ZON Multimedia towards the future

When it is all a matter of ‘fiber’

André Almeida Pinho, 32 years old, director of new product development and product management at ZON TV Cabo, stood in front of his office’s window in Lisbon, Portugal, recalling his short but successful company’s story. He wondered how he might continue its successful path in such a time of aggressive competition and change in the telecommunication sector.

Established in November 2007, ZON Multimedia was initially known for its TV cable service but quickly conquered the remaining market with its integrated and innovative offer which also included voice and broadband Internet. By the end of 2008 ZON Multimedia, with a business volume of 773,081 M€, had achieved a leading position in the Triple Play segment.

Filipa Bilbao prepared this case under the supervision of Nuno Magalhães Guedes, in partial fulfillment of the Dissertation requirements for the degree of MSc in Business Administration, at Universidade Católica Portuguesa, in January 2012, as a basis for class discussion rather than to illustrate either effective or ineffective handling of a management situation.
Established in November 2007, ZON Multimedia was initially known for its TV cable service but quickly conquered the remaining market with its integrated and innovative offer which also included voice and broadband Internet. By the end of 2008 ZON Multimedia, with a business volume of 773,081 M€, had achieved a leading position in the Triple Play segment.

Yet, in 2008, the technology of ZON Multimedia began to be challenged. The exponential increase in internet data consumption due to the appearance of new services and over-the-top contents was exhausting the cable modem bandwidth and forecasts appointed for a continuous consumption growth. This fact and the almost obvious step forward of PT, its main competitor, to the Next Generation Network (NGN), were reasons enough to be worried about the future.

André Almeida wondered how ZON Multimedia could face this threat, whether it should stick to the ongoing technical upgrade of its current access technology (Hybrid Fiber Coax, the HFC) or if it should anticipate its main competitor’s strategy. André Almeida knew that ZON Multimedia was not the company with the highest investment capacity in the market, but he also knew that HFC technology should not be underestimated.

The beginning

ZON Multimedia is a Portuguese telecommunication company which is listed in the main Portuguese stock market index (PSI-20). See exhibit 1 for ZON Multimedia’s financial highlights in 2008. The name ZON Multimedia resulted from a new identity and a new corporate strategy established as a consequence of the spin-off of Portugal Telecom Multimedia (PTM), currently ZON Multimedia, from its mother company, Portugal Telecom, today its main competitor. The then named PT Multimedia was constituted by Portugal Telecom in the 15th of July of 1999 in order to expand its strategy into the multimedia business.

ZON Multimedia’s Triple Play service comprises pay TV by cable or satellite, broadband internet and fixed voice. The three services were inherited from PTM when the company was still part of Portugal Telecom Group. Cable TV was its initial service. The fixed voice service, however, had been launched in January of 2007, a few months before the spin-off. The distribution of audiovisual material and the operation of cinematographic theaters are the other two businesses that complete ZON Multimedia portfolio. The mobile voice service was launched only in September 2008, extending ZON Multimedia offer. The main goal of integrating these different business areas was to provide a broad number of options to customers and satisfying as many telecommunications and entertainment needs as possible.
ZON TV Cabo, ZON Lusomundo Cinemas, ZON Lusomundo Audovisuais and ZON Conteúdos and their subsidiaries plus ZON Açores and ZON Madeira are the companies that make up the structure of ZON Multimedia and ensure the offer of all these services throughout the Portuguese territory. Exhibit 2 depicts the simplified structure of ZON Multimedia. During the year of 2008 ZON Multimedia acquired three cable TV companies in order to consolidate its presence in the market.

In the end of 2008, ZON Multimedia had more than 1,500 employees and almost 3 million clients. It was the leader of the Portuguese pay TV market, the second largest internet provider and the third largest player in the fixed voice market. Exhibit 3 shows operational performance indicators of ZON Multimedia in 2008.

**The PTM Spin-Off**

The pressure made by the Portuguese Competition Authority (Autoridade da Concorrência, AdC) did herald the PTM spin-off. At that time, Portugal Telecom owned, simultaneously, the old copper cable network with Asymmetric Digital Subscriber Line technology (ADSL) and the coaxial cable network with the cable modem technology. This made Portugal one of the last European countries where cable modem and ADSL infrastructures were owned by the same company. The spin-off would separate those technologies among different owners and their evolution would make the market much more competitive, benefiting the sector. The AdC concern was to stimulate competition with the goal of creating better and more dynamic companies to the consumer’s advantage.

The spin-off happened in 2007 after a thirteen-month battle over a hostile takeover from Sonaecom over the Portugal Telecom capital. On the 21st September of that year the new Executive Management Team was named. A new phase of the institutional development of PT Multimedia was beginning. In that meeting the board accepted the resignation of the Executive Management Team president, Zeinal Bava, and the members Manuel Rosa da Silva, Francisco da Silva Nunes and Pedro Durão Leitão. Joaquim Goes, member of the board of directors, also presented his resignation. In the same meeting, the board named Rodrigo Costa as president of PTM, José Pereira da Costa as CFO and Luís Lopes and Duarte Calheiros as members of the executive committee. With this, Portugal Telecom and PT Multimedia no longer had any members of their respective Board of Directors in common. Thus, from then on PT Multimedia was an independent company with no relation at all to PT.

After the nomination of the Executive Management Team, André Almeida Pinho was one of the first key persons to be invited to move from PT to PTM. He was the Manager of Strategy and Business Development of PT Comunicações and had been a Ford award winner for best MBA student at Insead.
in 2004. If accepted, the invitation would put him in charge of all the product areas (TV, net and fixed voice) of PTM, presenting him with the stimulating challenge of having to compete against his old employer in a time of significant change in the telecommunication market worldwide.

The level of disruption caused by the spin-off was high. Zeinal Bava, former CEO of PTM and new CEO of PT, met over the weekend with the first and second line PTM directors of several areas and took with him more than 20 managers of the main departments, that is, almost 90% of the PTM managers. A fast process of direct transfer of managers between PT and PTM and the selection and recruitment of a new team of managers were the topics of the day. In the news many wrote that even if the direct transfer was to affect both companies equally, PTM would always be the most disturbed of the two, since it had a less experienced team than PT. In response to these statements, Rodrigo Costa, new CEO of PT Multimedia, speaking to ‘Diário de Negócios’ newspaper said: ‘It was in my expectations that this could happen, I just did not anticipate how many managers would go to PT’. The CEO also took the opportunity to reaffirm that the PTM spin-off was not an arranged deal and that the current situation was an obvious proof of it. Knowing that the transfer of managers had been a voluntary process, Rodrigo Costa also knew that those still at the company were certainly motivated to start working with him in this new challenge. As a matter of fact, PTM was hiring new managers at a record pace, including recruitments made by André Almeida for management positions at each of the key businesses of PTM, since the 1.5 million customers company was virtually on the edge of no day-to-day management capabilities below the board level.

At the general meeting of shareholders held on the 2nd of March 2007 the proposal of Sonaecom was rejected and the hostile takeover was extinguished. On the 14th of November of 2007, PTM made the announcement that from that day on PT no longer held any direct capital participation on PT Multimedia. The spin-off was officially concluded.

