

**THE E-HEALTH OPPORTUNITY  
FOR THE TELECOMMUNICATION INDUSTRY  
AND PORTUGAL TELECOM – A CASE STUDY**

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### Abstract

Electronic-Health (e-health) is a recent answer to some pressing challenges on health. Aging of western societies and treatments' rising costs raised doubts about health systems' sustainability. Individuals, companies and public administration alike are looking for technology to find aid in addressing these challenges. Several industries are tackling those issues offering innovative solutions among which Telecommunication's. Nonetheless, this industry is facing challenges from over-the-top players menacing its business model. Portugal Telecom shares these challenges and is looking to diversify to guarantee future growth, namely, by developing in e-health solutions.

This case study follows two important threads in strategy literature: diversification and the resource-based view, applied Portugal Telecom and the e-health opportunity. As a case study, it aims providing readers a tool to better understand and employ strategic management concepts and frameworks in an applied business context.

E-health as an opportunity for growth to Telecommunication companies and Portugal Telecom is described from three points of view: i) an *actual* market need ii) that *may be* addressed by Telecommunication companies and iii) *should be addressed* by those companies as they *need to grow*.

It is shown how increasing concern with health issues by individuals, general public, companies and public administration is driving technology to find innovative answers to those same issues (i). Then, it is explained how Telcos may and in fact are addressing those issues, namely, by developing e-health solutions for their customers (ii). Finally, it is argued why Telcos should address this opportunity due their eroding revenues and margins (iii).

**Keywords:** telecommunication industry, e-health, strategy, resource-based view, RBV, resources and capabilities

**JEL classification system:** M10 - General Business Administration; I100 - Health: General

## Resumo

‘Electronic-health’ (e-saúde) é uma resposta recente a alguns desafios na saúde. O envelhecimento das sociedades ocidentais e custos crescentes dos tratamentos levantaram dúvidas acerca da sustentabilidade do sistema de saúde. Indivíduos, empresas e administração pública procuram tecnologia capaz de ajudá-los a enfrentar esses desafios. Várias indústrias endereçam esses problemas oferecendo soluções inovadoras, incluindo a indústria das telecomunicações. Porém, esta indústria enfrenta desafios de concorrentes ‘over-the-top’ que ameaçam o seu modelo de negócio. A Portugal Telecom partilha estes desafios e procura diversificar o negócio para garantir crescimento futuro, desenvolvendo soluções de e-Saúde.

Este estudo de caso segue duas linhas da literatura de gestão: diversificação e a visão baseada-em-recursos, aplicada à Portugal Telecom e à oportunidade da e-saúde. Como estudo de caso, procura oferecer aos leitores uma ferramenta para melhor compreender e empregar conceitos / enquadramentos teóricos de gestão estratégica num contexto de negócio.

A e-saúde como oportunidade de crescimento para empresas de Telecomunicações e a Portugal Telecom é descrita sob três perspetivas: i) uma necessidade *real* do mercado ii) que *pode ser* endereçada por empresas de Telecomunicações e iii) *deve ser endereçada* por essas empresas que *precisam de crescer*.

Mostra-se como a preocupação crescente com problemas de saúde pelos indivíduos, público geral, empresas e administração pública tem levado a respostas tecnológicas inovadoras para esses problemas (i). Posteriormente, explica-se como as Telcos podem e estão a endereçar esses problemas, nomeadamente, via soluções de e-saúde (ii). Finalmente, argumenta-se porque devem as Telcos endereçar esta oportunidade devido à erosão de receitas e margens (iii).

**Palavras-chave:** setor das telecomunicações, e-saúde, estratégia, RBV, recursos e capacidades

**Sistema de classificação JEL:** M10 - General Business Administration; I100 - Health: General

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## Glossary and main abbreviations

Along the manuscript, several words and concepts were abbreviated for a matter of concision and to avoid repetition. Presented here is the list of those abbreviations and their meaning to which was added a brief description when felt in need. (Some abbreviations refer to concepts specific to the Telecommunication sector and may be unknown to the general business reader.)

**ARPU** – stands for ‘average revenues per user’

**B2C, B2B, B2G, B2B2V** – stands for different customer segments standing for ‘business to consumer’, ‘business’, ‘government’, and ‘business to consumer’

**Dumb pipes** – meaning telecommunication operators’ inability to provide services / applications through its network, providing only bandwidth and network speed, used only to transfer bytes between the end user’s device and the Internet

**e2e** – stands for ‘end-to-end’ service, meaning the ability telecommunication providers to guarantee quality of service from the channel to the service itself, i.e., the network and the service on top of it

**EBITDA** – stands for ‘earnings before interests, taxes, depreciations and amortizations’

**e-health** – stands for ‘electronic health’, transferring of health resources and health care by electronic means (WHO - World Health Organization)

**ICT** – stands for ‘information and communications technology’

**ISP** – stands for ‘internet service provider’

**m-health** – ‘mobile health’, medical and public health practice enabled by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices (WHO)

**MVNO** – mobile virtual network operators, that is, operators who do not own a telecommunication network but rent it from Telco providers, offering telecommunication services to their customers independently

**OTT** – stands for ‘over-the-top’, players delivering services through the internet using the network simply as a channel

**QoS** – stands for ‘quality of service’

**Telco(s)** – Telecommunication company / companies

## Foreword

Here I may speak in the first person. I will allow myself to address the motivation behind this thesis.

It all started from a Team Project started in 2012 at PT in which I participated as a member of a junior consulting organization. The project was focused on innovation and strategy regarding the so called health and well-being opportunity. Since there, much has happened and I am now working on a different area, namely cloud computing in the B2B segment, still at PT. I feel fortunate to work in such dynamic industry, full with possibilities of growth and hard problems to tackle. To show and share some of the changes and challenges the telecommunication industry is was for me a key objective. I hope to pass through the excitement I feel about the subject.

I must also acknowledge my indebtedness to a particular paper, Chetan Sharma's *Operator's Dilemma*. It was for me eye-opening as the paper compiled systematically evidence and argument for the challenges the telecom industry faces. The author develops a main idea, namely that telecom operators, while seeking new revenue sources, must turn themselves now to multiple new revenues streams – or to risk of losing face to the customer and becoming a commodity service provider, under the threat of new, over the top, competitors. The author calls those *the forth-wave*, following the waves of revenues from voice, messaging and data. Among those new sources Sharma identifies e-health and cloud computing. Both would give the chance to address the need that most Telecoms felt to enter in the ICT market. I chose to address the former: e-Health

My choice for developing a case for e-Health in Telecom industry follows another personal motivation. As a management student, I was taught several tools and frameworks. One of the first was for sure the PEST analysis. I remember to think at the time that that kind of analysis was not very interesting: a little bit of common place and an introductory step that *you* need to pass before going to other, more serious stuff. I also remember that most of my colleagues shared a similar opinion. It was not without surprise how much power may have a PEST analysis, namely about health. That is, how a 'single' fact such as *population is aging* may imply so much: an entire shift in gears for different industries. When I was preparing for an interview at Siemens, I naturally did a little research about the company; again with surprised, I realized that they were able to explain most of their lines of business from a single major macro fact, as for example, 'Cities and Infrastructures' because we are perceiving a massive and increasing concentration of population around megapolis, and such big cities need products and services to ease everyday life. In short, with e-Health in Telecom industry I could show, and tell, a

similar story. And by doing that, allowing students early on to understand how much power may have a PEST analysis, directing companies to entirely different markets, pushing innovation – and just not as a introductory tool for other stuff, as something you should get pass by rapidly.

Also, the resources and capabilities approach and the VRIO framework with its Ricardian root were for me personal favorites. I entertained the thought of writing a vase in which they could play a major role. Finally, I tried to conceptualize the case as whole in which the different tools of analysis were mutually reinforcing and coherent.

Long story short, I wanted to be able to guide the reader through a journey that the Telecom industry and PT have recently begun. First, to identify the need of change within the industry; second, to identify the possibility of change from an external fact; third, to evaluate PT capacity to address the need and the possibility of change identified; fourth, to describe what would this mean in terms of strategy. It is a journey of innovation worth of understanding, following – and in my particular case, to be working on.

### **Disclaimer**

There were some issues related to PT and data sensitivity. Thus, it was not always possible to provide the most updated data due company's restrictions.

This thesis was written following the 'American English' orthography.



## Introduction

*The e-health<sup>1</sup> opportunity for the telecommunication industry and Portugal Telecom – a case study*, is a case study on strategy, applied to the telecommunication industry and PT. It is organized around two major chapters: 1) The Case study and the 2) Pedagogical note, which includes both a *literature review* and the *case resolution*. The conclusion identifies *practical implications and contributions* (3.1) and acknowledges the *main limitations and difficulties* felt during the thesis elaboration (3.2).

The *general purpose* of the case study is to provide a tool useful for teachers and students alike. It applies an important theoretical thread, strategy and *the resource-based view*, on an actual business scenario, within a fast-changing industry. From the professor point of view, it is a pedagogical tool enabling her / him to engage with students during the course, prompting class discussion illustrating vividly what is a mandatory topic on any strategy course – the *resource base view* and the *resources and capabilities* approach to *internal analysis*. From the student point of view, it is an opportunity *to develop basic managerial competences*, such as data gathering and analysis; *to enlarge her / his knowledge on an industry* embedded in a dynamic and complex environment; *to develop her / his skill in applying theoretical frameworks* and tools to a business context.

*The Case study* (chapter 1) follows three threads to identify and clearly state the problem here in question: the telecommunication industry (1.2), the market context (1.3) and the company, Portugal Telecom (1.4). Section 1.1 offers a brief overview.

First, the sector analysis (1.2) provides the general background emphasizing some traits of the industry and how it has been evolving. Then, it addresses industry's major problems, both from an internal and external point of view, namely, its declining revenues and the OTT threat. It concludes with an overview of the answers Telcos are giving to counter those problems.

The macro-environment and market analysis (1.3) addresses the e-health opportunity itself, from a larger context, explaining key enablers such as the ageing society and the digital society trends. It also identifies some progresses being made and obstacles still standing to e-health adoption, from a Portuguese and European perspective.

The company analysis – Portugal Telecom (1.4) expounds the past and recent history of the company, highlighting some of its achievements, strengths and weaknesses before moving to its strategic, business and financial outlook. It emphasizes innovation's important role at PT

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<sup>1</sup> 'E-health' stands short for 'electronic-health', i.e., the set of products and services technology / electronically enabled applied to the health industry.

and e-health related P&S provided, both to B2C and B2B / B2G segments. The chapter ends with the problem review (1.5). As whole, chapter 1 corresponds to the case to be delivered to students, to which one should append the questions proposed on section 2.6.

*The pedagogical note* (chapter 2) begins identifying the case's target (2.1) and its pedagogical objectives (2.2), namely, undergraduate students in courses of strategy or general management, to learn and apply business analysis frameworks and tools, such as the resource-based view (RBV) to an ever evolving industry such as telecommunication's.

The literature review follows (2.3), starting by distinguishing different definitions and levels of strategy, corporate and business level, and strategic management concepts and analysis tools, such as PESTEL and Ansoff's product-market matrix. It then moves to the *resource-based view of the firm* (RBV), reviewing its main concepts and major tenets, explaining the RBV – and the VRIO and ASSIST frameworks.

The next sections, analysis tools (2.4), animation plan / action plan (2.5) and proposed case questions (2.6) provide the pedagogical tools and guidelines both to students and teachers when using the case study. Case resolution (2.7) answers to the proposed questions in section 2.5, applying analysis tools and frameworks addressed in the literature review. Annex C provides the case resolution slides, not included in the main text.

The third and final chapter, the *conclusion*, accounts for the (3.1) practical implications and contributions made with this case, namely, by identifying large trends within the industry and its larger context. Their expected evolution may motivate further research, addressing other opportunities that the telecommunication and PT will address to answer industry's pressing challenges, opportunities such as cloud computing, e.g. – or how other sectors are addressing the e-health opportunity based on the macro-environment modern societies live in. Also, it provides a short reflection on what are the case study's (3.2) main limitations and what difficulties the author felt during research and writing. There was a significant range of information that was classified and could not be here published; at the same time, due the subject scope, on the industry and market sides, it was difficult to choose and narrow all data available in order *to build an argument* and a case study that would engage with its readers.

Finally, at the end one may find the *bibliography* with the books and book chapters (4.1), articles and papers on periodicals (4.2), and business reports or other electronic sources (4.3) used when writing this case study. Annexes provide analysis tools templates (A), support analysis for the case resolution (B), and the resolution slides (C) (see 2.7.2).

## 1. The Case study

### 1.1. Problem identification

#### 1.1.1. The Problem overview

Many telecommunication companies are introducing new lines of businesses (LoB) into their traditional portfolio. One of those LoB is related to 'e-health'. This case study aims to answer the general question of *why are Telcos introducing this kind of products and services (P&S)*.

It develops this answer by *factoring in* issues and challenges from the telecommunication industry and its competitive environment – and from the market at large and macro-environment. Moreover, it reflects on what are the resources and capabilities that Telcos must now have and / or develop in the near future to profit from this new LoB.

Finally, the case study applies to Portugal Telecom (henceforth, PT) and its efforts to develop e-health related P&S evaluating its resources, capabilities and ability to seize this opportunity.

#### 1.1.2. The Problem context

Below, the context for this problem is introduced in the following order: a) the *company*, PT; b) the *telecommunication industry*; c) the *e-health opportunity*. Concluding this section, there is a short restatement of the identified problem.

##### *a) The Company: Portugal Telecom*

Portugal Telecom was created in 1994 from a merger of three companies as a wholly State-owned company to provide fixed telephony to both consumer and businesses. Since then, the company has been through some deep changes. In 1995 it started the process of becoming a public company and in 2000 the State already was not the major shareholder at PT. It has also grown its portfolio in both consumer and business market while aiming for new geographies.

The company expanded its services to include mobile telephony, cable / IP TV and internet services in the consumer or B2C market. It also ventured into the content delivery market but exited it due a decision by the industry regulator. It forced PT to spin-off PT Multimédia unit, which became ZON, PT's major competitor in B2C (now NOS, through a merger with Optimus).

PT also expanded its services for the business customer or B2B market. Most notably, it has created back in 1999 an independent unit, PT Sistemas de Informação (PT SI), dedicated to IT services and integration. More recently, it built a Data Center at Covilhã and created a dedicated unit focused on cloud and data center services addressing both the SMB and Corporate customer.

The company expanded not only its product and services portfolio but also ventured into new markets, especially in Brazil. It has invested in Vivo and more recently in Oi, both Brazilian telecoms. Meanwhile, in 2010, PT sold his shareholder position in Vivo to Telefónica and then

invested in Brazilian operator Oi, announcing a merger intention. Meanwhile, a series of events precluded the M&A success, due investments PT made at GES. This triggered Bava's leave from Oi and new terms on the M&A which ultimately led to PT being sold by Oi to Altice.

### ***b) The Telecommunication industry***

This heavy turn of new P&S and new geographical markets in the telecommunication companies are due to the growing *market liberalization* and consequently *open competition* within the industry. Moreover, the very nature of communication is changing through social networking and emphasis on mobility, challenging Telcos' traditional approach. Finally, with the onslaught of the internet, Telcos faced new entrants' competition from *over-the-top (OTT) players* that offer web-based substitutes to voice, messaging and other Telco services, e.g.

PT and each, e.g., European counterpart were *State-owned* and held *monopolies* in their respective countries as they were the incumbent in each national market. This meant they did not had the pressure they now have to develop new P&S, to attract new customers while retaining current ones, or the need for scale felt today.

Nowadays, Telcos are facing internal market competition as *market liberalization and deregulation* began, and multinational or pan-european players are competing in each national market. In Portugal, one may look to Vodafone as one of such players.

The telecommunication industry is being pushed forward by major technology innovation drivers which are changing the very nature of communication, that is, the core business of Telcos – with evermore focus on mobility, leveraged in new, interconnected devices. This meant that Telcos traditional LoBs, such fixed telephony, were on the verge of becoming obsolete or, at least, commodities, which usually represent thinner margins.

As introduced above, OTT players and services are Telcos' new competitors. Many of them operate globally, providing *carrier neutral* services to the end-consumer through the web. For instance, a given end customer may choose from a variety of messaging services offered by different providers, *through* her / his internet connection independently of whom is providing it, i.e., which Telco provides the data service in her / his smartphone, e.g.. It is, again, carrier neutral. For Telcos this has a huge impact because such OTT services substitute Telcos', reducing them to a smaller role – mere internet provider or network enabler, sometimes referred as 'dumb-pipes'. In short, the once national / State-owned telecommunication companies, focused on fixed telephony and voice, now have new competition within the telecommunication industry – *other* Telcos due to market deregulation – and from *new*, OTT, entrants.

***c) An Aging society as an opportunity to the telecommunication industry and PT***

To grasp this set of services and where it is coming from, it is important to understand the issues relating with an aging society, amongst the most worrisome in contemporary western societies: first, by having a quick overview of such issues, supported by some key figures; then by exemplifying how and why they imply *an opportunity for the telecommunication industry in particular*; finally, by giving some examples of e-health services offered by PT.

From the second-half of the 20<sup>th</sup>-century until the present, western societies are growing increasingly old. After the so-called baby-boom after the World War II, nativity had a general decrease; at the same time, mortality decreased, making an increase in general life expectancy. Reasons explaining such trends are many and complex. The advancement of medicine is one of such reasons, important to acknowledge in this discussion. Medical and pharmaceutical research is evolving and involving more and more efficacious, but costly, treatments. This fact puts pressure in many health systems, especially those which are State funded, following a European model. Moreover, associated with this aging of society, the prevalence of the so-called chronic disease increased dramatically. This also had and has an impact on health costs, as it implies ongoing, long-term treatment for a growing population. As a result, one may observe the emphasis being made on *active aging* and *preventive medicine*.

Active aging insists on having each person responsible for her / his healthier life style, physically and socially speaking, thus emphasizing self-care and autonomy. Preventive medicine also, insists on measures each person should take to avoid the need of medical care – emphasizing, for instance, the importance of good nutrition, regular physical exercise and a healthy lifestyle. As a consequence, quality of life would increase, just not life expectancy – and health costs would not escalate as they otherwise will.

The telecommunication industry interest on the health sector is not new. Nevertheless, one may observe a growing interest on e-health and health-related services, due the market opportunity generated by the issues shortly described above. Moreover, Telcos are experiencing a decline in revenues and / or margins on the most traditional business streams: voice, messaging, data and cable TV (or IP TV). Finally, as said before, Telcos are facing new entrants, from other industries, mostly OTT players that bypass them as they are carrier neutral. To answer such challenges, Telcos are trying to find new sources of revenue while fighting back. As it will be described below, e-health is among these new sources. These opportunities are an attempt to leverage a Telco value chain position as network provider, using its specific resources and capabilities.

Similarly, PT has been following this general trend, by introducing some health related services to its portfolio. Medigraf and Sapó Saúde are such examples: the former addresses the business segment (B2B), the latter the end-consumer (B2C).

### 1.1.3. Problem statement

Having this context in mind, the problem identified may be resumed to the following key questions about *the role of e-health may play for Telcos and PT in particular, as a new LoB*:

- What are the conditions that prompted the e-health opportunity?
- What is the e-health opportunity from a telecom point of view? Why is it so important for Telcos and PT to address it?
- Are Telcos and PT in place to embrace the e-health opportunity? If the answer is positive, what are the key resources and capabilities that enable them to do so? Which resources and capabilities should they develop further?

The present case study provides a guide to one of the most competitive and fast-paced industries, telecommunications' – while following the thread of the so-called 'e-health opportunity' as both a response to key issues in society and to some major industry threats.

In its resolution, one may expect to have a fuller understanding of the telecommunication industry and its recent evolution and some of its future developments.

## 1.2. Sector analysis

### 1.2.1. General background and history

The telecommunications industry is more than 100 years old. It started when Marconi allegedly invented telephony and patented it in 1876.<sup>2</sup> Soon, many countries started to build an infrastructure to support this new communication services; see table 1, below.

**Table 1 – Telecommunication industry starting year, in selected countries**

Country	Year
USA	1877
United Kingdom	1878
Germany	1878-1889
France	1878-1889

Source: Companies' corporate websites and ETNO (2014)

<sup>2</sup> There are others to whom is also attributed the invention of telephony, such as Meucci, in 1854. Cf. the US Congress resolution, 107 (HRes 269), 2002

This service started in Portugal in 1882, around the same time as the countries shown above. Introducing these services was revolutionary at the time, increasingly facilitating communication for people and companies alike.

#### *a) The Monopoly mindset*

As depicted above, most telephony initiatives have been State led. Each country developed its own telecommunication infrastructure and, for that matter, founded an organization around it. Many Telcos today are heirs of this initial condition, having been State held for many years, operating only in its national territory. Bellow, table 2 shows telcos and their country origin.

**Table 2 – Formerly State-held Telecom companies by country and world region**

Telcos	Country of origin	World region
<b>AT&amp;T</b> formerly, American Telephone and	United States	Outside europe
<b>BT</b> formerly, British Telecom	United Kingdom	
<b>Deutsche Telekom</b>	Germany	Europe
<b>Italia Telecom</b>	Italy	
<b>NTT</b> Nippon Telegraph and Telephone)	Japan	Outside europe
<b>Orange</b> formerly, France Telecom	France	Europe
<b>Telefónica</b>	Spain	

Source: Companies' corporate websites and ETNO (2014)

Telecoms were State-held operating in a much regulated space with no competition, holding thus a national monopoly. Like other industries (e.g., Energy), the telecommunication's was considered a strategic asset for a country. The market liberalization happened at different speeds in different countries. Below, table 3 show the starting year for liberalization in selected countries.

**Table 3 – Starting years in telecommunication markets liberalization**

Country	Country of origin	Year
<b>USA</b>	AT&T	1984
<b>United Kingdom</b>	BT formerly, British Telecom	1982-4
<b>Germany</b>	Deutsche Telekom	1995-6
<b>Italy</b>	Italia Telecom	1997
<b>Japan</b>	NTT	1985-7
<b>France</b>	Orange formerly, France Telecom	1990
<b>Spain</b>	Telefónica	1997

Source: Companies' corporate websites and ETNO (2014)

The market became liberalized which prompted competition. Nevertheless, many States kept an important position in their respective Telco, remaining its major shareholder. One must also note that the market liberalization was not followed by a full market deregulation. It continues to be an industry highly regulated and for each country there remains at least one incumbent, i.e., providing Universal Service to the population.

### ***b) Innovation and new business streams***

Throughout the years, Telcos have expanded their portfolio in both the consumer (B2C) and business (B2B) segments. In B2C this led to mobile voice, mobile messaging, internet service (cable, DSL or other), and cable TV. This portfolio expansion involved a considerable amount of investment and innovation from Telcos, since those services represent capital-intensive businesses, to develop infrastructure and engineering their own technological solutions.

On the B2C, there are several generations of mobile connectivity, 2G through 4G. On 2015's Mobile World Congress, a 5<sup>th</sup> generation was shown by leading players. Another recent development, also a Telcos' innovation example, optic fiber *to the home* (FFTH), allowed the industry to deliver the end-consumer services with a new level in terms of speed and quality.

Finally, this portfolio expansion meant not only a *technological* evolution. It also involved *business model* innovation, regarding for instance, *service convergence*: the so-called triple-play (3P) and now, 4P and 5P, based on bundled services. Being monthly billed, it enables Telcos to push customers to sign for more services (cross-sell and up-sell), while increasing the ARPU (average revenue per user) and reducing the churn rate. By offering services in bundle Telcos found a way of raising the switching costs for consumers, thus reducing the probability of they leaving (i.e., the churn rate, which equals 1 *minus* the retention rate).

On B2B, Telcos also developed new services, accompanying or anticipating the needs of their customer, leading or following market trends. For instance, Telcos came to offer unified communications services (UCS), leveraging their core telecommunication business, providing companies a value-added service (example also discussed below). Moreover, Telcos may benefit from their technological know-how – deep engineering background – and their value chain positioning as network owners. Being a carrier, Telcos may move upstream in the value chain leveraging its network resource, expertise, offering cost advantage, assuring end-to-end (e2e) quality of service (QoS), independent from third-parties.

Regarding business model innovation, the recent example of cloud computing provides an illustration. *De facto*, analysts believe that Telcos may play a role in the cloud market since cloud 'as-a-service' business model emulates that one already in place in Telcos' other LoBs, namely in B2C: an 'as-a-service' approach, monthly billed.



**c) The IT / IS turn**

The internet allowed for what is now usually called the dot.com boom in early 2000's. Several companies emerged with internet-based businesses. There was a new market upcoming that generated a lot of speculation and M&As. Portugal Telecom acquired SAPO, a company that survived the M&A and still stands as PT brand for the online.

Many Telcos began then to acquire or start from scratch new companies within their enterprise group. Each of these IT companies allowed Telcos to engage in this new business stream while providing internal shared services. Below, table 4 presents some examples.

**Table 4 – IT units from Telcos**

Telco	Country of origin	IT Unit
<b>BT</b> formerly, British Telecom	United Kingdom	BT Engage IT BT Global Solution
<b>Deutsche Telekom</b>	Germany	T-Systems
<b>Italia Telecom</b>	Italy	TI Digital Solutions
<b>NTT</b> Nippon Telegraph and Telephone)	Japan	NTT Data
<b>Orange</b> formerly, France Telecom	France	Orange Business Services
<b>Telefónica</b>	Spain	Telefónica Digital

Source: Companies' corporate websites and ETNO (2014)

Some of these companies, such T-Systems, Orange Business Services or Telefónica Digital are important as standalone companies, competing head-to-head with non-Telco players in IT.

In 1999, PT founded PT Sistemas de Informação and PT Inovação. More recently, in 2014, PT announced the fusion between these two companies while launching a new one, PT Unidade Cloud & Data Centers. More recently, some Telcos invested further in the IT through M&As.

**Table 5 – IT related acquisitions from Telcos**

Telco	Company acquired	Date	IT area
<b>AT&amp;T</b>	US-1	2006	Software + consulting
<b>CenturyLink</b>	Tier3 Savvis	2013 2011	Infrastructure / hosting
<b>Deutsche Telekom</b>	Strato	2009	Infrastructure / hosting
<b>NTT</b>	Dimension Data	2010	Consulting + IT outsourcing
<b>Telefónica</b>	eyeOS Acens	2014 2011	Software + Infrastructure / hosting
<b>Verizon</b>	Terremark	2011	Infrastructure / hostin

Source: Adapted from PwC (2013), companies' corporate websites and ETNO (2014)

Verizon's acquisition of Terremark is probably one of the most important ones. Terremark was already a leading player in data center services (e.g. housing, hosting). With this M&A Verizon was able to immediately to enter in a competitive market such as cloud computing.

#### *d) The Verge of consolidation*

In this last section of General background and history, it is important to account for a recent M&A turn on the telecommunication industry. This trend is felt both at international and local level. In Portugal, major national players are pursuing this path.

Portugal Telecom announced in 2013 its intention to merge with Oi, the Brazilian telecommunications operator. ZON and Optimus, two of the most important players operating in Portugal – the former on fixed voice, internet service and cable TV, and the latter, on mobile voice and (mobile) internet services – announced a merger in 2013, fully effective today, under NOS, company and brand. NOS may compete head to head with PT offering a quadruple-play (4P) offer of fixed and mobile voice, internet service and IP TV. It was an important move since ZON lacked the resources and client base for mobile voice; the same for Optimus, which lacked resources for IP TV..

At the international level, the telecommunication industry is observing some major M&As. Below, table 6 presents a synopsis of recent M&As from around the world.

