Traction Light and Power (Light for short), a multinational company that arrived in Brazil in 1899 and monopolized the telephone services in Rio de Janeiro and Sao Pablo, still operating under the name of CTB.

In 1922, the first autonomous telephone station in South America was installed in Porto Alegre and the first Brazilian pay public phone was installed in 1935 by CTB. Between 1930 and 1955, the number of lines increased from 160,000 up to 746,000 while in Argentina it did from 280,000 to 1,080,000.

4.2 Nationalization.

Changing from the Empire and Concession period to that of Nationalization, was a complex process but it was carried out because of the low quality and the obsolescence of the

Brazilian telephone services, the territory not being fully covered, and the unsatisfied users. In addition, there was a huge gap in telecommunications between the bordering countries.

In 1960, the 80% of the Brazilian lines were under control of the Canadian company, Companhia Telefônica Brasileira (CTB) and the American company, Telefônica Nacional (ITT). The former operated in: Rio de Janeiro, Sao Pablo, Espiritu Santo and Minas Gerais and the latter covered Paraná and Rio Grande do Sul. However, both companies were expropriated near 1962.

The telecommunications restructuring process began when the Conselho Nacional de Telecomunicações (Contel) created the National Telecommunications Plan. The course of action included the establishment, in 1965, of Empresa Brasileira de Telecomunicações (Embratel), and the creation of a monetary fund for the main purpose of Embratel: exploiting the international communications services.

Besides, under the same plan, in 1967 the Ministry of Communications (MINICOM) was created. This entity was responsible for the national telecommunications policies.

Under Act 5,792, on November 9th, 1973, MINICOM formed Telecomunicações Brasileiras SA (Telebras), a state-owned holding company of all the operating and privatized firms.[4] After the creation of Telebras, the company owned over 97% of all the telephone lines in the country. In addition, the firm ranked as the 12th largest telephone network in the world, increased from 1.8 million to 19 million telephone lines and developed mobile technology in the country.

In 1990, Rio de Janeiro was the first city in Brazil to have a mobile phone network.

4.3 Privatization and Globalization.

The changeover process from Nationalization to Privatization was marked, mainly, by the end of Telebras as a state company. This occurred in 1998, when the country was divided into regions and each region was adjudicated to a firm with a monopolistic behavior. However, the change started in 1995 when the General Telecommunications law (Act number 9,472) was enacted and allowed the creation of Agência Nacional de Telecomunicações (Anatel). Anatel is a regulatory agency, responsible for supervising the quality of the telecommunication service and for setting the rules that guided the privatization of the state owned Telebras and the market

[4] Along the entire of the Brazilian territory where many telephonic operating companies. In this work, the most relevant firms considered by the author are mentioned.

opening process. During 1997 and 2007, fixed lines were highly increased from 19 million to 40 million and mobile lines from 5.2 million to 102 million.

In 1998, Telebras was divided into 12 companies. Each one operated in a different region of the country and had an assigned service to provide. The fixed phone communications were under control of Tele Centro Sul Participações S.A., Tele Norte Leste Participações S.A. and Telesp Participações SA. Besides, mobile phone needs were covered by: Tele Norte Celular, Tele Centro Oeste Celular, Tele Nordeste Celular, Tele Leste Celular, Tele Sudeste Celular, Telemig Celular and Tele Celular Sul. Lastly, Embratel was a long-distance calls company.

As regards fixed phone companies, Tele Centro Sul Participações S.A. was founded on July 29th, 1998 and it operated in the southern and eastern central areas. Later, in 2002 the firm was acquired by Telecom Italia and opportunity funds; and it was named Telecom Brasil. At the same time, Tele Norte Leste Participações S.A. was created to manage the North-East region and renamed Telmar. In 2002, the Brazilian company Oi bought Telmar and acquired Telecom Brasil in 2009.

Lastly, Telesp Participações S.A., which operated in Sao Pablo, was taken by Telefonica Brasil, its main capital being Spanish. Later, in 2002, Telefónica and Portugal Telecom created a joint venture to operate in the country and the following year they began to operate under Vivo. But in 2012, Telefónica culminated the transformation of the company in Brazil and launched Vivo as a commercial brand for all the services it provided. Finally, in 2015, Telefonica Brasil acquired GVT, a firm that offers landline telephones, Pay TV and voice IP services, and became an integrated operator in Brazil.

In relation to mobile phone services, Tele Norte Celular was a company that operated in the north region of the country and it was known as Amazonia Celular. The company operated until 2007 when it was bought by Oi. In 2016, Oi had 13.7 million fixed lines in operation and 42.1 million mobile phone users.

Tele Centro Oeste Celular was a mobile phone company managed by Splice group. Nowadays, the firm is property of Telefonica and works under the commercial brand Vivo.

Moreover, Vivo controls the market assigned to Tele Leste Celular Participações S.A., as the company was acquired in 2006. Tele Leste Celular offered mobile phone services in the eastern Brazilian states of Bahia and Sergipe.

Another firm controlled by the Telefónica group is Telming Celular Participações created, like the others, in 1998 after the privatization of Telebras to provide services in Minas Gerais region. In 2008, the company changed its name to Vivo and established the brand.

Lastly, Tele Sudeste Participações S.A covered the regions of Rio de Janeiro and Espírito Santo and it was sold to Telefónica but, in 2006, began to operate under the commercial brand Vivo, too. By September 2017, Vivo had 14,007,300 fixed phone accesses and 74,553,600 mobile accesses in the Brazilian territory.

According to the division of the Brazilian territory, the north-east zone was covered by Tele Nordeste Celular. This means that the regions of Piauí, Ceará, Río Grande do Norte, Paraíba, Pernambuco and Alagoas were served by the Bitel Participações S.A. consortium, which had capitals from Telecom Italia and UGB, a partnership between Globo and Bradesco. As soon as the firm was created, in 1998, its main aim was to be the market leader in terms of number of users, service quality, scope and customer service. In 1999, Tele Nordeste began to use the commercial name TIM in its entire operation zone. In this way, the firm got the support of Telecom Italia, its major shareholder.

Besides, Bitel Participações and UGB managed Tele Celular Sul Participações S.A. covering the south part of the country. Later, in 2000 the company was transferred to TIM. The following year, TIM acquired licenses to be the first firm to operate in the whole country. In 2005, the merger between the southern and the north eastern TIM's shares was approved. After three years, the company launched TIM Fixo and became an alternative player in the fixed telephone market.

According to the TIM website, the company closed the third quarter of 2017 with over 59.4 million mobile lines and it was the first mobile operator to be present in all Brazilian states and the number one in 4G coverage.

In 1998, Embratel was bought by the American company, MCI Communications. Nevertheless, in 2003, MCI Communications went bankrupt and, since that moment, the Mexican group América Móvil has been the major shareholder of Embratel. Currently, Embratel is the major player in both voice and data communication in Brazil. In addition, by the merge of small companies, in 2003, Claro, a firm of América Móvil, started to operate in the mobile phone market and over the years covered the whole country. Finally, in 2015, Claro, Embratel and NET become a joint company under Claro SA.

All the companies mentioned, have undergone the nationalization and privatization processes except for Algar Telecom, Nextel, Sercomtel and Vodafone. The story of Algar Telecom began in 1954 when Alexandrino Garcia founded CTBC. Over the years, the company increased the number of lines and performed acceptably, since at the moment the nationalization process took place, CTBC remained under private control and increased the offer across Brazil by 1980. In the new millennium, the firm was allowed to cover all the territory and changed its name to its current denomination, Algar Telecom.

As regards Nextel, is a company that uses iDEM technology (radio) by means of a mobile phone and arrived in Brazil a year before than it did in Argentina (1997). NII Holdings serves its 4 million customers under the brand Nextel.

Due to the great extension of the Brazilian territory, there are many small companies that have emerged and now operates in certain states, such as Sercomtel. In 1964, the operator was established in Londina, a small town in the state of Paraná and four years later it reached 7,280 fixed lines installed but the mobile service only arrived in 1991. With the privatization, the company was renamed Sercomtel Celular S.A. and finally, in 2009, it was able to operate all throughout the state of Paraná.

Finally, Vodafone has only been operating in Brazil since 2013, due to the partnership agreement between the English Vodafone and the Brazilian Datora Mobile, that created Vodafone Brasil. This firm is the first to be completely focused on M2M/IoT.

To conclude, in 2009, Anatel passed a decree to allow number portability, hence every phone user could move from one company to another without changing their telephone number.

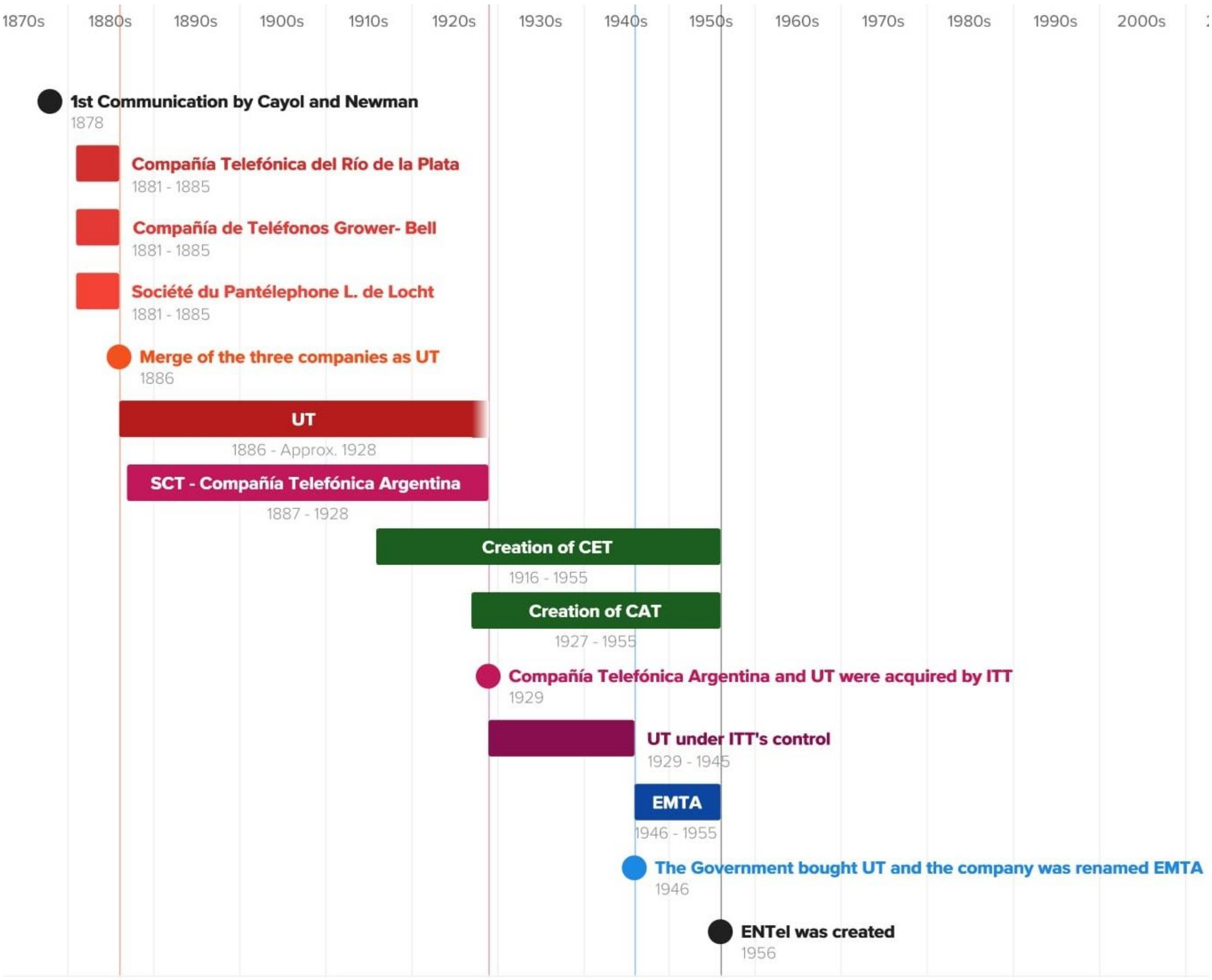
5 Firms' timelines.

According to the information presented in the two previous chapters, timelines were created to clarify beginnings, merges, acquisitions and endings of the telecommunications firms involved over the years.

5.1 Argentina's timeline.

Figure 5.1 summarizes the companies that were in the country during the period when the monopolies arose up to the creation of a state-owned company, ENTel.

Figure 5-1:Telecommunications firms of Argentina (1878-1856).



After the creation of ENTel, Figure 5.2 and Figure 5.3 clarify the establishment of firms with multinational capitals and each picture corresponds to fixed lines market and mobile phone market, respectively.

Figure 5-2: Telephone firms in Argentina (1956- 2017).

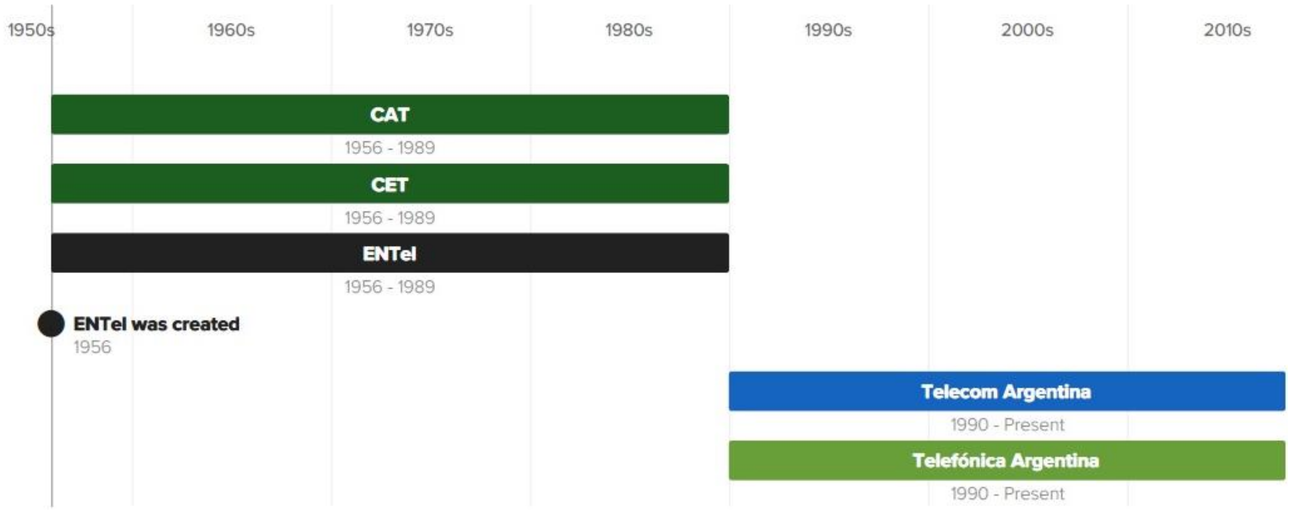
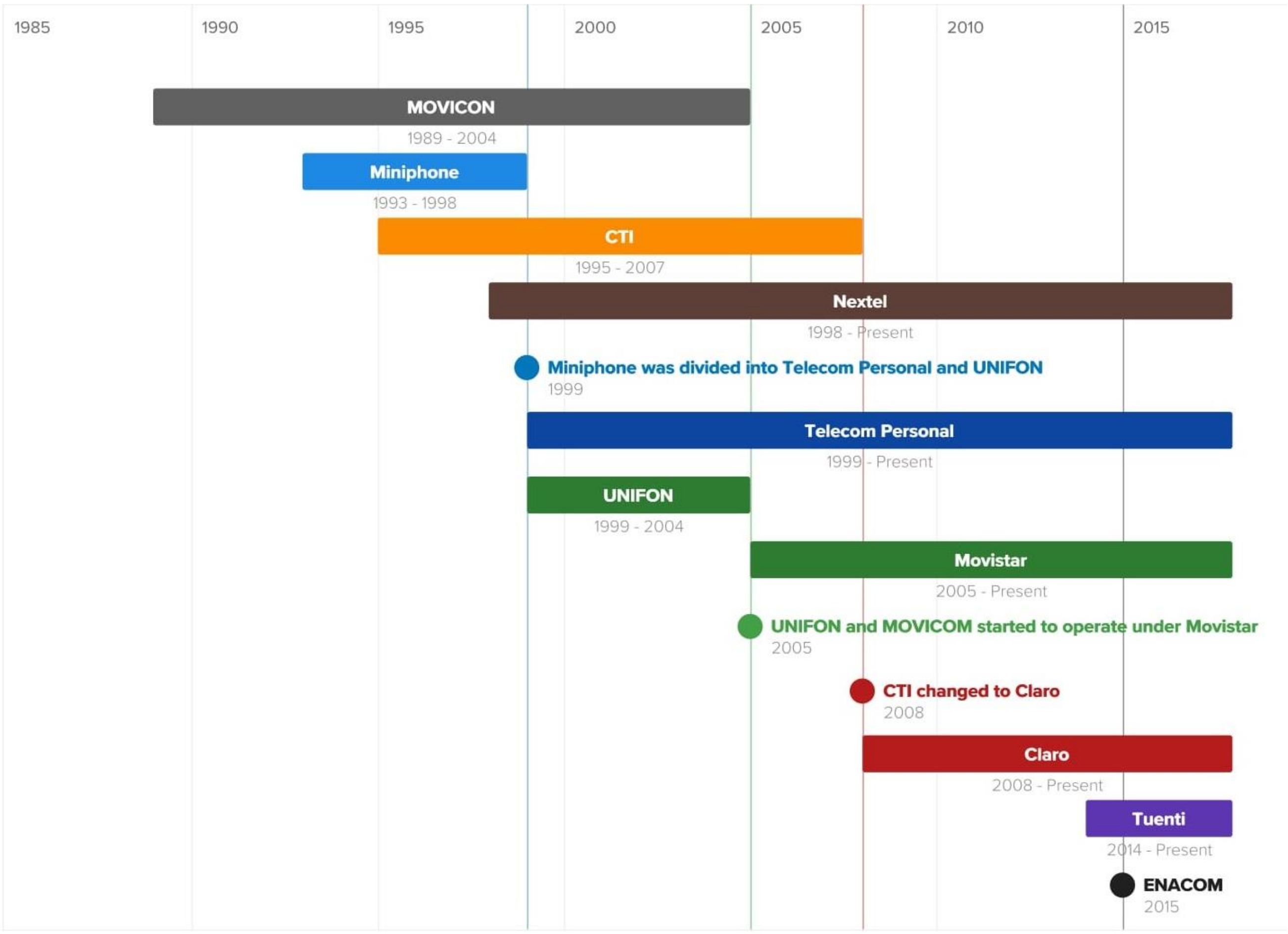


Figure 5-3: Argentinian mobile phone market (1989 - 2017).



5.2 Brazil's timeline.

Following the three periods on Brazilian telecommunications history, the timeline also was divided according that classification.

Figure 5.4 presents the main firms that operated from 1877 up to 1960 in the Brazilian territory. Besides, the picture includes the most important worldwide events that took place in Brazil.

Figure 5-4: Telecommunications companies during the Empire and Concession period.

Secondly, Figure 5.5 summarizes the Nationalization period which main events were the creation of EMBRATEL and TELEBRAS.

To conclude, the current companies are evidenced in Figure 5.6. These companies are deeper analyzed in the following part of the work.

Figure 5-5: Brazilian firms (1954 - 2017).

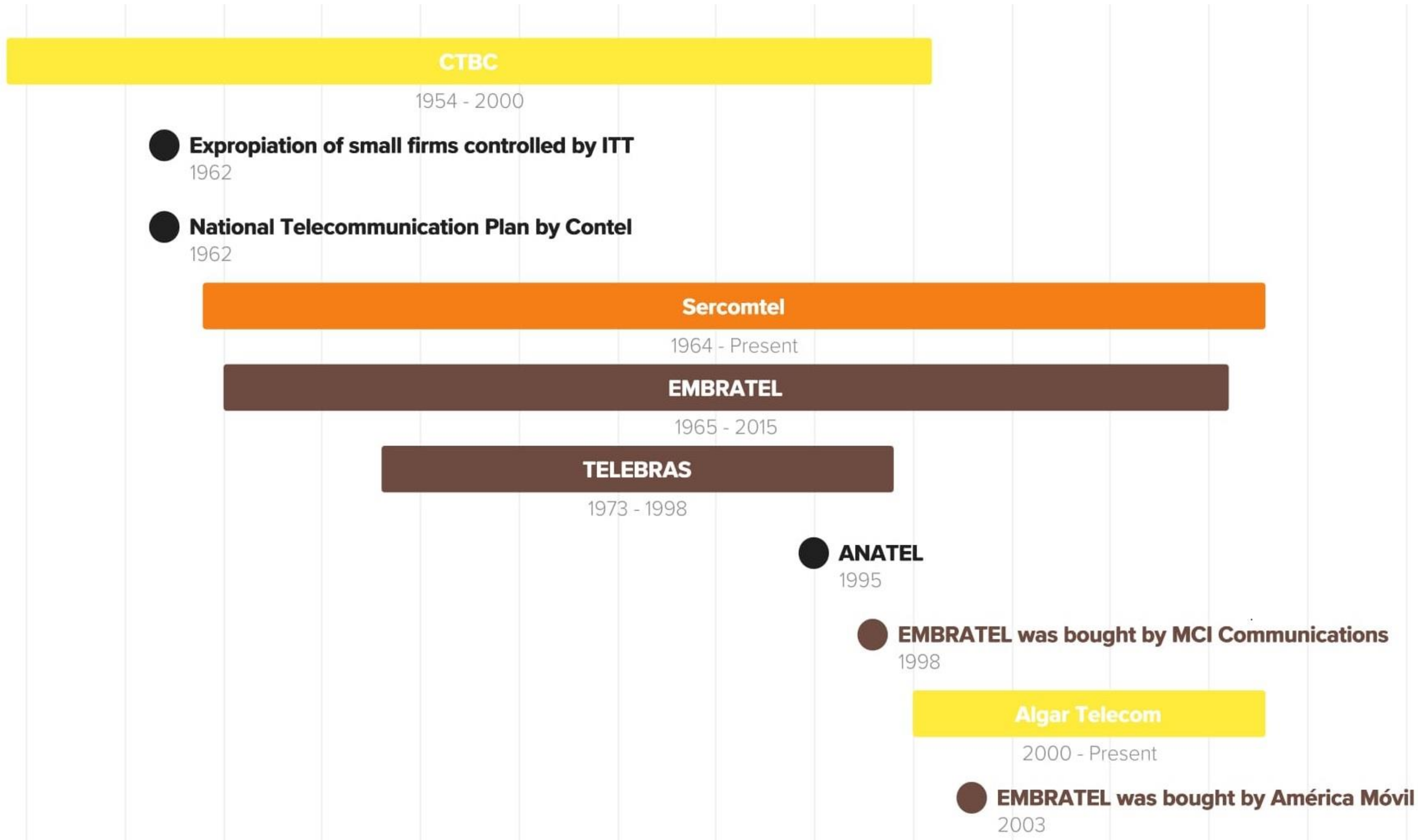
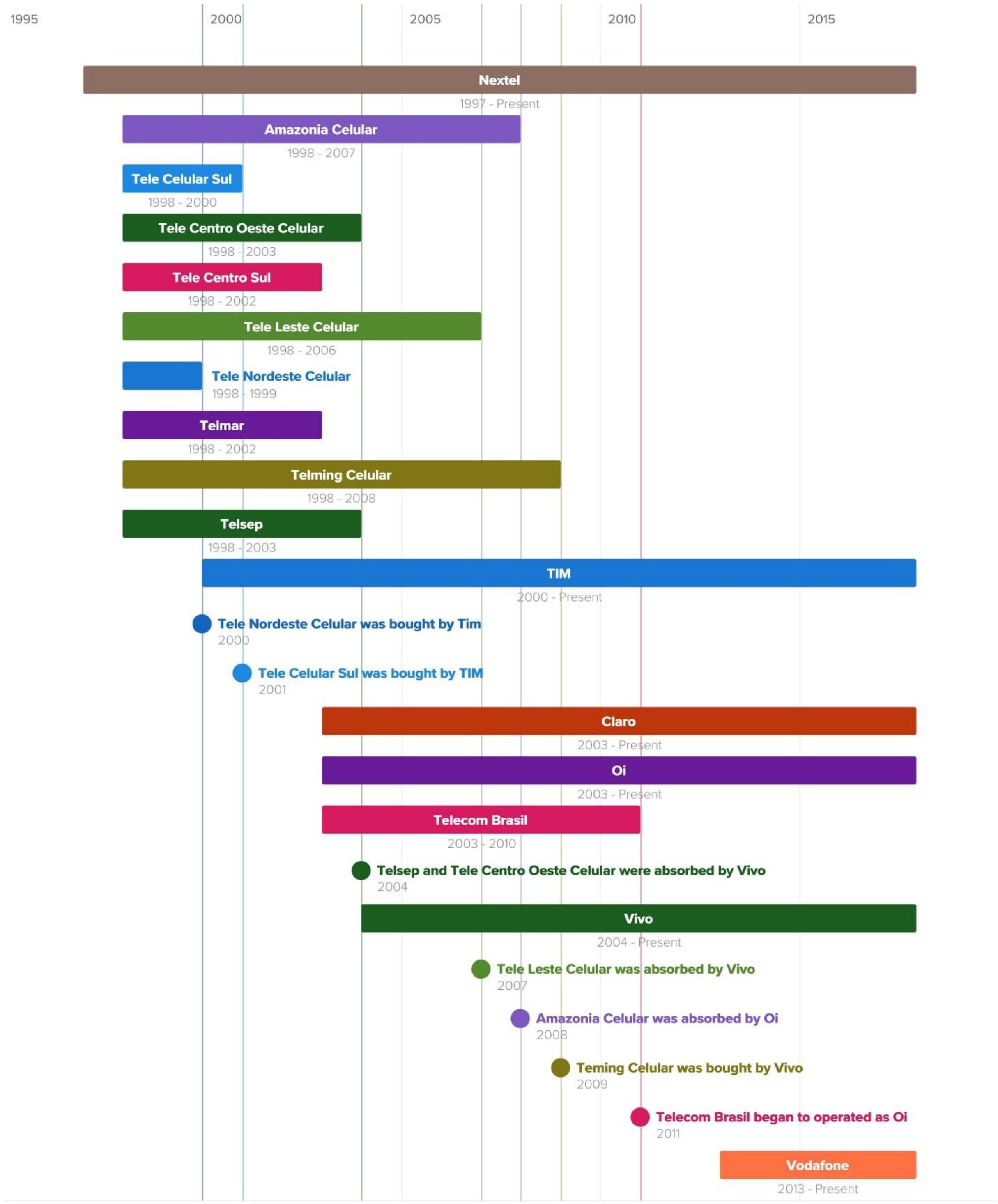


Figure 5-6: Companies that have been in Brazil from 1997 to 2017.