On the 27th of November, PTM made the announcement that it would acquire from PT all the network equipment related to cable television for a total of 21.6 M€. Both companies also signed an agreement through which PT would provide to TV Cabo (now owned by PTM) services related to the network infrastructure by a period of 3 years. This would mean a short to medium term risk to PTM, with the renegotiation expected for late 2010.

In the following January, shareholders approved ‘ZON Multimedia’ as the new corporate name. A renewed company was born with the ambition to lead the Portuguese telecommunications market.
The Portuguese Telecommunications market

Triple Play is the name of the game

In the telecommunications market, the triple play service allowed operators to offer at the same time high speed internet access, pay TV and fixed voice. The triple play is the marketing designation given to a single offer that integrates over a unique connection of a single operator all the three services. This integrated offer should guarantee that all the different services provided have equal or even better quality and price than the previously separately sold services.

In Portugal, Cabovisão, a cable operator, was the first company to launch a triple play offer in 2001. The event was assumed to be the starting point for a growing competition in the Portuguese telecommunication sector. At an international level, this integrated service allowed operators to improve customers’ loyalty, to reduce costs, to increase productivity and to offer new services. Studies about the triple play offer, conducted by the American cable operator Cox Communications, showed that the churn rate¹ was reduced when the service was provided in a triple play package (Exhibit 4 depicts the impact of the integrated offer in churn rate results). Moreover, according to it, the customers churn rate in double play packages was 18% lower than in a single play, while in the triple play the churn rate was 48% lower than in the single play.

ZON Multimedia was in the Triple Play market since the voice service had been launched in January 2007. However, the company was not alone. At that time, André Almeida was aware that the Triple Play was a key element of the present and the future of the telecommunications market and that it could be used as a defence tactic in such a competitive environment. All the telecommunication operators with appropriate skills would want to develop this integrated offer in no time.

During the year of 2007 the ZON TV Cabo triple play offer was still a child. However, the multiple play offer in Portugal was gaining an higher prominence with the double play package losing some ground to the triple play offer (Exhibit 5 presents the subscriptions per multiple package type for 2008). While the triple play enjoyed an increase of 91,34%, the double play increased only 1,54% from 2007 to 2008. In the year of 2008 the addition of the mobile voice to the internet, fixed voice and pay TV services brought the quadruple play to the market, but according to ANACOM only one operator was providing it. Exhibit 6 depicts the multiple play market shares by company in 2008.

André Almeida knew that this strategic vector was essential to conquer and to improve customers’ loyalty and consequently to guarantee a comfortable position in the market. Having in mind that PT

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¹ Churn rate: Rate at which customers voluntarily leave the service
had entered the triple play service at the end of the first half of June with the pay TV launch, a few months after the ZON Multimedia had launched its integrated offer, André Almeida was ready to lead this game. The ambition of leading the Triple Play market was so present in ZON Multimedia spirit that it was one of the three main elements elected by ZON Multimedia for the strategic plan for 2008-2010. The remaining objectives consisted in achieving the excellence in the relationship between the company, client and operations, and capturing new growth opportunities.

In 2008, the single service was still the offer most picked by customers due to the late appearance of the multiple play. See exhibit 7 for the subscriptions to multiple play service and single service. But ZON TV Cabo base customers were now adhering to the triple play service at a rate 17% higher than in the previous year. At that moment, 23% of the TV cable customers were subscribing the triple play and the number of customers buying only the single play dropped sharply comparing to 2007. Exhibit 8 shows the triple play evolution in ZON Multimedia’s TV cable base customers (2007/2008). These values made ZON Multimedia the triple play market leader.

André Almeida knew that these results were the outcome of a strategy which included network upgrades and an effort by the marketing team in communicating aggressively the advantages that customers could enjoy with the integrated offer and in highlighting this triple play service against other triple play services in the market. The easiness of installation in cable customers’ houses (pay TV clients) of additional services of fixed voice and internet was also a factor that contributed to this performance. A house where the system of cable pay TV was already installed made the process of installation very simple, since it did not involve specific interventions. In fact, this last point gave ZON TV Cabo a competitive advantage compared to its competitor, for whom cable TV was not the main product. Finally, the growing development of access devices (mobile terminals as Smartphone, computers, TVs), in which the three services were more and more convergent, heralded the future growth of triple play.

**The three services evolution in an individual perspective**

In the telecommunications industry, innovation is a crucial factor for the development and growth of the triple play offer. The greater is the operators’ ability to innovate, the more diversified and competitive will be the integrated offer. Hence, the development of new equipment, features and contents, on a regular basis, has characterized the evolution of the triple play in the market.

The triple play teamed up three services previously considered as being worlds apart. They were gathered for business reasons but their individual evolution is the reason why triple play is able to satisfy customers. Consult exhibit 9 to understand the main events in each of these service.
Types of broadband access technology

The main area of development and growth in the telecommunications industry is the broadband technology. The adoption of different types of broadband technologies with advanced materials has allowed the emergence of new business opportunities. It was due to the continuous development and improvement of these technologies that operators became able to deliver the complex triple play service over a unique broadband connection, supporting high speed connections. It is in the bandwidth of the broadband connection that the three services run in, being the high speed internet access and television the more bandwidth-demanding and voice the less. It is important to distinguish download and upload speed from bandwidth. Bandwidth is the amount of data that can be transmitted through a broadband line. However, since higher bandwidth means that the user is able to get more data through the same stretch of time, the outcome is that for the user the time taken to view and download contents becomes shorter. Hence, broadband access technology has been seen as a central driver of the triple play over the last years.

Until 2008, the Portuguese telecommunications market was based on two main types of broadband access technologies. The Asymmetric Digital Subscribed Line (ADSL) technology, based on copper cables which evolved to ADSL 2+, and the Cable technology, originally based only on coaxial cables but in the meantime evolved to a hybrid of fiber and coaxial cables (HFC). The main differences between these two technologies were in the broadband network’s architecture. Exhibit 10 presents ADSL and HFC networks’ architecture.

**Asymmetric Digital Subscribed Line (ADSL)**

The Asymmetric Digital Subscribed Line was developed from the copper cable used in the traditional telephone lines. This type of technology allowed the user to surf the internet and at the same time to receive a call through its fixed telephone line. It is the existence of a DSL filter which allows that a unique telephone connection may be used, at the same time, for both Voice and ADSL internet services, with one channel for voice calls and another for internet data. Due to its low capacity, ADSL was not able to deliver video. This fact led to the development of a stronger ADSL technology, the ADSL 2+. This technology eventually replaced the majority of the former ADSL’s operators technology.

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2 The download is the process in which the user receives data from the internet provider and the upload is the process in which the user sends data to the provider.
The Asymmetric designation came from the difference regarding the upload and the download processes. In the case of ADSL 2+, the download speed is much faster than the upload. The maximum theoretical speed achievable is up to 24Mbps for downloading and 1Mbps for uploading.