**Table 6 – Recent M&As in the telecommunication industry core business**

Telco	Country	Company acquired	Date
Altice	France	SFR	2014
Altice	France	Numericable	2014
Verizon	US	Verizon Wireless (owned by Vodafone)	2014
Telefónica	UK	O2	2006
Deutsche Telekom	Poland	GTS Central Europe	2013
Vodafone	Spain	ONO	2014

Source: PwC (2013) and companies' corporate websites

It is important to note the following. Telcos are acquiring *within the telecommunication industry*, aiming to complement their regional presence, to extend their portfolio and / or their resources and capabilities, benefiting from economies of scale and / or scope. Moreover, Telcos are acquiring *outside the telecommunication industry*, especially in the IT services industry, a topic already discussed. Most companies acquired were B2B oriented.

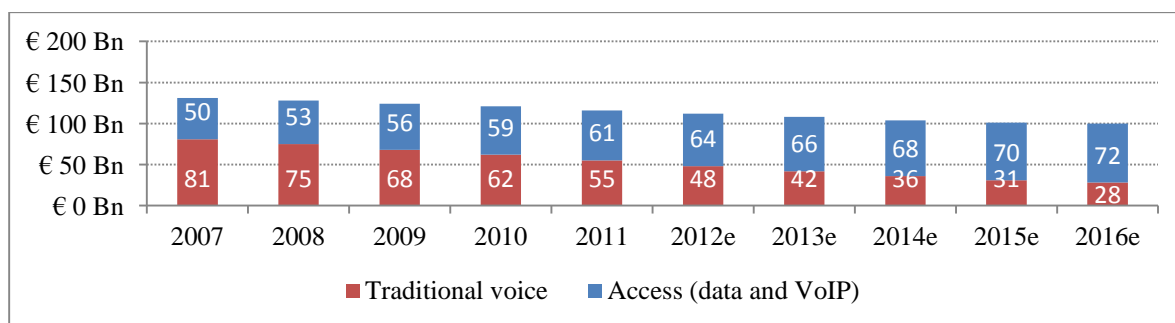
### 1.2.2. Traditional business and the three waves

After having a general understanding of the telecommunication industry, its background, history and recent trends, it is important to focus on Telcos' portfolios as they are today before discussing how they may evolve (next section, 1.2.3).

After this section, a company analysis for Portugal Telecom (1.3) is set forth, which concludes the case study presentation.

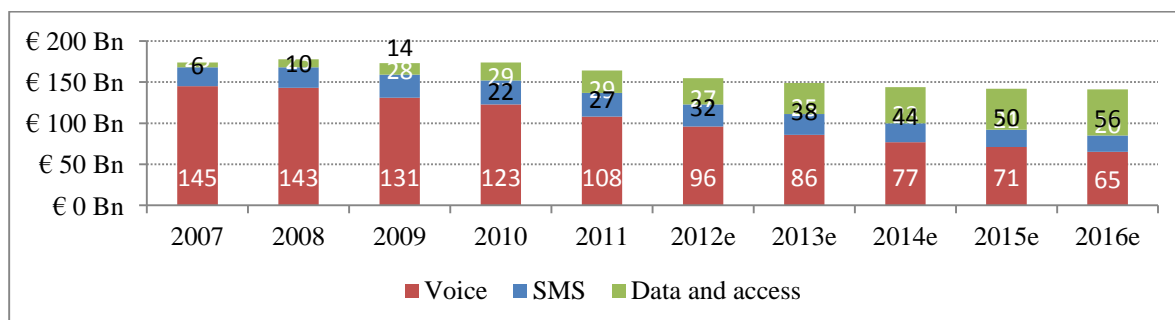
#### a) Traditional businesses

In the end consumer segment, if one looks to most Telcos' portfolio, one finds steadily three or four key offerings: fixed and mobile voice, internet services and IP TV, usually in bundles. The same does not happen in the business segment. There, one may find some disparagingly different offerings in Telcos' portfolio. Some concentrate around vertical sectors as government, healthcare, etc. – others do not. Notwithstanding, offerings like voice and mobile broadband are quite common. Also, P&S cloud related are quite common nowadays in Telcos' portfolio. Here it is important to show some key figures regarding each business stream and the *consumer vs. business segment*, as it stands and how it has evolved over time. As before, the focus goes to major Telcos as their represent they represent players usually operating in the most mature markets, which provides insights how the overall market will grow as it matures. Below, Charts 1 and 2 show Telcos' declining revenues operating in Europe for both fixed and mobile services.



**Chart 1 – Telcos’ revenues from fixed services, Europe, 2007-2016**

Source: Adapted from ETNO (2013), and based on IDC and A.T. Kearney analysis



**Chart 2 – Telcos’ revenues from mobile services, Europe, 2007-2016**

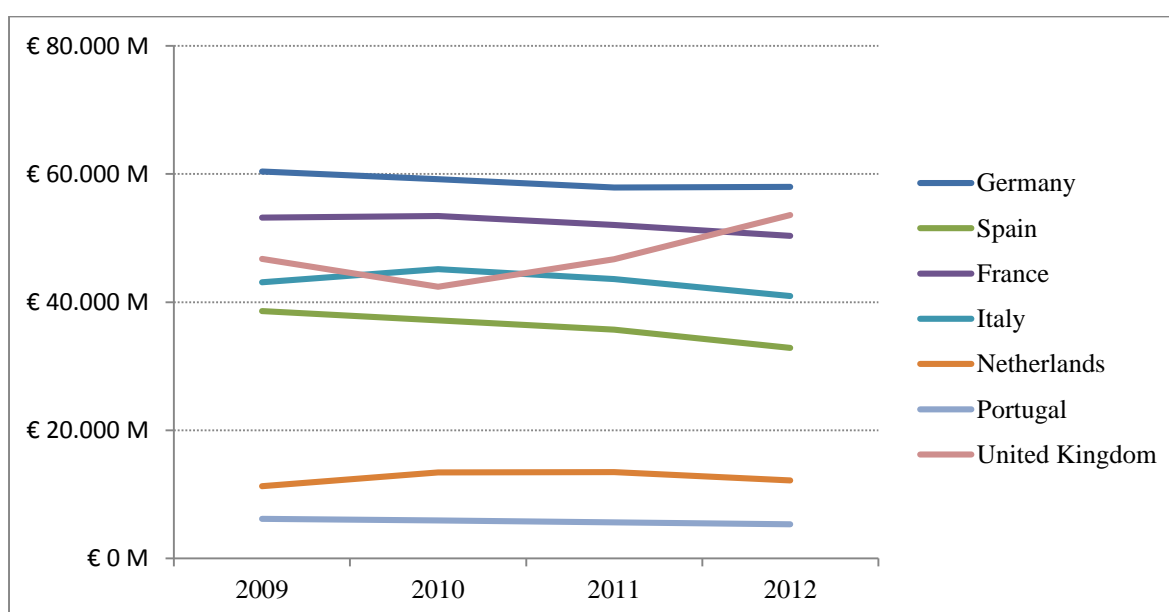
Source: Adapted from ETNO (2013), and based on IDC and A.T. Kearney analysis

This is the existing picture today. Charts 1 and 2 clearly show an overall decline in revenues, where the growing revenue coming from data does not compensate for the other losses.

### ***b) The Internal problem***

As shown above (a), Telcos' main revenue sources were voice, messaging and internet services – and IP TV in many cases. Sharma (2010) called those the 'three waves' (the author did not analyze IP TV). In his analysis, those revenues sources are doomed to decline. This section (b) presents a picture of this state-of-affairs as an internal problem. Next (c), it will detailed why this came to be, by showing major threats Telcos are facing.

Below, Chart 3 maps how the telecommunication industry behavior on different European countries, showing a steadiness or decline, with the exception of the United Kingdom.



**Chart 3 – Telecommunication revenues in selected European countries, 2009-2012**

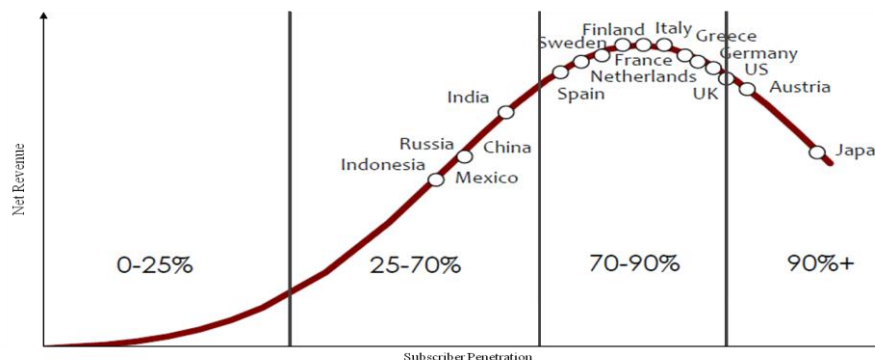
Source: Eurostat

*Voice* was the first to decline. It is also the oldest business stream, either fixed or mobile, if compared with newer business streams. As telecommunications evolve, it became at best commoditized, at worse obsolete. People and companies still need voice to communicate. However, as new players and new solutions entered the market, providing alternatives to customer, Telcos were unable to differentiate themselves and their offer, which prompted competition based on price. Telcos lost 'supplier power' (Porter, 2008). All this results in eroding margins and ARPU, as it happens frequently, as explained by Porter (2008).

Moreover, innovation and new competition made voice *as provided traditionally by Telcos* replaceable. Now people may use voice *and video*, or instead use a VoIP (voice over IP, internet protocol), to communicate. Also, such trends as social networking may be analyzed as

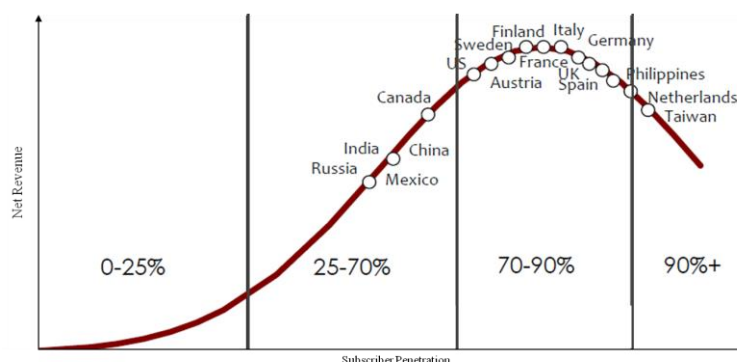
substitutes of traditional, voice, communication. Finally, even messaging may be viewed as a substitute, that is, a Telco service cannibalizing fixed and mobile voice.

Below, figures 1 and 2 show the evolution of voice and messaging revenues for some major markets, comparing net revenue with subscriber penetration.



**Figure 1 – Revenue growth curve for Voice related services**

Source: Adapted from Sharma (2012)



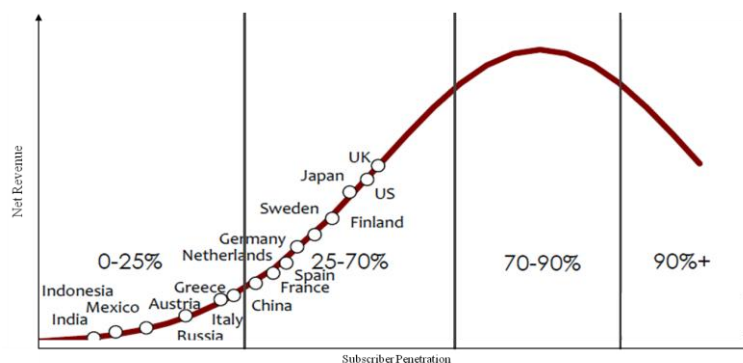
**Figure 2 – Revenue growth curve for Messaging related services**

Source: Adapted from Sharma (2012)

Similarly as voice, **messaging** has been partially replaced internet enabled communication forms. Again, social networks such as Facebook or WhatsApp can be referred as such substitutes. Notwithstanding, even services as email or online messaging / chat, which are common and everyday tools for many people, are messaging replacement. Thus, it should not be surprising that this onslaught of substitutes – and free substitutes – forced a decrease in price and consequently, overtime, margins and ARPU erosion. Nowadays, many providers offer voice and messaging through a flat fee within a mobile plan, with free messaging within and outside the telecommunication operator’s own network.

**Internet service** – or data revenue – is also doomed to decline. Being the last of the three waves, if one follows Sharma (2010) and excludes IP TV, its decline is not as evident. Some markets have not yet reached maturity as such enablers such as new generation mobile devices (smartphones and tablets, e.g.) are still a growing market. Nevertheless, its prospects are not

good and one should expect a decline in margins and ARPU. Many companies are already offering unlimited plans for internet, even for mobile – e.g., AT&T in the US.



**Figure 3 – Revenue growth curve for access related services**

Source: Adapted from Sharma (2012)

Sharma’s (2010) analysis for voice, messaging and access is based on market maturity, here interpreted as subscriber penetration. It reveals similar results as those shown in Charts 1 and 2. Unlike voice or messaging, Telcos do not face substitutes for this kind of offer. They face, of course, competition, mainly from other Telcos.

As an industry, there are not so many competitors entering the market. It is a market which calls for huge entering costs – namely, upfront capital investments and engineering expertise – which inhibit new entrants. Nevertheless, it is important to note that Google already offers, and Facebook is piloting, this kind of services. The size of this threat is yet to be seen.

**c) The External threat – the OTT entrants**

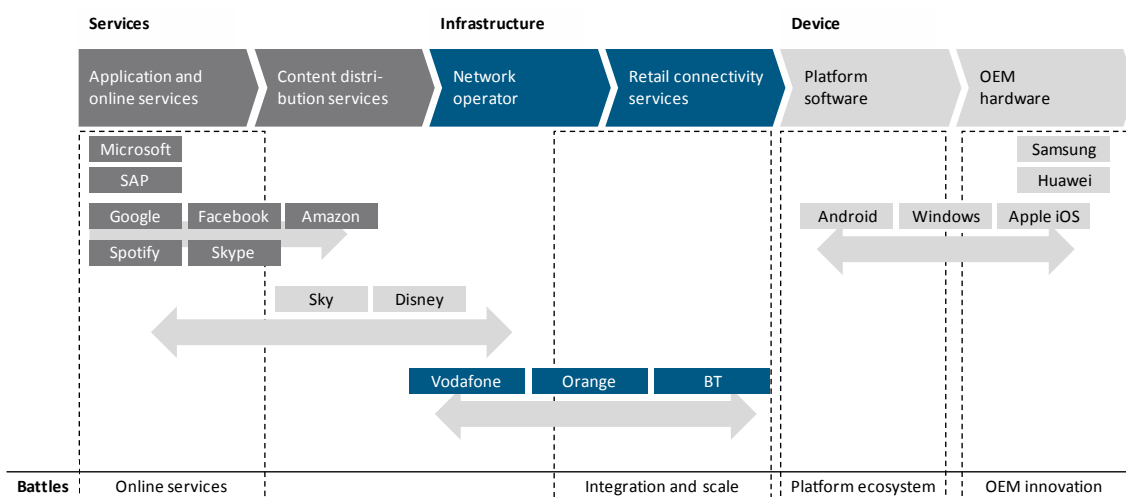
Telcos are facing OTT players offering several services through the internet. From one point of view, this is very advantageous for Telcos as it promotes data consumption. For that reason, some Telcos are letting its customers to use services like Facebook without charging the internet access and usage. Nevertheless, services like Facebook or Google are also substitutes for traditional Telco services so that while they enable data access, they hinder other revenues streams. Below, table 7 shows some direct and indirect substitutes to Telcos’ traditional services.

**Table 7 – Current threats to B2C segments and traditional businesses**

Business area	Direct	Indirect
TV	Netflix	Youtube
Messaging	What's App	Social networks
Fixed voice	Skype (VoIP)	Social networks

Source: Own elaboration

As mentioned before, Telcos will still play an enabler role in the larger ecosystem, even if they are fully substituted in voice, messaging or TV, they would still be the network operators and connectivity providers, thus, the channel through which the end-users access the services. Below, figure 4 maps the telecommunication within its larger ecosystem, including OTTs.



**Figure 4 – Telco’s ecosystem and value chain**

Source: Adapted from ETNO (2012) and A.T. Kearney analysis

### 1.2.3. Future business and the Forth wave

#### a) New revenue sources

Services like cloud computing, e-health or M2M were already discussed above and given as examples of the telecommunication industry evolution so far. That is, it is clear that Telcos are *in fact* entering such markets. Here, it is discussed *why* Telcos needed to develop those services.

**Table 8 – Telcos’ new revenue sources as reported by consultants**

ETNO / A.T. Kearney	Chetan Sharma		Arthur D. Little / Exane BNP Paribas
M-payments	Identity / risk management	Cloud services	Cloud
M-advertising	Commerce	Enterorise	CDN
M2M	Payments	Connected ho	Building automation
IPTV	User profile	Health	Smart meetering
Cloud Services	Advertising	Analytics	Vending machines and payment terminals
			Fleet and freight management
			Connected cars
			M-payments

Sources: ETNO (2012), Sharma (2012), Arthur D. Little / Exane BNP Paribas (2012) and own elaboration

As reported by the consultants above, e-health presents itself as one of many future growth opportunities for Telcos. In fact, many companies, including PT (see below) have already introduced health related products and services – or even formed a dedicated business unit,

### 1.3. Macro-environment and market analysis

The following section (1.3) addresses the business environment and market on which the e-health opportunity should find support, i.e., its key enablers (1.3.1), such as the aging and digital trend found in society today. Also, it highlights some progresses being made *as we speak* on e-health (1.3.2). Finally, it notes obstacles standing to develop e-health solutions.

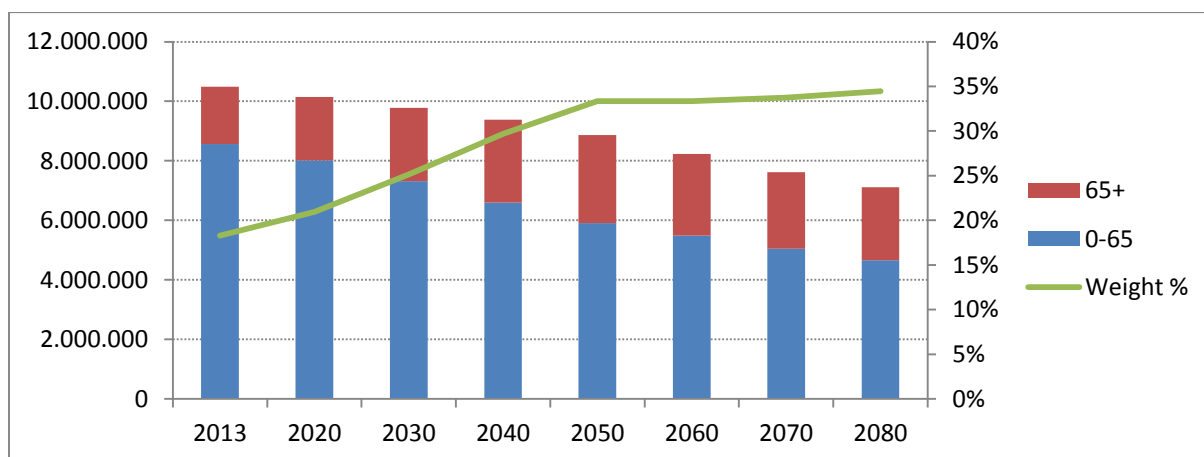
#### 1.3.1. Key enablers of the e-health opportunity

*From the market or demand point of view*, the e-health opportunity could be supported by recalling two general trends: the aging and the digitalization of society. The case for e-health today and the near future depends on those two cornerstones. *From the provider or supply point of view*, one should recall how technological innovation enables the more general ICT industry address the health and well-being market. This other part was already briefly described above, when explaining the so-called 'forth wave' – and will be further addressed when analyzing PT.

##### a) An Aging society

Western societies are becoming increasingly aged, bringing forward serious issues that individuals, organizations (profit and non-profit) and governments should and are indeed addressing, among which health and well-being. Issues relating with retirement age, retirement plans and sustainability of the social security may be offered as other examples.

Thus, it is important to understand first the demographics. As much as possible, this will be done assuming a Portuguese perspective and evidence Below, chart 4 shows Portugal's population, above and below 65 years old (% of total) – and its expected evolution till 2080.

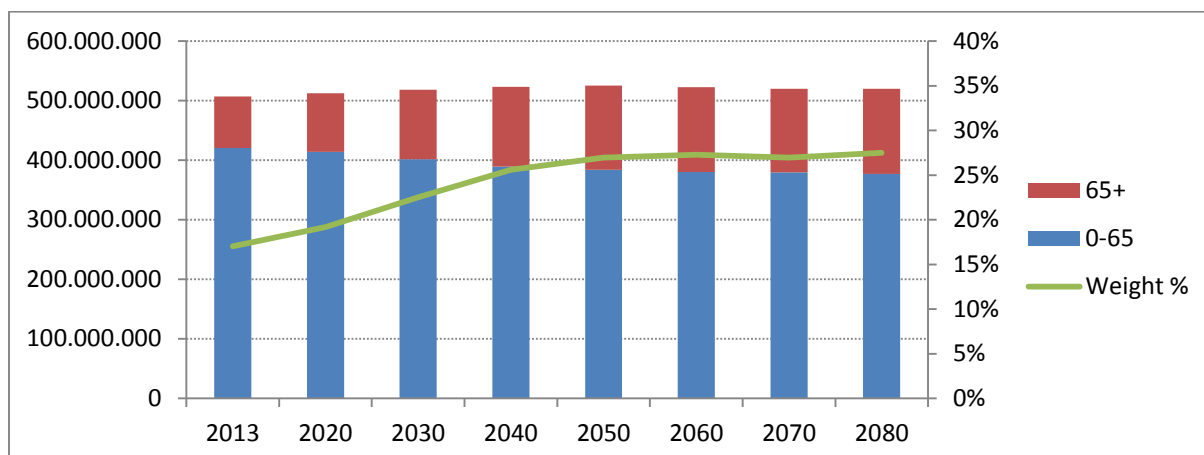


**Chart 4 – Population above and below 65 years old in Portugal, 2013 and 2020-2080**

Source: PORDATA / Instituto Nacional de Estatística, IP, 2013



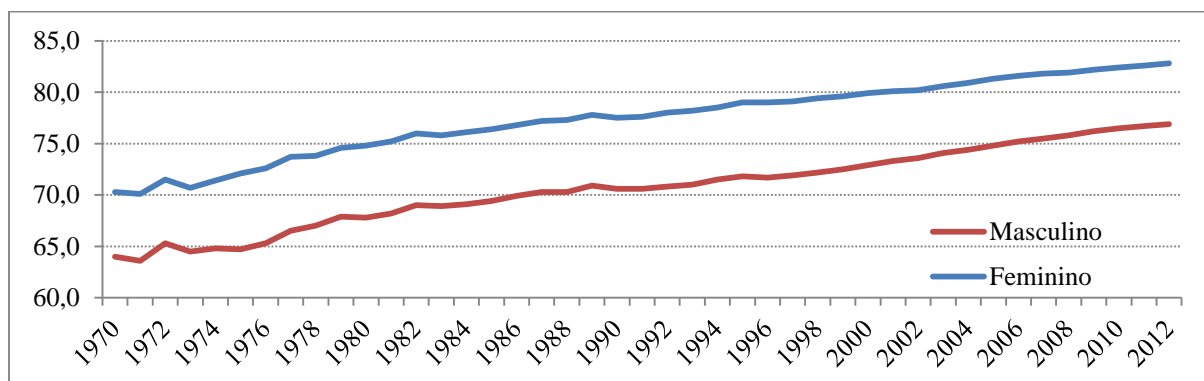
Chart 5 below show how population is expected to evolve till 2080, supporting the claim that Portugal is a case following more or less a general trend.



**Chart 5 – Population above and below 65 years old in EU27, 2013 and 2020-2080**

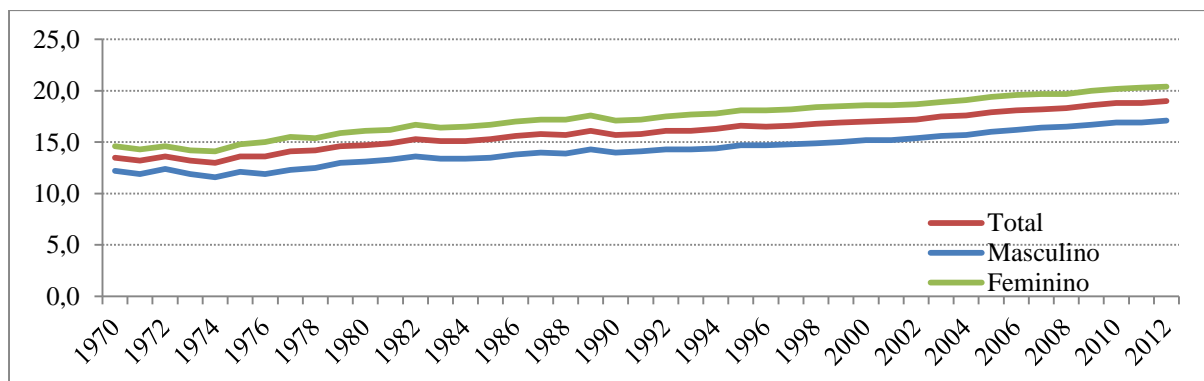
Source: PORDATA / Instituto Nacional de Estatística, IP / EUROSTAT, 2013

There are several reasons that may explain this trend. Below, charts 6, 7 and 8 picture the life expectancy at birth and at 65, the mortality and birth rates, during the last quarter of the 20<sup>th</sup>-century till today, showing the trends that led to an ageing society.



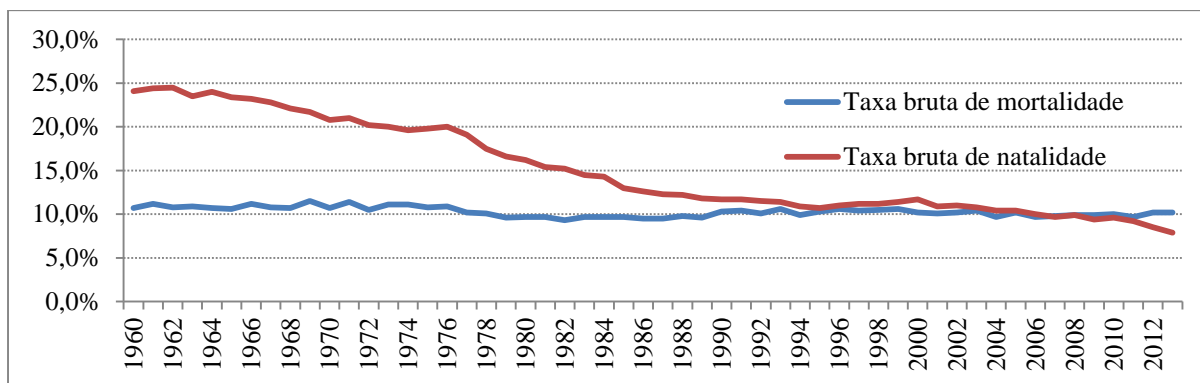
**Chart 6 – Expected lifetime at birth in Portugal, 1970-2012**

Source: PORDATA / Instituto Nacional de Estatística, IP / EUROSTAT, 1970.2012



**Chart 7 – Expected lifetime at 65 years-old in Portugal, 1970-2012**

Source: PORDATA / Instituto Nacional de Estatística, IP / EUROSTAT, 1970.2012



**Chart 8 – Birth and mortality rate in Portugal in Portugal, 1960-2012**

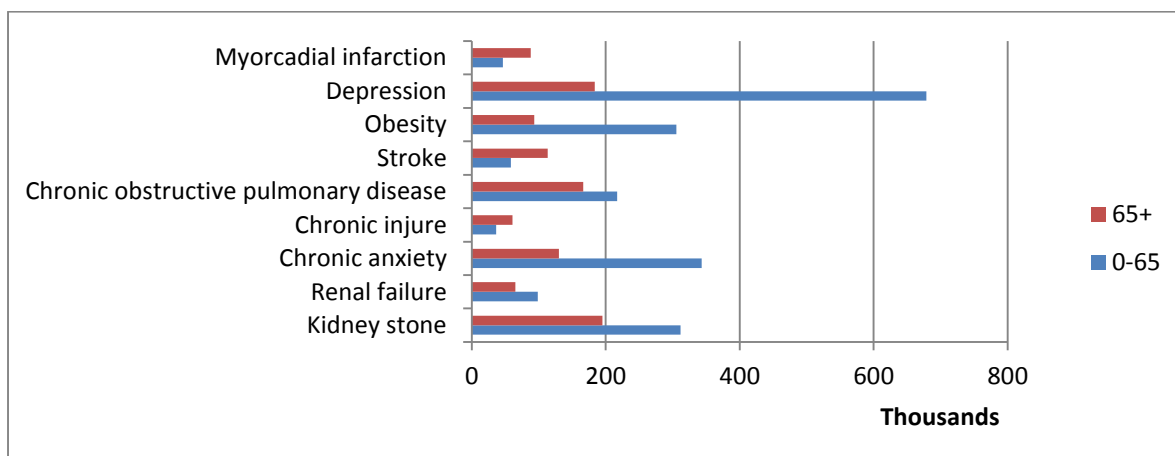
Source: PORDATA / INE, 2014

Finally, there is no expected halt in this trend. On the contrary, life expectancy trends show the difference between the life expectancy of a new born vs. someone who has just hit 65 years-old. As people live longer and birth rates are low, *aged societies will continue to grow*.