6 Available accesses over the years.

After the privatization of the state-owned companies which led to well constituted mobile phone markets and steady fixed telephone markets in Argentina and Brazil, it was possible to analyze the evolution of the available accesses in both, Argentina and Brazil from 2000 up to the present.

For a better understanding of the numbers that will be presented for each year, it is important to focus, firstly, on the definition of "accesses". The term refers to all the operating and working lines that could have a wire or wireless connection to the infrastructure which provides the service. Mobile telecommunication service considers a smart phone or just a cellular with an active SIM card, and the fixed phone services considers an access a telephone connected to the fixed communication network.

6.1 Sources.

After a long research process about the number of accesses in each country over the years, the data choose was provided by International Telecommunication Union (ITU). As mentioned in its website[5], "ITU is the United Nations specialized agency for information and communication technologies – ICTs" and has its own statistic centre where it classifies the information into regions or countries. For this Final Thesis the publications "Fixed Telephone subscriptions" and "Mobile – cellular subscriptions" with information until 2016 [6] were used.

Besides, the accesses available in Argentina for each year during the period 2000 - 2016 were verified with the ones estimated by Enacom. The numbers of the official entity were taken from the publications "02 Telefonía Fija 2016" and "06 Telefonía Móvil 2016" available on its website.

In the years that were discrepancy between the two sources, the provided by the ITU were used because Enacom was created in 2015 and before that, Argentina had not have an official and reliable entity that could provide that kind of data.

In the case of Brazil, the data processed was, also, provided by the United Nations agency (ITU), aiming to work with the same source of information as that of Argentina, i.e. the

[5] http://www.itu.int/en/about/Pages/default.aspx

[6] http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx

total number of accesses and accesses per 100 inhabitants for both mobile and fixed telephone service for the same period.

6.2 Numbers over the years.

6.2.1 Argentinian data from 2000 to 2016.

Table 6.1 and Table 6.2 show historical data corresponding to the Argentinian fixed telephone market from 2000 to 2016 and to the Argentinian mobile phone market for the same period, respectively.

Table 6-1: Subscriptions of fixed phone in Argentina.

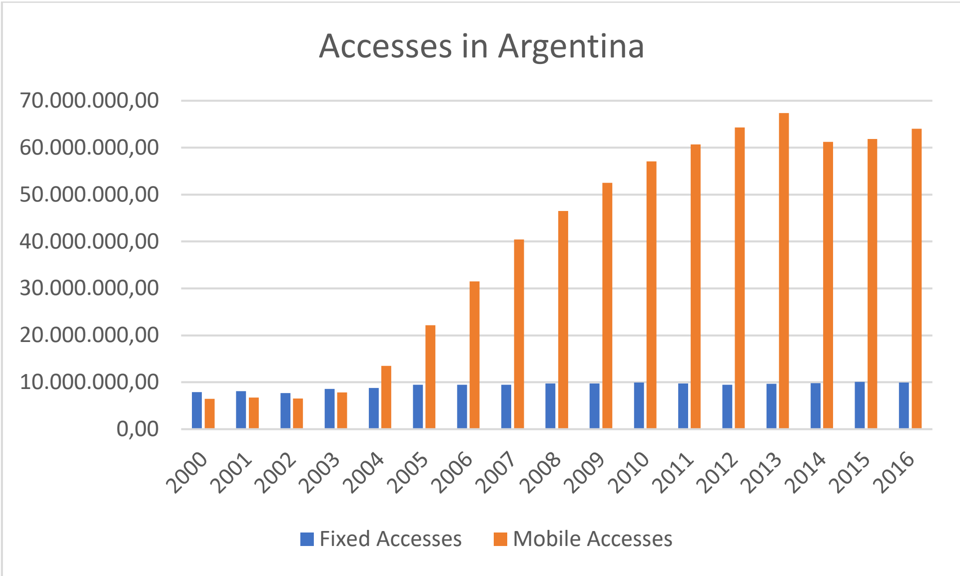
Country	ARGENTINA	
Service	FIXED	
Data		
Year	**Accesses**	**Per 100 inh.**
2000	7,894,205.00	21.39
2001	8,121,435.00	21.82
2002	7,708,435.00	20.49
2003	8,603,869.00	22.66
2004	8,760,566.00	22.87
2005	9,441,673.00	24.43
2006	9,459,794.00	24.26
2007	9,500,000.00	24.15
2008	9,742,833.00	24.56
2009	9,768,135.00	24.41
2010	9,914,208.00	24.56
2011	9,722,525.00	23.87
2012	9,455,639.00	23.01
2013	9,662,084.00	23.31
2014	9,822,465.00	23.50
2015	10,073,125.00	23.90
2016	9,938,630.00	23.38

Table 6-2: Subscriptions of mobile phone in Argentina.

Country	ARGENTINA	
Service	MOBILE	
Data		
Year	**Accesses**	**Per 100 inh.**
2000	6,487,950.00	17.58
2001	6,741,791.00	18.09
2002	6,566,740.00	17.45
2003	7,842,233.00	20.65
2004	13,512,383.00	35.27
2005	22,156,426.00	57.33
2006	31,510,390.00	80.82
2007	40,401,771.00	102.72
2008	46,508,774.00	117.72
2009	52,482,789.00	131.13
2010	57,082,298.00	141.38
2011	60,722,729.00	149.09
2012	64,327,647.00	156.56
2013	67,361,515.00	162.53
2014	61,234,216.00	146.48
2015	61,842,011.00	146.7
2016	64,033,692.00	150.67

As shown in the tables and in the graph of Figure 6.1, the fixed telephone service peaked at 10,073,125 in 2015. This means that in 2015 in Argentina there were 250,660 more lines than the previous year, that is 2.55% extra lines. As regards the mobile phone subscriptions, they peaked at 67,361,515 in 2013.

Figure 6-1: Fixed and mobile accesses in Argentina (2000 - 2016).



Argentina has suffered a big depression since 1998, but it was intensified in December 2001. At the beginning of 2002 the middle class was reduced, the Argentinian citizens did not trust the government and on their own currency, a high percentage of the population was economically poor, and the wages were reduced and affected by the inflation. For this reason, the Argentinian focused their consumption on very few services and cancelled their phone subscriptions.

In 2014, the second reduction in the number of mobile lines took place, the first one being in 2002 when the country suffered the economic crisis of 2001, as mentioned.

The main difference between the two periods in which the number of mobile users decreased was that in 2001 the market segment was undergoing a period of growth and had 6,741,791 lines. However, in 2014, the market was mature enough and consequently the fall was caused by a combination of macroeconomic factors, services and non-used line policies adopted by the companies, such as an operative cost reduction. From the user side, the causes of the decrease in mobile active lines were the inefficiencies in existing mobile networks and the increase in the number of devices that just used WiFi like some tablets.

As it is known, the fixed telephone is being replaced by new technologies, such as e-mails, SMS, WhatsApp messages, Facebook calls, used via mobile devices connected to a mobile network.

Following the global tendency, the fixed telephones are used less as year go by. But the Argentinians have not cancelled the service, yet because the quality of mobile communications is still not at its best in the whole country. This means that there are some areas that are not included in the scope of the mobile companies or the mobile networks are saturated and so the data transmission speed is low.

Moreover, according to an article published on the Argentinian newspaper Clarín on March 13th, 2015[7], there are more reasons that make the survival of the fixed communication service in Argentina. Firstly, a fixed telephone still works if there is a power blackout, whereas the mobile devices cannot work if they run out of battery and secondly, telephone prices have been frozen for decades.

Moreover, the fixed phone market did not lose customers, but the number of fixed calls was reduced. The complete technological paradigm change will be done as soon as the mobile networks are improved and when a generational change takes place.

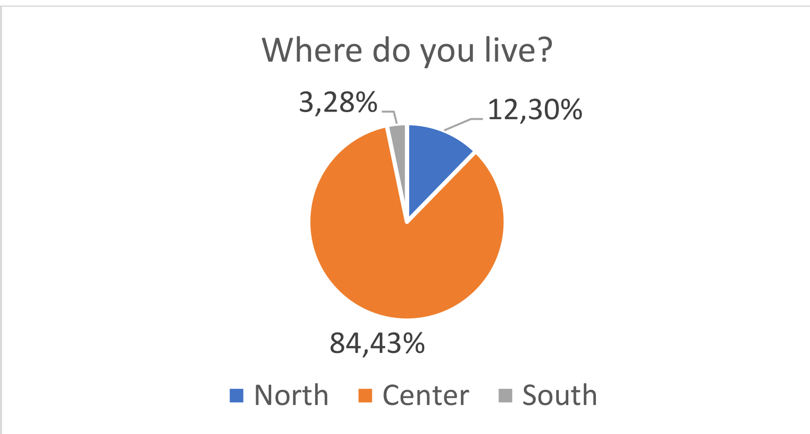
6.2.2 Generational change in Argentina.

To verify that a generational change has begun in Argentina, an online survey carried out. The questionnaire started with a confirmation that the interviewed lived in Argentina, as it carried out online. To analyse the geographical distribution of the responses, the country was divided into three areas: Central, Northern and Southern.

The majority of the Argentinian citizens live in Buenos Aires, Córdoba and Santa Fe, the most crowded provinces of the country that belong to the Central area. For this reason, the 84.43% of the interviewed people live in that part of the state.

Secondly, in terms of population, there is the Northern region so, the 12.3% of the answers were taken from the mentioned area. Lastly, the 3.28% of the inhabitants live in the least crowded area of the country, the Southern. (Figure 6.2)

Figure 6-2:Geographical distribution of the participants.



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[7] https://www.clarin.com/sociedad/telefono-fijo-celular-consumo_0_rJaDKM9w7l.html

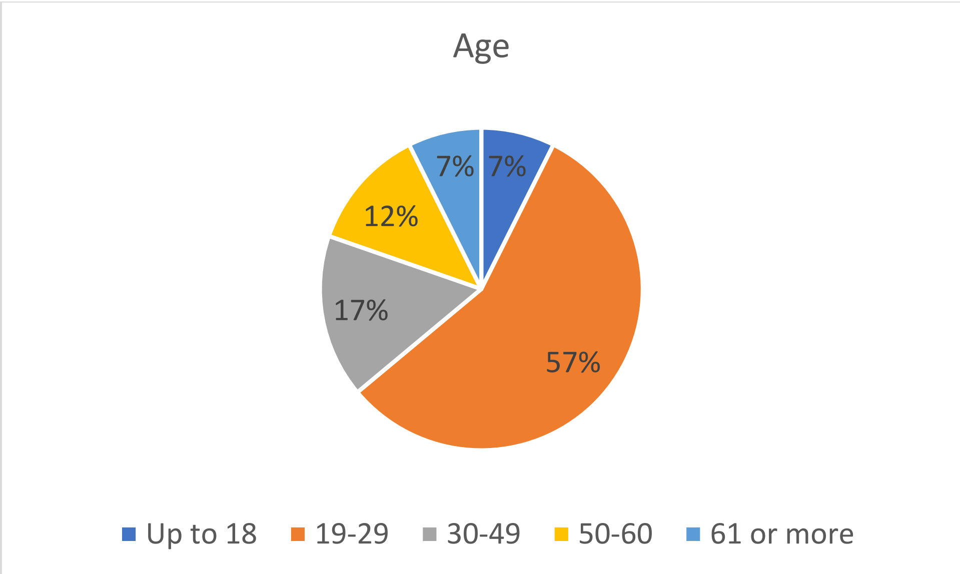
Other demographic variables considered were age and gender that take into account the background associated to each participant. Figure 6.3 and Figure 6.4 show the age and gender of the interviewed people, respectively.

Being an online survey, it is important to highlight that the questionnaire reached mainly teens, young adults and adults because they are the ones most in touch with this technological tool. This makes it possible to carry out the survey without being in the country and, at the same time, reach the population of interest and following the requirements of the predefined sample.

On the one hand, the 57% of the participants were born between 1988 and 1998 and currently are the group that uses the mobile phones the most and could answer the questionnaire via their smart phone.

On the other hand, both the up to 18 years old group and 61 or more years old group, with 7% each, used the online questionnaire the least.

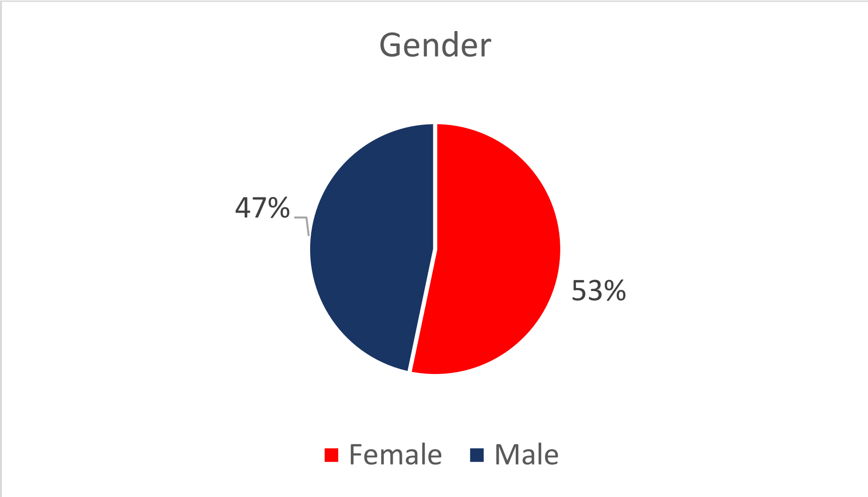
Figure 6-3: Participants' age.



In Argentina, according to Infobae[8] on their publication on January, 23rd 2017, the 52% of the population are women and the remaining 48% are men, thus, the sample nearly fits the tendency.

[8] https://www.infobae.com/america/mundo/2017/01/23/cuales-son-los-paises-con-mas-mujeres-y-mas-hombres-en-el-mundo/

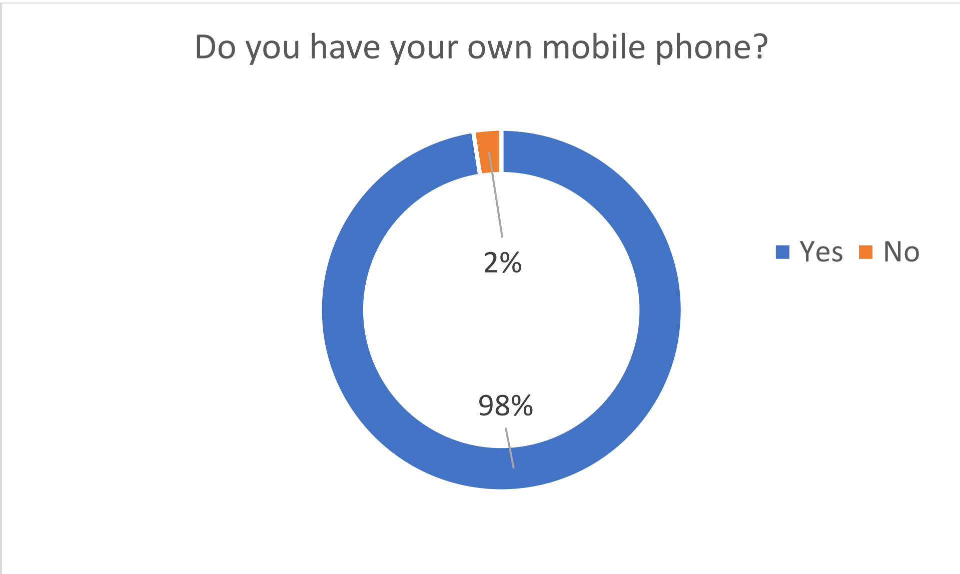
Figure 6-4: Participants' gender.



According to the data collected though the question "Do you have your own mobile phone?", Figure 6.5 shows that 98% of the participants confirmed having their own device and being able to use it on their own, although the other 2% does not own a mobile phone.

Having analyzed the negative answers and computed the age and zone where the participants live, it was possible to conclude that not owning a mobile phone is influenced by their age but does not depends on the geographical zone where the user lives. This means that nowadays people who do not have a mobile phone in Argentina were born in 1956 or before, so they are 61 or more years old.

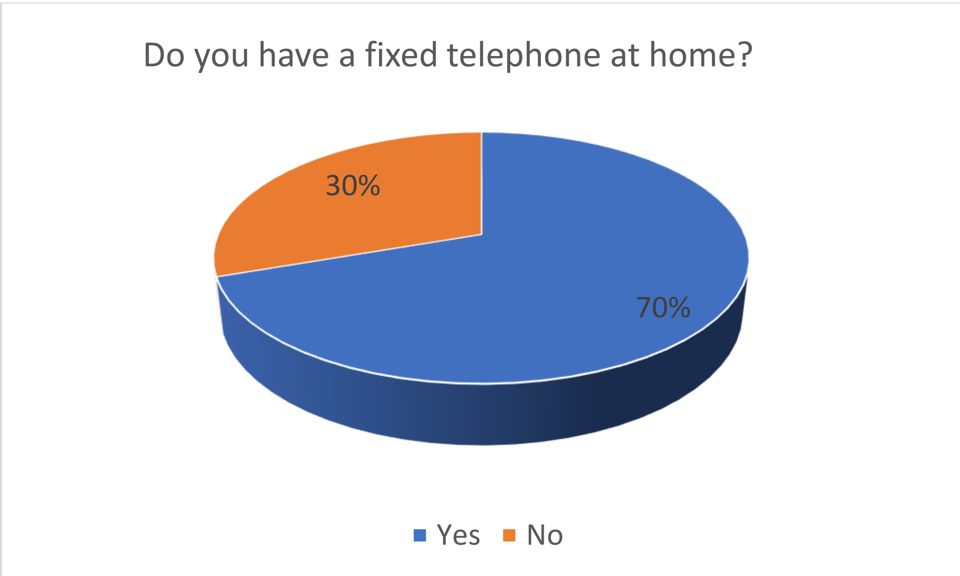
Figure 6-5: Own mobile phone possession according to the questionnaire in Argentina.



Last but not least, the most relevant data collected to verify the beginning of generational change in Argentina that would lead to the progressive replacement of all the fixed phones lines by active mobile phones is supported by the question "Do you have a fixed telephone at your home?”. The pie chart in Figure 6.6 represents the distribution of the responses obtained, 70% of the sample still has a subscription to fixed telephone whereas, the remaining 30% mentioned not employing that service but still using their mobile phones to communicate without any problem.

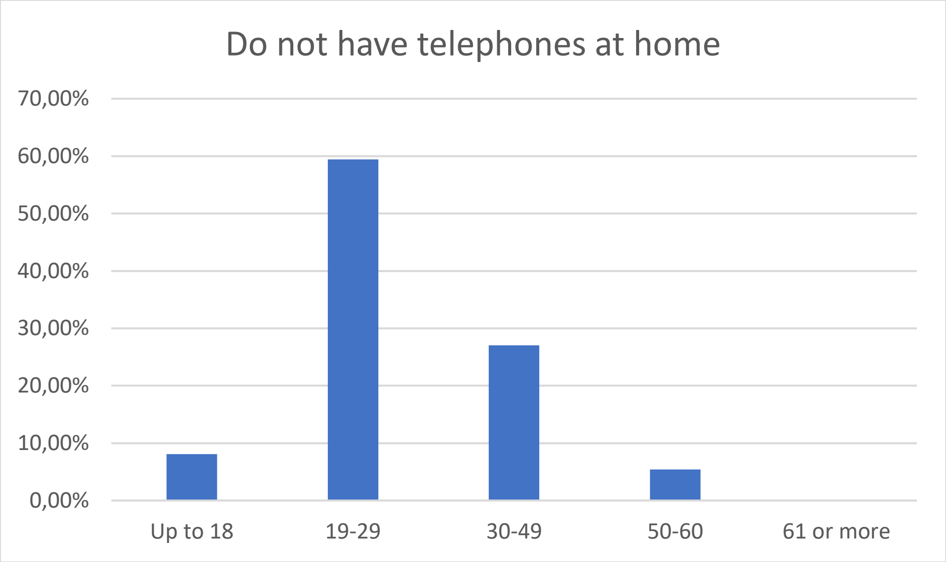
Applying the results to all the 2017 Argentinian society, it is possible to conclude that new generations are growing without fixed phone services in their homes and could live all their life without them, just by using a mobile phone and all the functions and advantages that these portables devices have. Over the years, the non-telephone generations will pass on future groups this means of communications and will encourage the decay of the telephone. For this reason, the companies operating the service will need to redefine their strategies and adapt themselves to the near future market changes.

Figure 6-6: Argentinian possession of fixed phone.



The bar graph in Figure 6.7 represents the total responses corresponding to the lack if a fixed telephone at home, in percentage, but classifies the answers in relation to age groups that replied. In the first place, people between 19 and 29 years old do not have a telephone in their houses, followed by adults between 30 and 49 years old, then kids and teens and lastly, the age group between 50 and 60 years old. None of the oldest adults (more than 60 years old) manifested not having a fixed phone at home, since they do not own cell phones.

Figure 6-7:Ages groups that do not have a telephone in Argentina.



6.2.3 Brazilian data from 2000 to 2016.

Table 6-3: Brazilian fixed phone subscriptions.

Country	BRAZIL	
Service	FIXED	
Data		
Year	**Accesses**	**Per 100 inh.**
2000	30,926,272.00	17.72
2001	37,439,779.00	21.15
2002	38,810,685.00	21.63
2003	39,205,000.00	21.57
2004	39,578,903.00	21.51
2005	39,852,600.00	21.41
2006	38,800,200.00	20.62
2007	39,399,622.00	20.74
2008	41,235,247.00	21.50
2009	41,496,998.00	21.45
2010	42,141,418.00	21.59
2011	43,025,835.00	21.85
2012	44,305,294.00	22.30
2013	45,038,117.00	22.48
2014	44,128,188.00	21.84
2015	43,677,141.00	21.45
2016	41,846,846.00	20.39

Table 6-4: Brazilian mobile phone subscriptions.