The distance between the providers’ central and the user is a conditioner of ADSL 2+, as this technology works better the closer the user is from the providers’ central. Problems of signal quality and speed connection increase along with the increase of distance. In terms of bandwidth sharing, ADSL 2+ is committed to one single user and it is not shared among other users. The development of the Internet Protocol Television (IPTV) made possible for ADSL 2+ operators to offer also the television service, in order to follow the cable operators.

**Cable – Hybrid Fiber Coax (HFC)**

The Cable technology was born to support Pay TV. Before the nineties, this network was constituted by coaxial cables in its entirety but problems of quality of transmission inherent to this kind of cable material implied some limitations. Hence, operators started to implement fiber optics in the primary network’s portions. This would allow offering better service since the optical fiber has higher quality of transmission than coaxial cables. The network architecture gained another name, the Hybrid Fiber-Coaxial (HFC). *Exhibit 11* illustrates ZON Multimedia’s HFC architecture network. Since the components required to deploy it were very expensive, fiber optics was adopted only in some portions of the network serving simultaneously a big number of users. However, this evolution was enough to allow cable operators to run also internet and fixed voice services. The Data Over Cable Service Interface Specifications (DOCSIS) protocol and the development of the Voice Over Internet Protocol (VoIP) enabled cable operators to provide internet and voice, respectively.

One of the advantages of the cable coaxial lines is the no dependence on the distance between the customer’s home and the providers’ central. However, the lines are shared between users that live in the same area, so the greatest the number of users in one area, the lesser the Internet’s quality. In order to decrease the networks congestion and increase data speeds, optical node splitting is a regular measure taken by HFC operators. The maximum theoretical speed achieved is about 30 Mbps for downloading and 5Mbps for uploading, although the offer available in the market was actually lower.

Notwithstanding their different limits, both access technologies were confined to their theoretical maximum bandwidth limitation. In 2008, in their hypothetical maximum both could offer 100 TV channels and unlimited voice: they did not have however the same download speed which was 24Mbps for ADSL 2+ operators and 30Mbps for HFC operators.
Competitors

In 2008, besides ZON Multimedia with its ZON TV Cabo brand and the historical operator, Portugal Telecom, with the MEO brand, there were two more relevant players in the triple play market: Clix, from Sonaecom, and Cabovisão S.A.. With the exception of Cabovisão, all operators were listed in the PSI-20 index. Exhibit 12 shows a summary of the highest speed capacity packages from each operator. Other players such as Vodafone, ONI and AR Telecom were also part of the market but with a market share far less significant. Of these thee players, AR Telecom was the only one with a triple play offer.

PT comunicações from Portugal Telecom Group

At the end of 2008, Portugal Telecom, was already present in several countries. In Portugal this operator was organized in three units: PT Comunicações and PT Prime that ran, respectively, the business of the fixed voice service for residential and enterprise customers, and Telecomunicações Móveis Nacionais (TMN) for the mobile service business. These three units supported a complete portfolio of products and services and contributed with 3 569,17 M€\(^3\) for the total business volume. Besides that, a set of other companies gave technological, financial orientation and telemarketing support to other companies within the group. This strong structure along with a large history and a strong financial muscle put PT as the largest Portuguese operator. To access PT’s consolidated financial highlights at 2008 see exhibit 13. In fact, PT was the incumbent of the fixed voice network and for several years the only operator to provide the fixed voice service in the Portuguese market. In the end of 2008 the incumbent had around 60,6% of this market. Until 2000, PT was the only owner of the essential network infrastructures required to provide telecommunications services which made the telecommunications market a market controlled by only one player. It was then required that PT opened its infrastructures to other operators in order to allow the existence of those operators. In 2000, with the European process of market liberalization which main objective was to promote competition in the telecommunications market, the incumbent was forced by ANACOM to supply network-access service to other operators, allowing the emergence of new operators.

The main access technology used by PT was based on the traditional copper cables network, the ADSL, since the cable technology, after the structural separation, had been delivered to ZON Multimedia management. This broadband internet service was first launched in 2002 by the brand SAPO, which in 2007 also launched the first broadband internet mobile service. In 2008, PT evolved

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\(^3\) 53% of the total volume of 6 734,3 €M
its ADSL technology to ADSL 2+ which allowed the development of the IPTV project, permitting the company to enter the triple play market in that year. The management of the triple play was at charge of PT Comunicações. The name chosen for this pay TV service was Meo. Although originally circumscribed to TV related services, it came to be used to name the triple play offer. An aggressive promotion campaign was designed in order to position Meo at the top of preferences. The most successful team of Portuguese comedians of that moment, ‘Gato Fedorento’ (‘Smelly Cat’) was hired to produce a big impact. In fact, the investment in TV commercials, during 2008, positioned Portugal Telecom as the eleventh company in the advertisers’ Portuguese ranking, immediately followed by ZON Multimedia in the twelfth position.

The launch of video on demand, High Definition TV channels, digital video recording and electronic programming were all features that were added to the IPTV of PT. In that year, PT also gained the Digital Terrestrial Television (DTTV) platform contract which would reinforce PT’s multiplatform strategy of national coverage. The Direct to Home (DTH) broadcast was also launched in April as complement to the IPTV offer. In August 2008, from the four triple play packages that PT launched in the market (each one customized to different customers’ needs), the most complete package included for a promotional price of 49,54€, 45 TV Channels, broadband internet with a downloading speed of up to 16Mb, unlimited fixed voice calls, video club and mobile broadband internet. To subscribe this service or get information customers had several options. They could go to one of several PT stores (‘PT bluestore’) spread around the country or to the PT website, search for a ‘ask to be called back’ button and wait for that call. There was also a website dedicated to online customer care service, the PT wikicare, in which customers could find support about any issue related to this service.

Yet in 2007, PT started to explore the Next Generation Networks access and begun to test the Fiber-To-The-Home technology (this technological issue will be further approached on page 14). For that it used 3700 houses in the regions of Miraflores and Oriente in Lisbon to which access to the IPTV service and broadband internet of 50Mbps were conceded.

At the end of 2008 around 42,9% of the ADSL 2+’s PT customers had subscribed to the Meo service. The number of Meo customers had increased by 14,9 times, achieving 310 thousand of subscribers or a 13,6% market share in the Portuguese Pay TV market.

**Sonaecom from Sonae Group**

Sonaecom is a subsidiary of Grupo Sonae and it is responsible for three business units: telecommunications, media and Information System Software area. Its role is to manage in an
integrated way the business units in order to create synergies and identify growth opportunities. The main goal of the subsidiary is to conquer the leadership of integrated services.

The Sonaecom business areas of mobile communication and fixed service for business customers were developed by the Optimus brand and the business area of fixed communications for residential customers was developed by Clix. The main network technology of these brands was the ADSL, whose access was provided by PT.

In 2006 Sonaecom started to offer a faster service of ADSL, the ADSL2+ which allowed the company to offer broadband internet with more capacity, fixed voice and IPTV. With the introduction of the IPTV, Sonaecom became able to launch the triple play offer. In fact, Sonaecom was the first operator introducing the IPTV in Portugal in April of that year. The triple play service of Sonaecom was named Clix SmarTV. Its launch promotion strategy was not too aggressive but it was expected to conquer a substantial number of clients. The best triple play package included 47 TV channels, 12Mb of broadband internet and unlimited fixed voice calls at night, all for a monthly price of 53,40€.