Though the direct concern here is not to explain this trend, it is important to bear in mind some generic causes that help to explain it:

- Mortality rates went down due to increased health and hygiene factors;
- Decline of birth rate due general changing habits in society (studies, women at work, later marriage and later first child);

At the same time, an ageing society meant an increase in some chronic diseases, many of which require long-term care and monitoring, including self-care and self-monitoring. Chart 9 below shows the incidence of some of those diseases as reported in the last INSA report.

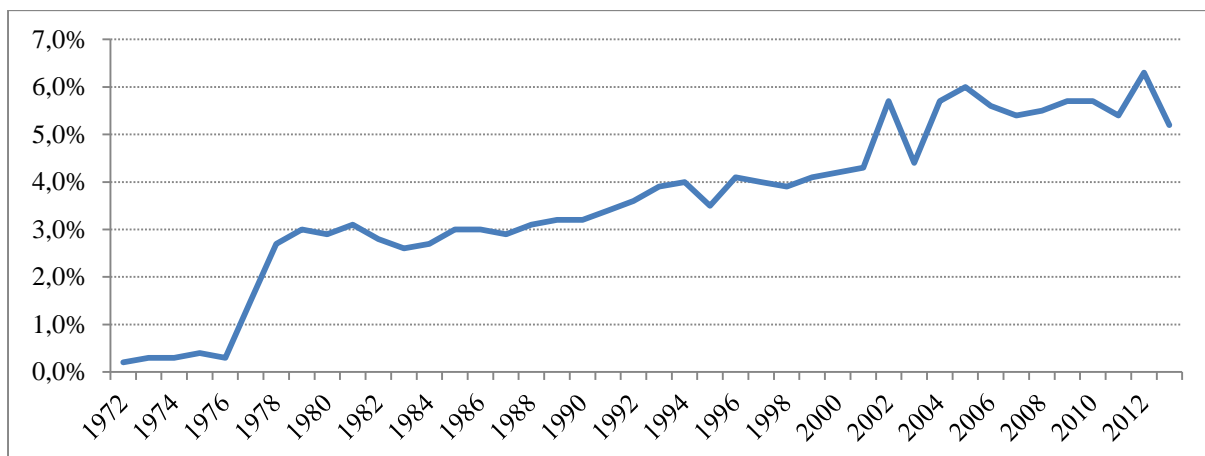


**Chart 9 – Chronic Disease in Portugal, 2005 / 2006**

Source: PORDATA / INSA – Instituto António Jorge / Instituto Nacional de Estatística, IP, 2005/2006

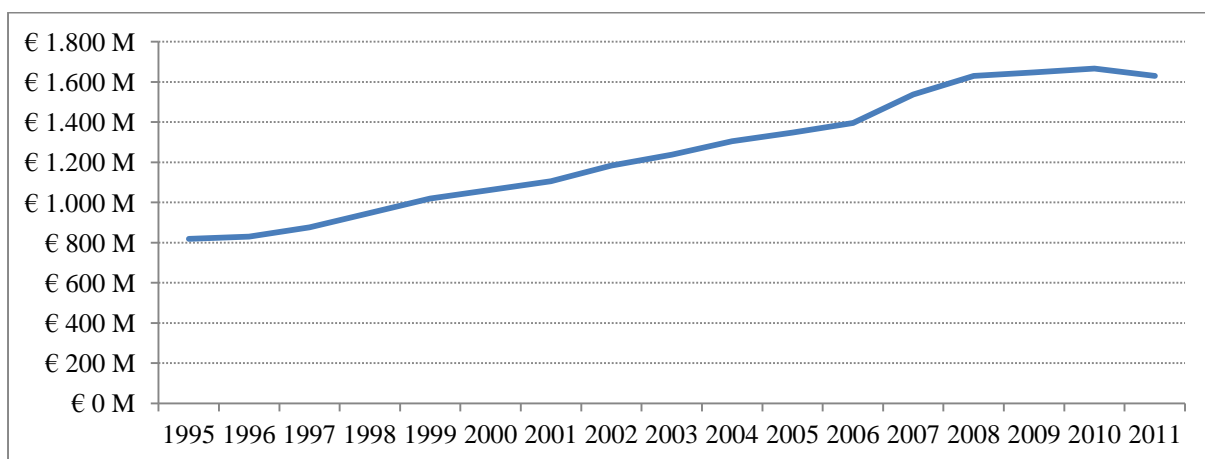
Also, below, charts 10 and 11 the growth in health expenditure, by the State and individuals.

The rise of chronic diseases helps to explain this trend, among other factors.



**Chart 10 – Public expense (% of GDP) in Health in Portugal, 1972-2012**

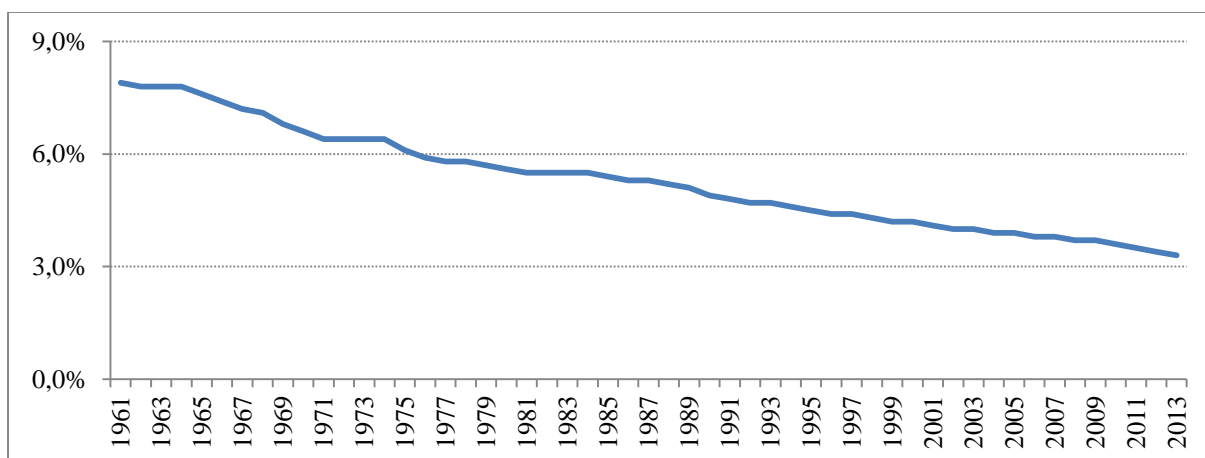
Source: PORDATA / Instituto Nacional de Estatística, IP, 1972-2012



**Chart 11 – Total expenditure in Health in Portugal, 1995-2011**

Source: PORDATA / Inquérito à Despesa das Famílias (IDEF) / Instituto Nacional de Estatística, IP, 1995-2011

As a consequence the sustainability index of the entire health system diminishes, which poses an important problem for the Portuguese society.



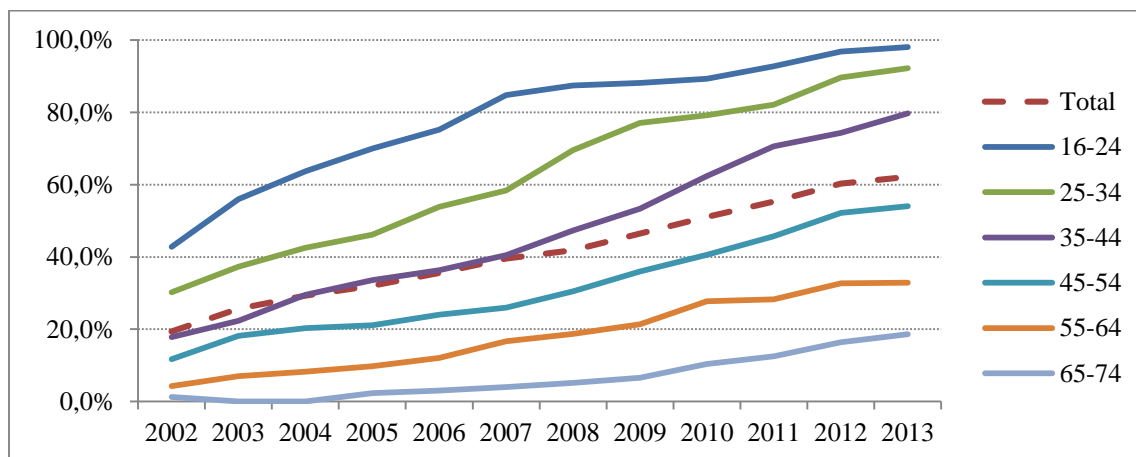
**Chart 12 – Portuguese health system sustainability index, 1961-2013**

Source: PORDATA / Instituto Nacional de Estatística, IP, 1961-2011

**b) A Digital society**

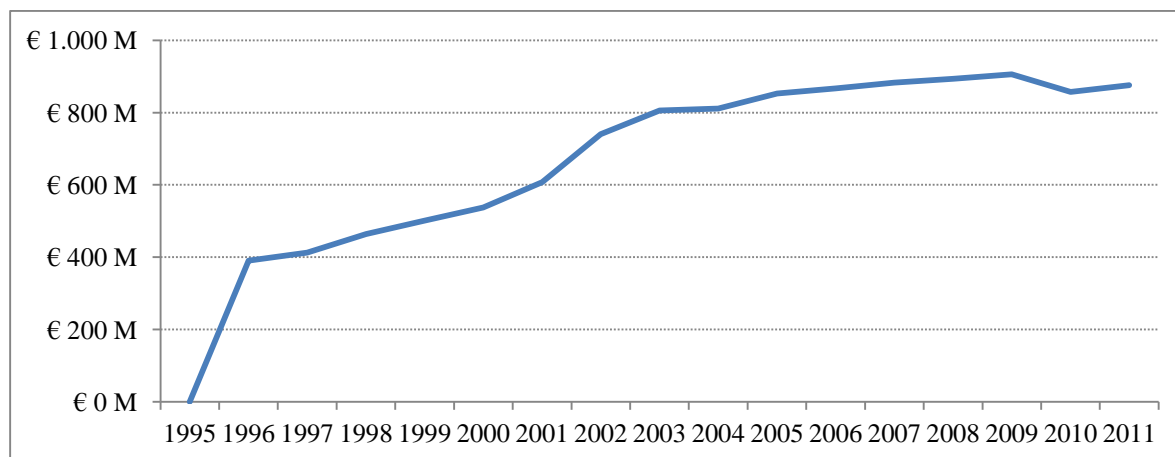
Digital literacy on western societies is very important to understand and support the e-health opportunity, especially for the ICT industry. The aging of society trend backed up the *health* bit on 'e-health'; the 'digital society' backs up the *electronic* bit on 'e(lectronic)-health'.

The Portuguese of every age are increasingly using the internet. In 2013, more than 60% were using the internet as shown below in Chart 12. 65 year old or older people are slower in adoption, lagging behind with less than 20%.



**Chart 13 – Persons accessing the internet (%) by age in Portugal, 2002-2013**

Source: PORDATA / UMIC / Instituto Nacional de Estatística, IP, 2002-2013



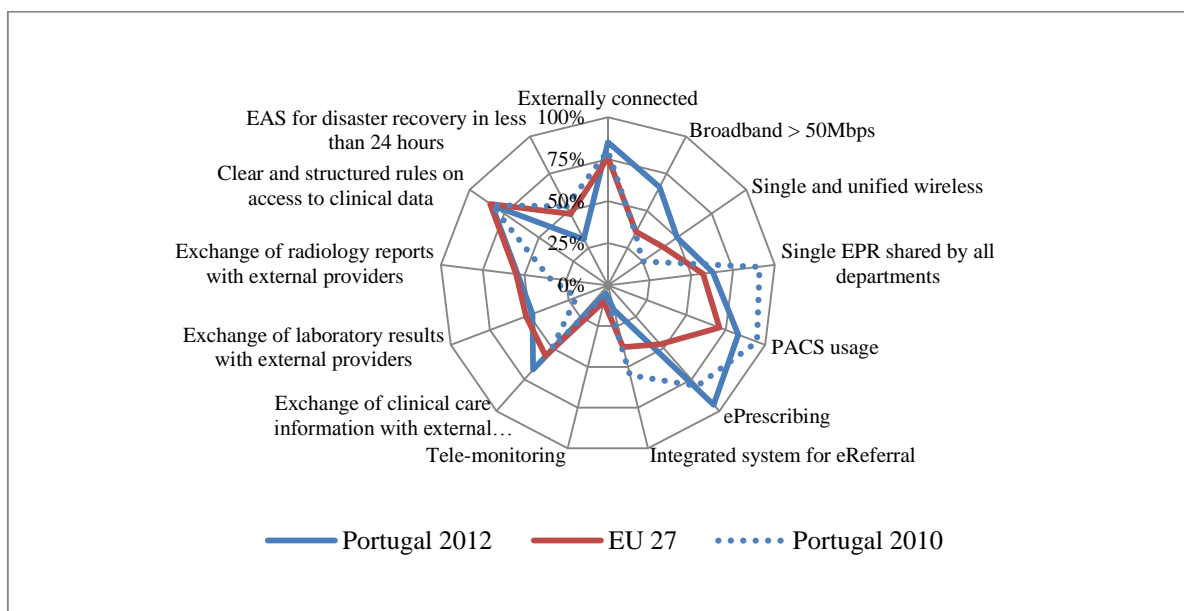
**Chart 14 – Total communication expenditure in Portugal, 1995-2011**

Source: PORDATA / Inquérito à Despesa das Famílias (IDEF) / Instituto Nacional de Estatística, IP, 1995-2011

**1.3.2. Progresses made in e-health**

E-health is *relatively* new. It depends from when one starts counting. In fact, e-health has had its precursors, such as telemedicine, a termed appeared around 1999. This is not to say that the *e-health opportunity* is 25 years-old. Having a technology available is not the same as having customer to sell to. The market may need to mature first in order to adopt a new solution; that may take a few years. Sometimes, products are indeed launched *prematurely*, hindering its

adoption. Then, followers may take advantage in waiting for favorable market reception. Other times, the technological solution is good but does not have a fitted business model.



**Chart 15 – E-Health indicators in Portugal and the EU 27, 2010 and 2012**

Source: UMIC, 2010 and 2012

### 1.3.3. Major obstacles still standing to market development

Notwithstanding the enablers (1.3.1) and progresses (1.3.2) described above, there are hurdles remaining on e-health solutions development and its massive adoption by the health industry, companies or individual professionals – and by the end-consumer. The latter is here addressed first, continuing the subject on digital societies; the former, afterwards.

#### *a) The Digital divide / exclusion*

Previous sections addressed digital adoption as an e-health enabler. Here, focus is its counterpart, namely, the so-called digital divide. As mentioned there, the 'digital society' is a strong trend today in most of the Western world. Nevertheless, as a trend, it is also a process – and being a process, that means that an important part of the population might not be as 'digital' as one would hope for. And as seen above (chart 13 - internet access level by age group), Portuguese above 55 years old have lower internet access.

#### *b) Inefficiencies and poor adoption rates among health professionals*

Despite the general good will towards the application of technology to healthcare, there have been some studies revealing hurdles to e-health. A research conducted in the United Kingdom (BMJ, 2012), applied to telehealth and chronic diseases was not able to establish statistically relevant differences between the control group and chronic patients aided by e-health. They were also not able to find data to support for the cost efficiency of those solutions.

In Portugal, the Health Cluster (2012) inquired doctors, nurses and pharmaceuticals regarding e-health. The 2012 survey revealed poor knowledge about the subject about 50% did not know or heard of 'e-health' and only 34% acknowledges actual usage of an e-health solution.

#### **1.4. Company analysis – Portugal Telecom**

This last section offers an overview of the company: Portugal Telecom (PT). It starts with a general background and history (1.4.1), then moving to strategy and portfolio (1.4.2). Finally, it describes the role of innovation at PT (1.4.3), namely, innovation related with e-health (1.4.4).

##### **1.4.1. General background**

The first section, expounded a common root of telecommunication companies, i.e., *being state-held and holding a monopoly in a highly regulated though not competitive business environment*. Similarly, it acknowledged some recent industry developments, namely on M&As. PT is no exception here. In this first section it is offered a brief overview of the company, from PT's (a) early history, covering the 'monopoly period', to (b) the latest news, that is, the merger with Oi, the turmoil that followed and Altice's PT acquisition.

###### **a) History**

**State-owned.** PT history may be traced back to the late nineteenth-century, to the first telephone experiments in Portugal. At the time, it was not named such. As 'Telecom Portugal', PT exists since 1992, when the State decided to divide the telecommunication services from the mail services. Before that, what is now PT can be traced to APT, TLP, TDP, CPRM and CTT.

While the mail and telecommunication services were divided, they remained State-held through CN (Comunicações Portugal), a holding company. The privatization began in 1995-6. In 1997-9 the privatization process continued and the State lost the majority participation. It was concluded only in 2010 when the European Commission forced the Portuguese State to sell its 'golden share', after Telefónica made an offer for PT's participation on Vivo, a Brazilian Telco.

**Extending business.** In 1991, PT began offering mobile voice through TMN. This meant an important shift for PT that went beyond (fixed) telephony (and then, telegraphs). Soon, PT acquired SAPO as an internet portal and soon to be an internet service provider (ISP). Finally, PT extended its consumer portfolio to multimedia, through PT Multimédia in 1999 and spun-off in 2007. MEO was then created to offer TV services, filling the gap left by the spin-off.

In the business segment, one should highlight again PT Sistemas de Informação (cf. supra), created in 2000 – and PT Corporate, in 2003. The former offered consulting and information systems (IS) integration while the latter incorporated most services offered to large companies (Enterprise segment). Meanwhile, in 2014 both units were merged with other units (cf. infra).

**Investment in Vivo.** PT began investing in Telesp Cellular, the Brazilian telecommunication operator, back in 2003, in a joint-venture with Telefónica Móviles, forming the company / brand VIVO. In 2010, Telefónica proposed PT to buy its share which led the Portuguese government, then with a stake at PT to intervene with the so-called 'golden-share'. PT tried to defend its position at Vivo by ruling out Telefónica's proposal at the shareholders meeting, backed-up by the government, alleging that PT's VIVO stake was of *public or national interest*.

**PT's Multimédia spin-off.** PT's Multimedia spin-off in 2007 was imposed by ANACOM, the authority responsible for regulating the sector, to guarantee its competitiveness, ruling out monopolies. ANACOM considered that PT held too much power as a TMT (technology, media and telecommunication) company, obligating PT to set loose its media business unit, creating what would become PT's main competitor as TV and Internet service provider, ZON. PT responded this challenge by creating MEO to compete in this market, providing TV services.

#### ***b) Recent clipping***

The previous subsection presented PT's (pre-)history focusing on some events that contribute to understand the company's past background. To better understand PT's current standpoint and near future evolution, it is important to highlight some recent news regarding PT: release of M4O and the convergence trend for the consumer segment; announcement and inauguration of PT's Data Center at Covilhã; merger with Oi; turmoil and PT sold to Altice.

**M4O and the convergence trend.** In 2010, PT released MEO and in 2013 M4O, each having shown a huge effort in communication, through media and sponsorship. Having lost its TV business, PT developed from scratch a new TV offer. M4O is a Quadruple Play (4P) offering (TV + Internet + Fixed voice + Mobile voice, the first in the national market). Meanwhile, MEO and NOS introduced the 5P adding mobile broadband. This led to a large *rebranding operation*, for PT B2C brands, in which MEO stands as the *umbrella brand* for all the consumer offerings. Most noteworthy, this meant letting go the 'TMN' brand for the personal / mobile, segment. Meanwhile, B2B was also rebranded: PT Corporate and PT Negócios merged in an unified brand, PT Empresas, while PT Sistemas de Informação (PT SI) and PT Inovação also began a process of merger. Finally, PT Cloud and Data Centers was created as dedicated to those services.

**Data Center Covilhã.** Data Center (DC) Covilhã was announced in 2011 and inaugurated in September 2013. The DC is at a cornerstone for the company's growth strategy, positioning PT as a 'digital' company. This transformation, *from a pure telecom to a digital telecom*, represents also a *shift in LoBs*, enabling PT to offer cloud computing and content delivery services.

**Merger with Oi.** Finally, the merger with Oi made progresses through the last quarters (the forth of 2013, 4Q13 and the first of 2014, 1Q14), during which the M&A was approved by the

shareholders, and the Portuguese and Brazilian authorities. PT interest in Oi goes back to 2010, as a response to Telefónica's buyout of PT's stake at Vivo, mentioned above.

### **Turmoil, M&A fail and acquisition by Altice**

Early in 2014, PT made a near €0,9bn investment in a GES associated company. When BES and GES collapsed later on that year, it began a turmoil that affected the Portuguese economy and PT in particular. As a consequence, Bava resigned from Oi as shareholders were displeased with PT's financial operation. Moreover, the terms of agreement for the M&A between Oi and PT changed – forcing a sharper division between PT Portugal and PT SGPS – which later allowed Oi to sell PT to international bidders. APAX and Altice bid for PT and the latter – an industrial fund also holding other telecommunication operators, including France's no.2 operator, SFR – acquired PT late in 2014 for ca.€7,4bn, the deal to be closed still on 2T15.

### **1.4.2. Strategy, business areas and financial Results**

PT has evolved through the years, launching several new products and entering new markets. Here, it is provided the strategic direction from these last years as expounded in the strategy corporate statement: some main business areas in which PT operates and key financial results. Given this, one should have a general understanding *where* PT wanted to go (*strategy*), *how* they thought they could get there (*main business areas*) and *if* they did get there (*results*).

#### ***a) Strategic profile***

PT positions itself as "an innovative operator placing technology at the service of consumers and enterprises world-wide." As stated, one may highlight then:

- The role of *innovation*, "innovative operator";
- The *customer-centric culture*, "placing technology at the service of...";
- *Only two* key segments, consumers and companies, "consumers and enterprises"; and
- *Geographical reach*, "world-wide".

Innovation has been a key for PT, both in technology and business model, having within the group a dedicated company, PT Inovação, to develop in-house technological solutions. Moreover, PT has a dedicated management team responsible for a 'structured approach to innovation', coordinating projects across the organization. Finally, M4O and the P&S that gravitate around MEO offerings, reveal an *innovative approach* to attract and retain customers. Finally, PT has a strong presence in the Portuguese-speaking world, from Portugal to Brazil, Africa and East Timor. After the merger with Oi, international focus will increase even more. As stated in its corporate website, PT mission is



*to deliver telecommunications and multimedia services of recognized value to our customers, technologically updated on a permanent basis through qualified and motivated resources, and respecting environment and society*

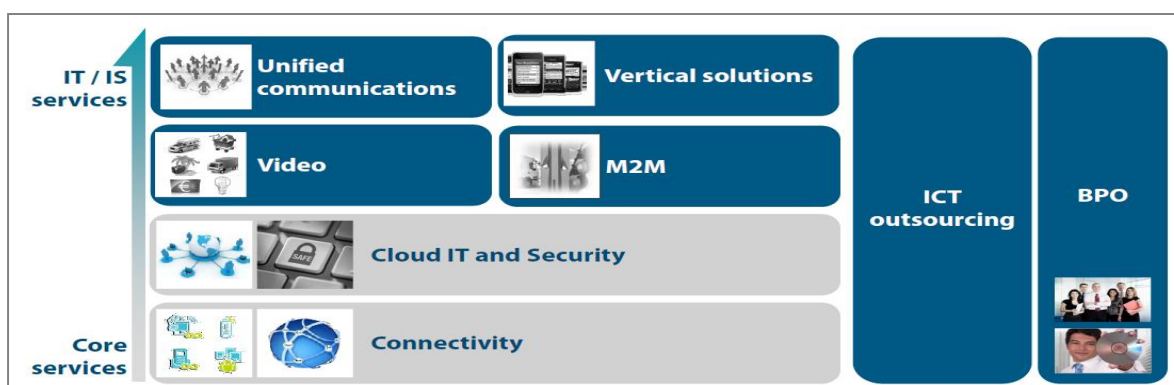
### **b) Portfolio**

**Business to consumer (B2C).** Nowadays, PT has almost of its offerings to business consumer under the brand ‘MEO’, whose core services are: TV, broadband, mobile and fixed voice, sold in bundle for a monthly fee. Along these offering, there are several other features included in the core services, aiming for an increased perception of the services' benefits. Here too, it is possible to observe the convergence trend and the attention given to digitalization. For instance, MEO Go, which allows consumers to watch TV in several devices, that is, at home or outside. Moreover, PT offers several other, smaller, services next to its core services, including: MEO Drive (GPS-like service), MEO Music (music streaming) and MEO Cloud (a file sync and share service with 16 GB free, based on cloud). Many of those features are free for the premium 3P and 4P bundles while in the other they may be subscribed as an add-on.

Meanwhile, MEO has become PT's main brand for this segment. Convergence led PT to group its entire B2C offering under one umbrella, letting loose TMN earlier in 2014. Due the investment made in media and advertising, MEO became PT's strongest consumer brand.

Besides MEO, PT has two other brands for the consumer segment, Moche and SAPO. The former addresses the younger segment, focusing on mobile voice and broadband; like MEO, Moche has invested a lot for brand recognition and, also like MEO, offers several features and services (e.g., apps) to its customers, along with its core voice / messaging / data services.

**Business to business (B2B).** PT offers a wide range of services, from traditional Telco solutions such as voice, to ICT solutions (cloud IT, e.g.). Below, figure 5 shows its current B2B portfolio.