Country	BRAZIL	
Service	MOBILE	
Data		
Year	**Accesses**	**Per 100 inh.**
2000	23,188,171.00	13.29
2001	28,745,769.00	16.24
2002	34,800,964.00	19.44
2003	46,373,266.00	25.51
2004	65,605,000.00	35.65
2005	86,210,336.00	46.31
2006	99,918,621.00	53.11
2007	120,980,103.00	63.67
2008	150,641,403.00	78.55
2009	169,385,584.00	87.54
2010	196,929,978.00	100.88
2011	234,357,507.00	119.00
2012	248,323,703.00	125.00
2013	271,099,799.00	135.31
2014	280,728,796.00	138.95
2015	257,814,274.00	126.59
2016	244,066,759.00	118.92

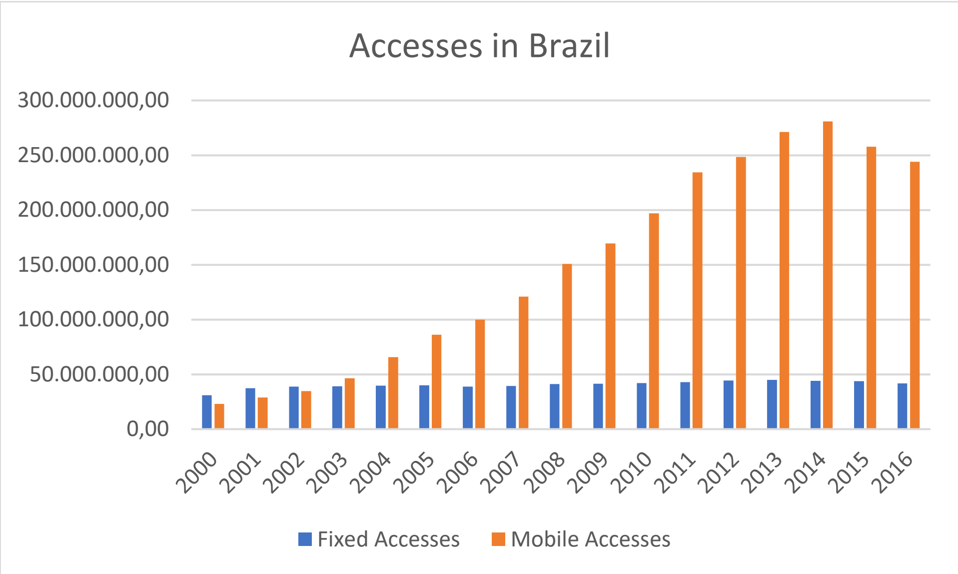
Parallel to the analysis carried out for Argentina, the same research was done for Brazil based on the information available in the website of the ITU. The information collected was summarized into two tables, each one refers to one of the two communication service of interest.

Table 6.3 recaps the data collected of Brazil corresponding to the telephone market between 2000 and 2016. Besides, it also provides the total amount of accesses and the number of accesses per 100 inhabitants.

Table 6.4 shows the same categories over the same period but in reference to the mobile phone market.

Graph of Figure 6.8 compares the evolution of the fixed and mobile accesses together.

Figure 6-8: Fixed and mobile accesses in Brazil (2000 - 2016).



The telephone service peaked at 45,038,117 subscriptions in 2013 and the mobile services reached a maximum in 2014 with 280,728,796 active lines. In the period from 2000 to 2002, the fixed telecommunication service had more users than the mobile one because the latter was not established at all and there were many acquisitions by different companies aiming to improve the cell phone service. Both services increased the amount of accesses over to the years up to 2013 when the social crisis begun. However, in 2014, the year of the Brazil World Cup, the telephone users decreased, and the mobile customers increased up to the highest historical value.

After these key years in the Brazilian economy and in the household expenditure the number of users of both services decreased. In 2016, in Brazil there was nearly the same number of fixed subscriptions than in 2009 and a similar amount that in 2012 of mobile users.

As regards the accesses per users, the mobile telephone services counted more than one active line per inhabitants. However, the telephone had one active line per 4.77 inhabitants, so family, there was one telephone per home.

6.3 How to forecast 2017 and 2018 available accesses.

By the end of 2017, there was no official data about the accesses available for both services for that year. However, it is possible to forecast the values for 2017 and 2018 based on the historical data gathered via the regression method considering that the results obtained will be subject to uncertainty due to the error of the model.

The quantitative method uses historical data under the assumption that the future will have the same behavior of the past. By employing time series, the future value is forecasted based on preestablished past patterns. The error is known as the irregular component and it is basically the difference between the forecasted value and the real one.

The simple linear regression method assumes that the relationship between the dependent variable (y) and the independent variable (x) could be approximately by a straight line. According to the data available for Argentina and Brazil, time is the independent variable and the accesses number is the dependent variable.

The first step in the forecasting process was the creation of a dispersion graph that represents the values for each pair of variables (x, y) and having a visual idea of the type of relationship that could be found.

However, an adjustment of the variables was carried out to represent the number of period, to avoid mistakes that may led to incorrect forecasted values and to simplify the analysis since official data will be available soon. For this reason, the year 2000 was taken as the period 1, 2001 as period 2, 2002 as 3 and so on up to 2018 as 19. So, the forecasted values of interest will correspond to x=18 and x=19.

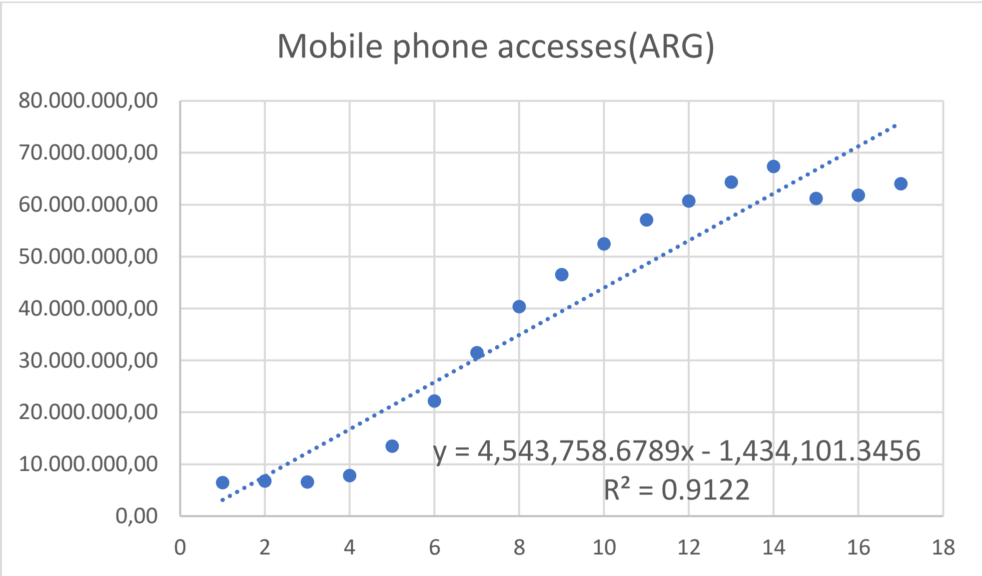
Secondly, by means of Microsoft Excel, a linear trendline was set up in a graph. In addition, the software displays the equation and the corresponding R^2.

The determination coefficient (R^2), is the proportion of the total variation of the all the observed values of the dependent variable explained by the regression model. If the value is zero, there is no correlation, but if it is one, in absolute terms, there is a perfect correlation.

In the forecasting process for the years 2017 and 2018, a R^2 equal or higher to 0.80 in absolute terms proved that the trendline and its equation represent accepted values for the years when information is missing.

Figure 6.9 represents step 1 and 2 and has an associated R^2 equal to 0.9122 so there is a high correlation and thus the forecasted values may be near the real ones.

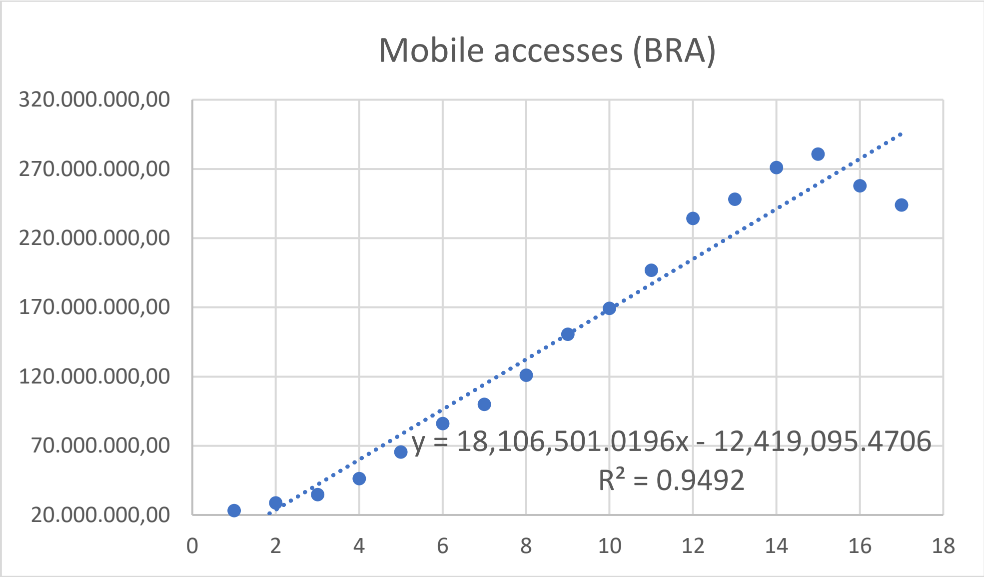
Figure 6-9: Dispersion graph with linear trendline for the mobile accesses in Argentina.



The same was done for mobile phone accesses in Brazil and for telephone accesses in both countries. The results are plotted in Figure 6.10, Figure 6.11 and Figure 6.12.

According to the coefficient of determination of mobile accesses in Brazil, the values for the intersection and the slope of the trendline combined provide a good approximation for the values corresponding to the 18th and 19th periods.

Figure 6-10: Dispersion graph with linear trendline of mobile accesses in Brazil.



However, the R^2 obtained for fixed telephone accesses in Argentina is equal to 0.7466 and in Brazil equal to 0.7107. Both countries have a coefficient of determination lower than 0.8 and, consequently, the linear trendline cannot be used to forecast the values for the period corresponding to the years 2017 and 2018.

Figure 6-11; Dispersion graph of telephone accesses in Argentina with a linear trendline.

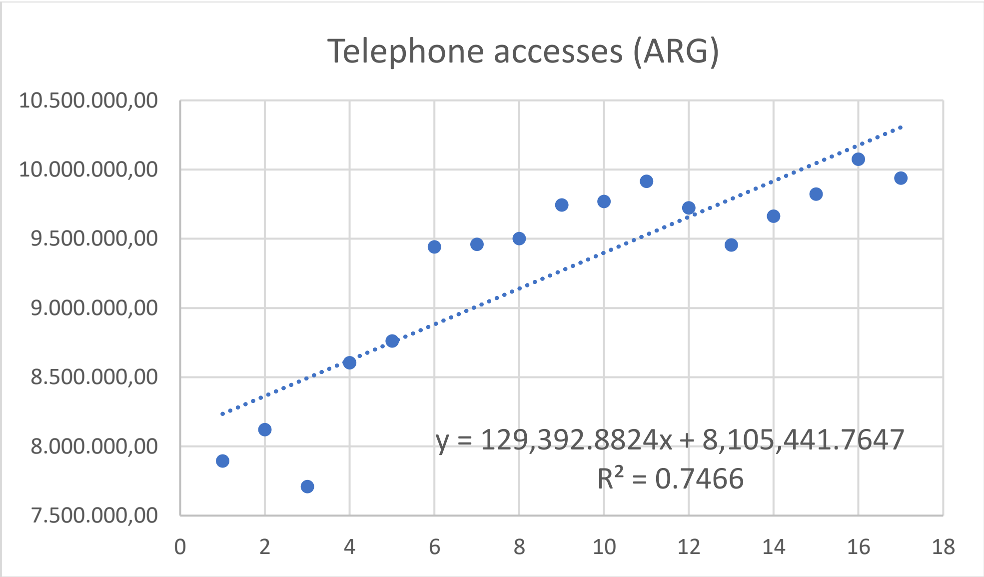
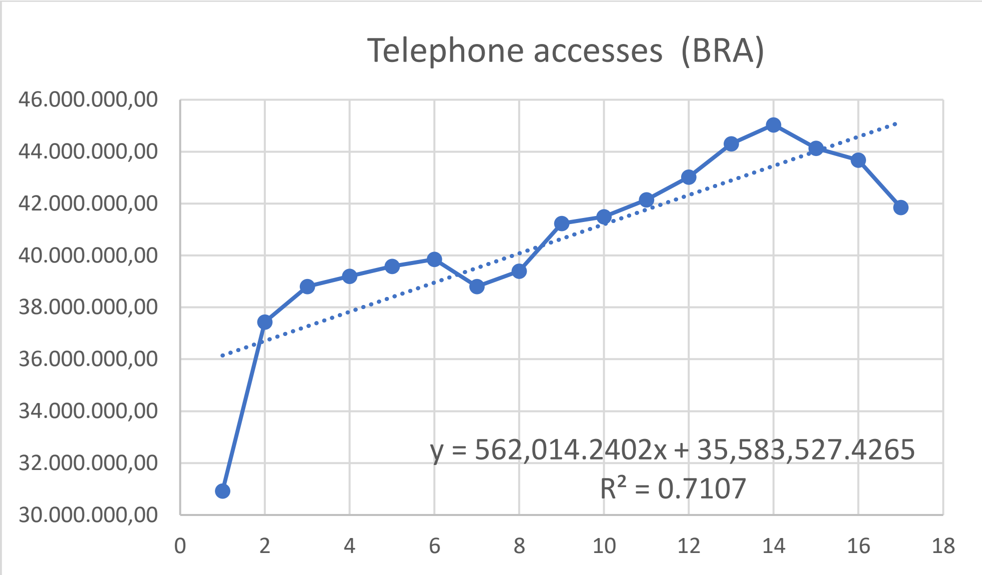


Figure 6-12:Dispersion plot of telephone accesses in Brazil with linear trendline.



The third step, as the given R^2 for neither the Brazilian nor Argentinian fixed market satisfies the condition, the linear regression model cannot be applied. Instead there were approximately obtained with the quadratic regression model.

The polynomic trendline for the telephone accesses in Argentina could be modelled by the equation 6.1 and had a coefficient of determination equal to 0.89, so it met the requirement.

$$\hat{y}_t = -13{,}010.0095\, x_t{}^2 + 365{,}572.0542\, x_t + 7{,}363{,}871.2206 \quad (6.1)$$

In addition, the fixed telephone data of Brazil followed the behavior of the polynomic trendline, equation 6.2 since the R^2 is equal to 0.8055, so satisfies the standards.

$$\hat{y}_t = -47{,}083.7637\, x_t{}^2 + 1{,}409{,}521.9863\, x_t + 32{,}899{,}752.8971 \quad (6.2)$$

Fourthly, with the slope and the intersection values, the forecasted values for the period 2000 - 2018 were obtained and they were also represented in a dispersion chart. The graph allowed to have a visual comparison between the real value and the forecasted one (error).

Later, the mean squared error was calculated. The MSE is an average value of all the squared errors of the period, as it is presented in the Equation (6.3) with n: number of periods, y_t: real value for period t and $\hat{y}_t$: forecasted value for period t.

$$MSE = \frac{\sum_{t=1}^{n}(y_t - \hat{y}_t)^2}{n} \quad (5.3)$$

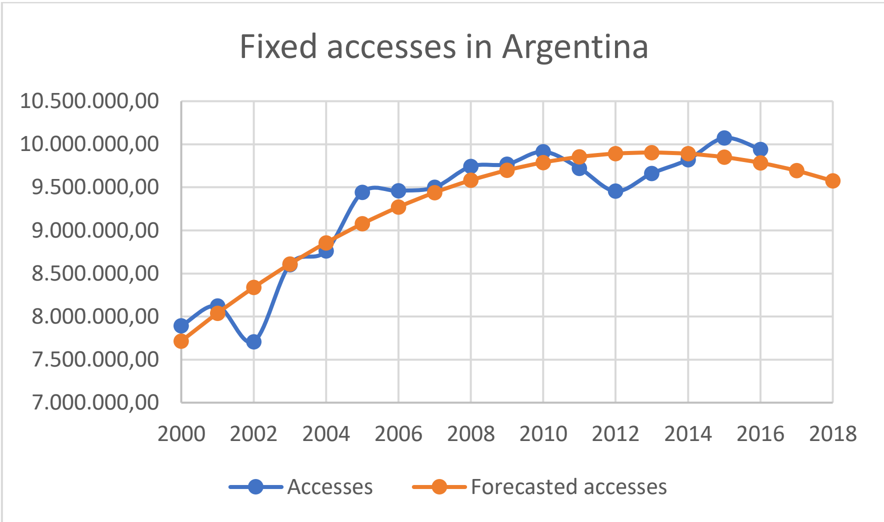
The obtained values for MSE are huge in magnitude since, they are the difference between two big numbers and the power of that number, but when comparing two SME for the same data, the small one must be chosen.

The mobile accesses for both countries could be as well estimated with a linear trendline or a polynomic trendline. The latter was studied and allowed to verify that the conditions needed to be a suitable model were met, so the SME were calculated.

6.4 Forecasted values for fixed accesses.

After the analysis and the calculations based on the historical data, the estimated values and the real values for fixed phone accesses in Argentina and Brazil are plotted in the graph of the Figure 6.13 and Figure 6.14, respectively.

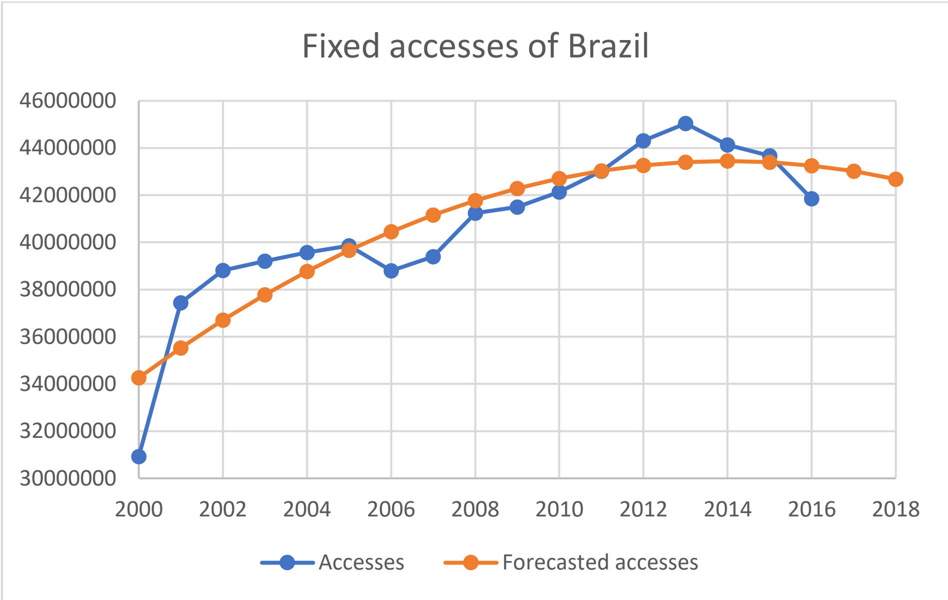
Figure 6-13: Real vs. forecasted fixed phone accesses in Argentina.



As regards Argentina, the fixed accesses forecasted for 2017 are 9,692,943 and the ones for 2018 are 9,575,145. The corresponding SME for these values is 59,180,557,287.48, which represents a high error. The estimated values agree with the statement that the number of telephone lines will be reduced until its disappearance related to the generational change presented in the analysis of the questionnaire. (Figure 6.13)

In the case of Brazil, the forecasted accesses for 2017 are 43,016,009 and for 2018 are 42,683,431; these values have a SME equal to 2,075,169,607,431.50. (Figure 6.14)

Figure 6-14: Real vs forecasted fixed phone accesses in Brazil.



6.5 Forecasted values for mobile accesses.

The conclusions obtained for both countries in relationship to the mobile phone available lines for 2017 and 2018 are presented in Table 6.5.

Table 6-5: Comparison between linear and quadratic regression for Argentina and Brazil.

	Argentina		Brazil	
Regression	**Lineal**	**Polynomic**	**Lineal**	**Polynomic**
R^2	0.9122	0.9423	0.9492	0.9515
SME	47,668,150,803,452.0000	31,359,071,414,761.6000	421,132,257,076,127.0000	401,883,656,018,885.0000
2017	80,353,554.0000	69,573,842.0000	313,497,922.0000	301,757,768.0000
2018	84,897,313.0000	70,524,364.0000	331,604,423.0000	315,957,274.0000

By the observation of the SME for each country, in both cases the polynomic one is smaller, meaning that the model has less discrepancy between the estimated and real values. Therefore, the Argentinian value for mobile communications in 2017 is 69,573,842 and in 2018 is 70,527,364, as plotted in the graph of Figure 6.15.

In the Brazilian case, also, the SME of the polynomic is lower than the one approximated with a linear trendline; consequently, the values considered for the year 2017 is 301,757,768 and for the year 2018 is 315,957,274. The numbers are plotted in the Figure 6.16.

Figure 6-15: Real vs. forecasted mobile accesses in Argentina.

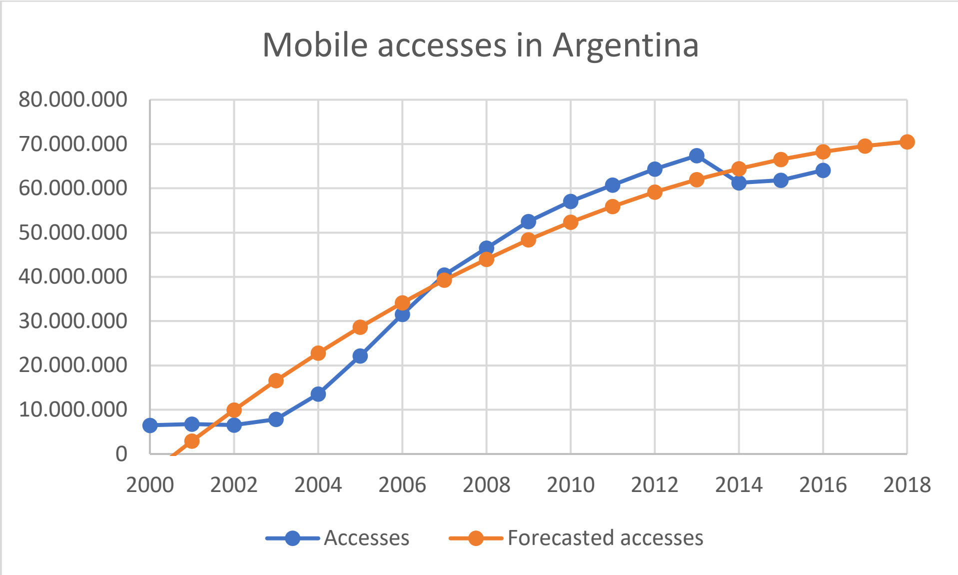
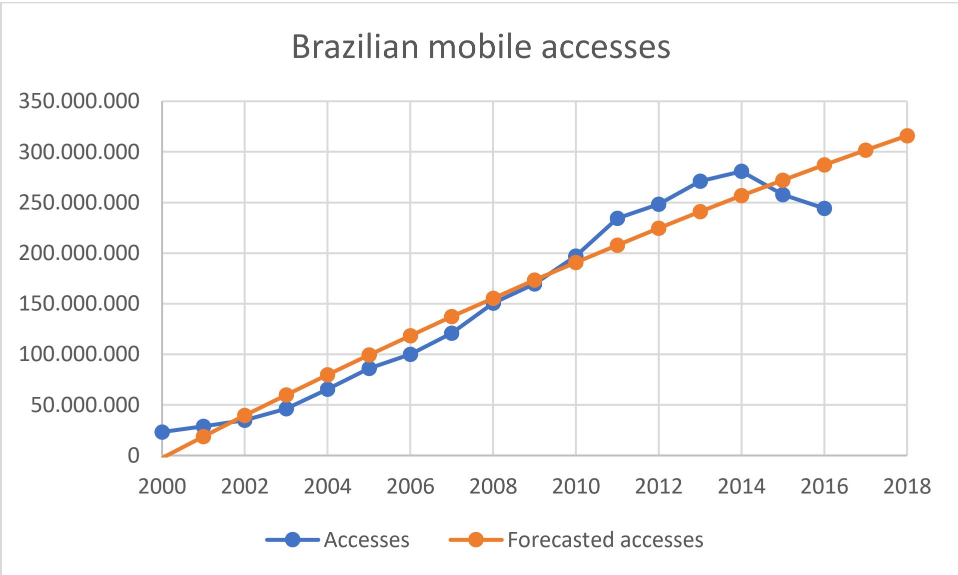


Figure 6-16: Real vs. forecasted values of mobile accesses in Brazil.



