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# THE BRAZILIAN MOBILE CONTENT VALUE SYSTEM AND THE MOBILE INTERNET

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# 1. Executive Summary

## 1.1 General Context and Problem Definition

One of the fastest growing and important businesses today is Telecommunications. The fact remains that this business is a key input factor in economic growth, it is on the basis structure of all other business helping to maintain their activities fluency, boosting their productivity, efficiency, and expansion. The Insight Research Corporation forecasts global telecommunications spending as a share of global GDP (gross domestic product) to 5.9 percent by 2013, a 23 percent growing rate taking the year of 2006 as basis. Telecommunications have an estimated 2010 worldwide revenues accounting for circa $1.9 trillion and an expected grow of 95 percent by 2015, with an overall CAGR (compound annual growth rate) of 13.8 percent (The Insight Research Corporation, 2010).

Technological changes in the telecommunications sector have led to a deep transformation of the sector (Olla & Patel, 2002). The technological evolution deployed new means of communications through wireless networks with an infinity of new possibilities. As a consequence of this fact, the mobile telephony sector arose as an essential mean of communication. Representing one main vector of Telecommunication business growth, the mobile telephony segment has more than considerable importance. Having its foundations during the 1950's, with the first fully automatic mobile phones, the segment had an impressive growth rate in the last years, reaching nowadays more than 4 billion mobile connections worldwide with an expected growth of 50 percent by 2013 (Mika, 2009). Diffused overall the globe, the mobile telephony market has a worldwide annual new client acquisition of twenty five percent (Mika, 2009), a remarkable number especially on periods of global retraction. In difficult times where Telcos' regional CAPEX (capital expenditure) growth rates are expected to decline, the demand for mobile services in developing countries will support the maintenance of global CAPEX spend.

As a consequence of evolutional factors of the market as the convergence of the internet and mobile phones, there is a global trend for stagnant or even decreasing mobile phones voice revenues, leaving data revenues to fuel the growth of the industry (Cortimiglia et al., 2009). The present trend has also led to the integration of traditionally separated services like voice and data services (Olla & Patel, 2002). The interest in data business is supported by its numbers; Pyramid Research expects that mobile data will account for 29 percent of the global mobile service revenue in 2012, with total global revenue of $300 billion. Olla & Patel (2001) noted the benefits that can be delivered by data transmission not just to end customers, but even on business to business it shows as a great benefit by transforming business processes.

Going deep on the business it's possible to identify main segments such as mobile marketing, mobile digital content, mobile payment, mobile search, and mobile services (Dunnewijk & Hultén, 2007, Kallio et al., 2006). Mobile digital content is considered

by several authors as one of the most promising segments, Holden (2008b) expects that the global mobile content market will be worth $167 billion by 2013.

Keeping in light its attractive business importance, the segment has a value system composed by several players, like Media Companies and Mobile Content Service Providers (Mcsps), which alternate its core activities, featuring a fast evolving business that can specially be seen in emerging countries like the BRICs (acronym for Brazil, Russia, India and China).

The four key emerging countries present the same telecommunications global trends, in fact as in some cases more accentuated issues can be seen in these countries, the BRICs may properly be driving global trends. Their telecommunications industries are expected to drive their continued growth, with telecommunications revenues (in particular mobile data and services revenues) growing even faster than the annual rate of increase in GDP in each country (Juniper Research, 2010). In 2007, the BRICs telecoms markets were worth a combined $256.1 billion, representing an annual increase of 15.7 percent. From 2010 to 2015, while EMEA (Europe, Middle East, Africa) region has the slowest telecommunications expected revenues CAGR at 9.1 percent, LAC (Latin America, Caribbean) region dominated by the fast-growing economies like Brazil has an expected CAGR of 14.1.

Nowadays Brazil shows a technological innovation environment on communications, motivating consolidations that reshape the Brazilian communications market. Galina (2002) affirms that technological innovation motivates behavior changes on consumers, forcing enterprisers to search for a differential competitive position, leading them to adopt appropriate practices to market transformations.

As noted Cormiglia (2009), in 2001 circa 40 MNOs operated in Brazil, presently, there are only seven, four of them having national coverage (Vivo, Claro, TIM and Oi), while the remaining three (Sercomtel, CTBC and Unicel) having only local coverage. After acquiring Brasil Telecom Oi became market leader in total telecom revenue. Intelig was acquired by TIM, who probably intends to rely on the acquired network to improve its mobile data services. On the regulatory field developers are affronting a thorough revision underway of the basic communications law (Lei Geral das Telecomunicações).

Brazil was able to use its internal economy and successful governmental incentives to minimize the recent adverse economic effects (Frost & Sullivan, 2010), reinforcing its position in 2009 as the largest telecommunications market in Latin America, with total telecom revenue of $49.5 billion (Pyramid Research, 2010). In the end of the 3rd trimester of 2009 Brazilian telecommunication services were provided for 225.9 million subscribers representing a 14.3 annual growth, which was driven by mobile phone services that accounted for 73.5 percent of this total (TELEBRASIL, 2010).

The Brazilian mobile penetration on the population is remarkable; on February 2010 there were 176.8 millions of mobile phones in Brazil, what signify a density of 91.87 mobile phones per 100 habitants, representing 16 percent annual growth (TELECO, 2010). In this way Pyramid Research expects that the Brazilian telecommunications

revenue grow will be fueled principally by mobile data services, while competition-driven decline in voice revenue is expected in the short term (Bertelè et al., 2009). Brazilian mobile phone data revenue is expected to rise to $12.7 billion in 2014, from $4.3 billion in 2009, representing a 195 percent growth (Pyramid Research, 2010). On the 4th trimester of 2009 Brazil presented the 3rd world biggest revenue growth with mobile data related to 2008, accounting 39 percent growth (Merrill Lynch, 2010).

Despite the remarkable growth, Brazilian Telcos are already aware about market saturation, and start to look to VAS (value-added services), especially Mobile Content, as strategic competition keys. This trend is highlighted by Frost & Sullivan (2008) which indicates the importance of Mobile Content in Brazil by estimating at 37 percent the number of mobile subscribers that used at least one mobile content service during 2007, while forecasting a 34.9 percent CAGR between 2007 and 2013.

Bertelè et al. (2009) reveals that the supply of Mobile Content services in Brazil is characterized by a remarkably high degree of content quality and numerous value propositions that creatively aim to transform the market's economical and technological limitations into opportunities. This fact is a consequence of the presence of multivariate players in the sector. National and international players are acting in the Brazilian mobile content environment generating extremely potential value systems. On the Brazil Mobile Content market environment around half of the suppliers are Traditional Publisher, like Group Abril (Brazilian-based) and Universal Music Group (USA-based), Web Editors and Pure Players like Buongiorno (Italian-based), CRE8 (New Zealand-based) and IG (Brazilian-based) represent almost the second half of the market followed by Telcos that represent 3 percent of the suppliers. Despite the small participation on the supplier's total amount, Telcos are extremely relevant in terms of service offering, representing around 30 percent of the total offer.

Mobile Content is a new issue in the academic world, as there are few systematic studies about the topic in emerging countries, what precedes the existence of intriguing unresolved questions in diverse fields. In the field of business strategy applied to the mobile digital content industry emerges the unsolved issue about the ideal relationship configuration between players on one interlinked system of value networks and other value configurations. This ideal value system configuration is currently unsolved because of the fast development and the constant changes that occur on the mobile content market. An extremely relevant issue that impacts directly on the value system configuration, as creating new models of business, changing the roles of present mobile content actors and drawing new guidelines for the content offer, is the recent convergence of the mobile content market with the mobile internet.

The world is currently in the center of the fifth major technology cycle of the past fifty years. The previous four years were the mainframe era of the 50s and 60s, the mini-computer era of the 70s and the desktop Internet era of the 80s. The current cycle is the era of the mobile Internet.

The mobile internet is expected to overtake fixed internet in the near future. Morgan Stanley Research foresees that within 2015 the number of worldwide mobile internet

users will overcome desktop internet users, achieving the mark of around 2 billion users. This growth will be mainly guided by developed economies and some intense growing economies like the BRICs. For instance, according to Forrester Research, in Western Europe mobile internet usage will shift on audience among mobile phone users from 13% in 2008 to 39% in 2014. In the USA mobile internet users are expected to more than double by 2014. In Brazil, 2009 last month 10% increase on internet usage was 66%[1] generated by mobile internet access. In the country mobile phone users start to substitute the fixed internet use by the mobile one. According to TNS Research, search web sites are already used by 19% of mobile internet users, while general content related sites are accessed by 18%.

This intense growth of mobile internet usage will be a boom to consumers, and some players are going to capitalize and others will wonder what just happened.

While traditional internet actors are fast moving to the mobile scenario, traditional Telco players are aware with the mobile internet diffusion, because this technology is expressive related to data and not about voice. The average mobile phone usage pattern is 70 percent voice, while the average of recent emerging mobile phone models as iPhone and Android devices is around 45 percent voice. The expansion of smarter phones together with high-speed networks are enabling compelling user experiences that, coupled with all-you-can-eat data plans, are unleashing mobile internet data usage. In some extremely developed mobile phone markets as Japan, operators already focus more in data than in voice. For instance, to the Japanese NTT DoCoMo, data usage accounts for 90 percent of network traffic. Globally, the mobile data traffic is expected to increase by almost 4,000[2] percent by 2014, for a cumulative annual growth rate of more than 100 percent.

This trend presently affects the overall telecommunications industry and therefore impacts directly on the mobile content value system.

Typifying the present Brazilian Mobile Content value systems players relationships are not already well established creating uncertainties about the future, about which players are going to take which positions, the ones who are going to be merged and who is going to be outcast of the value systems.

On the Mobile Content segment which scenario is going to shape the future? In what extend the mobile internet impacts on the mobile content value system? Retail revenues for mobile content will accrue to the content providers? Or mobile content revenues will be generated by operators through portals? Traditional players are in line with the mobile internet and content convergence? Innovative content replaces or complement traditional players' offer? Telcos, Mcsps, Media Companies and Content Providers exchange activities among themselves featuring a fast evolving market with plenty of uncertainty. The uncertainties about the future motivate this study, as it is an important and urgent issue for stakeholders of the Mobile Content sector.

[1] IBOPE, 2010
[2] Morgan Stanley Research, 2010

Few academic studies pointed out expectations about the future of the ideal configuration of the Mobile Content value system. The present value system logic contrasts the value chain logic, as its functions seems be performed simultaneously rather than sequentially. Stabell & Fjeldstad (1998) consider that business value system simultaneous and coproducing nature requires common standards, and to create an ideal configuration it must include competitive and cooperative relationships. Olla & Patel (2001) pointed out the importance of value system product standards allowing members to add value by creating bespoke applications, hardware and handsets. Kothandaraman & Wilson (2001) highlighted that focus has moved beyond individuals firms to value-creating networks formed by key firms through cooperative relationships in the system, with the objective of delivering value to the end customer. Deliver high value to end customers on present Mobile Content market scenario becomes more arduous. Achieve a value proposition[1] with superior relative value means overlap the actual competition arena deploying differential offer embedded in a new model of business.

The competition shifts from the firm-level to the value-system level signaling that operators should revise its models of business. Kuo & Yo (2006) remark the crucial importance of telecommunication operators on the value system; however criticize their actual distribution of profits among other value system players, emphasizing the urgency on its revision. Peppard & Rylander (2006) pointed that Telco operators must explore new revenue sharing models, as those with more favorable models will attract more content creators and thus increase the number of customers ultimately using the network. This consequence would be very positive as the size of the customer base is a critical driver of value networks (Stabell & Fjeldstad, 1998). The increasingly customers demand of Mobile Digital Content do not permits Telco operators to hold their activities alone. They will be forced to cooperate and partner with a range of content and service providers from the large media conglomerates and aggregators to smaller content creators (Peppard & Rylander, 2006), as the competition arise and the maintenance of focus on its core competences gains great importance.

Increasingly, organizations prefer to focus on core competencies and to outsource those activities that may be performed more cost-effectively (or cost-efficiently) elsewhere (Geoff Lancaster, 2000). Olla & Patel (2002) emphasize the importance of an alliance of enterprises each contributing core competencies to create an efficient value system able to meet customers cost, high quality, time and variety demand.

Within the context of discussion is possible to presume that operators are passing through a complex period replete of changes, as foreseen by Olla & Patel (2001): “The biggest challenge for operators will be shifting from a one-service mindset to a portfolio of services, new business models, multiple partnerships and complex relationships”. The impact of the mobile internet on the mobile content value system has to be taken in consideration if operators and other players presume to capitalize the current scenario. Moreover, it is possible to state that these changes are necessary not just for a competitive differential, but for survival of value system players.

[1] See Walters & Lancaster (1999a, b) for *value proposition* and *relative value* definitions.

## 1.2 Objectives

The objective of this thesis is to present a descriptive overview of the Brazilian mobile content business environment, with special focus on the impacts of the mobile internet on the mobile content value system.

## 1.3 Methodology

### 1.3.1 Mobile Digital Content

The research was made from March to June of 2010 focused on the Brazilian Mobile Digital Content market with exploratory and qualitative nature. Richardson et al. (1999) define that qualitative research are most appropriate in describing problems complexities on real contexts, analyze multi variables interactions and comprehend dynamic processes, as in the case of Mobile Content Value System.

The definition of Mobile Digital Content adopted on this study is that of Feijóo et al. (2009): “mobile content refers to the creation-production, distribution-access and consumption-use-interaction of content, be it creative or processed information, on a mobile platform, consisting at least of a mobile device and/or a mobile network”. Consequently, as noted by Cortimiglia et al. (2009), person-to-person messaging services, payment services, marketing and promotion services, customer relationship management services, and mobile commerce for physical products are not included in the definition of mobile content.

The Mobile Digital Content is classified on this study according the methodology adopted by Cortimiglia et al. (2009) that considers the perceived value for the users (or the value proposed by the offerer) instead of the intrinsic content or informational value itself. The following content types are considered:

- Infotainment: includes both information-based and entertainment-based content. Examples of information-based content are news accessible through WAP sites or delivered through text alerts, while examples of entertainment-based content include fulltrack music, videos, both downloaded and streamed, and television broadcasted to mobile phones.
- Communication & Community (C&C): content focusing on or enabling interaction, interactivity and/or collaborative content generation by users, such as chat, mobile communities, social networks and forums.
- Customization: content designed to customize the mobile device in order to make it reflect the user's own personality and lifestyle. Examples of customization content are ringtones, wallpapers and screensavers.
- Betting: content related to gambling, such as lotteries and reverse auctions. The content component of these services is mainly the feedback the user gets when placing the bet or bid, or updates during the course of the game.

- Gaming: content based on or enabling interaction with a gaming application, either embedded or accessed through the wireless connection. Both SMS messaging and downloadable are examples of gaming content.

### 1.3.2 Mobile Commerce and Value System

Since there are recurrent interchangeably uses of the expressions mobile business and mobile commerce, is also important highlight the mobile commerce definition adopted in this research, while mobile business, as defined by Scornavacca et al. (2006) and Barnes & Scornavacca (2007) as an issue focused on the impact of mobility on organizational structures, strategies and processes is outside the scope of this study. As defined by Maitland et al. (2006) mobile commerce is the activity of "buying and selling goods and services through wireless hand-held devices".

To perform the Mobile Commerce enterprises interact with themselves forming interlinked relationships configuring a value system. At this point it is very important identify the differences between definitions of value systems, value networks, value shops and value chains.

Based on Stabell & Fjeldstad (1998) value configuration definitions, this research considers value networks, value shops and value chains as three different value configuration models required to understand and analyze firm-level value creation logic across a broad range of industries and firms.

Porter's work (1985) is the most diffused reference on value chain. Building on Porter's value chain definition, and Thompson's typology of long linked technology[1], Stabell & Fjeldstad (1998) propose that a firm's value chain create value by transforming inputs into products, being the product the medium for transferring value between the firm and its customers. In this way, value chain strategic position for competitive advantage focus on product, market and business value system scope. Examples of firms relying on value chain configuration are manufacturing companies.

Value shops are firms that rely on an intensive technology focused on solve a customer or client problem. Therefore, while the value chain perform a fixed set of activities that enables it to produce a standard product in large quantities, the shop schedules activities and applies resources in a fashion that is dimensioned and appropriate to the needs of the client's problems (Stabell & Fjeldstad, 1998). Therefore a key issue for value shop's strategic position is the degree of incorporation of the problem object, as it is a tool for reducing uncertainty, to increase communication between specialists and a means for efficient and effective post implementation evaluation. Examples of firms configured as value shops are Hospitals and Engineering firms.

Stabell & Fjeldstad (1998) propose that value networks are firms that rely on a mediating technology to link clients or customers who are or wish to be interdependent. Therefore, the value of a communication service depends on whom it enables the

[1] See Thompson (1967) for typologies of *long-linked*, *intensive* and *mediating* technologies.

customer to communicate with. As a consequence, size and composition of the customer base are the critical drivers of value in the value network. As a consequence of the high competitive scenario existent on value networks environment, value networks should address the value system scope as strategic positioning for competitive advantage. Examples of firms that can be considered as value networks are telecommunications companies and retail banks.

The definition of value system proposed on this study considers that a value system is an interlinked group of players with same or different value configurations pursuing the objective of deliver the higher value to the end customer. In a mediation industry like telecommunications, the business value system is potentially a set of coproducing, layered and interconnected players that enhance the range and reach of the services provided. As exemplified by Stabell & Fjeldstad (1998), network operators deliver the infrastructure for service providers, who in turn serve as the communication infrastructure for payment services. Exchange relationships offered by a mediation service can also extend beyond its immediate customers to customers of other mediation service providers. These possibilities give rise to a structure of interconnected mediation value systems.

### 1.3.3 Cases

The study comprises cases regarding representative players of the mobile content Brazilian sector. Firstly, each player was analyzed using as support previous cases, corporate web sites and newsletters' information. Secondly, interviews took place aiming to cover fundamental issues regarding the impacts of the mobile internet in the mobile content value system. The interviews were digitally recorded to permit precise analysis on the received information and content. They were made based on the following analysis scheme:

- Company's core competencies
- Company's strategy
- Target market
- Position on the mobile content value system
- Clients and suppliers
- Business model
- Offer (platforms and variety)
- Mobile internet influence on innovative mobile content offer
- Competitors (direct, indirect and potential)
- Future perspectives for the mobile content market

The study cases were reported based on the following scheme:

- Company profile
- Value system relationships and mobile content offer
- Business model
- Value system trends and mobile content & internet perspectives

### 1.4 Delimitations

The research is focused in the overall Brazilian mobile content market regarding the mobile content offer described antecedently. Traditional value system players considered on the thesis scope were Traditional Publishers, Web Editors, Pure Players and Telcos, which are going to be latterly described. Moreover, new entrants were identified along the research. The study took place from April to July 2010.

### 1.5 Barriers

Brazil is the most stable and representative economy in Latin America and plays an important role on the global mobile digital content market. However, barriers appear causing inertia on the development of the market. The Principal barriers related to market structural characteristics are: lagging technological infra-structure, the prevalence of rather low-performance devices, a low average ARPU, pricing policy for Micro-browsing and tax and regulatory policies.

The lagging technological infra-structure of Telcos and other players is behind of high failure rates in content billing and delivery. This issue discourages the entrance of new players, impoverishing the Mobile Content offer. Moreover it difficult the maintenance of the present players on the market, and complicates the relationships among them. As noticed by Bertelè et al. (2009) there are two principal issues that should be resolved in the short term through more massive investments in the local technological infrastructure: the inefficiency of Message Terminated (MT) premium charging platforms and the technological limitations of the micro-browsing channel. Resolve this technological issue will certainly generate a positive outcome for all players in the value system.

The prevalence of rather low-performance device holds back the development of richer Mobile Content offering. Content Providers are constrained to produce appropriate less rich content causing inertia on market evolution. More affordable high-performance devices combined with accessible subscription plans should be addressed for the improvement of the market offering.

Regarding the development of the mobile internet, a critical barrier is the low diffusion of 3G technology through mobile phones, which is a key driver for its proliferation. In addition, the internet transmission capacity should be improved to motivate the mobile internet use.

The low average ARPU constrain the evolution of Mobile Digital Content offering, as players of the value system reduce their offer adapting it to consumers spends. Players could address this issue through advertisement of subscription plans and attractive Mobile Digital Content through new marketplaces.

Pricing policies for Micro-browsing should be revised to permit fostering of the market growth. The issue arises as a consequence of two aspects: high consumer prices for data transmission and confusing charging schemes. The combined aspects certainly inhibit the consumers' acquisition of Mobile Content. As an example there is the data transmission cost for downloading content, Bertelè et al. (2009) highlighted the essentiality of this issue for the fruition of more multimedia-rich services, like downloadable Customization and Infointainment, so far rather constrained by exaggerated costs of download, which in some cases may even double the final price of the service. Telcos revision of the present pricing policies would enlarge the customer base and extend Mobile Content offer.

The Brazilian Mobile tax and regulatory fields present relevant gaps when compared to other global economies. Brazilian taxes are complex and strict; they affect sector revenues and generate disagreements between value system players. As noticed by Cortimiglia et al. (2009), and highlighted by MoWA in one interview conceded for the present study, some taxes are collected at each level of the value network, resulting in multiple taxation for the same transaction. Many players interviewed for this study highlighted Brazilian tax issue as an expressive barrier for mobile content market evolution. On the present regulatory field players are exposed to opportunistic behaviors and customers are not immune to many threats. This situation holds back market growing and prohibits entrance of new players, as an example Brazilian telecommunications regulatory agency had not yet established formal rules for Mobile Virtual Networks Operators (MVNO) register and operation. As highlighted in by Movile in one interview conceded for the present study, "the Brazilian regulatory field is discrepant; it does not follow mobile content market dynamic".

In addition it is important to mention the current Brazilian share agreements between Telcos and other value system players that are constraining the mobile content market evolution. Telcos' share agreements unviable a variety of new investments in the mobile content market. According to the testimonials comprised in this study, Telcos receive a minimum of around 50% of mobile content revenues share, what unviable the creation and launch of new mobile content. Buongiorno considers that "Telco agreements are constraining mobile content value creation". Moreover, as pointed out by MoWA "Telco operators do not divide the risks comprised in the commercialization of a new mobile content", fact that difficult the present mobile content value system activities, as the market is composed by many small companies that do not have capacity to support high risks.

In order to make the local Mobile Content market in a correct way it is necessary to establish more affordable and clear rules in the matter of taxes, as well as create solid regulatory base (Bertelè et al., 2009).

## 1.6 Results

The present work indicated new trends in the Brazilian mobile content market. The convergence of the mobile internet with the mobile content is a reality.

Despite the majority of Brazilian mobile phone users do not access the mobile internet, the study identified that mobile internet compatible phones are increasing as a share of the Brazilian mobile phone market. As a consequence, it was possible to find that innovative internet based mobile content start to appear in the country announcing the expansion of the mobile content market.

The mobile content offer expansion is generated by traditional value system players and new entrants that were identified along the research. It was possible to affirm that Telco operators' monopoly start to disband, as some players were indentified bypassing this category of player. New relationships between players generated by emerging business models were found.

Finally the study proposes critical issues to be addressed by traditional and emerging value system players aiming to capitalize in the new opportunities that currently emerge.

The present study served as basis to the article "The Brazilian Mobile Content Market: A Value System Interpretation" published by the author in the 2010's ENEGEP International Congress.

# 2. General Country and Market Overview

## 2.1 Introduction

Brazil is situated on the central-oriental part of South America, occupies an area of approximately eight and half millions km² being the largest country in South America and the 5th largest in the world. Its extensive borders, with twenty three thousand km, neighbors all South American countries unless Chile and Ecuador.[1]

Figure 1 - South American Political Map


Source: Rice University

Having the second largest population in America, estimated in hundred ninety millions habitants[2], and a stable and fast-growing economy occupying the 8th position[3] in 2009 ranking of largest economies Brazil is a country full of potentials. As expected by Goldman Sachs[4] Brazil will achieve a GDP of US$ 11,3 trillion in 2050 becoming the 4th largest world economy.

The nation occupies leading positions on global markets, as in petroleum, mining and agricultural sectors.

[1] IBGE - *Instituto Brasileiro de Geografia e Estatística,* Brazilian Geography and Statistics Institute
[2] IBGE
[3] IMF - International Monetary Fund, 2010, *World Economic Outlook Database.*
[4] Goldman Sachs, 2007, *Global Economics.*

On petroleum sector Petrobrás, the Brazilian oil company, overcomes traditional leading firms, achieving on January 2010 an outstanding performance on global rankings, as 4th biggest[1] energy company on market capitalization in the world.

Brazilian mining sector is not behind represented by Vale, mining International Brazilian-based Corporation producer of a variety of ore, as iron ore, pellets and nickel. The company is the world's largest iron ore miner, and after the 2006 acquisition of the Canadian miner Inco, Vale became the world's second biggest mining company[2].

With plenty of rich soil and vast land extensions, Brazilian agricultural production is one of the largest worldwide, keeping Brazil as the 3rd largest agricultural exporter of the world[3]. The country is among the leading nations on production of a vast variety of cultivars, as coffee, sugarcane and soya beans.

Despite having an extremely commodity focused economy, Brazil also presents a strong industrial base, with representative industries like Embraer occupying the 3rd place[4] as largest aircraft manufacturer company worldwide, as well as developed commerce and service sectors, featuring a fast growing emerging country.

The overall picture of demographic, social and economic Brazilian situation is presented on the following table.

Table 1 - Brazilian General Facts

| Federative Republic of Brazil | |
|---|---|
| Population (2009) | 192.8 Million habitants |
| Population growth rate (2009) | 1.2 % |
| Area | 8.5 Million Km² |
| Population density | 22.7 hab/km² |
| Capital | Brasilia |
| Largest cities by population (2009) | São Paulo 11.0 Million habitants<br>Rio de Janeiro 6.2 Million habitants<br>Salvador 3.0 Million habitants |
| Languages | Official: Portuguese; no regional dialects |
| Time | Official: UTC-3 (Brasilia and main cities);<br>DST: UTC-4 / UTC-2 |
| Life expectancy | 72.0 years |
| Literacy | 88.6 % |
| Currency | Real (R$, BRL) |
| Average annual currency exchange rate (2009) | 1,99 R$ / US$ |
| GDP nominal (2009) | US$ 1.57 trillion |

[1] PCF Energy, 2010, *PCF Energy 50.*
[2] BBC News, 2006
[3] WTO - World Trade Organization, 2010
[4] Reuters News, 2010

| | |
|---|---|
| GDP real growth rate (2009) | -0.2 % |
| GDP nominal per capita (2009) | US$ 8,220 |
| GDP per capita growth (2009) | -1.2% |
| PPP GDP (2009) | US$ 2.01 trillion |
| PPP GDP per capita (2009) | US$ 10,513 |
| Inflation (2009) | 4.9 % |
| HDI index (2007) | 0.813 |
| Labor force (2009) | 95.21 million |
| Unemployment rate (2009) | 7.4 % |
| Gini (2009) | 49.3 |

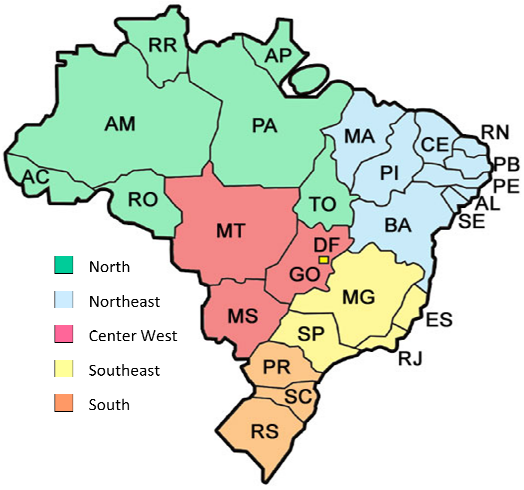
Sources: CIA, IBGE, IPEA, UNDP and IMF.[1]

## 2.2 Government and Politics

The Brazilian Federation is the union of three distinct political entities: the Federal District, the States and the Municipalities. The country comprises 5.564[2] municipalities, which are grouped in twenty six states and one Federal District. States have autonomous administrations, collect their own taxes and receive a share of taxes collected by the Federal government. Brazilian states and Federal District can be grouped in five macro-regions: North, Northeast, Center West, Southeast and South. The Brazilian regions are merely geographical, not political or administrative divisions, and they do not have any specific form of government, they are useful for statistical purposes. The following illustration describes the Brazilian political map.

[1] CIA - Central Intelligence Agency, 2010, *The 2010 World Factbook*;
IBGE - *Instituto Brasileiro de Geografia e Estatística,* Brazilian Geography and Statistics Institute;
IPEA - Instituto de Pesquisa Econômica Aplicada, Applied Economics Research Institute;
UNDP - United Nations Development Programme;
IMF - International Monetary Fund, 2010, *World Economic Outlook Database.*
[2] IBGE - *Brazil em Síntese*

Figure 2 - Brazilian Political Map




The tripartite power of government, defined as Executive, Legislative and Judiciary, is formally established by the constitution. While the Executive and Legislative are organized independently in all spheres of government, the Judiciary is organized only at the federal and state/Federal District spheres.

The Executive power is represented by the president of the republic, who is both chief of the State and head of the government, and his vice-president. They are elected, as a couple, by popular vote for a four-year term, with the option to candidate themselves for a single reelection term. The president has also the power to appoint its cabinet of ministers.

On the political field, Brazil has several parties, four of them stands out: Workers' Party (PT), Brazilian Social Democracy Party (PSDB), Brazilian Democratic Movement Party (PMDB), and Democrats (DEM).

The actual president, Luiz Inácio Lula da Silva (Lula), thirty fifty Brazilian President, belongs to left-wing Worker's party, which he is a founding member.

In 2002, Brazilian political elections agitate the national political context. Despite the economical development introduced by the prior government, persisting problems continued threatening Brazilian social and economical development, as the unemployment rate, states debit and the income distribution. This arena permitted Lula to diffuse his political plans that would change Brazilian political path, culminating with his victory on the second round of the 2002 election, held on 27 October, on which Lula defeats the Brazilian Social Democracy Party (PSDB) candidate José Serra.

The international society was worried with Brazilian 2002 new government, it was the first time in history that a left-wing president would command nation reins.

In the 2002 campaign, Lula forswore his platform plank of linking the payment of Brazil's foreign debt to a prior thorough audit. This had worried economists, businessmen and banks, who feared that even a partial Brazilian default along with the existing Argentine default would have a massive ripple effect through the world economy. However, his government achieved a satisfactory primary budget surplus in

the first two years, as required by the IMF agreement, exceeding the target for the third year. In late 2005, the government paid off its debt to the IMF in full, two years ahead of schedule. Lula had slowly but firmly gained the market's confidence and sovereign risk indexes fell to around 250 points.