**Figure 5 – PT's ICT portfolio for the business segment**

Source: Portugal Telecom, 2012

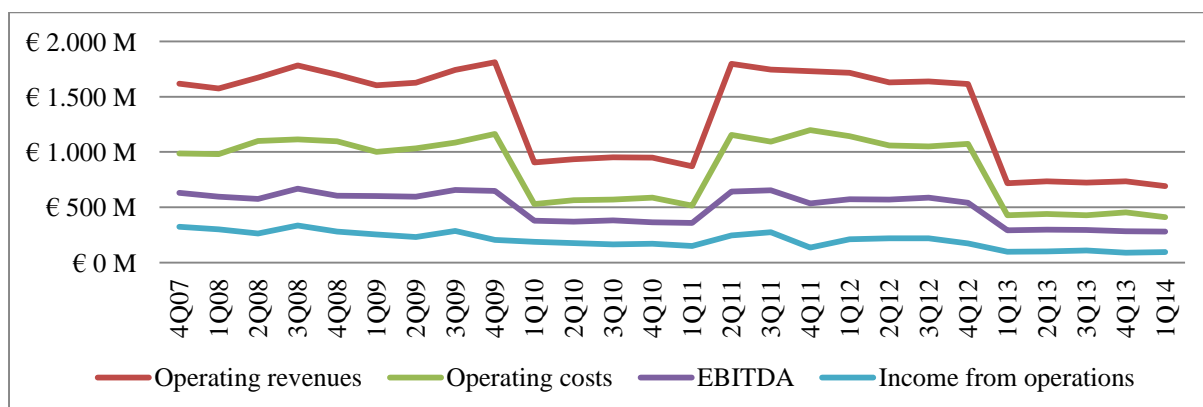
Thus, PT is following the trend described below in Sector analysis (section 1.2). The company regards by ICT and digital solutions as a necessary step to move into an ICT operator, offering

more value-added solutions. In fact, voice revenues' weight has been decreasing, due both its natural decline and PT's focus on new business streams. In the future, company aims having their new LoBs alone (IT + outsourcing + managed services) responsible for ~50% of its corporate revenues, apart from voice, data and equipment (traditional Telco).

Recently, PT has made two important moves towards these goals: i) PT inaugurated a new, world-class, DC at Covilhã, guaranteeing the infrastructure needed to support this strategy; ii) early in 2014, separating their cloud, IT, security and data center services in a different business unit. Also, it merged two former brands, PT Negócios and PT Prime into one, single, business unit, dedicated to the business segment: PT Empresas.

**c) Key financial data**

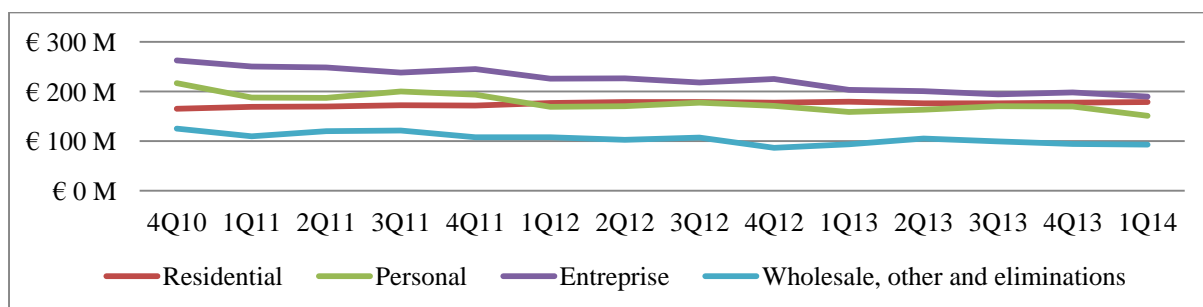
Looking to PT's key financial data, one acknowledges that the company had a 46,6% increase in its consolidated income for 2013 (when comparing with 2012, yoy). Meanwhile, all other financial indicators show a decrease, namely: revenues, -5,5% yoy, and EBIDTA, -9,9%, yoy. Below, Chart 16 shows the full financial data, from the last 5 years.



**Chart 16 – PT’s Operating revenues, costs and income, and EBITDA**

Source: PT’s Annual reports and Quarterly results releases, 2010-2014

Below, chart 17 breaks down PT’s revenue in Portugal into different segments / sources, that is Residential (e.g., TV, fixed internet and telephony), Personal (e.g., mobile voice, messaging and mobile internet), Enterprise (B2B segment) and Wholesale (e.g., network rentals).



**Chart 17 – PT’s revenue by segment / source in Portugal, 2010-2014**

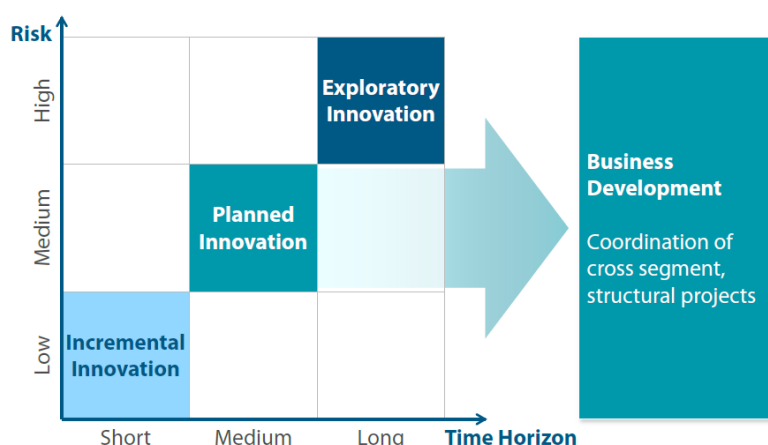
Source: PT’s Annual reports and Quarterly results releases, 2010-2014

### 1.4.3. Innovation at PT

Innovation has been an important factor to PT's growth and success in recent years, being important to understand its role at the company. Also, it is key to developments in such areas as the machine-to-machine (M2M) and e-health, e.g., which will be addressed further on.

Within PT as a Group, PT Inovação has been responsible for innovation, mainly from a R&D and technology engineering point of view. This in-house development encompasses both solutions that have PT as a client and solutions for PT to address the market. Meanwhile, early in 2014, PT Inovação merged with another company inside Portugal Telecom Group, PT Sistemas de Informação, leveraging the former's technology engineering skills with the latter's consulting and system integration expertise. This new company provides solutions in two business areas, telco-network solutions and Smart cities related solutions, such as e-Health, e-Education and M2M. Moreover, it offers certification, training and laboratories services.

Below, figure 6 shows how PT positions and envisions itself driving innovation.



**Figure 6 – PT's structure to approach to innovation**

Source: Portugal Telecom, 2012

Inside PT there is also an area dedicated to manage and address innovation with structured approach, across the organization, coordinating cross segment, structural projects. Furthermore, this area of business development addresses i) short-term, *incremental* innovation; ii) medium-term, *planned* innovation; and iii), long-term, *exploratory* innovation. While (i) represent lower risks, the next levels present an increase in risk (medium and high). This area has been addressing business opportunities such as M2M, home management, e-health, e-education, contextual advertising, mobile payments and cloud computing (cf. Sector analysis, 1.2.3).

### 1.4.4. E-health related products and services

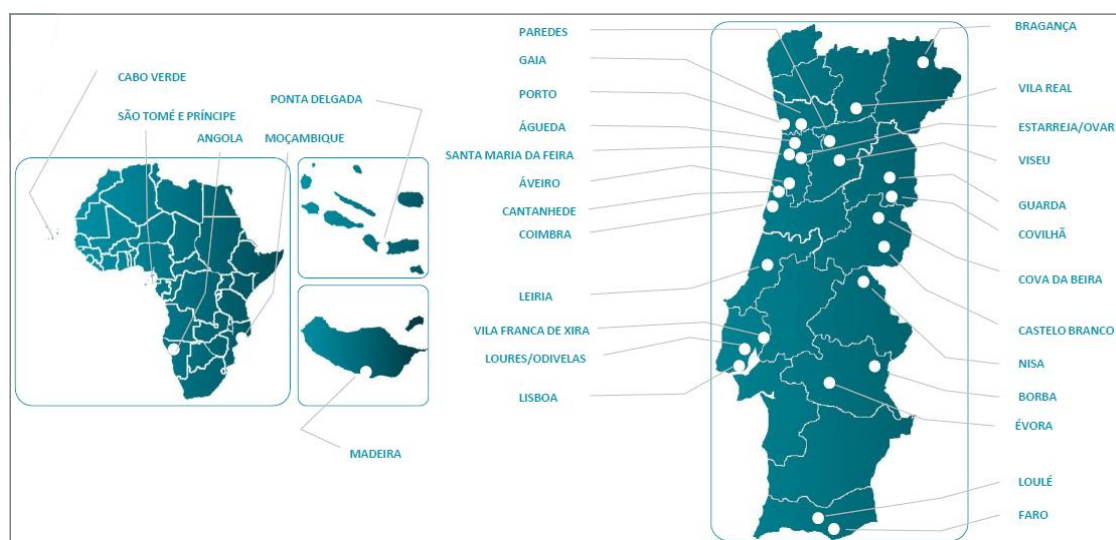
E-health was addressed above from the point of view of *innovation* (1.4.4.b). Here, the focus is on portfolio. Pilots or other exploratory projects are not considered.

**a) B2B / B2G**

PT's main e-Health offer for the business segment (B2B) and the public administration (B2G) (e.g., Hospitals) is 'Medigraf', an *integrated solution for remote diagnosis and workflow management*, supported on internet connectivity. Doctors and medical staff may collaborate remotely, sharing exams, clinical data and other information in real-time, to achieve a better diagnosis or ask for a second opinion. The solution also offers telepresence, collaborative environment and work features. Finally, Medigraf allows a full integration with healthcare information systems and PACS systems. Medigraf has a few success cases at the domestic market but it is also integrated in PT's international portfolio, through PT's Open Idea, the aforementioned business unit dedicated to international deals, B2B or B2G.

Others e-Health related P&S for this segment include services like HealthBus, for mobile health units and the health platform PACS/RIS.

Below, figure 7 shows the market and geographical reach of the above solutions.



**Figure 7 – PT's Health ICT solutions geographical coverage**

Source: Portugal Telecom, 2012

**b) B2C**

For the consumer segment, it is important to highlight two interrelated services, both developed and held by SAPO: i) Sapo Saúde and ii) Meu Sapo Saúde. The former (i) is a health and well-being portal, providing users information about health issues, including nutrition and fitness. Meu Sapo Saúde falls under the 'personal health record' (PHR) category. This service is a free personalized information system, where users may add clinical data for daily monitoring; it has an area dedicated to diabetes, a chronic disease that asks for constant monitoring.

Other e-Health related services for the consumer segment include True Kare (m-Health), again a service to monitor health and falls but associated both with a portal and mobile services.

Finally, PT has a Teleassistance service, for the elderly, associated either with fixed and / or mobile voice, providing also remote health advice. Those two services draw on partnerships PT has with True Kare, for the former, and EuropAssistance, for the latter.

### **1.5. Problem review**

Telcos are on a fast-paced, challenging, technological industry, facing new entrants competing in their traditional businesses, resulting in declining revenues. As a consequence, Telcos are looking for new revenue streams to complete their portfolio and balance their losses, venturing in new markets where they also find new competition. PT is no exception to this.

E-health represents one of those new revenue streams for Telcos and PT. It dwells on macro-level trends that enable e-health as a business opportunity: aging, digitalization, health tech.

The case studies how the both the macro-environment, sector situation and company's resources and capabilities may contribute to justify and recommend e-health as source of future growth – focusing on data-gathering, analysis and corporate strategy formulation to propose a resolution. Moreover, it gives the reader an opportunity to apply some strategic analysis tools, e.g., the resource-based view and VRIO, to understand and propose a solution for the case.

## 2. Pedagogical note

### 2.1. Target

This is a *strategy and resource-based diversification case study*. It addresses the *e-health opportunity for Telcos*, focusing on PT in particular, using *generic strategic tools and frameworks* to *diagnose* the opportunity and *support a strategic recommendation*. The case is built in such a way that students are expected to draw heavily on *PEST analysis, diversification strategy* and the *resource-based view* in order to answer the proposed case questions.

As such, the case aims and is mostly suited to *undergraduate students* in their final year, or *first-year students on a Master degree*. This prescription is justified from the case's complexity and the variety of tools needed to answer the case questions recommend the aforementioned target.

The source for complexity is at least twofold: i) telecommunication's fast-moving and highly competitive environment; ii) the scope of the PEST analysis, which almost asks for a second industry analysis, on the health sector. Nevertheless, *the case does not presuppose any specific knowledge or background experience on management or technology*; students may benefit from it but it is not necessary at all. Background from previous management courses should be enough to solve the case for an undergraduate or graduate student. It presupposes a great deal of research from students to cope with the several issues and tools needed to answer the case.

The case study and proposed questions may constitute a valuable tool for professors and students alike, in general business / management or innovation courses. It offers a complex case for students to apply different analysis tools, concepts from, critical thinking and practical insight. More specifically, the case aims to *provide a solid illustration of PESTEL analysis' usefulness*, since it almost single-handedly supports the business opportunity, from the demand side. Finally, it is an opportunity to apply the resource-based view in an industry in which it stands out.

The stated focus is on the telecommunication industry challenges – and the 'e-health' opportunity as one viable solution to tackle those challenges. Notwithstanding, another stated aim involves using generic strategic tools for analyzing and supporting a recommendation – tools that may be used in several, non-related, case studies. It is expected that the *critical thinking and thorough analysis competencies* that a student develops here may be *further applied in other cases or real business scenarios*.

### 2.2. Pedagogical objectives

The case study draws on the telecommunication industry even if by applying generic strategic analysis tools. Thus, the learning outcomes are at least threefold: i) *competence development*, based on data-gathering, framework application analysis needed to complete the case; ii)

*industry specific*, dwelling on the knowledge students should develop on the telecommunication sector; and iii) *general management / strategy*, from the application of tools and frameworks.

From a *competence development* point of view, the case completion endows the student with:

- *Data gathering skills*, being able to choose and recollect relevant information in a complex environment to the case resolution and each question proposed;
- *Analytic and problem-solving skills*, being able to choose and apply a framework fitted to the data available gathered in order build alternative business scenarios and to support a business recommendation;
- *Presentation and public speaking skills*, being able to present a supported business recommendation, arguing in its support when confronted with the student audience.

From the *telecommunication industry knowledge* obtained, the student is expected to be able to:

- *name and describe* two or three key challenges that the telecommunication industry is facing at the present;
- *describe* today's competitive environment for Telcos;
- *name and describe* the opportunities under the *fourth wave* 'umbrella';
- *name and describe* the key enablers for the 'e-health' opportunity;
- *name and describe* lines of business and use cases for Telcos related e-health;
- *describe and evaluate* PT's present positioning within the industry and larger market and recommend business level options for future growth.

From the *management knowledge* point of view, the student should be able to:

- *understand* better the impact on business from major trends in the larger society;
- perform a wide scope *environment analysis and industry diagnosis*, selecting the tools the most fit for each purpose;
- apply thoroughly a *resource and capabilities related framework* (VRIO and others);
- *support and present business recommendations* both data driven and theoretically supported with sound management concepts and frameworks.

These pedagogical supported by the proposed animation plan and question (see infra, 2.5 and 2.6). The case applies to telecommunication industry; however, its intended benefits for students have a broad scope, as stressed by the pedagogical objectives. The students will benefit both from specific industry knowledge and general management knowledge and competences.

### **2.3. Literature review**

The literature review offered below draws on four key concepts, namely: *strategy* (section 2.3.1), *diversification* (2.3.2), and the *resource-based view* (RBV) (2.3.3). The first two are related with

generic strategic analysis and strategic formulation, important to understand the RBV (section's core). While the focus is on research and papers, textbooks are used to introduce each topic.

### 2.3.1. Strategy definition

The American Oxford Dictionary offers a good starting definition for 'strategy', the following:

*A plan of action or policy designed to achieve a major or overall aim: 'time to develop a coherent economic strategy' / 'shifts in marketing strategy'.*

In their textbook, Johnston et al (2008: 2) define strategy as

*...the direction and scope of an organization over the long term, which achieves advantage in a changing environment through its configuration of resources and competences with the aim of fulfilling stakeholder expectations.*

#### a) Corporate and business level strategy

After these definitions, it is important to distinguish different levels of strategy. This case study aims at 'corporate level strategy' – that is, at the "most general level in an organization" (Johnston et al, 2008: 2), which is concerned with the "overall scope of an organization and how value will be added to the different parts (business units) of the organization." (Johnston et al, 2008: 7). The authors go on (*idem*: 7) and describe three levels of strategy, namely:

- *Corporate strategy*, overall direction and scope of the organization, markets in which operates, business units and general portfolio offered;
- *Business strategy*, more related with a specific product or service, and / or market;
- *Operational strategy*, the means to implement the strategic levels above, relating to allocation and planning of resources, people and processes.

Now a classic paper, Porter's *What is strategy?* (1996) develops its concept of strategy through a *critique of the operational effectiveness* concept and by applying *competitive advantage* to strategy as a key concept. Porter (1996: 5-6) criticizes operational effectiveness as the (sole) focus that the author saw then in multiples organization and industries, which lead to an operational frontier that erodes margins within an industry while requiring companies a continuous effort (and investment) just to remain within the threshold. Porter then proposes three key principles to strategic positioning that avoid the problems sketched above, defining strategy as i) "the creation of a unique and valuable position, ii) requiring a company "to make trade-offs" and choosing "what *not* to do", and iii) involving a "'fit' among a company's activities" (Porter, 1996: 3).

Porter (1980, 1985) developed already and extensively the concept of competitive advantage on which the above described strategic positioning rests. Porter identified two main sources of



competitive advantage, *cost leadership* and *differentiation*. Accordingly, Porter identified four generic competitive strategies coming out from it, depending on the competitive scope:

- *Cost leadership* or *cost focus* (depending on a broader or narrower target)
- *Differentiation* or *differentiation focus* (again depending on the target's scope)

Kim, Nam et Stimpert (2004) criticized the alleged mutual exclusion between cost-leadership *or* differentiation as generic within the specific case of digital companies (and agencies). The authors advocated an 'integrated strategy' in between but continuous with cost-leadership and differentiation. Kim et Mauborgne (2004) also target Porter. While Kim et al (2004) target the generic strategies issuing from the Porter's analysis, Kim et Mauborgne (2004) target the alleged trade-off between the two sources of competitive advantage, advocating for a the "simultaneous pursuit of differentiation and low cost" as a 'blue ocean' region in which "cost savings are made from eliminating and reducing the factors an industry competes on" (*idem*, 77). As Porter (1996) identified operational effectiveness and productivity frontiers as general threats to any industry, Kim et Mauborgne (2004) brings the low cost / differentiation alternative close to what the authors call red ocean strategies, which menace companies. The *read ocean strategy* is said to "make the value / cost trade-off" while the *blue ocean strategy* breaks it (*idem*, 76).

#### ***b) Strategic management***

Boddy (2008: 245ff) puts it nicely and describes six steps on the strategic management process: i) current *mission, vision, goals and strategy identification* within a given company; ii) *external analysis*; iii) *internal analysis*; iv) *strategy formulation*, v) *implementation* and vi) *evaluation*. The following review addresses (iii) on section 2.3.3 which will develop further on the theoretical framework needed to evaluate the company's ability to interact with its external environment. The next section (2.3.2) will address strategy formulation (iv). However, it is important to understand how to analyze the external environment before moving to how one may act on it. What remains of the present section will address mainly (i) and (ii).

***Mission, vision and goals.*** Collins et Porras (1996) focused on company *vision, mission, goal and values*. The authors analyzed 'vision' in two components, which, all and all encompasses mission, goals and values. The two components are the following: *core ideology* and *envisioned future*. The former itself is also twofold: a) *core values*, i.e., "a system of guiding principles and tenets" (Collins et Porras, 1996: 45); b) *core purpose*, i.e., "the organization's most fundamental reason for existence" (*ibidem*), what is also commonly called company's *mission*. Collins et Porras (1996: 49) stress the importance of the mission in uplifting the organization, "inspiring people", which excludes 'maximizing shareholders returns'-like mission statements.

Noteworthy is the distinction between *core ideology* and *core competency*. Core ideology "captures what you stand for" whereas core competencies do not, necessarily. In fact, Collins et Porras (1996) point out that core competencies may change while supporting, that is, enabling, the same core ideology – the company's ability to stand for what it says it stands for. Envisioned future is twofold as well: a) *long-term goal* b) *described vividly* (Collins et Porras, 1996: 51). Being a goal, a vision may be achieved, at least in principle. It is not an objective, if one distinguishes 'goal' and 'objective' following Johnston et al (*idem*, 9): the latter is measurable while the former is a "general statement or aim or purpose." Collins et Porras (1996: 51ff) draw further on their research to develop the *BHAG* concept, an acronym for "big, hairy, audacious goals" (*idem*, 51), i.e., a challenge difficult but stimulating enough to uplift and focus the organization. The authors distinguish different types of BHAGs, based on a quantitative or qualitative target, a common-enemy, a role-model or internal transformation, providing examples for each (*ibidem*).

**External analysis.** External analysis includes both competitive and general environment (Boddy, 2008: 84) that is, the *enlarged scope of stakeholders and agents* that influence a company's *strategy and performance*. For instance, the job market influences a company's ability to hire personnel, i.e., from an abstract point of view, to acquire resources important to achieve certain goals. The external or general environment comprehends different factors that affect *all* organizations (Boddy, 2008: 84), such as *political, economic, socio-cultural, technological, environmental and legal* – the so-called *PESTEL factors*. Though they affect every organization, each specific factor affects differently different industries and companies at different times, depending on its relative strength (Boddy, 2008: 85). For instance, political / legal factors have a strong hold on the telecommunication industry, a highly regulated market, to which political agents, both domestic and international (e.g., the European Commission) pay attention on. Therefore, regulation should be considered thoroughly in any external analysis for the telecommunication industry (Curwen et Whalley, 2004: 27). Under each factor, usually one finds common topics across industries and companies, as described by Boddy (2008: 97):

- *Political* factors examples: taxation policy and public expenditure;
- *Economic* factors examples: taxation policy and public expenditure;
- *Socio-cultural* factors examples: demographics and customer behavior trends;
- *Technology* factors examples: new network and communication technology;
- *Environmental* factors examples: water and energy supplies;
- *Legal* factor examples: business regulation and labor law.

Duncan (1972) developed an approach that enables one to frame the information above, from the PESTEL factors, to describe an industry type of environment. Each environment is determined by two main variables, namely, the *degree of complexity* (low or high, i.e., from simple to complex) and *degree of dynamism* (low or high, i.e., from stable to dynamic). Do note that the author refers to *degrees* suggesting a more or less open ended analysis. The complexity degree is measured from the number of PESTEL factors affecting a particular industry, and the degree of knowledge needed to understand those same factors (Boddy, 2008: 102), hence being both a qualitative ('number of...') and qualitative ('knowledge needed...') approach. The dynamism degree is measured from how frequently PESTEL factors change within a given industry (*ibidem*). The resulting framework acknowledges four types of environment:

- A) *Simple and stable* (low complexity / dynamism)
- B) *Simple but dynamic* (low complexity and high dynamism)
- C) *Complex but stable* (high complexity and low dynamism)
- D) *Complex and dynamic* (high complexity and high dynamism)

Each scenario has its own hurdles and one should not say that, for instance, type A environments are *easier* to compete in then, say, type B's.

**Industry analysis.** Porter (1980, 1985, 2008) developed a framework to evaluate industry attractiveness by understanding and measuring five forces that shape strategy and an industry long-term profits. The forces included in Porter's original model are the following:

- Threat of *entry* (Porter, 2008: 26ff)
- The bargaining power of *suppliers* (*idem*, 29-30)
- The bargaining power of *buyers* (*idem*, 30-1)
- The threat of *substitutes* (*idem*, 31-2)
- *Rivalry* among existing competitors (*idem*, 32-3)

Porter selected these '*competitive forces*' to reflect each and every industry structure and its ability to create and retain value. For instance, intensity of rivalry should reflect *market shares within a given sector* and how it is structured (e.g., monopolistic, concentrated, fragmented). From a value chain and network perspective, suppliers and customers bargaining powers affect how an industry may extract value upstream (from suppliers) and retain value downstream (from customers), remaining the main profit focus. Each force has several criteria which measure its relative strength, summarized 'ipsis verbis' from Porter in table 9, below.

**Table 9 – Criteria for evaluating Porter’s 5 forces within an industry**

<b>Force</b>	<b>Criteria (non-exhaustive)</b>
<b>Threat of new entrants</b>	Supply-side economies of scale, demand-side benefits of scale, customer switching costs, capital requirement, incumbency advantage independent of size, unequal access to distribution channel, restrictive government policy
<b>Bargaining power of suppliers</b>	Supplier's industry more concentrated than the industry it sells to, supplier group does not depend heavily on the industry for its revenues, industry participants face switching costs, suppliers offers products that are differentiated, there is no substitute, the supplier
<b>Bargaining power of buyers</b>	There are a few buyers, the industry's products are standardized or undifferentiated, buyers face few switching costs in changing vendors, buyers can credibly integrate backwards,
<b>Threat of substitutes</b>	It offers na attractive price-performance trade-off, the buyer's cost of switching to the substitute is low
<b>Rivalry among existing competitors</b>	Competitors are numerous or are roughly equal in size and power, industry growth is slow, exit barriers are high, rivals are highly committed to the business and have aspirations of leadership, firms cannot read each other's signals well because of lack of familiarity with one another

Source: Porter (2008: 26-32); own elaboration

In 2008, Porter (2008: 33ff) answered to some attempts to extend the five forces model beyond and include other forces, such as 'industry growth rate', 'technology and innovation', 'government', 'complementary products and services'. To Porter (*idem*, 33) those are "factors, not forces" as they are not "structural conditions" affecting the industry but more "fleeting factors" that may affect positively or negatively a sector or a company.

### **2.3.2. Diversification**

Before going deeper on how diversification may contribute to strategic analysis as a growth option for enterprises, the very concept of 'diversification' and its definition should be given.

In the current everyday use definition, given by the American Oxford Dictionary, to *diversify* is "to make or become more diverse or varied" More specifically, if said of a company, to diversify means to

*enlarge or vary its range of products or field of operation : the company expanded rapidly and diversified into computers (...) [or] to enlarge or vary the range of products or the field of operation of (a company) : the rise of the diversified corporation.*

Last but not least, the dictionary also acknowledges the diversification as a means to "reduce risk." Those general meaning all seem familiar. When one gets to the details, elaborate, and empirically test the construct, things are not so clear (see below).

In the management literature, Ansoff's product / market growth matrix has been a standard reference, and some form of it is retained in introductory textbooks on management (e.g., see Boddy (2008:254) or strategy (e.g., see Johnston et al, 2008:258). The original idea comes from Ansoff's *Corporate Strategy* (1988, chapter 6). Basically, the matrix (see below, figure 10) draws on two axes of analysis, namely: new / existing markets vs. new / existing product. As shown below, it sets four segments, each of which commending companies with one or more generic strategic direction(s).

		Products	
		Present	New
Markets	Present	(A) Market penetration	(B) Product development
	New	(C) Market development	(D) Diversification

**Figure 8 - Ansoff's product / market growth matrix**

Source: adapted from Boddy (2008: 254)

The above description follows both Boddy (2008: 253ff) and Johnston et al (2008: 257ff)

- A) When opting for existing markets and existing product/service, companies face three general options:
- 1) *Market penetration*, that is, companies should increase their market share within the *existing market* with the *existing product*. To achieve this companies may change their product's marketing strategy, namely on product (enhanced), price, placement and promotion.
  - 2) *Consolidation*, that is, companies should build on and protect their their current int the *existing market* and *product*. To achieve this, companies may turn their focus on improving efficiency to increase margins, retain customers thus reducing revenue loss due to churn (and the new customer acquiring cost), or to consolidate to gain economies of scale and reduce competition.
  - 3) *Withdrawal*, that is, companies should discontinue the *existing product*, at least in the *existing market*, as it is not creating value due to the competitive environment,

e.g., or due the opportunity cost involved (i.e., the company should invest their resources elsewhere, with a better return). Withdrawn should be managed carefully as it may affect the company's other business, for instance, through bad press.