After forecasting all the available accesses for both telephone and the mobile phone in Argentina and Brazil, the numbers will be used as the total market and will be useful to analyze the market share that each company has according to the information collected.

7 Telecom Group Argentina.

Telecom Argentina presents itself as Telecom Group in their English version website. The general description of the company says: "Based on basic telephony as our initial service, we have developed […] our brands TELECOM, PERSONAL, and ARNET throughout the national territory."[9] The brands offer voice communication, fixed and mobile Internet and entertainment services fulfilling the communicative needs of the Argentinian citizens.

By the end of 2017, 23,000 people had worked directly or indirectly for Telecom Argentina. There were 16,000 direct jobs, 1,800 services suppliers and 450 contractors.

The company's vision "to be close to our customers, providing them the connection they need, facilitating their interaction with the world" expresses the course of action needed to achieve their goal to be close to their customers, providing them the connection they need, facilitating their interaction with the world." [10]

7.1 Telecom Argentina: An overview.

As it was mentioned, Telecom Argentina S.A operates in Fixed Telecommunications Services and Personal Mobile Telecommunications Services in Argentina. Moreover, it operates Núcleo Mobile Telecommunications Services in Paraguay.

In 2017, the Board of Directors was constituted by eleven directors including the chairman and the vice chairman and nine alternate directors. In the Supervisory Committee, there were five members and five alternate members. In addition, there were five Independent Auditors during the fiscal year 2017 while three in the Audit Committee.

Telecom Argentina S.A. is a public limited telecommunications company and the capital ownership is constituted by floating shares, class C shares and Nortel Inversora. The latter is the holding company of Telecom Argentina, as it is shown in Figure 7.1.

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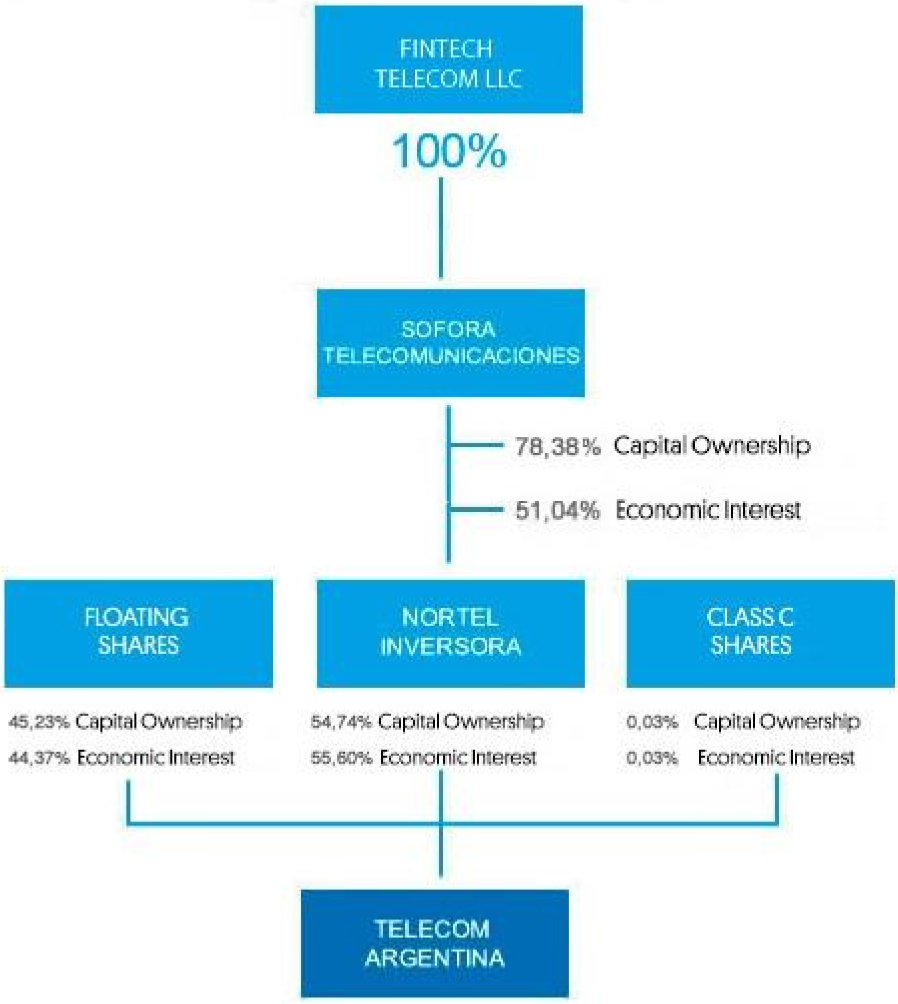
[9] Website of Telecom Argentina http://institucional.telecom.com.ar/grupotelecom.html#en – About us – 2017.

[10] Website of Telecom Argentina http://institucional.telecom.com.ar/grupotelecom.html#visionfuture – Our vision of the future – 2017.

Figure 7-1:Telecom Argentina capital ownership. Source: website of Telecom Argentina. [11]



According to the statistics and data provided by Bloomberg, the shares of the company traded at U$S 38.09 with a positive increase of 0.24 in December 18th, 2017, while the outstanding number of shares were 93.38 million. The highest value was reached on November 29th of the same year.

With the variations during the days, months and the last year, Telecom Argentina improved their stock trade with some peaks and valleys but, in sum, a positive increasing trend.

The statement published on December 1st, 2017 showed that "Telecom Argentina S.A. reported unaudited consolidated earnings results for the third quarter and nine months ending in September 30th, 2017."[12] The numbers comparing the quarters are presented in the Table 7.1.

[11] The diagram was provided by the official website of Telecom Argentina - 2017 http://institucional.telecom.com.ar/grupotelecom.html#en

[12] https://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=390314

Table 7-1: Earnings of Telecom Argentina for 3rd quarter of 2016 and 2017.

	3rd quarter, 2016	3rd quarter, 2017
Revenues	$13,412 million	$16,719 million
Operating income	$1,802 million	$3,167 million
Income before tax expense	$1,166 million	$3,151 million
Net income	$746 million	$2,026 million

However, the results can also be compared for nine months, so from the beginning of January to the end of September of the years 2016 and 2017, as it is shown in the following table (Table 7.2). The numbers of the tables are expressed in Argentinian pesos.

Table 7-2: Telecom Argentina in numbers 2016 vs. 2017 (nine months).

	January to September, 2016	January to September, 2017
Income before tax expense	$3,841million	$8,742 million
Net income	$2,471 million	$5,641 million
Total cash flows	$6,359 million	$15,568 million
PP&E acquisitions	$6,808 million	$7,825 million
Intangible assets acquisitions	$1,317 million	$723 million

In analysing the financial statements of Telecom Argentina S.A., it can be obtained that the company has improved its performance and got better results from one period to the other one. Besides, the company's net income in the third quarter of 2017 was higher than the net incomes of the other quarters under analysis.

7.2 Personal Argentina.

Personal is one of the biggest mobile phone company in Argentina. "Hagamos que todo suceda" (in English: Let's make everything happen) is their aim to promote their business as a network facilitator. The company has changed their logo over the years but the current one is illustrated in Figure 7.2. and was taken from the official website of the company at the beginning of 2018.

Figure 7-2: Logo of Personal.

Personal offers 2G/3G in the whole country. In addition, the company is progressively developing a 4G network, hence trying to extend their scope to the most isolated regions of the country. Moreover, Personal provides voice communications, text messages, high speed mobile Internet, roaming and long international calls, entertainment such as games and music and video streaming. The firm has different customer services, including: telephone support, face-to-face support in their business premises around the country and via an application this means, which involves an online platform in which the user can ask and perform multiple operations from their electronic device. The main functions of the mobile application are consumption analysis, managing Club Personal points and all the benefits that the company provides proportionally to the consumption, finding the nearest store and the activation of new promotions, services and plans.

Nowadays, the firm has presence in Facebook, Twitter, Foursquare, Google +, LinkedIn, Pinterest, YouTube and Snapchat in order to encourage the interaction between the users and the company.

The company has one of the most important prize benefits in Argentina: Club Personal. This allows over 7 million of affiliates to enjoy benefits and discounts in gastronomy, cinemas, shops, leisure activities and tourism while earning reward points under this loyalty program. [13]

7.2.1 Brief history.

Since its origin, Personal has worked to succeed in the new communication paradigm because it was the most involved company in innovation in mobile telecommunications in Argentina. In 1999, Personal launched text message services (SMS) and in 2003 they implemented a GSM digital network. These were followed by the development of the first 3G network in Argentina in 2007 and its corresponding update to HSPA+. Finally, in 2014 there came the new 4G/LTE (Long Term Evolution) technology which gave a competitive advantage and exponentially improved the quality of the service. [14]

7.2.2 Promotions and plans.

As regards the communications needs, Personal developed plans and tariffs that provided their users with flexible offers, mainly focusing on mobile Internet access. All plans have evolved to provide this highly requested service and all of them allow texting and calling, too.

Table 7.3 summarizes all the offers that Personal provides to their customers in Argentina. The data was collected from the website of the company. The offers were available on January, 2018, considering one euro equal to AR$ 23.35, as it was the real quote of the day.

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[13] http://www.personal.com.ar/institucional.html

[14] http://www.personal.com.ar/institucional.html#historia

Table 7-3: Offers of Personal in Argentina.

Plan name	Type of payment	Tax period	Price (AR$)	Price (€)	Internet	Calls		SMS	MMS	Credit
						to Personal	to others			
Plan 1	Postpaid	Per month	$330	EUR 14.13	2 GB	Unlimited	400 minutes	Unlimited	$2.20	$30
Plan 2	Postpaid	Per month	$520	EUR 22.27	4 GB	Unlimited	600 minutes	Unlimited	$2.20	$30
Plan 3	Postpaid	Per month	$750	EUR 32.12	7 GB	Unlimited	1000 minutes	Unlimited	$2.20	$30
Plan 4 Black	Postpaid	Per month	$900	EUR 38.54	10 GB	Unlimited	Unlimited	Unlimited	$2.20	No
Plan 5	Postpaid	Per month	$900	EUR 38.54	10 GB	Unlimited	Unlimited	Unlimited	$2.20	$30
Plan digital 100 MB	Prepaid	Per day	$12	EUR 0.51	100 MB/day	$4.20 first segment, $0.14 per second		$1.99	$2	Need to be charged
Personal con tarjeta	Prepaid	Per day	$9.99	EUR 0.43	Unlimited: high speed for the first 50	$4.20 first segment, $0.14 per second		$1.99	$2	Need to be charged
Plan Prepago Nacional	Prepaid	Per day	$4.59	EUR 0.20	Unlimited: high speed for the first 50 MB.	$2.36 first segment, $0,079 per second		$1.18	$1.86	Need to be charged

Firstly, Personal offers five post-paid plans that are paid per month. The payment can be made by Internet, credit card or in an office. Plan 1, Plan 2, Plan 3, Plan 4 Black and Plan 5 offer unlimited national phone calls to any user of the firm and unlimited national text messages (SMS). All of them, except for Plan 4 Black, get a bonus of $ 30 every month that could be used to buy extra gigabytes or paid calls. The Multimedia Messaging Service (MMS) costs $2.20 per unit (0.094 €). If the minutes of each plan are not enough, additional calls are possible at $ 2.55 (0.11 €); the first 30 seconds are rated as a segment, so it does not matter if the call lasts less than 30 seconds, the following seconds cost $0.085 per second. The feature “Datos compartidos” (Shared Internet) allows to share Internet gigabytes among family members without an extra cost. This means that if a member has an Internet surplus, the user can give them to another line number that requires them.

Plan 1 costs, equivalently, € 14.13 and provides 2 GB of Internet and 400 minutes to call any national mobile company or any fixed phone number. The telephone numbers that contracted this plan can only be recipients of the promotion of shared Internet.

Then, in Personal, there is Plan 2 which requires a monthly payment of € 22.27 and gives the user 4 GB and 600 minutes to call other companies instead of 2 GB and 600 minutes. In this type of contract, it is possible to give or receive Internet on the basis of Shared Internet.

Another one is Plan 3, whose price in euros is 32.12. The amount of gigabytes per month rises up to 7 GB and the minutes to 1000. The Shared Internet option is also possible.

The last two post-paid services are Plan 4 Black and Plan 5. Both of them cost € 38.54 per month, have unlimited national phone calls to any company and 10 GB of mobile Internet. While Plan 5 allows to share Internet among family members, Plan 4 Black users are rewarded with benefits such as differentiated customer service, free Spotify subscription for a year and calls throughout the entire American continent at local price since its customer segment looks for the latest innovation in mobile phones and in added value services.

Secondly, Personal has two prepaid offers; this means that the user needs to pre-charge credit on their line to use the service. Once the credit is consumed, the line stops working until a new charge is done. If a call is made, the first segment of 30 seconds costs € 0.18 and the following seconds € 0.006 per second. The SMS and MMS cost around € 0.086. Plan digital 100 MB discounts € 0.51 per day from the credit to provide 100 MB per day whereas Personal con Tarjeta discounts € 0.43 to provide 50 MB of high speed Internet per day but when that amount is consumed the speed falls to 32 Kbps. What is more, prepaid customers have the benefit of unlimited WhatsApp since the data consumption of the application does not use the amount per day of Internet so if the Internet bought per day runs out, the application can still work.

Lastly, for individual customers, Personal, like many companies agreed with the Argentinian government and ENACOM to offer an option between 40% and 67% cheaper than the average prepaid plan. It includes voice calls, SMS, MMS, Internet, radio calls, as well a free number for calling and a free mobile number for text messages. In 2017, there were 718.000 users from different companies that used the National Plan since it provides a good quality service at an affordable price[15]. In Personal, this is called Plan Prepago Nacional and the first 30 seconds cost € 0.10, while the following second rate at € 0.0033 per second. MSM are rated at € 0.05 and MMS at € 0.08. 50 MB of high speed Internet and unlimited Internet at 32 Kbps cost € 0.20 per day.

Personal also covers the enterprises segment, by which the company focuses on, the same as done for individual customers, Internet aiming to serve a better-quality connectivity to this part of the market. In addition, SMEs can contract geopositioning and monitoring of trucks,

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[15] https://www.enacom.gob.ar/institucional/continua-el-plan-prepago-nacional_n1599

M2M solutions (Machine to Machine), safety information kits, Personal Box to keep information safe in the cloud, Office 365, and equipment insurance.

Nowadays, Personal has more than 325 Roaming agreements that provide connectivity in more than 165 countries.

7.2.3 Mobile revenues.

Figure 7.3 is an extract from page number 1 of the Consolidated Financial Statements of Telecom Argentina, published on its website and corresponding to the period from January to September 2017.

Figure 7-3:Finacial data of Telecom, 3Q17.

(in million P$, except where noted)	As of September, 30 2017	2016	Δ $	Δ %
Consolidated Revenues	47,263	38,818	8,445	21.8%
Mobile Services	32,634	27,928	4,706	16.9%
Fixed Services	14,629	10,890	3,739	34.3%
Operating Income before D&A	14,246	10,210	4,036	39.5%
Operating Income	9,018	5,523	3,495	63.3%
Net Income attributable to Telecom Argentina	5,641	2,471	3,170	128.3%
Shareholders' equity attributable to Telecom Argentina	25,063	17,843	7,220	40.5%
Net Financial Position - Cash / (Debt)	503	(7,157)	7,660	-107.0%
CAPEX (excluding spectrum)	6,638	7,699	(1,061)	-13.8%
Fixed lines in service (in thousand lines)	3,838	3,946	(107)	-2.7%
Mobile customers (in thousand)	21,507	22,433	(925)	-4.1%
Personal (Argentina)	19,030	19,901	(871)	-4.4%
Núcleo (Paraguay) -including Wimax customers-	2,477	2,532	(55)	-2.2%
Broadband accesses (in thousand)	1,746	1,800	(54)	-3.0%
Average Billing per user (ARBU) Fixed Telephony / voice (in P$)	145.6	93.1	52.5	56.3%
Average Revenue per user (ARPU) Mobile Services in Arg. (in P$)	139.0	108.3	30.7	28.4%
Average Revenue per user (ARPU) ADSL (in P$)	350.1	260.4	89.7	34.4%

In September, 2017, Argentinian mobile subscribers were 19,030,000 and these users generated 47,263 million ARS (€ 2,024 million).

In addition, the statement reports “As of September 30, 2017, Personal reached 19.0 million subscribers in Argentina, where the postpaid clients represented the 34% of the subscriber base. […] The average monthly revenue per user (ARPU) amounted to $139.0 during 9M17 (+ 28.4% vs 9M16).” (p. 2).

Since the official market share is not yet available, it is possible to calculate it. The data needed are the total Argentinian mobile accesses in 2017, forecasted in chapter 6 and the Personal’s mobile accesses in 2017. Consequently, assuming that the latter equals to the company’s mobile accesses in September 2017, it is possible to estimate that in 2017, Personal’s market share was around 27.35%. The calculation is shown in Equation 7.1.

Equation 7-1: Personal's market share, 2017.

$$\widehat{MS_{PERSONAL}}_{17} = \frac{19{,}030{,}000}{69{,}573{,}842} \times 100 \ = 27.35\%$$

8 Grupo Telefónica in Argentina.

Nowadays, Telefónica defines as the leader in telecommunications integrated operator in Argentina. Its activities are mainly focused on fixed and mobile telephone lines, where, Internet is the powerful tool employed for their development.

The goal of the company is to improve Argentinians' quality of life and help in the development of new businesses in the society where works. Besides, the company has invested in telecommunication infrastructure in the country, promoting employment and becoming more competitive.

In order achieve that goal, an internal transformation process, named global bravo!, is taking place in Telefónica. Its objective is to make all the organizational processes simpler and make their customers to get involved in all the operations. As a result, the firm will be reinvented on the basis of in four pillars: leadership and growth, quality, commitment and transformation; hence becoming a strategic partner for the society.

Telefónica in Argentina manages nearly 23 million of accesses, of which 17 million are mobile accesses, 6 million fixed lines and 1.6 million just Internet. Moreover, Telefónica has more than 24,000 employees and 1,569 suppliers, 94% of which are local companies.

Quality is the central point of their business model that leads them to a continuous improvement in the whole company. This strategy is followed to meet customers's needs and employees's personal goals. Since 2009, Telefónica has been ranked in Great Place to Work Institute Argentina (GPTW) as one of the best companies with more than a thousand employees to work in. In 2012, the firm reached the 12th position because of its efficient work environment management capacity.[16]

As regards capital equity, Telefónica in Argentina has two kinds of shares where shares A represents the 62.53% and the 37,47% shares are class B. By the end of 2011, Compañía Internacional de Telecomunicaciones (COINTEL) was their major shareholder with 3,596 million shares that correspond to 51.49% of the equity. Currently, all the stocks are directly or indirectly under the control of Telefónica.

[16] http://www.telefonica.com.ar/acercadetelefonica/

8.1 Business lines.

Telefónica in Argentina bases its business lines on a regional customer view and its processes are focused on three segments: residential, SMEs and companies. The firms of Telefónica are Telefónica de Argentina S.A. and Telefónica Móviles de Argentina S.A.

Telefónica de Argentina S.A. is the enterprise that manages all the activities related to national and international fixed phone services, sales of products and services and Internet fixed services. The investments of Telefónica made it possible for 20,000 km of fibre optic networks around the country to reach the most isolated areas of Argentina.

Telefónica Móviles Argentina S.A. under the commercial brand, Movistar, is the enterprise that operates the mobile communications of Grupo Telefónica in Argentina. The latest investments were made in the development of the mobile network to provide the newest services in the field.

8.2 Financial data.

The consolidated financial statement of the company states that in the period from January to September 2017 "Telefónica Argentina's third quarter results presented a solid increase in revenues and OIBDA, not only due to the progressive ARPU growth, supported by the strong rise in data consumption and the gradual update in prices, but also because of the substantial increase in high value accesses (contract, LTE and FTTx). All above, these results were in a context of progressive macroeconomic improvements" (p. 28).

The revenues presented in Figure 8.1 are taken from the statement of results of Telefónica, published on their website for period from January to September 2017. "Mobile service revenues amounted to € 449,000,000 in the third quarter, growing 32.7% [...], reflecting the gradual tariff updates, success in commercial campaigns […] and data traffic expansion." [17]

In addition, the report presents the fixed phone revenues that "reached € 281,000,000 in the third quarter, maintaining steady growth levels […], mainly as the result of old tariff updates and the positive revenue performance of fixed broadband and new services."

Overall, from January to September of 2017 the mobile service revenues were € 1,475 million and the fixed business revenues were € 910 million. The operating income before

[17] https://www.telefonica.com/es/web/about_telefonica/donde_estamos/argentina

depreciation and amortization was € 747,000,000 and it increased from 2016 to 2017 in a 42.3%. In 2017, the capital expenditure was reduced to € 423 million and the operating cash flows were € 325 million.

Figure 8-1: Financial data of Telefónica Argentina.

TELEFÓNICA ARGENTINA
SELECTED FINANCIAL DATA

Unaudited figures (Euros in millions)	January - September			
	2017	2016	% Chg	% Organic Chg
Revenues	2,604	2,148	21.2	34.3
Mobile Business	1,694	1,316	28.7	42.6
Mobile service revenues	1,475	1,162	26.9	40.7
Data revenues	858	608	41.1	56.4
Handset revenues	219	154	42.3	57.7
Fixed Business	910	833	9.3	21.2
FBB and new services (1)	549	526	4.3	15.6
Voice & access revenues	361	306	18.1	30.8
OIBDA	747	525	42.3	57.6
OIBDA margin	28.7%	24.4%	4.2 p.p.	4.2 p.p.
CapEx	423	447	(5.4)	4.8
Spectrum	-	-	-	-
OpCF (OIBDA-CapEx)	325	78	n.m.	n.m.

8.3 Movistar Argentina.

Under the commitment to bring technology closer to society and make their daily lives easier, Movistar manages nearly of 20 million of mobile phones lines. Movistar is focused on accelerating the development of 4G networks and increasing the scope of 3G networks and Internet speed.

Movistar has presence in YouTube, Twitter, Facebook, Google+, Pinterest and Instagram.

The company has a set of identity elements used for their advertisements and promotions. All of them follow the same aesthetic but its most widely spread logo is the one appearing on Figure 8.2, obtained from the website of Movistar.

Figure 8-2: Logo of Movistar Argentina in 2017.

movistar

8.3.1 Plans and promotions.

Figure 8.3 shows the promotion portfolio that Movistar offers in Argentina. All the options include the benefit of free WhatsApp. The user can choose between a postpaid service and a prepaid one.

Figure 8-3: Plans offered in Argentina by Movistar.

Plan name	Type of payment	Tax period	Price (AR$)	Price (€)	Internet	Calls		SMS	MMS	Credit
						to Movistar	to others			
Comunidad más 2 Gigas	Postpaid	Per month	$339	EUR 14.52	2 GB	Unlimited	200 minutes	Unlimited	$5.91	$30
Comunidad más 4 Gigas	Postpaid	Per month	$529	EUR 22.66	4 GB	Unlimited	500 minutes	Unlimited	$5.91	$30
One de 7 Gigas	Postpaid	Per month	$759	EUR 32.51	7 GB	Unlimited	Unlimited	Unlimited	$5.91	
One de 10 Gigas	Postpaid	Per month	$999	EUR 42.78	10 GB	Unlimited	Unlimited	Unlimited	$5.91	
Plan Prepago	Prepaid	Per day	$9	EUR 0.39	50 MB/day	$3.75 first segment, $0.125 per second		$1.95	$5.28	Need to be charged
Plan Prepago Nacional	Prepaid	Per day	$4.59	EUR 0.20	50 MB/day	$2.36 first segment, $0.079 per second		$1.18	$1.86	Need to be charged

As regards monthly payments, Movistar offers four plans that it main distinctive feature is the Internet quota. Firstly, Comunidad más 2 Gigas costs € 14.52 and offers 2 GB of high speed Internet plus 200 minutes to make calls across companies.

Secondly, Comunidad más 4 Gigas costs € 22.66 and offers 500 minutes to call other firms and 4 GB of Internet. Both plans include unlimited calls to any Movistar number and unlimited national SMS and an amount of money for any additional charge. A MMS costs around € 0.253.

Finally, there are two plans that allow the customer to make calls to any mobile phone in America at local price. One de 7 Gigas offers seven gigabytes of Internet and costs € 32.51 while One de 10 Gigas provides ten gigabytes for connecting to Internet and costs € 42.78. Both of them have an unlimited number of national phone calls and each MMS is rated € 0.253.