During his first term as president, he was able to obtain the middle classes support by softening his party's radical approach to politics and economy. He also managed to receive plentiful support from the working classes through the implementation of widespread welfare programs aimed at the poorest classes.

Lula put welfare programs at the top of his agenda during the campaign and since being elected. Lula's leading program since very early on has been a campaign to eradicate hunger, he expanded early projects within the new Fome Zero, program that brings together a series of programs with the goal to end hunger in Brazil. This program has a government budget and accepts donations from the private sector and international organizations. Despite Lula's big effort to promote Fome Zero, the program was not considered as a success, it was not implemented satisfactory. On the other hand, Brazil's largest assistance program Bolsa Família, which was conditional on school attendance, has been praised internationally for its achievements. Both Bolsa Família and Fome Zero were maintained through Lula's second term.

Lula won his second term in 2006 with promises of maintaining social focused programs and with new implementations proposals on the economic development field. Not long after the start of his second term, Lula, alongside his cabinet, announced the new Growth Acceleration Program (PAC), an investment program to solve many of the problems that prevent the Brazilian economy from expanding more rapidly. The measures include investment in the creation and repair of roads and railways, simplification and reduction of taxation, and modernization on the country's energy production to avoid further shortages. In this way, Lula's government was marked with public investments growth, but despite this fact, public investments still scarce considering Brazilian federation necessities. Even affronting persisting problems as the high percentage of the population living below the line of poverty, the economic inequality and the regional differences in wealth and welfare, Brazil grows on international prestige and figures as one of the economies with remarkable influence for the future scenario. Together with this trend, Lula's reputation grew on the international community, being appointed by many worldwide recognized entities as one of the most influent leaders on the globe.

On the Legislative field, the power is represented by the bicameral National Congress, composed by the Federal Senate and the Chamber of Deputies. Fifteen political parties are represented in Congress. The actual president's party does not have the majority in the Congress, thus, Government is formed by a broad political alliance based on the continuity of the previous government's economic policies, which were aimed at economic stabilization and inflation control. In 2005 and 2006, the resolution of a long political crisis associated to corruption claims in the National Congress

demonstrated the strength of the federal institutions and the country's commitment to democracy.

The Judiciary power is represented by the Supreme Federal Tribunal (with its ministers appointed by the president and confirmed by the Senate), the Higher Tribunal of Justice, Regional Federal Tribunals (at State level) and specific tribunals for election, military and labor issues. Generally, Brazilian Judiciary entities exercise two main roles: the jurisdictional function and the control of constitutionality. The jurisdictional function is the obligation and prerogative in composing conflicts of interest on concrete facts through norm applications. The later is a method to prevent legislative and administrative acts to be against federal constitutions rules and principles.

### 2.3 Economy

Brazil has a stable and fast-growing economy occupying the 8th position[1] in 2009 IMF's ranking of world largest economies. The country is characterized by large and well-developed agricultural, mining, manufacturing, and service sectors, keeping the position of largest South American market with remarkable position in world markets.

Since Lula's first term presidency, Brazil has steadily improved macroeconomic stability, building up foreign reserves, adhering to an inflation target, reducing its debt profile and committing to fiscal responsibility. By mid 2008, Brazil awarded investment grade status to its debt by two renowned ratings agencies: Fitch Ratings[2] and Standard & Poor's[3], as a consequence of becoming a net external creditor. Both agencies define Brazilian foreign long term credit rating as BBB- and stable.

Despite Brazil experienced two quarters of recession on September 2008, it was one of the first emerging markets to begin a recovery. Consumer and investor confidence revived after this recession period and GDP growth returned to positive in the second quarter, 2009. The Brazilian Central Bank expects growth of 5% for 2010[4] and, as expected by Goldman Sachs[5], Brazil will achieve a GDP of US$ 11,3 trillion in 2050 becoming the 4th largest world economy. The following table presents the diversified pattern of Brazilian GDP for the year 2009.

Table 2 - Brazilian GDP Composed by Sector

| Sector | Participation on GDP (%) |
|---|---|
| Agriculture | 6.5 |
| Industry | 25.8 |
| Services | 67.7 |

Source: CIA, 2009, *Factbook*

[1] IMF - International Monetary Fund, 2010, *World Economic Outlook Database.*
[2] Fitch Ratings, 2010, *Sovereigns Ratings*.
[3] Standard & Poor's, 2010, *Sovereigns Ratings*.
[4] CIA - Central Intelligence Agency, 2010, *The 2010 World Factbook*;
[5] Goldman Sachs, 2007, *Global Economics.*

Brazil is aligned to developed economies, as its Services sector is bigger than Industry sector, which is superior to agricultural one. On sequence is presented 2009 GDP composition for some developed economies.

Table 3 - USA, Italy and Australia GDP Composed by Sector

| Sector | Participation on GDP (%) | | |
|---|---|---|---|
| | USA | Italy | Australia |
| Agriculture | 1.2 | 2.1 | 3.8 |
| Industry | 21.9 | 25 | 24.9 |
| Services | 76.9 | 72.9 | 71.3 |

Source: CIA, 2009, *Factbook*

On international trade environment, Brazilian exports amounted US$ 158.9 billion in 2009, while its imports amounted US$ 136 billion, featuring a surplus balance of trade.[1] Brazilian main export partners are the USA, Argentina and China, which ones mainly import transport equipments, iron ore, soybeans, footwear, coffee and autos. Considering Brazilian imports, main partners are the same of exports ones, and main imported products are machinery, electrical and transport equipment, chemical products, oil, automotive parts and electronics.

Regarding the energy sector, as Brazil occupies the 8th position on the rank of largest world economies, large energy availability is fundamental to maintain national economy on continuing growth.

On the electrical energy sector, Brazil 2007 production amounted 438 billion kwh, occupying the 11th position as larger producer in comparison to the world. In addition to the energy produced, were imported 42 billion kwh. Its consumptions amounted 404 billion kwh while exports amounted for 2 billion kwh.

As mentioned before, Brazil occupies relevant position on the oil sector having one of largest oil reserves worldwide. As noted by CIA, Brazilian 2008 oil production amounted 2,4 million barrels/day and importations amounted 632 thousand barrels/day. The country exported 570 thousand barrels/day and consumed 2.5 million barrels/day.

On natural gas field, Brazil produced 12.6 billion cubic meters, imported 11 billion cubic meters, consuming al the resultant amount, consequently the country did not effectuate exports of natural gas.

Despite the recognized recent improvement of Brazilian economy, it can be observed that in the last years Brazilian economical growth usually had been slowest than other comparable emerging markets as Russia, India and China. The following table presents a temporal comparison of BRICs emerging economies' GDP growth.

[1] CIA - Central Intelligence Agency, 2010, *The 2010 World Factbook*

Table 4 - BRICs GDP Real Growth

| Year | GDP Real Growth (%) | | | |
|---|---|---|---|---|
| | Brazil | Russia | India | China |
| 2009 | -0.2 | -7.9 | 6.5 | 8.7 |
| 2008 | 5.1 | 5.6 | 7.4 | 9.0 |
| 2007 | 6.1 | 8.1 | 9.0 | 13 |

Source: CIA, 2009, *Factbook*

As Brazil arises as a global economy, foreign investors find on the country a secure and attractive financial port. Afterwards foreign direct investments (FDI) records in 2007 and 2008, Brazil credit rating was elevated from speculative grade to investment grade. This fact was preponderant on supporting Brazilian economy in the onset of the 2008 global financial crisis. Despite the 28.3 percent fall in 2009 FDI, Brazilian FDI reduction was smallest than the average fall of Latin America and Caribbean (LAC) countries' FDI, making Brazil as the biggest 2009 LAC recipient for investments from abroad[1].

Table 5 - Representative LAC Contries' FDI

| Country | 2008 – 2009 FDI Growth (%) | 2009 FDI (US$ Millions) | Participation on LAC FDI (%) |
|---|---|---|---|
| Brazil | - 28.3 | 31,475 | 38.3 |
| Argentina | - 49.6 | 4,894 | 5.9 |
| Mexico | - 50.7 | 11,417 | 13.9 |
| Chile | - 16.3 | 12,702 | 15.4 |
| LAC | - 41.8 | 82,208 | 100 |

Source: Brazilian Central Bank, ECLAC

The following table shows the evolution of the amount invested in Brazil by the top ten investor countries in the last five years.

Table 6 - Top ten Brazilian Foreign Investors

| Rank | Country | FDI (US$ Millions) | | | | |
|---|---|---|---|---|---|---|
| | | 2005 | 2006 | 2007 | 2008 | 2009 |
| 1 | USA | 4,644.16 | 4,433.68 | 6,039.19 | 6,917.95 | 4,453.02 |
| 2 | Netherland | 3,207.92 | 3,494.94 | 8,116.13 | 4,623.68 | 6,382.69 |
| 3 | Spain | 1,220.43 | 1,513.74 | 2,163.52 | 3,787.47 | 3,405.14 |
| 4 | Luxembourg | 139.10 | 745.09 | 2,855.30 | 5,937.32 | 590.06 |
| 5 | France | 1,458.41 | 744.59 | 1,214.40 | 2,856.13 | 2,415.30 |
| 6 | Japan | 779.08 | 647.52 | 464.63 | 4,098.78 | 1,910.80 |
| 7 | Germany | 1,269.32 | 848.27 | 1,756.78 | 1,036.57 | 2,467.56 |

[1] Economic Commission for Latin America and the Caribbean (ECLAC) , 2009, *Briefing paper*

| | | | | | | |
|---|---|---|---|---|---|---|
| 8 | Cayman Islands | 1,078.17 | 1,974.39 | 1,604.47 | 1,554.67 | 1,013.44 |
| 9 | Canada | 1,435.32 | 1,285.51 | 818.35 | 1,438.02 | 1,258.66 |
| 10 | Switzerland | 341.54 | 1,631.01 | 858.58 | 772.86 | 376.76 |
| Total Foreign Investments | | 21,521 | 22,231 | 33,704 | 43,886 | 31,475 |

Source: Brazilian Central Bank

The total 2009 Brazilian FDI was applied mainly on industry and services, representing respectively 41.7 and 44.8 of total investments. On services sector, Telecommunications had a share of 2 percent out of total service investments, representing a 25 percent decrease related to 2008, and a 9.1 percent increase when related to 2007.

### 2.4 Demographics

Brazilian demography comprises one of the biggest populations worldwide, keeping the 5th position as biggest world population with 192.8 million habitants. When compared to other emergent countries, Brazil presents a stable growth rate of 1.2% pace featuring the 106th position on world rank.

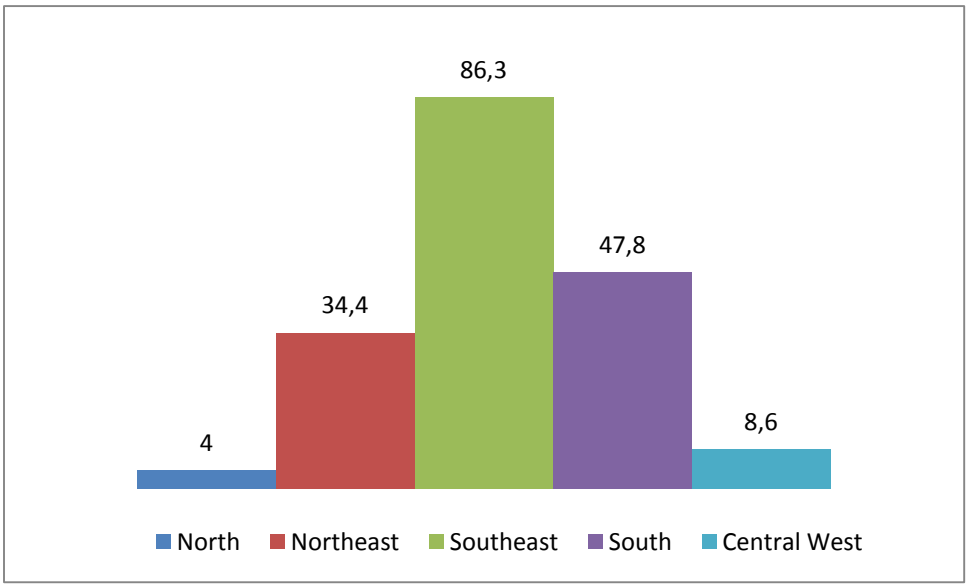
Table 7 - BRIC's Population and Growth Rate, 2010

| Country | Rank | Population(Millions) | Growth rate (%) |
|---|---|---|---|
| Brazil | 5th | 192.8 | 1.2 |
| Russia | 9th | 139.4 | -0.46 |
| India | 2nd | 1,173.1 | 1.37 |
| China | 1st | 1,330.1 | 0.49 |

Source: IBGE, CIA

Despite occupying the 5th position, being nearly behind China and India, Brazil presents a population that amount just 16% of India population and 14% of China one. This fact analyzed together with Brazilian area extension demonstrates that when compared to China and India Brazil has a smallest demographical density of 22.7 habitants per km². In fact, is worth to mention that already exist vast empty territories on Brazilian extensions. For instance, on the North region, which comprises 45.2% of country's total area, there is only 8.1% of total population, with 4 habitants per km². On the other hand, the Southeast region, which is the most well economically developed, comprises 42% of total population, featuring the most occupied region with a demographical density of 86.3 habitants per km².

Figure 3 - Brazilian Demographical Density per Region (hab/km²), 2008




Source: IBGE

Regarding the urbanization process, Brazil presented an 83.4% rate in 2008, against a 79.6% rate in 1998[1]. This fact confirms a continued growth of the urbanization process. However, the process is not equal distributed all over the country, for instance while Rio de Janeiro – second biggest Brazilian city – had a 96.7% rate, Piauí had a 62.8% rate, the smallest national rate.

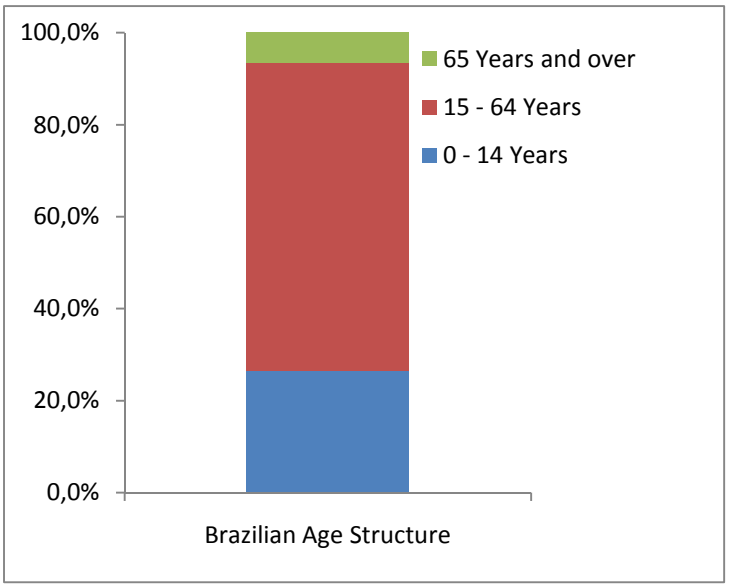
In fact, is important to mention that Brazil has a prominent regional disparity as a consequence of the colonization process, which established concentrated settlements near the coast leaving interior areas unoccupied.

Southeast and South regions are the most developed regions while North, Northeast and Central West regions are mainly based on agricultural production and tourism.

The distribution of Brazilian population age structure traditionally configures a young population, with more than 93% out of total below 65 years. However, it's important highlight the present trend which features the increasing of the population above 70 years and the decreasing of the population below 14 years. For instance, as presented by the 2008 PNAD[2] research, population below 14 years accounted for 24% of total population, a decrease of 17% when related to 1998. This trend happens as a consequence of continued decreasing on fecundity levels and the increase of life expectancy.

[1] IBGE, *Síntese de indicadores sociais*, 2009
[2] Pesquisa Nacional por Amostra de Domicílios (PNAD), 2008

Figure 4 - Population Distribution by Age Group, 2010




Source: CIA

The Brazilian sex ratio observed in 2008 was 94,8 men for each 100 women as a consequence of biggest men' mortality rate. This fact is explained by the fact that Brazilian men die earlier mainly due to cardiovascular diseases, brain strikes and urban violence[1]. So on, Brazilian female median age is higher than male median age. In comparison to other BRIC countries Brazil configures a more similar median age pattern to India, while Russia and China patterns feature highest median ages, what is aligned with lowest population growth rates. The following table presents Brazilian median age estimations in confront with other BRIC countries.

Table 8 - BRIC's Median Age Estimation, 2010

| Country | Median Age (Years) | | |
|---|---|---|---|
| | Total | Male | Female |
| Brazil | 28.9 | 28.1 | 29.7 |
| Russia | 38.5 | 35.3 | 41.7 |
| India | 25.9 | 25.4 | 26.6 |
| China | 35.2 | 34.5 | 35.8 |

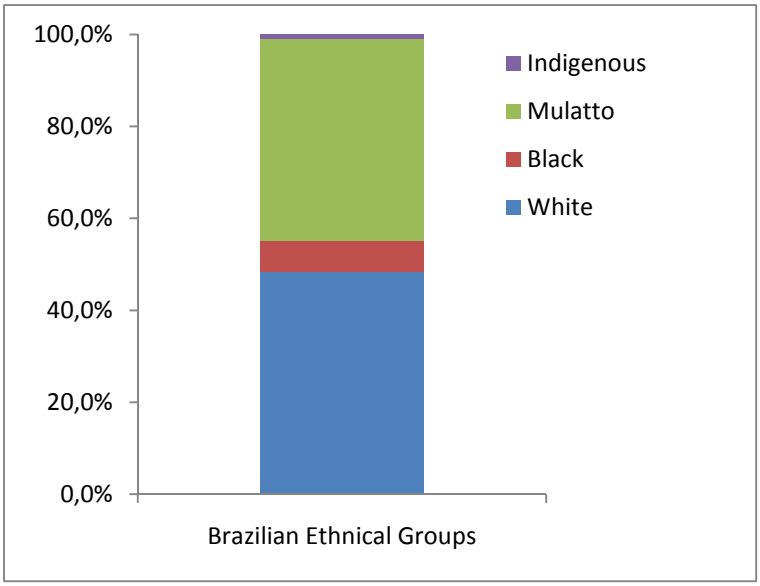
Source: CIA

On the recent past, Brazilian ethnical distribution reflected historical characteristics related to the country colonization pattern. In recent days, as racial issue assumed an important dimension, the self classification progressively changes ethnical distribution. Comparing IBGE population distributions of the years 1998 and 2008 it is possible to

[1] Serviço de Comunicação da Universidade de Brasilia, 2008, *Doenças modernas matam mais*.

note a significant change on ethnical groups. While the number of people declaring itself black or mulatto increases, the amount of people who declare itself white is reducing. However, it is important to mention that ethnical groups considered as black, mulatto and indigenous are situated in precarious conditions when considered the social integration. The persistence of inequalities among the group of white and the other ethnical groups is a present reality.

Figure 5 - Brazilian Ethnical Groups, 2008

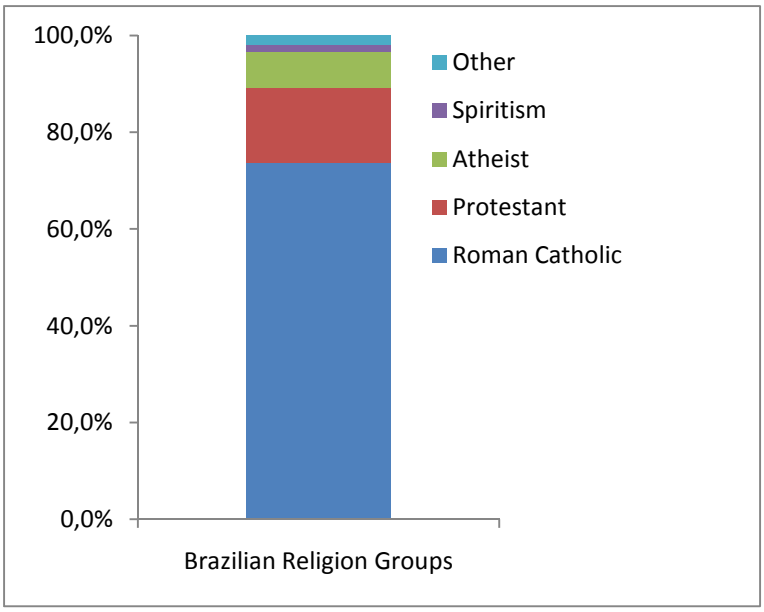



Source: IBGE, Síntese de Indicadores sociais, 2009

Regarding religion, Brazil is a country with predominant Roman Catholic faith. The Roman Catholic religion had a profound influence on population along the Brazilian historical development. Since the beginning of the 16th century it was introduced among the native Brazilians by Jesuits missionaries and also by Portuguese first settlers. However, present trends announce that Roman Catholic faithful is decreasing, while Protestant religion gains more relevance. IBGE research made on year 2000 presented that Roman Catholics were 73.8% of the population and Protestants accounted for 15.4%. On year 2010, Datafolha[1] released data demonstrating that Roman Catholic represent 61% of population, while Protestants account for 25%.

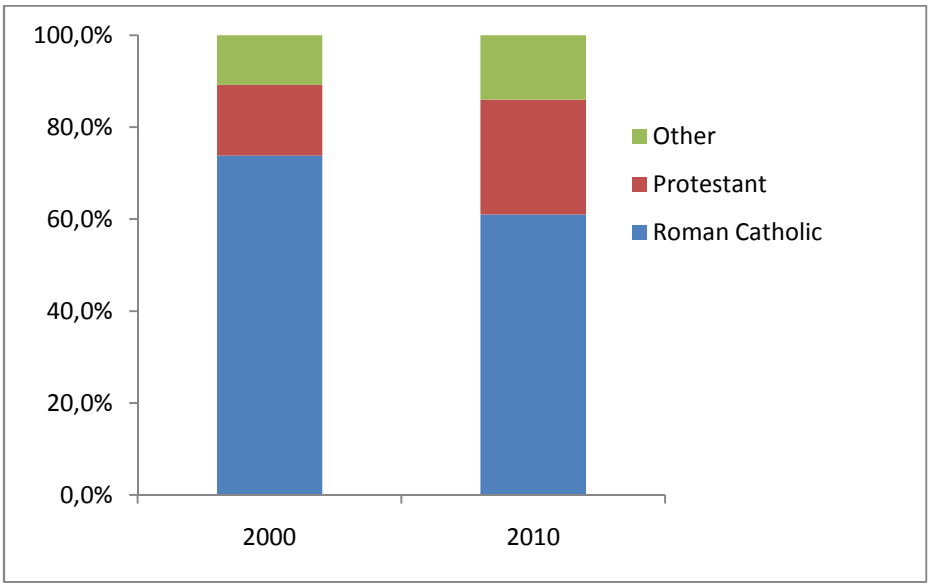
[1] Folha de São Paulo, Datafolha, *Crescimento: Segundo Datafolha 25% dos brasileiros são evangélicos*, 2010

Figure 6 - Brazilian Religion Groups in 2000




Source: IBGE, 2007, Síntese de Indicadores

Figure 7 - Brazilian Religion Groups, 2000 - 2010




Source: IBGE, Datafolha

Nonetheless, is important highlight other representative groups as the Atheist and the spirits that accounts respectively for 7.4 and 1.3 percent out of total population[1]. Moreover, pertaining to a smallest share of the population are the Afro-Brazilian religions that are considered very traditional. In fact, some these, as the Umbanda, are

[1] IBGE, *Síntese de Indicadores*, 2007

considered to be traditionally founded in Brazil. These religions have its roots on the African slaves that immigrated to Brazil along the country colonization process.

## 2.5 Brazilian ICT

On the Informational era the contemporary society structures its social and economical relationships through a complex set of networks created by the ICTs' evolution. This evolution has a remarkable impact on the economical development of nations, as can specially be seem in emerging markets like Brazil.

Historically, Brazilian ICT evolution can be divided I two divergent governmental periods. The first one dating to 80's was marked by governmental protection and intervention, what generated positive and negative effects. On one hand it allowed the expansion and diversification of the Brazilian industrial base towards ICT. On the other hand, the market offer was narrowed to national companies' offer, which ones not fully exploited the market potential. The later period was characterized by economical liberalization, and so, international players landed on Brazilian marketplace introducing new competition. As a consequence, Brazilian ICT offer improved to a more diversified, cost efficient and quality level, warming-up contemporary society' demand.

Brazilian contemporary society shows significant evolutions in uses and ownership of ICTs, as the increasing use of computer and internet, the enlargement of users' age group from children to elders, increasing citizens' day-to-day use of ICTs, enterprises that harmonize with the present ICTs contest, and so on. However, economical and social disparities still affecting ICTs diffusion all over the country. The analysis of desktop computers, mobile phone and internet penetration rates can quantify Brazilian disparities problem.

Desktop computers have a 30% penetration rate in Brazilian households. However, this rate is not equal in all country's regions. For instance, while the southeast region presents a 42% penetration rate, northeast region has 13% out of total households with at least one desktop computer.

Moreover, in the case of mobile phones, is possible to find similar trend. The southeast region has an 85% penetration rate, while the northeast region has a 63% rate.

Despite the recent efforts of the Brazilian government to expand internet access to the majority of the Brazilian population, a contrasting reality still can be seen. Although there has been an increase in internet use by the poorer segments of the population, rich social classes still have much more access to it. While 85% of upper classes population has access to internet, on lower classes segments only 17% have access to internet[1]. Regarding broadband connections, the situation is more accentuated because of the cost related to it and its offer centralization in high income regions. This is motivated by the fact that the majority of broadband services are provided by three companies, which control 86% of the market aiming their services at upper classes.

The following table presents ICT penetration rates in Brazilian Households.

[1] Comitê Gestor da Internet no Brasil (CGI), *Survey on the Use of ICTs in Brazil 2009*

Table 9 - ICT Penetration Rates in Brazilian Households, 2006 - 2009

| Technology | Portion of households with access to ICT (%) | | | |
|---|---|---|---|---|
| | 2006 | 2007 | 2008 | 2009 |
| Radio | 89 | 89 | 86 | 86 |
| Television | 97 | 98 | 97 | 98 |
| Fixed Phone | 49 | 45 | 36 | 40 |
| Mobile Phone | 67 | 74 | 72 | 78 |
| Desktop Computer | 19 | 24 | 23 | 30 |
| Game Console | 16 | 17 | 13 | 16 |
| Satellite Dish | 16 | 18 | 20 | 26 |
| Cable TV | 5 | 7 | 6 | 9 |
| Portable Computer | - | 1 | 3 | 5 |

Source: CGI[1]

Despite the existence of economical barriers as cited previously, continued growth can be seen in many Brazilian ICTs' industries. Regarding to the hardware industry, Brazil presents expressive development, especially on the computer sector. From 1997 to 2001 national computer sales totalized 12 million units, from 2001 to 2005 this number raised to 19 million units, and between 2006 and 2009 total sales accounted 41 million units, what makes Brazil represent 41% of all Latin American market[2]. This growth is strictly related to three factors: computer price reductions, more credit availability and population's average income increase.

As presented by Positivo Informática, from 2004 to 2009, average computer prices dropped 42% as a consequence of the dollar/real rate drop and of PIS[3] and COFINS[4] taxes exemption.

Regarding the credit availability in the same period, is seen an average growth rate of 22.6%, generating - especially adaptable to low income consumers - the possibility to buy a computer by 24 month installment.

Finally, the population's increasing average income permits the entrance of new social classes on the computer market warming consumers' demand.

The Brazilian software industry is either expressive. Despite 2008 turbulent crisis, Brazilian software market kept the 12th[5] position on world largest software markets rank, moving US$ 15 billion during 2008. According to ABES, the majority of this amount was generated by services related to software, accounting for US$ 10 billion; the remaining US$ 5 billion was related to software, representing 1.68% of the global software market. The national market comprises almost 8,500 enterprises, acting on

[1] CGI, *Survey on the Use of ICTs in Brazil 2009*
[2] Positivo Informática, *Indústria de Informática e Hardware*, 2010
[3] Programa de Integração Social (PIS)
[4] Contribuição para o Financiamento da Seguridade Social (COFINS)
[5] Associação Brasileira das Empresas de Software (ABES), 2010, *Mercado Brasileiro de Software 2009*

development, production, distribution and service providing. According to ABES, 94% of companies acting on software development and distribution are micro or small enterprises.

In the entrepreneurial sector ICTs are extremely diffused. In the last decade the use of computers and Internet has remarkably expanded to high penetration rates, providing the expansion of new ways of work, as the remote work that presented ten percent increase from 2006 to 2009[1]. This kind of work is possibly motivated by the reduced costs related to it, as costs with light, water, rent, etc. In the last years the internet access presented high growth rates, 3G modems reached 10% penetration in 2009 when in 2006 had 4% penetration, cable connections went from 14% in 2006 to 25% in 2009, while dial-up connections are practically extinct in enterprises. It is noteworthy to highlight that internet mobile connections in the entrepreneurial sector have double in number over 2009.

Table 10 - Computer and Internet Penetration Rates in Brazilian Enterprises, 2006 - 2009

| Technology | Portion of Companies with access to ICT | | | |
|---|---|---|---|---|
| | 2006 | 2007 | 2008 | 2009 |
| Computer | 99 | 95 | 94 | 97 |
| Internet | 94 | 92 | 91 | 93 |

Source: CGI

Regarding mobile phones, as presented on CGI survey, 90% of large enterprises provide corporate mobile phone while half of them provide access to internet through it. In small enterprises this numbers tend to be more reduced, 61% of small enterprises use corporate mobile phone, and just 22% of these provide access through mobile phones. A public policy to reduce call fees together with decreasing mobile phone prices related to the market growth could promote these practices among enterprises.

On the recent past years, excepting of 2009, The Brazilian ICT industry presented a continued growth demonstrating its remarkable potential.

Brazilian ICT potential is based on the fact that the country has a large internal market, a diversified industrial base with knowledge about ICT, qualified low cost work force and an easy access to Latin American markets.

On a pos global crisis scenario, where exports downturn affects all sectors, a strong internal market is preponderant on sustaining continued growth. ABINEE highlight the importance of the Brazilian internal market as largely responsible for Electric and Electronic industry growth, since exports are expected to remain in 2009 levels.

A diversified industrial base is a strategic property especially on periods on which consumers' demand varies significantly, permitting the sector to position its production

[1] CGI, *Survey on the Use of ICTs in Brazil 2009*

according to consumers' necessity. Brazilian industrial base is diversified acting either in hardware, software and information systems industries.

Brazilian ICT workforce presents good patterns of cost and quality when compared to other emerging markets. Therefore, companies continue to hire national workforce, what can be quantified by ABINEE data on Electric and Electronic industry. ABINEE shows work force growth even if compared the 2010 year with the pre crisis period. In 2010, the total work force accounted for 169 thousand employees, while in October 2008 there were 165 thousand employees. Specific on the telecommunications sector, in 2009 the sector employed 393.5 thousand workers, representing a 4.4% growth related to 2008[1].