Johnston et al (2008: 257-8) note that *consolidation* and *withdrawal* do not belong to the original Ansoff matrix which is concerned with growth. Trivially, withdrawal is not a growth direction strategy. Consolidation may be seen as a variation of market penetration, that is, through M&As. However, Johnston et al (2008: 257-8, 260ff) show how consolidation is mainly a *defensive strategy*, to "gain market power and increase overall efficiency."

- B) *Product development* is the preferred choice for companies that decide to introduce new products / services in existing markets (Boddy, 2008: 254). Johnston et al (2008) identify some hurdles companies may facing when following this strategic direction, relating to time to develop (and time to market) and unexpected costs common in complex R&D projects. Product development will be further developed below, in the next section (2.3.4), under 'innovation'.
- C) The third strategic direction drawn from Ansoff's matrix is *market development*, that is, to offer existing products / services in new markets. However, 'new markets' do not stand only for 'internationalization'. If it was, multinational companies operating globally, such as Virgin, *could* barely be said to diversify. Thus, under market development one may include a new *geographical* market, a new market *segment* – or even a new *use* for a existing product (Boddy, 2008: 255).
- D) The forth quadrant is usually called '*diversification*' (Boddy: 2008: 255). It is a core concept in the proposed case study, to support the strategy formulation behind the pursuit of the e-health opportunity.

Johnston et al (2008: 262ff) identify at least six general reasons for companies to diversify, the following: "efficiency gains (...), stretching corporate parenting capabilities (...), increasing market power (...), responding to market decline (...), spreading risk (...) [and following] the expectations of powerful stakeholders, including top management."

Boddy (*ibidem*) proposes three flavors for diversifications, namely: i) *horizontal integration*, when it draws on activities either related or complementary; ii) *vertical integration*, when its source is a move either downstream or upstream in the value chain / value network; and iii) *unrelated diversification*, when it addresses an entirely new market with an entirely new P&S. Being a matter of degree, it should not be surprising that defining diversification may be harder than one may think at the beginning (Kenny, 2008: 15). For instance, while doing research on 'related diversification' in corporate portfolio, Robins et Wiersema (2003) systematically

compared two then popular constructs (and set of indicators) for that type of diversification. They tested and compared against each other the *entropy index* and the *concentric index* for content validity, from previous studies that used one of those indexes to measure portfolio diversification. This is important as there are several management studies addressing *the connection between diversification and performance*, whose most common conclusion is: ultimately, a strategy focused on *extensive unrelated diversification drives poor performance while related limited diversification drives higher performances* (Johnston et al, 2008: 270).

It is important to note that diversification is not a rigid concept in the sense that, for every case (product and / or service) one is able to determine if it diverges from the rest of company's portfolio – meaning this that diversification is, again, a matter of degree (Johnston et al, 2008: 262). Kenny (2008: 16-7) agrees on a diversity degree, measured by a set of criteria, present below on table 10.

**Table 10 – Dimensions of relatedness / diversification**

Relatedness dimensions	
Businesses within a company which...	
are cost leaders	emphasize product design
produce commodity products	emphasize R&D
emphasize new product development	require same raw materials
are market share leaders	are vertically linked
have strong brand names	share manufacturing process
produce high value-added products	share distribution network
serve niche markets	share quality emphasis
share customers	share investment requirements
emphasize advertising	are about the same size
emphasize customer service	

Source: adapted from Kenny (2008: 16)

For Kenny (2008), diversifications degree depends on two factors when comparing LoB, products and / or services within a company's larger portfolio: i) for each criterion, the *degree of difference* against the remaining portfolio; ii) the *number of criteria* in which the element being analyzed diverges from the others (*idem*, 17). As a result, the more a LoB has *different criteria*, the more it is diversified, hence depending on *both qualitative and quantitative factors*.

### 2.3.3. The Resource-based view – resources and capabilities

This section addresses the *resource-based view* (henceforth, shortened as 'RBV'). It starts by laying down its key tenets and concepts, early history and some of its developments, including the VRIO / VRIN analysis. Moreover, it acknowledges what have been the main critiques to

the RBV, paying attention to theoretical, methodological, empirical, and practical issues and shortcomings. In addition, some focus will be given on how the RBV articulates with other important business topics such as diversification and internationalization. Finally, it is important to stress RBV’s value as a framework for *organizational (internal) analysis* and a tool for strategy formulation, i.e.:

- i) *to identify core resources and capabilities* within a given company – that is, from the organization's internal point of view – and then
- ii) *to offer strategic insights* to build strategy around an unique set of resources a capabilities that, being unique, should be a source of differentiation.

For that reason, a framework for applying the RBV will be presented at the end of this section, through a VRIO / VRIN analysis, also discussed infra.

**a) General presentation**

First and foremost, it is important to define what a 'resource' and a 'capability' are. Barney et Hesterly (2000: 66) define *resources* as "the tangible and intangible assets that a firm controls that it can use to conceive and implement its strategies" (also, Wernerfelt, 1984: 172) and *capability* as "subset of a firm's resources and are defined as the tangible and intangible assets that enable a firm to take full advantage of the other resources it controls." Johnson et al (2006: 95) distinguish between *resources* and *competences*, being the latter somewhat equivalent to Barney et Hesterly (2006) ‘capability’ definition. For Johnson et al (2006) both are capabilities and may be classified as 'threshold capabilities' or as sources of 'competitive advantage', that is, skills and ability with which a company may use its resources effective and efficiently. Below, figure 8 details Johnson et al (2008) classification.

	Resources	Competences
Threshold capabilities	Threshold resources (tangible, intangible)	Threshold competences
Capabilities for competitive advantage	Unique resources (tangible, intangible)	Core competences

**Figure 9 – Threshold and competitive advantage capabilities**

Source: Johnson et al (2008: 95)

Resources may be either tangible or intangible. Examples of the former are plants, labor and finance (*idem*, 95). Information, reputation and knowledge are examples of the latter.

Threshold resources and competencies, in this view (Johnson et al, 2006), are not to be confused with dispensable resources. A company must have them in order to *just* compete. Nevertheless,



as such, they will not give a company any form of competitive advantage (*ibidem*). Those capabilities will lead a company, at most, to a productivity frontier (cf. supra, and Porter, 1996).

***b) The Resource-based view, inauguration and predecessors***

Wernerfelt's seminal work arguably inaugurated this stream of research (e.g., Peng, 2001; Kraaijenbrink, Spender et Groen, 2010: 351), back in 1984. While being relatively recent, even Wernerfelt (1984) acknowledged then that *something like* the resource-based has been around for longer, even if not explicitly stated, in his work and elsewhere.

Thus, the concept might be traced to the classical economist David Ricardo, working in the 19<sup>th</sup> century (Kraaijenbrink et al, 2010). In economical, the resource-based view of the firm may be understood as an alternative to transactional costs economics as a general theory of the firm (Kraaijenbrink et al, 2010, Lockett, Thompson et Morgenstern, 2009), explaining different performance between firms with the so-called *ricardian rents*.

Edith Penrose's pioneering work on *The theory of the growth of the firm* (1959/2009), usually acknowledged as an early source (e.g., Peng, 2001, Newbert, 2008, Lockett et al, 2009, Kraaijenbrink et al, 2010). Penrose introduces a view of "the firm as a pool of resources" (2009: 132ff) and its relation with diversification. In management, the 'resource-based view' of the company may be understood as an alternative to a product driven analysis (Wernerfelt, 1984).

***c) The Seminal work from Wernerfelt, Barney, and Dierickx et Cool***

In 1984 Wernerfelt introduced the RBV, its key tenets and concepts, positioning it as a general theory of the firm, stressing the importance of a company internal factors to achieve a *sustainable competitive advantage* (SCA). Looking back, the author acknowledges it (Wernerfelt, 1994) as a 'milestone' that allowed researchers to follow this then new line of inquiry on the enterprise. Following Kraaijenbrink et al (2010: 350), one may define RBV's main thesis: "if a firm is to achieve a state of SCA, it must acquire and control valuable, rare, inimitable, and non-substitutable (VRIN) resources and capabilities, plus have the organization (O) in place that can absorb and apply them." The VRIN / VRIO framework will be further addressed below, as developed by Barney's (1991) seminal work.

Wernerfelt (1984) puts forward four main propositions that structure his analysis: i) the resource point of view enables insights complementary to the traditional product-market view, providing relevant insights into a company's strategy definition; ii) there are resource position barriers analogous to entry barriers providing competitive advantage and leading to high profits; iii) there is a resource-product matrix analogous to the growth-share matrix (see above), recommending a balance between exploiting existing resources and developing new resources,

contributing to a company's growth; iv) M&As may be understood as acquisitions of a special kind, namely, bundle of resources (in a highly imperfect market). This insight was developed further by Barney (1985) and others (e.g., Peteraf, 1993).

Linking RBV with Porter's five competitive forces *and* diversification strategy, Wernerfelt (1984: 172ff) applies Porter's framework to resources, considered as any given company strength or weakness, instead of products. Moreover, the author considers that "the resource perspective provides a basis for addressing some key issues in the formulation of strategy for diversified firms" (*idem*, 172). Wernerfelt (1984: 172-3) stresses how "the availability of substitute resources will tend to depress returns to the holders of a given resource." (*ibidem*) Regarding M&As, Wernerfelt (1984: 175) offers a reinterpretation in which they become a special case of trading, of "otherwise non-marketable resources," focusing on related resources, either complementary or supplementary. Within this perspective, whatever, it is difficult to perceive the *actual* value of target resources (or bundles of resources) to purchase through an M&A, different companies attributing different value to the same target resource (Wernerfelt, 1984). The relation between the RBV and M&As was further explored by Barney (1986), which introduces the concept of 'strategic factor markets,' an example of which is the market where one buys and sells companies as a means to purchase, e.g., reputation or scale. Barney (1986) considers strategy implementation costs when addressing a company's strategizing efforts, suggesting that competitive environment fares worse than internal analysis on resources and capabilities as a source of more accurate predictions regarding the future value of strategic factors. Thus, enabling better strategic decisions and lower strategy implementation costs (Barney, 1986). Nevertheless, due market imperfections (acknowledged by Barney, 1986, Wernerfelt, 1984, and Dierickx et Cool, 1989), a company do not always make accurate predictions on the future value of certain resources. Consequently, Barney (1986) argues, 'good fortune and luck' plays an important role when achieving above normal economic performance. Finally, it is important to understand why Barney (1986) considers internal analysis *better* than environmental analysis in achieving more accurate predictions; the argument goes as follows: the latter relies on 'public information,' and any insight that it may give will be available to other companies as well, creating thus a perfect market condition (symmetry of information) and will not be a source of competitive advantage; moreover, if a piece of environmental information is hinted unsystematically, then it should be stochastic by nature and thus dependent on a *company's good fortune and luck*; on the other hand, the former, internal, analysis, relies on specific information that is not available to other companies, being thus a candidate for a systematical source of more accurate predictions on the future value of strategies

and the resources needed to implement them, i.e., the strategic factors as a strategy implementation costs, including M&As and synergies (Barney, 1986).

Dierickx et Cool (1989) critique Barney (1986) proposing a counterpart to his approach. While acknowledging value to Barney's idea of *strategic factor markets*, Dierickx et Cool (1989) propose a counterpart 'asset stock accumulation' to explain those resources nontradeable, i.e., for which there is no market available where they might be traded. In fact, according to Dierickx et Cool (1989), there are assets non appropriable, 'externalities' in the economic sense, that cannot be bought – for instance, customers' loyalty or reputation (an example given in Barney, 1986, nonetheless; see above). Those resources are the “cumulative result of adhering to a set of policies” (Dierickx et Cool, 1989: 1506), precluding them to be traded in a strategic factor market. With this in mind, Dierickx et Cool's (1989) complement to Barney (1986) is twofold: i) the strategic factor market Barney describes is not only imperfectly competitive but is also incomplete, in the sense there are nontradeable strategic factors; moreover, ii) the *asset stock accumulation* framework explains what is left out by Barney, enriching the overall RBV.

Dierickx et Cool's (1989) framework stresses that strategic resources (or asset stocks), to be a sustainable source of competitive advantage, should not be replicated, should not be tradeable. Yet there other conditions on which a resource may be replicated; thus, a *sustainable* strategic resource should also be 'nonimitable' and 'nonsubstituable' (Dierickx et Cool, 1989: 1507). Arguably, imitation will depend on “the characteristics of the process by which it [the asset stock] may be accumulated” (*ibidem*). However, there are several characteristics that hinder imitation from competitors, accruing their costs and / or consuming their time; Dierickx et Cool (1989) identifies the following: time compression diseconomies, asset mass efficiencies, interconnectedness of asset stocks, asset erosion, and causal ambiguity. For instance, gaining one's customer loyalty takes times, as does R&D to yield results; these examples given by Dierickx et Cool (1989) are not arbitrary, as they all represent some kind of stock (vs. flow), which can be accumulated – and whose accumulation cannot be, in some cases, accelerated. Moreover, Indeed, Dierickx et Cool (1989: 1509) stress that “for some asset stocks it may be impossible to fully specify which factors play a role in their accumulation process, even for firms who already own those stock.”

Peteraf (1993) proposes a model of competitive advantage as “a general model of resources and firm performance” (180) dwelling on the RBV. The author identifies four conditions under which a company may achieve competitive advantage, namely: i) *heterogeneity*, justifying monopoly or ricardian rents; ii) '*ex post*' *limits to competition*, contributing to rents' sustainability; iii) *imperfect mobility*, contributing to rents' sustainability *within* the company;

and iv) ‘*ex ante*’ *limits to competition*, which prevent costs from offsetting rents. Heterogeneity “the most basic condition” (Peteraf, 1993: 185) but *ex post limits* to competition enables the preservation of monopoly or ricardian rents as they limit rents erosion through the increase of scarce resources, e.g. (Peteraf, 1993: 182). Following Dierickx et Cool (1989), Peteraf (1993) accounts for immobility as an important condition to achieve competitive advantage.

#### ***d) The RBV and its alternatives***

From a management studies point of view, it is important to understand RBV and Wernerfelt’s (1984) impetus against Porter’s industry analysis, more focused on product-market. Both Barney (1986) and Dierickx et Cool (1989) reinforce this view. Peteraf (1993: 179) refers to the need felt by several scholars regarding this issue. Stalk, Evans et Shulman (1992) support this view, stating capabilities, i.e., business processes, as the strategy’s building blocks, *not products and markets*. As Kraaijenbrink et al (2010) acknowledge, “[t]he RBV developed as a complement to the industrial organization (IO)” supported by the SCP (structure-conduct-performance) paradigm first proposed by the economists Chamberlin and Robinson.

From an economic point of view, Barney (2001) acknowledges three other theoretical frameworks which may support it. These are, namely: i) SCP-based theories of competitive advantage, that is, *structure, conduct* and *performance* of a given industry and the companies within (Grimm, Lee and Smith, 2006); ii) neo-classical microeconomics; and iii) Nelson and Winter’s (1982) evolutionary economics framework. Conner (2008) evaluates RBV specific contribution as allegedly innovative approach to strategy research, as does Peng (2001), who argues that at least, it is perceived as innovative. To such evaluation, Conner (2008) systematically compares the RBV with other industrial-organization (IO) economics theories, namely: i) neoclassical theory of perfect competition, ii) Bain-type IO, iii) Schumpeterian, iv) Chicago’s school, and v) transaction costs economics (TCE). The latter is a popular alternative, or complementary (Peng, 2001), approach to the RBV’s. Conner (2008) systematic comparison identifies at least one major difference between the RBV and each of its competing approaches, while also sharing at least one major tenet with each of such approaches. For instance, when comparing the RBV with TCE, they both argue that asset specificity and ‘rareness’ are critical concepts constraining strategic options for a given company; at the same time, the RBV focuses on resource deployment and combination rather on avoiding opportunism as TCE prescripts.

#### ***e) Developments on the RBV and the resource and capabilities approach***

Kraaijenbrink et al (2010) review the development of the RBV from the seminal works of Wernerfelt (1984), Rumelt (1984), Barney (1986), Dierickx et Cool (1989) and several others

authors (all reviewed under subsection *c*, supra, Rumelt (1984) being the exception). Collis et Montgomery (2008) address the resource-based view highlighting that a resource value should be measured taking into account the interplay of market forces, which change over time. Consequently, the same resource can be valuable at a given period but not in another (*idem*, 143). Thus, the authors analyze ‘what makes a resource (or a capability) valuable as the ‘dynamic interplay’ market forces of scarcity, appropriability and demand.

Moreover, Collis et Montgomery (2008: 143-6) introduce five tests to evaluate a resource / capability *inimitability*, *durability*, *appropriability*, *substitutability*, and *competitive superiority*. As for inimitability, the authors consider criteria like physical uniqueness, path-dependency, causal ambiguity and economic deterrence. *Causal ambiguity* relates usually with organizational skills, for which is hard to understand how one may replicate them; *economic deterrence* applies to resources that require very large investments and for which only a small number of player can earn returns, e.g., due market size and scale, the first mover takes it all.

When analyzing RBV’s strategic implications, Collis et Montgomery (2008: 147ff) identify and exemplify the benefits and pitfalls of ‘investing in resources’, ‘upgrading resources’ and ‘leveraging resources’. One of their examples is a telecommunication operator, AT&T, which "is trying to build capabilities in multimedia now that its physical infrastructure – the network – is no longer unique or as critical as it once was" (*idem*, 148). Concluding, the authors find the RBV illuminating to understand diversification strategies’ success and / or failure (*idem*, 149).

Stalk, Evans et Shulman (1992) propose a ‘capability-based competition’ to support corporate strategy; the authors take care distinguishing capabilities and core competences, proposed by Hamel et Prahalad (1990). A *core competence* may be understood as a combined set of technologies and product skills enabling a company’s products and their success (Hamel et Prahalad, 1990), helping explain market entrance in (apparently) not related businesses which, however, share an underlying core competence. *Capabilities* on the other hand dwells on the processes which support innovation or speed or yet another quality (Stalk et al, 1992). While core competences focus on the lower part of the value chain, capabilities focus on its upper part – but both emphasize behavioral aspects of strategy, instead of structural ones. Ulrich et Smallwood (2004) also acknowledge the importance of social of capabilities, e.g., human resources, distinguishing core competences (technical) and capabilities (social) (*idem*, 120).

For Stalk et al (1992) business processes are the building blocks supporting corporate strategy; the authors argue that ‘competitive success’ relies on transforming “key processes (...) into strategic capabilities” which “consistently provide superior value to the customer,” (Stalk et al, 1992: 60), i.e., sustainable competitive advantage. Thus, one key attribute of capability is being

collective and cross-functional, that is, linking together SBUs and functions through its support infrastructure; for that reason, Stalk et al (1992) emphasize the role of the CEO in fostering capabilities and its five dimensions: speed, consistency, acuity, agility and innovativeness.

*f) Common critiques and future research*

Lockett et al (2009) review RBV's shortcomings in four aspects, namely: theoretical, methodological, empirical and practical (i.e., its contributions to managerial practice). In another perspective, as seen above, Kraaijenbrink et al (2010) offer a critical review of the RBV and its development, its main strengths and weaknesses. In short, they address eight critiques commonly made to the RBV, arguing that at least three of them deserve serious scholar attention.

In their review and assessment, Kraaijenbrink et al (2010) identify *eight* main critiques (or clusters of critiques) one may find within the RBV literature, stressing that most of them may be addressed by simply specifying its "variables, boundaries, and applicability" (350) This does not amount to a dismissal of such critiques; it only states that the RBV has currently the theoretical resources to answer them. The following five critiques do not constitute a threat to RBV, according to Kraaijenbrink et al (2010): (i) the RBV has no managerial implications; (ii) it implies infinite regress; (iii) its applicability is too limited; (iv) SCA is not achievable; (v) RBV is not a theory of the firm. While Kraaijenbrink et al (2010) identify those critiques above as non-threatening to the RBV, they also identify three critiques that are not so easily answered, needing thus more effort and research, namely, that (vi) VRIN / VRIO is neither necessary nor sufficient for SCA; (vii) the value of a resource is too indeterminate to support a useful theory; (viii) the definition of 'resource' is unworkable. Some of these critiques will be addressed below.

**Theoretical.** Lockett et al (2009) identify theoretical shortcomings, the first being its resistance to formalization due RBV assumptions' "minimalistic nature" (*idem*, 10). More importantly, Lockett et al (2009) stress how RBV may be seen as tautological (see also, Newbert, 2008), and thus trivial in some sense, explaining "differences in firm performance to intrinsic differences in the firms themselves." This accusation of 'circular reasoning' is also identified by Kraaijenbrink et al (2010) and has methodological consequences (see *infra*). Finally, resources functionality is undeveloped theoretically speaking, hindering managerial insights from the RBV, poor in answering which resource contributes to what regarding competitive advantage. Regarding the RBV positioning as a *theory of the firm*, Kraaijenbrink et al, 2010: 353) acknowledge strong critiques against this, for instance, comparing the RBV with TCE (cf. *supra*; see also Lockett et al, 2009). However, the authors clearly state that the *RBV does not need to be a theory of the firm* and can have another, yet relevant role, regarding companies and their search for (sustainable) competitive advantage. Lockett et al (2009) share this assessment,

as they consider the RBV “not as a theory of firm behavior but, primarily as a theory that offers insights about the decision-making” (*idem*, 23). For another perspective on the RBV, as reaching for a rather positive theory of the firm, see Conner (2008, part 2).

Kraaijenbrink et al (2010) address an important limitation to RBV and its favored VRIO / VRIN framework, which is neither necessary nor sufficient to achieve SCA; on top of its lack of empirical support, VRIO / VRIN framework may be not able to explain in a relevant manner how the *deployment* of such valuable, rare, etc. resources. And considering ‘managerial expertise in resource deployment’ as a resource is both non-illuminating and circular.

Authors like Gibbert (2006a, 2006b), Connor (2002), or Miller (2003) argue that taking ‘uniqueness’ as a variable prevents generalization, that the RBV applies only to larger firms or firms striving for SCA, and finally, that only companies already holding VRIN resources are able to acquire additional resources (Kraaijenbrink et al, 2010: 353).

**Methodological.** Lockett et al (2009) acknowledge observational issues, due the resources’ causal ambiguity and path-dependency. This hinders testing the RBV, methodological speaking, and rests also on the ‘tautological’ accusation (Lockett et al, 2009) commonly made to the RBV, as Kraaijenbrink et al (2010) recognize too (critique vii, see above), further relating it to an all-encompassing – and thus, an unworkable definition of resource. The ‘tautological’ accusation is strong (Kraaijenbrink et al, 2010) as it precludes falsifiability (Lockett et al, 2009) an important feature of scientific enquiry as famously stressed by Popper (1959/2005).

Kraaijenbrink et al (2010) also acknowledge critiques regarding difficulties in generalizing from ‘unique’ resources while restating that the RBV withstands such critiques as ‘uniqueness’ may be understood as having degrees. Finally, Lockett et al (2009) refer to statistical issues regarding causal direction (e.g., statistical correlation) – and on cross-functional researches.

In their review of 125 empirical studies that a construct resource-base, Armstrong, C. E. & Shimizu (2007) identify three major issues, namely: i) operationalization regarding intrinsically hard-to-observe resources; ii) attention and treatment given to the dependent variable of ‘sustainability’ (applied to growth or competitive advantage); and iii) “control of confounding factors in the relationship between resources and sustainable competitive advantages and resulting performance outcomes” (*idem*, 975). The authors give several recommendations (*idem*, 976ff) for future research to address those issues, such as adopting a qualitative approach more often, using longitudinal research design or elucidate industries idiosyncrasies.

**Empirical.** Lockett et al (2009) review some empirical issues regarding RBV, namely its general lack of support. Suggestions for future research by Kraaijenbrink et al (2010) in their review of RBV’s critiques emphasizes the need to further empirical research to support the

theory and, specifically, functional relations between types of resources and competitive advantage attributes. Newbert (2007) reviews 55 empirical applications of the RBV, reporting that “only modest support” (121) has been given to the theory’s underpinnings. The authors address several approaches, dwelling on resources and capabilities’ heterogeneity, organizational capabilities, resources value and rareness, and dynamic capabilities, concluding that future research should emphasize more recent developments of the RB when operationalizing empirical research (Newbert, 2007).

On the other hand, Newbert (2008) himself carries on an empirical study in order to test the RBV’s contribution to competitive advantage and performance, following Barney et Mackey (2005) recommendation when sampling. They test five hypotheses, namely, both value and rarity of the resource capability combination relate positively to a company’s competitive advantage (hypotheses 1 and 2); that such competitive advantage is positively related with a company’s performance (financial, organizational) (hypotheses 3); and that the competitive advantage construct mediate such relationship between *a resource capability combination value or rareness* and *the performance of the company* (hypotheses 4 and 5). On their study, the authors find corroboration for hypotheses 1-3 and 5.

*Practical.* Lockett et al (2009) offers an interesting distinction between i) known knowns (*sic*), ii) known unknowns and iii) unknown unknowns, stressing the importance of (ii) to the RBV as “[t]he role of managers is to try and make sense of known unknowns and to manage the ambiguity surrounding them” (*idem*, 23). Moreover, the authors put shortly five practical implications coming from the RBV, namely, that is important to identify the strengths and weaknesses of a company; that “history matters” (*ibidem*), since critical resources are path-dependent; also, the function and contribution of each resource to competitive advantage, while acknowledging that a resource is always prone to decay, thus emphasizing the ‘process’ nature of their creation and decay to maintain competitive advantage. Finally, Lockett et al (2009) stress the importance of asymmetric information while building (or acquiring) competitive advantage, e.g., in a strategic factors market due market imperfections (cf. Barney 1986).

Kraaijenbrink et al (2010) counters those who critique the RBV based on its allegedly reduced scope, that is, to large companies, not comprehending entrepreneurship, while dismissing critics of the RBV based on its, again allegedly, small contribution to managerial practice, stressing that this is problem that one may encounter in many other theories, not being specific to the RBV. Nonetheless, it is important to stress this limitation. Peteraf (1993) on the other hand, emphasized very down to earth contribution RBV may have when guiding managerial practice. For instance, the RBV may recommend a company to license or develop in-house a new



technology; or if it should diversify to another market based on its current or future resources. Wernerfelt (1984) also proposes some models that may help managers to decide whether to enter (or not) into new market, based on an inversed product-market matrix.

**g) Related topics – international business, diversification and dynamic capabilities**

Peng (2001) briefly reviews the development of the RBV as a theory in management literature and then assesses its contributions to *international business* (IB) literature while also hinting inputs IB gave to RBV. Drawing on works on IB that cite Wernerfelt (1984) or Barney (1991) as influential resource-based theory (RBT) paper (1986), Peng (2001: 805) identifies four areas in IB where the RBT was contributing, namely: i) multinational companies, ii) strategic alliances, iii) international entrepreneurship, and iv) market entries – while exploring some other threads, such as privatized firms, conglomerates, startups and ‘state-owned enterprises.’ At a general level, Peng (2001: 819) argues that through the RBT, the IB research becomes “more theoretically rigorous.” Peng (2001) emphasizes local knowledge in deploying resources and top-management expertise in international business, linking a broader contribution ‘strategic international human resources management’ with the RBV as such as expertise may have explanatory power in understanding international performance. Another thread important to acknowledge is the introduction of ‘institutional relatedness’ important to both IB – focusing the local embeddedness – and diversification; or, such institutional links explain relatedness of what would be otherwise unrelated diversification through a resource related against the traditional product-related view, a common business diversification explanation (Peng, 2001). Robins, J. & Wiersena (1995) also address the relation between the diversification and the RBV, even if limiting themselves to corporations / multibusiness companies. The paper reviews empirical studies concluding that the RBV does offers “real insight into multibusiness firm” (*idem*, 292). Another important takeaway is the ‘reconceptualization of relatedness’ based on resources differs from alternative measures of related diversification.

