ISCTE ◈ Business School
Instituto Universitário de Lisboa

THE STRATEGIC ROLE OF MOOCS IN EDUCATION AND ITS EFFECTS ON THE COMPETITIVE RECOVERY OF PORTUGAL

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"Competitiveness is not a sprint, it is a marathon, where the first results only show up in five, ten or more years"

Michael Porter

ABSTRACT

Competitiveness and competition are drivers that guide our society during this Era: competition between countries, competition between firms, competition at work to achieve promotions, competition for vacancies in the best universities, competition for the best partners and even the beginning of life starts with a competition.

The main objective of this project is to study if MOOCs (Massive Open Online Courses, an innovation in the education field brought us by technology) can help Portugal in its Competitive recovery.

To achieve this goal it was important to study in depth the correlation between competitiveness and Education and if the Portuguese Language could have a leverage role.

Primary research in form of a survey and in-depth interviews were made, adding to desk-based research of updating Porter's study of Portuguese competitiveness to the days we live and other assessments such as how can MOOCs work and which business models can be effective.

The intended results were to prove that MOOCs could have a strategic role on the economic recovery of the country.

The main findings also concluded that the Portuguese language could leverage MOOCs into an exportation strategy of Portuguese educational contents.

Key-words: Competitiveness, MOOCs, Portuguese economic recovery, Strategy, Education, Portuguese language

JEL Classification System: I – Economics of Health, Education and Welfare, 2 – Education, 29 - Others

RESUMO

A Competitividade e a competição são fatores que marcam e guiam a sociedade da nossa Era: competição entre países, competição entre empresas, competição no trabalho para ser promovido, competição para as vagas nas melhores universidades, competição pelos melhores parceiros e até o início da vida tem origem numa competição.

O principal objetivo deste projeto é estudar se os MOOCs (Massive Open Online Course, uma inovação no campo da educação proporcionada pela tecnologia) podem ajudar Portugal na sua recuperação ao nível da competitividade.

Para atingir este objetivo é importante estudar em profundidade a correlação entre Competitividade e Educação e ainda e se a Língua Portuguesa poderá ter um papel de alavancagem.

Um questionário e entrevistas em profundidade foram realizadas de forma a obter insights que pudessem permitir validar estas hipóteses, aos quais se soma a atualização do estudo de Michael Porter sobre a Competitividade Portuguesa para os dias de hoje entre outros estudos como por exemplo o *modus operandi* correto dos MOOCs em Portugal e que modelos negócios permitiriam a viabilidade destes.

Os resultados pretendidos baseiam-se na prova de que os MOOCs podem ter um papel estratégico na recuperação económica do país.

Outra conclusão a destacar é a importância que a Língua Portuguesa pode ter a alavancar os MOOCs para os países que falam Português e a abertura que isso pode dar para a exportação de conteúdos educativos em Língua Portuguesa.

Palavras-chave: Competitividade, MOOCs, Recuperação económica Portuguesa, Estratégia, Educação, Língua Portuguesa

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EXECUTIVE SUMMARY

Portugal is currently facing an economic crisis deepened by the austerity from the public spending cuts and tax increases imposed by the three external institutions referred to as troika (ECB, IMF and European Commission) as a consequence for the national bailout.

This economical crisis contributed even more to an historical lack of competitiveness of the country which needs to be addressed. This project assumes that Education is one of the main causes of the historical lack of competitiveness and tries to find a solution for that. It also assumes that the Portuguese Language can have a role on potentiating and escalating educational contents in Portuguese.

Some authors reject the notion of competitiveness adapted to countries (Krugman, 1994) while others believe in its use (Budd and Hirmis, 2004; Bristow, 2005; Camagni, 2002; Cellini and Soci, 2002). In assessing the competitive advantage of nations Michael Porter is seen as one of the key-note influencers.

The literature review assessed what makes a country competitive and makes an analysis of the twenty micro-factors more important to Portuguese Competitiveness. Education is one of the factors. This is corroborated by Porter in the application of his diamond Model to Portugal in 1994 and then its soft update in 2002. Vinhas da Silva (2010) also pointed Education as one of the pain points of the country to growth and be competitive.

The relationship between competitiveness and education is not soothing: Sahlberg (2006) says there is no strong correlation between the quality of education and competitiveness because countries that top the competitiveness ranking are not always the same that top the education rankings. On the other hand, Sala-i-martin *et al* (2004) conducted a study which concluded that primary schooling was the most roust influence factor on growth in GDP per capita in 1960-1996 in comparison with other 66 explanatory variables for a sample of 88 countries. In other study, Verner (2007) concluded that whenever there is an increase in expenditure on education or R&D (*ceteribus paribus*), competitiveness (HDI) also increases. Hanushek and Woessmann (2009) tested positively that better schools lead to more growth.