As already mentioned, Movistar offers their customers a prepaid alternative, this means that the user has to charge credit to the mobile line before using it. In Plan Prepago, the user can pay € 0.39 per day to get 50 MB of Internet to use in that day. If a national phone call is made, the consumer will pay € 0.16 for the first segment (the first 30 seconds) and € 0.005 for each following second. Text messages cost € 0.083 and multimedia ones € 0.23. Besides, Movistar has also agreed with ENACOM to provide the national plan, Plan Prepago Nacional, in which each SMS is rated approximately € 0.05 and each MMS at € 0,08. The phone calls are reduced to € 0.101 for the first segment and the following seconds to € 0.004 each. Contracting 50 MB of Internet per day costs € 0.20 per day. The users of this promotion get as a benefit calls to one Movistar's number for free and free texting service to one Movistar's number.

8.3.2 Mobile revenues.

Figure 8.4 is an extract from page number 29 of the Consolidated Financial Statements of Telefónica, published on its international website and corresponding to the period from January to September 2017.

Figure 8-4: Percental Revenues of Movistar in Argentina.

SELECTED OPERATIONAL DATA
Unaudited figures

	2016				2017			
	March	June	September	December	March	June	September	% Chg
Contract percentage (%)	34.8%	35.0%	34.8%	34.6%	35.8%	36.8%	37.4%	2.6 p.p.
Smartphones ('000)	7,700.6	8,328.3	9,286.3	8,953.5	9,194.8	8,789.6	9,195.1	(1.0)
Smartphone penetration (%)	39.8%	43.4%	47.1%	44.5%	47.2%	45.9%	48.2%	1.1 p.p.
LTE ('000)	2,213.3	2,462.0	3,130.3	3,744.8	4,136.7	4,707.5	5,363.2	71.3
LTE penetration (%)	11.4%	12.7%	15.8%	18.5%	21.1%	24.4%	27.9%	12.1 p.p.
Mobile churn (quarterly)	3.3%	3.1%	2.7%	2.7%	3.4%	3.1%	2.9%	0.1 p.p.
Contract (1)	1.2%	1.4%	0.8%	1.3%	1.2%	1.2%	1.2%	0.4 p.p.
Mobile churn (cumulative YTD)	3.3%	3.2%	3.1%	3.0%	3.4%	3.2%	3.1%	0.0 p.p.
Contract (1)	1.2%	1.3%	1.1%	1.1%	1.2%	1.2%	1.2%	0.1 p.p.
Mobile ARPU (EUR)(cumulative YTD)	6.5	6.6	6.6	7.1	8.6	8.7	8.4	42.0
Prepay	1.9	2.0	1.9	1.9	2.5	2.6	2.6	50.7
Contract (1)	16.2	16.2	16.1	15.7	21.0	21.0	19.9	37.3
Mobile data traffic (TB) (cumulative YTD)	23,517	51,940	87,337	126,846	42,378	92,707	153,286	75.5
Fixed telephony ARPU (EUR) (cumulative YTD)	6.6	7.1	9.2	8.5	8.6	9.5	9.1	43.7
Broadband ARPU (EUR) (cumulative YTD)	17.6	18.1	22.0	18.4	20.8	21.7	21.3	29.7
Fixed data traffic (TB) (cumulative YTD) (2)	203,887	449,311	723,644	1,011,610	296,597	636,815	1,018,913	40.8

Notes:
- ARPU: monthly average revenue divided by the monthly average accesses of the period. % Change in local currency.
- Data traffic is defined as Terabytes used by the company customers, both upload and download (1TByte = 10^12 bytes). Promotional traffic is included. Traffic not associated to the Company's mobile customers (roaming-in, MVNOs, interconnection of third parties and other business lines) is also included. Traffic volume non-rounded.
(1) Excludes M2M.
(2) Includes solely traffic related with FBB accesses, not Business customers.

The previous image shows operational data related to the services that Telefónica provides in Argentina. The most relevant information is the one provided for the mobile communications market served by Movistar.

Comparing September 2016 to the same month in 2017, it can be detected the Mobile ARPU increased from 6.6 to 8.4 euros. Telefonica considers the ARPU index as the "monthly average revenue divided by the monthly average accesses of the period" in euros. By multiplying the ARPU by the total number of mobile accesses in September 2017 (Figure 8.5[18]), the total revenue of mobile phone service was € 166,230,960. It is important to highlight that

[18] https://www.telefonica.com/en/web/about_telefonica/geographic_spread/argentina

contract offers have a bigger contribution in the revenues of the company since the postpaid service has an ARPU of € 19.9 versus the € 2.6 of prepay ones.

Figure 8-5: Accesses of Telefónica in Argentina, September 2017.

Lastly, the 76.68% of Telefónica accesses are operated by its brand, Movistar, which provides the most profitable service and the most demanded one by its users.

Since there was not official data for the mobile phone market share, it is possible to estimate the proportion that corresponds to Movistar. In 2017, were 69,573,842 forecasted accesses (Chapter 6) then, by assuming that 19,789,400 of them were managed by Movistar it is possible to conclude that Movistar served the 28.44% of the Argentinian mobile phone market.

8.3.3 Plans for business and enterprises.

Movistar also serves business and enterprise segments. For both of them, the firm offers different plans according to the needs and number of lines contracted.

The plans for business people are personally designed, but usually they have unlimited calls to Movistar lines, 10000 minutes to other telephone companies, 5000 text messages, calls within America at local price, unlimited WhatsApp texting, cloud storage and antivirus. The price of the plans varies according to the amount of Internet gigabytes included. For example, € 13.49 for 2 GB, € 17.77 for 4 GB, € 24.84 for 8 GB and € 35.55 for 14 GB of monthly Internet. In case of contracting a business plan, the customer has special discounts to buy new smartphones.

Telefónica and Movistar provide business solutions such as mobile phone services for enterprises. The price depends on the size of enterprise and the services hired. The business solutions unit develops an integrated and innovative portfolio for enterprises of digital solutions (Cloud, Security, Big Data and IOT) and telecommunication services (international voice calls, IP, high speed internet, fixed services, IT and mobile services).

8.4 Tuenti in Argentina.

Tuenti in Argentina was launched in 2013 aiming to join to the regional strategy of Grupo Telefónica. This means the unification of one brand covering the young segment in Spain and Latin America.

The company "integrates the Quam brand and its operations, which was introduced in Argentina in 2003". It focused on the "segment of young people to address the strategy of supporting Tuenti as a global company and product […] since it offers data for people who use the Internet a lot in their cell phones. It focuses on innovation and technology as differentiating elements, allowing it to complete and enrich the user experience for customers offered by Quam".[19]

Nowadays, the website operates with updated commercial offerings. "The service and the brand renewal are backed by campaign in advertising media, Twitter, Facebook", Instagram, Google+ and YouTube.

The worldwide Tuenti brand was launched in Spain, Mexico, Peru, Argentina and Guatemala.

Their slogan is "Tuenti la telefónia móvil, pero al revés" and explains that it is a prepaid service, mainly for young people. The firm believes that they are the best option for those people who see the world from their smartphone and want to be always online.

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[19] https://corporate.tuenti.com/en/blog/tags/Tuenti%20International Argentina, our third operation in Latin America. 18/11/2014. Sebastian Muriel.

Figure 8-6:Logo of Tuenti (2018).

The Figure 8.6 is the current logo of Tuenti Argentina used for its advertisements and its website.

The SIM card can be purchased at any kiosk, internet or official Tuenti sale points around the city. The only requirement to get a new line is the Argentinian ID, as the service is not available for non-Argentinian citizens.

8.4.1 Plans and Promotions.

Tuenti customers pay for freedom and innovation. For this reason, the service provides Internet and calls promotions. In addition, Tuenti has an application of its own via which customers can chat, send voice messages, share photographs and call anyone who has downloaded Tuenti's platform. Moreover, their customers are able to use the application for an extra 30 days without any credit on their line or WiFi.

Figure 8-7: Plans offered by Tuenti in Argentina (2018).

Plan name	Type of payment	Tax period	Price (AR$)	Price (€)	Internet	Calls		SMS	MMS	Credit	Free Whatsapp
						to Tuenti	to others				
Combo Mes	Prepaid	Per month	$150	EUR 6.42	2.5 GB	Unlimited	100 minutes	0	0	Need to be charged	Yes
Combo Semana	Prepaid	Per week	$50	EUR 2.14	500 MB	25 minutes		0	0	Need to be charged	Yes

Currently, Tuenti offers their users two plans as shown in Figure 8.7. The customers can hire the monthly or the weekly plan, as convenient. The first alternative, Combo mes, costs €6.42 per month and includes 2.5 GB of data, unlimited calls to Tuenti lines and 100 minutes to call other companies. In contrast, the second option, Combo Semana, must be renewed every week for € 2.14 and offers 500 MB and 25 minutes to make phone calls.

Neither of the options include text messages or multimedia messages but both provide free WhatsApp, hence the use of the application does not reduce the data quote.

In addition, customers can pay for extra promotions if needed, as it is presented in Figure 8.8. Buying data may cost € 2.57 for 500 MB per thirty days or € 0.32 for 100 MB per day. It is also possible to hire an additional call combo by a paying of € 1.07 for 25 minutes per thirty days or € 0.19 per minute. Furthermore, a text message costs € 0.06, an international minute, €0.28 and an international SMS, € 0.09.

Figure 8-8: Extra Tuenti's promotions.

Plan name	Type of payment	Tax period	Price (AR$)	Price (€)	Internet	Calls		SMS
						to Tuenti	to others	
Extra MB	Prepaid	Every 30 days	$60	EUR 2.57	500 MB			
Extra Voz	Prepaid	Every 30 days	$25	EUR 1.07		25 Minutes		
Datos	Prepaid	For 24 hs	$7.50	EUR 0.32	100 MB			
Minute	Prepaid	Per minute	$4.40	EUR 0.19		1 minute		
SMS	Prepaid	Per unit	$1.40	EUR 0.06				1
Llamada Mudial	Prepaid	Per minute	$6.50	EUR 0.28		1 international minute		
SMS Mundial	Prepaid	Per unit	$2.00	EUR 0.09				1

9 América Móvil in Argentina.

América Móvil is a telecommunications enterprise in Latin America that offers a portfolio of services and communication solutions in 25 countries in America and Europe. In Argentina, it operates under their brand: Claro.

América Móvil is a public trade company and the chairman of its board of directors is Carlos Slim Domit.

The América Móvil's third quarter of 2017 financial and operating report grouped and analyzed the data for Argentina, Paraguay and Uruguay together. The file was the last one published and available on its website and it includes the market share of the company, the number of accesses and the revenues.

Claro "finished the quarter with 24 million mobile clients, 3.4% more than a year before" in the region formed by Argentina, Uruguay and Paraguay. "Revenue growth remains strong with the service revenues climbing 33.1% on the back of mobile data revenues that soared 59.6%"[20].

Figure 9-1: Income statement of América Móvil in Argentina (2017).

INCOME STATEMENT (IFRS) - ***Argentina, Paraguay & Uruguay*** Millions of ARP

	3Q17	3Q16	Var.%	Jan - Sep 17	Jan - Sep 16	Var.%
Total Revenues	**13,033**	**10,281**	**26.8%**	**35,950**	**28,778**	**24.9%**
Total Service Revenues	10,680	8,025	33.1%	20,417	15,398	32.6%
Wireless Revenues	12,193	9,655	26.3%	33,544	27,007	24.2%
Service Revenues	9,830	7,397	32.9%	27,359	20,513	33.4%
Equipment Revenues	2,353	2,255	4.3%	6,147	6,481	-5.2%
Fixed Line and Other Revenues	840	695	20.8%	2,406	1,972	22.0%
EBITDA	**4,544**	**3,432**	**32.4%**	**12,812**	**9,828**	**30.4%**
% total revenues	34.9%	33.4%		35.6%	34.2%	
EBIT	**3,566**	**2,638**	**35.2%**	**10,016**	**7,621**	**31.4%**
%	27.4%	25.7%		27.9%	26.5%	

**Total Revenues reflect eliminations derived from both the overlap of fixed and mobile operations as well as international intercompany transactions; Wireless Revenues and Fixed Line and Other Revenues only exclude intercompany transactions with foreign subsidiaries. The sum of the parts will not equal Total Revenues.*

The income statement presented in Figure 9.1 was provided by the América Móvil third quarter of 2017 financial and operating report (p. 10). The earnings before interest and taxes

[20] América Móvil's third quarter of 2017 financial and operating report. Page 9. 2017 http://www.americamovil.com/es

from January to September 2017 were 10,016 million ARS, equivalent to € 428.95 million if we consider € 1 equal to 23.35 ARS. From the same period 2016, the EBIT increased a 31.4%.

The wireless revenues correspond to mobile technology, equipment such as smartphones or modems and services, from 2016 to 2017 the revenues increased in a 32.6% despite the equipment revenues dropped off.

Figure 9-2: Operating data of América Móvil in Argentina, Paraguay and Uruguay (2017).

Argentina, Paraguay & Uruguay Operating Data (IFRS)

	3Q17	3Q16	Var.%
Wireless Subscribers (thousands)	**24,000**	**23,204**	**3.4%**
Postpaid	2,444	2,460	-0.7%
Prepaid	21,556	20,744	3.9%
MOU	**90**	**100**	**-10.0%**
ARPU (ARP)	**136**	**107**	**28.0%**
Churn (%)	**2.1%**	**2.3%**	**(0.3)**
Revenue Generating Units (RGUs) *	**663**	**603**	**9.9%**

* Fixed Line, Broadband and Television.

As regards the mobile market, by the end of 2017 Claro had 24,000,000 subscribers in the three analyzed countries, as shown in Figure 9.2 provided by the América Móvil website. That number of users, for the company, equals 32% of the market in Argentina, Uruguay and Paraguay.

Claro in these countries offers a postpaid and a prepaid service. The first one decreased by 0.7% from the third quarter of 2016 to the same quarter of 2017 while, the second, rose by a 3.9% across the same periods.

9.1 Claro Argentina.

By the third quarter of 2017, Carlos Slim's company had the 100% of equity participation of Claro Argentina.

The firm defines itself as a young leader communication company that works in innovative and evolutive solutions to help people, societies and businesses to be connected around the world.

The main characteristic elements of the brand are its logo (Figure 9.3 downloaded from www.claro.com.ar), its slogan: "La red donde todo es posible" (in English: The network where everything is possible) and its phrase: “Es simple, es Claro” (in English: It’s simple, it’s Claro). These three have a power in the customers’ mind since whenever they see or hear any of these, they immediately associate them with Claro.

Figure 9-3: Logo of Claro (January 2018).

9.1.1 Plans and promotions.

Claro, as its competitors, offers postpaid and prepaid services to its individual customers. What is more, its market strategy is based on data quote.

Figure 9.4 presents all the postpaid plans offered by the firm in Argentina that allow users to make unlimited calls to any Claro number and unlimited text messages. In addition, any customer who hires a postpaid plan has free movies and series for free and twelve months of free music.

Firstly, Control 1 gigas is the most economical postpaid plan since it costs € 11.56 per month and gives a gigabyte of internet, 200 minutes to call other companies. If the minutes are not enough the user can still call for € 0.067 the first segment and € 0.002 per second. While, Control 2 gigas requires a monthly payment of € 14.13 for 2 GB of Internet and 500 minutes to call other companies. This plan and the following one offer calls and messages in America at local price. For this plan, the local segment costs € 0,064 and the following seconds € 0.002 per second.

Figure 9-4: Claro post-paid plans in Argentina.

Plan name	Type of payment	Tax period	Price (AR$)	Price (€)	Internet	Calls		SMS	Credit	Free Whatsapp
						to Claro	to others			
Control 1 gigas	Postpaid	Per month	$270	EUR 11.56	1 GB	Unlimited	200 minutes	Unlimited	$20	Yes
Control 2 gigas	Postpaid	Per month	$330	EUR 14.13	2 GB	Unlimited	500 minutes	Unlimited	$20	Yes
Control 4 gigas	Postpaid	Per month	$470	EUR 20.13	4 GB	Unlimited	500 minutes	Unlimited	$20	Yes
Control 7 gigas	Postpaid	Per month	$700.00	EUR 29.98	7 GB	Unlimited		Unlimited	$20	Yes
Libre 10 gigas	Postpaid	Per month	$900.00	EUR 38.54	10 GB	Unlimited		Unlimited		No

Then, Control 4 gigas costs € 20.13 for a 4 GB Internet quote and 500 minutes. The first segment price (€ 0.05) and the second price (€ 0.0017) are reduced while the monthly payment increases across plans.

The fourth alternative costs € 29.98 and provides 7 GB, unlimited calls and calls within America are rated at local price. This means that Control 7 GB users pay € 0.0451 for the first thirty seconds and € 0,0015 per each following second.

The mentioned options allow customers to use WhatsApp for free, as the other companies do and gives a sum of money to use for any purpose. Moreover, if the Internet quote is not enough, the line holder can purchase extra gigabytes as shown in Table 9.1

Table 9-1: Extra Internet promotions (Claro Argentina, 2018).

Quote	ARS	EUR
500 MB	$70	€ 3
1 GB	$80	€ 3.43
3 GB	$100	€ 4.28

Finally, Libre 10 gigas provides the customer with 10 GB, unlimited calls and calls in America at local price (€ 0.033 first segment, € 0.0011 each following second). The data quote can be used within the whole continent without extra charge. However, it does not give the free WhatsApp benefit and it only offers the purchase of three extra gigabytes for € 4.28.

As regard prepaid plans, Claro has two options and they are presented in Figure 9.5. Both of prepaid plans need credit charged in advance to work and give a Claro number to text for free and another to call for free.

Figure 9-5: Prepaid plans (Claro Argentina, 2018).

Plan name	Type of payment	Tax period	Price (AR$)	Price (€)	Internet	Calls to Claro	Calls to others	SMS	Credit	Free Whatsapp
Prepago Triplica	Prepaid	Per day	$9.00	EUR 0.39	50 MB, then $0.1 per MB	1st segment $3.90, $0.13/second		$1.95	Need to be charged	Yes
Prepago Nacional	Prepaid	Per day	$5.00	EUR 0.21	50 MB, then $0.054 per MB	1st segment $2.55, $0.09/second		$1.27	Need to be charged	No

Prepago Triplica plan spends € 0.39 per day to provide 50 MB of high speed Internet and, once that amount is used up each MB has an extra cost. However, WhatsApp messages do not reduce the original data quote. The calls are rated at € 0.167 for the first segment and the following seconds € 0.005 per second, while each SMS costs € 0.084.

The National Prepaid plan is also offered by Claro with some sight differences. One of them is that the 50 MB data quote per day costs € 0.21 but when that amount is spent, each extra megabyte has an extra cost. Besides, calls cost € 0.11 for the first segment and € 0.0038 per each following second, SMS costs € 0.055 and MMS[21] costs € 0.086.

Claro offers all their customers a loyalty program, Club Claro, that rewards them for their permanence and consumption. The points earned can be exchanged for special prizes at cinemas, theatres and shows; and each point equals 1 ARS.

9.1.2 Plans for businesses and enterprises.

Claro serves the enterprises and business segments, too. For each business, Claro designs a personalized promotion, but it mainly offers unlimited calls to mobile and fixed numbers, unlimited text messages, customized Internet quotas, a draft to manage the consumption excesses and Office 365 to work anywhere from any device. In addition, these customers have worldwide coverage at a predefined price, while in America they maintain their tariff and extra data options are available.

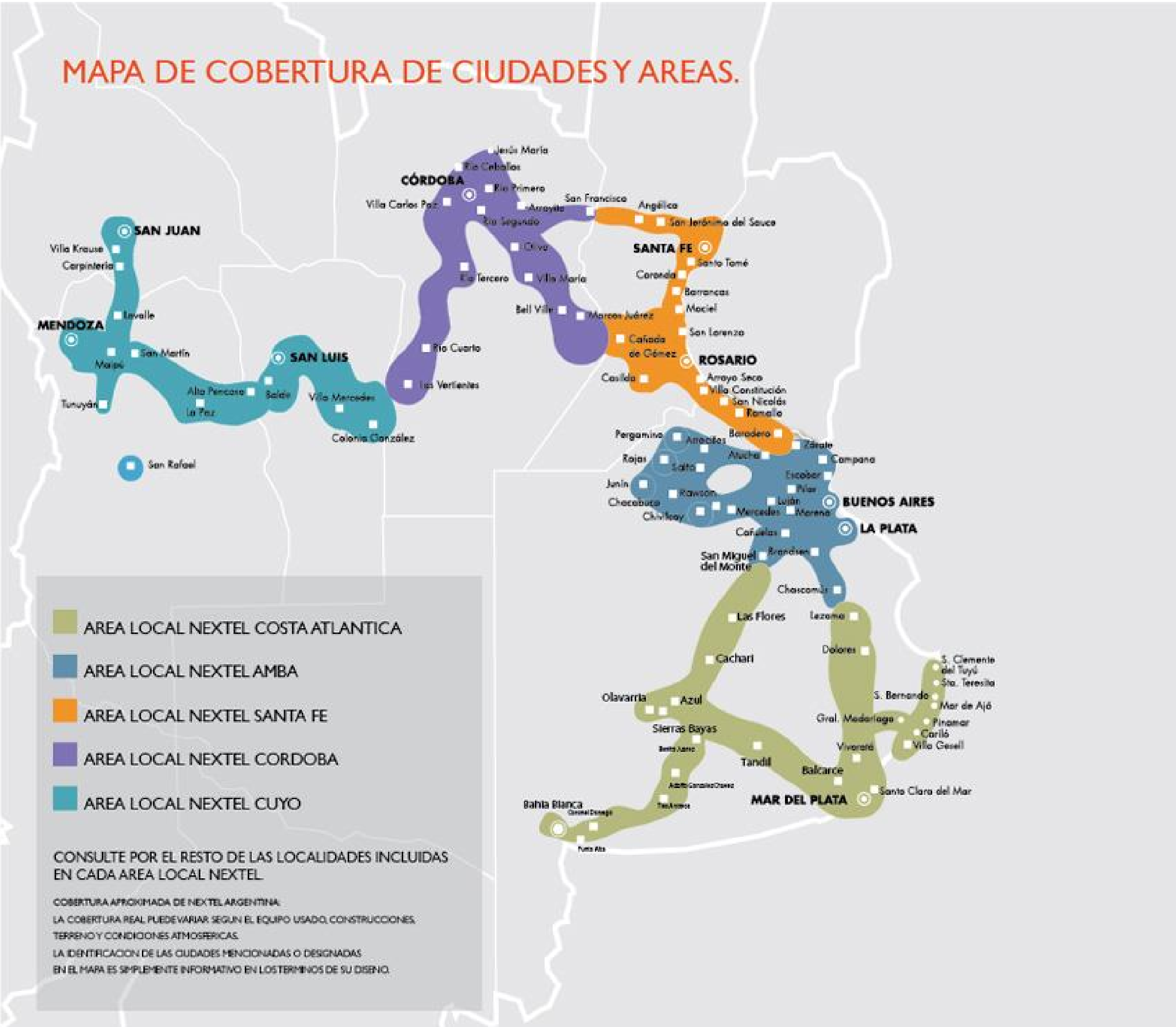
For enterprises, Claro offers business solutions, roaming, virtual servers and the possibility to manage the business remotely (M2M). The price of the services depends on the size of the enterprise and if the company is a multinational one or not.

[21] Information regarding to the cost of MMS was not available for the plans.

10 Nextel in Argentina.

Nextel Communications Argentina S.R.L. is not as widespread in Argentina as the others mobile phone firms. Before providing the service, Nextel verifies if the city its customer wishes to use it is within their scope area according to a coverage area map (Figure 10.1) published on their website. The service is only available in the central zone of the country and the network has 1550 km.

Figure 10-1: Nextel scope in Argentina (2018).



Since Nextel in Argentina uses iDEN[22] technology, it is possible to enjoy direct international connexion and international roaming in Brazil and Peru without changing the user's telephone number.

[22] Integrated Digital Enhanced Network allows digital radio, mobile telephone, text messages and data transmission in just one device.

The company has two distinctive elements, its logo and its “prip, prip!” that it imitates the sound of a radio communication device. Figure 10.2 presents the company’s logo, retrieved from the website: www.nextel.com.ar.

Figure 10-2: Nextel logo in Argentina, 2018.

In 2016, the Argentinian government approved the resolution that allowed Grupo Clarín to buy a part of Nextel Argentina. For that reason, it is possible to analyse the financial results and market share of Nextel in Argentina on the basis of the Results for the Fourth Quarter (4Q16) and Full Year of 2016 (FY16) statement of Grupo Clarín[23], published on March 13th, 2016.

Figure 10.3 is an extract from the Results file and presents the number of postpaid subscriptions that Nextel, as a telephony service, had in the country in 2016.