The ‘home video service’ (video-on-demand) with more than 600 available videos was the first value added service launched with the original triple play offer, but in 2007 other services and channels were added to the TV service in order to reinforce the Clix SmarTV. Amongst them were the Electronic Program Guide and the introduction of the main radio channels of ‘Rádio Difusão Portuguesa’ in the TV platform in addition to the 100 TV channels already available.

In 2008, Sonaecom had a business volume of 952,7 M€. During the year of 2007, one of the most relevant corporation issues was the failure of the hostile takeover of PT. But in the beginning of 2008 the company was already prepared to make an important announcement which would position the company as the first relevant market player offering NGN access. This would allow the Clix brand to offer a speed of 100Mb. The company planned to invest 240 M€ in order to put fiber in more than 1 million homes until 2011.

**Cabovisão S.A. from Cogeco Cable**

The launch of the triple play service in 2001 made Cabovisão the first operator to introduce this service in Portugal. In 2006 it became a subsidiary of the Canadian group Cogeco Cable. It was through the improvement of its own HFC infrastructures provided by Alcatel that in 2005 Cabovisão became able to deliver higher speed broadband connection and to add new services to the triple play offer. In the same year, with the launch of the TV channel HD1, Cabovisão became the first Portuguese operator to launch a High Definition TV channel. The main difference between Cabovisão and the other relevant market operators was its geographical approach. Along with some of the most
relevant cities, Cabovisão also bet in the regional development, reaching parts of the country where the triple play offer was less present.

In 2007, Cabovisão and ZON Multimedia were the two main players of the Portuguese cable technology. In the Pay TV service the two companies together held 86.6% of the market, with ZON TV Cabo holding the largest percentage with 71.3% against 15.3% of Cabovisão. In August of that year, greater market share and in part technology were the reasons that led ZON Multimedia to ask AdC for the approval of the acquisition of three other Portuguese cable operators, Bragatel, Leiria and Santarém Pluricanal and TVTel. On the other hand, Cabovisão acquired Aveiro Pluricanal.

Propelled by Alcatel networking solutions which strength Cabovisão’s network, in July of 2008 Cabovisão triple play offer presented a package with 25Mb of internet speed, the highest speed of the market, 46 TV channels and unlimited voice calls for fixed numbers, for a price of 78,97€. Video on demand, more services and more contents were all future developments that Cabovisão had in mind for the next months. The company was aware of the market trends and its goal was to match the competition’s technology offer. In the end of 2008 Cabovisão had a business volume of 161,1 M€.

Due to economic constraints, until the end of 2008 Cabovisão had assumed a low-profile market position in terms of marketing campaigns. But the company knew that with the turnaround of the telecommunications market, the adoption of a stronger marketing strategy would be a future need. However, the company had a communication strategy of proximity and a strong customers’ support service. This included a number for technical support, another for service’s information and a ‘click for call free’ website button.

**Changes in the consumption behavior**

According to ANACOM, in 2008, the Portuguese market for fixed voice services was showing signs that it was entering declining phase with a slow growth rate. (See Exhibit 14 for number of fixed voice client’s evolution 2005-2008). The number of subscribers and the revenues from this service were declining due to rising competition for conquering or maintaining market share which led to increasing price competitiveness. Those values were also affected by the substitution effect of the mobile voice over the fixed voice. In the period 2007-2008 the fixed voice service seemed to lose its

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4 Leiria with 42 745 inhabitants and Santarém with 28 760 inhabitants are Portuguese cities on the centre region of Portugal
individuality. It became to be mostly sold along with other services. André Almeida knew that the future growth of ZON Multimedia would not depend on selling this service alone.

At the end of 2008, although ZON Multimedia was the third player of the fixed voice market, it was the only relevant player whose fixed voice market share grew (from 2,5% in 2007 to 10,5% in 2008). See exhibit 15 for fixed voice market shares 2007/2008. The first player of this market, PT, on the other hand, had had a decrease of 6,2% from 66,8% to 60,6%, along with Sonaecom (second player of the voice service) which had decreased by 2,8% from 20,8% to 18,1% in the same period of 2007-2008.

Having in mind that the volume of the mobile service accounted for 66% of total voice traffic volume in the country, in the 2nd semester of 2008 ZON Multimedia launched the mobile voice service.

During the year of 2008, the Portuguese Pay TV service increased over the previous year, achieving 2,3 million subscribers. Its revenues also rose by 13,8% essentially due to the development of the IPTV from PT which was gaining ground in the Pay TV segment by aligning it with a strong DTH offer. For the first time, the number of Portuguese TV cable clients decreased by 1% comparing to the previous year. ZON Multimedia, the leader of Pay TV, was losing market share for its competitors. The company lost 5,7% of the 74% market share held in 2007 and PT gained 8,2% more, achieving 13,6%. Exhibit 16 shows the pay TV market shares 2007/2008. The competition among market competitors was bringing innovation as well as competitive prices for the market. Operators designed new offers and people were buying. Several new features as interactive TV and new TV contents were conquering people and there were no signs that this behavior would change.

Regarding the Internet service, there was a rise in the number of users and data consumption following an exponential growing demand. In 2008, the world forecasts for 2014 pointed to a data volume consumption of 5 times the then current consumption. As an example of this growing demand, the hosts of online contents like YouTube, in which the user is allowed to download and upload contents, became to accommodate much longer videos than before (hitherto not more than 10 minutes). In fact, the number of hosted videos on YouTube in 2008 was increasing around 20% every month. The capacity needed to store these videos reached almost 45 terabytes which is equivalent to the storage capacity of 5 thousand computers. Other services like Facebook (pictures and videos), iTunes (music), Picasa (pictures), Hulu (video), Amazon (e-commerce) were all contributing to this exponential behavior.

Moreover, the Internet turned out to be more than an information service, becoming a critical infrastructure to almost all sectors of society and an important factor in economic growth.
Internationally, operators were already taking measures in order to become able to respond to users’ needs. In Portugal, the broadband internet market revenues had increased by 13.1%. ZON Multimedia was the company that gained the biggest slice of the new number of subscribers with an increase of 4.8% in its market share. Exhibit 17 points out the Portuguese broadband internet market shares. According to ANACOM, in 100 Portuguese people, 25 had broadband internet access (mobile or fixed). Like the foreign operators, Portuguese operators were also concerned with the capacity of their technologies.

**Current Situation (2008-2009) – what to do next?**

Architectural evolutions in the access networks were being evaluated in order to face the change of the consumption patterns and the growing competition. The Next-Generation Network access was the term used to name the result of these architectural evolutions. It was defined as a different type of broadband in which one network carries all services in one package but with much more capacity than what the available technologies were then able to reach. The NGN access promised to substitute those current access technologies. In order to obtain the NGN access, the optical fiber was appointed as the crucial material to substitute the metallic cables in the networks’ architecture. Exhibit 18 depicts the advantageous characteristics of fiber optics technology. The generic term for these new networks was Fiber-to-the-x, FTTx. Exhibit 19 illustrates the variations of FTTx architecture. However, the Fiber-To-The-Home (FTTH) was the chosen by the majority of the Portuguese operators due to its proximity to the end-user.