The literature review also assessed a case-study about the Finnish case of exportation of Education and the topic of Education costs, a widely discussed matter on the society.

Education has not changed through the years in terms of method. Anant Agarwal, CEO of the nonprofit MOOC platform provider edX emphasizes "*It is pathetic that the education system has not changed in hundred years*". Nonetheless, in 2012 the New York Times declared the year of the MOOC. MOOCs are Massive Open Online Courses and are said to have the power to change Education since they allow everyone who has access to an internet connection to interact with contents from the best universities and professors all over the world. MOOCs are also said to change the paradigm of Education in terms of putting the student in the center of decision giving the power to choose which contents, where, when and how adding to the fact that its scalability and openness open doors to people who had no access in the past to high quality and varied contents.

To assess if the Portuguese Language through Education can have a strategic role on the recovery of Portuguese competitiveness, and if the implementation of MOOCs in Portugal is sustainable, worthwhile and exportable, a survey, in-depth interviews and desk-based research were conducted.

It was important to address mainly four points:

Firtly, to validate that the main findings of Porter's analysis in 1994 and in its 2002 soft update were still true, especially in what Education is concerned. Secondly to assess if MOOCs could have success in Portugal and what business models could be used in the country. Thirdly to analyse the main problems of Portuguese Education and discuss alternative means of financing.

Last but not least to research about a possible market for educational contents in Portuguese and analysis of the role that MOOCs can have in this market.

The main findings of this project are that Education, (that is correlated with competitiveness) is still a problem of the country. MOOCs can make a difference in Portugal since most of the students are not aware of the concept but when explained assume can change the paradigm of Education. Students point as preferred business models for MOOCs problem-sponsored learning, sponsored courses, data analytics for recruitment, engagement with the real world, and product placement. These business models go in line with the alternative ways of financing suggested during the in-depth interviews, mostly based on a higher involvement of companies in firms in Education.

These conclusions highly recommend a deeper study on how to implement MOOCs in Portugal and also found out that it could be interesting to create an Educational Portuguese-speaking Community that could bring more benefits than just the sharing and exportation of contents. A pilot project involved with Horizon 2020 could turn into an interesting project.

A national educational project can only really advance if all the society stakeholders are engaged and especially if there is political will materialized in an agreement signed by all the political parties with presence in the parliament turning this into a project with national interest.

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PURPOSE OF THE RESEARCH

In the second decade of the 21st century, Portugal, a country with almost 900 years is dealing with many difficulties. The purpose of this study is to address one of the difficulties with more impact in the country's competitiveness: Education. The timing could not be better: Portugal is showing some signs of recovery, and 2015 will be a year of changes. Adding to this the revolution technology has created has finally arrived to Education.

The primary concern of this research is to study the strategic role that MOOCs (Massive Open Online Courses, an innovation brought us by technology) can have in Education and on the competitive recovery of Portugal. To do this it is important to deep-dive in the concept of National Competitiveness, what challenge does it represent to Portugal, how National Competitiveness is correlated with the Education in countries and how the intangible asset that is the Portuguese Language can be leveraged.

This breakdown leads us to the exploration of the micro-economic factors and Porter's diamond model applied to Portugal and to the discussion of the state-of-art of Education in Portugal.

This dissertation will deal with new trends on Education like MOOCs that can be part of the solution to the competitive recovery of the country.

This investigation represents an attempt to address several questions like the strategic role of Portuguese Language in the recovery of the country, a successful implementation of MOOCs in the country and then a strategy for exporting MOOCs in Portuguese to other Portuguese-speaking countries.

To achieve this specific objectives in-depth interviews and a survey were conducted in order to prove that MOOCs can have a strategic role on changing the paradigm in the Portuguese Education and consequently improve National Competitiveness.

PART I

BACKGROUND

Portugal is a small country located in South-Western Europe, on the Iberian Peninsula, considered to be a developed country, the world's 27th in terms of quality of life as of 2010 (Human Development Index – UN) and the 25th in Bloomberg's Global Innovation Index. According to its last census Portugal has 10 562 178 people (80th in the world) and it is the 111th country in the world by area of land with an EEZ (Economic Exclusive Zone) forty times its continental size, one of its main potentialities. According to the International Monetary Fund, Portugal has the 45th highest GDP in the world as of 2012 – 212,720 Million $USD meaning a GDP per capita of 20,179$USD.