As a central hub in Latin America, Brazil has easy access to Latin America countries, which represent one important global market. In the first trimester of 2010 LATAM countries imported 57% of total exports of the Brazilian Electric and Electronic industry, with big participation of Argentina, which imported almost 50% of Brazilian LATAM exports.

Table 11 - 1T 2010/2009 Electric and Electronic Brazilian Exports

| Regions/Countries | US$ Millions | | Growth (%) |
|---|---|---|---|
| | 2009 | 2010 | |
| United States | 309 | 250 | -19 |
| LATAM (total) | 837 | 945 | 13 |
| Argentina | 348 | 459 | 32 |
| Other LATAM countries | 489 | 486 | -1 |
| Europe | 207 | 193 | -7 |
| Southeast Asia | 90 | 81 | -9 |
| China | 42 | 34 | -19 |
| Other Southeast Asian countries | 47 | 47 | - |
| Other countries | 209 | 181 | -14 |
| Total | 1652 | 1650 | - |

Source: ABINEE

Despite representing an important ICT exporter in Latin America, Brazil's electric and electronic trade balance is traditionally negative; the country 2009 imports surpassed exports in US$ 17.4 billion, with remarkable participation of Asian products.

[1] Telebrasil, 2010, *O Desempenho do Setor de Telecomunicações no Brasil 2009*

Table 12 - Electric and Eletronic Industry Trade Balance, 2006 - 2009

| Year | Imports (US$ billions) | Exports (US$ billions) | Trade balance (US$ billions) |
|---|---|---|---|
| 2009 | 24.9 | 7.5 | -17.4 |
| 2008 | 32.1 | 9.9 | -22.1 |
| 2007 | 24.0 | 9.3 | -14.7 |
| 2006 | 19.7 | 9.2 | -10.5 |

Source: ABINEE[1]

Despite 2009 revenues decrease nominal growth, the European Information Technology Observatory (EITO) foresees a 6.1% ICT investments growth for 2010, what can be understood as an optimist hope by sector players which expect revenues to growth. On the Electric and Electronic Industry, ABINEE expects a 12% revenues growth, highlighting the informatics area that is expected to growth 15%. For 2010 EITO expects that both investments in information technology equipments and in software will grow respectively 2.2% and 4.4%.

Electric and Electronic industry revenues, as representative to the ICT sector, are presented in the following table.

Table 13 - Electric and Electronic Industry Annual Revenues, 2006 - 2009

| Year | Total Revenues (US$ billions) | Nominal Growth (%) |
|---|---|---|
| 2009 | 55.9 | -9.1 |
| 2008 | 61.5 | 10.2 |
| 2007 | 55.8 | 7.3 |
| 2006 | 52.0 | 12.2 |

Source: ABINEE

In addition to the advantages of the Brazilian ICT market previously cited, is worth to mention the government inducements for digital inclusion that directly benefit the ICT sector. In line with the national information society program, proposed back in 1999, are a vast variety of programs as the internationally recognized programs: *Computador para Todos*, *Telecentros* and *Acessa São Paulo*, all aiming the promotion of computer use. Moreover, regarding the promotion of the internet use, the Brazilian government launched in 2010 the National broadband plan (PNBL). This plan has on its scope the objective of taking broadband connection to all Brazilian municipalities[2].

[1] Associação Brasileira de Indústria Elétrica e Eletrônica, 2010, *Desempenho Setorial*
[2] O Globo, 2010, *Governo Lança Plano Nacional da Banda Larga*

### 2.5.1 Telecommunications

Brazilian modern telecommunications development has its roots on the Portuguese empire, dating back to the XIX century. Dom Pedro II, current emperor at the time, installed the first telephony line on his palace connecting all ministers' residence, aiming to optimize the organization of his empire. Afterwards, the emperor started to create decrees conceding the exploration of telecommunication services by private entrepreneurs, as Charles Paul Mackie trough the American company Telephone Company of Brazil (TCB), the first[1] company to explore Brazilian telecommunications with commercial purposes.

After the end of the Brazilian emperor, telecommunications development showed slow growth, culminating with an expressive stagnancy of the sector on the 60's. Infrastructure lacks hindered telecommunication sector's further development generating high levels of dissatisfaction among Brazilian population. This scenario motivated the Brazilian government decides to act in favor of country's claims, starting to expropriate companies giving space to the nationalization of the telecommunications sector. So on, the country telecommunication sector had its structure based on a state-owned monopoly telecommunication operator, TELEBRAS, which was composed by 27 State operators and one long-distance operator, Embratel. However, despite his efforts to change the last decades problems, TELEBRAS could not keep up with the radical technological changes which were taking place in the global telecommunication market during the 80's. As a state owned company, investments were restricted to government budget, which were not compatible to countries necessities, generating high productivity inefficiencies and therefore, population dissatisfaction.

As a consequence of the present scenario, movements toward liberalization began in 1995 through amendments to the Constitution. Soon after, a regulatory agency, ANATEL, was created, configuring as the first regulatory agency to be installed in the country. With its innovative institutional personality, the agency was able to aim in the country's social needs stimulating the increase of covered areas, improving quality of telecommunications services, encouraging investments and development, while progressively changing the State role from a direct agent to a regulator. In 1998, Nearly after ANATEL's creation, TELEBRAS was privatized. In this way country's framework was prepared to receive new telecommunication investments and technology.

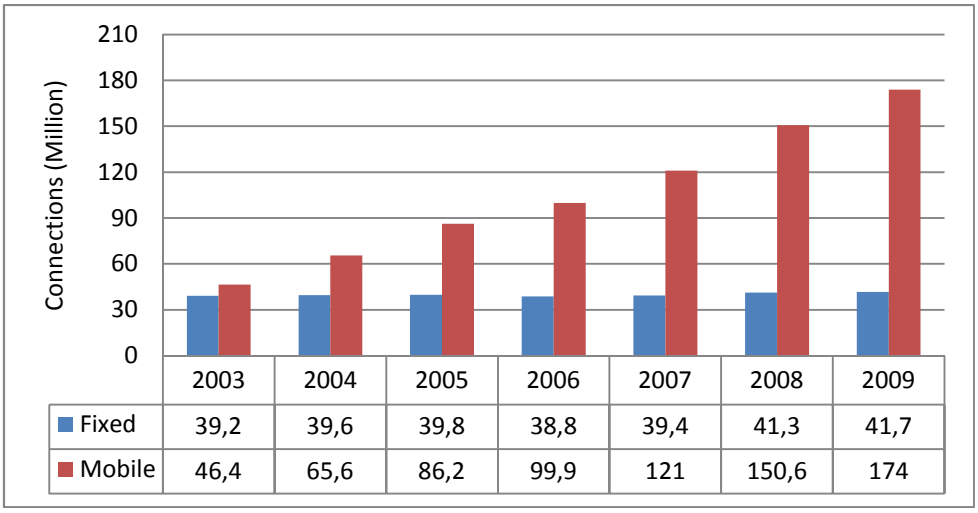
Nowadays, Brazil telecommunications development can be compared to the levels experienced by developed economies, where the majority of population has access to telephone. In Brazil, the portion of households with fixed or mobile telephone connections accounted for 82.1% in 2009, a 6.6% increase when compared to 2008[2]. It is important to note that in the year of the TELEBRAS privatization just 32% Brazilian households had access to telecommunication services. According to Teleco, from the

[1] Teleco, 2010, Tutoriais Operação.
[2] Teleco, 2010, Estatísticas do Brasil

1998 – year of the TELEBRAS privatization – to 2008, while the per capita income increased 20.3% the density of fixed connections and mobile connections increased 81.6% and 1,956% respectively.

In 2009 total telephone fixed connections amounted to 41.7 million maintaining practically constant last decade' levels and there were 174 million mobile connections, number that almost equals to total Brazilian population[1] representing a 15.5% year growth. It is noteworthy to mention that the fixed telephony had its boom nearly after TELEBRAS privatization, between 1998 and 2001. The following illustration presents the evolution of Brazilian fixed and mobile telephone connections.

Figure 8 - Evolution of Fixed and Mobile Connections in Brazil, 2003-2009




| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|
| Fixed | 39,2 | 39,6 | 39,8 | 38,8 | 39,4 | 41,3 | 41,7 |
| Mobile | 46,4 | 65,6 | 86,2 | 99,9 | 121 | 150,6 | 174 |

Source: Teleco

The telecommunications sector has a remarkable influence on the Brazilian economy. In the end of 2009 telecommunications services were provided to 234.5 million subscribers, generated around US$ 90 billion gross operational revenue – a record on Brazilian telecommunications sector – , accounting for 5.7% of the Brazilian GDP. In 2009 the sector employed 393.5 thousand workers, representing a 4.4% growth related to 2008[2].

Even in global terms Brazil represents an important role. According to UIT[3] and Teleco, in 2008, the country kept the 5th position as the largest mobile phone market, representing 34.8% of all Latin American market. In 2009, Brazil exported around US$ 1,432.8 million of mobile phones – corresponding 26.3% of total mobile phone production –, US$ 174.7 million of telecommunication components and US$ 150.8 million of telecommunication cables[4].

[1] Teleco, 2010, Estatísticas do Brasil
[2] Telebrasil, 2010, *O Desempenho do Setor de Telecomunicações no Brasil 2009*
[3] International Telecommunications Union, 2009
[4] ABINEE, 2010, *Panorama Econômico e Desempenho Setorial 2010*

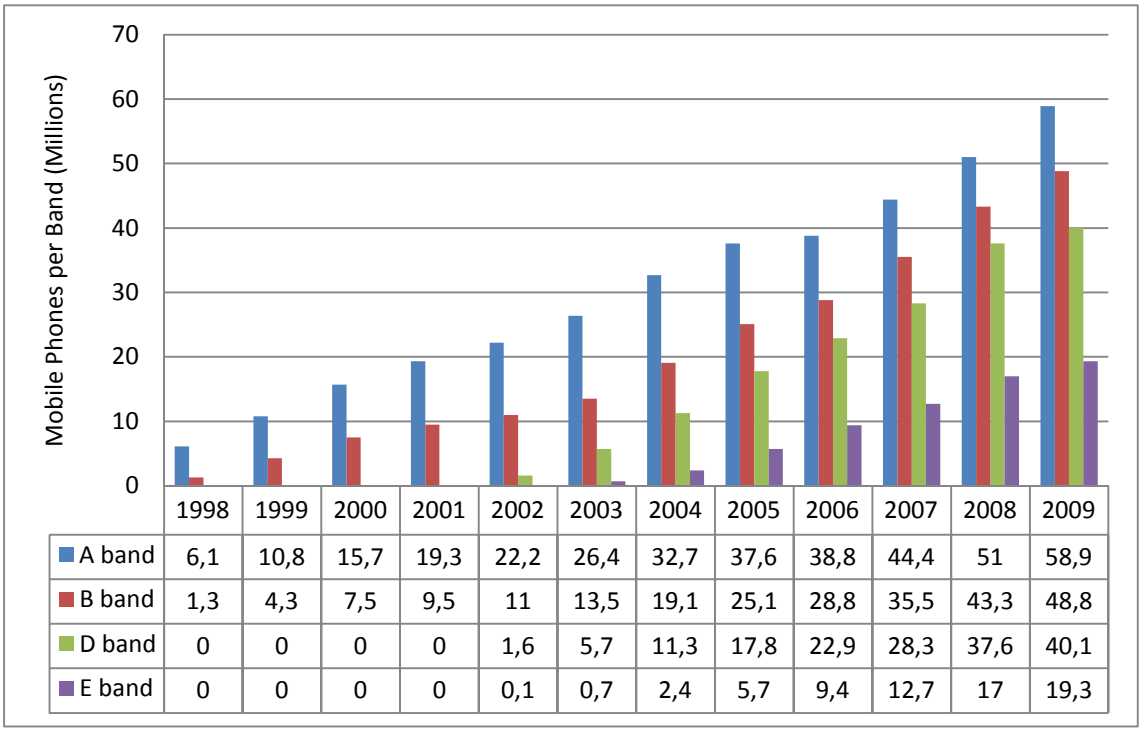
#### 2.5.1.1 Mobile Telephony

In the beginning of the 90's in Rio de Janeiro TELEBRAS through its controlled TELERJ started to implement the mobile telephony in Brazil. The first mobile auction was launched in 1997 expanding the Brazilian mobile telephony market. At the time mobile phone spectrum was divided in two bands: A band, operating between the frequencies 825 and 834 MHz and the B band, operating between 845 and 846 MHz[1].

As a consequence of the latent demand, a third auction took place in Brazil, this time licensing the D band and the E band, which operates between frequencies 1700 and 1800 MHz. At the same time, ANATEL proceeded towards the unification on regulation framework, as A and B band operators were subject to the Mobile Phone Service (SMC), which required less restrict rules, while other operators were subject to the Mobile Personal Service (SMP). After ANATEL's unification until present days, all mobile phone operators are subjected to the SMP.

Nowadays, the A and B band continue to be the most used bands in Brazil; in 2009 they were used by 58.9 and 48.8 million mobile phone lines respectively. However, D band is also expressive used by 40.1 million mobile phone lines, while E band achieved in 2009 almost half of the amount of mobile phone lines using the D band. The next Illustration exposes the evolution in the number of lines by each frequency band.

Figure 9 - Mobile Phone Lines by Frequency Band, 1998 - 2009



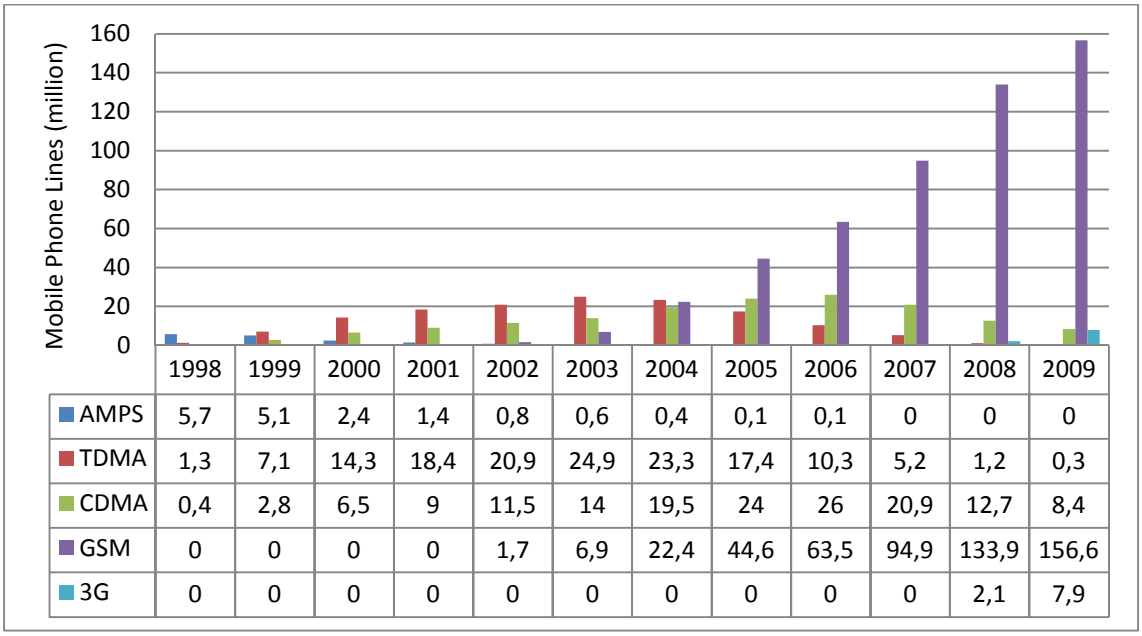

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A band | 6,1 | 10,8 | 15,7 | 19,3 | 22,2 | 26,4 | 32,7 | 37,6 | 38,8 | 44,4 | 51 | 58,9 |
| B band | 1,3 | 4,3 | 7,5 | 9,5 | 11 | 13,5 | 19,1 | 25,1 | 28,8 | 35,5 | 43,3 | 48,8 |
| D band | 0 | 0 | 0 | 0 | 1,6 | 5,7 | 11,3 | 17,8 | 22,9 | 28,3 | 37,6 | 40,1 |
| E band | 0 | 0 | 0 | 0 | 0,1 | 0,7 | 2,4 | 5,7 | 9,4 | 12,7 | 17 | 19,3 |

Source: Telebrasil

[1] Wireless Brasil, 2010, *A História da Telefonia Celular no Brasil*

Operating through these bands, the most widespread technologies were AMPS and TDMA, which achieved in 1998 5.7 and 1.3 million users respectively. Nowadays the most widespread technologies present on the market are: TDMA, CDMA, GSM and 3G. Among them the most diffused one is GSM, used by 156.6 million mobile phone lines in 2009. The AMPS, formed by analogical systems, is practically extinct used mainly to support roaming of CDMA technology users in some Brazilian states presenting infrastructure lacks. Regarding the 3G, in 2009 Brazil achieved the mark of 7.9 million mobile phones using this technology, representing 4.5% of total mobile phones in use all over the country. In comparison to developed economies as Japan, Italy and Germany Brazilian 3G mobile phone technology diffusion is lower, while in these countries respectively 87%, 38%, 24% of total mobile phones used 3G technology in 2008. The next illustration presents the evolution of the technology used by mobile phone lines from 1998 to 2009 in Brazil.

Figure 10 - Mobile Phone Lines by Technology, 1998 - 2009




| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AMPS | 5,7 | 5,1 | 2,4 | 1,4 | 0,8 | 0,6 | 0,4 | 0,1 | 0,1 | 0 | 0 | 0 |
| TDMA | 1,3 | 7,1 | 14,3 | 18,4 | 20,9 | 24,9 | 23,3 | 17,4 | 10,3 | 5,2 | 1,2 | 0,3 |
| CDMA | 0,4 | 2,8 | 6,5 | 9 | 11,5 | 14 | 19,5 | 24 | 26 | 20,9 | 12,7 | 8,4 |
| GSM | 0 | 0 | 0 | 0 | 1,7 | 6,9 | 22,4 | 44,6 | 63,5 | 94,9 | 133,9 | 156,6 |
| 3G | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,1 | 7,9 |

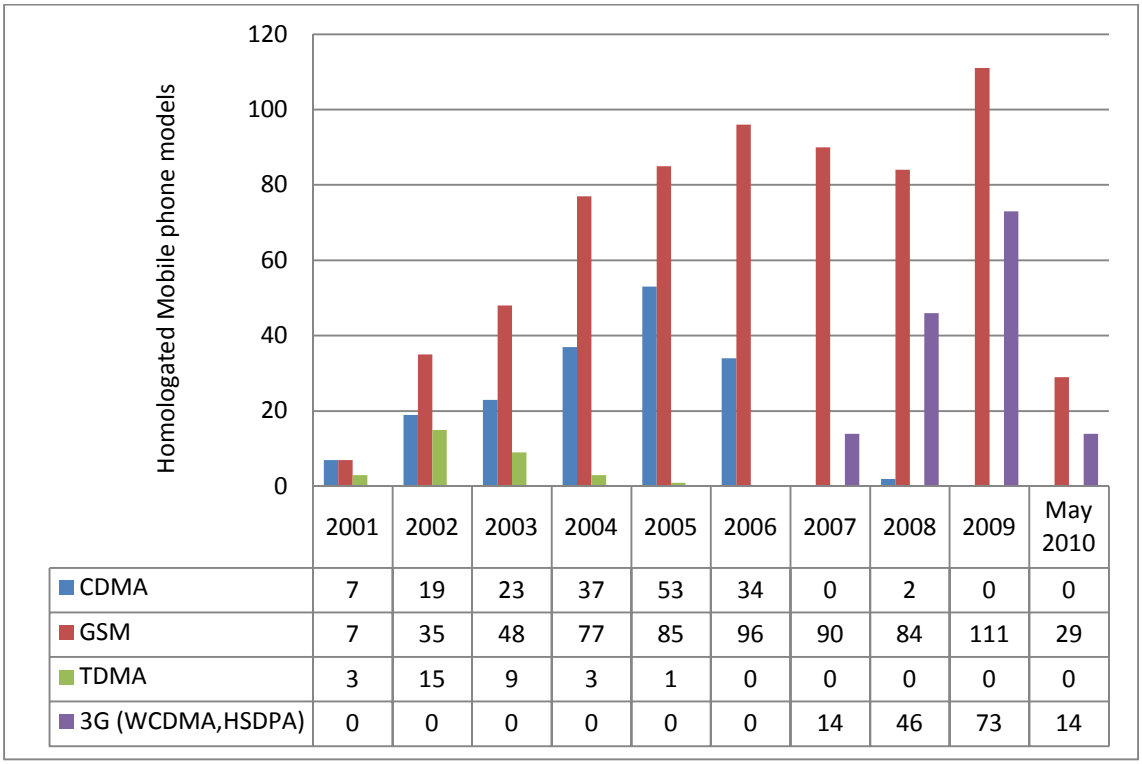
Source: Telebrasil

Analyzing the homologated mobile phone models by ANATEL is possible to note that the majority of them use GSM technology. In May of 2010 67.4% of the homologated mobile phones models used GSM technology, while 3G technology was present in 32,6% models. However, is possible to note that 3G technologies are establishing more presence in the market, in 2009 the number of homologated models in these technologies, principally HSDPA and WCDMA, had a 59% growth related to 2008. On the other hand, GSM technology had a 32% growth in the same period. As expected, other older technologies as CDMA and TDMA are not presently homologated through mobile phones models. This trend announces the enlargement of the mobile content market motivated by the expansion of the mobile internet, as more advanced

mobile phones with access to internet are appropriate to a large range of innovative mobile content.

The following illustration shows the homologated mobile phone models from 2001 to May of 2010.

Figure 11 - Homologated Mobile Phone Models by Technology, 2001 - 2010

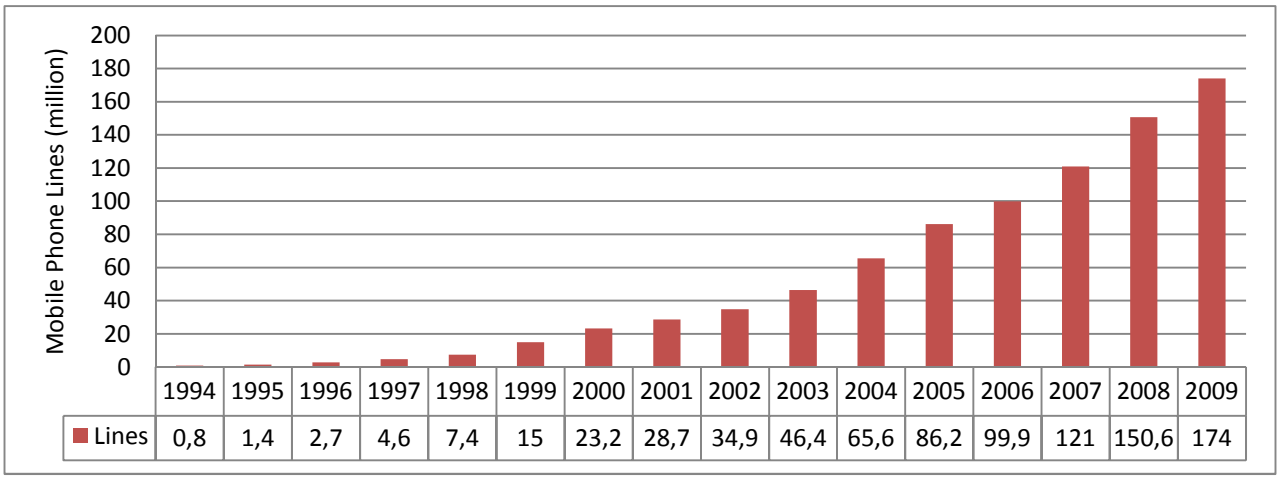



| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | May 2010 |
|---|---|---|---|---|---|---|---|---|---|---|
| CDMA | 7 | 19 | 23 | 37 | 53 | 34 | 0 | 2 | 0 | 0 |
| GSM | 7 | 35 | 48 | 77 | 85 | 96 | 90 | 84 | 111 | 29 |
| TDMA | 3 | 15 | 9 | 3 | 1 | 0 | 0 | 0 | 0 | 0 |
| 3G (WCDMA,HSDPA) | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 46 | 73 | 14 |

Source: Teleco

As a consequence of the Brazilian expressive internal market the number of mobile phone lines present in the country almost achieved a 100% density related to the population. According to ABINEE in the end of 2009 there were 90.6 mobile phones per each 100 habitants in Brazil, while total mobile phone lines were 174 million. The following illustration presents the Brazilian mobile phone lines evolution.

Figure 12 - Total Mobile Phone Lines Evolution, 1994 - 2009



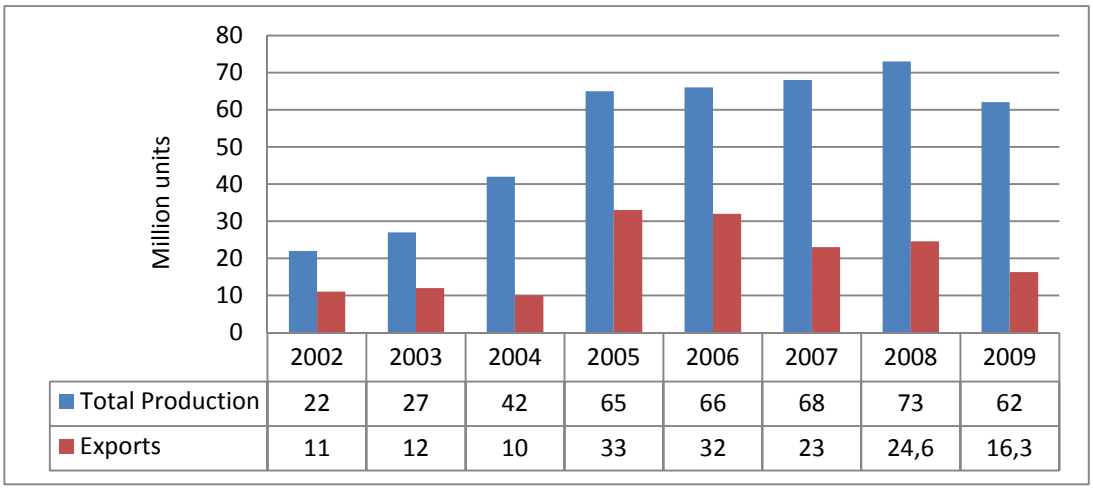

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lines | 0,8 | 1,4 | 2,7 | 4,6 | 7,4 | 15 | 23,2 | 28,7 | 34,9 | 46,4 | 65,6 | 86,2 | 99,9 | 121 | 150,6 | 174 |

Source: Telebrasil

As mentioned earlier Brazil represents an important role regarding external markets. According to UIT[1] and Teleco, in 2008, the country kept the 5th position as the largest mobile phone market, representing 34.8% of all Latin American market. In 2009, Brazil exported around US$ 1,432.8 million of mobile phones, amount that corresponds to 26.3% of total mobile phone production. Respect to Latin America, 6 countries concentrates more than 80% of total Latin American mobile phones: Brazil, Mexico, Argentina, Colombia, Venezuela and Chile. Among them, Brazil is the major market with the highest growth on mobile phone units, which presented a 15.5% increase in 2009[2]. The following illustration presents the Brazilian mobile phone exports in comparison with national mobile phone production.

[1] International Telecommunications Union, 2009
[2] Teleco, 2010, Teleco World: America Latina

Figure 13- Brazilian Mobile Phone Exports and Production, 2002 - 2009




| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|
| Total Production | 22 | 27 | 42 | 65 | 66 | 68 | 73 | 62 |
| Exports | 11 | 12 | 10 | 33 | 32 | 23 | 24,6 | 16,3 |

Source: ABINEE

Brazil used to have tens of mobile operators, nowadays, after liberalization and privatization periods the country comprises 7 mobile phone operators: Vivo, Claro, Tim, Oi, CTBC, Sercomtel and AEIOU, 4 of them controlled by national entities, while the other 3 – Vivo, Claro and Tim – are controlled by foreign entities. Among the 7 companies, Vivo, Claro, Tim and Oi control the national market, pursuing together almost the totality of the market shares.

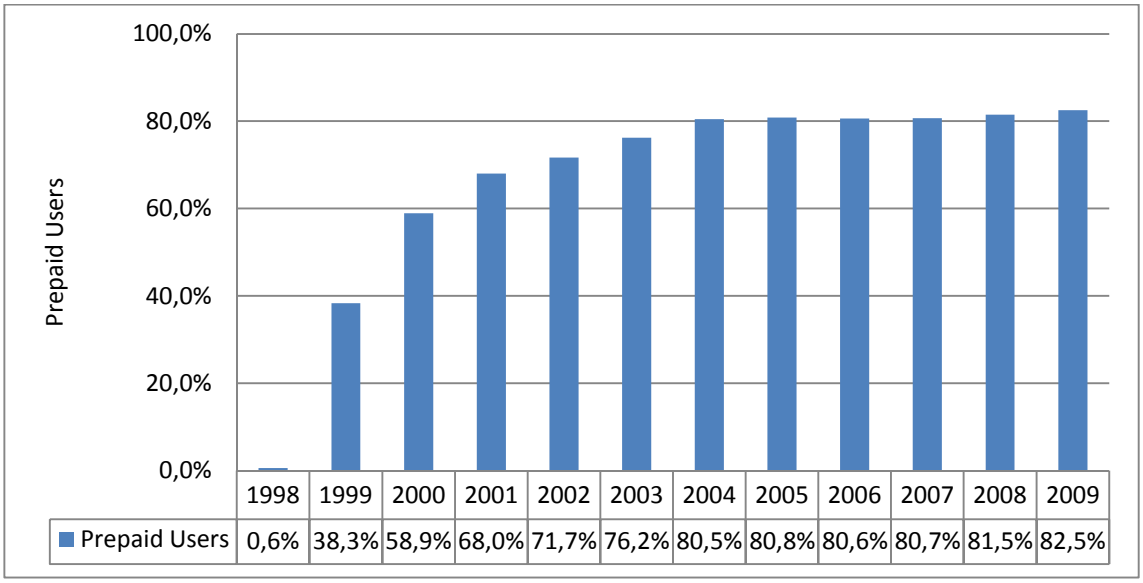
Vivo is the market leader with 30.12% market share in the 1T2010. The company is controlled by Telefonica and Portugal Telecom (PT), which are Spanish and Portuguese based companies respectively. Recently, Telefonica has been trying to take over PT's participation on Vivo, demonstrating its good expectations regarding the future of the Brazilian market. Telefonica's proposals were expressive higher than the market value of PT's participation on Vivo. On the 1T2010 the market value of PT's participation in Vivo – 88.9% ON and 44.1% PN shares - achieved around US$ 2.9 billion, and Telefonica made a proposal of US$ 7.8 billion on July 2010, more than two times PT's participation market value[1]. Before this last proposal Telefonica had already tried to take over Vivo's control for small sums. Its interest on PT's participation could be explained by the fact that with this acquisition Telefonica would be able to integrate its fixed and mobile operations in Brazil, benefiting of scale economy in a potentially growing market.