The theoretical maximum of 24Mb for downloads seemed insufficient to make the ADSL 2+ technology future-proof. In fact, for the copper cable operators only the migration from traditional network access to NGN access would allow a bandwidth evolution; this, however, would demand Greenfield investments in a new network and the complete abandonment of the old one.

On the other hand, the cable operators with HFC network could achieve ultra broadband speed transforming their network in an NGN access if an upgrade of the DOCSIS protocol and some amplifications of the network were made. Thus, the HFC network did not require a disruption of the core technology. If some modifications were made at the level of the Cable Modem Termination System (CMTS/cable headend), an upgrade of the DOCSIS protocol system would allow the bandwidth increase. This, in turn, could ensure a theoretical advantage for these operators regarding growing data consumption and copper cable competitors. As expected, the CMTS/cable headend suppliers, such as Cisco, ARRIS and Motorola, pushed forward the CMTS, allowing cable operators to increase their bandwidth. This upgrade would grant the designation of NGN access to HFC networks.
Trying to anticipate the market and as result of the CMTS’s upgrade, during the year of 2008, ZON Multimedia was able to start the deployment of EURODOCSIS 3.0, in order to replace the current DOCSIS system. This upgrade involved an investment of about 30€ per home. At the time, the company had 2.8M clients and it was estimated that until the end of 2009 the entire network would be upgraded with the possibility of each client to opt for a broadband speed of 100Mb. Besides that, the company was in the process of incorporating the recent acquired companies TVTel which held the biggest national network in FTTH, and Pluricanal Leiria and Santarém, that had 5.000 homes in Santo António dos Cavaleiros\(^5\) ready to receive FTTH.

In the beginning of 2009, Portugal was experiencing an economic recession. The Portuguese government had just announced a fiscal stimulus package of 2.18 billion euros to push forward the economy. The telecommunications sector was considered as a structural pillar for the development of the country and the willingness to develop Next-Generation Networks access all over the country should generate employment and money. It was estimated that, in the short term, the NGNs’ development in Portugal would generate a business volume of almost 3 000 M€, creating more than fifteen thousand permanent and qualified jobs and employing, not permanently, 25 thousand people during the infrastructure construction. For this development the Portuguese Prime Minister at the time, José Socrates, informed that a credit line of 800 M€ would be available with the support of the European Investment Bank for all the country’s operators who wished to invest in the NGN access with the aim of reaching about 1.5M homes by the end of that year. This NGN investment plan was part of the stimulus package.

ZON Multimedia was comfortable in the market with its cutting-edge HFC technology but kept in mind the increasingly strong FTTH technology. Sonaecom was already implementing its fiber optic network since its announcement on January of 2008. This would allow Clix SmarTV to offer a 100Mb speed. But this was not the main concern of André Almeida since the market share of Sonaecom was smaller than PT’s market share.

In the rest of Europe, copper cable incumbents operators were already deploying NGN access like Telecom Italia and British Telecom but many were also expecting government and regulation authority actions (more favorable regulatory treatment). In fact, Europe was lagging behind. In the United States, Middle East, Asia and Australia the support given by these identities was visible. Co-financing fiber deployment, or protection of operators’ investment were measures that were allowing the fast development of the NGN access and put these regions a couple of years ahead of Europe.

\(^5\) Santo António dos Cavaleiros is a portuguese parish in the municipaly of Loures with 21 945 inhabitants
In Portugal, the incumbent was also waiting for a more favorable regulatory treatment of the national regulator. PT was expecting that the decision did not imply the obligation of providing wholesale fiber services to competitors in order to keep some exclusivity in the fiber offering. André Almeida knew that it was a matter of time until its main competitor would announce the deployment of its fiber optic network.

On February of 2009, there were only two operators capable of offering 100Mbps: one package from Sonaecom under the brand Clix and another from ZON TV Cabo. Exhibit 20 illustrates the different 100Mbps offers (first quarter of 2009).

**The decision – two different paths**

During the first quarter of 2009 ZON Multimedia had 3M customers and had upgraded 500 000 homes with EURODOCSIS 3.0. While this process was underway, ZON Multimedia extended its offer also to the mobile broadband and added the video club feature to the pay TV service, following the latest market developments.

The company led by Rodrigo Costa had also already 100 thousand cabled homes with FTTH access due to Pluricanal Leiria and Santarém and TVTel but the name ‘Fiber’ and the decision to advance to FTTH was not yet announced. A short term decision needed to be made before competitors stepped forward. Besides that, the existence of a high concentration of consumption in a small number of clients who were named Heavy Users (HU) (see exhibit 21 for data traffic consumption by users’ segments) became a motive of concern. The HU represented on average 1,5% of the total data traffic and were stealing capacity from the remaining users.

Two options were on the table: either ZON Multimedia moved towards the adoption of FTTH as its main competitor would do (option I) or it would continue to invest in its current strategy of maximizing the HFC potential and using fiber in some cases (option II).

**OPTION I – Implementation of a FTTH network**

The deployment of a FTTH network would require a high investment of about 3 times the one that would be needed in the second option. The substitution of the coaxial cable network by fiber would be a lengthy process (5 years), slower than the PT substitution (if the incumbent decided to deploy FTTH) due to PT superior investment capacity. However, the expected operational costs by year would represent only 35% of the ones required to maintain a HFC network, which would make this option attractive. Besides that, there were indications that in the long term this infrastructure could
offer innovative services that would not be possible to be replicated by an HFC’s infrastructure and which would be relevant to maintain a competitive position.

**OPTION II – Maximize the HFC potential but using FTTH in some cases**

To run this plan it would be necessary to distinguish two parallel investment’s parcels. The first one would consist on CMTS upgrading in order to increase the HFC data transfer capacity to 360Mb. The second part of the investment would be allocated to migrate HFC’s heavy users cables to optical fiber cables and would imply 300€ per each heavy user. The investment needed would be 3 times inferior to the investment required for the first option. Besides, the time required to implement this decision would be 2 years. However, the expected operational costs would be high comparing with the first option.

Since this option would require a lower initial investment than the first one, ZON Multimedia would have enough financial space to give up from the PT’s wholesale fiber access and build its own. This would cut the strategic risk when renegotiating the contract in late 2010. ZON Multimedia would not depend anymore on the incumbent’s infrastructures. Moreover, it could open a new business area, doing the same network-access wholesale service that PT did with ZON Multimedia.

**What would be the best path to choose?**

Contemplating Lisboa through his window, André Almeida was wondered how long it would take until the HFC technology became obsolete. He knew that it was a matter of time until its main competitor started deploying FTTH, taking with it some of ZON Multimedia’s customers in search of the much talked fiber-to-the-home. ZON Multimedia had already taken some decisions to face the exponential consumption demand. The evolution to EURODOCSIS 3.0 was in theory more than able to respond to this need in the next years, but, at the same time, the existence of local heavy users concerned the team. Besides, the market was thinking even ahead. André Almeida, as all the team, was worried about the future success of the triple play. **Exhibit 22** illustrates the triple play market shares on the first quarter of 2009.