In terms of Development Index, Portugal is ranked 43th in the world as of March 2013 (with 0,813), and scores 34.2 in the Gini coefficient, a result considered to be medium but that makes Portugal one of the worst in the European Union, as far as income distribution is concerned.

"*Portuguese living standards increased greatly in the 25 years after the democratic revolution of April 1974*" (Robert M. Fishman, NYT 2011). In the 1990s labor productivity increased rapidly, private enterprises deepened capital investment with help from the government, and parties from both the center-right and center-left supported increases in social spending. By the end of the century the country had one of Europe's lowest unemployment rates (Eurostat).

"*The optimism of the 1990s gave rise to economic deficits and excessive spending. Skeptics of Portugal's economic health, point to its relative stagnation from 2000 to 2006. Even so, by the onset of the global financial crisis in 2007, the economy was again growing and joblessness was falling. The recession ended that recovery, but growth resumed in the second quarter of 2009, earlier than in other countries.*" (Fishman, 2011)

On the 16th of May 2011, a €78 billion bailout package for Portugal (which became the third Eurozone country to be rescued) was approved by Eurozone leaders, with a loan split between the IMF, the European Financial Stability Facility (EFSF) and the European

Financial Stabilization Mechanism (EFSM), a 3-way partnership baptized as "troika". To receive the loan in order to solve its sovereign debt crisis, Portuguese authorities had to compromise to a rescue plan that included many cuts on state spending, several austerity measures, including benefit cuts and tax increases. The memorandum of understanding, on specific economic policy, conditionally imposed troika's ideas about austerity, with the country being evaluated every quarter about its performance in achieving troika's targets of cut on spending, increases on tax-revenue, and public assets sales.

On the 34 pages of the Memorandum the word "competitiveness" only shows up seven times, two related with company taxation, three with the labour market and its flexibilization, and two with wages cut to improve firm's competitiveness.

Private investment is increasing while the government is challenged of having to recover an economy with a history of poor investments. This thesis' purpose is to find a solution for the small amount available for Public Investment, anchored on the competitive advantages of the country.

Portuguese last century's economic history explains some issues the country is now trying to correct. When in 1910 monarchy was replaced by a republic form of government Portuguese lived one of the most unstable moments in the country's history (Douglas L. Wheeler, 1978). In sixteen years, forty-five different governments, raised fiscal deficits and financed them by printing money and taking on foreign loans. This culminated in hyper-inflation and the forced suspension of the payments of the loans. The cost of living in 1926 was thirty times higher than the cost of living in 1914 (Wheeler, 1978). Fiscal madness and galloping inflation rates led to the outflow of capital. The domestic investment was not enough, allied with the increase of workers on the public sector that chose to abandon their work on the industries and contribute to the state (Wheeler, 1978).

In 1926 a military revolution occurred and a dictatorship regime became in charge of the country's destiny but was not successfully managing the country's turnaround. António de Oliveira Salazar, once a professor at Coimbra University, and an opinion leader in the society in matters of inflation, was invited to be the Finance Minister. He accepted with the condition of having the power to veto. This was the first step to implement the "*longest European system of authoritarian survival*" (Wheeler, 1981).

Salazar's economic policies had as priority the re-establishment of budget and monetary equilibrium, to change the image of Portugal as a non-reliable country (Wheeler, 1981). Since the 30's until the beginning of 1960, Portugal registered almost every year a surplus on the current accounts making it possible to increase public investment without any kind of external financing. However, in order to do this, Salazar pursued a path with two major pillars: deep economic regulation by the state and support private ownership of production facilities. This meant protectionism measures, backed up by large industrial and finance groups. These groups accepted the bureaucratic control in exchange of barriers for new entrants or the creation of some monopolies, minimal public property and wage control. This industrial conditioning was in fact stated by a law in 1931 that granted the state the right to decide the creation or re-location of industrial plants, investment on machinery and equipment of a company (Howard J. Wiarda. 1980). Wiarda underlined the corporatist side of the state "*work and capital, in fact all the corporative institutional network, were subordinated to the government*".

Portugal was ruled over the God-Homeland-Family motto materialized for the people in the 3 F's – Football, Fado and Fátima. Salazar's propaganda and influence in education (creation of state associations to evangelize the young, and the difficulties on the access to graduate studies) kept the population ignorant.