Figure 10-3: Fragment of Result for 4Q16 and FY16 of Clarín for telephony.

TELEPHONY

	2016	4Q16	3Q16	QoQ
Mobile Postpaid Subs[1]	730.9	730.9	807.5	(9.5%)
Postpaid ARPU	243.0	262.4	251.3	4.4%

[1] *Figures in thousands*

In 2016, Nextel had 730,900 mobile postpaid subscriptions and the total mobile accesses in 2016 were 64,033,692 (chapter 6), hence it is possible to estimate that the firm had a market share equivalent to a 1.14% in 2016. The number is small because the company serves the corporative market segment in Argentina.

10.1 Plans and promotions.

Figure 10.4 shows all the plans offered by Nextel to individual customers. In spite of the other firms operating in Argentina, Nextel bases its promotions on the radio quote since that is its distintive strategy. In some plans Internet quota or messages are not included, for that reason users need to purchase separately.

[23] Latest available statement.

Moreover, the company has two types of contracts, prepaid and postpaid. For the first option there are Powerchip Prepago and Prepago Nacional, whereas for the second one Nextel offers three alternatives.

Figure 10-4: Plans offered by Nextel Argentina 2018.

Plan name	Type of payment	Tax period	Price (AR$)	Price (€)	Internet	Calls		SMS	MMS	Credit	Radio
						to Nextel	to others				
Powerchip Prepago	Prepaid	Per day	$2.99	EUR 0.13	50 MB	1 st segment $4.107, second $0.1369		$2.06	$3.26		1st segment $0,753, second $0,0251
Prepago Nacional	Prepaid	Per day	$4	EUR 0.17	50 MB	1 st segment $2.55, second $0.085		$1.27	$2.01		1st segment $0.5962, second $0.0199
Control Ahorro XL	Postpaid	Per month	$300	EUR 12.85	Need to buy a pack	1 st segment $3.84, second $0.188		Need to buy a pack	Need to buy a pack	$1,000	1st segment $0.456, second $0.0152
Prip! Base	Postpaid	Per month	$439.00	EUR 18.80	Need to buy a pack	1 st segment $2.77, second $0.0924		1000 without charge			Unlimited
Prip! Ejecutivo Smart	Postpaid	Per month	$700.00	EUR 29.98	Need to buy a pack	Unlimeted	600 minutes	Unlimited			Unlimited

Powerchip Prepago has 50 MB of Internet per day by a daily payment of € 0.13. The text (€ 0.088) and the multimedia (€ 0.14) messages are more expensive than in the other plans. The same happens for calls and radio calls since the first call segment costs € 0.1759 and the following seconds € 0.006 each, and the first thirty seconds of radio calls cost € 0.0322 and the following second € 0.001 per second. In addition, this plan includes two Nextel numbers to call and text for free.

The national plan agreed with ENACOM gives 50 MB per day for € 0.17 per day. Phone calls are rated at € 0.11 for the first segment and € 0.004 for each following second, radio calls at € 0.0255 per segment and € 0.0008 for each following second, SMS at € 0.054 each and MMS at € 0.086 each one. Besides, there are three Nextel numbers to text for free and three Nextel lines to call without charge.

As regards monthly payments, Nextel firstly offers an alternative that gives around €42.83 for any purpose by paying € 12.85. Any calls made or messages sent reduce the available credit, for example: a phone call that lasted 30 seconds will reduce € 0.164 and a radio call with the same duration will discount € 0.0195. The messages should be bought as a pack.

Moreover, the company has two unlimited radio call plans. Prip! Base plan costs € 18.80 and provides 1000 text messages without charge and unlimited radio calls. Any phone call made will cost € 0.119 for the first segment and the following seconds, € 0.004 each second.

Finally, Prip! Ejecutivo Smart includes unlimited radio calls, unlimited mobile calls to any Nextel line, unlimited SMS and 600 minutes to make phone calls to other companies.

No plan includes free WhatsApp messages like the other companies do offer, as a consequence of the fact that that this feature is not the main element requested by Nextel customers.

10.2 Enterprise promotions.

The company adapts its offers to enterprises depending on its size, needs and the number of lines required. Its customers can ask for advice to choose the option that best meets their requirements. All the alternatives must be hired and are paid on a monthly basis.

11 TIM in Brazil.

TIM has always tried to evolve alongside its individual and corporative customers. For that reason, it works in its network improvement to offer mobile phone, fixed phone and Internet services.

Currently, according to TIM, the company has the widest 4G scope in Brazil that allows high speed Internet since its goal is to connect and take care of each user to allow them to do more ("Conectar e cuidar de cada um para que todos possam fazer mais"). In addition, it is believed that the company was one of the first firms in the Brazilian market to charge just for the calls made and promote new tariff formats.

In 2016, TIM published on its website a Guia de Marca file containing the basic elements to identify the brand anywhere. Firstly, it presents TIM's icon (Figure 11.1), which guarantees immediate and universal identification.

Figure 11-1: TIM's icon (Brazil,2018).

Secondly, it introduces the main logo (Figure 11.2), a combination of its icon, tagline and logotype.

Figure 11-2: TIM's main logo (Brazil, 2018).

TIM has profiles in Facebook, Instagram, Twitter and YouTube. Social media profiles allow the company to be closer to its customers and provide online support or information about TIM plans.

As regards its infrastructure, TIM has improved its equipment and had done new acquisitions in the past years. In 2009, the firm bought Intelig and, in 2011, AES Atimus.

Moreover, between 2017 and 2018, the company plans to invest R$12 billion in expanding the 4G network.

The innovative portfolio of TIM offers mobile and fixed telephony and access to Internet via modem, tablets or smartphones. What is more, TIM has the ideal solution for SMEs under its Soluções Corporativas program, which focuses on providing services that fit the customers' requirements.

As a company whose service reaches the most parts of the Brazilian territory, TIM focuses its course of action around five core values: customer care, business transparency, innovation, responsibility and agility. In line with the transparency pillar, TIM is listed in the São Paulo Stock Exchange and in the New York Stock Exchange.

11.1 TIM Group

In July 2011, TIM Celular celebrated an agreement with Companhia Brasiliana de Energia SA and AES Group in Brazil with the aim to purchase all shares in Electropaulo Telecom Ltda. and 98.3% of AES Communications Rio de Janeiro SA. After that, the companies were renamed TIM Fiber. The acquisition represented a significant expansion of the optic fibre network since it now reaches half a million corporate customers and eight million households, as well as high speed accesses.

By the end of 2009, Intelig became part of TIM Participações. Intelig set up the most modern telecommunication network in Brazil, allowing the company to operate national and international long-distance services, local telecommunications and data services. Moreover, the acquisition was advantageous to TIM since it then used the Intelig network as a complementary one to accelerate the development of its 3G service. In 2015, TIM reached a 70,700-kilometers network.

11.2 Governance structure.

Tim Participações SA is a public held corporation "managed by a Board of Directors, a Statutory Board of Executive Officers, and supervised by a Fiscal Council, which has its duties and responsibilities determined in Brazilian law, in the Company's Bylaws."[24]

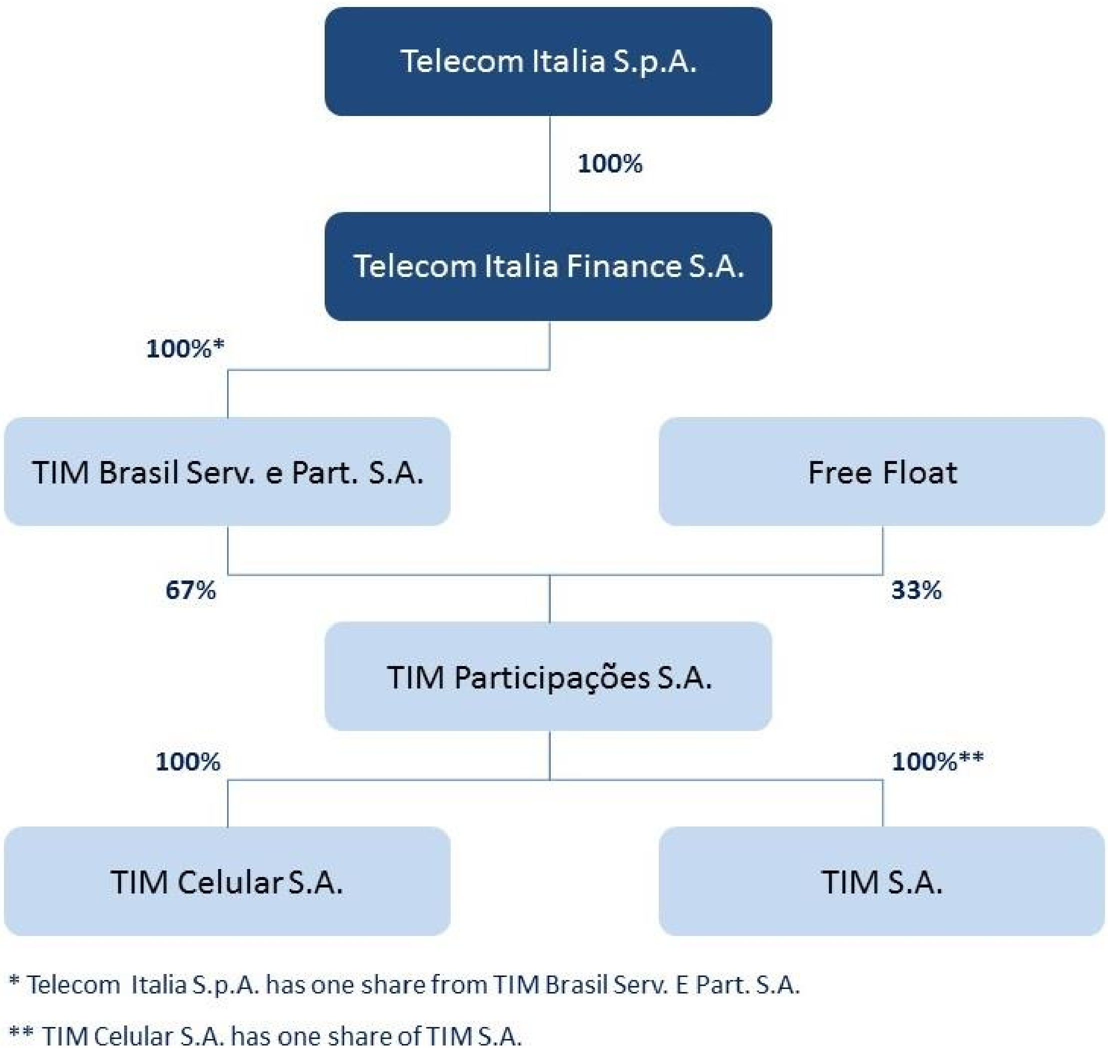
As regards the ownership structure, at the beginning of 2018, TIM Brasil Serviços e Participações S/A had 1,611,969,946 common shares of TIM Participações SA, representing

[24] http://ri.tim.com.br/show.aspx?idCanal=wdNYZkMcJxS0SXpKcHLx5w==&linguagem=en#

the 67% of shares. The remaining 807,194,165 (33%) shares of TIM Participações SA are free float. In addition, TIM has 1,868,368 shares managed by others.

Figure 11.3 summarizes the shareholders' structure of TIM Participações SA, the firm that provides and fulfil the communicative needs of the Brazilian market. The imagen has been retrieved from TIM Brazil website.

Figure 11-3: Tim Participações S.A. shareholders' structure, 2018.



At the top of the breakdown structure there is Telecom Italia S.P.A, which is one of the leaders in the field within Europe. Gruppo Telecom Italia[25] offers the most developed communication services, such as fixed and mobile telephony and Internet for individual and

[25] In South America, the group operates mobile and fixed phone services as TIM Brazil. Besides, TIM is in Argentina as Sparkle managing the central optical fiber backbone that it is integrated in the global Sparkle network. (http://www.telecomitalia.com/tit/it/about-us/geographical-dispersion.html)

corporative customers. Since innovation is the most relevant element for the Italian Group, they invest in it to improve the Internet offers in Europe and Brazil. In 1998, Telecom Italia established in Brazil via TIM Brazil Serviços e Participações S.A., becoming one of the most important mobile firms in the country because it served all the Brazilian states via TIM Participações.

11.3 Plans and promotions.

By the beginning of 2018, a euro equals approximately four Brazilian reals (1 EUR = 4 BRL), so this is the value considered for the calculations. It must be considered, however, that there might be fluctuations in the daily quotation due to the inflation in Brazil.[26]

TIM varies the promotions according to the Brazilian state, for that reason the analysis of plans and promotions is done for Sao Pablo, the most crowded region and where the most number of accesses are requested. The company offers three kinds of service: prepaid, control and postpaid.

Firstly, the prepaid service has four alternatives according to the customers' needs and they are presented in Figure 11.4.

Figure 11-4: Prepaid TIM offers (Brazil, 2018).

Plan name	Type of payment	Tax period	Price (BRL)	Price (€)	Internet	Calls		SMS	Credit	Free Whatsapp
						to TIM	to others			
TIM Pre Smart 150 MB	Prepaid	Per 7 days	$7	EUR 1.75	150 MB	100 minutes		Unlimited	Need to be charged	Yes
TIM Pre Smart 1 GB	Prepaid	Per 7 days	$9.99	EUR 2.50	1 GB	Unlimited	100 minutes	Unlimited	Need to be charged	Yes
TIM Pre Smart 1.5 GB	Prepaid	Per 7 days	$14.99	EUR 3.75	1.5 GB	Unlimited	100 minutes	Unlimited	Need to be charged	Yes
TIM Pre Smart 1.5 GB (30d)	Prepaid	Per 30 days	$34.99	EUR 8.75	1.5 GB	400 minutes		Unlimited	Need to be charged	Yes

All the options include free WhatsApp, like the Argentinian offers, and unlimited SMS. Moreover, credit must be charged before hiring any alternative according to the data quota needed. Calls included in the plans can be made to any DDD, Discagem Direta à Distância[27].

TIM Pre-Smart 150 MB costs € 1.75 per seven days and includes 150 megabytes and 100 minutes to call anybody. TIM Pre-Smart 1 GB costs € 0.75 more than the previous offer

[26] This consideration is used for all the Brazilian firms.

[27] Direct distance dialling is mandatory prefixed to make national calls inside Brazil. The Brazilian numbers have the following structure: 0 + operator code + DDD (city code) + phone number.

and gives one gigabyte to use within seven days, too. Calls among TIM numbers are unlimited, and it provides 100 minutes to call other companies. Besides, the customer can choose any ringtone for free. TIM Pre-Smart 1.5 GB offers that amount of Internet, unlimited calls to any TIM number and 100 minutes to make calls to any firm. This plan also includes free TIM Music, so the user can listen to more than 40 million songs without charge. In addition, TIM has a monthly prepaid plan, TIM Pre-Smart 1.5 GB that costs € 8.75 and gives 1.5 gigabytes of Internet and 400 minutes to call any Brazilian number.

If the quota included in the prepaid plan is not enough, the user can buy 150 MB extra per seven days just by paying € 1.25 or make calls for € 0.37 per minute.

Secondly, it has a control service presented in Figure 11.5. Both plans require a monthly payment that can be automatically discounted from the credit card or by a bill. The former is cheaper and is presented in the image. If the latter payment option is hired, customers must pay a 5 BRL extra.

Figure 11-5: TIM Control plans (Brazil, 2018).

Plan name	Type of payment	Tax period	Price (BRL)	Price (€)	Internet	Calls		SMS	Free Whatsapp
						to TIM	to others		
TIM Controle 3.5 GB	Postpaid	Per month	$54.99	EUR 13.75	3.5 GB	Unlimited		Unlimited	Yes
TIM Controle Light	Postpaid	Per month	$39.99	EUR 10.00	2.5 GB	Unlimited	25 min	$0.99	No

TIM Controle 3.5 GB costs € 13.75 and gives a 3.5 GB Internet quota, unlimited calls, unlimited text and multimedia messages and WhatsApp for free. National roaming is included, which means that if the user receives a non DDD call, they will not be charged for it. In addition, the user of this plan has 30 days of TIM Music for free and can hire the magazine online service (GoRead), which allows them to read more than 80 magazines online without using the Internet included.

TIM Controle Light costs € 10 and gives 2.5 GB, unlimited calls to any TIM number and 25 minutes to call other companies. The SMSs are rated at € 0.2475 each and the plan does not include free WhatsApp like the others do. If the minutes to call other companies end the user can still call by paying € 0.125 per minute.

Extra Internet can be purchased in TIM Controle options. The price of 50 MB per day is € 0.2475 per day and the price of 150 MB per seven days is € 1.25 per week.

Finally, TIM in Brazil offers a postpaid service. This option has five black alternatives and two express alternatives as presented in Figure 11.6. [28]

Figure 11-6: TIM Postpaid plans (Brazil, 2018).

Plan name	Type of payment	Tax period	Price (BRL)	Price (€)	Internet		Calls	SMS	Free WhatsApp	Credit (BRL)
					Any use	Video				
TIM Black 5 + 5	Postpaid	Per month	$109.99	EUR 27.50	5 GB	5 GB	Unlimited	Unlimited	Yes	$0
TIM Black 7 +7	Postpaid	Per month	$99.99	EUR 25.00	7 GB	7 GB	Unlimited	Unlimited	Yes	$0
TIM BlacK 10 + 10	Postpaid	Per month	$139.99	EUR 35.00	10 GB	10 GB	Unlimited	Unlimited	Yes	$0
TIM BlacK 15 + 15	Postpaid	Per month	$179.99	EUR 45.00	15 GB	15 GB	Unlimited	Unlimited	Yes	$0
TIM BlacK 50 + 50	Postpaid	Per month	$249.99	EUR 62.50	50 GB	50 GB	Unlimited	Unlimited	Yes	$0
TIM POS EXPRESS 7	Postpaid	Per month	$99.99	EUR 25.00	7 GB	0 GB	Unlimited	Unlimited	Yes	$25
TIM POS EXPRESS 5	Postpaid	Per month	$84.99	EUR 21.25	5 GB	0 GB	Unlimited	Unlimited	Yes	$25

All TIM Black plans include digital services (such as TIM Músic, Tim Banca Virtual and TIM Protect Backup), national roaming that allows users to answer calls when they are in other Brazilian states without an extra cost, a shared Internet option with other three TIM SIM cards, special discounts to buy new smartphones, unlimited calls and messages and free WhatsApp use. These plans differentiate from the others since they include an Internet quota just for watching videos in Netflix, Look, Cartoon Network and Esporte Interativo Plus platforms and another quota for other purposes. The only requirement is to hire the plan for at least twelve months.

As regards TIM Black costs, the one that offers 5 GB for any use and 5 GB for videos costs € 27.50 and it is more expensive than the one that has 7 GB and 7 GB for € 25 due to a special offer to promote the latter. TIM Black 10 GB + 10 GB, TIM Black 15 GB + 15 GB and TIM Black 50 GB + 50GB are rated at € 35, € 45 and € 62.50 respectively.

TIM Express plans can only be paid with a credit card and do not offer an extra Internet quota for videos but gives the user the equivalent to € 6.25 of credit to hire any service or buy extra Internet. TIM Pós 7 gives seven gigabytes and costs € 25 per month, while TIM Pós 5 provides five gigabytes for a monthly payment of € 21.25.

[28] https://pos.tim.com.br/

11.4 Enterprise promotions.

TIM in Brazil offers its corporative customers an analysis and evaluation of their voice and data networks, an online account that allows the enterprise's manager to gather all type of information regarding its firm, online solutions like remote accesses, IP Usage and dedicated IP and the fastest and secure mobile connections.

Each promotion is designed according to the size of the company and its needs. In addition, TIM helps its corporative customer to switch lines from another company to TIM and provides special benefits such as the Black plans.

11.5 2017 Third Quarter Results.

The latest available information is from 2017 Third Quarter Results, published on TIM's website. The report highlights that TIM has had more than "935 thousand postpaid customers, penetration of 28% over total base" As regards to TIM 4G coverage, it "has expanded to 2401 cities, reaching the 86% of the urban population and 4G users [have] totalled 24.8 million lines." (p.2).

11.5.1 Operating revenues.

Figure 11.7, obtained from the Result file, p. 2, shows the operating of revenues in reals. Mobile service revenues in the third quarter 2017 were 3,706 million BRL and from January to September they reached 11,400 million BRL. The increase from the first nine months of 2016 to the same period in 2017 was 4.8%. Data and content was the most profitable mobile service, while local voice and long-distance voice are decreasing over the years.

Figure 11-7: Operating revenues 3Q17Y (TIM Brasil).

OPERATING REVENUES

DESCRIPTION	3Q17	3Q16	% YoY	2Q17	% QoQ	9M17	9M16	% YoY
R$ million								
Net Revenues	**4,083**	**3,899**	**4.7%**	**3,942**	**3.6%**	**11,977**	**11,574**	**3.5%**
Services Revenues	**3,905**	**3,689**	**5.9%**	**3,750**	**4.1%**	**11,400**	**10,878**	**4.8%**
Mobile Service	**3,706**	**3,503**	**5.8%**	**3,555**	**4.2%**	**10,826**	**10,328**	**4.8%**
Client Genarated	3,401	3,148	8.0%	3,282	3.6%	9,894	9,274	6.7%
Local Voice (Usage & Monthly fee)	898	1,204	-25.4%	890	1.0%	2,859	3,590	-20.4%
Long Distance Voice	251	342	-26.7%	264	-5.0%	806	1,091	-26.1%
Data & Content (VAS)	2,252	1,603	40.5%	2,128	5.8%	6,229	4,593	35.6%
Interconnection	196	254	-22.9%	176	11.3%	600	796	-24.6%
Others	108	100	8.5%	97	12.0%	331	257	29.1%
Fixed Service	**200**	**187**	**7.0%**	**195**	**2.2%**	**574**	**551**	**4.2%**
Product Revenues	**178**	**210**	**-15.3%**	**192**	**-7.4%**	**578**	**696**	**-17.0%**

"Mobile ARPU (Average Revenues Per User) continues in its growth trajectory reaching R$ 20.5, an increase of 11.4% YoY. This ARPU expansion is mainly explained by the improvement in the base mix (mostly postpaid), but also by the individual growth of each segment. Prepaid ARPU has been growing for seven quarters while postpaid ARPU has been expanding for four quarters” (p.3).

11.5.2 Network evolution.

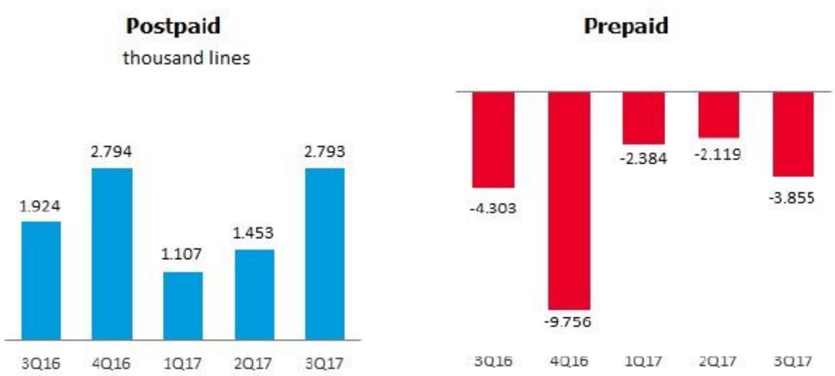
“TIM continues committed to coverage, capacity and availability in 3Q17 and was able to improve all the quality metrics and provide a better customer experience, while maintaining its leadership in 4G-covered cities” (p.11).

It was also obtained from the report, page 11, that TIM in third quarter of 2016 had 9,858 4G sites, while for the same period in 2017 the 4G sites were 17,785. “TIM kept the leadership in the cities covered by 4G tecnhology, […] reaching the 86% of the urban population, an increase of more than 220% in the number of covered cities, compared to 3Q16.” (p.11).

11.5.3 Mobile Market.

The postpaid mobile market increased although, the prepaid one dropped as shown in Figure 11.8, obtained from the 3Q17 results, p. 13.

Figure 11-8: 3Q17 TIM postpaid and prepaid lines (in thousands).



“TIM registered a customer base of 59.4 million active lines in the end of September/17, mainly impacted by prepaid customer base reduction. In 3Q17, TIM’s total net adds were negative at 1.4 million lines, despite strong postpaid additions.” (p. 13).

“The postpaid customer base grew 17.8% YoY, totalling 16.8 million users in 3Q17. […] The main reasons that influenced the base growth are: i) migration from prepaid to postpaid customers (mainly control), ii) number portability and iii) stable disconnection rate. […] The prepaid is still presenting a high negative net adds. In 3Q17, the prepaid disconnected 2.4 million lines.” (p.13).