Another important issue that can be motivating Telefonica's intentions on PT's participation is Vivo's data revenues growth. In line with global trends the company in 1T2010 presented one of the highest data revenue growths in the sector, 19.6%[2] of service gross revenues, a 47.4% increase related to the same period of 2009. This increase is a consequence of Vivo's efforts to equilibrate ARPU decline, which is a reality in the overall Brazilian mobile telecommunications sector (Illustration 14). Vivo

[1] Teleco, 2010, Comentários Teleco
[2] Teleco, 2010, Telefonia Celular

presented in 2010 a 9.1% ARPU decrease. This reality is mainly due to Telco's focus in market share and in the increase of prepaid users, which according to Teleco[1], this kind of user has approximately only 25% of the postpaid profitability. The following table presents the evolution of the percentage of prepaid mobile phone users in Brazil.

Figure 14 - Percentage of Prepaid Mobile Phone Users, 1998 – 2009

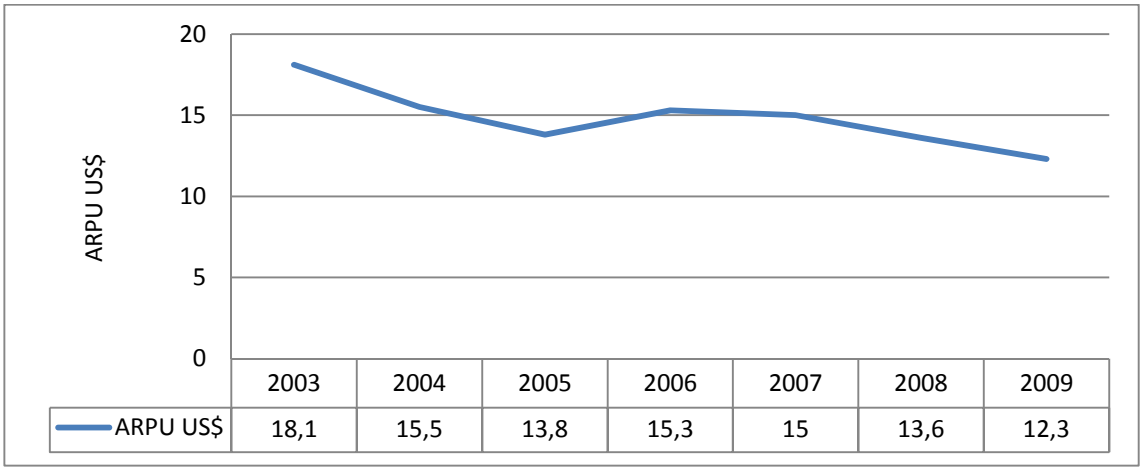



| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Prepaid Users | 0,6% | 38,3% | 58,9% | 68,0% | 71,7% | 76,2% | 80,5% | 80,8% | 80,6% | 80,7% | 81,5% | 82,5% |

Source: Telebrasil

The following table presents the evolution of Brazilian mobile telecommunications sector ARPU.

Figure 15 - Brazilian Mobile Telecommunications ARPU




| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|
| ARPU US$ | 18,1 | 15,5 | 13,8 | 15,3 | 15 | 13,6 | 12,3 |

Source: Teleco

[1] Teleco, 2008, *Como está a receita média por usuário de celular*

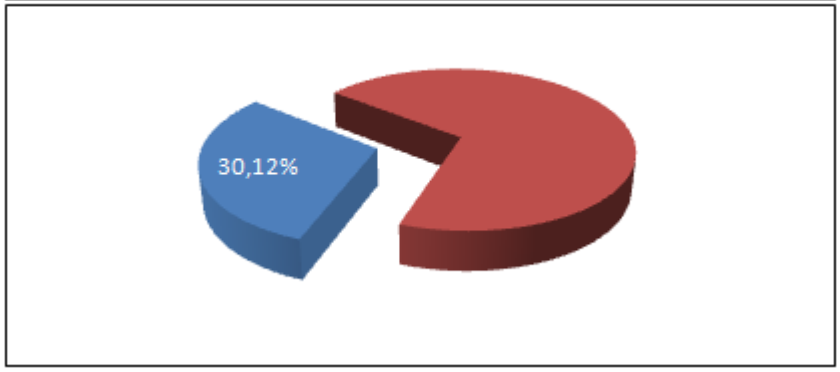
Regarding technological use, Vivo did not followed Brazilian market evolution. In the recent past the main technology used by the company was CDMA, diversely of its 3 direct competitors that use GSM. However, in 2007 Vivo's implanted a GSM network becoming nowadays its main technology. Despite Vivo's apparent technological delay related to its competitors, the company implanted the largest 3G Network in Brazil[1].

Vivo's mobile content offer is vast; the company offers music, videos, ringtones, images, games and a variety of applications through its Vivo Downloads Store. In addition the store has a section called Cinema offering films directed especially to younger.

Financially, Vivo is well placed. The company presented in 2009 the highest gross revenues of the sector totalizing US$ 11.4 billion. The following table summarizes Vivo's 1T2010 data.

Figure 16 - Vivo's Summarized Data, 1T2010

| Vivo | |
|---|---|
| Mobile Phone Lines (million) | 53.9 |
| Controller | Telefonica/Portugal Telecom |
| Country | Spain/Portugal |
| Prepaid users | 80.5% |
| ARPU (US$) | 12.4 |
| Mensal Churn | 2.5% |
| EBITDA | 30.1% |
| Gross Revenues (2009 US$ million) | 11,436 |
| VAS Revenues / Service Revenues | 19.1% |
| Vivo's Brazilian Mobile Telecommunications Market Share | |




Source: Teleco, Anatel, Acision

The second leader in market share of the Brazilian mobile telephony sector is Claro, with 25.45% of market share. The mobile phone company was created by the acquisition of SMP operators in B band in addition with license acquisitions of other Bands, is a subsidiary of the Mexican América Móvil. The company covers cellular

[1] Vivo, 2010, Institucional

networks all over the country through GSM technology, attending 45.6 million users[1]. In 2007, Claro began its 3G operations and nowadays covers 55% of the population with 3G networks.

Regarding the ARPU, Claro presented in the 1T2010 the smallest ARPU when compared to its 3 direct competitors, corresponding to a 13% decrease related to the same 2009 period. The company has a mensal churn of 2.8%, which is smallest than the Brazilian average that is 3.0%.

Recent speculations support that the controller of América Móvil, Carlos Slim, intends to promote the fusion between its fixed and mobile operations in Latin America. Regarding Brazil, this fact would means the fusion between Claro and Embratel – mainly operates long distance fixed lines – creating the second largest telecommunication operator company in revenues, behind Oi, generating US$ 2.8 billion revenues in the 1T2010[2]. Integrations of this kind generally bring benefits to the resultant company, as the case of TIM, in 2009. TIM after the integration was able to promote an offer in its Infinity and Liberty plans consisting of same rates to local and distant calls. With the operation, TIM became the leader on long call minutes. The regulation of which Claro is subjected does not permit similar benefit; however, concluding the operation Claro would be able to benefit the integrated offer among fixed and mobile services optimizing its operations and generating scale economies. Regarding technology, Claro uses mainly GSM. In 2007 the company introduced 3G operations, nowadays covering 380 Brazilian cities with this technology[3]. It is noteworthy that Claro has the largest portfolio of 3G and GSM mobile phones.

Regarding mobile Content, the company is the leader on offer variety, which is available on its 3G M-Portal Claro Idéias. Among the principal services available on the M-Portal there is Idéias Music Store, with around 1 million full tracks free of data transmission costs, and Minha TV, offering a variety of Tv channels, and itself branded mobile Tv Channel Idéias Tv. In the Communication & Community section, Claro offers popular international services including Orkut, Myspace and Youtube. The company also offers bundle services including Music Video and Customization. The following table summarizes Claro's 1T2010 data.

[1] Teleco, 2010, Operadoras de Celular
[2] Teleco, 2010, *O que muda com a fusão da Claro com a Embratel?*
[3] Claro, 2010, Institucional

Figure 17 - Claro's Summarized Data, 1T2010

| Claro | |
|---|---|
| Mobile Phone Lines (million) | 45.6 |
| Controller | América Móvil |
| Country | Mexico |
| Prepaid users | 80.8% |
| ARPU (US$) | 10 |
| Mensal Churn | 2.8% |
| EBITDA | 31.7% |
| Gross Revenues (2009 US$ million) | 7,894 |
| VAS Revenues / Service Revenues | - |

Claro's Brazilian Mobile Telecommunications Market Share


Source: Teleco, Anatel, Acision

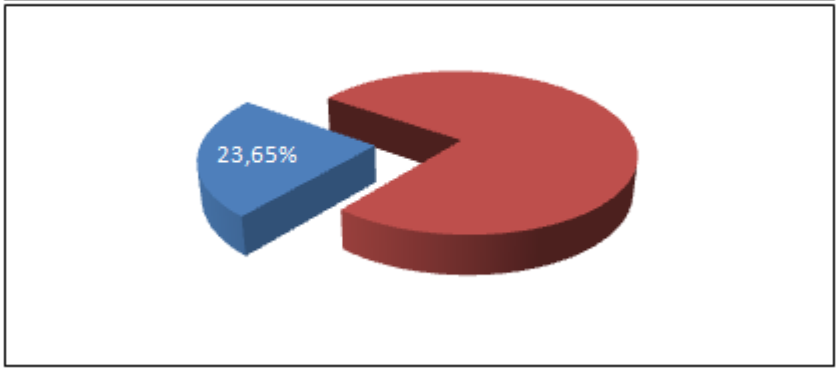
Nearly behind Claro is TIM, possessing 23.65% market Share. TIM has expressive importance to Telecom Italia as the main subsidiary in Latin America. Telecom Italia is the main mobile phone operator in Italy. After the 1997 privatization and until 2007, the main shareholder of Telecom Italia was Pirelli. After this period the controller of Telecom Italia, Olímpia, was sold for the Telco group, composed by Telefonica, Generali, Mediobanca, Intesa and Benetton. This acquisition had to be subjected by ANATEL in Brazil, as Telefonica could operate in the control of TIM and Vivo. ANATEL approved the operation with restrictions, establishing that Vivo and TIM would had to maintain themselves as independent companies blocking out the concentration process in the Brazilian market.

In the 1T2010 Telecom Italia presented a subscriber base composed by 30.4 million users in Italy, while in Brazil TIM subscriber base is 39% largest. TIM ended the 1T2010 with 42.4 million mobile phone lines in Brazil, a 17.3% growth related to the same period of 2009. Despite considerable growth prepaid subscribers base also grew to 84.3% in the end of 2009, while in 2008 this percentage was 82%. In addition, following sector's trend, TIM mobile ARPU decreased 8.4% accounting US$ 12 in the 1T2010. Among the 4 market share leaders of the Brazilian Mobile Telecommunications, TIM has the highest mensal churn of 3.4%.

The company began its operations in 1998 using the TDMA technology. In 2002 TIM introduced its GSM network all over Brazil, becoming nowadays its main technology. In 2008 the company began operations through its 3G network in 1.9 and 2.1 GHz frequencies. The company has the ANATEL's authorization to operate long distant calls, international calls and local fixed operations. It is noteworthy to mention that in 2009 TIM acquired 100% of Intelig, and as mentioned before, became the leader on long call minutes. Regarding mobile content, TIM is focusing on the development of its portfolio of Music services, with TIM Music store available free of data transmission costs, and is a sponsor of well known music events. The supply of mobile content services is compound on both self-branded services and popular international brands. The following table summarizes TIM's 1T2010 data.

Figure 18 - TIM's Summarized Data, 1T2010

| TIM | |
|---|---|
| Mobile Phone Lines (million) | 42.4 |
| Controller | Telecom Italia |
| Country | Italy |
| Prepaid users | 84.4% |
| ARPU (US$) | 12 |
| Mensal Churn | 3.4% |
| EBITDA | 24.8% |
| Gross Revenues (2009 US$ million) | 9,039 |
| VAS Revenues / Service Revenues | 11.9% |
| TIM's Brazilian Mobile Telecommunications Market Share | |




Source: Teleco, Anatel, Acision

Finally, Oi is the 4th Brazilian mobile operator per market share, possessing 20.41% of the market. Among the 4 main competitors in the sector, Oi is the only national based company.

In the end of the 1T2010, the company achieved 36.5 million mobile phone users, a 15% increase related to the same 2009 period. Despite this growth Oi had its mensal churn expressively increased, from 2.3% in the 1T2009 to 3.3% in the 1T2010. The company has a prepaid subscriber base of 85.6% out of total users and an ARPU of US$

10.9, overcoming Claro's ARPU but still below the Brazil 1T2010 ARPU average of US$ 11.35. Aiming to decelerate its ARPU decrease, recently Oi created the Mundo Oi M-Portal to support its mobile content offering. The company offers a variety of content, from music and video to games and screen savers.

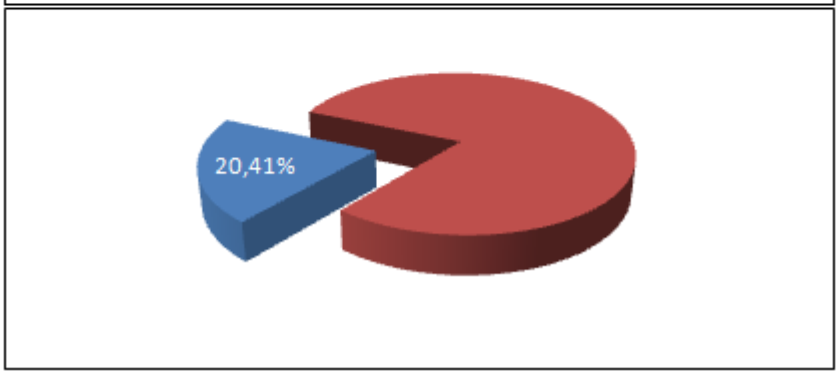
Regarding technology Oi operates mainly through GSM, technology that was firstly introduced in the country by the company.

In 2009, after the beginning of operations in the São Paulo state, Oi acquired the Brasil Telecom operator. With this acquisition, the company was able to cover all Brazilian States and Federal District. The following table summarizes Oi's 1T2010 data.

Figure 19 - Oi's Summarized Data, 1T2010

| Oi | |
|---|---|
| Mobile Phone Lines (million) | 36.5 |
| Controller | Telemar |
| Country | Brazil |
| Prepaid users | 85.6% |
| ARPU (US$) | 10.9 |
| Mensal Churn | 3.3% |
| EBITDA | 32.4% |
| Gross Revenue (2009 US$ million) | 6,304 |
| VAS Revenues / Service Revenues | 10.6% |

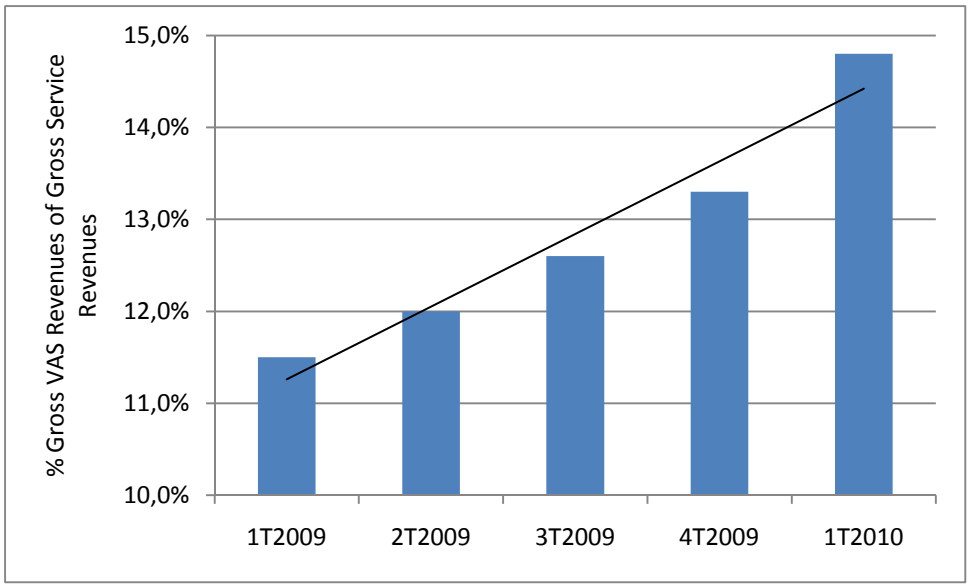
Oi's Brazilian Mobile Telecommunications Market Share




Source: Teleco, Anatel, Acision

Moreover, is extremely important to mention the increasing participation of VAS revenues on Telco mobile operators' service revenues. From the 1T2009 to the 1T2010, VAS revenues participation on service revenues presented a 28.7% increase. This fact shows how operators are aware with mobile content diffusion focusing on the enlargement of the offer aiming the growth of its revenues. The following illustration shows Brazilian Telco operators gross revenues as a percentage of service revenues.

Figure 20 - VAS participation in Brazilian Telcos Gross Service Revenues, 1T2009-1T2010




Source: Acision

### 2.5.1.2 Internet

Brazil performed its first internet protocol international traffic in 1991[1]. The early adoption of Brazilian internet use began on the academic environment, trough the National Research Network (RNP), implanted by the Science and Technology Ministry in 1991. The objective of this network was to connect Brazilian federal universities, improving the national research output. In 1994, the RNP reached all Brazilian regions awakening the interest of industries, companies and people not necessary related to the academic field.

In 1995, the Communication Ministry and the Science and Technology Ministry implanted the Global Internet Network, creating a national backbone which was resultant of the academic backbone expansion. Therefore, the opportunity to access internet was expanded out of the academic boundaries, and the commercial internet use began to appear in the sector. Internet management was transferred to a committee, composed by government, private companies, and academic and third sector representatives, while registration charges began in 1998.

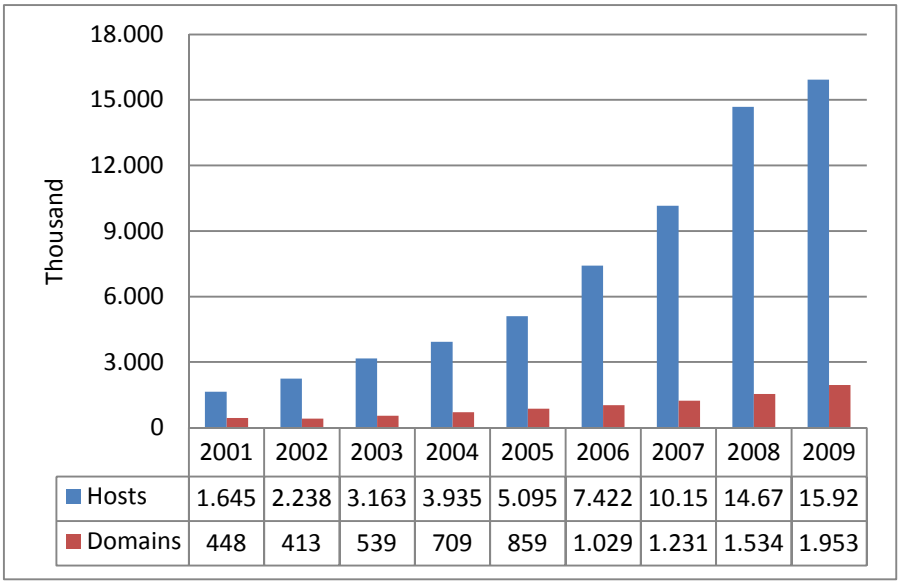
Nowadays, Brazilian Internet diffusion achieved considerable levels. As estimated by the CGI Survey[2] in 2009 24% of Brazilian households had access to internet, representing a 41% increase if compared to 2007. According to IBOPE[3] in the 4T2009 67.5 million users had access to internet. The predominant technology used was broadband, present in 66% of households, while 20% uses traditional modem.

[1] Brazilian Internet Steering Commitee, 2010.
[2] CGI, *Survey on the Use of ICTs in Brazil 2009*
[3] IBOPE, 2010, *Cresce o número de usuários de banda larga*

Considering internet users in general, households or not, Telebrasil presents that in 2008 there were 53.9 million internet users, a 20% increase when compared to 2007.

The number of Hosts and Domains, according to Telebrasil, nowadays are more than 15.9 million internet hosts and 1.9 domain names under ".br", representing a 27% growth. The following illustration shows the evolution on the number of internet hosts in Brazil.

Figure 21 - Brazilian Internet Hosts and Domains, 2001 - 2009




| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|
| Hosts | 1.645 | 2.238 | 3.163 | 3.935 | 5.095 | 7.422 | 10.15 | 14.67 | 15.92 |
| Domains | 448 | 413 | 539 | 709 | 859 | 1.029 | 1.231 | 1.534 | 1.953 |

Source: Telebrasil

Regarding internet providers there are two main classifications: the access providers, which connect final users PCs to the internet permitting the access to the World Wide Web, and the telecommunication providers, which are in charge of the physical connection between residences and serves of access providers. Telecommunication providers' main players are fixed telephony operators (for dialed access) and multimedia communication service providers (for broadband access).

According to Teleco[1], the main internet access providers in Brazil are Oi (Brasil Telecom), POP, Terra and UOL, representing together almost 30% of the total Brazilian households' accesses.

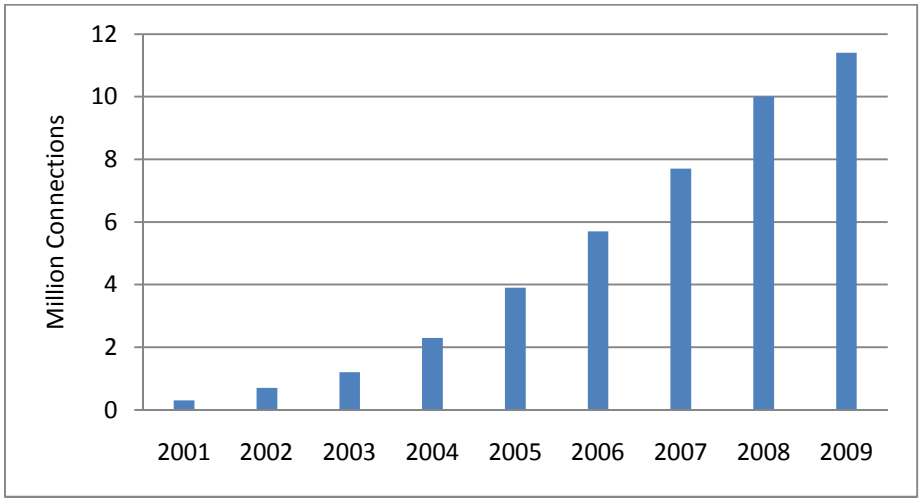
On the other hand, main Telecommunication providers providing physical connection to backbone are Embratel with 41.2% of the connections, Telemar with 31.6%, Brasil Telecom with 26.9%, Telefonica with 12.3% and GVT with 3%. The total sum of percentages is higher than 100%, denoting that a connection can be shared by more than one provider.

Regarding broadband connections, Teleco research appointed that in 2009, there were 11.4 million subscribers of broadband internet connection, a 14% increase related

[1] Teleco, 2010, Internet Brasil

to 2008. Moreover, according to IBOPE[1], in the 1Q2010, the number of broadband households accounted 28.7 millions. The following illustration presents broadband's subscriber evolution.

Figure 22 - Brazilian Broadband Subscribers, 2001 - 2009



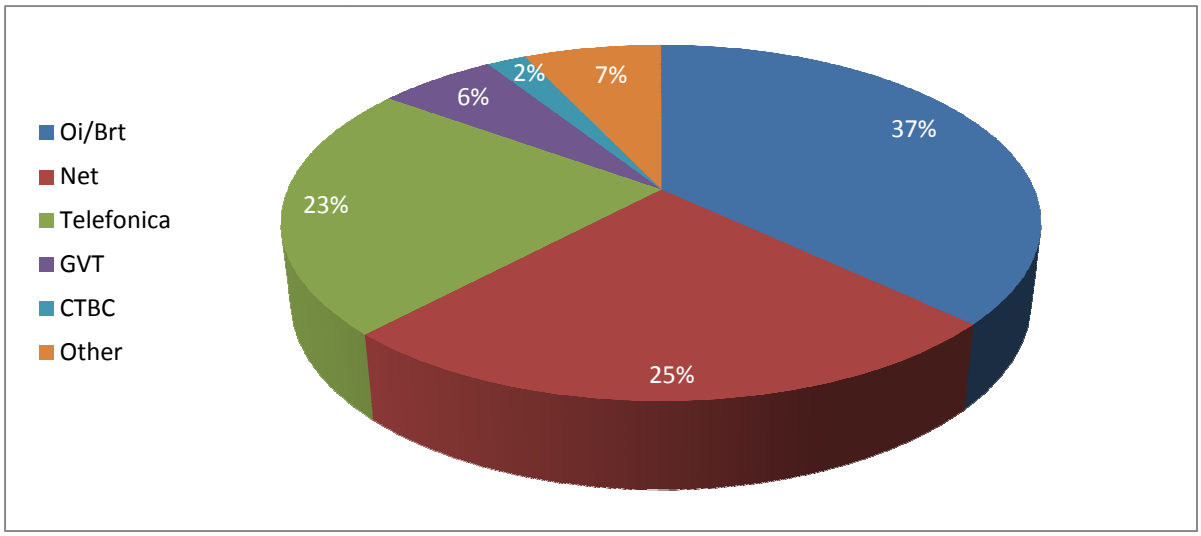

Source: Telebrasil

Despite having around 1,761[2] enterprises offering broadband access in Brazil, an expressive market share is concentrated in few broadband access providers, mainly fixed telephone operators and cable television operators.

Considering physical providers of broadband, the merger among Oi and Brasil Telecom keep the largest share of the market with 37%, followed by Net with 25% and Telefonica gathering 23% of the market. The following illustration depicts the 2009 market share division among broadband physical providers.

[1] IBOPE, 2010, *Cresce o número de usuários de banda larga*
[2] Teleco, 2010, Estatísticas de Banda Larga no Brasil

Figure 23 - Broadband Physical Providers Market Share, 2009




Source: Teleco

The following table represents the evolutional market share of broadband physical providers, from 2003 to 2009.

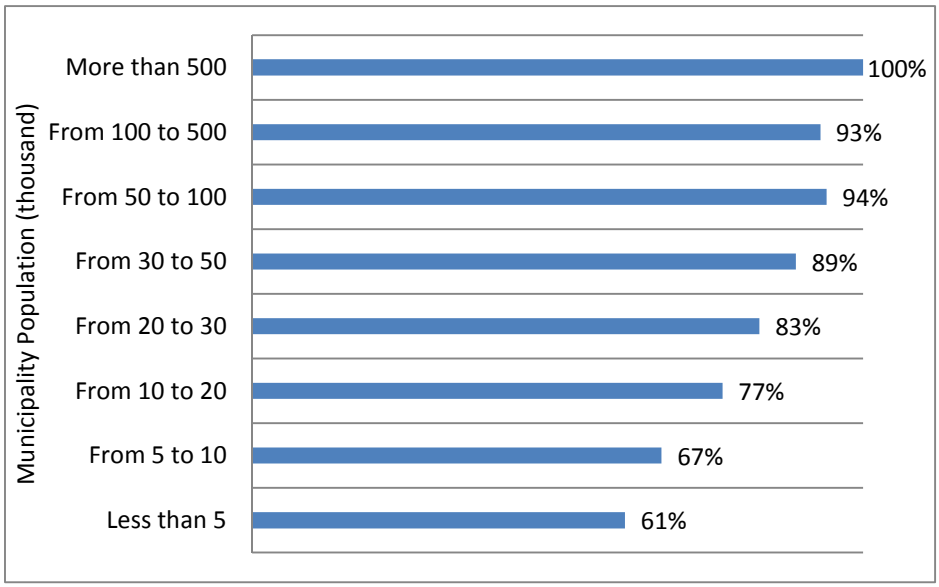
Table 14 - Broadband Physical Providers Market Share, 2003 - 2009

| Companies | Market Share (%) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| Oi/Brt | 40% | 45% | 47% | 43% | 41% | 38% | 37% |
| Net | 9% | 8% | 12% | 15% | 18% | 22% | 25% |
| Telefonica | 39% | 36% | 31% | 28% | 27% | 26% | 23% |
| GVT | 1% | 1% | 2% | 2% | 3% | 5% | 6% |
| CTBC | 0% | 1% | 2% | 2% | 2% | 2% | 2% |
| Outras | 11% | 9% | 7% | 8% | 9% | 8% | 7% |
| Total Connections (Million) | 1.2 | 2.3 | 3.8 | 5.6 | 7.7 | 10.0 | 11.4 |

Source: Teleco

Despite the expressive growth on the last decade, the broadband internet did not arrived in all Brazilian municipalities. The following illustration shows Brazilian attended municipalities in function of its population.

Figure 24 - Broadband Diffusion on Brazilian Municipalities




Source: Teleco

Aiming to combat broadband internet inequalities, Brazilian government launched in 2010 the National Broadband Plan (PNBL). This plan has on its scope the objective of taking broadband connection to all Brazilian municipalities[1] promoting the improvement of the national telecommunication infrastructure. One of the main principles of the PNBL is to stimulate the private sector to invest in Broadband infrastructure, while the state would act complementary aiming to solve the regional and social inequalities. The state would act through the reactivation of the TELEBRAS, what would be a mark in the Brazilian telecommunications history. The state-owned would take the service to final users just in case private sector does not present service provision.

In addition, is extremely important to mention that the PNBL aim goals regarding the mobile broadband internet diffusion. The program expects to reach 60 million mobile broadband internet terminals by 2014, which includes voice and data terminals and modems exclusively for data.

Analyzing the projections of Brazilian broadband diffusion in comparison to other comparable countries like Argentina, Chile, China, Mexico and Turkey, it is possible to find the urgency on the PNBL implementation. Brazilian government projections estipulate that in 2014 there will be 18.3 million connections all over the country, what corresponds to 31.2 accesses per each 100 households, while for the comparable countries projections estipulate for the same year an average of 37 accesses per each 100 households[2].

[1] O Globo, 2010, *Governo Lança Plano Nacional da Banda Larga*
[2] Communications Ministry, 2010, Um Plano Nacional para Banda Larga

#### 2.5.1.3 Mobile Internet

In 1999 the internet goes mobile in commercially scale. In Finland, Nokia launches the world's first WAP handset, the Nokia 7110[1]. At the same time in Japan i-mode mobile internet was launched by NTT DoCoMo[2].