**h) The VRIO / VRIN framework**

The *VRIO framework* became a common approach to evaluate a company's resources and capabilities (Barney et Hesterly, 2006: 83), in order to identify them as strengths or weaknesses. Thus, as PESTEL analysis is useful to understand *opportunities* and *threats*, the resources and capabilities justify company's *strengths* and *weaknesses*. Again, it is useful to first present it following a general textbook (Barney et Hesterly, 2006).

The VRIO framework addresses each resource and / or capability in four aspects: **V**alue, **R**areness, **I**mitability and **O**rganization (Barney, 1991; Barney et Hesterly, 2006; Johnson et al,

2008). It proposes a cumulative view for evaluating resources and capabilities. It starts with the value 'question' and ending with the organization 'question'.

Barney introduced the VRIO model in his 1991's seminal paper (Barney, 1991). In it, Barney defines – and exemplifies – what resources are – and of what kind (physical, organizational, human, capital, etc.). Moreover, it briefly discusses what is meant by 'sustainable' applied to 'competitive advantage' arguing that is more than "last[ing] a longer period of calendar time" (*idem*, 102), e.g., as the ability to preclude potential competitor entry or being able to benefit from a given strategy without having to duplicate efforts. Finally, the author proposes a conceptual framework based on *resources' heterogeneity* and *immobility*, discussed before (cf. *supra*), proposing *valuable*, *rare*, *imperfectly mobile*, and *non-substitutable* resource attributes driving *sustained competitive advantage*. Barney (1991) discusses each of these attributes, highlighting their complementarity while also emphasizing the historical, path dependent, character in achieving a sustainable competitive advantage, since it explains why a resource may be not imitated by competitors. Barney (1991) also acknowledges 'causal ambiguity' and 'social complexity' as important factors that hinder the competitors' ability to imitate a company's strategy; however, causal ambiguity can make it difficult for the company itself to understand its own source of competitive advantage – and thus, even to duplicate it. As for substitutability, Barney (1991) that even if a resource *x* is valuable, rare and hard to imitate, it can still be substitutable by another, equivalent resource, *y*; thus, if *y* is neither rare nor hard to imitate, then *x* does not drive competitive advantage (in a sense, a rare resource, not a rare strategic factor).

Moving forward, Parayitam et Gharana (2010) address and compare the RBV with the dynamics capabilities view (DCA), the former based on 'ricardian rents' and the latter on 'schumpeterian rents'. Following Parayitam et Gharana (2010), it is possible to apply this distinction to VRIO's model: while ricardian rents account for resources' attributes of 'valuable' and 'rare', schumpeterians' explain attributes like 'non-imitable' and 'non-substitutable'. Accordingly, the authors propose the concept of 'organizational rents' as a composition of the two, and provide an integrative framework, shown above, to explain SCA.

Ricardian rents	Yes	Competitive advantage <i>Valuable and rare</i>	Sustained competitive advantage <i>All traits present</i>
	No	(Sustained) competitive disadvantage	Competitive advantage <i>Non-imitable and non substituable</i>
		No	Yes
		Schumpererian rents	

**Figure 10 – RBV, VRIO and sustained competitive advantage framework**

Source: adapted from Boddy (2008: 254)

### *i) Applications of the VRIO / VRIN framework*

The *ASSIST framework* proposed by Duncan, Ginter et Swayne (1998) comes from a gap identified then by the authors in the management literature at the time, namely, regarding tools for conducting internal analysis (Duncan et al, 1998: 6). ASSIST stands as an acronym for **ASS**essment of **I**nternal factors for **ST**rategic advantage (*idem*, 10) and draws on concepts previously discussed in this literature review, such as the RBV, the VRIO framework and VCA. The authors (*idem*, 8) proposes a four basic stages approach in order to conduct an ASSIST analysis: stage 1, *surveying* potential strengths and weaknesses; stage 2, *categorizing* organizational differences; stage 3, *investigation* the source of competitive advantage; and stage 4, *evaluating* competitive advantage. Each stage has its own steps and tools.

*Stage 1* involves surveying on "infrastructure, human resources, technology development, procurement, inbound and outbound logistics, operations, marketing and sales, and service activities" (Duncan et al, 1998: 7). It is plain to see that this survey is related with Porter's (1980) value chain, which Duncan et al (1998: 9) expressly modified.

The *second stage* involves categorizing each strength and weakness identified in the previous stage as resource or capability, tangible or intangible, developing at the same time more precise measurements (*idem*, 10). Afterwards, one should apply the VRIO framework, assessing resources and capabilities in terms of value, rareness, imitability and sustainability (here replacing 'organization' but with the same purpose) (*idem*, 10-12).

*Stage 3* builds on the results of the previous stages assessing the potential source of competitive advantage / disadvantage and its location in the modified value chain. It offers an overview where the organization should improve and focus, which resources and / or capabilities it should acquire or develop, which can and should be neglected, and those which should be defended as they provide *sustainable competitive advantage*, e.g., *uniqueness driver* (Duncan et al, 1998: 13-4).

Finally, on the *fourth and last stage*, one evaluates the strategic implication for competitive advantage from the previous analysis *recommending general courses of action*, crossing it threats and opportunities found in the external environment. In an entirely other thread, Ulrich et Smallwood (2004) propose a model for auditing a company in its capabilities, putting forward general guidelines and examples, while acknowledging that every audit will be very different since "there is no magic list of capabilities appropriate to every organization" (*idem*, 120).

## **2.4. Analysis tools**

In this section, one may find analysis tools and general theoretical frameworks that should be useful to answer the proposed case questions (2.6). Not all of them are necessary to resolve the

case. The student should be able to choose the right tools to answer each question as already stressed above (2.1 and 2.2). The student may find useful other tools than those here presented, based on students' autonomy, yielding richer results.

This said, the tools and frameworks below are presented under two main headings, each corresponding to a major phase: strategic analysis (2.4.1) and strategic formulation (2.4.2).

### **2.4.1. Strategic analysis**

#### ***a) Environment and Market analysis***

There are several tools for environment and market analysis. Here, the focus is on two interrelated: i) PESTEL analysis and ii) the environment complexity / dynamism matrix. Others such as Stakeholder's mapping (Eden et Ackerman, 1998) or more recent ones, related with environmental, economic and social sustainability would also enter this category.

**PESTEL** is usually attributed to Aguilar (1967) which allegedly first developed a tool to address macroscopic issues affecting businesses. PESTEL stands for **P**olitical, **E**conomic, **S**ocial, **E**nvironmental and **L**egal, a tool to evaluate each issue's capacity to affect, positive or negatively, businesses at the operational, tactical or strategic level. The **environment complexity / dynamism matrix**, developed by Duncan (1972) follows the PESTEL analysis, positioning an industry within four quadrants, according to the number of issues affecting an industry and the issues' change frequency (dynamic / stable).

#### ***b) Industry / sector analysis***

Industry analysis also has several tools. Generally, they aim to understand the competitive landscape in which companies operate stressing its relative forces and / or weaknesses.

**Porter's 5 forces** framework was developed by Porter, in two papers in the 80's (1980 and 1985). The framework aims at understanding how a business and a company are affected by intensity of rivalry, supplier and buyer powers, new entrants and substitutes threats.

As such, the above framework relates with two other threads developed by Porter. First and foremost, the **Value chain analysis** (VCA) (Porter, 1985). Both supplier and buyer power affect an industry value chain, upstream and downstream, inbound logistics and margins, respectively. Second, the new entrants and substitutes threats may support a kind of a 'structural change' within an industry (Porter, 1985). This said, VCA aims to distinguish between primary and supporting activities and then to understand how each primary activity contributes to end value.

#### ***c) Company analysis***

Company analysis may include the already described tools such as Value chain analysis (Porter, 1985). Here and elsewhere, one may find an overlap between tools and frameworks.

The RBV approach is more of a set of tools and frameworks around the basic idea that it is important to have an internal analysis to determine key resources and / or capabilities that may drive strategic choice or (a successful) strategy implementation. Among the RBV frameworks, one may find: i) again, the **Porter's VCA**, ii) **VRIO**; and iii) **ASSIST**.

**SWOT analysis** is allegedly the most famous management tool and it may attributed to common sense; in the management literature, it is attributed to S. Tilles' 'Making strategy explicit' (1968) or to Humphrey and colleagues, during the 1960's. It details and evaluates a company's forces and weaknesses and the main opportunities and threats within the industry.

#### **2.4.2. Strategic formulation**

The product / market matrix, or **Ansoff's matrix**, frames strategic options in four quadrants, each with *one or more strategic direction*. It is a tool appropriate to define strategy at the corporate level (Body: 253-4), e.g., within multi-business corporation: i) market penetration; ii) product / service development; iii) market development; and iv) diversification.

Porter (1995 and *passim*) developed '**competitive strategies' framework** which identifies four generic strategies, according with the competitive advantage (cost leadership *or* differentiation) and scope (from broad to narrow), namely: i) cost leadership; ii) differentiation; iii) cost focus; iv) differentiation focus.

#### **2.5. Animation plan / action plan**

To apply this case study in the classroom, it is helpful to have some guidelines and set of rules on how to apply it, both to students and teachers. As the case study is complex, involving triple focus on the industry, the macro-environment and the company, the students should be given the chance to read it and prepare it at home, individually and within groups of 3-4.

As it is, the case requires former knowledge of some specific business tools. Thus, the case study should be applied only after the students have been introduced to them, especially the frameworks related to the resources and capabilities approach. Arguably, as stated above (2.1. Target), its recipients should be final-year undergraduate, or first-year graduate, students.

The whole case, as proposed, should be divided in two, each corresponding to a classroom sessions and a set of questions (1-2 and 3-4). Before the first section, the case study should be distributed to students, e.g., through email, asking them to read it before the first session. This procedure allows for a better preparation for a rather complex case (in the sense argued on 2.1 and 2.2), portioning in different sections the effort asked from students.

At the 1<sup>st</sup> session, the professor should briefly present case before in 30-40 minutes, exploring its triple focus. After that, the students may ask any questions they may have and then form

groups in order to solve the first part of the case (Questions 1 and 2) while in class and with their professor assistance. Each group should research and answer the questions. The case study provided earlier, before class should be useful here but students are encouraged to research on their own, further exploring the industry, the market and/or the company. After that, each group is asked to have a spokesperson to briefly present their answers and findings to the class, with aid of the professor who may ask further questions and help clarifying points, moderating the whole discussion. In that way, students may benefit from other groups analysis, complementing their answers, before moving on to the second part of the case and to questions 3 and 4. This procedure intends to allow students to develop their data-gathering skills while fostering their ability to critically exchange points of view on the case (e.g. build scenarios) still in class, an evaluation-free, safer, environment.

Before the 2<sup>nd</sup> session, groups are asked to prepare outside the class a presentation synthesizing the answers given in class and answering questions 3-4. The presentations should not have more than 10 slides nor should it take more than 15 minutes. This procedure intends to allow students to prepare thoroughly though in their own pace the case's answers, choosing and applying the relevant tools and frameworks; this is of the utmost importance given the case scope. It enables students to develop further their data-gathering, analytical and critical thinking skills.

At the second class, the professor should choose randomly one or two groups to present the class their answers and findings, promoting an open discussion after that, where the other groups may and should actively participate. The professor moderates the discussion and encourages the participation. Finally, this procedure enables students to develop their presentation and public discussions skills while assessing their answers against other groups.

Below, table 11 maps each stage / session objectives, methodology and resources and estimated schedule to accomplish it.

**Table 11 – Proposed sessions structure to apply the case study**

Session	Stage	Objective	Methodology	Resources	Schedule
Session 0	Professor distributes the case study	Introduction to case study and its subjects	Individual reading of the case study	Copy of the case study	Before session 1
	Professor presents the case in class		Class presentation	Powerpoint, e.g.	20-30 mins.
Session 1	Class discusses the case in groups of 3-4	Collect data, discuss and answer questions 1-2	Brainstorming	Copy of the case study; internet; other	40-50 mins.
	Spokepersons present each group answers	Share findings with other groups	Class presentation	N/A	30 mins.
Session 2	1-2 groups propose case resolution(s)	Propose answers to questions 3-4	Class presentation	Powerpoint, e.g.	30-40 mins.
	Class discusses the case in groups of 3-4	Class participation and shared learning	Moderated class discussion	N/A	40-50 mins.
	Professor wraps-up the case study	Lessons learned and theory recap	Class presentation	Powerpoint, e.g.	30 mins.

Source: Own elaboration

As a whole, the animation plan is designed to fit the target, pedagogical objectives and proposed questions (right below) given the case's scope. The animation plan also intends to provide a mix of inside and outside class engagement with the case, each scenario enabling different competence development while deepening the students industry and management knowledge.

## 2.6. Proposed case questions

Below, the proposed animation questions for the case study.

*After reviewing the case, please read all questions before answering them. In your answers, please relate the case with the relevant theoretical framework and tools introduced in class.*

**1- Industry analysis.** *The telecommunication sector is going through severe changes, being pushed by a more demanding end-consumer and rather new competitors from other industries.*

1.1- What are the main challenges of this industry? What are companies doing or may do to address those challenges? Describe which main options are there. (In answering this question, please evaluate the industry using Porter's 5 forces framework and SWOT analysis.)

**2- Environment and market analysis.** *Society is moving fast and with it many industries are facing new threats and opportunities.*

2.1- What are the key political, economic, societal, technological, environmental and legal issues and trend that are affecting the telecommunication industry and PT in particular?

2.2- Please develop a PESTEL analysis on aging and health issues discussed in the case study.

2.3- Finally, consider the issues identified in last Question (2.2) from a market point of view. How can those issues be addressed by the telecommunication industry? Are there business opportunities involved for Telcos? Please recap your answers from Question 1.

**3- Internal analysis.** *PT has been paving its way to new markets and new business opportunities while facing some internal strategic shifts.*

3.1- Name and briefly describe at least three key issues PT is facing internally.

3.2- How is PT addressing the challenges identified in Question 1?

3.3- What are PT's main resources and capabilities? How are they contributing to PT's current e-health market approach? Please develop a VRIO analysis.

**4- Strategic recommendation.** *PT is already addressing the e-health opportunity in both the B2B and B2C segment, in the national market and abroad.*

4.1- Describe the strategic direction and positioning implied in PT current take on the e-health opportunity. In answering this question, please use the Ansoff's product-market matrix.

4.2- Name and describe at least two main resources and / or capabilities that PT should develop in order to pursue the strategic direction identified. And what further steps should PT take in the e-health market? Should it continue the path taken so far?

## 2.7. Case resolution

### 2.7.1. Draft resolution

Annex B provides a more detailed support for the conclusions presented here.

#### *Question 1 - Industry analysis*

**1.1- What are the main challenges of this industry? What are companies doing or may do to address those challenges? Describe which main options are there.** (In answering this question, please evaluate the industry using Porter's 5 forces framework and SWOT analysis.)

The telecommunication industry is facing declining worldwide and in Portugal, industry's global revenues are sloping down year over year, for several factors. Telcos will need to develop new revenue streams while delaying the decline in its 'traditional' revenue streams.

**Competitive rivalry.** The Portuguese market for telecommunications has seen a trend for convergence in recent years, as companies moved from triple-play (3P) offers (fixed telephony + fixed data access + IP TV) to 4P (+ mobile voice) and 5P (+ mobile data access). At different speeds, competitors moved to bundles including more and more services, depending also on their capabilities. For instance, NOS is able to include movie theater tickets as they own Lusomundo; other competitors are not able to offer directly such service as they depend on partnerships, e.g. This allowed Telcos to address a larger market, offering more services and charging for larger fees, even if providing a discounts for bundles.

Another trend on the Portuguese telecommunication market is the 'price wars' in the consumer segment. The main competitors MEO (PT), NOS, Vodafone and Cabovisão are lowering the prices for their services, each following the other, making every competitor worse-off in the long run as the industry's total value decreases, i.e., diminishing value for all competitors. That is, competitors aim for market share even if this means less revenues or, at least, less ARPU (average revenue per user) or less SOW (share of wallet). Aggressive pricing, through promotions or otherwise erodes margins; nevertheless, when a company lowers its prices, its competitors tend to follow and lower their prices to defend its market position and market share. This structure is well acknowledged in Porter (1995) as productivity frontiers and reveals a difficulty to competitors within the industry to differentiate their P&S (products and services) in order to price it differently, charging a premium and allowing themselves to maintain its market positions without following discounts, promotions, skimming pricing strategies.



Additionally, competitors recently engaged in a price war specifically within mobile voice and younger generations, e.g., generation Y ('millennials'). Not only on price, but also relatively to branding, Portuguese competitors are appealing to younger generations with specifically design brands, heavily investing in marketing to capture this segment. This 'battlefield' is justified with the belief that luring younger generations may guarantee their later conversions as *full* customers – not only on mobile voice, but on 3P, 4P or 5P offerings, thus expanding their customers total value lifecycle. This was especially important as a response to Vodafone's success within younger generations, as PT and NOS feared losing these customers when they reach adulthood.

On the enterprise and business segment became more competitive as the consumer segment reached a plateau. Competitors like NOS Empresas (and even Vodafone) arrived later to the Portuguese market. It is a more demanding market but now represent a relevant area for growth. Finally, one must acknowledge the M&A international trend, also seen in the Portuguese telecommunication industry (see ZON + Optimus, PT + Oi, PT + Altice). This trend emphasizes the need these companies have in consolidating costs, benefiting from economies of scale.

**Threat of substitutes.** This is a major threat to Telcos and PT is no exception. As newer generations are becoming customers, they are using alternative, i.e., substitute communication tools; also, they do it *through* mobile phones which deepens the *substitutive* character. When analyzing the competitive rivalry above, the competition for new generations was described as an important 'battlefield' for PT, NOS and Vodafone as a guarantee of future revenues through upsell. In a somewhat paradoxical move, Telcos have been offering data services for free when used in certain mobile apps, as Facebook or WhatsApp, i.e., as if promoting their substitutes.

**Customers' bargaining power.** Telcos are on the edge of having an important setback as *consumer protection rights institutions* and, ultimately, *regulators*, are forcing the industry to quit from minimum commitment periods. The latter diminishes customers' bargaining power as they have a contract to fulfill, precluding impulse as they would incur in additional costs.

Another setback Telcos had, a few years ago, was regulators approved (telephone number) portability, allowing customers to switch providers *without* changing their fixed or mobile number. This was very important as it represents a relevant *switching costs* for the customer, even if intangible. In fact, changing mobile phone number, e.g., was burdensome and cumbersome, as customer would have to inform each and every contact that she / he change her / his number.

**Threat of new entrants.** In Portugal as elsewhere, the telecommunication industry is capital-intensive, involving huge initial investments precluding new competitors to enter this market. These entry barriers, however, apply to the industry *as whole*, not necessarily to individual services. For that reason – and against the aforementioned convergence trend – services like

TV have now new competitors, like Netflix or Amazon, providing TV content while not controlling the network. Netflix is now a more important threat as they are expanding to Europe. Other entrants might include internet giants like Google or Facebook for which a capital entry barrier may not apply. In the US, Google is already offering internet based on its own network. Finally, other Telcos are not expect to enter in the Portuguese market since it is declining and since the overall industry is going towards consolidation and oligopolies. For instance, Cabovisão may be the next company to disappear if acquired by Vodafone, as it might happen as a consequence of Altice's PT takeover. In that case, the market will be reduced to three operators (in B2C), when a few years ago there were at least five (excluding MVNOs)

**Suppliers' bargaining power.** This is the least important force within industry. Nevertheless, smartphones changed the value chain, which now include the mobile handset constructor and the operating system (OS) supplier (Apple's iOS, Google's Android, Microsoft's Windows Phone, or RIM's Blackberry). That is, over and over, customers recognizes differentiation in the constructor (Apple, Samsung, e.g.) or the OS (iOS, Android, e.g.) – and not the telecommunication provide. It changes the value chain and thus, in this case, the mobile telecommunication industry scope and landscape. Moreover, customers engage more with the apps in their smartphones than with the ISP, as data access may be seen as a 'commodity'. This way, players like Google, both beneath and above the ISP services, providing the OS, the handset and the apps, might well move to the final piece of the value chain, *the network*.

Given this situation, described through Porter's five forces, how can Telcos grow? What business strategies are they pursuing? How can they delay the outlined negative prospects?

In general, **Telcos are pursuing new business areas** such as cloud computing, e-health, M2M (machine-to-machine), CDN (content delivery network) (Sharma, 2012) and Arthur D. Little et Exane BNP Paribas, 2012), i.e., building a set of value-added services from its value chain position as network services provider. As such, Telcos are in a better position to offer an *end-to-end* (e2e) service and *quality of service* (QoS) as they do not depend on third-parties connectivity suppliers. Furthermore, Telcos have traditionally a large footprint, longstanding established client relationships on which they can leverage and upsell value-added services.

Telcos are putting forward some **strategies to delay revenue decline**. In the Portuguese market, competitors are finding ways to replace the commitment period, which might be about to be prohibited by regulators. For instance, by offering expensive handsets, smartphones or tablets for a monthly payment, Telcos establish a contract which avoid churn. This is of the utmost importance as the commitment period and low churn rates enable predictable revenues and avoid lowering prices until the end of the said period. Another way to delay revenue decline is

to push customers to plans with more services included (4P, 5P), thus pricier, guaranteeing a better ARPU than otherwise (2P, 3P). Even more, Telcos are adding to those four or five core services, other services such as movie theater tickets, apps with free data, cloud storage, etc. to increase the service perceived value and customers' willingness to pay. Again, adding these services may foster customer maintenance within their current provider as such services may increase customers switching costs, as portability did. Finally, to leverage the third wave, i.e., data, Telcos are offering data access free of charge for certain apps like Facebook or WhatsApp, those same apps that hinder and threaten Telcos' other business (voice, messaging). This happens as these services are considered gateways to the internet and thus, data consumption. As a consequence, letting these apps work free of charge is a cost to obtain larger revenues coming from the links on Facebook, Twitter or other that end-customers follow, leveraging Telcos' data access revenues. However, this strategy has been criticized as it benefits some apps over others, precluding fair competition; as a consequence, it may be prohibited as well by regulators.

### ***Question 2 - Environment and market analysis***

#### **2.1- What are the key political, economic, societal, technological, environmental and legal issues and trend that are affecting the telecommunication industry and PT in particular?**

The environment surrounding this industry is both *complex* and *dynamic*, due the number of impacting factors (complexity) and its likelihood to change (dynamism) (Duncan, 1972). In general, it is a complex environment due the industry broad scope: telecommunications belong to mass-market; it involves universal accessibility; it is a core industry in each country; addresses B2C, B2B, B2B2C, B2G alike; includes a large range of P&S.

Also in general, the environment is said dynamic due its rapid-changing pace. In fact, the telecommunication industry belongs to a larger ICT (information and technological technology) industry, that is, highly technological and innovation driven. Furthermore, Telcos have been expanding their lines of business, e.g., towards IT, involving also dynamic environments.

Finally, it is important to evaluate the PESTEL factors within different contexts, that is, at an international and national level – and within these, there are factors especially relevant to PT.

***Political.*** Political factors have historically a huge impact on the telecommunication industry since it was a State-held sector for years and a sector in which the Portuguese state had until recently a share and a direct stake in decision making, at the company level. Moreover, the telecommunication industry is considered typically as a country strategic factor, e.g., as a basic infrastructure (network, connectivity) providing competitive advantage (or disadvantage) to countries. Furthermore, access to (some) telecommunication technologies is viewed as a

population basic right, involving thus universal access to the whole of population. Therefore, it is a highly regulated industry, at a national and supranational level (the Portuguese government and EU's European Commission), regulating State aid, antitrust laws and M&As; moreover, it has both international and national supervision, e.g., ANACOM. Attention to regulation is especially important to the telecommunication industry as acknowledged by Curwen et Whalley (2004: 27). Likewise, due its strategic positioning and historical institutional links with the State and other strategic industries, the telecommunication sector is prone to receive bad publicity and PR (e.g., golden share or BES-PT cases). Finally, government and EU initiatives and agendas impact the industry; for instance, PT's 'Magalhães' project depended heavily on PT's institutional links and the government digital agenda for universal access to computers.

**Economic.** The telecommunication industry addresses the end-consumer mass-market, the business segment and public administration. Thus, the macroeconomic outlook impacts on Telcos lines of business. For instance, the recent sub-prime crisis, its impact on the global financial sector, ultimately led to a political change in Europe and in Portugal. This meant a change to a rather austere economic policy that is having a huge impact on the population. In conclusion, Portuguese grim economic environment emphasized the need for savings, diminishing end-consumers' disposable income and willingness to pay for value-added services. Companies also struggle for 'survival', focusing on cost reduction inhibiting investment, namely, on ICT. The same can be said of the public administration, more concerned in paying whose budget constraints prevent further investment and subsidizing innovation.

**Socio-cultural.** As with political and economic issues, there are several socio-cultural impacting the telecommunication industry. For instance, macroeconomic influences the business segment's market size, like demographics influence the mass-market (end-consumers). Portuguese population is growing older and generation renewal is not accompanying its pace. Thus, market will shrink in the coming years. In another strain, a whole set of issues may be considered under a major trend: *the digitalization of society*. For example, people are becoming increasingly digital as they have more, easier access to computer and internet enabled technologies. Thus, digital literacy is becoming an important matter to governments, now trying to foster it to avoid the so-called digital divide – those knowing / accessing new technologies, and those not, which may prompt inequality. Finally, these digital trends are also changing the way people relate to one another (social network) consume and share content (Youtube, digital music, e-books), buy products and services (e-commerce), relate to institutions (e-learning) and government (e-government).

**Technological.** Technology related factors have a huge impact on the telecommunication industry, heavily technological in itself. First of all, new technology disrupts ever more rapidly the industry, making obsolescence a matter of few years. Moreover, each new, say, wireless technology typically involves capital investment in infrastructure, in-house R&D, etc. Also, as Telcos are entering in other *technological* lines of business, e.g., cloud computing, more and more technologies have an impact on the industry. Furthermore, technology disrupts the sector at its core as it may and has prompted an industry scope redefinition (Porter, 1995). Internet speed and overall access is game-changing to this industry as it allowed new competitors and substitutes (Porter, 2008). Nevertheless, the increasing importance of the internet and amount of data circulating made Telcos invest in data centers to prepare themselves to a ‘data tsunami’.

**Environmental.** Environmental factors are the least interesting when assessing the telecommunication industry. Nevertheless, it is important to acknowledge one or two issues within this category. Awareness with the environment and ‘green-consumers’ turn energy consumption decisions important, for instance, when building and managing data centers.

**Legal.** Legal factors are particularly relevant when performing an external analysis on the telecommunication industry (Curwen et Whalley, 2004). Discussion regarding ‘data protection’ and ‘privacy’, may impact the industry in the near future. Moreover, this issue is extensive to companies and government, e.g., regarding industrial espionage and homeland security.

## **2.2- Please develop a PESTEL analysis on aging / health issues discussed in the case study.**

There are several factors within the macro-environment related with aging, health and fitness issues, which are relevant to the telecommunication industry. Being at a macro-level, they affect other industries as well – but those particularly relevant to Telcos are on focus here.

The environment surrounding the aging, health and fitness is typically *complex* but relatively *stable*, due the number of impacting factors (complexity) and its dependence on long-term trends (dynamism) (Duncan, 1972). Below, the PESTEL factors identified.

**Political.** Health systems around the world and European health systems in particular have been struggling its sustainability, due its rising costs. Portugal is not an exception on this. Thus Governments are searching for policies to address those challenges while attempting to cut costs wherever possible, which may ultimately lead to a quality decrease on public health services. For instance, public administration is emphasizing the importance of preventive medicine and a healthier lifestyle, in order to prevent individuals’ health problems.