The economic context was not the most favorable for anyone and ZON Multimedia had some financial limitations compared to its biggest competitor. However, the decision making team recognized the fiber optics’ potential and if the initial investment would be a big parcel, the operational costs and the services that could be born from the FTTH network would eventually compensate it. They questioned themselves what would be the best decision?
## Exhibits

### Exhibit 1  ZON Multimedia’s financial highlights 2008

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Revenues</td>
<td>715.7</td>
<td>776.6</td>
</tr>
<tr>
<td>EBITDA</td>
<td>220.2</td>
<td>244.5</td>
</tr>
<tr>
<td>EBITDA margin</td>
<td>30.8%</td>
<td>31.5%</td>
</tr>
<tr>
<td>Consolidated net income</td>
<td>49.3</td>
<td>47.9</td>
</tr>
<tr>
<td>CAPEX</td>
<td>99.4</td>
<td>145.5</td>
</tr>
<tr>
<td>Net debt</td>
<td>23.5</td>
<td>552.5</td>
</tr>
<tr>
<td>Earnings per share (€)</td>
<td>0.1596</td>
<td>0.1626</td>
</tr>
<tr>
<td>Net debt/EBITDA</td>
<td>0.03</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Source: ZON Multimedia 2008 financial results
Exhibit 2  Simplified structure of ZON Multimedia (30th of June 2008)

ZON Multimedia

Pay TV, Broadband, Voice

TV Cabo 100%
Cabo TV Madeirense 71.14%
Cabo TV Açoreana 83.82%
Sport TV Portugal 50%
Lisboa TV Portugal 40%

ZON Conteúdos 100%

Lusomundo Audovisuais 100%
Lusomundo Cinemas 100%

Audiovisual Services

Theather Exhibitions

Subsidiary | Business
---|---
TV Cabo | Management of TV service by cable or satellite, voice service and broadband internet service. The satellite approach is used when the cable is not available in a given area in order to cover all the national territory (rural areas that cable did not reach).
ZON Conteúdos | Production of TV content such as series and cinema channels which are distributed by ZON TV Cabo and the management of advertising space of some of them.
Lusomundo Audovisuais | Distribution of movies, exploration of cinemas, acquisition and negotiation of content rights and video on demand.
Lusomundo Cinemas | 

Source: ZON Multimedia Annual Report 2008
### Exhibit 3  Operational Performance of ZON Multimedia (2008)

<table>
<thead>
<tr>
<th>Business Indicators ('000)</th>
<th>4Q07</th>
<th>4Q08</th>
<th>4Q07/4Q08</th>
<th>2007</th>
<th>2008</th>
<th>2007/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Passed Homes</strong></td>
<td>2,752.8</td>
<td>2,844.0</td>
<td>3.3%</td>
<td>2,752.8</td>
<td>2,844.0</td>
<td>3.3%</td>
</tr>
<tr>
<td><strong>TV cable subscribers</strong>, of which:</td>
<td>1,547.1</td>
<td>1,525.1</td>
<td>(1.4%)</td>
<td>1,547.1</td>
<td>1,525.1</td>
<td>(1.4%)</td>
</tr>
<tr>
<td><strong>Digital TV</strong></td>
<td>382.1</td>
<td>495.8</td>
<td>29.8%</td>
<td>382.1</td>
<td>495.8</td>
<td>29.8%</td>
</tr>
<tr>
<td><strong>RGMs</strong></td>
<td>840.6</td>
<td>829.9</td>
<td>(1.3%)</td>
<td>840.6</td>
<td>829.9</td>
<td>(1.3%)</td>
</tr>
<tr>
<td><strong>Broadband Internet</strong></td>
<td>400.2</td>
<td>479.0</td>
<td>19.7%</td>
<td>400.2</td>
<td>479.0</td>
<td>19.7%</td>
</tr>
<tr>
<td><strong>Fixed Voice</strong></td>
<td>83.5</td>
<td>327.1</td>
<td>291.8%</td>
<td>83.5</td>
<td>327.1</td>
<td>291.8%</td>
</tr>
<tr>
<td><strong>Mobile Voice</strong></td>
<td>0.0</td>
<td>7.2</td>
<td>-</td>
<td>0.0</td>
<td>7.2</td>
<td>-</td>
</tr>
<tr>
<td><strong>RGUs by subscriber</strong></td>
<td>1.56</td>
<td>1.85</td>
<td>18.7%</td>
<td>1.56</td>
<td>1.85</td>
<td>18.7%</td>
</tr>
<tr>
<td><strong>Triple Play customers</strong></td>
<td>68.7</td>
<td>250.1</td>
<td>264.2%</td>
<td>68.7</td>
<td>250.1</td>
<td>264.2%</td>
</tr>
<tr>
<td><strong>ARPU</strong></td>
<td>31.0</td>
<td>32.7</td>
<td>5.6%</td>
<td>30.8</td>
<td>32.0</td>
<td>4.2%</td>
</tr>
</tbody>
</table>

**Net Additions**

<table>
<thead>
<tr>
<th>Business Indicators</th>
<th>4Q07</th>
<th>4Q08</th>
<th>4Q07/4Q08</th>
<th>2007</th>
<th>2008</th>
<th>2007/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TV subscribers</strong></td>
<td>26.3</td>
<td>(14.0)</td>
<td>(153.1%)</td>
<td>67.0</td>
<td>(22.0)</td>
<td>(132.8%)</td>
</tr>
<tr>
<td><strong>Digital TV</strong></td>
<td>25.7</td>
<td>50.0</td>
<td>94.2%</td>
<td>111.7</td>
<td>113.8</td>
<td>1.9%</td>
</tr>
<tr>
<td><strong>Premium</strong></td>
<td>37.6</td>
<td>(4.9)</td>
<td>(113.1%)</td>
<td>60.6</td>
<td>(10.7)</td>
<td>(117.7%)</td>
</tr>
<tr>
<td><strong>Broadband Internet</strong></td>
<td>12.9</td>
<td>28.0</td>
<td>117.1%</td>
<td>38.3</td>
<td>78.8</td>
<td>105.6%</td>
</tr>
<tr>
<td><strong>Fixed Voice</strong></td>
<td>29.6</td>
<td>73.2</td>
<td>146.9%</td>
<td>83.5</td>
<td>243.6</td>
<td>191.8%</td>
</tr>
<tr>
<td><strong>Mobile Voice</strong></td>
<td>0.0</td>
<td>7.2</td>
<td>-</td>
<td>0.0</td>
<td>7.2</td>
<td>-</td>
</tr>
<tr>
<td><strong>RGUs</strong></td>
<td>2,412.9</td>
<td>2,834.3</td>
<td>17.5%</td>
<td>2,412.9</td>
<td>2,834.3</td>
<td>17.5%</td>
</tr>
<tr>
<td><strong>Triple Play customers</strong></td>
<td>20.3</td>
<td>56.7</td>
<td>179.0%</td>
<td>68.7</td>
<td>181.4</td>
<td>164.2%</td>
</tr>
</tbody>
</table>