Nowadays the mobile internet is progressing so fast that it is revolutionizing the entire framework of communication technology. This technology is basically an extension of the internet on mobile devices which allows the users to access internet even while they are on a move. However, that is not the only function of mobile internet. It is an integration of telecommunication technologies and internet in such a way that it provides solutions to vast typologies of communication requirements. The next-generation Mobile Internet will enable consumers and businesses to connect and access new types of applications and new forms of information and content wherever and whenever they want.

With the progress which has been achieved in wireless technology, sophisticated software and hardware design, the way the contemporary society communicates has changed in quite a major way. The contemporary society evolved in a manner which considerate mobility as a fundamental everyday necessity. In the last few years, not only has the use of mobile phones increased in quite a dramatic way, but the way that people prefer to communicate and stay in touch with the world has changed too. This reality is on the base of the current diffusion of the Mobile internet.

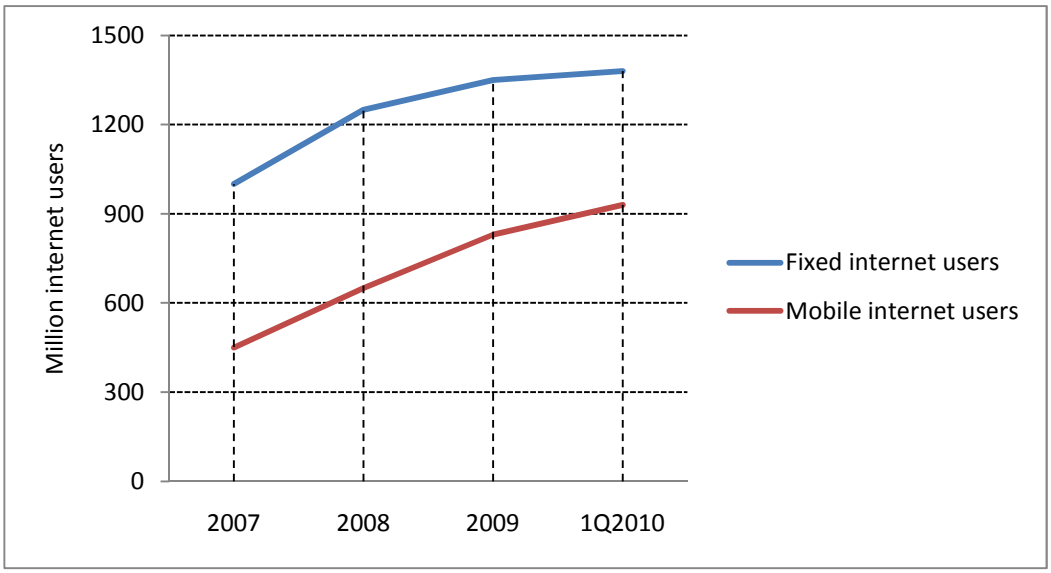
Mobile internet technology is the new trend in mobile phone users. People prefer to listen to music, watch videos, download content, send and receive emails and communicate to each other while they are on the move, and to be able to do that they the mobile internet is fundamental. This fact precedes its superlative value when compared to the fixed internet.

The mobile internet is expected to overtake fixed internet in the near future. Morgan Stanley Research foresees that within 2015 the number of worldwide mobile internet users will overcome desktop internet users, achieving the mark of around 2 billion users. In fact, analyzing currently available numbers is already possible to note this trend. From 2007 to the 1Q2010, mobile internet users increased a 100% worldwide, while fixed internet users increased 38%. Mobile internet growth will be mainly guided by developed economies and some intense growing economies like the BRICs. The 2008 World Bank report also indicates that the mobility of internet access is a reality, especially in more developed countries. As far as developing countries are concerned, the future of this type of access is promising.

The following illustration shows approximate mobile and fixed worldwide usage from 2007 to 2009.

[1] Nokia, 2010, Story of Nokia
[2] NTT DoCoMo, 2010, Company History

Figure 25 - Worldwide Mobile and Fixed Internet Usage, 2007 - 1Q2010




Source: Morgan Stanley Research

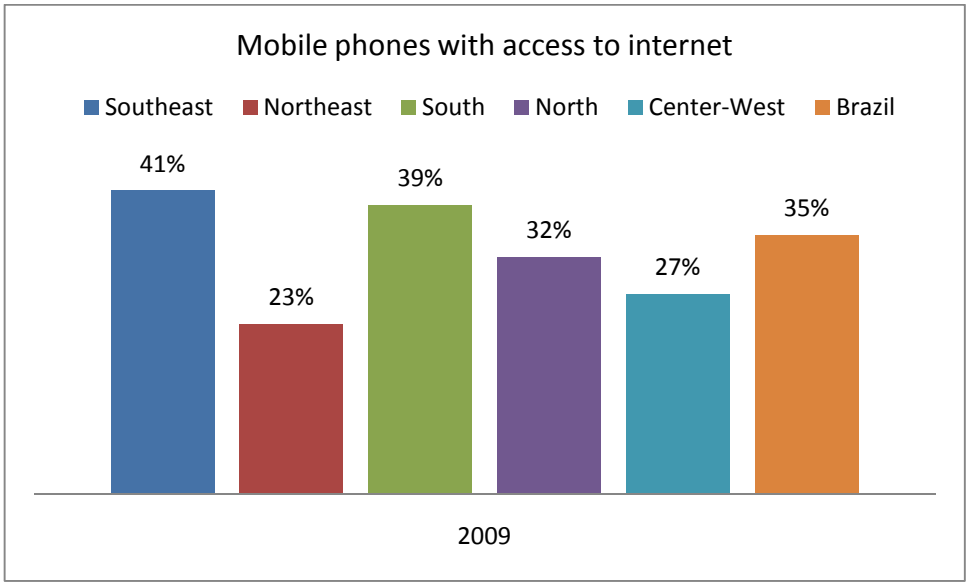
For instance, according to Forrester Research, in Western Europe mobile internet usage will shift on audience among mobile phone users from 13% in 2008 to 39% in 2014. In the USA mobile internet users are expected to more than double by 2014.

In Brazil, according to ANATEL's PGR[1], the mobile broadband internet Personal Mobile Service (PMS) shall reach, until 2018, 125 million accesses, increasing its share to almost 50% of the overall number of accesses in operation, growth that is expressive supported by mobile phones usage. In the last month of 2009 the 10% increase on internet usage was 66%[2] generated by mobile internet access. According to Teleco and Huawei, the access to internet through mobile phones and wireless devices presented a 227% year growth in 2009, with mobile phones representing 94% of this total. In the country mobile phone users start to substitute the fixed internet use by the mobile one. According to TNS Research, search web sites are already used by 19% of mobile internet users, while general content related sites are accessed by 18%.

The current mobile internet national scenario is supported by the high mobile phone penetration rate, which is not far away to achieve 100% penetration and the increasing use of internet through mobile phones. According to CGI survey, the percentage of individuals who own mobile phones with internet access achieved 35% in 2009. However, social disparities affect the equal distribution of the mobile internet use. While the southeast region presented 41% of mobile phone users with access to internet, the northeast region presented just 23% mobile internet penetration. The following illustration presents the proportion of individuals who own mobile phones with access to internet per each Brazilian region for the year 2009.

Figure 26 – Proportion of individuals who own mobile phones with access to internet, 2009

[1] General Plan for Updating and Regulating Telecommunications in Brazil
[2] IBOPE, 2010




Source: CGI Survey

In addition to the socio-economic reality, Brazil still presents other bottlenecks that should be overcome to permit wider mobile internet diffusion. One of the most significant bottlenecks in Brazil is the transmission capacity of mobile and fixed networks.

According to data published in 2009 by the International Telecommunications Union (ITU), in 2007 the internet transmission capacity per citizen of the backbones in developed countries was up to 18.7 times higher than in Brazil, comparing the latter with the UK, for instance, which presented the best figures in the G7. On the other hand, when compared to the BRIC (Brazil, Russia, India and China) countries, Brazil presents the best average, with a capacity that is 6.7 times larger than in India, the worst country by comparison.

However, this reality is controversial to the mobile internet when considered the fixed internet bottleneck. According to CGI, in Brazil, as well as in other developing countries, the increasing use of mobile internet is largely due to the unavailability and/or lack of coverage of fixed networks. High prices and the still limited transmission capacity available make access to the internet through mobile networks a more attractive option to individuals and it is usually used as a complement by enterprises.

Regarding the corporate sector, even access for private matters is often done through work or public points of access. However, although according to ANATEL the tendency is for broadband connections accessed from mobile locations to surpass access through fixed points in the near future, corporate access still remains deeply rooted in fixed points. According to CGI, in 2009 88% of enterprises had fixed access to the Internet, while on the other hand mobile access to the internet was also significant, as 31% of the enterprises already use some type of mobile access to the Internet. The use of corporate mobile phones is present in 65%[1] of the enterprises that have computers.

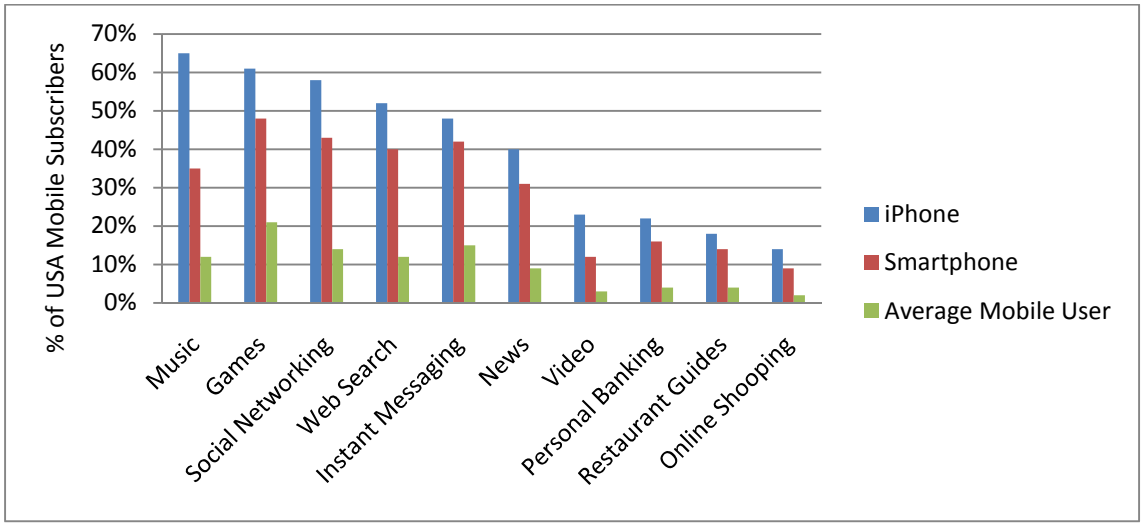
[1] CGI, 2009, Survey on the use of ICTs in Brazil

According to CGI survey only a fourth of these enterprises use corporate mobile phones for internet access; whereas 45% use SMS and MMS messages; and 24% send and receive e-mails through mobile terminals. Regarding the overall number of enterprises that use the internet, 10% in 2009 did so through mobile/ 3G modem connections. Despite subtle percentage, this represents a 100% increase in relation to the previous year.

Coming back to the global scenario, it is possible to assume that the expected intense growth of mobile internet usage will be a boom to consumers, and some players are going to capitalize and others will wonder what just happened. And Brazil is expected to follow these global trends.

While traditional internet actors are fast moving to the mobile scenario, traditional Telco players are aware with the mobile internet diffusion, because this technology is expressive related to data and not about voice. The average mobile phone usage pattern is 70 percent voice, while the average of recent emerging mobile phone models as iPhone and Android devices is around 45 percent voice. The expansion of smarter phones together with high-speed networks are enabling compelling user experiences that, coupled with all-you-can-eat data plans, are unleashing mobile internet data usage. This trend affects directly the mobile content segment, as mobile content became more diffuse and accessible. As an example, the following illustration depicts the USA developed economy mobile content and service consumption by mobile phone type in 2009. The percentages reflect share of users that consumed content or service of a given category at least once a month.

Figure 27 - USA Mobile Content and Service Consuption by Mobile Phone type, 2009




Source: Morgan Stanley

In some extremely developed mobile phone markets as Japan, operators already focus more in data than in voice. For instance, to the Japanese NTT DoCoMo, data usage accounts for 90 percent of network traffic. Globally, the mobile data traffic is

expected to increase by almost 4,000[1] percent by 2014, for a cumulative annual growth rate of more than 100 percent.

This trend presently affects the overall telecommunications industry; probably, in the near future, the expansion of the mobile internet will likely be the fastest growing marketplace in the telecommunications industry, impacting directly on the mobile content value system.

## 3. Mobile Content Market Overview

### 3.1 Past and Present

The roots of the mobile content diffusion in Brazil are based in the introduction of the VAS in the 70's. The VAS were firstly introduced through voice services with the scope of informing useful information to the user. A representative example of the firsts Brazilian VAS was the "Hora Certa", for which the user dialed a certain number on the phone and received back the right hour through voice.

Latterly, the beginning of the communication through digital data was launched by Embratel. In 1985 the company created the RENPAC[2] - National Network for Data Communication through Packages Commutation - and them the creation of digital VAS became possible. Afterwards in 1988, the government altered the general regulation for the telecommunication sector, attempting to cover all new aspects of the Brazilian telecommunications as the VAS diffusion and evolution. In 1992, nearly after the mobile phone introduction in Brazil, Embratel aimed to attend the growing demand of the telecommunications market that was facing the convergence of internet and mobile telephony. Therefore the company launched the Multi Digital Network[3], integrating voice and video to text and data, opening new possibilities for the mobile content diffusion.

In Brazil the convergence of Internet and Mobile phones began in 2000[4], when mobile phone users were able to connect to internet through WAP technology. The protocol used the markup language WML especially created to attend the mobile phone specificities. The mark was preponderant for the mobile content diffusion; in the same year one of the first infotainment services was launched with the scope of providing news from FolhaWAP[5] and important media players as Abril and Estado de São Paulo created WAP sites. Nearly after in 2001 TELESP turned available a WAP chat, in 2002 a voice chat and in 2003, already under the name Vivo, launched Vivo Downloads, a portal that offered customization content and games[6]. The mobile content offer began to take largest proportions.

[1] Morgan Stanley Research, 2010
[2] Embratel, 2010, História
[3] Embratel, 2010, História
[4] Vivo, 2008, Linha do Tempo
[5] Ferreira, P. H. O., 2005, *Notícias do Celular, Uma Introdução ao Tema*
[6] Telesintese, 2006, *Qualcomm Divulga os Numeros Brew na AL*

Nowadays, with the availability of the 3G technology in Brazil, which was introduced firstly by Vivo in 2004, a broader range of services and content became possible to be offered through mobile phones. The technology is able to support high transmission rates of data in a minimum of 2Mbit/s as prior defined by the IMT - 2000 (UIT)[1]. In Brazil the predominate 3G technology is the WCDMA[2] used by 73.4% of 3G users.

Despite 3G mobile phone users in Brazil still scarce when compared to mobile phone users in general, their base is rapidly growing in the country; in the first 4 months of 2010 3G mobile phone user base more than double.

Regarding the technological platforms for offering mobile content in Brazil, micro-browsing is the most diffused. According to Bertelè et al. (2009), this platform accounted for 40% of mobile content offer in 2009, while Sms and download represented respectively 32% and 23% of the offer. Streaming represented 4% of the offer and other innovative technological platforms as SBTVD (Digital Tv Broadcasting) and Mms are marginal.

Globally, the VAS already represent an indispensable source of revenues, in fact for the majority of 3G representative mobile phone operators it represents more than 20% of service revenues[3]. In some cases they almost represent the majority of total revenues, as in the case of the NTT DoCoMo and Verizon, representing in the 1T2010 45.4% and 33.3% respectively. In Brazil in the 1T2010, the VAS represented 15.6% of service revenues, a 27.9% increase compared to the 1T2009. These numbers keep Brazil as a potently market with space to grow.

Considering Brazil as a potential mobile content market, players in the value system articulate themselves to offer more sophisticated and varied content and services. The main classifications of mobile content offered in Brazil are infotainment, customization, communication & community, betting and gaming.

The infotainment classification is related to content which bring entertainment and information to the final users. This classification represents the majority of services and content in the Brazilian market, accounting for almost 80% of the offer[4]. They are mainly based in image, video, audio and text, being available both through subscription and single buys. The frequency in which products become available varies greatly, for instance, services like news through SMS, audio and video podcasts are mainly offered at regular basis, but videos for entertainment have a slower pace of release. These differences are caused by the finality of the service, being that information and text messages have a higher value when they are updated in real time, while entertaining products take a longer time to become out of date. The Vivo Download Store represents a complete offer of infotainment. On the store it is possible to find a large variety of infotainment as the videos related to diverse themes, for example the ones related to the

[1] Teleco, 2010, *Tecnologias de Celular*
[2] Teleco, 2010, *Seção 3G*
[3] Teleco, 2010, *Receita de Dados das Operadoras*
[4] Bertelè et al., Mobile Content Market in Brazil, 2009

FIFA World Cup and the ones just regarding humor, all of them covering almost all publics' age group demand.

The customization content comprises mainly images and sounds that the clients can use in order to personalize its mobile device. In Brazil the customization offer represented 11% of total offer in 2009, playing an important role in terms of revenues. They are principally composed by ringtones, logos, wallpapers and screensavers. The complexity of ringtones varies from simple monophonic and polyphonic tones to true tones and video ringtones, being the last ones products that make use of video and sound in order to customize the cell phone. The images have its sophistication related to details and movement, for instance, there are logos and animated logos, products which are less detailed than wallpapers, which do not have movements as the screensavers. A good example of the variety of the customization content can be seen in the TJ Net website, which offers a large variety of content as wallpapers, which are offered through 35[1] different categories, and true tones.

The communication & community typology of content is not expressively diffused in the Brazilian market, representing in 2009 4%[2] of the offer. However, this typology of mobile content is seen as remarkable potential regarding the mobile content sector. This fact is motivated by the intense diffusion of social networks in the country, which are easily connected to mobile phones through the present technologies. According to Ibope NetRatings Brazil is the most sociable country in the world; while each internet user possess in average 365 virtual friends[3]. On the Oi M-Portal is possible to find a large variety of communication & community services, as the Oi Bate-Papo offered in 13[4] varieties of groups, from the ones regarding friendship to the ones directed to music or football fans.

The betting typology is not very representative for the sector, this classification represented in 2009 1% of total mobile content offering. However, as in the case of the customization content, betting has a substantial impact on revenues through all the value system. This fact occurs mainly because the revenues generated by Reverse Auction services. These services are mainly advertised during TV shows and the audience is invited to participate through SMS. One examples of this kind of service is the Super Leilão offered by Record Television and Media Company.

Finally, the gaming classification comprised 5% [5]of the offer in 2009. This typology is offered in a large variety range, varying from single to multiplayer in diverse levels of graphical details. The more technological advanced games are offered mainly in Java format with single player option. On the other hand, simplest games are offered in SMS and offer many features for multiplayer game. On the Claro Idéias M-Portal games are

[1] TJ Net, 2010, Wallpapers
[2] Bertelè et al., Mobile Content Market in Brazil, 2009
[3] IPNews, 2010, *Brasileiro usa VAS mas ainda é tímido em relação ao acesso a internet*
[4] Oi, 2010, Mundo Oi
[5] Bertelè et al., Mobile Content Market in Brazil, 2009

offered through 30[1] different categories from the classics to the recent games as the ones related to the South African FIFA World Cup and to the Iron Man 2 film.

### 3.2 The Basis of Mobile Content Commerce

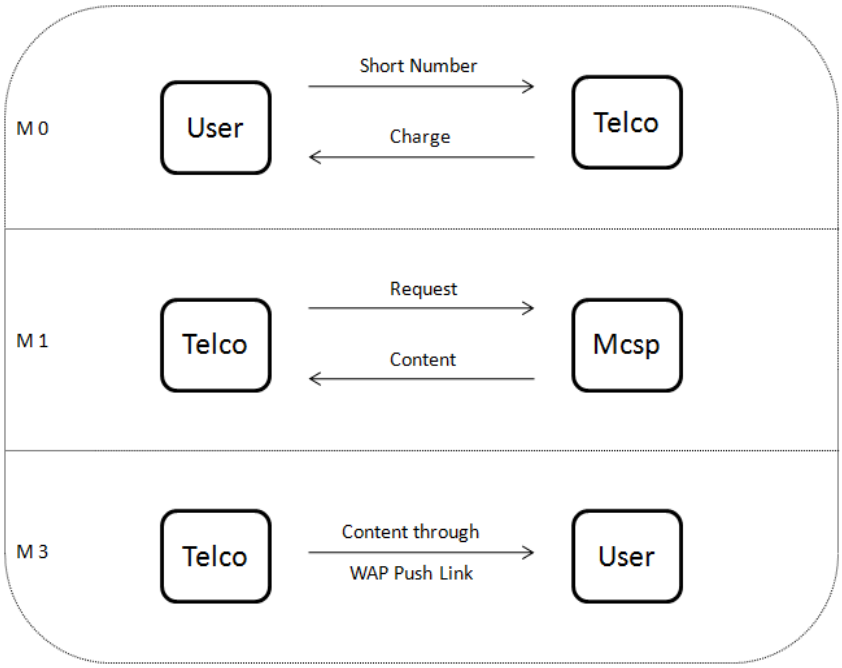
A fundamental issue for the understanding of the mobile content business and value system is the Sms as main payment and delivery method. Sms is the main technology that supports the mobile content market, being the most widespread payment and delivery method for mobile content services.

After having activated the mobile content services through a short premium number, web portal or other activation channel the customer has the option to make the payment of its acquisitions through two types of Premium billing Sms: the message originated (MO) premium and the message terminated (MT) premium.

Through the MO premium the user asks for the mobile content desired sending to the Telco a Sms with a short number that is charged with premium price (a higher price than the usual Sms price charged by the Telco). Telco, through the short number composition recognizes the supplier of the service (usually a Mcsp) and automatically sends a service request to that supplier. The supplier sends the service requested by user to the Telco. Afterwards Telco sends to the user a Wap Push Link enabling the download of the service. It is important to point out that in the MO premium case the user is automatically charged in the moment that sends the message, the Telco send request after the charge. The following illustration shows the MO Premium single buy charging models highlighting the three moments involved on the acquisition process.

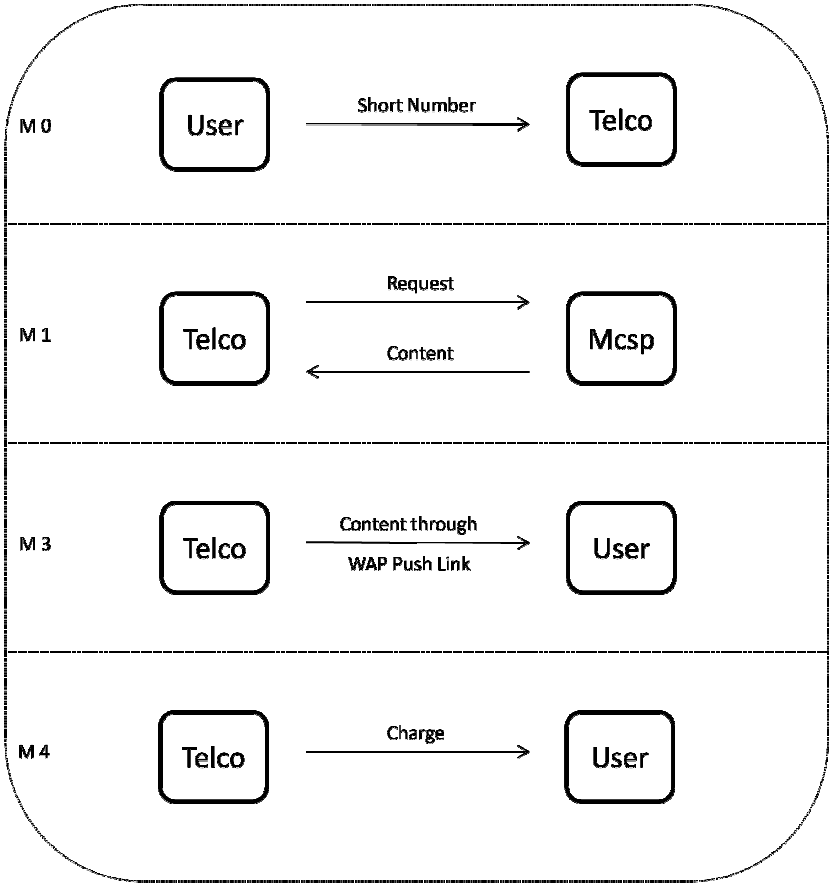
[1] Claro, 2010, Claro Idéias

Figure 28 - MO Premium Single Buy in moments M 0, M 1 and M 3




The MT premium charging model is classified in two principal types: single buy and subscription with frequent receipt. In the single buy type the user sends a simple Sms (with simple price) with a short number requesting for the service. The Telco, after received the request by the user recognizes the supplier of the service (usually a Mcsp) and automatically sends a service request to that supplier. The supplier sends the service requested by user to the Telco with the indication of price to be charged. Afterwards Telco sends to the user a Wap Push Link enabling the download of the service followed by a Sms charging the acquisition. Therefore, in this case charge occurs in a different moment than MO premium, the user is charged after the reception of the request. The following illustration shows the MT Premium single buy charging model highlighting the four moments involved on the acquisition process.

Figure 29 - MT Premium Single Buy in moments M 0, M 1, M 3 and M 4




On the other hand, in the subscription with frequent receipt the user makes a request at once and passes to receive services regularly until he doesn't unsubscribe from the service. In general, players using this type of MT premium offer a package of services with a fixed weekly price. An advantage of the subscription with frequent receipt is the possibility that players have to forecast the demand of content and therefore better planning its content offer.

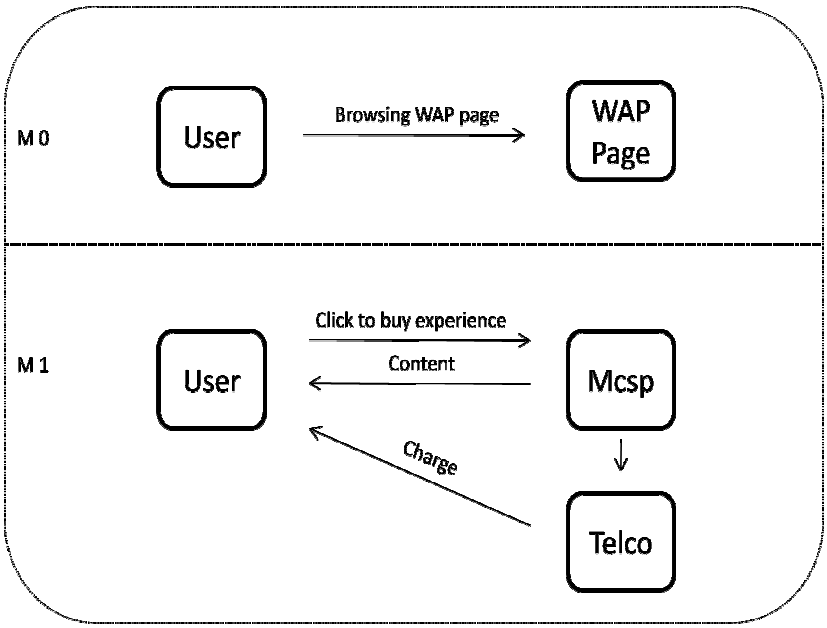
With the mobile internet diffusion new billing systems became more diffuse and contribute to changes in mobile content business models. In addition to the billing systems previously mentioned another diffused system is the WAP billing, so-called D2C (direct to customer), that is considered the next generation of billing approach for the mobile content. The base of this consideration is the influence of the mobile internet on the mobile content commerce.

In this system Sms messages are not necessary, as long as it is connected to the billing system of a Telco. The customer is required to have a WAP session with the mobile content service provider, by browsing a WAP page for example. During the session his mobile phone identity – MSISDN- can be identified by the WAP site hoster, this information is provided through integration with the operators own MSISDN lookup service. With the customers' identity, any purchase can be recorded and billed

directly from the phone bill. The user connected to the M-Portal select its products by clicking on a link for the respective products – an action called "click to buy experience" – and agrees to make the purchase. Afterwards the VAS became automatically available to download.

The WAP billing is seen as a potential charging model that may overcome the Sms based models in the near future. This trend may be explained by the advantages related to this charging model, as the simplification of the acquisition process for customers, the reduction of frauds on its operations and principally the fast transactions completion speeds generated through it. Once in the WAP page the customer can directly visualize the mobile content and simply "clicking to buy experience" the request is made without having to lose time writing a message, completing registering forms, usernames or passwords. WAP billing also reduces frauds as hackers can't send short numbers through false mobile phone numbers, what can happen in the case of Sms based models. As pointed out by the K2's UK CEO Steve Kitchen [1]on the 2010 Sydney's WAP Billing and Mobile Search seminar, the transactions completion speeds generated through it usually are fastest than in Sms based models. The interaction among the players involved on it are more simultaneous and less sequential, as can be seen in the following illustration that represents the WAP billing process in two moments.

Figure 30 - WAP billing process in moments M 0 and M 1




[1] Dialogue, 2010, WAP billing & Mobile Search in Australia

## 3.3 Mobile Content Revenue Sharing Policy

A critical issue that has to be considered to the understanding of the actual layout of the Brazilian mobile content value system is the revenues agreements over the system.

Actually Telcos are the most benefited players regarding the division of mobile content revenues. They remain with 50% of the content price, deducted taxes. This amount can be considered very elevated if take in consideration that at each step on the system there are taxes around 30% of the revenues and that frequently are several players involved in the business. The content acquired by the customer can pass through all players' classifications, Web Editors, Traditional Publishers, Pure Players and Telcos, and in some cases through different players of the same classification.