In addition, the document classified the customer base regarding the technology used. It mentioned that 24.8 million users employed 4G network while “3G totalled 21.6 million users in 3Q17.” (p.13).

Under the assumption that the total number of mobile accesses in the third quarter of 2017 (59,390,000 TIM’s mobile accesses) was the total number of mobile accesses of the company in 2017, it is possible to estimate the TIM market share based on the total mobile accesses in Brazil calculated for the country (chapter 6). Table 11.1 presents the data and the estimation needed and Equation 11.1 shows the calculation.

Table 11-1: Data needed for TIM's market share calculation.

TIM’s mobile accesses (2017)	59,390,000
Brazilian mobile accesses (2017)	301,757,768
TIM’s market share (2017)	19.68%

Equation 11-1: TIM's market share 2017.

$$\widehat{MS_{TIM}}_{17} = \frac{59,390,000}{301,757,768} \times 100 = 19.68\%$$

It is possible to consider that TIM’s 2017 market share is close to the real value since the company’s market share in 2016 was 26%, as it is mentioned in the firm’s website (Figure 11.9). If we consider the values from the third quarter of 2016 to be the total TIM mobile accesses in that year (63,247,000) and the Brazilian mobile accesses to be 244,066,759 as considered in Chapter 6, a value near to 26% is obtained as showed in Equation 11.2.

Equation 11-2: TIM's market share, 2016.

$$\widehat{MS_{TIM}}_{16} = \frac{63,247,000}{244,066,759} \times 100 = 25,91\%$$

Figure 11-9:TIM's market share from 2007 to 2016.

CONSOLIDATED OPERATING DATA

TIM

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Market Share	25.8%	24.2%	23.6%	24.1%	26.5%	26.9%	27.1%	27.0%	25.7%	26.0%

12 Grupo Telefónica in Brazil.

Grupo Telefónica serves the Brazilian telecommunication market as well. It was established in 1998, as mentioned in chapter 4. At the very beginning, the company only offered fixed phone services in Sao Pablo. However, in 2010 Telefónica bought Vivo shares that were owned by Portugal Telecom. In 2012, Telefónica used the brand Vivo throughout the whole territory of Brazil. Telefónica is a worldwide brand and in Brazil its services are provided by Vivo. Vivo, Movistar and O2 are the brands of Telefónica.

Currently, Grupo Telefonica in Brazil has 100 million of accesses considering the Internet, fixed phone and mobile phone ones. What is more, it considers itself as a high quality and innovative firm.

Telefónica is ranked as one of the best companies to work in Brazil since the company cannot achieve its goal without employees who help plan and develop solutions for its customers' requirements.

12.1 Corporate structure.

By the end of 2017, the Spanish group Telefónica owned the 73.7% of Telefónica Brasil S.A., as shown in the first four rows of Figure 12.1. The remaining shares are held by others or kept as treasury ones. The data was provided by the official Brazilian website of the company.

Figure 12-1: Shareholders of Telefónica Brasil.

Shareholders Base

Shareholders of Telefônica Brasil S.A.						
Shareholders	**Common Shares**		**Preferred Shares**		**Total**	
	Quantity	**%**	**Quantity**	**%**	**Quantity**	**%**
Telefónica Latinoamérica Holding, S.L.	46.746.635	8.18%	360.532.578	32.22%	407.279.213	24.09%
Telefónica S/A	198.207.608	34.67%	305.122.195	27.26%	503.329.803	29.77%
SP Telecomunicações Participações Ltda	294.158.155	51.46%	38.537.435	3.44%	332.695.590	19.67%
Telefónica Chile S/A	920.866	0.16%	15.647	0.00%	936.513	0.06%
Other Shareholders	29.320.789	5.13%	415.131.868	37.09%	444.452.657	26.28%
Treasury Shares	2.290.164	0.40%	983	0.00%	2.291.147	0.14%
TOTAL	**571.644.217**	**100.00%**	**1.119.340.706**	**100.00%**	**1.690.984.923**	**100.00%**

12.2 Financial data.

The consolidated financial statement of the company states that in the period from January to September 2017 "Telefónica Brasil once again posted solid revenue and OIBDA growth with margin expansion thanks to its differential assets which place the company as a benchmark operator in terms of quality and customer satisfaction. This positioning was reinforced during the third quarter with the accelerated development of 4G, enabling the company to achieve a population coverage of 76%." (p. 24).

Figure 12-2: Consolidated income statement Telefónica Brasil, 3Q17.

TELEFÓNICA BRASIL
CONSOLIDATED INCOME STATEMENT
Unaudited figures (Euros in millions)

	January - September		% Chg	
	2017	2016	Reported	Organic
Revenues	9,128	8,035	13.6	1.5
Mobile Business	5,563	4,812	15.6	3.6
Mobile service revenues	5,344	4,579	16.7	4.6
Data revenues	3,796	2,572	47.6	32.3
Handset revenues	219	233	(6.0)	(15.8)
Fixed Business	3,565	3,223	10.6	(1.5)
FBB and new services (1)	1,501	1,222	22.8	8.4
Pay TV	408	367	11.0	(0.6)
Voice & access revenues	1,656	1,634	1.4	(9.3)
Internal expenditure capitalized in fixed assets	107	81	31.7	17.9
Operating expenses	(6,047)	(5,473)	10.5	(0.8)
Supplies	(1,723)	(1,656)	4.1	(7.2)
Personnel expenses	(902)	(840)	7.4	(1.3)
Other operating expenses	(3,422)	(2,977)	14.9	2.9
Other net income (expense)	(24)	(22)	9.1	(4.9)
Gain (loss) on sale of fixed assets	(12)	1	c.s.	c.s.
Impairment of goodwill and other assets	11	(2)	c.s.	c.s.
Operating income before D&A (OIBDA)	3,162	2,621	20.6	6.8
OIBDA Margin	*34.6%*	*32.6%*	*2.0 p.p.*	*1.7 p.p.*
CapEx	1,513	1,369	10.6	2.5
Spectrum	-	47	-	-
OpCF (OIBDA-CapEx)	1,649	1,253	31.7	11.1

Figure 12.2 is an extract from Telefónica Brasil consolidated income statement and shows that mobile revenues were higher than the earned by the fixed business in the period from January to September 2017. Mobile revenues peaked at € 5,563 million and included mobile services revenues and handset revenues. Besides, it contributed to 60.94% of the total revenues earned by Telefónica Brasil in the first nine months of 2016.

"Revenues in the third quarter (€ 2,935 M) increased by 1.2% […] with a positive growth in service revenues, despite the regulatory impacts. […] Mobile service revenues (€ 1,713m in July-September) increased by a 3.8% in the quarter […] driven by data revenues (+28.2%)." (p. 24).

12.3 Vivo.

Vivo, as it was mentioned, is the brand that operates the mobile phone market in Brazil. By the end of 2017, Vivo served 2,600 cities with 4G. In this way, it reached 84.5% of the Brazilian population. Besides, the firm offered a high-speed connection since it had added new frequencies to its spectrum.

In Brazil, Vivo is easy to recognize since its logotype and icon are published on its advertisements, promotions, social networks and website. Figure 12.3 presents the distinctive elements and phrase used by the company that are internalized in the Brazilian minds. The image was obtained from Vivo's website, www.vivo.com.br.

Figure 12-3: Logotype and phrase of Vivo (Brazil, 2018).

Nowadays, the firm has presence in Facebook, Twitter, YouTube, Instagram and ForumVivo in order to encourage the interaction between the users and the company. Moreover, the company has developed an exclusive smartphone application that allows its customers to check Vivo's news and contents and customer consumptions.

In Brazil, Vivo offers fixed phone services, Internet services, TV HDTV and mobile phone services. As done throughout the whole Final Work, the analysis of the firm focuses on the mobile service.

12.3.1 Plans and Promotions.

Vivo offers prepaid, control and postpaid plans. Figure 12.1 presents the prepaid and control ones available at the beginning of 2018. It is important to highlight that the company also bases its promotions on the Internet quota. However, Vivo does not provide free WhatsApp service, so the use of the application reduces the amount of Internet available. In addition, the company includes unlimited local calls to any Vivo.

Figure 12-4: Prepaid and Control plans offered by Vivo (Brazil, 2018)

Plan name	Type of payment	Tax period	Price (BRL)	Price (€)	Internet	Calls		SMS		Credit	Extras
						to Vivo	to others	to Vivo	to others		
Vivo Turbo 1.5 GB	Prepaid	Per 7 days	$15	EUR 3.75	1.5 GB	Unlimited	$0.69/ min	Unlimited	$0.10	Need to be charged	NBA + GoRead
Vivo Turbo 800 MB	Prepaid	Per 7 days	$9.99	EUR 2.50	800 MB	Unlimited	$0.69/ min	Unlimited	$0.10	Need to be charged	GoRead
Vivo Turbo 300 MB	Prepaid	Per 7 days	$7.99	EUR 2.00	300 MB	Unlimited	$0.69/ min	Unlimited	$0.10	Need to be charged	No
Vivo Controle 4GB	Postpaid	Per month	$89.99	EUR 22.50	4 GB	Unlimited		Unlimited		For not included consumptions	GoRead + NBA + SYNC+ Kantoo + Vivo Guru
Vivo Controle 3GB	Postpaid	Per month	$59.99	EUR 15.00	3 GB	Unlimited		Unlimited		For not included consumptions	GoRead + NBA + SYNC+ Kantoo
Vivo Controle 2GB	Postpaid	Per month	$49.99	EUR 12.50	2 GB	Unlimited		Unlimited		For not included consumptions	GoRead + NBA + SYNC
Vivo Controle 2 GB (b)	Postpaid	Per month	$42.99	EUR 10.75	2 GB	Unlimited		Unlimited		For not included consumptions	No

Firstly, Vivo Turbo 1.5 GB, Vivo Turbo 800 MB and Vivo Turbo 300 MB are prepaid plans and are automatically renewed every seven days. If the data quota is not enough, the user can renew the promotion before seven days. All of them include unlimited text messages to any Vivo number, while the messages to other companies cost € 0.025 and the calls of the same kind cost € 0.1725. Vivo Turbo 1.5 GB includes 1.5 GB of Internet to be used within a week, costs € 3.50 and allows customers to use GoRead and watch NBA matches. Vivo Turbo 800 MB includes that amount of Internet, costs € 2.50 and has the benefit of GoRead; and Vivo Turbo 300 MB is the plan that has the lowest Internet quota (300 MB) and the most economical prepaid plan since it costs € 2 per week.

Secondly, the company offers four Controle plans that are paid monthly for the included services. If customers want to hire a non-included service or make a non-local call, the user must charge credit in advance. Unlimited local calls and unlimited text messages are included. These plans vary according to the Internet quota and the extra services; for example, Vivo

Controle 4 GB gives four gigabytes of Internet for € 22.50 per month and GoRead, NBA matches, SYNC[29], Kantoo[30] and Vivo Guru[31] accesses for free; Vivo Controle 3 GB includes three gigabytes of Internet, GoRead, NBA matches, SYNC and Kantoo for € 15 per month; and Vivo Controle 2 GB gives that amount of Internet, GoRead, NBA and SYNC for a payment of € 12.50. Finally, Vivo offers Vivo Controle 2 GB (b) for € 10.75 but it does not have the extra benefits.

Thirdly, the company offers postpaid plans. This kind of payment has two alternatives: familía (family) and vocé (you), as shown in Figure 12.5.

Figure 12-5: Postpaid plans of Vivo (Brazil, 2018).

Plan name	Type of payment	Tax period	Price (BRL)	Price (€)	Internet		Calls	SMS	Extra lines
					Any use	Double Play			
Família 50 GB	Postpaid	Per month	$589.99	EUR 147.50	50 GB	50 GB	Unlimited	Unlimited	4
Família 30 GB	Postpaid	Per month	$489.99	EUR 122.50	30 GB	30 GB	Unlimited	Unlimited	3
Família 15 GB	Postpaid	Per month	$389.99	EUR 97.50	15 GB	15 GB	Unlimited	Unlimited	2
Família 10 GB	Postpaid	Per month	$179.99	EUR 45.00	10 GB	10 GB	Unlimited	Unlimited	1
Vocé 8 GB	Postpaid	Per month	$149.99	EUR 37.50	8 GB	0 GB	Unlimited	Unlimited	0
Vocé 5 GB	Postpaid	Per month	$99.99	EUR 25.00	5 GB	0 GB	Unlimited	Unlimited	0

Familiar plans have two Internet quotas, one for any use and the other is named Double Play. Double Play is exclusive for YouTube, Spotify, Vivo Música, Vivo Play and NBA. Since the plan can be shared among family members, the person who hired the service can manage and distribute the Internet.

Moreover, Familía and Vocé plans include 7 days per year to use Internet, send messages and make calls outside Brazil without extra charge and extra hundred minutes per month to make international calls. Besides, the use of Cabify, Easy Taxi, Waze, SYNC, Play Kids, Studio+ and Vivo Educa does not reduce the monthly amount of Internet. Mobile calls, calls to fixed Vivo numbers and SMSs are unlimited.

Familía 50 GB costs € 147.50 and allows five users to benefit for the 50 gigabytes includes, while Familía 30 GB is rated at € 112.5 and the 30 gigabytes can be shared among

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[29] SYNC is a secure cloud storage.

[30] Kantoo is a mobile application used for learning English.

[31] Vivo Guru offers 24 hours of online support.

four lines. However, Vivo provides a less expensive option (€ 97.50) that includes fifteen gigabytes and can be distributed among three lines. The last familiar alternative costs € 45 and provides 10 GB that can be used between two lines.

Finally, if the user is not interested in sharing Internet data, they can hire Vocé plans. By a monthly payment of € 37.5 or € 25, the customer gets eight or five gigabytes, respectively. Users have unlimited calls and messages and the mentioned benefits, too.

12.3.2 Enterprise promotions.

The plans of Vivo depend on the size of the corporation. However, for SMEs and big enterprises, the company offers IT solutions, fixed phone services, twenty-four hours of online support and mobile phone combos. Besides, Open Cloud and Cloud Server can be hired.

12.3.3 Mobile Revenues.

Figure 12.6 is an extract from page 25 of the Consolidated Financial Statements of Telefónica, published on its international website and corresponding to the period from January to September 2017.

Figure 12-6: Telefónica Brasil accesses, 3Q17.

TELEFÓNICA BRASIL ACCESSES *Unaudited figures (thousands)*	2016				2017			
	March	June	September	December	March	June	September	% Chg
Final Clients Accesses	97,283.7	97,121.4	97,276.6	97,204.2	97,331.7	97,679.1	97,732.9	0.5
Fixed telephony accesses (1)	14,945.4	14,742.1	14,629.9	14,338.4	14,242.0	14,167.6	14,007.3	(4.3)
Internet and data accesses	7,294.2	7,321.8	7,397.5	7,383.2	7,439.6	7,537.2	7,554.0	2.1
Broadband	7,229.2	7,263.5	7,325.3	7,311.0	7,369.5	7,468.6	7,485.5	2.2
FTTx/Cable	3,954.5	4,023.2	4,115.4	4,145.8	4,226.8	4,365.9	4,472.2	8.7
Mobile accesses	73,257.4	73,296.1	73,486.9	73,769.8	73,988.8	74,327.1	74,553.6	1.5
Prepay	42,011.5	41,669.4	40,995.6	40,387.2	40,171.5	39,652.1	38,897.4	(5.1)
Contract	31,245.8	31,626.7	32,491.3	33,382.6	33,817.3	34,675.0	35,656.2	9.7
M2M	4,390.0	4,590.3	4,770.4	5,005.1	5,271.5	5,590.8	5,845.3	22.5
Pay TV	1,786.7	1,761.4	1,762.2	1,712.7	1,661.3	1,647.2	1,618.0	(8.2)
Wholesale Accesses	21.0	20.7	18.7	17.9	17.5	17.0	16.9	(9.8)
Total Accesses T. Brasil	97,304.7	97,142.1	97,295.4	97,222.2	97,349.2	97,696.1	97,749.8	0.5

(1) Includes fixed wireless and VoIP accesses.

The previous image shows the accesses that Telefónica had in Brazil. The most relevant information is the one regarding the mobile communications market served by Vivo. According to the extract Vivo managed in September 2017, there were 74,553,600 mobile accesses, of which amount 51.48% were prepaid ones and 49.2% postpaid ones. From September 2016 to the same month in 2017, Vivo increased the total mobile accesses. However, the prepaid accesses decreased.

It is possible to get an estimated market share of Vivo for 2017. In that year, the estimated total mobile accesses in Brazil were 301,757,768 and by assuming that 74,553,600 was the number of total Vivo mobile accesses number. A market share equal to 24.7% is thus obtained.

13 Oi in Brazil.

Oi was the first mover mobile phone firm in Brazil. It offers TV, local voice transmission, long distance calls and it has the most developed WiFi network within Brazil. The company's scope reaches the whole state, serving from the most remotes areas to the main cities of Brazil.

Oi's vision is to offer internal or external customers suitable and efficient solutions, which are aligned with the strategy of the firm. Users and potential customers of the firm easily identify the promotions, plans and advertisement by its logo (Figure 13.1), retrieved from the website of the company.

Figure 13-1: Oi's logo (Brazil, 2018).

13.1 Ownership breakdown.

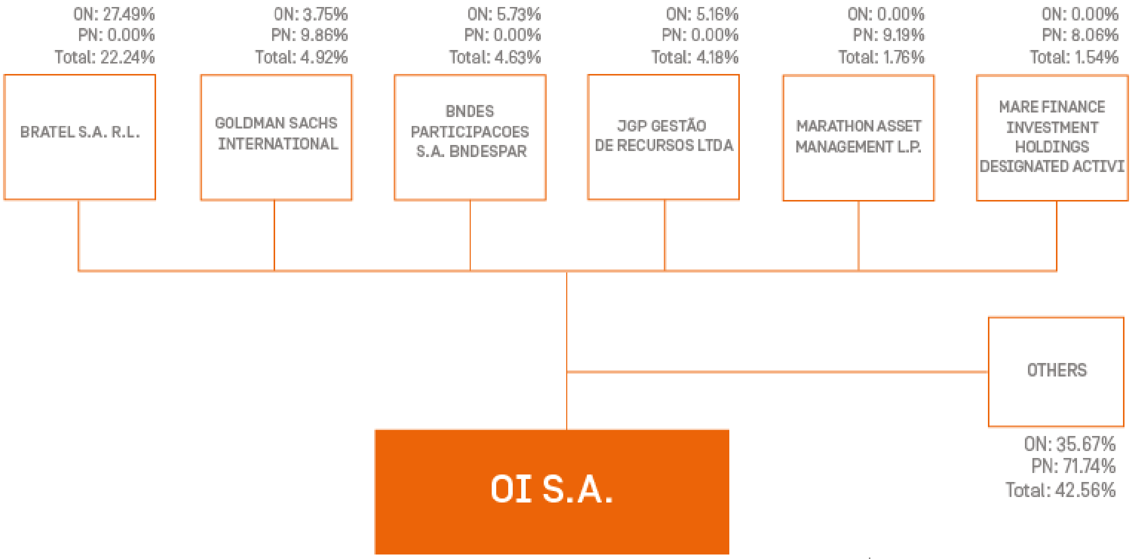


Figure 13-2: Oi's ownership structure (Brazil, 2018).

At the beginning of 2018, Oi S.A. was a public trade company. The major shareholder was BRATEL S.A.R.L, owning 22.24% of the shares, while others had 42.56% as illustrated in Figure 13.2, published on its Oi's website. In sum, the company had 825,760,902 shares of shared capital and the treasury shares reached 150,093,755.

"Oi S.A. […], is a Switched Fixed-line Telephony Services […] operating since July 1998. The company also holds: (i) […] Telmar Norte Leste S.A. (Telmar) […] and (ii) through its indirect subsidiary Oi Móvel S.A. – under judicial reorganization (Oi Móvel) a license to provide mobile telephony services." (p. 29)[32].

13.2 Plans and promotions.

For the analysis of Oi's plans, Sao Pablo state was considered, as done for others Brazilian companies that provide mobile phone services. The firm offers prepaid, control and postpaid plans, too.

Figure 13-3: Prepaid offers of Oi, 2018.

Plan name	Type of payment	Tax period	Price (BRL)	Price (€)	Internet	Calls		SMS		Credit
						to Oi	to others	to Oi	to others	
Pré pra falar	Prepaid	Per 20 days	$20	EUR 5.00	1 GB	400 minutes		600		Need to be charged
Pré para navegar mais	Prepaid	Per 14 days	$20.00	EUR 5.00	2.1 GB	420 minutes		420		Need to be charged
Pré para falar e navegar	Prepaid	Per 10 days	$20.00	EUR 5.00	2.5 GB	Unlimited		500		Need to be charged

As regards its prepaid plans, showed in Figure 13.3, user pays € 5 and can choose the alternative that better fulfils its needs, but neither of them includes WhatsApp for free. Firstly, the customer must charge credit and later hired the plan. Pré pra falar is for those who mainly make calls (400 minutes). In addition, it includes a gigabyte of Internet and 600 SMSs and which last twenty days. Whereas, Pré pra navegar focuses its offer on Internet for 14 days, includes 2.1 GB, 420 minutes and 420 text messages. Lastly, Pré pra falar e navegar increases the data quota (2.5 GB) and has unlimited minutes but decreases the duration of the plan to ten days.

In relation to Control plans, Oi offers four monthly paid options whose price varies with the amount of Internet included. All of them have unlimited calls and messages to Oi's numbers. The most economic alternative costs € 8.73, gives 2.5 gigabytes and the non-included SMSs

[32] Independent auditor's report on the interim financial information. Quartely Financial Infrmation (ITR). 30th September, 2017.

are rated at € 0.30 per minute. This is followed by Controle 4.5 GB which has that amount of Internet and 100 minutes to call other companies for € 9.98.

Figure 13-4: Controle plans (Oi, 2018).

Plan name	Type of payment	Tax period	Price (BRL)	Price (€)	Internet	Calls		SMS
						to Oi	to others	to Oi
Controle 2.5 GB	Postpaid	Per month	$34.90	EUR 8.73	2.5 GB	Unlimited	$0.30 per minute	Unlimited
Controle 4.5 GB	Postpaid	Per month	$39.90	EUR 9.98	4.5 GB	Unlimited	100 minutes	Unlimited
Controle 5 GB	Postpaid	Per month	$54.90	EUR 13.73	5 GB	Unlimited		Unlimited
Controle 6 GB	Postpaid	Per month	$84.90	EUR 21.23	6 GB	Unlimited		Unlimited

Then, Controle 5 GB has unlimited calls for € 13.73. Finally, by paying € 21.23 it is possible to hire a plan that includes 6 gigabytes and unlimited calls. These plans are cheaper than the ones from the other Brazilian companies because they do not include extra benefits.

Postpaid plans allow the user to share Internet and enjoy extra features such as magazines, books and exclusive Oi content. This type of plan has four alternatives as shown in Figure 13.5. All options allow the users to share Internet with other Oi numbers and include unlimited messages and calls.

Figure 13-5: Postpaid plans (Oi, 2018).

Plan name	Type of payment	Tax period	Price (BRL)	Price (€)	Internet	Extra lines	Calls	SMS
Pos 6 GB	Postpaid	Per month	$84.90	EUR 21.23	6 GB	3	Unlimited	Unlimited
Pos 9 GB	Postpaid	Per month	$99.90	EUR 24.98	9 GB	3	Unlimited	Unlimited
Pos 15 GB	Postpaid	Per month	$149.90	EUR 37.48	15 GB	3	Unlimited	Unlimited
Pos 30 GB	Postpaid	Per month	$244.90	EUR 61.23	30 GB	3	Unlimited	Unlimited

The prices depend on the data included; for example, a six gigabytes plan costs € 21.23, nine gigabytes € 24.98, fifteen € 37.48 and thirty € 61.23.

13.3 Promotions for enterprises.

By the end of 2017, Oi reached a million of business customers. These users have unlimited calls to any mobile or fixed telephone and special customer support.

International Roaming, conference call and waiting calls can be hired if required by customer. Special plan options can be designed for them as well.

13.4 Mobile revenues.

Figure 13.6 is an extract from the third quarter of 2017 Oi's earning release (p.8), published on its website.

Figure 13-6: Mobile revenues 3Q17 (Oi).