**Cinematographic Theaters**

<table>
<thead>
<tr>
<th>Business Indicators</th>
<th>4Q07</th>
<th>4Q08</th>
<th>4Q07/4Q08</th>
<th>2007</th>
<th>2008</th>
<th>2007/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenues per viewer (€)</strong></td>
<td>4.0</td>
<td>4.2</td>
<td>3.1%</td>
<td>4.0</td>
<td>4.1</td>
<td>3.4%</td>
</tr>
<tr>
<td><strong>Sold Tickets</strong></td>
<td>2,092.9</td>
<td>2,234.8</td>
<td>6.8%</td>
<td>8,193.4</td>
<td>8,289.0</td>
<td>1.2%</td>
</tr>
<tr>
<td><strong>Cinema Rooms (units)</strong></td>
<td>204.0</td>
<td>213.0</td>
<td>4.4%</td>
<td>204.0</td>
<td>213.0</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

Source: ZON Multimedia Annual Report 2008

---

6 The presented numbers refer to the total number of ZON TV Cabo clients for the TV service.
7 RGUs - Revenue Generating Units – corresponds to the sum of the number of pay TV, Digital TV, broadband internet, fixed and mobile subscribers.
8 Average Revenue Per User
Exhibit 4  Impact of the integrated offer in churn rate results

![Reduction of the voluntary service abandonment](image)

Source: Studies about the triple play offer, conducted by the American cable operator Cox Communications in Promon, Business & Technology Review (2007), *Triple Play, Um fenómeno sem volta na Indústria de telecomunicações*, Brasil

Exhibit 5  The subscriptions per per multiple package type in Portugal (number of customers 2007/2008)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Double Play</td>
<td>385 729</td>
<td>391 666</td>
<td>1.54%</td>
</tr>
<tr>
<td>Triple Play</td>
<td>179 291</td>
<td>343 051</td>
<td>91.34%</td>
</tr>
<tr>
<td>Quadruple Play</td>
<td>0</td>
<td>9650</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: ANACOM, *The state of the Portuguese communications in 2008* (Report)
Exhibit 6 Multiple play market shares by company (2008)

Customers in the multiple play offer (% by operator)

Source: ANACOM, The state of the Portuguese communications in 2008 (Report)

Exhibit 7 Subscription to multiple play service and to single service

Multiple Play Offer
Customer's subscription(%)
Exhibit 8  Triple play’s evolution in ZON Multimedia’s TV cable base customers (2007/2008)

Cable Base Customer Distribution (2007)

- Single Play: 62%
- Double Play: 32%
- Triple Play: 6%

Cable Base Customer Distribution (2008)

- Single Play: 47%
- Double Play: 30%
- Triple Play: 23%

Source: ZON Multimedia Annual Report 2008
Exhibit 9  Main events that occurred in each of the triple play services

<table>
<thead>
<tr>
<th>Fixed Voice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initially fixed voice was only delivered by traditional copper cables network but with the development of the Voice over Internet Protocol (VoIP) it was possible to make telephone calls over a computer’s network. The advent of the local number portability which allowed keeping the telephone number when changing operator, was another relevant change. The growing effect of substitution of the mobile voice for the fixed voice and the development of several tariff plans such as free nights or free weekends contributed as well to relevant changes in this service.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pay TV</th>
</tr>
</thead>
</table>
| The Pay TV service is the term associated to subscription-based television services. The subscription to this service implies paying a monthly fee according to the quantity and quality of TV channels that the user chooses. Comparing to the free TV (analog TV) service, a better performance is expected.  
In Portugal, the most relevant technologies that allowed this pay TV service are three: cable TV (CATV), the Internet Protocol Television (IPTV) and Satellite (Direct to Home broadcast– DTH). In 2008, Digital Terrestrial Television (DTTV) appeared in Portugal, in order to substitute the free TV (analog TV) which included 4 TV channels for free, maintaining the same number of TV channels but with higher quality of transmission.  
Until the end of 2008, the innovations adopted by telecommunications’ operators included the possibility of having several televisions connected to this service in different rooms in the same house and the possibility of having an electronic programming guide allowing the user to customize his TV channels’ lists according to his preferences. The pause in live TV feature, the video recording plus the video on demand that allowed customers to rent a movie in their television and the diversity of channel packages including premium channels with high quality and highly specialized content – they all constitute additional developments that users have gained access to in the last years. |

<table>
<thead>
<tr>
<th>Broadband Internet Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Since its appearance that internet has had an important role in society. The most meaningful changes in the internet services were related to the appearance of the mobile/wireless internet and to the levels of bandwidth. The higher the levels of bandwidth, the largest is the capacity and speed of the internet broadband.</td>
</tr>
</tbody>
</table>
Exhibit 10  ADSL and HFC networks’ architecture

Source: Corning (2005), Broadband Technology Overview White Paper – Optical Fiber
Exhibit 11  ZON Multimedia’s HFC architecture network

Source: Corning (2005), Broadband Technology Overview White Paper – Optical Fiber
**Exhibit 12  Summary of the highest speed capacity packages from each operator (end of the first semester of 2008)**

<table>
<thead>
<tr>
<th>Operator</th>
<th>TV (#Channels)</th>
<th>NET (download speed)</th>
<th>FIXED VOICE</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADSL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portugal Telecom Meo</td>
<td>45</td>
<td>16Mb</td>
<td>Unlimited</td>
<td>49,54€</td>
</tr>
<tr>
<td>Sonaecom</td>
<td>47</td>
<td>12Mb</td>
<td>Unlimited at night</td>
<td>53,40€</td>
</tr>
<tr>
<td>Clix SmarTV</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HFC</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZON Multimedia ZON TV cabo</td>
<td>90</td>
<td>18Mb</td>
<td>For free at nights and weekends</td>
<td>48,69€</td>
</tr>
<tr>
<td>Cabovisão</td>
<td>46</td>
<td>25Mb</td>
<td>Unlimited</td>
<td>78,97€</td>
</tr>
</tbody>
</table>

Source: Operators’ websites, annual reports and available information at media
Exhibit 13  PT’s consolidated financial highlights at 2008