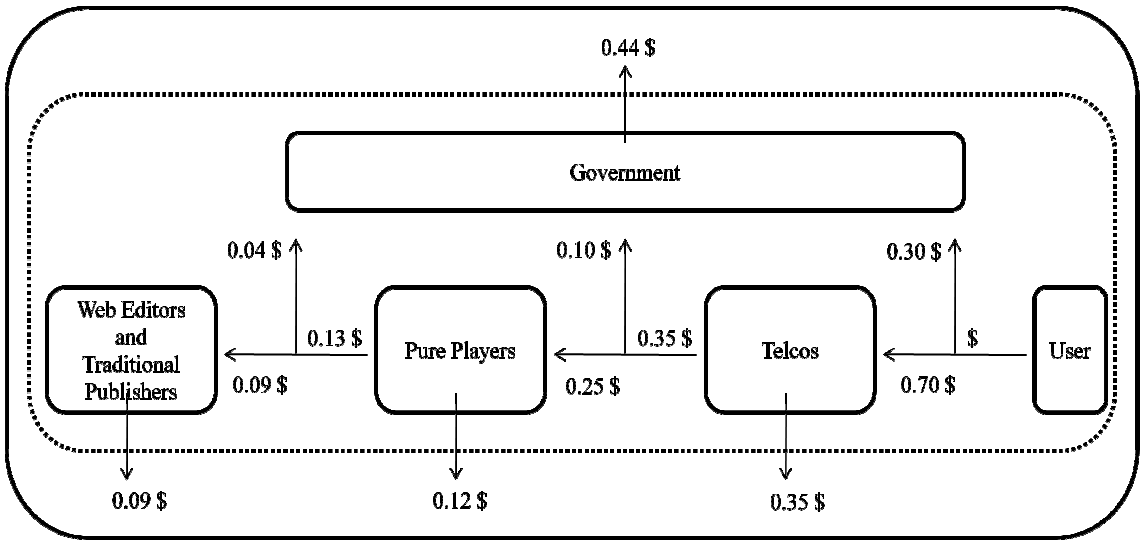
Telcos bargaining power is based on the direct contact that these players have with the mobile content user. They are in possession of clients' database, and based on it they can easily prepare the appropriate offer sending it through its own channel.

After Telcos, Pure Players remain with the biggest share of revenues. They take around 50% of the remaining revenues that were taken by the Telco. The other 50% is distributed among the other value system players.

Pure Players retain a large amount of revenues mainly because they act as a central HUB in the value system connecting Telcos with other players. They manage and aggregate content in a business-to-business function. Therefore, almost all mobile content transactions have to pass through them.

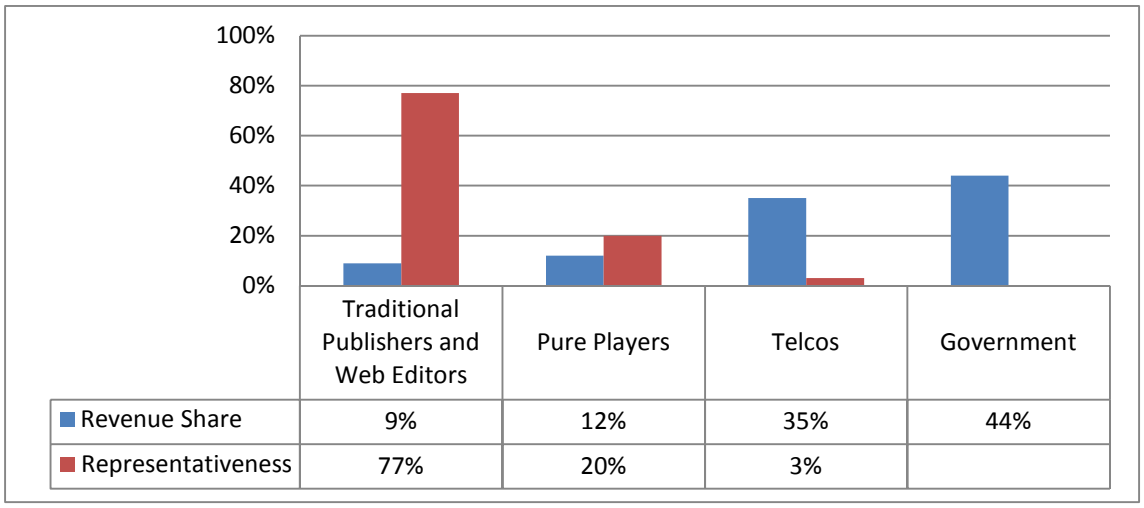
It is important to note that frequently the technology providers do not participate of the revenues share, as its services are hired through fixed agreements. The following illustration depicts the usual present mobile content revenue sharing policy.

Figure 31 – Revenue Sharing of a $ priced Mobile Content



The following illustration shows mobile content revenue sharing percentages, considering players and government, in contrast to the representativeness of players, considering the total of suppliers.

Figure 32 - Players' Revenue Share versus Players' Representativeness




Source: Bertelè et al. 2009

## 3.4 Value System

The Value system is an interlinked group of players with same or different value configurations pursuing the objective of deliver the higher value to the end customer. In the case of the Mobile Content segment the main players comprised on the value system are: Traditional Publishers, Web Editors, Pure Players (mainly MCSPs) and Telcos. As identified by Bertelè et al. (2009), the Brazilian Mobile Content Market comprises more than 290 main players generating a rich content offer. All players' groups present national and international presence, as example of Traditional Publishers are Group Abril (Brazilian-based) and Universal Music Group (Usa-based), both with annual revenues over billion dollars. Group Abril is one of the major Brazilian open capital media groups, boasting over 8.500 employees, 300 of whom employed in Abril Digital and 25 dedicated to Mobile. Its digital activities (web and mobile) have been carried out by the company Abril Digital since 2000. Abril acts in B2c Mobile Content retailing, offering mainly Infotainment services related to its magazines brands, both through its own mobile site and Sms through subscription. Universal Music Group is the largest Major label in the music industry, with roughly 25% of worldwide market-share. The group is able to act in B2c and B2b. The company offers music both in Infotainment and Customization both through its own channels and through all the Telcos.

International and national Telco operators compose the Brazilian market, as examples are TIM (Italian-based) and Oi (Brazilian-based). TIM is the third largest

Telco in Brazil, with 23.6% market share, while Oi has 20.4% market share occupying the 4th position.

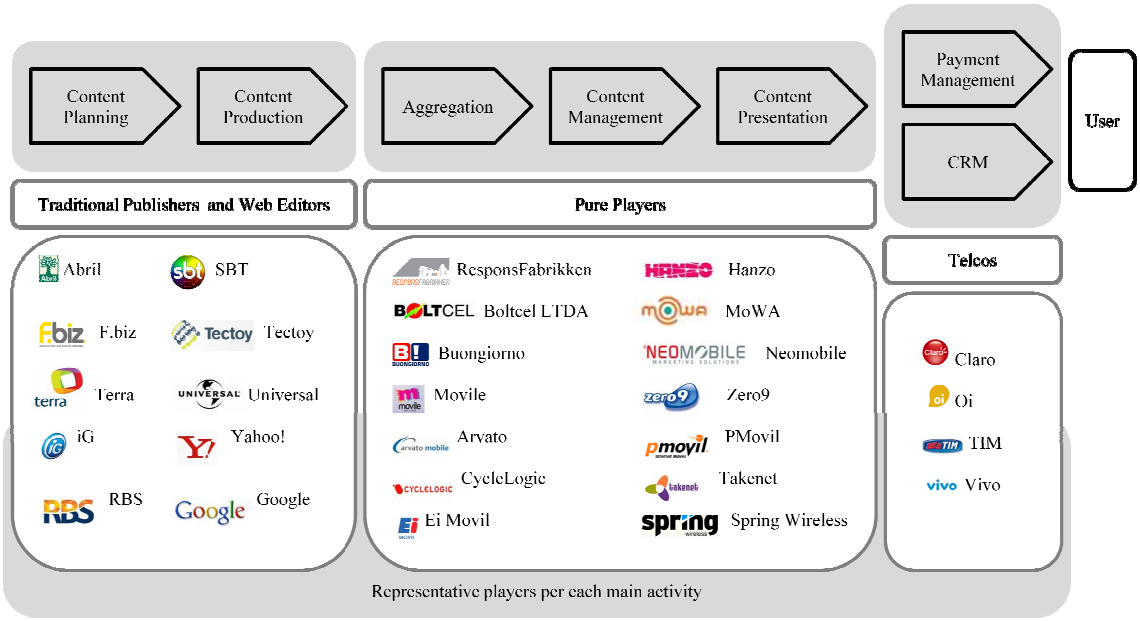
As Pure players, some representative ones are Bungiorno (Italian-based) and and Hanzo (Brazilian-based). Hanzo works in B2b technology and service provision for Mobile Marketing campaigns, including management, delivery and billing. Hanzo has been connected to all the Telcos in Brazil since 2007 and has partnerships with nearly 100 Media groups, brands and advertising agencies. Buongiorno is the world leader in mobile entertainment and operates both with B2c and B2b approach, managing white label services for third parties.

As representative Web Editors are iG (Brazilian-based) and Yahoo! (USA-based). iG initiated operations as a free dial-up Internet provider in 2000, nowadays it reaches 28% of the Brazilian residences. The company offers Mobile Content such as Customization, Infotainment, Java Games and Chat Communities. Yahoo! is an American public corporation that provides internet services worldwide. The company offers large amount of Mobile Content and services, such as mobile blogging, ring tones and mobile Games.

Players can be separated by defining their core activities, which on the Mobile Content value system are: Content Planning, Content Production, Content Aggregation, Content Management, Content Presentation, Payment Management and CRM (Customer Relationship Management).

The following figure presents the Brazilian Mobile Content value systems standard layout illustrated with representative players.

Figure 33 - Brazilian Mobile Content Value Systems Standard Layout

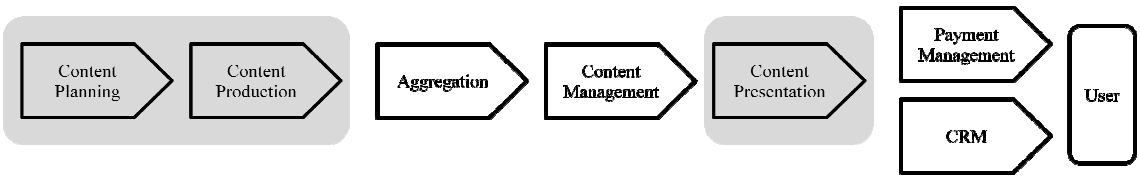



Telcos play a very important role on the value system, representing 30 percent of Mobile Content service offering (Bertelè et al. 2009). They detain the access to final

users through the equipments distribution and through own services through their networks, as well as they manage the main marketplaces (own mobile portals) and charging schemes (Cortimiglia, 2009). These players control the billing of Mobile Content offers once they own the billing system of mobile accounts. Moreover, they are in charge of CRM, as each product request has to pass through their system.

Central to the Mobile Content value system, Telcos articulate key partnerships with Pure Players, Traditional Publishers and Web Editors, acting with remarkable influence. As a consequence of their central role and by controlling Mobile Content billing, Telcos remain with the biggest share of revenues. In this way, they have interest in other main activities that can directly impact on their profits; these activities are content planning, production and presentation. Establishing their presence on these activities they would be able to keep control of value system's down and upstream. In fact, in a recent past, Telcos used to control value system's entrances and exits, however, as noticed Sabat (2002), network operators no more owns the entire value system. Nowadays, with new players on the system and the complexity of interactions among them increasing, market turning competitive and hostile, high customers' expectations and necessity to create efficacy partnerships, Telcos have to focus on their core activities. Therefore, Telcos should consider these three main activities as complementary, as presented on figure 30.

Figure 34 - Telcos' Complementary Activities




Operators may benefit by outsourcing to, or partnering with, Pure Players. By offering proven expertise in value system elements, Pure Players offer a way for operators to differentiate themselves in a highly competitive market, where time-to-market is critical (Sabat, 2002).

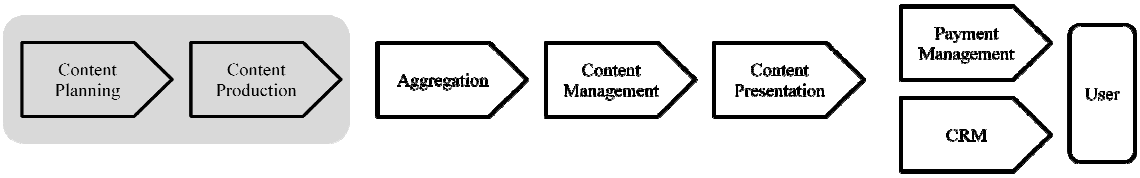
Pure Players, represented almost exclusively by MCSPs, have a fundamental role to play in fostering market growth (Bertelè et al., 2009). They are responsible for the introduction of innovative business models such the ones based on subscription pricing schemes or content bundle propositions.

In a direct business-to-business function, Pure Players ease technological complexity in the value system by centralizing the points of contact with Telcos, handling direct connections, operating billing and reporting systems and managing access to and use of short numbers (Bertelè et al., 2009). These players aggregate and manage a variety of content developed by other players, standardizing the offering, and therefore reducing its complexity, facilitating Telcos activities. On Content Presentation, Brazilian market is strong represented by international players. Engaged mostly on Mobile Content retailing, they leverage mostly on marketing competencies

and operational know-how developed from years of experience in foreign markets (Bertelè et al., 2009).

Some Pure Players, as Boltcel LTDA, develop products in-house, expanding its value system range of action; however, aligned with global trends, most Brazilian Pure Players tend to focus on their core activities considering other important activities as Content Planning and Production as Complementary activities. They benefit from well established relationships with Telcos and unique knowledge about their traditionally value system roles.

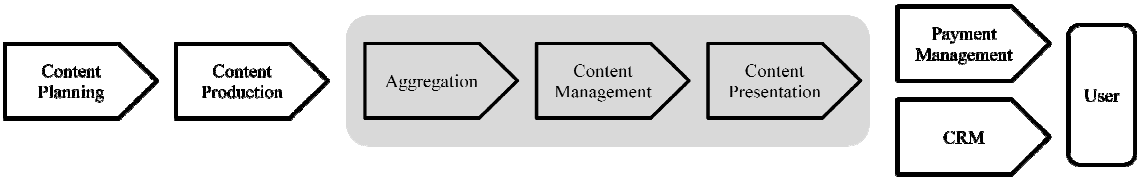
Figure 35 - Pure Players' Complementary Activities




Traditional Publishers is the main category of suppliers in the Brazilian Mobile Content market, accounting for 50 percent of the suppliers and 31 percent of the services (Bertelè et al., 2009). With a remarkable presence of large Media companies comprised on the group, Traditional Publishers play a fundamental role on Content Planning and Production focusing on traditional Infotainment content and rich-quality Mobile Internet and M-Sites.

An important drive for the development of this supply was well developed agreements with Telcos for sharing data traffic revenues. However, as noticed Bertelè et al. (2009), there is evidence that this particular revenue shared model will probably be discontinued in the near future. It is worth to mention that Media companies are already preparing a move toward advertisement-based Mobile Internet. In this way Traditional Publishers may incorporate some complementary activities as main ones, extending their range of action on the value system.

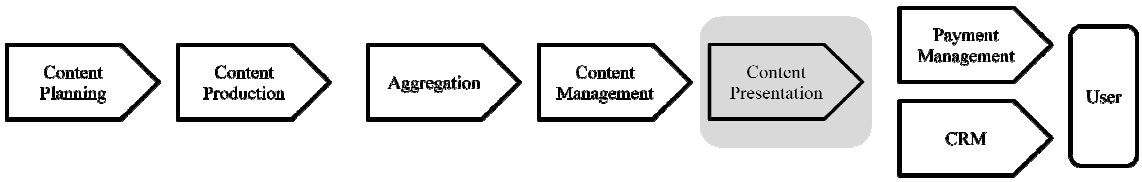
Figure 36 - Traditional Publishers' Complementary Activities




Web Editors in general are engaged in two roles of the value system, as content providers and content retailers. As content providers they are considered as fundamental partners by Telcos, as they provide Infotainment content in special areas inside Telco

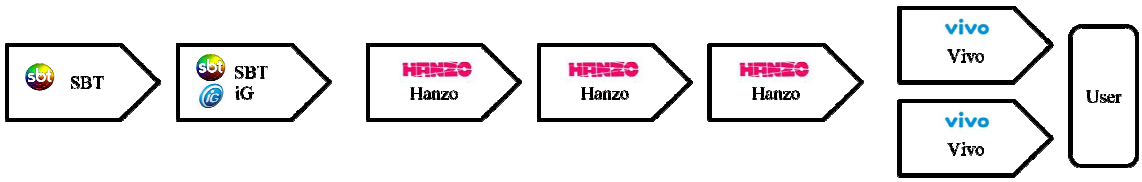
M-Portals. As content retailers they benefit from data traffic revenue share agreements with Telcos, placing their rich-quality content on Off portal environment, in order to capitalize on their web audiences. This objective may precedes Web Editors preparation to change their business models in order to leverage their large audiences and exploit the opportunities of displaying advertising and Mobile Marketing promotions. This fact may imply that Web Editors should bypass other value system players. However, as affirmed Bertelè et al. (2009), even if Web editors tend to be capable of independently manage their own services and connections with Telcos, partnerships with Pure Players are essential to help them concentrate on the activities in which they excel.

Figure 37 - Web Editors' Complementary Activities




The following figure presents a theoretical value system, based on players' real market relationships. SBT is one of the largest Brazilian Traditional Publishers and acts as Content Provider of Infotainment Video services for Vivo's M-Portals. Vivo, has comprised on its Mobile Content offering an extensive range of content, partnering with other content providers as iG, a Brazilian Web-Editor. However, it's important to mention the complex reality to manage all Vivo's Mobile Content. Therefore the value system announces the necessity of other player to permit the delivery of high value to the end user. This role would be fulfilled by a Pure Player. Hanzo, a privately-held Brazilian Pure Player, has been connected to Vivo and has partnerships with a variety of Traditional Publishers and Web Editors, as SBT and iG, managing roughly 800 services. In this way Hanzo plays a central point connecting both ends of the value system.

Figure 38 - Theoretical Mobile Content Value System



# 4. The Mobile Internet on the Mobile Content Value System

## 4.1 Impacts on the business models

With the convergence of the mobile content market with the mobile internet new business models in the mobile content segment arise. Non-telecom players, such as media companies, retailers, and financial institutions, need to define or refine their strategy to engage directly with consumers via the mobile internet. They must be aware of the mobile market's unique character as they integrate their mobile internet services into a multichannel and multimedia strategy (Forrester Research). An important issue directly related to this trend is the new possibilities of advertisement applicable to mobile content.

Since the first ringing tone was sold on the mobile phone in Finland around 1998, the mobile has emerged as the "seventh of the mass media", after the later six: print, recordings, cinema, radio, television and internet. Also like on all other media, advertising appeared onto mobile when free news services launched in Finland sponsored by ads around 2000. Nowadays, driven by the mobile internet diffusion mobile advertising is bubbling with activity and new possibilities. The mobile is emerging as next advertising and marketing medium.

According to projections from Juniper Research, mobile advertising spending will swell to nearly US$ 6 billion by 2014 from just $1.4 billion in 2009, as an expressive impact of the mobile internet. According to New York Times, mobile internet advertising alone is projected to grow fourfold to a US$2 billion market over the same period. Regarding revenues, Mind Commerce estimates the world market for mobile marketing and advertising revenues will reach nearly US$50 billion by 2014, up from about US$ 29 billion today, growing at a five year CAGR rate of nearly 12%. This growth is expected to be based mainly in the increase in mobile internet usage, and an accompanying increase in consumer adoption of mobile internet services. Juniper Research expects much of the growth to come from emerging markets such as BRICs, where fixed-line connectivity remains low.

With the increasing proliferation of mobile phones and mobile internet, mobile advertising is being considered as the new catalyst for generating revenues. Few years back, mobile advertising was a niche market but now it is gaining momentum among operators and other players.

To capitalize this scenario, Telco operators should know how to profit the new revenue stream that arises from other players promoting their mobile content and drawing innovative ways to drive business. In fact, with the mobile internet diffusion, other players as Traditional Publishers and Pure Players began to advertise their content directly through own web sites, bypassing the walled garden imposed by operators.

To maintain its position Telco operators developed walled garden portals to ensure that other mobile content players were kept well away from end-customers. This strategy has made it difficult for players to easily connect up to operator networks in

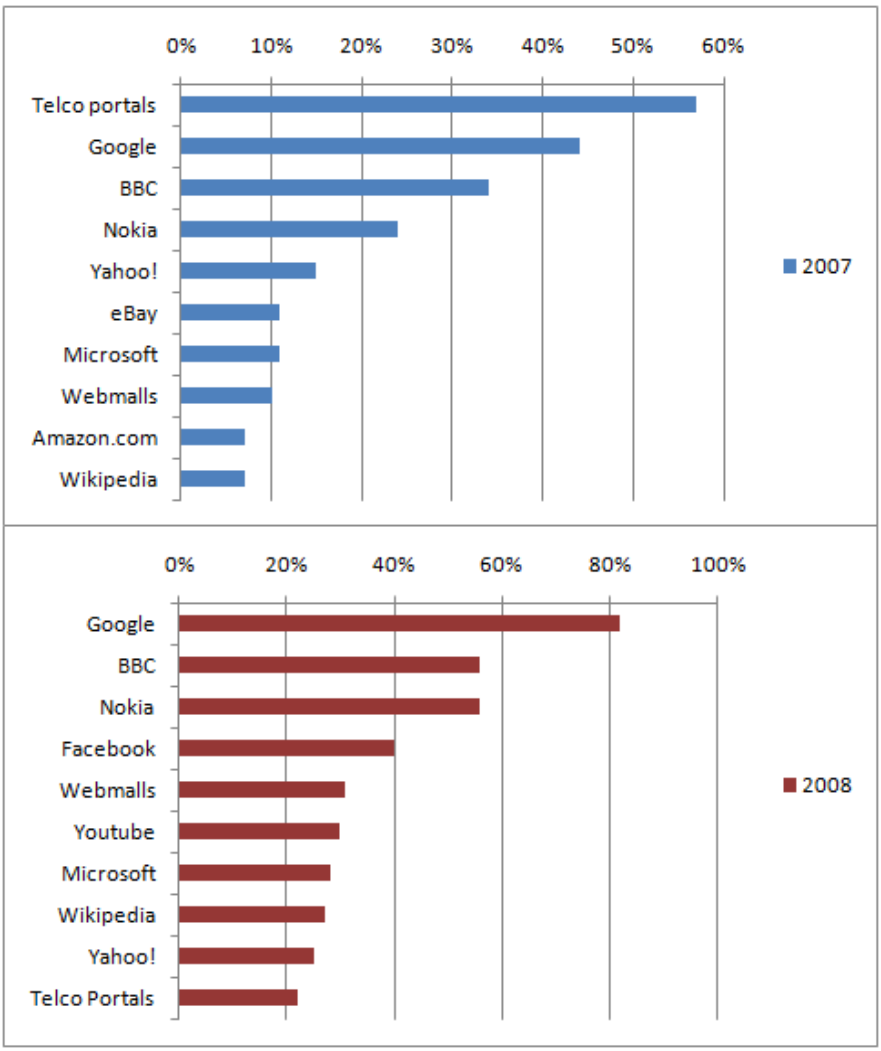
order to make their content available and those that did were also unhappy with the revenue-sharing arrangements (De Lussanet, 2004). As analyzed by Peppard & Rylander, 2006, this practice is based on the old conception of the value chain with its value creating logic as a linked chain of activities, a perspective that leads to the development of strategies focused on controlling the chain. However with the mobile internet both content and the value chain logic is inappropriate and requires a fresh perspective that recognises co-operative relationships and alliances.

Mobile telecom operators must also redraw their IT architecture if they hope to market new services quickly and cheaply (Benni et al., 2003). Many have begun to implement service delivery platforms (SDPs) to facilitate the provision of new and innovative content from 3rd party providers, however the overall logic guiding these initiatives still based on old conceptions of value creation and the value chain logic. This raises the issue of a value system with different business models and bilateral service level agreements.

The open mobile internet and the distribution of content and applications via new retail stores could represent operators' portals bypassing. According to Forrester Research, Apple is just the pit of this trend and drivers are now in place for mass-market uptake of the mobile Internet.

Taking a developed mobile internet market as UK is possible to note that walled gardens are collapsing extremely rapid. In 2007 Telco mobile portals were accessed by 57% of mobile internet users. Nearly after, in 2008, telco mobile portals were accessed by 22% of mobile internet user, a 61% decrease. The following illustration shows mobile web sites' share of UK mobile internet users for 2007 and 2008.

Figure 39 - Mobile web sites share of UK mobile internet users, 2007 - 2008




Source: Morgan Stanley

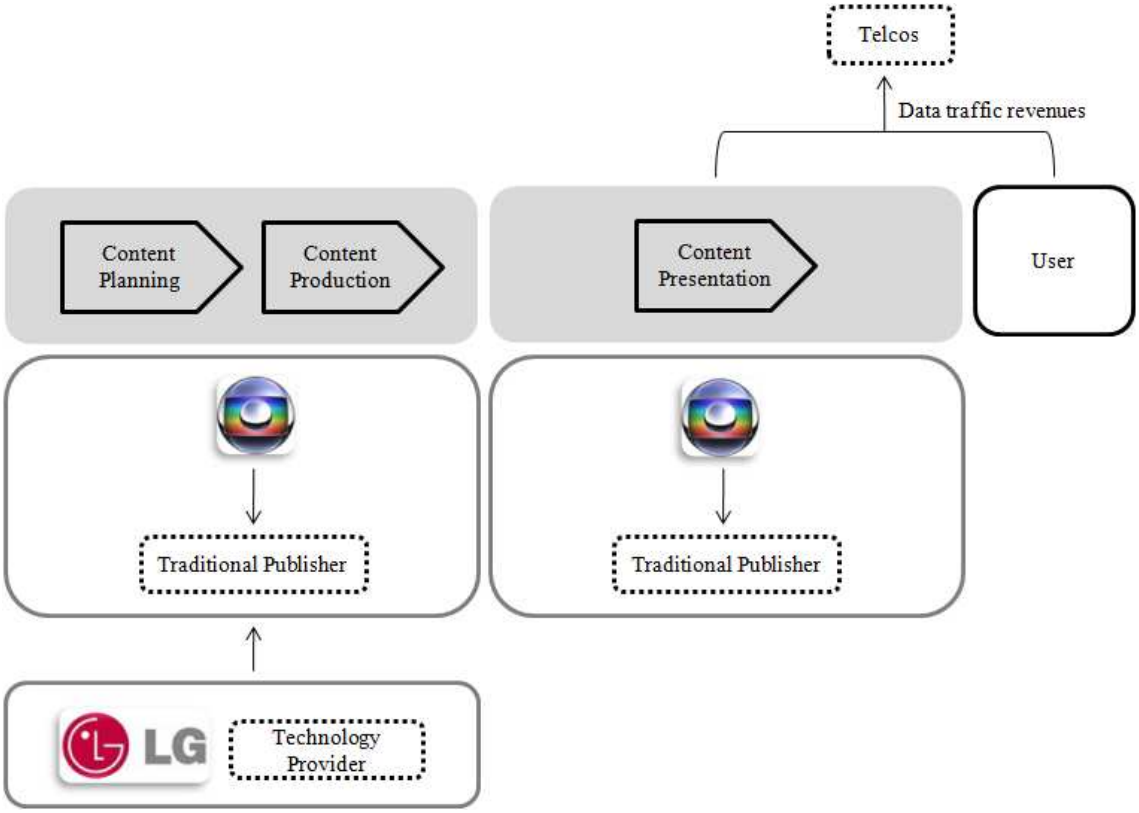
In the Brazilian market, many players bypassed Telcos' walled gardens, as the traditional publisher Abril that profit of new ways of mobile content advertisement redrawing traditional business models.

Abril created a mobile portal called "Abril Celular" which offers a vast quantity of mobile content, mainly in the infotainment classification, that can be bought directly through its mobile site. However, is important to note that an expressive part of the content offer is constrained by Telco plans.

Recently the LG launched the first mobile phone with interactive digital tv in Brazil, indicating the generation of new business models for mobile content. The national tv related content offered will be free of charge and transmitted by tv operators. The launch was made together with the Globo Traditional Publisher, which already developed an application that interacts with the users while transmitting FIFA World Cup matches. The company expects 30 million mobile digital tv users using this content

by 2014[1]. However, LG intends to have in the future agreements with other Traditional Publishers. Interesting to mention that Telco operators aren't directly included in this business model, while they just benefit from data traffic revenues. Moreover, is important to mention the preset positioning of technology providers, which began to participate more closely in the mobile content market. The following illustration depicts the emerging value system created around LG and Globo's mobile content.

Figure 40 - LG and Globo Emerging Value System

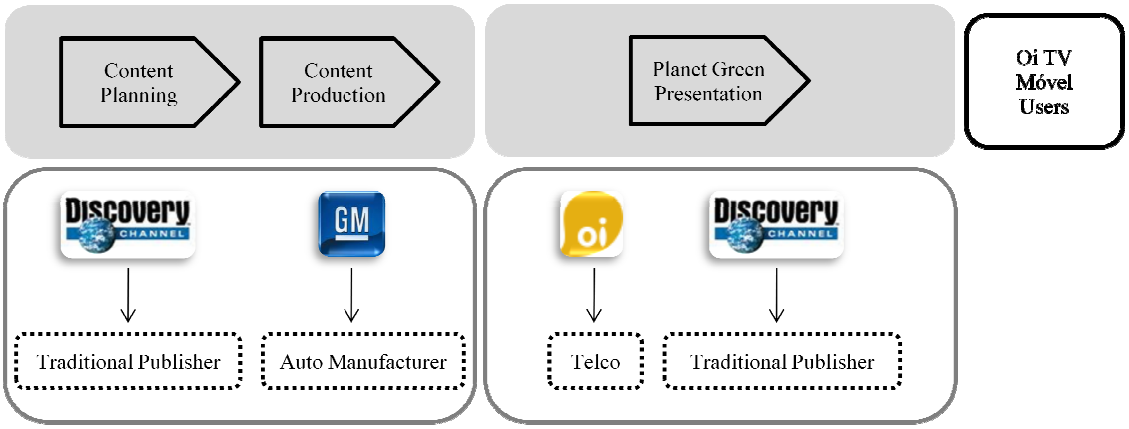



In 2009 the first free tv mobile channel supported by advertisement was created in Brazil, representing an evolution on the infotainment mobile content model of business. Discovery Channel joined the Telco operator Oi and the auto producer GM to create a new infotainment product. Discovery acts as a content provider, Oi developed the platform and GM sponsors the program. The program is called Planet Green and makes part of the sustainability program of GM. The content is broadcasted in packets with one hour long duration divided in small programs from 5 to 10 minutes, among which GM implemented advertisements. Oi does not benefit from data traffic revenues; however the content is available just for subscribers of the Oi TV Móvel, which is downloadable through mobile internet. The application works through streaming

[1] Telesíntese, 2010, Celulares LG já permitem interatividade com TV digital aberta

technology. The following illustration depicts the value system around Planet Green process.