**Economic.** The health system sustainability is all about is long-term economic viability as funded by the State and citizens as tax payers. The increasing weight of health on Governments’ budgets is even more important on a time where public expenditures are under scrutiny.

**Socio-cultural.** Societal factors are among the most important when analyzing health issues. There are two major trends under which it is possible to cluster a wide range of factors, namely, as society is *growing older* and *becoming digital*. The aging of western societies has important consequences to healthcare: aged people have more health problems and are more prone to chronic diseases, which demand long-term (and costly) palliative treatment and supervision (diabetes, e.g.). Moreover, there is an increasing number of elders living alone in their households who may struggle to find help if anything happens to them (a fall, e.g.). Regarding health at a broader scope, it is important to acknowledge socio-cultural trends such as healthier lifestyle adoption, through exercise and gym or better eating. On the latter, digital, trend, technology enabled change of habits may impact healthcare and well-being, through apps and smart-devices.

**Technological.** Here again, it is important to acknowledge two technological threads, one pertaining to medicine's development, in itself, and another to ICT technologies as applied to healthcare. Under the former, one finds new chirurgic techniques, new protocols and new medicines, all of which promote a longer life expectancy. Under the latter, one finds e-health as a major trend, combining healthcare and technology. Nevertheless, on a wider scope one may consider also the increasing number of health and fitness apps as an impact ICT has on healthcare and well-being, very important to preventive medicine (see above, 2.1).

**Environmental.** Issues pertaining to this category are the least important in the present analysis. However, one may observe clinical waste disposal or the emphasis on throw-away items and discarding as relevant environmental factors.

**Legal.** Again, data protection and access are relevant issues when discussing legal aspect of health. In fact, biomedical data is sensitive and considered to be confidential, only accessible to patients and practitioners. Finally, as it is linked State-held institutions, they benefit from increased protection – and data location may also be an issue within the legal framework.

**2.3- Finally, consider the issues identified in last Question (2.2) from a market point of view. How can those issues be addressed by the telecommunication industry? Are there business opportunities involved for Telcos? Please recap you answers from Question 1.**

From a market point of view, the overview on aging, health and well-being issues fostered opportunities, e-health among others – for many industries, telecommunications' among others. Since telecom operators address traditionally different segments, B2C, B2B and B2G (business to *consumer, business, government*), they are addressing several issues with different approaches. That is, from a customer point of view, Telcos have a both experience and footprint to address different segments. From a product point of view, Telcos have been moving to ICT, being able to offer complex solutions, usually in partnership with IT providers (e.g., Oracle,

SAP). For instance, it is usual for Telcos to have a dedicated IT Business Unit, developed in-house or through an (early) acquisition. Thus, Telcos have the technology and expertise to offer robust solutions, based on cloud computing and / or M2M (*machine-to-machine*), e.g. Some Telcos such as Telstra (Australia incumbent) aims to differentiate itself by specializing in some vertical industries as B2B customers, namely, health. Finally, from a demand point of view, the issues identified above reveal different needs support diverse approaches: healthcare for individuals, practitioners (doctors, clinics, pharmaceutical), hospitals, public administration – and industries indirectly related with healthcare (insurance companies, e.g.).

In general, Telcos benefit from their large footprint, historical institutional links, trust and reputation, security and compliance, integration capabilities, and other resources and capabilities that enable them to offer value-added services on top of their traditional services. Finally, different Telcos are addressing differently this opportunities, depending on local context and macro-environment, industry environment, resources and capabilities available, strategic decisions made. Telecom operators such as AT&T, Deutsche Telekom (DT), Orange, Telefónica, Telstra, or Verizon offer a wide range of P&S (products and services) related with healthcare. AT&T offers a platform for collaboration and management patients' health data, focusing on compliance, security and virtual access from everywhere. DT offers a wide range of P&S addressing hospitals, homecare, practitioners (including billing solutions), health insurance, and general consumers (including fitness-related). Orange also offers telehealth, telematics, m-health (*mobile health*), and ageing-related P&S – addressing to not only hospitals and consumers but also homecare institutions (for Alzheimer's patients, e.g.). Among other P&S, Telefónica offers solution specifically diabetes's patients and health plans for consumers. Telstra for instance offers kiosks to provide health information to hospital visitors and Verizon healthcare fraud management. This is an overview, not being exhaustive neither on Telco-enabled healthcare and well-being P&S, nor on the number of Telcos focusing on the e-health opportunity. However, it shows several ways Telcos are addressing *the e-health opportunity*.

### ***Question 3 - Internal analysis***

#### **3.1- Name and briefly describe at least three key issues PT is facing internally.**

Altice prepares to take over managerial responsibility at PT but this issue will not be considered. Issues like i) plateau ahead on the consumer segment, ii) declining revenues on the business segment, iii) new revenue streams and future growth should be addressed by any administration.

***Plateau ahead on the consumer segment (B2C).*** The consumer segment in Portugal is heading for a plateau, becoming a mature market on which there is little room for growth. There are

only three or four players currently competing in this market, with similar services, having a hard time to differentiate themselves against the competition as voice, messaging, connectivity and IP TV are becoming ‘commodities.’ Moreover, the market is saturated as whole, meaning that the large majority of the population already has Telco services. Gaining new customers means ‘stealing’ them from competitors, many times through promotion and price drops, which erode margins (Porter, 1995). Demographics do not help in this picture: population is not growing and thus the addressable market is not expected to grow. In conclusion, the overall market outlook is like a red ocean as described by Kim et Mauborgne (2004).

***Declining revenues on the business segment (B2B).*** PT has a dominant position on the B2B segment, within the traditional telecommunication market. Its high market share is explained through its legacy as the State-held, monopolistic, company in Portugal. Therefore, for *that* reason – and that reason would be enough – PT may expect its market share to decline, both in revenues and units. As competitors enter the market, prices tend to decline, leading to a decline in ARPU. Furthermore, as PT dominates most of the market, competitors will preferentially (and inevitably) attack PT’s position – ‘stealing’ their customers. One may observe this happening as NOS as it established contracts with former PT relevant clients, BPI and CGD.

When the market liberalization began, competitors started competing mainly on the consumer segment. This is not surprising as NOS entered the market as PT Multimédia’s spin-off, that is, a consumer orientated provider of P&S such as IP TV. Vodafone and Optimus (now merged with ZON, building NOS) also targeted preferentially the end-consumer, namely, through mobile communication. They have or had offering to business customers but it was not core. Also, adding services for end-consumers implied huge investments on infrastructure as new technologies appeared, such as FFTH, an *asset threshold resource* (or asset) needed in order to even compete (Johnson et al, 2008). For instance, led by the convergence trend, from 2P to 4P and 5P, PT’s competitors focused on extending their consumer portfolio. Letting themselves lag behind would mean at best losing share of wallet – and at worse, losing customers.

Moreover, players like NOS and Vodafone had a late entry on the business communications market, with a relatively narrow scope of P&S. This allowed PT to maintain its leading, quasi-monopolistic position on the segment. Meanwhile, as the consumer segment is also reaching a plateau, as seen above, PT competitors like NOS or Vodafone turned themselves to *their* opportunity to growth, i.e., almost an underdeveloped market for them. It is important not to forget that are other Telco competing *specifically* on the B2B segment, including smaller Telcos (Oni, AR Telecom) and international B2B oriented Telcos (Colt). Even so, they have a somewhat limited expressing and PT was *until now the unchallenged leader of the segment.*



***New revenue streams and future growth.*** Depending on the business segment and LoB, PT is pushing its business in corners of the product-matrix (Ansoff, 1987). That is, in MEO TV services, PT is still aiming for market share, i.e., become the market leader (*market penetration*) while in the business segment, it is introducing ICT products to their current customer base (*product development*). As for existing products in new markets, PT has transferred to Oi P&S (*market development*); meanwhile, this stream has shut down as the M&A as initially intended failed and Oi sold PT to Altice. Finally, PT is developing new products to new markets, that is, health-related products to a (relatively) untapped market (*diversification*).

### **3.2- How is PT addressing the challenges identified in Question 1?**

Answer to question 1 identified several issues the industry is currently facing and the previous answer developed some of those from a PT perspective. Following Sharma (2012), PT is taking measures to *develop new revenue streams* while *delaying traditional business revenues' decay*.

Answer to question 1 identified some new revenues streams Telcos are developing in order to foster growth, countering revenue downward slope from the 'first three waves' (Sharma, 2012). Then, the so-called 'forth wave' is multiple, involving cloud computing, machine-to-machine, e-health (Sharma, 2012) to which one may add CDN (*content delivery network*), m-payments (*mobile payments*), smart metering, fleet / freight telematics and connected cars (Arthur D. Little et Exane BNP Paribas. 2012). From all these, PT is following primarily the cloud computing opportunities, leveraging its capabilities as an IT providers, its partnerships, corporate footprint and the data center built for the purpose. PT has in fact built a business unit around cloud computing and data center services, believing that a vertical approach would bring focus. However, PT is also following e-health and M2M, even if in a less systematic ways.

In the *consumer segment*, PT aims to be market leader (currently, NOS) while not entering in price war with Vodafone, expecting NOS will not enter either. This may prove itself difficult and it relies on the conviction that Vodafone will 'steal' more from NOS customers than from MEO / PT's. In general, PT strategy is to maintain its current customers, diminishing the churn rate. Measures include keep adding value-added services such as MEO Music, offering free data traffic for those apps, thus increasing the customers' switching costs. This measure is particular to PT in the national market as it leverages PT's in-house development capabilities, namely, SAPO as applications developer. Moreover, PT (as others) are adding on top of the service commitment period another commitment period. That is, customers may now buy expensive smartphones through a monthly fee. This helps Telcos to retain their customers at the same time that it promotes data consumption.

### 3.3- What are PT's main resources and capabilities? How are they contributing to PT's current e-health market approach? Please develop a VRIO analysis.

First, it is important to note that some resources and capabilities may be considered *valuable*, *rare* or *non-imitable* in context, namely, in Portugal. This is particularly important regarding the healthcare industry since there is regulation which privileges national location to store and manage health data from patients as Portuguese citizens. Thus, an e-health global competitor would have to compete deploying some resources *locally*; this condition allows PT to benefit from a competitive advantage that it would not have otherwise. Again, as Curwen et Whalley (2004) stress, regulation represent a great constraint on Telcos' businesses.

Therefore, location and PT's Tier III data center represent a *valuable*, *rare* and *difficult to imitate* resource in national context, especially considering the guarantees it gives in terms of *security*, *compliance* and *performance*. As storing and processing data is key to many e-health P&S, it is not possible to substitute it. Moreover, PT has a large experience in systems integrations through their IT companies, IT services and technological expertise (e.g., cloud). This is a relevant resource since many e-health P&S demand capabilities typically available on large, corporate, companies. To close, network is more of a threshold resource (Johnson et al, 2008) but in *this context*, it allows PT a better value proposition for clients: as they *control the value chain*, they may provide the service *end-to-end* (e2e), i.e., the quality of service (QoS) from the channel to the value-added services on top.

In-house R&D expertise is another *valuable*, *rare* and *difficult to imitate* resource / capability. Both PT Inovação e Sistemas and SAPO represent important resources from which PT may develop P&S to B2C, B2B and B2G. This is an important issue as it enables PT to have to control product development, helping PT when reaching for partners and customers as it fosters collaboration and customization. That is, PT's R&D capabilities leverage PT's position in the value chain, not reduced to mere reseller of third-party services on top of its network.

Finally, PT has a kind of first-mover advantage regarding e-health as it already has P&S for the consumer, business and public administration segments. This is both a consequence of resource and capabilities deployed in the past – and a cause for future competitive advantage. With them, PT has already footprint on healthcare, established client relations and institutional links.

In conclusion, PT has a competitive advantage based on IT-related resources and capabilities when compared against other (national) Telcos – and it has a competitive advantage based on Telco-related resources and capabilities (network), and its location, when compared against (international) non-Telco competitors. Following Barney (1991) and others (Dierickx et Cool, 1989, Peteraf, 1993), PT may be said to have *valuable*, *rare* and *hard to imitate resources and*

*capabilities*, based on path-dependency, past made investments. As this opportunity was not predictable when some of these decisions were made, PT's position may partially be attributed to good fortune (Barney, 1986). Even if PT's present position was not *planned* (Barney, 1986), the resources developed independently and unsystematically, they now represent a competitive advantage as a *mix* (Wernerfelt, 1984, Barney, 1991, Peteraf, 1993). Finally, from an industry point of view, capital expenditure needed to emulate PT's position represents an *entry barrier* (Porter, 2008); from a *resource-based view*, it represents a *resource barrier* (Wernerfelt, 1984).

#### ***Question 4 - Strategic recommendation***

##### **4.1- Describe the strategic direction and positioning implied in PT current take on the e-health opportunity. In answering this question, please use the product-market matrix.**

PT's current efforts regarding e-health may be described as *unrelated diversification* from a product-market perspective, following Ansoff's approach. From a product point of view, e-health solutions represent a *new product*, if compared with Telcos' traditional portfolio (including B2B) – and thus, *product development*. From a market point of view, e-health solutions represent a *new market*, not geographically speaking but according to the needs it addresses – and therefore, a kind of *market development*. Combining the two points of view above, one concludes that PT's strategic direction and positioning implies *diversification*. As the product is not continuous with any of the major B2C, B2B or B2G solutions PT offers, one may consider e-health LoB as representing '*unrelated*' *diversification*.

Nonetheless, the new revenues streams that the telecommunication industry is aiming to achieve represent all *value-added services* built on its network as an asset, i.e., a resource. Thus, though unrelated in terms of products, those revenues streams presuppose a common resource as a source of competitive advantage (even if not sustainable). That is, e-health solutions may be seen as resource-related diversification, e.g., another way to extract rents from the network asset. From a value-chain analysis, it means that PT is moving forward along the value chain in order to offer services on top of its other services, network related and traditional in Telcos.

Instead of assuming a position of dumb-pipes, a channel or enabler of services but not a provider, PT, as others, resolved to enter the market based on an already held, *previous position* on the value chain, for which there is a relatively few number of direct competitors. Of course, as commonly acknowledged, OTT competitors may enter the market without acquiring PT's or Telcos resource network, thus, it cannot be considered really a strategic factor in this kind of markets, as Barney (1986) hints; in any case, network assets depend upon capital intensive investment throughout years and would represent a huge entry barrier if needed to compete in

these markets, including e-health's. Again network should be viewed as a relevant resource providing a position from which PT may compete – but not a strategic factor driving sustainable competitive advantage and PT's strategy. While relatively hard to imitate (or acquire), 'network ownership' is a rather substitutable resource as competitors may *use* it simply as a *channel*.

Finally, it is important to note that technological disruption as fuzzing the boundaries of resources expected value (as in Barney, 1986) has been widely acknowledged in the RBV research literature (as reviewed by Lockett, Thompson et Morgenstern, 2009, Kraaijenbrink, Spender et Groen, 2010). Thus, while providing competitive advantage it may not provide 'sustainable' as it is prone to decay or be easily substitutable, eroding entry barriers as, for instance, the internet is ubiquitous in most markets, providing a channel through which OTT players may enter and compete with traditional, longstanding traditional incumbents.

In conclusion, for PT, e-health may be considered as '*unrelated*' *diversification* from a product-market perspective and as '*related*' *diversification*' from a resource perspective, following Wernerfelt's (1984) original model.

#### **4.2- Name and describe at least two main resources and / or capabilities that PT should develop in order to pursue the strategic direction identified. And what further steps should PT take in the e-health market? Should it continue the path taken so far?**

There a few resources and/or capabilities PT may or should develop to pursue an e-health related strategy, including i) deepening its current alliances with health partners and ii) leveraging its long-standing institutional links with the government and health institutions (such as public or private hospitals), but also associations and regulators (medics, clinics, pharmaceuticals) acting as agents that may prescribe or support PT's solutions.

*Alliances and partnerships* may be seen as a kind of resource / capability following Peng (2001) suggestions on the subject. In fact, a company like PT may be seen as deploying together with its health partner a *combination of resources*. Each company resources may be valuable but, for that matter, neither rare nor non-imitable; nevertheless, the *resulting mix* may be so. Such a view dwells on Dierickx et Cool (1989) insight that many resources and capabilities rely on asset accumulation (vs. straightforward M&As). This said, in pursuing its current alliances with health partners, PT may drive its e-health strategy forward. In this context, both the *resource resulting mix* and PT's experience in managing alliances and deploying products and services and partnerships should be considered as important to develop and drive PT's e-health strategy. *Institutional links* is yet another capability that PT could and should develop to pursue its e-health strategy, namely, with *institutional links* with the government, health institutions and associations. This capability is already identified in Peng (2001) as able to explain related

diversification, based not on product-market but instead *resources and capabilities*. The institutional links capability is important as a source of both legitimacy and additional resources. Moreover, it emphasizes the local embeddedness that PT may benefit from (even if transferring its technological solutions abroad). Again, institutional links have the historical character that supports non-imitability, being difficult to replicate. Nevertheless, as long as this capability may depend on specific human resources (e.g., top-management), it may thus be (partly) acquired, following Barney's (1986) insight on 'strategic factor market.' Notwithstanding, reputation may not be so easily acquired in such market as Barney (1986) suggests, as Dierickx et Cool (1989) point out.

This said, *what should PT do from now to grab this opportunity and which resources and / or capabilities should it develop?* As seen in question 3.3, PT's R&D in-house capabilities (SAPO, PT IS - PT Inovação e Sistemas) is valuable, rare and difficult to imitate *at least at the national context*. Moreover, its location is crucial to address security and data protection natural fears; this is a resource valuable, rare and difficult to imitate. Together, they may give PT a (sustainable) competitive advantage in national context. The recommendation is therefore to leverage those resources and capabilities emphasizing the need of organization in order to deploy and extract rents (Wernerfelt, 1984, Peteraf, 1993). *Organization* is an important attribute (Barney et Hesterly, 2006, Duncan et al, 1998). That is, to deepen its current path, PT should focus on organization as an ability to aggregate, articulate and manage those resources, now explored in a rather unsystematic way. For instance, PT IS is responsible for Medigraf and some other solutions, which are not articulated with others e-health offers. Some kind of verticalization would benefit PT in exploring these internal resources while also building a brand for itself, and creating a common interlocutor when reaching for partnerships and entering in health consortiums. This last recommendation is very important as PT needs to reach for health partners which legitimate PT's positioning and build for PT reputation for e-health. Note that there other resources / capabilities PT has that are relevant to compete in this LoB but are not as valuable or rare, such as its size, integration experience, technical expertise – these are *threshold* resources, needed to compete but not advantageously (Johnson et al, 2008).

In conclusion, PT is already in a good position to address the e-health opportunity in Portugal. And if the company further develops some resources and capabilities, such as organization, and deepens some of others, it may have a first mover advantage. This may prove itself important as it creates a path dependency and historical track hard to imitate as whole.

### **2.7.2. Resolution slides**

The resolution slides can be found in Annex C.

### 3. Conclusion

#### 3.1. Practical implications and contributions

The case study addresses a fast-changing, ever evolving industry, telecommunications'. Thus, it provides a practical tool rich enough to deliver important lessons to student interested in strategy and general management / business administration. Further research may dwell on other opportunities Telcos seeking to counter its declining revenues. The case offers enough material to tell another story on top of it, not focused on health but on cloud computing, e.g. Also, as it provides an overview of the so-called 'e-health opportunity', it may instigate further research on the topic. For instance, one may develop a rationale for the e-health opportunity within another industry, e.g., software developers, given its specific strengths and weaknesses, resources and capabilities. (Companies like Box, which provides sync and share solution to the business segment, are looking to medical imaging as a path to differentiation in highly competitive market.) Or instead, one may go deeper on this analysis to offer a detailed account of m-health still within the telecommunication sector and, say, in Africa, where mobile health solutions are seen an answer to pressing troubles with distant populations.

Finally, Portugal Telecom is *actually* following many of these trends, even if not with the same ambition. Thus, given the industry's and company's background provided in the case study, one may research further and build cases around PT and m-payments, cloud, or M2M.

In conclusion, it is possible to build other case studies from part of this research, depending on the part one picks, as the examples above show. There are plenty of paths for further research, as the industry, the macro-environment and PT are rapidly changing.

#### 3.2. Main limitations and difficulties

The author met obstacles regarding which data should she / he present in the case study. Being a more general, corporate level strategy case study, it required higher level descriptions. For instance, e-health solutions in the telecommunications industry encompass the consumer, business and government segment. Also, regarding the identified enablers, the ageing and digitalization of society, they are both very large in scope and hard to describe in a few paragraphs. Naturally, much of the data collected was left out as there was not enough space to include it all. The case study would be much longer, hindering its actual application in class and students' engagement and learning, which are the case's ultimate goals.

Finally, some data points were left out as they were classified and could not be published here without PT's approval. This constitutes a necessary limitation for the case study.

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- (5) [www.healthportugal.com](http://www.healthportugal.com)
- (6) [www.apdsi.pt](http://www.apdsi.pt)
- (7) [www.apdc.pt](http://www.apdc.pt)

**Annexes**

**Annex A - Analysis tools templates**

**A1 - SWOT analysis**

**SWOT ANALYSIS**

FRAMEWORK TEMPLATE



1 | INSTITUTO UNIVERSITÁRIO DE LISBOA

**SWOT ANALYSIS**

FRAMEWORK TEMPLATE

	STRENGTH	DESCRIPTION	IMPACT
Strengths			<input type="radio"/>
Weaknesses			<input type="radio"/>
Opportunities			<input type="radio"/>
Threats			<input type="radio"/>

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## SWOT ANALYSIS

### FRAMEWORK TEMPLATE

	WEAKNESS	DESCRIPTION	IMPACT
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Weaknesses			<input type="radio"/>
			<input type="radio"/>
Opportunities			<input type="radio"/>
			<input type="radio"/>
Threats			<input type="radio"/>
			<input type="radio"/>

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## SWOT ANALYSIS

### FRAMEWORK TEMPLATE

	OPPORTUNITY	DESCRIPTION	IMPACT
Strengths			<input type="radio"/>
Weaknesses			<input type="radio"/>
			<input type="radio"/>
Opportunities			<input type="radio"/>
			<input type="radio"/>
Threats			<input type="radio"/>
			<input type="radio"/>

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## SWOT ANALYSIS

### FRAMEWORK TEMPLATE

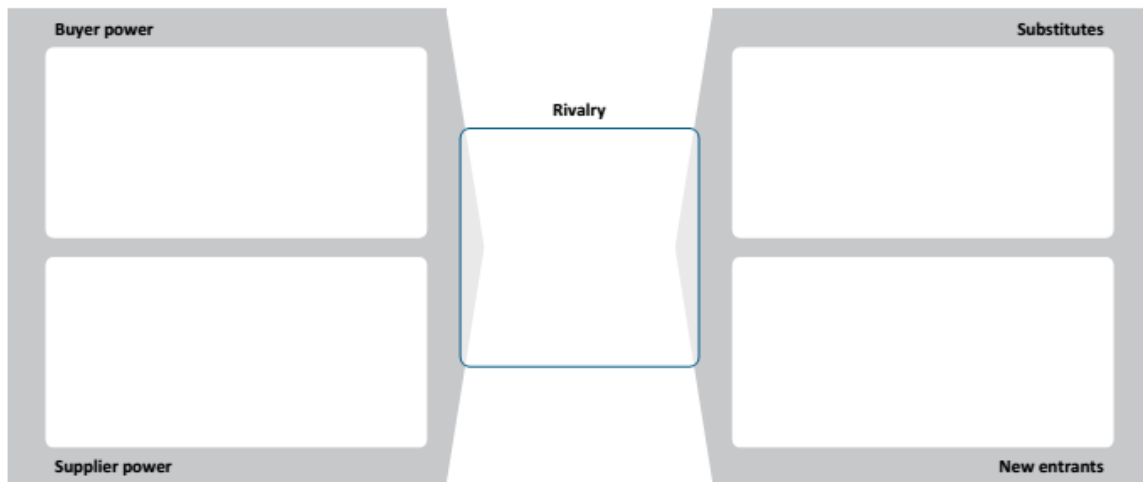
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Weaknesses			<input type="radio"/>
			<input type="radio"/>
Opportunities			<input type="radio"/>
			<input type="radio"/>
Threats			<input type="radio"/>
			<input type="radio"/>

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### A2 - Porter's 5 forces

## PORTER’S FIVE FORCES – INDUSTRY ANALYSIS

### FRAMEWORK TEMPLATE



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## PORTER’S FIVE FORCES – INDUSTRY ANALYSIS

### FRAMEWORK TEMPLATE

	FORCE	DESCRIPTION	IMPACT
Rivalry			<input type="radio"/>
Substitutes			<input type="radio"/>
Buyer power			<input type="radio"/>
Supplier power			<input type="radio"/>
New entrants			<input type="radio"/>

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## PORTER’S FIVE FORCES – INDUSTRY ANALYSIS

### FRAMEWORK TEMPLATE

	FORCE	DESCRIPTION	IMPACT
Rivalry			<input type="radio"/>
Substitutes			<input type="radio"/>
Buyer power			<input type="radio"/>
Supplier power			<input type="radio"/>
New entrants			<input type="radio"/>

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## PORTER’S FIVE FORCES – INDUSTRY ANALYSIS

### FRAMEWORK TEMPLATE

	FORCE	DESCRIPTION	IMPACT
Rivalry			<input type="radio"/>
Substitutes			<input type="radio"/>
Buyer power			<input type="radio"/>
Supplier power			<input type="radio"/>
New entrants			<input type="radio"/>

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## PORTER’S FIVE FORCES – INDUSTRY ANALYSIS

### FRAMEWORK TEMPLATE

	FORCE	DESCRIPTION	IMPACT
Rivalry			<input type="radio"/>
Substitutes			<input type="radio"/>
Buyer power			<input type="radio"/>
Supplier power			<input type="radio"/>
New entrants			<input type="radio"/>

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## PORTER’S FIVE FORCES – INDUSTRY ANALYSIS

### FRAMEWORK TEMPLATE

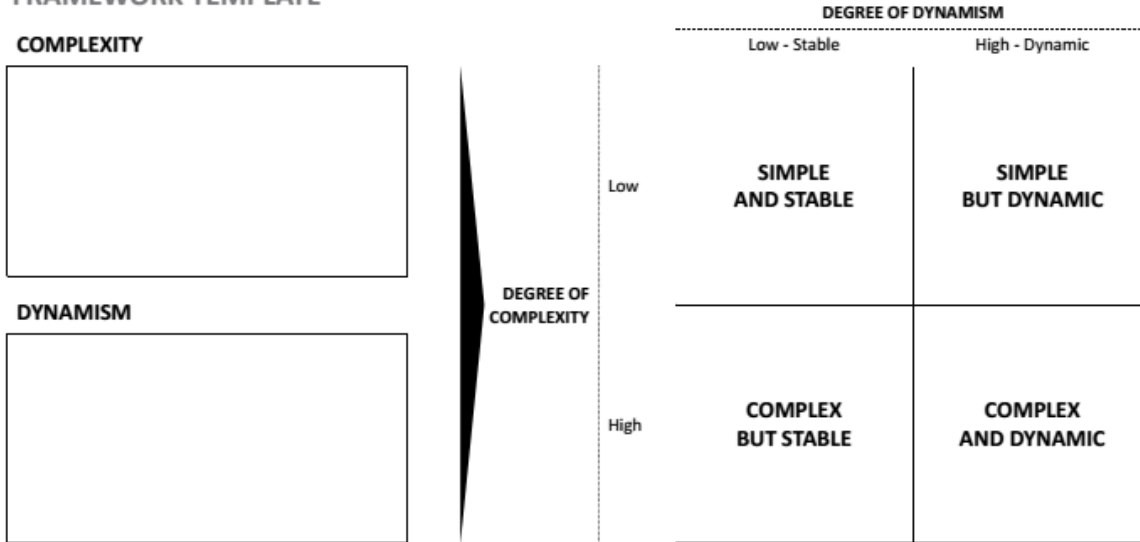
	FORCE	DESCRIPTION	IMPACT
Rivalry			<input type="radio"/>
Substitutes			<input type="radio"/>
Buyer power			<input type="radio"/>
Supplier power			<input type="radio"/>
New entrants			<input type="radio"/>