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating revenues</td>
<td>6,148.4</td>
<td>6,734.3</td>
</tr>
<tr>
<td>Wireline</td>
<td>1,962.4</td>
<td>1,931.4</td>
</tr>
<tr>
<td>Domestic mobile + TMN</td>
<td>1,542.9</td>
<td>1,601.5</td>
</tr>
<tr>
<td>Brazilian mobile + Vivo</td>
<td>2,463.0</td>
<td>3,039.8</td>
</tr>
<tr>
<td>Other and eliminations</td>
<td>180.1</td>
<td>161.6</td>
</tr>
<tr>
<td>EBITDA [1]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireline</td>
<td>2,356.7</td>
<td>2,442.9</td>
</tr>
<tr>
<td>Domestic mobile + TMN</td>
<td>679.0</td>
<td>689.2</td>
</tr>
<tr>
<td>Brazilian mobile + Vivo</td>
<td>595.0</td>
<td>832.5</td>
</tr>
<tr>
<td>Other and eliminations</td>
<td>73.9</td>
<td>78.7</td>
</tr>
<tr>
<td>EBITDA margin (%)</td>
<td>38.3</td>
<td>36.3</td>
</tr>
<tr>
<td>Consolidated net income</td>
<td>741.9</td>
<td>581.5</td>
</tr>
<tr>
<td>CAPEX [2]</td>
<td>899.3</td>
<td>1,242.3</td>
</tr>
<tr>
<td>Net debt</td>
<td>4,381.8</td>
<td>5,571.3</td>
</tr>
<tr>
<td>Earnings per share (€)</td>
<td>0.67</td>
<td>0.63</td>
</tr>
<tr>
<td>Net debt/EBITDA</td>
<td>1.9</td>
<td>2.28</td>
</tr>
</tbody>
</table>

[1] EBITDA = income from operations + depreciation and amortization.


Source: Portugal Telecom Annual Report 2008

Exhibit 14  Number of Portuguese subscribers of the fixed voice service evolution (2005-2008)

Source: ZON Multimedia Annual Report 2008
Exhibit 15  Portuguese fixed voice market shares (2007/2008)

Exhibit 16  Portuguese Pay TV market shares by subscription (2007/2008)

Source: ZON Multimedia Annual Report 2008

* Included 4% of subscribers gained due to ZON Multimedia acquisitions during 2008. Without it the company would have 68,3% market share.
**Exhibit 17  Portuguese broadband internet market shares (2007/2008)**

![Market Share Chart](chart.png)

Source: ZON Multimedia Annual Report 2008

*Included 2.4% of subscribers gained due to ZON Multimedia acquisitions during 2008. Without it the company would have 28.9% market share.*

**Exhibit 18  Fiber optics technology’s main advantages**

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>ADVANTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Enormous potential bandwidth’</td>
<td>This allows carrying a lot more and faster data than what the ADSL or Cable modem technology can reach. This is reflected in shorter download times.</td>
</tr>
<tr>
<td>‘Small size and weight’</td>
<td>The optical fiber has a diameter similar to a human hair. Hence, even applying protective covers the optical fibers are far much lighter and smaller than metallic cables. This allows alleviating cities’ duct congestion.</td>
</tr>
<tr>
<td>‘Immunity to interference and cross talk’</td>
<td>The lighting signals from one fiber optic do not interfere with other fiber optics which makes the phone calls or TV reception clearer.</td>
</tr>
<tr>
<td>‘Low transmission loss’</td>
<td>Optical fiber cables carried a signal over long distances</td>
</tr>
<tr>
<td>‘System reliability and ease of maintenance’</td>
<td>The low transmission loss propriety along with the prediction of optical’s components have a lifetime of 20 to 30 years tend to reduce costs and time of maintenance.</td>
</tr>
</tbody>
</table>

Exhibit 19  FTTx architecture variations

This scheme illustrates the variations of the FTTx architecture according to the distance between the end-user and the optical fiber cables.

The building on the right side is where the end users are located, being the dotted rectangles distinct habitations. On the left side is the operator’s central office.

Source: Fiber to the x from Wikipedia (http://en.wikipedia.org/wiki/Fiber_to_the_x)
Exhibit 20  The different 100Mbps offers (first quarter of 2009)

<table>
<thead>
<tr>
<th>TV</th>
<th>NET Download</th>
<th>Upload</th>
<th>VOICE</th>
<th>Price/ Month (promotion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clix Fibra Pack L</td>
<td>20</td>
<td>30 Mb</td>
<td>3 Mb</td>
<td>9pm-9am to fixed voice</td>
</tr>
<tr>
<td>Clix Fibra Pack XL</td>
<td>80</td>
<td>50 Mb</td>
<td>5 Mb</td>
<td>Not free</td>
</tr>
<tr>
<td>Clix Fibra Pack XXL</td>
<td>100</td>
<td>100 Mb</td>
<td>10 Mb</td>
<td>24 h/day</td>
</tr>
<tr>
<td>ZON Net Wideband 50MB</td>
<td>110</td>
<td>50 Mb</td>
<td>2 Mb</td>
<td>24 h/day</td>
</tr>
<tr>
<td>ZON Net Wideband 100MB</td>
<td>110</td>
<td>100 Mb</td>
<td>6 Mb</td>
<td>24 h/day</td>
</tr>
</tbody>
</table>

Note that ZON Net Wideband initially was only a double play package requiring the subscription of the TV service. The customer needed to pay 59,49€ per month for the double play plus the price of the TV service. However, in the following month this offer changed to the triple play service as described above.

The biggest difference between the services presented above and the ones that offered lower speeds were their geographic reach. This ultra broadband speed was present only in some Portuguese regions like Lisbon and Oporto, with the ZON Net Wideband being present in a smaller area because of its later deployment.

Source: The information was gathered through consulting conceded information from ZON Multimedia and from the online article ‘Tek tip: Move to fiber’ published at 2009 in the Sapo Tek website
The light users were the segment with more users in number but with lower traffic consumption. The medium users segment represented 19.5% of the quantity of users and consumed 59% of the total amount of data consumed in that month. The following users are classified as heavy users because although they represented only 1.1% of the total number of users their consumptions amounts were so high that they were able to affect the network performance.

Source: ZON Multimedia
Exhibit 22  The triple play market shares on the first quarter of 2009

Source: ZON Multimedia
List of terms and acronyms

ADSL - Asymmetric Digital Subscriber Line network technology

AdC – Competition Authority (Autoridade da Concorrência) for telecommunications industry

ANACOM – Portuguese Regulator Authority of telecommunications industry (is the AdC)

ARPU – Average Revenue Per User

Bandwidth - Amount of data that can be transmitted through a broadband internet line.

Churn rate - Rate at which customers voluntarily leave the service

DTH - Direct to Home broadcast

DTTV - Digital Terrestrial Television

DOCSIS protocol - Data Over Cable Service Interface Specifications protocol

Download - Process in which the user receives data from the internet provider

FTTB – Fiber-to-the-Building

FTTH – Fiber-to-the-Home

FTTN – Fiber-to-the Node

FTTx – Fiber-to-the-X - generic term to describe any network which metallic cables were all or part replaced by optical fiber in the last mile of the architecture network (it can be FTTH, FTTB, FTTN)

HFC - Hybrid fiber-coaxial network technology

IPTV - Internet Protocol Television

Last Mile - In telecommunications this term describes the neighborhood network infrastructure.

Mbps – Megabits per second (data rate unit)

ORAC - Reference Offer of Ducts Access (Oferta de Referência de Acesso a Condutas)

Passed Home – Areas in which an operator’s network reaches, this term shall not be confounded with the number of clients.

PT – Portugal Telecom

PTM – Portugal Telecom Multimédia

Upload - Process in which the user sends data to the provider.

VoIP - Voice Over Internet Protocol