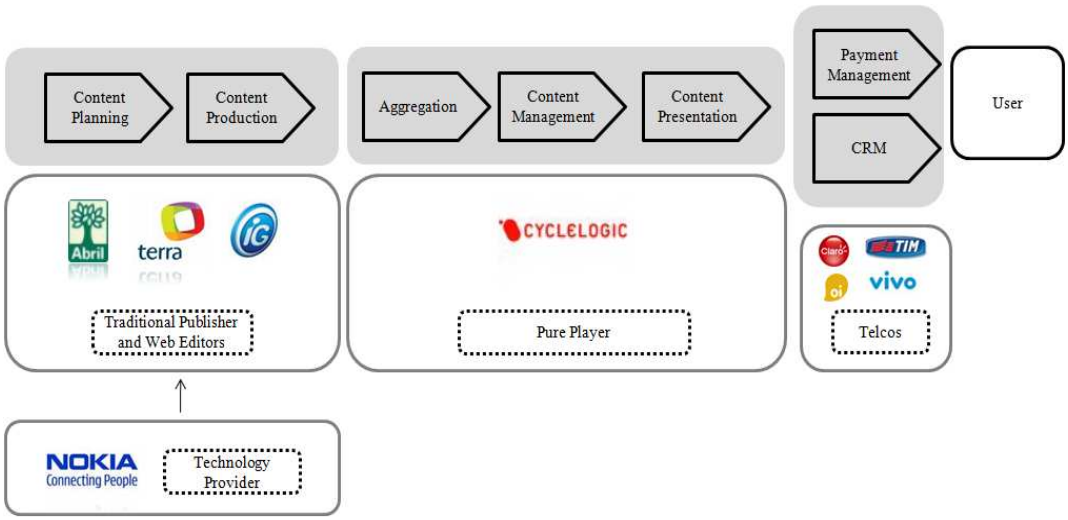
Figure 41 - Planet Green Value System




An interesting mobile content value system that is to be created around the mobile internet regards a new application developed by Nokia. Nokia developed an application that goes embedded on a new device that is to be lauch. There are 36 icons prepared to receive mobile marketing, SMS mobile content with subscription and mobile content offer in general. Many players already partner to make part in this application, as Abril, Terra and iG. Devices with this application are going to be offered in Asia, Europe and Latin America.

In Brazil telco operators will receive mobile content generated revenues and in sequence they will pass a percentage to CycleLogic – which acts mainly as an aggregator in this case - that in his turn pass a percentage to Nokia and other players. It is interesting to note the positioning of Nokia in the created value system. It shows an approximation of a technology provider to the mobile content market. The value system around Nokia's application is depicted as follows.

Figure 42 - Nokia's emergent application's value system




The previous value system demonstration shows Telco operators' efforts to maintain its mobile content value system position even in the mobile internet environment.

Delimitating the segment for the emerging generation of iPhone and Smartphone users, it is possible to assume that the mobile content advertising is passing through an expressive evolution. New players profit the new possibilities of the mobile internet potentiated by these mobile phones developing new advertisement campaigns for mobile content. For instance, in Brazil, Pontomobi and Nivea joined to promote an infotainment related to the use of Nivea Sun sun protectors for iPhone. The mobile content, which is downloadable through mobile internet, localizes the user and sends him the information about local temperature. Then the user should type its age and skin color and the mobile content says which protector he should use. Interesting to mention that the content is advertised not just in iPhone App Store, but even in through other web sites, as in the Admob site network. The following illustration shows Nivea Sun mobile advertising through mobile content.

Figure 43 - Nivea Sun Mobile Advertising

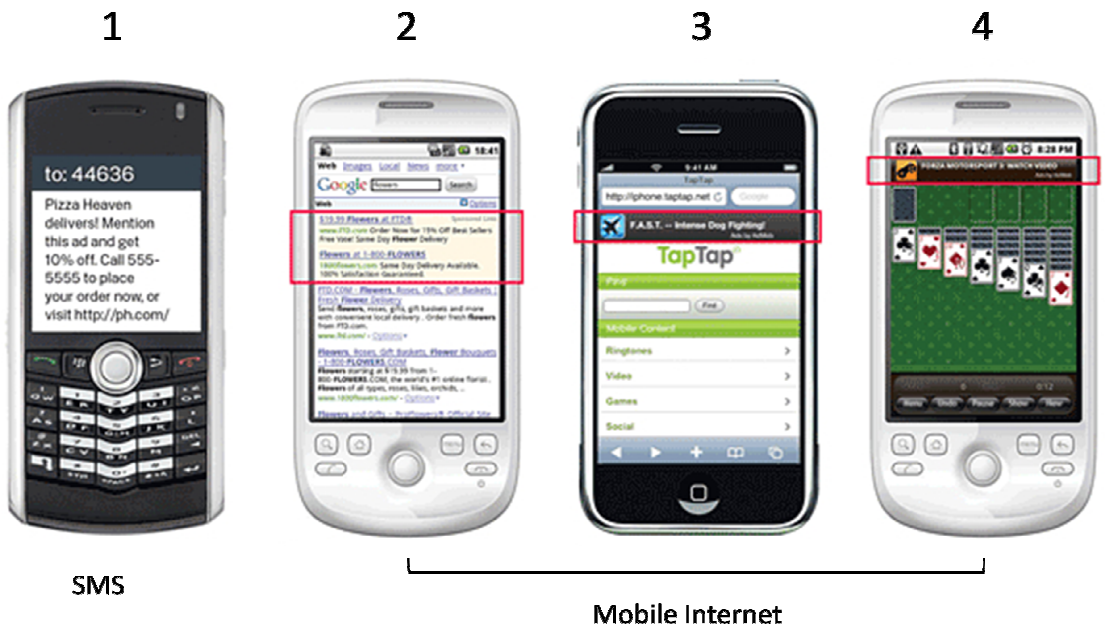

Source: O Globo

The following illustration shows Nivea Sun advertising banner in the Admob web gaming Falling Balls.

Figure 44 - Nivea Sun Advertise Banner


The following illustration presents the evolution from SMS based advertisement to mobile internet based advertisement. The first mobile phone from left to right presents a SMS based advertise and the others, 2, 3 and 4 present mobile internet based advertises. Number 2 comes together with Google search toll, number 3 together with Apple content and in mobile phone 4 aggregated advertise is in a gamming mobile content.

Figure 45 - SMS and Mobile Internet Based Advertises




Despite more appealing advertises emerge in Brazil, SMS based advertises are expected to still diffuse on the mobile content market, as this SMS technology is extremely diffuse on national mobile phone base.

The objective of Nivea is to achieve a differentiated space inside users' mobile phone, that why the mobile content was developed specifically for the company. On the other hand, there are other players that prefer to advertise through mobile content that already exists, by utilizing services of the companies called as "Ad Networks". These companies are specialized in put advertising through mobile sites and mobile content that already exists. However in this case the company does not "gain" a fixed space on user's mobile phone, one important advantage related to this kind of advertises is the faster process to make the advertisement available to user. An example of a Brazilian company that works with companies that performs these activities is the Mobext, which revenues development can quantify Brazilian mobile advertisement growth. The company is a subsidiary of the French-Spanish Hanvas in Brazil, representing in 2009 6% of Hanvas Brazilian total revenues, a 500% increase related to 2008[1].

Another example is the Pontombi, which developed for the Banco do Brasil advertisements related to a specific fund placed on already present mobile web sites and mobile content.

Globally, numbers regarding the Apple's App Store can quantify the evolution of mobile content business models. In the beginning of 2010 the App Store had an offer of 133,979[2] applications for download. Developers that joined the store, providing content were more than 28 million. Interesting to note that ¾ of these applications are free and the other ¼ costs between US$ 0.99 and US$ 9.99. According to Apple, the average

[1] iG Colunistas, 2009
[2] Mobilepedia, 2010, Números da App Store

revenue generation through download of these mobile contents is about US$ 500 million, and really important to mention is the sharing policy related to it, 30% goes to Apple and the other 70% goes to developers.

Realizing the huge potential of mobile internet, many new players are expected to enter in this space in the coming few years. It is also expected that many small and medium VAS players will move into mobile advertising space, as advertising via mobile is more appealing as it can target user more directly. Other traditional players as Telcos and Pure Players are struggling follow the market evolution.

Brazilian Telcos are struggling to capitalize in the mobile internet and content convergent scenario.

In the 1T2010 Vivo presented data showing a 7.3% growth of data and VAS revenues. This growth was driven mainly by the mobile internet revenues, which grew 20% related to the same 2009 period. In fact, revenues related to the mobile internet were largest than SMS and MMS[1]. With this growth the mobile internet represented 53% of Vivo's data and VAS revenues.

Other Telcos, like Tim, which have smallest shares of VAS and data revenues and are aware of the mobile internet impulse on VAS sales, start to implement impacting marketing strategies to motivate VAS consume. In 2008, Tim made a raffle of 101 Peugeots 307 among customers which acquired mobile content through Tim Music Store web site.

Oi created the Oi Blog, Oi Foto and Radio Oi giving new channels and possibilities for the VAS consume. In fact, some content like the Oi Foto, can be used by consumers of other Telco operators, demonstrating Oi aggressive approach on the emerging new possibilities of the market.

Either Claro is aware of the convergence of the mobile content market with the mobile internet. In 2010 the company launched aggressive discounts regarding VAS diffusion giving until 50% reduction in the first three months in data plans' monthly payment. Moreover the company responded its competitors by the creation of new content channels as the Claro Radio, which for instance competes directly with Radio Oi. The following illustration shows some Claro advertising aiming the increase of VAS consume through the diffusion of the mobile internet.

[1] MobilePedia, 2010

Figure 46 - Claro Advertise, 2010


Source: Claro

Summing up, business models are expected to continue evolve together with the mobile internet diffusion generating a myriad of opportunities to new and present mobile content value system players.

## 4.2 Impacts on mobile content products

The mobile internet technology expanded the variety of mobile content destined to mobile phone users. With this technology, more complex, quality and appealing content can be created. In the short term these new internet based content act as complementary to the present mobile content offer; however in the nearly future it can be expected to overcome traditional mobile content.

On the vanguard of innovative mobile content use are the smart phone users as their mobile phones are appropriate to a vast variety of complex content. On the following are described some innovative mobile content/services mainly appropriate to smart phone users on the Brazilian market.

The Corinthians Soccer Club joined traditional mobile content value system players to produce an iPhone mobile application directed to Corinthians fans. The application offers content related to news, interviews, photos and videos from the club. Moreover,

users are able to share photos and videos. The content costs US$ 4.99 at App Store. The following illustration depicts Corinthians Soccer Club content.

Figure 47 - Corinthians Mobile Applicative


The confectionery Cadbury joined the Web Editor F.Biz to create a downloadable mobile content for iPhone regarding the launch of the new candy Trident Fresh. Through the content the user can “freeze” its mobile phone screen by blowing the mobile phone microphone and then draw on the frozen screen. The following illustration depicts Trident Fresh content.

Figure 48- Trident Fresh Mobile Content


The web site Surfline.com and the brand Oakley joined to offer the applicative Surf Report. Through this content the mobile user is able to check climatic and wave conditions on Brazilian beaches. In addition, the user receives mobile content surf news,

wall papers, access photos and videos. The applicative is free of charge based on Oakley and Surfline advertisement.

Nestlè in agreement with other value system players launched the Nestlè Receitas applicative. The applicative has 3 thousand recipes on which the user can make searches and prepare shopping lists based on them. Moreover, the user receives indicated recipes by Nestlè. The applicative is free of charge, based in advertisement. The following illustration depicts Nestlè Receitas applicative.

Figure 49 - Nestlè Receitas Mobile Applicative


The constructer Tecnisa in agreement with other value system players created a mobile applicative regarding apartment market. The applicative offers the user the possibility to search for available apartments by typing the address of a specific region. By finding the apartment the user can check photos, plan, can click-to-call for more information, and share the offer by e-mail or Twitter community. The applicative is free of charge. The following illustration depicts Tecnisa applicative.

Figure 50 - Tecnisa Mobile Content


Interesting to note that the majority of innovative content based on mobile internet aggregates services and content in the same download. As consequence the mobile content offer complexity and quality grows being widespread practically through all age groups users.

Another kind of mobile content that is passing through expressive evolution is the one related to the Communication & Community typology.

According to Frost & Sullivan, until 2015, the market for social networks accessed through mobile phones should grow ten times in Latin America and Africa, reaching 527 million users and almost US$ 2.4 billion in revenues, what reveals the social networks' potential as a Mobile VAS revenue generator. The social network became an advertising channel for a myriad of companies, as it is appealing and reaches the final user. Moreover, the content generates data traffic revenues to Telco operators. However as pointed out by IDG News, Facebook – the most diffused social network worldwide – made agreements with 50 Telcos around the world for the exemption of data costs through some parts of the social network when accessed through mobile phones. In Brazil, the telco operator TIM signed the agreement[1].

Globally, Facebook has 400 million active users, more than 100 million users accessing its services through mobile devices[2]. MySpace on the other hand, saw the quantity of connections via mobile phones quadruple in 2008, reaching 20 million, and this continues to follow an ascending curve[3].

[1] UOL, 2010, Novo Facebook Mobile não cobrará uso de dados
[2] Acision, 2010
[3] Acision, 2010

Regarding the Brazilian social network market, Acision showed that 69%[1] of mobile phone users claimed to access social networks on a regular basis, mainly to communicate with friends. Despite only 3% of those users access social networks through a mobile phone, in the case of smartphone usage, that percentage goes up to 13%.

In Brazil, penetration of accesses to social networking sites via mobile phones didn't achieved high levels mainly because the predominance of pre-paid terminals in the country (82.3% of the consumer base), high data plans cost and, also, by the large quantity of simpler handset models. However, the country that leads[2] in the usage of social networking across the world will probably see this trend of accessing social networking sites via mobile phones increase.

The following illustration shows an example of mobile social network.

Figure 51 - Facebook Mobile


[1] Survey in Rio de Janeiro, São Paulo and Porto Alegre, 2010
[2] Nielsen, 2010

5. Cases

**Movile**

Interviewer: Tiago Carneiro Fernandes
Interviewee/Job title: Fabricio Bloisi - CEO
Duration: 36 minutes

Company profile

Movile is the union of Compera nTime and Yavox. Compera nTime, the resultant of the 2007's merger of Compera and nTime, acquired Yavox in 2009, which was one of the leading integrator companies in Brazil. Movile is 55% owned by Naspers, a south African media group. The company began its operations mainly as an integrator. Nowadays, the company had an important change on its strategy that now considers the mobile content direct-to-customer market very important. Movile is in the Brazilian market for 11 years with offices in three Brazilian cities: Rio de Janeiro, São Paulo and Campinas. Moreover, the company has a strong directive on internationalization in Latin America, having established an office in Mexico and plans to expand its operations to Argentina, Colombia and Venezuela. Presently the company has around 130 employees mainly in Brazil, country that represents 90% of its revenues. The company intends to reach the mark of 100 milion final user customers by 2011.

Value system relationships and mobile content offer

Movile works with many typologies of players such as Telcos (partnering with all mobile operators), Radio, Traditional Publishers and Pure Players. The company has activities in B2B and B2C. Some examples of Movile clients are: Ouvi (Pure Player), Globo (Traditional Publisher) and Terra (Internet Provider).

The company has on its portfolio products differentiated in four typologies: Mobile Marketing and Interactivity, Entertainment and Comunities, Corporative Mobility and Operators.

On Mobile Marketing Movile offers B2B products: the Super Alerta, Super Chat, Super Downloads and Super Quiz. Companies aiming to reach final users with its brands and content can develop its marketing strategy based on these products. These contents are based in SMS, Download and Interactivity.

The Entertainment and Comunities offer gives the possibility to companies associate their brands on already created content, as the content comprised in Movile ultramob portal.

Moreover, the Corporative Mobility comprises services to corporate clients, as the management solution through the brand "dispara", which aims productivity increase of camp work forces.

Finally, as Movile Partners with all Telco operators, the company manages the connections between Telcos and Traditional Publishers and Content providers to a vast variety of VAS. Some of its products are the Quiz and UGC. Quiz is game of questions, comprising Sport, News, Celebrities, Enigmas and more. It can be accessed through SMS or WAP in operators' sites. UGC is a service that allows final users to generate content (video, image and audio) to be shared and commercialized through social networks accessed through operators' portals. The company considers the UGC as very important for the future; they were pioneers on this kind of mobile content, having launched the "Blog da Oi" the first Brazilian platform for UGC. It's important to mention that UGC passed through an important change, nowadays users mainly post UGC mobile content in social networks, while in the past it was posted anywhere possible.

Business model

Movile began its operations mainly as an integrator. Nowadays, after mergers and acquisitions the company had an important change on its strategy that now considers the mobile content direct-to-customer market very important. Three years ago Movile operated just in B2B and nowadays B2C operations already represent 2/3 of its operations. In Latin America, as the customer base have mainly simple mobile phones and spends small sums in VAS, Movile considers that scale economy is very important on the mobile content sector. This fact motivates Movile mergers and acquisitions along its history.

The company aims principally in young customers between 14 and 25 years old.

Its mobile content is mainly activated through SMS, however finds that WAP is going to take part in the future.

Nowadays Telco operators usually take around 40% of revenue share in Movile's own labeled mobile content. Specifically in white label, this percentage is few reduced to around 30%.

Value system trends and mobile content perspectives

Regarding the value system Movile thinks that integrators have gained more space in the system, as the direct-to-consumer market grows and they can in some sense bypass Telco operators. However in 2010 Movile sees that operators start to tighten the market as an attempt to increase its revenues.

The company foresees the future Brazilian mobile content market with more international players and national players going to specific niches. In addition, thinks that internet companies as Google and Yahoo! are going to compete for share in the mobile phone sector

Movile considers that in the medium term the mobile internet will be completely linked with the mobile content market, and think that value system players are going to have to reinvent its business models.

The company believes in the mobile internet expressive diffusion, and already focuses this trend on its strategy.

**Buongiorno**

Interviewer: Tiago Carneiro Fernandes
Interviewee/Job title: Victor Hugo - B2B Manager
Duration: 36 minutes

Company profile

Buongiorno is an Italian Mobile Content & Service provider founded in 1999, the world leader in mobile entertainment. The company acts in B2B managing white label for third parties (Telcos, Traditional Publishers, etc) and B2C – with Blinko Gold's brand. The company partner with over than 130 mobile operators worldwide, in Brazil the company has straight relations with TIM. The company entered in the Brazilian market in 2007 to manage TIM's music store. Nowadays the company has around 15 employees working in Brazil, and intends to reach 20 employees by the end of 2010.

Value system relationships and mobile content offer

The most relevant offer from Buongiorno portfolio in Brazil are SMS based content, as Quizes and Chats. Download content as ringtones, wallpapers and videos are not extremely relevant for the company.

For its offer, the main activation channel is SMS.

The company diffuses publicity in many media channels, as television and web.

Its main value system partners are publicity agencies, internet networks, Telco operators, television networks and content providers - as Sony Music.

Business model

Globally, Buongiorno has its activities divided equally in B2B and B2C. In Brazil B2C activities represent around 60% of total, while B2B represent the other 40%. In 2010 Brazil passed to integrate the group of most important markets to Buongiorno global. This fact occurred in a very short interval of time, from 2009 to 2010 the country passed from the "second group" of importance to the first one. According to Buongiorno this fact was motivated by the Brazilian market evolution together with Buongiorno internal investments.

The company focuses mainly in customers between 15 and 30 years old, however highlighted that has a considerable amount of customers out of this range.

Regarding mobile content shares, Telco operators usually stay with around 50% of Buongiorno content revenues.

Value system trends and mobile content & internet perspectives

The company sees Brazil as a country that did not achieved maturity and that offers space to grow. Buongiorno considers that the mobile internet diffusion is going to shape the mobile content market with a specific niche comprising more complex platforms directed to customers with high capacity devices mobile users. On the other hand, for more simple content, considers that SMS will still being the most diffused platform. The company considers that the business model applied by the iPhone store could foster the market. Buongiorno intends that Telcos monopoly is not going to change in the near future, however, foresses that the Japanese model of NTT DoCoMo can be a Brazilian reality in the next 4 years.

**RBS Celular**

Interviewer: Tiago Carneiro Fernandes
Interviewee/Job title: Alexandre Silveira - Mobile Product Coordinator
Duration: 16 minutes

Company profile

RBS is a Brazilian media group, operating since 1957, whose activities include television, newspaper, radio and internet. Its mobile division, RBS cellular, was launched in 2006. The company owns the portals “Hagah Celular”, “ClickRBS Mobile”, “Guia da Semana Mobile”, “Oba Oba” and “Pense Imóveis”. The first 4 offers mobile content. Moreover, in November 2008 the company acquired PontoMobi, thereby entering the Mobile Marketing business.

RBS intentions on the creation of the RBS Celular are due to the expansion of its media channels. According to the company, RBS cellular is growing in relevance for RBS results.

Nowadays the company has four employess dedicated to the mobile division, a 100% increase compared to 2009.

Value system relationships and mobile content offer

RBS Celular offers a portfolio of Customization, Sms and M-browsing based in infotainment in subscription, mostly leveraging on their media assets. The most

representative mobile contents are voice portals (Chat) and content based in SMS and Download.

The company launched new infotainment mobile content in 2010 based in SMS and Download.

In 2009 the company partnered with two integrators based on the content to be managed: PMovil and SpringWireless. In 2010 this number increased due to the enlargement of its mobile division. Some of its new partnerships are Bizvox and Cyclelogic.

RBS Celular didn't enlarge its roles in the value system, acting mainly as retailer.

Business model

Its business model is based in revenue share with mobile operators.

Usually Telco operator passes mobile content revenues to the integrator that in sequence pass a share to RBS Celular.

For the mobile content related to the FIFA 2010 World Cup, the revenue sharing agreement established between RBS Celular, integrators and Telco operators established a higher percentage of revenues to RBS Celular and Integrators.

The main media channels used for mobile content advertisement diffusion are Tv and Radio, both directing the customer to SMS.

The main mobile content activation channel is SMS.

Value system trends and mobile content & internet perspectives

According to RBS Celular, Telco operators began to lose power to influence the mobile content value system process, and other players began to establish straighter partnering.

**CycleLogic**

Interviewer: Tiago Carneiro Fernandes
Interviewee/Job title: Luiz Santucci - General Director
Duration: 36 minutes

Company profile

CycleLogic, Inc. is a US-based privately-held company founded in 1996 in Miami under the name StarMedia Network, Inc.. The company started managing content portals for spanish and portuguese readers. Nowadays CycleLogic makes interaction between different actors in the value system, giving an integral solution from the provider to the end user. The company is present in Latin America and in the USA, with

offices in Buenos Aires, Bogotá, Caracas, Medellín, Mexico DF, Miami and São Paulo. Moreover the company has Commercial representatives in Lima and Quito.

Brazil is the most important market for CycleLogic, as the country represents 55% of its results. The company has around 26 employees and offers 280 SMS channels.

Cyclelogic provides integral solutions to 46 cellular operator in Latin America and 8 in the USA.

Value system relationships and mobile content offer

Infotainment is released through SMS, WAP (content portal), S@TML (sim card content) and MMS (multimedia content with text, images, sound and video).

Regarding Cyclelogic download content, their catalog include: Ringtones, Wallpapers, Screensavers, Games, Videos, Realtones and innovative sounds.

Considering overall CycleLogic's mobile content offer, the typologies more ordered are the ones related to Soccer, Financial News, Health and Jokes.

From 2009 to 2010 the company expanded its partnerships with media companies aiming to enlarge the profitability of SMS channels.

As innovative product the company mentioned the application generated in collaboration with Nokia. Nokia developed an application that goes inside a specific device. There are 36 icons prepared to receive mobile marketing, SMS mobile content with subscription and mobile content offer in general. Many players already partner to make part in this application, as Abril, Terra and iG. Devices with this application are going to be offered in Asia, Europe and Latin America. Operators receive mobile content generated revenues and in sequence pass a percentage to CycleLogic that in his turn pass a percentage to Nokia and other players.

The company acts in many value system roles, as integrator and content provider. Moreover, CycleLogic acts as mobile marketer.

Business model

CycleLogic has four different business units, Mobile Marketing, Platforms, Connectivity and Product.

Regarding Mobile Marketing the company combines different technologies as Internet, SMS, WAP portals, Bluetooth and IVR. The company developed around 150 successful interactive campaigns in all Latin America and Hispanic sectors of the USA markets. Among the most remarkeable of these, there are Philip Morris, Pantene, Gatorade, Pepsi, Heineken, Fritolay, Dog Chow, Nestlé, Visa and Postobón.

The Platforms business unit installed the WIS(Wireless internet server) platform in 25 carriers from México, Brasil, Venezuela, Colombia, Argentina, Uruguay, Chile, Perú, Panamá, Guatemala and República Dominicana. The company has the widest regional connectivity coverage that a WASP (Wireless Application Service Provider) company can offer to the corporative world in Latin America. CycleLogic works mainly

through 5 platforms: WIS, MMS WIS, SAM, AdServer and Mobile Fun Plus (Mobile content platform).

Through Connectivity the company manages WASP between value system players and mobile operators in Latin America and USA.

The Product business unit is directly responsible for interaction services (mainly voting) and mobile content. The company deals with all the traditional mobile content services: Infotainment (both text and video), Communication and Community, Games (both via SMS and Download), Customization (Ringtones, Wallpapers, etc) and Micro-browsing.

In Brazil 90% of CycleLogic activities are B2B, the rest is B2C. The company does not intend to expand B2C activities.

Regarding these areas, in Brazil 60% of revenues came from Mobile Marketing and Connectivity.

In Brazil CycleLogic main activities are: platform and content provision for media companies and micro payment management mainly for WEB games, as the Finland game Haboo Hotel.

Regarding revenue share, mobile operators take 55% of mobile content revenues, in the sequence operators pass the rest to CycleLogic that takes from 10% to 50% of this amount, and pass the rest to the value system's upstream. CycleLogic accords these percentages with upstream value system players based in media investments and mobile content sales volume.

Value system trends and mobile content & internet perspectives

CycleLogic expects that in the next 5 years value system roles are going to be more defined and companies are going to work in specific niches focusing on core competencies. Moreover, according to the company this fact is going to motivate the market evolution, as companies will be able to profit from scale economy and will be capable to produce more rich mobile content.

The company does not see many new entrants on the market. On the other hand, mention that players began to organize themselves in defined roles, and therefore, the value system began to take shape.

**MoWA**

Interviewer: Tiago Carneiro Fernandes
Interviewee/Job title: Guilherme Santa Rosa - President for Technology
Duration: 48 minutes

Company profile

MoWA – Mobile Wireless Applications is a privately-held Brazilian Pure Player founded in 1997. The company has an office in São Paulo with 40 employees divided in three groups: 10 dedicated to B2C activities, 10 to B2B and 20 participating in both areas.

Value system relationships and mobile content offer

MoWA partner with many value system players as Traditional Publishers, other Pure Players and Telco operators.

For its mobile content offer the company has partnerships with entities such as the CBF (Brazilian Football Federation), and the national rock bands as Roupa Nova and Jota Quest. For these clients MoWA manages in white label the supply of mobile content offered both in the web and in the mobile.

The company develops and integrates content for Vivo, Telco operator with which has straight relationship. Some of its important partners are Banco do Brasil, Pão de Açúcar, Coca-Cola, GOL, Sadia, Samsung, Gerdau and Votorantin.

Business model

The company started acting exclusively in B2B, nowadays its activities are equally 50% divided in B2B and B2C.

MoWA has three main business lines, MoWA Mobile Branding, MoWa Phone and MoWa SMS.

For MoWA Mobile Branding division the company makes Mobile Marketing, developing solutions for the iPhone platform, structuring personalized mobility projects and giving professional consulting services.

The MoWA Phone business line regards to the management and outsourcing of accounts and contracts for mobile telephony.

Finally, MoWA SMS regards the management of corporate SMS and the implementation of mobile marketing through SMS.

The company mainly acts in the following 7 areas:

1 - Developing applications and content to Smartphone;

2 - Mobile portals creation and management;

3 - Managing SMS messages;

4 - Creating mobile marketing campaigns to third parties;

5 - Developing content related to seasonal events as for the FIFA World Cup;

6 - Developing Games;

7 - Corporative solutions, for instance, solutions applied to sales force.

Regarding these 7 areas, the development of applications for smartphones is the most representative area for MoWA.

The company highlighted the SMS as the most diffused activation channel for its mobile content offer. Regarding share of mobile content revenues the company has agreements with Telcos that established a minimum of 50% of content share accruing to Telcos.

Value system trends and mobile content & internet perspectives

The company sees an expressive growth of mobile sites demand. MoWA mentioned that in 2009 12% of the 500 biggest companies in Brazil had Mobile portals, and that this number is expected to expressive growth by the end of 2010. The company sees the mobile internet diffusion in Brazil growing, but affirms that the SMS use is not going to be overcome. The company does not see the WAP billing diffused in the near future. The company expects the emerging mobile internet convergence with the mobile content market, highlighting the increasing demand for content through mobile internet channel. In addition, MoWA expects that in the next years mobile content market will became more rich and more important to Brazilian mobile telephony business.

**Hands**

Interviewer: Tiago Carneiro Fernandes
Interviewee/Job title: Alex Pinheiro - CEO
Duration: 32 minutes

Company profile

Hands is a Brazilian private-owned company in operation since 1999 making part of the holding IdeiasNet portfolio. The company is specialized in Mobile sites development, applications development for third parties – mainly media companies – and Mobile Advertising. The company has the biggest Brazilian mobile sites inventory. Hands expects to reach 30 million pageviews through its portals by 2010.

Value system relationships and mobile content offer

The company has a proprietary platform that adapts mobile sites to any kind of mobile phone existent in the Brazilian market.

Regarding the corporative business they work implanting, managing and maintaining mobile channels.

The company intends to improve and disclose its own branded mobile portal to aggregate the mobile content and portals of its Traditional Publishers partners.

The access to mobile portals managed by Hands can be made through direct access (using M-Portals address), through Hands M-Portal, Through Vivo's iPhone M-Portal and through iPhone and Touch portals from Claro.

Some of Hands partners are Globo, Valor and Rolling Stones Magazine. From which Hands is partly or completely responsible for the technological part of its mobile sites.

As an example of Hands recently product is the mobile site developed to Schincariol specialy for the FIFA World Cup that is accessible only through WAP.

Business model

Hands is a company that exclusively works with B2B activities. The company has revenue share with Traditional Publishers and fixed payment from corporative clients. Hands do not have share agreements with Telco operators. The only way Telcos profit from Hands business is through data traffic. Regarding share agreements, Hands take around 50% of revenues generated through mobile advertising of its partners.

Smartphone users represent 40% of access in Hands mobile portfolio. According to the company the time spent on its mobile portals is very superior when accessed via touch platforms. However, the company highlighted that from 2008 is seeing an increasing amount of access from other mobile platforms.

Regarding its mobile content portfolio the most accessed mobile content is related to sports. It is important to highlight that its mobile sites are off-portal.