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### A3 - PESTEL analysis

## ENVIRONMENT CHARACTERIZATION

### FRAMEWORK TEMPLATE



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## PESTEL ANALYSIS

### FRAMEWORK TEMPLATE

PESTEL	FACTOR	DESCRIPTION	DYNAMISM	IMPACT
				<input type="radio"/>
Political				<input type="radio"/>
Economic				<input type="radio"/>
Social				<input type="radio"/>
Technological				<input type="radio"/>
Environmental				<input type="radio"/>
Legal				<input type="radio"/>

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## PESTEL ANALYSIS

### FRAMEWORK TEMPLATE

PESTEL	FACTOR	DESCRIPTION	DYNAMISM	IMPACT
				<input type="radio"/>
Political				<input type="radio"/>
Economic				<input type="radio"/>
Social				<input type="radio"/>
Technological				<input type="radio"/>
Environmental				<input type="radio"/>
Legal				<input type="radio"/>

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## PESTEL ANALYSIS

### FRAMEWORK TEMPLATE

PESTEL	FACTOR	DESCRIPTION	DYNAMISM	IMPACT
				<input type="radio"/>
Political				<input type="radio"/>
Economic				<input type="radio"/>
Social				<input type="radio"/>
Technological				<input type="radio"/>
Environmental				<input type="radio"/>
Legal				<input type="radio"/>

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## PESTEL ANALYSIS

### FRAMEWORK TEMPLATE

PESTEL	FACTOR	DESCRIPTION	DYNAMISM	IMPACT
PESTEL				<input type="radio"/>
Political				<input type="radio"/>
Economic				<input type="radio"/>
<b>Social</b>				<input type="radio"/>
Technological				<input type="radio"/>
Environmental				<input type="radio"/>
Legal				<input type="radio"/>

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## PESTEL ANALYSIS

### FRAMEWORK TEMPLATE

PESTEL	FACTOR	DESCRIPTION	DYNAMISM	IMPACT
PESTEL				<input type="radio"/>
Political				<input type="radio"/>
Economic				<input type="radio"/>
Social				<input type="radio"/>
<b>Technological</b>				<input type="radio"/>
Environmental				<input type="radio"/>
Legal				<input type="radio"/>

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## PESTEL ANALYSIS

### FRAMEWORK TEMPLATE

PESTEL	FACTOR	DESCRIPTION	DYNAMISM	IMPACT
				<input type="radio"/>
Political				<input type="radio"/>
Economic				<input type="radio"/>
Social				<input type="radio"/>
Technological				<input type="radio"/>
Environmental				<input type="radio"/>
Legal				<input type="radio"/>

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## PESTEL ANALYSIS

### FRAMEWORK TEMPLATE

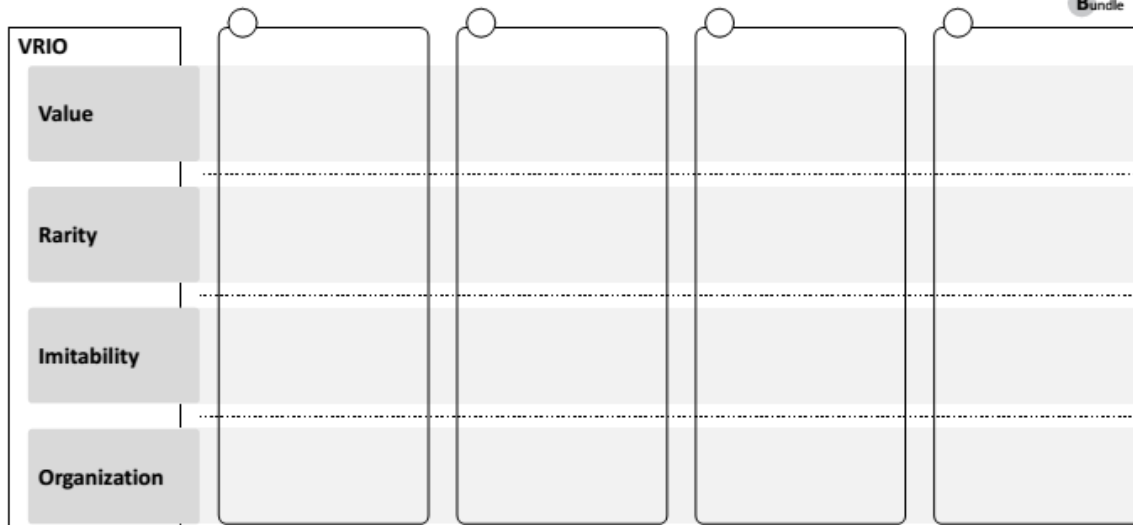
PESTEL	FACTOR	DESCRIPTION	DYNAMISM	IMPACT
				<input type="radio"/>
Political				<input type="radio"/>
Economic				<input type="radio"/>
Social				<input type="radio"/>
Technological				<input type="radio"/>
Environmental				<input type="radio"/>
Legal				<input type="radio"/>

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### A4 - VRIO analysis

## VRIO ANALYSIS

### FRAMEWORK TEMPLATE

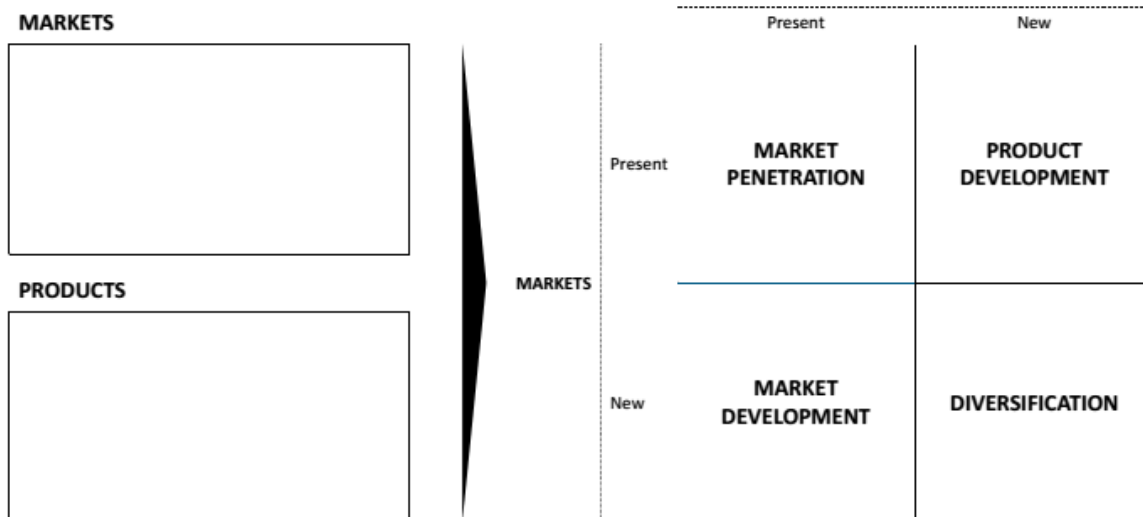


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### A5 - Product-market matrix

## PRODUCT-MARKET MATRIX

### FRAMEWORK TEMPLATE



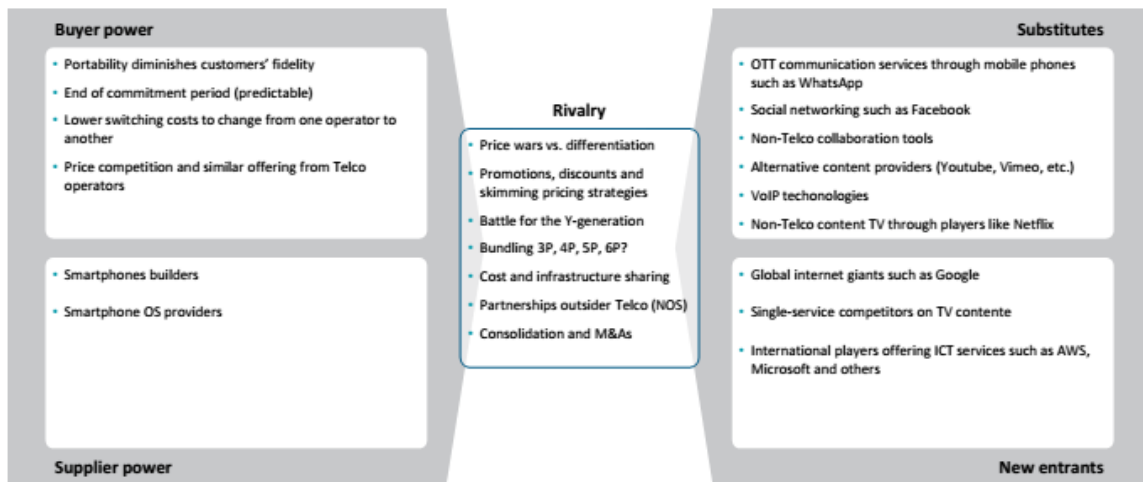
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## Annex B - Support analysis for Case resolution

### B1 - Question 1.1

## PORTER'S FIVE FORCES – INDUSTRY ANALYSIS

### QUESTION 1.1



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## SWOT ANALYSIS

### QUESTION 1.1

	<b>+</b> Positive impact	<b>-</b> Negative impact
<b>Internal</b>	<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Footprint in consumer and business segments</li> <li>• Infrastructure network and value chain position</li> <li>• Ability to deliver end-to-end services guaranteeing quality of service</li> <li>• Ability to upsell services through large force of sales</li> <li>• Large customer base in every segment</li> <li>• Addresses needs present in every end-user and industry</li> <li>• Long customer lifecycles</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Declining revenues in core business</li> <li>• High cost structure due large infrastructure and HR</li> <li>• High levels of debt due ever going investments in infrastructure and developing / introducing new technologies</li> <li>• Legacy systems and legacy infrastructures</li> <li>• Problems still inherited from being State-held on the past</li> <li>• High visibility with potential PR scandals and spill-overs</li> </ul>
<b>External</b>	<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Data tsunami, i.e., ever growing data consumption</li> <li>• OTT services as gateways to internet and thus data consumption</li> <li>• ICT value-added services</li> <li>• Cloud computing</li> <li>• Machine-to-machine</li> <li>• E-health</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Global competition through market liberalization</li> <li>• OTT players and services</li> <li>• Social networking</li> <li>• Internet global players looking for network capability as the last piece in the value chain</li> <li>• Losing face and touch points with end-consumers</li> <li>• Regulation against commitment period</li> <li>• Becoming dumb pipes, i.e., a mere channel to other customer facing services</li> </ul>

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### B2 - Question 2.1

## ENVIRONMENT CHARACTERIZATION

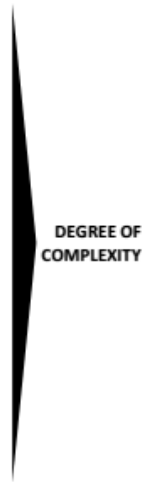
### QUESTION 2.1

#### COMPLEXITY

- Grim demographics affecting
- Technologic evolution in Telco and IT, in which Telcos are now playing an important role
- Economy affecting businesses and consumers, both being Telco customers

#### DYNAMISM

- Technology in core Telco infrastructures
  - successive generations of wireless communications
  - evolution of IP-based network and FFTH
  - SDN (software-defined network)



		DEGREE OF DYNAMISM	
		Low - Stable	High - Dynamic
DEGREE OF COMPLEXITY	Low	SIMPLE AND STABLE	SIMPLE BUT DYNAMIC
	High	COMPLEX BUT STABLE	COMPLEX AND DYNAMIC

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### B3 - Question 2.2

## ENVIRONMENT CHARACTERIZATION

### QUESTION 2.2

#### COMPLEXITY

- Demographics involving long-term transformation of population, types of diseases
- Life-styles and food habits
- Medicine evolution and technology introduction in medical practice
- Legal questions concerning responsibility, accountability and data protection
- Economical and financial issues regarding sustainability

#### DYNAMISM

- Medicine ongoing evolution but involving slow development of new drugs and medicines as it requires several years of research and testing
- Key transformations depend on long-term demographic changes



		DEGREE OF DYNAMISM	
		Low - Stable	High - Dynamic
DEGREE OF COMPLEXITY	Low	SIMPLE AND STABLE	SIMPLE BUT DYNAMIC
	High	COMPLEX BUT STABLE	COMPLEX AND DYNAMIC

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**B4 - Question 3.3**

**VRIO ANALYSIS**

QUESTION 3.3

VRIO	Data center <sup>R</sup>	P&S in place <sup>R</sup>	In-house R&D <sup>B</sup>	IT / IS Expertise <sup>C</sup>
<b>Value</b>	Yes Tier III DC compliant with international requirements	Yes Focused on both B2C and B2B	Yes Focused on both B2C and B2B	Yes Focused on value-added services
<b>Rarity</b>	Yes Due location constraints for health data	No International competitors already have it	Yes But only at a national level, i.e., against Telcos	No Competing IT companies have it but not Telcos
<b>Imitability</b>	Yes It involves heavy capital expenditure	No Value-added but not one of a kind (e.g., patent)	Yes Classical example of path-dependancy	No Competing IT companies have it but not Telcos
<b>Organization</b>	Yes It involves much IT / IS expertise	No Unsystematic	Yes Two independent units, thus not interconnected	Yes Through PT SI

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**B5 - Question 4.1**

**PRODUCT-MARKET MATRIX**

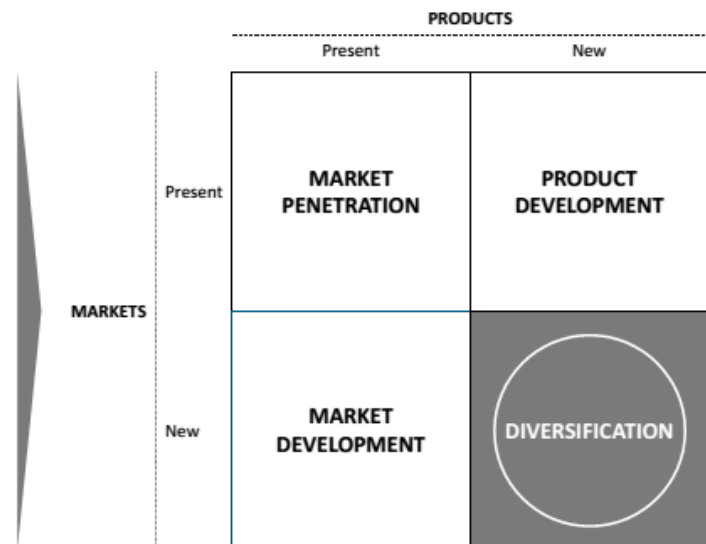
QUESTION 4.1

**MARKETS**

- E-health represents a new market as it addresses radically new needs Telcos did not address before, at least, systematically
- Consumers as patients and businesses as healthcare institutions represent new vertical markets on which Telco may expand their business

**PRODUCTS**

- E-health related products and services imply innovations outside Telco traditional scope such as telematics, imaging, personal health records, etc
- E-health P&S encompasses both healthcare and well-being, applying diverse ICT technologies such as cloud computing or mobile communications (a traditional Telco product, here a resource supporting other, value-added services)



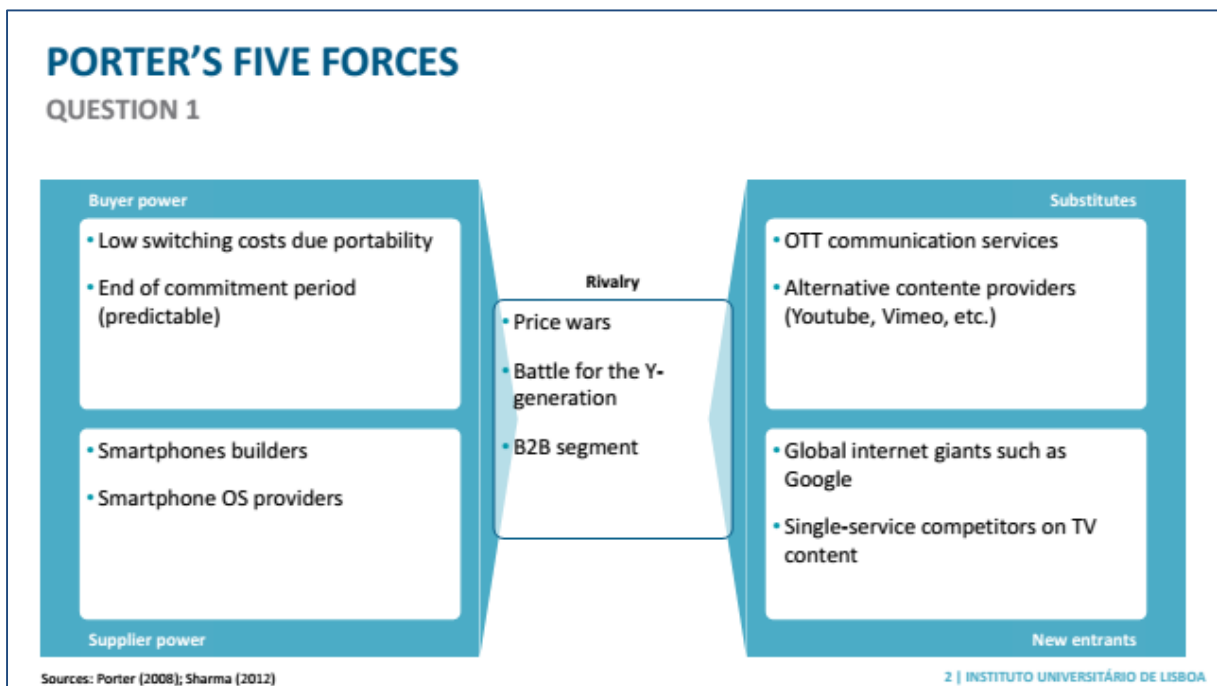
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**Annex C - Case resolution slides**

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# E-HEALTH IN THE TELECOMMUNICATION INDUSTRY AND AT PT

## CASE RESOLUTION





## SWOT ANALYSIS

### QUESTION 1

+ Positive impact

- Negative impact

<input checked="" type="radio"/> Internal	<b>Strengths</b> <ul style="list-style-type: none"> <li>Footprint in consumer and business segments</li> <li>Infrastructure</li> </ul>	<b>Weaknesses</b> <ul style="list-style-type: none"> <li>Declining revenues in core business</li> </ul>
<input type="radio"/> External	<b>Opportunities</b> <ul style="list-style-type: none"> <li>Data tsunami</li> <li>ICT value-added services</li> <li>Cloud computing</li> <li>Machine-to-machine</li> <li>E-health</li> </ul>	<b>Threats</b> <ul style="list-style-type: none"> <li>Global competition through market liberalization</li> <li>OTT players and services</li> <li>Losing face and touchpoints with end-consumers</li> <li>Regulation against commitment period</li> </ul>

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## FOSTER NEW REVENUE STREAMS AND DELAY DECLINE

### QUESTION 1

Sharma (2012: 35)

Telcos are adopting tactical maneuvers to delay revenue decline on traditional businesses, through churn reduction and increasing their customers switching costs, while introducing value-added services in their portfolio

Sources: Sharma (2012), Arthur D. Little et Exane BNP Paribas (2012)

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## ENVIRONMENT CHARACTERIZATION - TELCOS

QUESTION 2

		DEGREE OF DYNAMISM	
		Low - Stable	High - Dynamic
DEGREE OF COMPLEXITY	Low	SIMPLE AND STABLE	SIMPLE BUT DYNAMIC
	High	COMPLEX BUT STABLE	COMPLEX AND DYNAMIC

**Current environment**

- **Complex** as there are several factors able to interfere in Telcos lines of business, within a industry highly regulated
- **Dynamic** as it is a technology and innovation driven industry
- **Factors** such as bad PR, population economic conditions and demographics, digital services adoption and consumption, new ICT technologies, and data privacy and other regulations have an important impact on Telcos

Sources: Duncan (1972); Curwen et Whalley (2004) 5 | INSTITUTO UNIVERSITÁRIO DE LISBOA

## ENVIRONMENT CHARACTERIZATION - HEALTHCARE

QUESTION 2

		DEGREE OF DYNAMISM	
		Low - Stable	High - Dynamic
DEGREE OF COMPLEXITY	Low	SIMPLE AND STABLE	SIMPLE BUT DYNAMIC
	High	COMPLEX BUT STABLE	COMPLEX AND DYNAMIC

**Current environment**

- **Complex** as there are several factors able to interfere in healthcare, from demographics to new medicines and politics
- Relatively **stable** as it is depends on some long-term phenomenons
- **Factors** such as rising costs of national health systems, chronic diseases, higher and higher medicine costs, (non-)healthy lifestyles, new technologies, and privacy have an important impact on healthcare

Sources: Duncan (1972); Curwen et Whalley (2004) 6 | INSTITUTO UNIVERSITÁRIO DE LISBOA

## E-HEALTH RELATED P&S AS A NEW TELCO REVENUE STREAM

### QUESTION 2



Sources: Sharma (2012); companies websites

- Telecom operators such as AT&T, Deutsche Telekom, Orange, Telefónica, Telstra, or Verizon offer a **wide range of products and services** related with healthcare:
  - Collaboration platform, insurance, telehealth, telematics, m-health, homecare institutions
  - Solutions for patients with specific diseases such as Alzheimer or diabetes
  - Kiosks to provide health information to hospital visitors
  - Healthcare fraud management

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## KEY ISSUES AT PT – INTERNAL ANALYSIS

### QUESTION 3

#### Plateau ahead on the consumer segment (B2C)

- Commoditization and **competition based on price**
- Difficulties in **differentiation**
- End of **commitment periods(?)**
- Past **switching costs** for customers are losing their force

#### Declining revenues on the business segment (B2B)

- **Market share too high and doomed to decline**
- **New(?) Telcos competitors in Portugal:**
  - NOS Empresas
  - Vodafone

#### New revenue streams and future growth

- **Market penetration**
- **Product development**
- **Market development**
- **Diversification:**
  - ICT value-added services
  - Cloud computing
  - e-health, m-payments, M2M

PT is trying to protect its market share in B2C, focusing on differentiation and new switching costs while not following price wars. In B2B PT is moving to value-added ICT services focusing on new revenue streams to counter Telcos' decay

Sources: Porte (1996); Porter (2008); Ansoff (1987); Boddý (2008)

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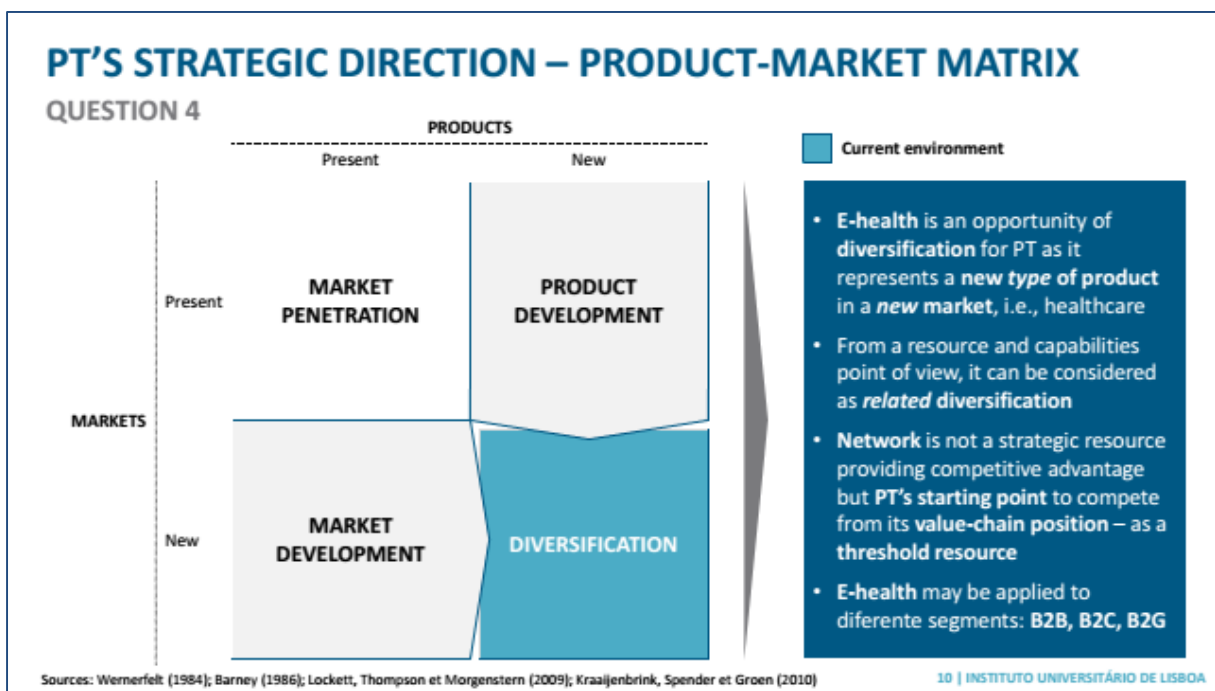
### VRIO ANALYSIS IN A LOCAL CONTEXT

Resource  
Capability  
Bundle

**QUESTION 3**

VRIO	Data center <sup>R</sup>	P&S in place <sup>R</sup>	In-house R&D <sup>B</sup>	IT / IS Expertise <sup>C</sup>
<b>Value</b>	Yes Tier III DC compliant with international requirements	Yes Focused on both B2C and B2B	Yes Focused on both B2C and B2B	Yes Focused on value-added services
<b>Rarity</b>	Yes Due location constraints for health data	No International competitors already have it	Yes But only at a national level, i.e., against Telcos	No Competing IT companies have it but not Telcos
<b>Imitability</b>	Yes It involves heavy capital expenditure	No Value-added but not one of a kind (e.g., patent)	Yes Classical example of path-dependency	No Competing IT companies have it but not Telcos
<b>Organization</b>	Yes It involves much IT / IS expertise	No Unsystematic	Yes Two independent units, thus not interconnected	Yes Through PT SI

Sources: Barney (2001); Duncal et al (1998); Peteraf (1993); Barney et Hesterly (2006); Dierickx et Cool (1989) 9 | INSTITUTO UNIVERSITÁRIO DE LISBOA



## PT’S KEY RESOURCES AND RESOURCES TO ADDRESS E-HEALTH

### QUESTION 4

#### Competitive advantage against other national Telcos

- In-house R&D through PT SI and SAPO
- ICT and system integration expertise
- Institutional links and extensive footprint on larger companies
- Infrastructure and SLAs

#### Competitive advantage against non-Telcos international players

- Data center location and compliance with top international requirements  
— addresses concerns on sensitive data location and security
- Local embeddedness partnerships and alliances

#### Organization and verticalization

- **Develop an unit** to combine resources and capabilities while managing partnerships
- **Single interlocutor** to partners
- **Build reputation for (e-)health services** through its services and partnerships, which provide **legitimacy**

PT is already in a good position to address the e-health opportunity in Portugal. If the company further develops some resources and capabilities such as organization and deepens some of others, it may have a first mover advantage

Sources: Wernerfelt (1984); Barney (1986); Dierickx et Cool (1989); Peteraf (1993); Johnson et al (2008); Barney et Hesterly (2006); Duncan et al (1998); Peng (2001)

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