	3Q17	3Q16	2Q17	YoY	QoQ	9M17	9M16	YoY
Personal Mobility								
Net Revenues (R$ million) [1]	**1.939**	**1.940**	**1.872**	**-0,1%**	**3,6%**	**5.757**	**5.904**	**-2,5%**
Service	1.884	1.897	1.814	-0,7%	3,9%	5.588	5.737	-2,6%
Customer [2]	1.761	1.754	1.713	0,4%	2,8%	5.222	5.266	-0,8%
Network Usage	123	143	100	-13,8%	22,8%	365	471	-22,5%
Sales of handsets, SIM cards and others	55	43	58	27,8%	-6,6%	170	167	1,6%
Revenue Generating Units - ('000) [1]	**39.626**	**44.118**	**39.802**	**-10,2%**	**-0,4%**	**39.626**	**44.118**	**-10,2%**
Prepaid Plans	32.807	37.318	32.963	-12,1%	-0,5%	32.807	37.318	-12,1%
Postpaid Plans [3]	6.820	6.800	6.839	0,3%	-0,3%	6.820	6.800	0,3%

(1) In 4Q16, the Company revised and changed the criteria for segmenting revenues and revenue generating units (RGUs) among the various business units (BUs), as it believes this new breakdown better reflects how the businesses are managed. Historical revenue and RGU figures were adjusted in order to reflect this change. To see the reclassified historical data, please refer to the Additional Information section of this document.
(2) Excludes handset and network usage revenues.
(3) Includes postpaid plans, *Oi Controle*, bundled mobile services and 3G (mini-modem).

"Net revenues from the Persona Mobility […] totalled [1,939 million BRL] in 3Q17.'' (p.8) From 2016 to 2017, mobile service revenues decreased, as well the mobile access. In September 2017, Oi had 39,807,000 mobile accesses: 82.79% were prepaid and 17.21% postpaid.

In order to estimate the Oi's market share, it is necessary to make the same assumptions as the ones made for the other companies, so it is possible to consider 39,807,000 as the total number of mobile accesses in 2017. Oi's market share estimated equals 13.19%.

14 América Móvil in Brazil.

América Móvil is a telecommunications enterprise in Latin America that offers mobile phone services. In Brazil, it operates under their brand: Claro. The main elements, like its logo, are the same as the one for Claro in Argentina. Claro Brazil has presence in Facebook, Twitter, YouTube, Google+, Instagram, Snapchat and LinkedIn.

Briefly, in 2003, Claro was established in Brazil. Later, in 2007 the company launched 3G service in the country and the following year it was expanded to the whole Brazilian territory. In 2014, 4G networks were built to fulfil all the communicative needs for the Football World Cup.

14.1 Plans and promotions.

Claro offers, like the other Brazilian firms, prepaid, postpaid and control options. Claro is also a brand within America, and the control option is only available in Brazil because the firm has to compete with other companies that offer that alternative.

Postpaid plans are shown in Figure 14.1 and give extra benefits such as WhatsApp, Claro Música, Claro Video, Banca Digital Premium and Hero Top for free.

Claro Música and Claro Video allow users to download music and videos, respectively everywhere. Banca Digital has the most popular Brazilian magazines and Hero Top is a security tool and a cloud storage.

Figure 14-1: Claro Brazil postpaid plans, 2018.

Plan name	Type of payment	Tax period	Price (BRL)	Price (€)	Internet	Extra lines	Calls	SMS
Pos 6 GB	Postpaid	Per month	$99.99	EUR 25.00	6 GB	$19.00/line	Unlimited	Unlimited
Pos 8 GB	Postpaid	Per month	$119.99	EUR 30.00	8 GB	$29.99/line	Unlimited	Unlimited
Pos 10 GB	Postpaid	Per month	$149.99	EUR 37.50	10 GB	$29.99/line	Unlimited	Unlimited
Pos 15 GB	Postpaid	Per month	$199.99	EUR 50.00	15 GB	$29.99/line	Unlimited	Unlimited
Pos 30 GB	Postpaid	Per month	$299.99	EUR 75.00	30 GB	$29.99/line	Unlimited	Unlimited
Pos 50 GB	Postpaid	Per month	$399.99	EUR 100.00	50 GB	$29.99/line	Unlimited	Unlimited

All of them include unlimited calls among Brazilian lines and unlimited text messages. A six gigabytes plan costs € 25 and each line added to share Internet costs € 4.75 per month. In the following alternatives, extra lines are rated at € 7.50 per line per month. An 8 GB plans costs € 30, a 10 GB € 37.50, a 15 GB € 50 and a 30 GB € 75. Finally, the most expensive plan rises to € 100 and gives the user 50 gigabytes of Internet.

Figure 14-2: Claro Brazil prepaid plans, 2018.

Plan name	Type of payment	Tax period	Price (BRL)	Price (€)	Internet	Calls		SMS		Free Whatsapp	Extras
						to Claro	to others	to Claro	to others		
Pré Muito Mais	Prepaid	Per 7 days	$9.99	EUR 2.50	2 GB	Unlimited	Unlimited	Unlimited	100	Yes	Claro Música + Claro Video
Pré fala mais	Prepaid	Per 14 days	$9.99	EUR 2.50	0 GB	Unlimited	100 minutes	Unlimited	100	No	Claro Video
Pré muito mais mensal	Prepaid	Per 30 days	$34.99	EUR 8.75	3 GB	Unlimited	300 minutes	Unlimited	300	Yes	Claro Música + Claro Video
Pré fala mais mensal	Prepaid	Per month	$19.99	EUR 5.00	0 GB	Unlimited	200 minutes	Unlimited	200	No	Claro Video

Figure 14.2 summarizes the prepaid plans that Claro offers to its Brazilian customers. All plans provide its users with Claro Video for free. The first option is a weekly one, since it costs € 2.50 and includes a two-gigabytes Internet quota, unlimited calls, unlimited text messages to any Claro's number and WhatsApp for free. Additionally, it provides Claro Música for free.

For the same price, there is another alternative that lasts 14 days and does not include any data quota but has unlimited calls and messages to Claro's numbers and 100 minutes and 100 SMSs to other companies.

Pré muito mais mensal is a monthly option that costs € 8.75 and includes three gigabytes of Internet, unlimited calls and messages to Claro's numbers and 300 minutes and 300 SMSs to other companies. Moreover, Claro Música is for free.

The last prepaid option costs € 5 per month and allows user to made calls and text any Claro line without limit. However, it has 200 minutes and 200 SMSs to other companies and does not include any gigabyte.

As regards its Controle plans (Figure 14.3), it gives its users WhatsApp, Claro Música and Claro Video for free and includes unlimited text messages to any line number and unlimited calls to Claro users. All options are monthly paid. The most economic option is Controle 2 GB since it costs € 9.50 and includes 100 minutes and two gigabytes of Internet.

If the customer wants three gigabytes, it is possible to hire Controle 3 GB by paying €13. Finally, Controle 4 GB includes that amount of Internet and provides online magazines for free.

Figure 14-3: Controle Plans (Claro in Brazil, 2018).

Plan name	Type of payment	Tax period	Price (BRL)	Price (€)	Internet	Calls		SMS	
						to Claro	to others	to Claro	to others
Controle 2 GB	Postpaid	Per month	$37.99	EUR 9.50	2 GB	Unlimited	100 minutes	Unlimited	
Controle 3 GB	Postpaid	Per month	$51.99	EUR 13.00	3 GB	Unlimited		Unlimited	
Controle 4 GB	Postpaid	Per month	$69.99	EUR 17.50	4 GB	Unlimited		Unlimited	

14.2 Promotions for enterprises.

Claro in Brazil offers the same solution as the company does in Argentina. [33]

14.3 Revenues and market share.

América Móvil's third quarter of 2017 financial and operating report also included an analysis of the data for Brazil. The file was the last one published and available on its website and it includes the number of accesses and revenues.

Figure 14-4: Brazil Operating Data (Claro, 2018).

Brazil Operating Data (IFRS)

	3Q17	3Q16	Var.%
Wireless Subscribers (thousands)	**60,398**	**63,519**	**-4.9%**
Postpaid	19,338	17,285	11.9%
Prepaid	41,060	46,233	-11.2%
MOU	**87**	**94**	**-8.0%**
ARPU (BrL)	**15**	**14**	**9.7%**
Churn (%)	**3.6%**	**3.8%**	**(0.2)**
Revenue Generating Units (RGUs) *	**35,962**	**36,983**	**-2.8%**

* Fixed Line, Broadband and Television.

[33] See 9.1.2.

As regards the mobile market, by the end of 2017 Claro had 60,398,000 subscribers in Brazil as shown in Figure 14.4 provided by América Móvil’s website. That number of users, for the company, equals 20.02% of the market in Brazil.

Claro in this country offers a postpaid and a prepaid service. The first one increased by 11.9% from the third quarter of 2016 to the same quarter of 2017, while the second decreased a 11.2% during the same periods. The prepaid accesses equal 67.98% of the total accesses, while the postpaid 32.02%.

15 Nextel in Brazil.

The subsidiary company of NII Holdings, Nextel, offers wireless communicative services such as digital cellphones, wireless internet accesses and radio applications.

In Brazil, the company's mission is to reinvent the ways of communications to join people, enterprises and communities. Nextel is easily recognized in the country since it uses the same logo as the Argentinian one. [34]

Nextel was established in 1997 and has four thousand employees in the country. In Brazil, it also was the first firm to merge the iDEN technology to a mobile device. In addition, in 2014 it launched 3G and 4G services in Rio de Janeiro.

15.1 Financial data.

Based on the information available in the NII Holdings Reports 2017 Third Quarter Results, "Nextel Brazil's average monthly services revenue per subscriber (ARPU) for the third quarter of 2017 was $19, a 10% decrease on the reported basis, and a 12% decrease on a constant currency basis, compared to the same quarter last year."[35]

Moreover, the file provides the total amount of subscribers as shown in Figure 15.1. In 2017, Nextel decreased its number of users to 3,295,500.

Figure 15-1: Nextel total subscriber units (Brazil, 3Q17).

Nextel Brazil	2017	2016
Subscriber units (in thousands)		
iDEN	449.7	962.1
WCDMA	2,845.8	2,746.3
Total subscriber units in commercial service (as of September 30)	3,295.5	3,708.4
iDEN net subscriber losses	(100.3)	(130.8)
WCDMA net subscriber losses	(32.3)	(5.7)
Total net subscriber losses	(132.6)	(136.5)

By making the same previous assumptions, it is possible to estimate that Nextel's market share in 2017 equals 1.09% of the Brazilian market.

[34] See Figure 10.2.

[35] http://phx.corporate-ir.net/phoenix.zhtml?c=137178&p=irol-newsArticle&ID=2315767

15.2 Plans and promotions.

Currently, Nextel Brazil is in a transformation process in which its radio calls are being replaced for 3G or 4G connections since the former technology has extremely high maintenance costs due to the Brazilian extension. For that reason, the company only suggests to hire one plan of the presented in Figure 15.2. If the user does not agree with these promotions, it is possible to request online support to design a plan that better fix the customer's needs.

Figure 15-2: Recommended plans of Nextel Brazil, 2018.

Plan name	Type of payment	Tax period	Price (BRL)	Price (€)	Internet	Calls		SMS	
						to Nextel	to others	to Nextel	to others
8GB	Postpaid	Per month	$99.00	EUR 24.75	8 GB	Unlimited		Unlimited	
Plano familia	Postpaid	Per month	$39.00	EUR 9.75	0 GB	Unlimited Unlimited to family		Unlimited to family members	
Recomendado	Controle	Per 30 days	$69.99	EUR 17.50	4.5 GB	Unlimited		Unlimited	

The recommended alternatives include unlimited calls and messages between Nextel phone numbers. The first option gives the user eight gigabytes of Internet rated at € 24.75. It also includes unlimited communication among any mobile line.

The familiar plan costs € 9.75 per month per line within the familiar group. These lines can talk and text each other without extra costs but making calls or texting others has an extra cost. Besides, it does not include any Internet quota.

Finally, control option means that the user decides the limit of the bill, although the minimum payment is € 17.50, and it gives the user 4.5 GB of Internet and unlimited calls and messages. If the data quota is not enough, the customer pays for the extra data.

16 Conclusion.

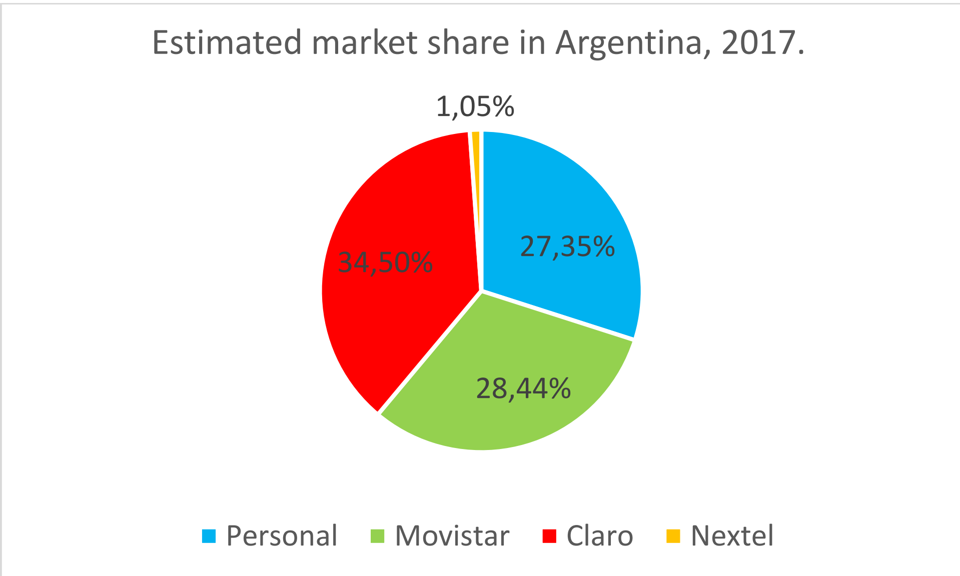
This final fragment describes mobile market in the region in general terms, the pricing strategies and the main differences between mobile market in South America and in Europe.

Firstly, mobile phone services have increased over the years in South America. In the early 2000's there were more fixed accesses than mobile ones. However, this situation was reversed in 2003 when the number of mobile phones rapidly started to gain growth. Moreover, the mobile telephony environment is more competitive than the fixed telephony service because the latter is provided by fewer companies.

In the region, mobile telephone markets are served by few firms operating in various countries. These widely spread companies have a big proportion of the total number of users and leave a small percentage to mobile SME, especially in some Brazilian states. Additionally, the mobile operators have been the same one for the last fifteen years, consequently a limited number of companies entered the market.

After forecasting the total number of mobile accesses in the countries and estimating the market share for each operating company, it is possible to rank the firm depending on its market share. In 2017, the Argentinian mobile phone market was served by three big and well-established brands, one new entrant and one that offers mobile and radio communications, as shown in Figure 16.1.

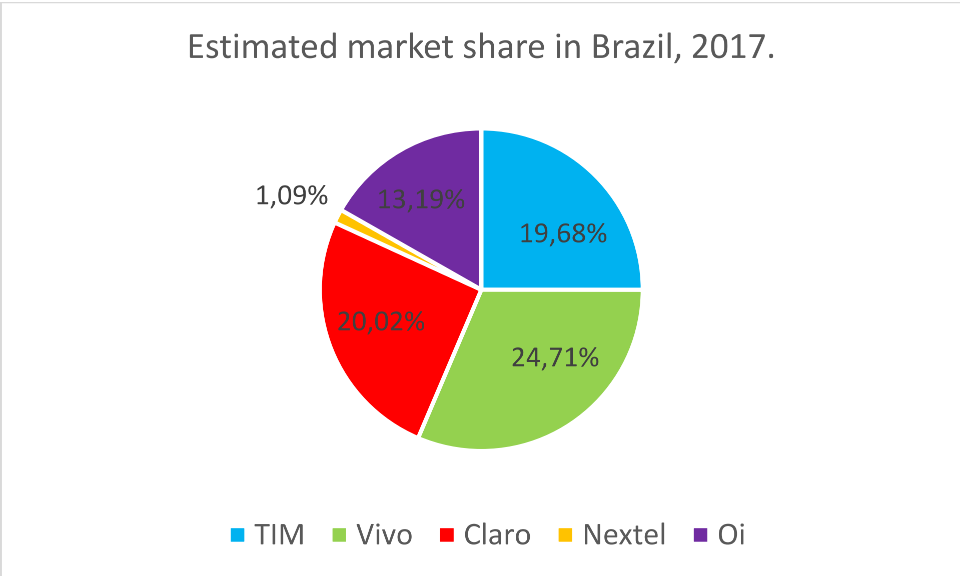
Figure 16-1:Estimated market share in Argentina, 2017.



Approximately, Claro was the company that majorly fulfilled the communicative needs in Argentina, followed by Movistar and Personal. Finally, Nextel had the smallest participation quota. It is important to highlight that 91.34% of the market was managed by these four firms, while the remaining 8.66% corresponds to Tuenti's market share and the estimation error due to the assumptions made.

Similar conclusions can be driven for the Brazilian case by understanding Figure 16.2. The leader firm was Vivo, then Claro and Tim, followed by the local company Oi, and lastly Nextel. These five big firms served the 78.69% of the total mobile market. The remaining 21.31% is covered by new and small firms such as Vodafone, Sercomtel that operates in Paraná state and Algar Telecom in central eastern zone. What is more, the percentage includes an estimation error due to the assumptions and the forecasted data.

Figure 16-2: Estimated market share in Brazil, 2017.



Both countries have an estimation error, but this does not mean that the calculations are wrong since the numbers obtained are used to rank the firms and analyse how the mobile market works in the region, in general terms.

The brands of América Móvil and Telefónica are the ones that serve the most number of users in Argentina and Brazil. In fact, these companies are leaders in other South American countries, too. By the end of 2017, Claro also served Chile, Colombia, Paraguay, Peru and Uruguay, whereas Movistar operated in Chile, Colombia, Ecuador, Peru, Uruguay and Venezuela.

The small number of firms operating in a country and the number of countries in which a firm operates leads to the conclusion that the mobile telephone service tends to an oligopolistic behaviour on the basis of its definition; an oligopoly is "a state of limited competition, in which a market is shared by a small number of producers or sellers."[36] In addition, the entry to the market is limited by the number of licenses and the spectrum available.

Customers wish to have access to the mobile services in any part of the country, for that reason mobile operators should offer its service in an extensive scope. Despite of the firms' will, there are regulations and a limited spectrum available for allocation. Hence, companies should follow a service differentiation strategy, as Nextel does, or imitate other companies' promotions to increase price competition, as done by América Móvil and Telefónica.

The worldwide enterprises operating in the region in fixed and mobile telephony made most customer segments hire big companies because they believe that those corporations are more reliable. This leads to firm acquisition by big enterprises or extinction of the smallest ones. Besides, mobile services were an extra profitable activity for the existing firms in the market.

Big mobile operators, such as América Móvil developed a vertically and horizontally integrated strategy to fulfill the needs and requirements of the customers segments and governments.

Nowadays, it is very difficult to enter to the mobile market in South America because the sum of all the competitive advantages mentioned becomes an entry barrier for new competitors. Moreover, entering the system requires investments since all the small companies have been acquired to use their infrastructure. Advantageously, these sunk costs had already been made by currently operating firms.

Economies of scale and network effects are crucial elements that also help the oligopoly since mobile operators incurred in high costs to reach these benefits. These costs tend to a limited market with a scarce number of firms and many customers. Additionally, any firm aiming to operate in any South American country needs a license and each country decides the quantity from the spectrum to allocate. All the entry barriers lead to the disruption of new entrants and more competitive operators.

Tuenti and Vodafone, the newest firms in Argentina and Brazil respectively, were able to enter the market due to their business models that had been successful in Europe. Its strategies can be easily replicated in America with tactic partnerships and by using the networks from other companies that worked there before.

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[36] https://en.oxforddictionaries.com/definition/oligopoly

In the region there are many regulations, for example Act nº 27078, 'Argentina digital', which tries to respond to the mobile market dynamics and the newest innovative strategies adopted by the operators. The acts provide rights and duties for both users and operators. Nevertheless, authorities cannot follow and pass laws as fast as technological changes take place, consequently the laws are not updated and are not rigorous. Subsequently, the lack of efficient regulation allows mobile companies to manage the market as they wish.

As regards prices, establishing a tariff for mobile services is complex because it includes different costs but the most important is the one for interconnections between networks. At the very beginning, customers used to pay for modernization costs since in the countries there were only fixed networks and mobile networks needed to be developed.

As soon as the service was launched, both users, the calling and the receiving party paid, for the communication. Later, calling party pays (CPP) were used as a pricing strategy for any call made. This way of taxing changed the access to voice communications and defined new criteria to charge the total cost to the user who calls. Moreover, prepaid plans were an alternative for users without large costs. Regulatory agencies, like ANATEL in Brazil or ENACOM in Argentina, focus on unifying the pricing methodologies of all the mobile companies operating in the country aiming to increase market competition.

Number portability is another instrument used to establish the service price since it encourages customers to hire a more advantageous plan without changing its number and its contacts can still contacting the user deprived of difficulties.

The most diverse alternatives like prepaid, postpaid, control plans and WhatsApp for free were determinant to the mobile market growth in the region, as well as the number of accesses. South American mobile subscribes were growing very fast in the last years with the development of 4G in the region.

South America struggles with income inequality and in order to allow every citizen to get in touch with the telecommunications, governments launched national plans such the ones available in Argentina. These promotions are more economical than the companies' plans and includes Internet, calls and messages. Additionally, it gives numbers to contact without charge and makes the service more affordable for all segments.

Mobile firms must struggle with the reduction of the messaging income, this means that consumer replaced SMSs and MMSs for WhatsApp messages. The most requested service was data transmission to make the messaging apps work and firms did not perceive revenues for each online message sent, so they based their offers according the Internet quota and provide the basic functions of WhatsApp for free. Our society, especially young generations, is completely dependent on Internet. Mobile phone operators realized that they can earn money on the basis of the Internet quota, and thus they began to offer different plans concentrated in data transmission. This strategy was replicated in all South American countries and nowadays, most offers include data, unlimited calls and text messages, free accesses to some social networks and international roaming at special prices. What is more, it gives access to special contents by making partnerships with the content supplier and sharing revenues.

Every mobile operator pays value added tax, corporation tax income tax and social security and the firms reflect the taxes in the final prices of the promotion hired. Additionally, the companies pay for the licences of spectrum bands. The taxes reduce firms' returns on investments and increase the final price paid by the user.

In South America, authorities have allocated a lower number of spectrum than in Europe. The market concentration in both continents is different since the vast majority of the firms firstly reached a consolidated position in Europe and later in South America.

The European mobile market is more regulated that the South American one. Furthermore, in the former there are regulations at EU level, while in the latter there are no regional level laws. The European mobile regulations focus on regional issues related to communication needs, prices and projects.

Currently, the European mobile telephony market is saturated and has more competitors who everyday try to innovate to increase its market share. This is one of the reasons why mobile plans are cheaper in the old continent. What is more, in South America customers pay for the developing of 4G network, whereas in Europe it has already been built.

As regards mobile markets, firms struggle with competitors and regulations. In addition, South American markets are not mature at all (depending on the number of licenses in the country). In contrast, the Europeans ones reached a higher level of maturity and higher penetration rates than the southern ones.

The countries of South America need infrastructure development and investments. Large networks should connect the north with the south and the east with the west. Moreover, the networks are old and must be modernized. This means, that mobile operators must afford sunk costs but governmental authorities should encourage the inversions without imposing high taxes that are reflected in the plan prices. In Europe, however, the 4G networks were developed many years ago.

In South America, companies also provide exclusive contents such as music, magazines and loyalty programs for free. This zero-rating proposition is common in the southern part of the globe while in Europe is not as common. Some commercial approaches are: Netflix, Spotify, Claro Video, Claro music and AdBlock.

Overall, based on the historical evolution of telecommunications it is possible to say that within a few years South America transformed an old technological telecommunication system into an advanced one that still need to be developed. The mobile services are very requested in the region and it is possible to expand them. To reach the highest quality in communications it is necessary to invest to improve the infrastructure. Firms operating in the zone can freely fix its prices but they also need to invest to a better connectivity because in South American countries it is estimated that there are more than one mobile phone per person.

Inflation, foreign currency rate and controls to the exchange rate are factors that influence the prices additionally to the taxes.

Mobile operators in the near future will need to reduce its prices in South America because the market will become more mature, and companies are expected to continue providing its services. In addition, the services offered by firms are cannibalized by other services also provided by them, as it is the case of text messages and WhatsApp, so they constantly need to innovate in its plans. Moreover, customers everyday know more about the promotions, and consequently this means a competitive pressure for big firms. Finally, regulations will be passed to control and demand quality service and long network coverage.

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