Value system trends and mobile content & internet perspectives

The company sees that a strong growth in mobile internet access through mobile phones began in 2009. The company considers that the mobile internet is impacting positively on the mobile content market, principally because the increasing amount of investments on infrastructure on the base of the mobile content offer that is motivated by the mobile internet diffusion. The company sees an increasing amount of investments in mobile sites from Traditional Publishers. Hands considers that content providers are going to gain power in the value system in the near future.

**Globo**

Interviewer: Tiago Carneiro Fernandes
Interviewee/Job title 1: Emanuel Castro – Director New Media Sports
Interviewee/Job title 2: Raymundo Barros – Director New Media Engineering

Duration 1: 16 minutes
Duration 2: 30 minutes

Company profile

Globo is a media group that began its activities in early 1910's. The group began its activities as a newspaper and nowadays has a vast variety of media channels, occupying the 1st position as largest media group in Latin America. In 1944 the company founded its Radio unit called Rádio Globo. However, Globo expressive expansion started in 1965, when the group inaugurated the Tv channel Rede Globo. In 2000, the group entered in the internet market with the web portal Globo.com that is focused in news, sports, entertainment and videos. In 2008 the group created the mobile portal version of Globo.com web portal, which is compatible to all mobile phones with access to mobile internet. Nowadays, the group starts to enter in the mobile content segment with some specific initiatives, as the iPhone application Central da Copa related to the FIFA World Cup through which mainly infotainment content is offered.

The group does not have a specific mobile division, there are 3 departments dedicated to plan new media channels that also consider the mobile channel.

Value system relationships and mobile content offer

The group starts to enter in the mobile environment, focusing on mobile tv broadcasting together with infotainment mobile content.

The company intends to discontinue its M-Portal, because nowadays it does not generate satisfactory results.

The newest mobile product offered by Globo is the iPhone application called Central da Copa that is related to the FIFA World Cup. According to Globo, nowadays this applicative is the most downloaded from the Brazilian Apple Store. Central da Copa was 100% produced internally by Globo's technologic development department. The group does not have any commercial purpose with this applicative, they are experimenting and testing the market.

In general, the group focuses in smartphones platforms, Apple, Android, Symbiam and Windows. And its mobile contents are extremely related to Tv programs.

Business model

Presently, the group focuses in the transmission of interactive Tv. This transmission allows the final user to interact with Globo through applications while assisting the Tv programation. Embedded in these applications the mobile user has the possibility to access mainly infotainment free of charge. The company aims the mobile as a new media channel.

Value system trends and mobile content & internet perspectives

Globo considers the mobile channel as potential to the future, however, considers that the present situation of the Brazilian market do not offer minimum scale for Globo massive investments. For instance, the Central da Copa application had 20.000 downloads, that despite the success is not representative to Globo standards.

**Pinuts Studios**

Interviewer: Tiago Carneiro Fernandes
Interviewee/Job title: Carlos Renato Camolesi – Executive Director
Duration: 44 minutes

Company profile

Pinuts Studios is a Brazilian privately-held company founded in 2006 in Campinas, São Paulo. The company traditionally acts in the B2B realm mainly as Technological provider and content developer. From 2009 to 2010 Pinuts Studios had changed its strategy. The company still acts as a developer; however, nowadays they also focus in providing solutions for mobile integration. The company presented a 50% growth compared to 2009, having nowadays 31 workers. The new workers were hired for development, software quality management and project management. They expect to have 40 workers by the end of 2010.

Value system relationships and mobile content offer

Pinuts studios general offer comprises development of embedded applications, mobile portals, development frameworks and technical consulting.

Its services are divided in 6 areas: embeeded applications, GPS, mobile media, mobile internet, platforms and consulting.

Its applications are personalized according to its customer's necessity. Its projects comprise mobile magazines, games, client/server applications, corporative systems and more. The company develops applications for Windows mobile, Symbian OS and Linux

mobile. Moreover, Pinuts Studios recently began to produce applications for Android and iPhone OS platforms. They produce many kinds of applications, such as related to infotainment and social networks. The company gives support and maintenance to the application user. Their applications development is aimed principally to iPhone and Android, which usually is related to mobile marketing. However, for services aiming high volume users they produce in Java platform, which is more adaptable to the Brazilian mobile devices base.

The company develops applications integrated to GPS. Presently, these applications are related to mobile marketing tools and corporative systems.

Regarding the mobile media area, the company develops applications that permit the production, edition, and reproduction of infotainment mobile content.

For mobile internet, Pinuts Studios develop WAP sites and supports and develops solutions for infrastructure to mobile internet in GPRS, EDGE, UMTS and HSDPA.

Per platforms area, the company aims in the development of personalized platforms and specific platforms for VAS.

Finally, Pinuts Studios offers consultancy regarding the mobile market in technical and non technical areas.

The company partners with a vast variety of Brazilian value system players, some of them are: Qualcomm, AMMB, Nokia.

Some of its clients are: Spring Wireless, Movile, Arena Mobile, Tectoy and Overplay.

Moreover, the company has CIATEC as a strategic public institution partner, which provides physical structure and professional opportunities.

Its games production is mainly based in J2ME and iPhone platforms.

Business model

The company works in B2B on-demand developing mobile products exclusively in white label.

Pinuts Studios highlighted a big change in their applications business. Nowadays they said that do not make “punctual” applicative sales, they sell it to its customers and manage it providing improvements along time.

The company mentioned that Telco revenue share of Pinuts products is extremely high, varying from 50% to 70%. For instance, they mentioned that for white label products to be put on-deck, the share from these products accruing to Pinuts is 30% of total.

The production of embedded applications is the one that generates higher results for Pinuts Studios. Four years prior they had been producing 1 application each 2 months. Nowadays they produce around 5 applications per month in diverse platforms.

Value system trends and mobile content & internet perspectives

The company sees a strong demand of new applications, and together with it comes the internet management that is linked with these applications.

Pinuts Studios considers that the iPhone together with the mobile internet evolution had introduced relevant changes in the Brazilian mobile content market. The company sees more rich content being created principally motivated by these two facts.

The company considers that the mobile internet diffusion, that was a barrier for the viability of its applications, nowadays is being bypassed.

The company sees Telco operators constraining the mobile content market, however, foresees changes for the future. They mentioned the platform opening to develop mobile content that some Telcos (as Vivo, Claro and Tim) had made, opportunity which Pinuts Studios profits.

The company mentioned the emerging of new business models regarding applications. They foresee Telco operators not charging for data traffic for some mobile content.

**F.biz**

Interviewer: Tiago Carneiro Fernandes
Interviewee/Job title: Marcelo Castelo – Emergent Platforms and Mobility Director
Duration: 28 minutes

Company profile

F.biz is a Brazilian-based digital marketing agency founded in 1999 and focusing in interactivity. The company traditionally began working with WEB and in 2002 started to act in the mobile business partnering with Telesp celular as mobile game developer. In 2004 F.biz established a long term contract to develop white label mobile content to Vivo. As consequence, the company created the mobile division that is divided in three areas: VAS projects, interactivity for media channels and mobile marketing.

Nowadays F.biz has 160 employees, 25 of them are exclusively dedicated to mobile. The company operates exclusively in the Brazilian market and intends to growth 50% yearly.

Value system relationships and mobile content offer

F.biz has a vast variety of clients, such as Vivo, ESPN, Ibemec and Netshoes.

The company develops the majority of its mobile content in-house, in some specific cases they outsource some of the production phases.

Some of its latest mobile cases are: Ana Maria game, Lux game and Luftansa advertising.

On the package of Ana Maria (Ana Maria is a kind of cake produced by Bimbo) is written an SMS number through which customers, when sending an SMS with this

number, received a link to download an specific free of charge game related to Ana Maria brand.

Lux game allowed players to choose and combine the new ingredients used in Lux cosmetics line. The game was offered through many channels, as in Lux mobile site, where it was available for download.

F.biz created the first iPhone mobile advertising campaign using a Telco operator deck in Brazil. Inside Claro's "viagem" M-Portal it was disposed a Luftansa's banner through which iPhone users could click and be directed to Luftansa's site. Once in Luftansa's portal the user could enjoy from services and download Luftansa's ringtones, wallpapers and screen savers.

Business model

F.biz works exclusively in B2B and do not intends to expand to B2C activities.

The company has many business models accorded on each agreement established with its customers and partners.

Nowadays, projects for Telco operators are the ones that generate the best results for F.biz. Company's revenues are 80% based in WEB channels use. The other 20% is generated through mobile channels.

The company develops mobile marketing in many platforms, according to customers' necessity.

For mobile marketing its business model is based in fixed contracts with it clients. Telco operators participates on mobile marketing campaigns when F.biz makes use of SMS or when F.biz uses mobile advertising in operator's mobile portals.

Value system trends and mobile content & internet perspectives

The company sees a crescent demand for projects in mobile marketing.

In 2009 F.biz intended to expand its activities to foreign countries. However this plan was postponed principally because of the crescent demand of mobile marketing projects in Brazil. The company considers the Brazilian market as very potential.

The company expects an expressive convergence of the mobile internet with the mobile content market in the next 3 years in Brazil.

F.biz sees that aggregators began to be tightened by operators' actions. The company foresees the end of walled gardens with the mobile internet diffusion.

F.biz believes in a mobile content business model with free content supported by advertisers.

## 6. Value System Critical Issues

There is an extensive range of evidences (Funk, 2009; Funk 2007a; Haas, 2006; Knutsen & Lyytinen, 2005; Henten et al., 2004) that Western mobile content markets, as Brazil, had not achieved its potential.

The facts that generated this reality are vast. If taken in consideration one eastern market as Japan, that represent one of the most well developed mobile content markets in the world[1], it is possible to find critical issues that were addressed in this country and should be addressed in Western economies like Brazil due to achieve the potential development. Some of them, as the greater use of e-mail, the policy making and the agreements on standards were pointed out by many academics (Funk, 2009, 2004, 2007a; Haas, 2006; Knutsen & Lyytinen, 2005).

The present study proposes 4 critical mobile content value system's issues that should be addressed as helpers to overcome the present reality: focus on core competencies, constructive relationships, a new revenue sharing model and the use of common standards. With the convergence of the mobile content with the mobile internet value system relationships became more complex, time-to-market is reduced and then address these critical issues became fundamental for players survival.

To create value on the mobile content value system it is necessary assemble core competencies beyond the competences of each player. In this way the system of players is able to build a market offering that delivers high value to the end customers. An important pillar of this high value is related to the time saved on the mobile content availability to offer, as time-to-market becomes a preponderant key-winner in the actual scenario. Each player focusing on its core competencies is able to perform its activities more time-efficiently. Therefore, the system is able to meet customers' demand on time consequently fostering the market and generating more revenues. In addition, content becomes profitable within a shorter space of time and short life-span services, such as those related to particular brand promotions, also become economically feasible.

Another important issue that generates value on the mobile content value system is the adoption of common standards for mobile content, principally with the recent content complexities introduced by the mobile internet. Common standards enable connections between Telco operators and other players that surround the mobile phone industry and therefore increase the mobile content offer. With common standards adoption, the content producer is able to meet customers' technological availability with content appropriate to it.

For instance, taking the Japanese market as example is possible to affirm that the setting of interface standards defined by Japanese operators is quite different from the decentralized and relatively uncoordinated approach used by Western firms. In some western markets, more than 1000[2] relative independent standards committees exist. This fact motivates the affirmation that this issue should be addressed in the Brazilian

[1] Funk, 2009
[2] Funk, 2009

market. In this way, mobile content variety growth is facilitated as value system members are able to create more appropriate mobile content to the end user. Agreements on interface standards enable basic data connections between phones, operators, and content, while other interface standards connect the mobile phone with specific industries (Funk, 2009). For instance, standards for micro-payment, text-based content, for music and images enables connections between mobile phones, Telco operators, other value system players and other industries. Moreover, as highlighted in some interviews made for this study, another important standard that should be created in the Brazilian market is related to the metrics system to measure mobile content channels performance. In the Brazilian market were created a vast variety of measures that nowadays generate confusion to many players, principally for Traditional Publishers, in the moment to identify the most adequate channel for its offer. Therefore, this fact difficult the most efficient choice regarding the channel for mobile content diffusion, what constrains the improvement of the market.

Brazilian Telco operators still strive to shift from a one-service mindset to a portfolio of services, new business models, multiple partnerships and complex relationships. This fact rebounds directly on the creation of a mobile content value system mindset that considerate constructive relationship among players as a key-winner factor.

The mobile internet, motivate the entrance of new players in the mobile content value system. Therefore, new wealthy relationships are necessary to create value through mobile content. Constructive relationships among players of the value system generate offer quality, as the right information flows between players and investments are motivated by loyalty. The right information about customers' necessities in a market that evolves from a day to other as the mobile content market is a critical issue to appropriate the mobile content offer with quality.

The formation of a value system loyalty of players is an issue to be considered. Losing confidential information through the alliance channels is a key deterrent to potential investments, as players are constrained to reduce its spectrum of action, and consequently the mobile content offer quality is reduced. The entrance of new "unknown" players can generate in traditional players such Telcos to be over cautious and constrain investments on emerging opportunities.

In addition, if inter-player relationships are not constructive, then the core competences cannot be combined in an efficient manner. Therefore the value created on the mobile content offer may not be significant.

Since the Brazilian mobile commerce value system has gradually been formed one upcoming issue is the revenue distribution among upstream and downstream players. In the area of mobile commerce, how operators should distribute revenues among other value system players in order the build a sound mobile commerce value system has expressive importance. Different of the traditional value network, the mobile content value system is the aggregation of the telecommunication and internet value network, and the importance of player roles has gradually been moving from the monopolist

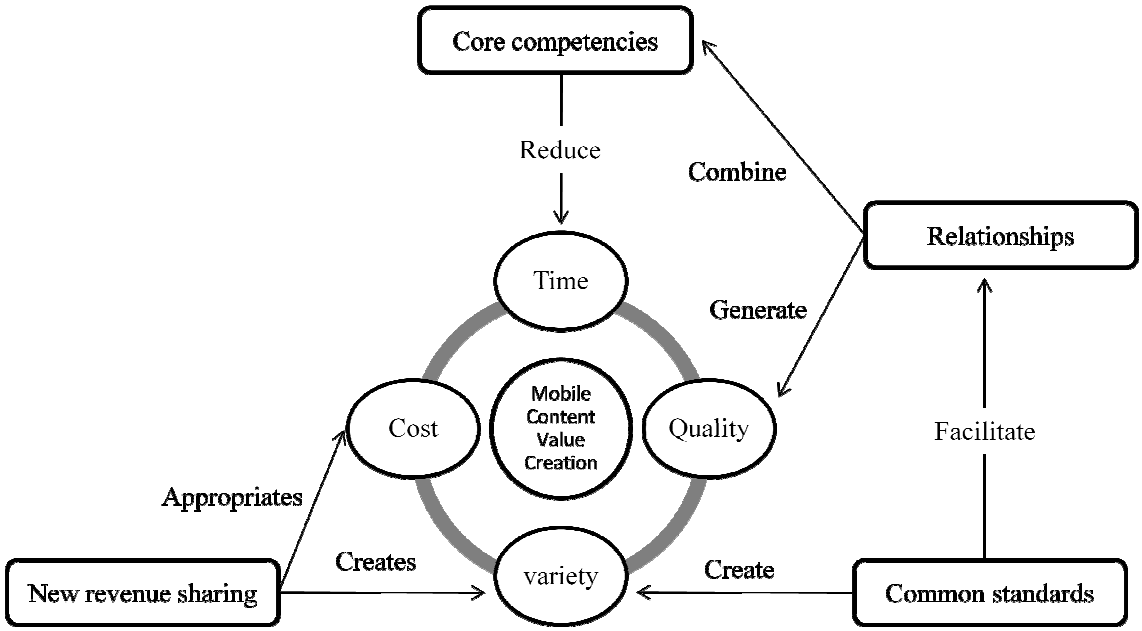
Telcos to other players. However, in the mobile Brazilian mobile content market, the revenue sharing model did not follow this movement. Telco operators still retain the largest share of mobile content revenues while some players keep a very small portion. For instance, Traditional publishers and web editors that have the largest representativeness on the market keep only around 9% of mobile content revenues. The present revenue sharing model reduces the creation of content variety and difficult the appropriation of content costs to the final user. Fact that was expressively confirmed through the majority of the interviewed players, “a big barrier for the Brazilian mobile content development is the high price to the final user”. As many players have relative small financial returns the investments on new and diverse content remain constrained to it. In addition this fact represents a barrier to new entrants on the system that could aggregate more variety to the offer. To guarantee a minimum return players are constrained to keep prices elevated to a level that could be reduced if the distribution of revenues were more equal. The example of the Japanese NTT DoCoMo should be considered as a pattern to be followed in the Brazilian market.

NTT DoCoMo plays the roles of an intermediator and a coordinator, between mobile users and other value system players, charging only limited commission and allocating most of the revenues to the related players. This mechanism provides a great incentive to players, and then, more companies are willing to join the system. As a consequence, NTT DoCoMo attracted more customers, culminating in a gain of traffic flow and more revenue from connection fees. In this way a benign circulation was formed and all players were benefited.

Summing up, a reasonable proportion of revenue allocation on the Brazilian mobile content value system should be addressed.

The following model presents Brazilian value systems critical issues.

Figure 52 - Value System Critical Issues Model



# 7. Bibliography

## Articles, Thesis and Reports

**ACISION**. *Acision Monitor for Mobile VAS*. 2010.

**ABINEE**. *Panorama Econômico e Desempenho Setorial*, 2010.

**ANATEL**. *Um plano nacional para banda larga*. 2010

**BARNES, S.J. & SCORNAVACCA, E.**. The Emergence of Mobile Commerce. In S.J Barnes (editor), E-*Commerce and V-business: Digital Enterprise in The Twenty-First Century*, 2nd edition. Butterworth-Heinemann, 2007

**BELFORT, F.**. *Latin America's Top IT Trends for the New Decade*. Frost & Sullivan. Retrieved on March, 2010 from http://www.frost.com/prod/servlet/market-insight-top.pag?Src=RSS&docid=194357753.

**BENNI, E., HJARTAR, K. & LAARTZ, J.** *The IT factor in mobile services*. The McKinsey Quarterly (3), 2003

**BERTELÈ ET AL.** *Mobile Content Market in Brazil – Report 2009 Mobile Content Observatory in Brazil*. Politecnico di Milano School of Management, 2009.

**CAETANO V.** *Brazil: 3G and Service Bundling Will Drive Network Operator Revenue Growth*. Pyramid Research, MA, USA, 2010.

**CGI**. *Survey on the use of information and communication technologies in Brazil*. 2009

**CHEN P. & CHENG J. Z**.. *Unlocking the promise of mobile value-added services by applying new collaborative business models.* Technological Forecasting & Social Change 77 (2010) 678-693, 2009

**CORTIMIGLIA, M.N.; RENGA, F.M.; RANGONE, A.** The Brazilian Mobile Digital Content Market: An Overview. In: IADIS International Conference on E-Commerce 2009, 2009, Algarve, Portugal. *Proceedings of the IADIS International Conference on E-Commerce 2009*, Algarve (Portugal), 19-21 June, 2009. p. 131-138.

**CRICELLI L. & GRIMALDI M.**. The competition among mobile network operators in the telecommunication supply chain. Int. J. Production Economics, 2010

**DE LUSSANET, M.**. *Mobilizing Content for 3G Delivery*. Forrester, London, 2004.

**DUNNEWIJK, T., HULTÈN, S.** A brief history of mobile communication in Europe. *Telematics and Informatics*, Vol. 24, No. 3, pp. 164-179., 2007.

**FROST & SULLIVAN.** *Latin American Mobile Content Markets*. Retrieved February, 2009 from http://www.researchandmarkets.com/reports/612484.

**FUNK J. L**. The emerging value network in the mobile phone industry: The case of Japan and its implications for the rest of the world. Telecommunications Policy 33(2009) 4 – 18, 2008

**GALINA, S.V.R.** 1º Relatorio DPP-FINEP para o Setor de Telecomunicações. *Research Report (DPP-FINEP)*. São Paulo, Mimeo, 2002.

**GEOFF LANCASTER, D. W.**. Implementing value strategy through the value chain. *Management Decision*, Vol. 38, n. 3, p. 160–178, 2000.

**GOLDMAN SACHS**. *Global Economics Paper N° 153*. 2007

**HOLDEN, W**. *Mobile Content Strategies & Business Models – Scenarios & Forecasts 2008-2013.*

Juniper Research, 2008b.

**IMF**. *Wolrd Economic Outlook*. 2010

**JUNIPER RESEARCH**. *BRIC ~ Stepping Stone for a Mobile Future*. Whitepaper. Bansingstoke, Hampshire, 2008.

**JUNIPER RESEARCH**. *Content ~ Modeling a Mobile Future*. Whitepaper. Bansingstoke, Hampshire, 2008.

**KALLIO, J.; TINNILA M. & TSENG A..**An international comparison of operator-driven business models. Business Process Management Journal, Vol. 12, n. 3, p 281-298, 2006.

**KAWAO G. G. & DE CAMARGO R.**. *An Empirical Analysis of The Mobile Content Market in Brazil*. Politecnico di Milano. 2009

**KOTHANDARAMAN, PRABAKAR & WILSON, DAVID.T..** The Future of Competition, Value-Creating Networks. *Industrial Marketing Management*, Vol. 30, p. 379-389, 2001.

**KUO, YING-FENG & YU CHING-WEN.** 3G telecommunication operators' challenges and roles: A perspective of mobile commerce value chain. *Technovation*, Vol. 26, p. 1347-1356, 2006.

**MAITLAND, C.F. ET AL**..The European market for mobile data: evolving value chains and industry structures. *Telecommunications Policy*, Vol. 26, n. 9, p. 485-504, 2006.

**MERRIL LYNCH.** *Brasil lidera crescimentos de dados no celular*. Retrived on April, 2010 from: http://www.telesintese.com.br/index.php?option=com_content&task=view&id=14514&Itemid=105.

**MIKA, N.**. Mobile connections surpass 4 billion mark worldwide. *Reuters Technology*, retrieved February 9, 2009 from http://www.reuters.com/article/technologyNews/idUSTRE51A2I8200902112009.

**MORGAN STANLEY RESEARCH**. Internet Trends. 2010

**NIELSEN**. *Critical Mass: The Worldwide State of the Mobile Web*. 2008

**OLLA, P. & PATEL, N. V.**. A value chain model for mobile data service providers. *Telecommunications Policy*, Vol. 26, p. 551–571, 2002.

**PCF ENERGY**. *The Definitive Annual Ranking of the World's Largest Listed Energy Firms*. 2010

**PEPPARD, JOE & RYLANDER ANNA.** From Value Chain toValue Network: Insights for Mobile Operators. *European Management Journal*, Vol. 24, n.. 2-3, p. 128-141, 2006.

**PORTER, M.**. *Competitive Advantage: Creating and Sustaining Superior Performance*. Free Press, New York, 1985.

**PYRAMID RESEARCH.** *Mobile Data Best Practices: Positioning and Revenue Opportunities in Emerging and Developed Markets*, 2008.

**SABAT, HEMANT KUMAR.** The evolving mobile wireless value chain and market structure. *Telecommunications Policy*, Vol. 26, p. 505–535, 2002.

**SCORNAVACCA, E.; BARNES, S.J. & HUFF, S.L..**Mobile business research published in 2000-2004: emergence, current status, and future opportunities. *Communications of the Association for Information Systems*, Vol. 17, p. 635-646, 2006.

**STABELL, CHARLES B. & FJELDSTAD, ØYSTEIN D.**. Configuring Value for Competitive Advantage: On Chains, Shops and Networks. *Strategic Management Journal*, Vol. 19, p. 413-437, 1998.

**TELEBRASIL**. *O Desempenho do Setor de Telecomunicações no Brasil – Séries Temporais*. Retrieved on March, 2010 from http://www.telebrasil.org.br/saiba-mais/index.asp?m=inicio.htm

**TELECO**. *Estatísticas de Celular no Brasil*. Retrived on March, April, May and June, 2010, from http://www.teleco.com.br/ncel.asp.

**THE INSIGHT RESEARCH CORPORATION**. Telecommunications and *Capital Investments: Looking Beyond the Financial Crisis 2010-2015*. The Insight Research Company, Boonton, New Jersey,

2010.

**THE INSIGHT RESEARCH CORPORATION**. *The 2010 Telecommunications Industry Review: An Anthology of Market Facts and Forecasts.* The Insight Research Company, Boonton, New Jersey, 2010.

**UN ECLAC**. *Foreign Direct Investment in Latin America and Caribbean*. 2009

## Newsletters

Daywireless, http://www.daywireless.com

Financial Times, http://www.ft.com/home/uk

Forrester Research, http://www.forrester.com

Frost & Sullivan, http://www.frost.com/

Telesíntese, http://www.telesintese.com.br

Find White Papers, http://www.findwhitepapers.com/

Juniper Research, http://juniperresearch.com/

Gartner, http://www.gartner.com

Mobile Europe, http://www.mobileeurope.co.uk/

Teleco, http://www.teleco.com.br/

European Communications, http://www.eurocomms.com/

Pyramid Research, http://www.pyr.com/

The Insight Research Corporation, http://www.insight-corp.com/

Wireless Week, http://www.wirelessweek.com/

I-Mode Business Strategy, http://www.imodestrategy.com

Mobile Entertainment, http://www.mobile-ent.biz

Newswire Today, http://www.newswiretoday.com

Web Wireless, http://www.webwireless.it

**Web Sites**

Web sites constantly accessed from March to June 2010

Teleco. http://www.teleco.com.br/

Telebrasil. http://www.telebrasil.org.br/

IBGE. http://www.ibge.gov.br/

CIA. https://www.cia.gov/

WTO. http://www.wto.org/

IPEA. http://www.ipea.gov.br/

Vivo. http://www.vivo.com.br/portal/

TIM. http://www.tim.com.br/

Claro. http://www.claro.com.br/

Oi. http://www.oi.com.br/

Anatel. http://www.anatel.gov.br/

Web sites acessed at once in 2010:

JP Celular. *Acesso a internet pelo celular dispara 227% no Brasil*. Available 1st June at:

http://jpcelular.wordpress.com/2010/06/01/acesso-a-internet-pelo-celular-dispara-227-no-brasil/

Estadão. *Brasil Supera Canadá*. Available 28th April at:

http://www.estadao.com.br/estadaodehoje/20100307/not_imp520620,0.php

BBC. *Brazilian miner buys Canada rival*. Available 28th April at:

http://news.bbc.co.uk/2/hi/business/6081390.stm

PCF Energy. *PCF Energy 100*. Available 28th April at:

http://www.pfcenergy.com/pfc100.aspx

Terra. *Embraer avalia apresentar o maior jato da empresa.* Available 28th April at:

http://economia.terra.com.br/noticias/noticia.aspx?idNoticia=201002011043_RTR_1265018984nN01174650

Estadão. *PIB per capita cai 1,2% e fecha 2009 a R$ 16.414*. Available 28th April at:

http://economia.estadao.com.br/noticias/not_8694.htm

Rumo Sustentável. *Desigualdade e pobreza (IPEA).* Available 28th April at:

http://www.rumosustentavel.com.br/desigualdade-e-pobreza-continuaram-caindo-no-brasil-mesmo-com-crise-revela-ipea/

PNUD. *Ranking do IDH*. Available 28th April at:

http://www.pnud.org.br/pobreza_desigualdade/reportagens/index.php?id01=3324&lay=pde

Standard and Poors. *Ratings*. Available 21st May at:

http://www.standardandpoors.com/prot/ratings/entity-atings/en/us/?entityID=270219&sectorCode=SOV

Fitch Ratings. *Ratings*. Available 21th May at:

http://www.fitchratings.com/creditdesk/ratings/issr_rtng.cfm?issr_id=80442191

IB TIMES. *Foreign Investments in Latin America*. Available 24th May at:

http://www.ibtimes.com/articles/22642/20100507/foreign-investment-in-latin-america-to-jump-40-50-in-2010.htm 24.05

IHU. *Segundo Datafolha 25% dos Brasileiros são Evagélicos*. Available 19th June at:

http://www.ihu.unisinos.br/index.php?option=com_noticias&Itemid=18&task=detalhe&id=31813

Computer World. *Investimento em TIC no Brasil vai crescer*. Available 19th June at:

http://www.computerworld.com.pt/2010/01/05/investimento-em-tic-no-brasil-vai-crescer-61/

Tudo Celular. *Oi Portal Aplicativos*. Available 19th June at:

http://www.tudocelular.com/Software/noticias/n22593/oi-portal-aplicativos.html

JP Celular. *Acesso a Internet Dispara 227% no Brasil*. Available 1st June at:

http://jpcelular.wordpress.com/2010/06/01/acesso-a-internet-pelo-celular-dispara-227-no-brasil/

Fox Business. *Foreigh Investments in Argentina*. Available 20th June at:

http://www.foxbusiness.com/story/markets/foreign-investment-argentina-falls-rebound-expected/

Gigaom. *Mobile Internert will soon overtake Fixed internet.* Available 20th June at:

http://gigaom.com/2010/04/12/mary-meeker-mobile-internet-will-soon-overtake-fixed-internet/

Voicendata. *Mobile ad market to reach $6 bn by 2014.* Available 20th June at:

http://voicendata.ciol.com/content/news/109090801.asp

Mobi thinking. *Mobile Internet Usage*. Available 21st June at:

http://mobithinking.com/best-practices/mobile-internet-usage-attitudes-study

Denuncio Available. *Uso de internet pelo celular*. Available 21st June at:

http://www.denuncio.com.br/noticias/uso-de-internet-pelo-celular-fara-operadoras-investirem-para-diminuir-custos/3263/

Wssites. *Estatisticas de internet.* Available 21st June at:

http://www.wssites.com.br/blog/blog/estatisticas-internet-crescimento-em-66-via-celular/

Enterprise Mobile Today. *Smartphone traffic explodes.* Available 21th June at:

http://www.enterprisemobiletoday.com/news/article.php/3873056/Smartphone-Traffic-Explodes-193-Percent.htm

Gomo News. *Buzzcity*. Available 21st June at:

http://www.gomonews.com/we-know-how-consumers-access-the-mobile-internet-says-buzzcity/

4Trends. *Three reasons why HP is buying Palm*. Available 21st June at:

http://4gtrends.com/?p=3589

Mobile Advertising. *O mundo dos App e sua importância*. Available 21st June at:

http://www.mobileadvertisingbrasil.com.br/

Bligoo. *Midias migram para o mundo mobile*. Available 21st June at:

http://turma4b201001.bligoo.com/content/view/802199/MIDIAS-MIGRAM-PARA-O-MUNDO-MOBILE.html

Mobile Pedia. Numeros da App Store. Available 21st June at:

http://www.mobilepedia.com.br/noticias/numeros-da-app-store

Mobile Pedia. *Claro reage*. Available 21st June at:

http://www.mobilepedia.com.br/noticias/claro-reage-e-entra-na-guerra-entre-as-operadoras