During the Second World War the regime successfully maintained the country at a neutral stance, although negotiating with both parts, selling wolfram to the German, and negotiating the Lajes base in Azores with the allies (Fernando Rosas). This was the period when Portugal acquired most of its gold reserve, still nowadays, the 14th largest in the world (World Gold Council). After World War II, the Marshall Plan was announced. Contrary to what it is believed, Portugal participated actively on the negotiations since its beginning in 1947 (Maria Fernanda Rollo, 1994) in Paris and it was a founding member of the OECD (Organization for Economic Co-Operation and Development). The Portuguese government started by refusing the possibility of accepting American financial aid. However, when faced with the worsening of the economic and financial conditions of the country, in 1948, and also with problems with the escudo, Portuguese's currency at the time, an historical decision of entering the Plan was took, although that entrance was camouflaged (Maria Rollo, 1994). Portuguese's active participation in the Marshall Plan played an "*important role on the structuration of controlled process of economic development*" (Maria Rollo, 1994), with an effort to modernize the economy with industrial incentives, public investments, the opening of the economy to

foreign investors and especially on the rise of new trade associations. This was a shift on Portugal's isolation from the rest of the world. In 1950, Portugal had an income per capita lower than 200 USD (today's prices) and 47% of the population worked in agriculture, with cork, wolframium, wine, wood and canned fish accounting for more of 70% of exports (Wheeler, 1981). In 1960 the GDP per capita in Portugal was 38% of the average of the twelve countries that belonged to the European Community. On the 1960's, with the creation of organized private groups, development plans were created and there was an increase on investment and a progressive opening to international trade. A positive turnaround took place in the tourism sector and emigrants' money originated a balanced economy. In 1968 the GDP per capita was at 48% of the average of the EC (Wheeler, 1981). Salazar's politics in the end of the 60's were changing the country. In 1968, Salazar was replaced by Marcello Caetano due to illness. The "Marcellist Spring" – designation of the first two years of Caetano in office created an expectation of a deep change in Portugal. In the beginning of the 70's, the per capita income had increased to 900 USD and only 1/3 of the population was working at agriculture, with more than 60% of the exports being manufactured products. However, with the war in the colonies and the associated costs rising, combined with a new immigration vague, the gap between Portugal and other European countries was increasing every day, associated with chronic rural exodus and deep regional inequalities (Wheeler, 1981).

Allied with a partial political opening, economically the country was even more opened to foreign investment with the end of the industrial conditionalism and the launch of big public investments, like the projects of Sines and Alqueva. Although this constituted an important step, the academic crisis, the carry-over of the war, the refuse to adopt deeper reforms (suggested by the Liberal Wing) and associated with the increasingly inflation due to the oil crisis of 1973, lead the people to dissatisfaction and culminated on the Carnation Revolution of 25th of April 1974.

With the Revolution, a new constitution was approved, censorship was forbidden, freedom of speech was guaranteed, political prisoners were freed and the main institutions of the new state were abolished. Subsequently, the Portuguese colonies were given independence. Nonetheless the first two years after the Revolution were not stable for Portugal. The country had six provisory governments, the result of a strange co-habitation between military forces and civilians' governments. Ideological changes in this two years, normal in a process of fast democratization of a country, made the goal of the country change through socialism, communism and others, creating great pressure for nationalizations, higher wages, and

different power relationships in the hierarchy at companies between workers and employers. After 1975, socialism roots were felt not only on the Portuguese Constitution (where since its first approval in that year until now incorporated the sentence "to create the conditions to establish a socialist society") but also in some of the most important decisions taken in those years: nationalizations towards the creation of a heavy welfare state focused in education, social security and the health sector. In 1977, Portugal had to call the IMF for the first time: adding to a world recession, Portugal had an unemployment rate of 7% and growing, energy prices were rising, goods rationed, fast-growing inflation, political instability and a devaluated *escudo*. The loan was equivalent to 111 M € in current prices, that came with tax raise and wage cuts. In 1983 with an unemployment rate above 11%, a rising external debt due to the raise of international interest rates and facing a recession and commercial deficits Portugal had to ask for another loan valued at 555 M € in current prices (IMF.org) With the loan came more cuts, especially focused on the public sector, which aided to stop the price raise.

In 1986, Portugal turned into a member of the European Economic Community, finishing a process that started in 1977. Being part of the European Community meant access to more funding, as Portugal was in a worst position in comparison with other countries. It also meant that the young Portuguese Democracy could now have some reasons to settle, bringing economic prosperity and a new sense of confidence on the population. Social rights like housing, healthcare, education and others improved accompanied by an economic growth and the rise in domestic consumption. Nevertheless at the exports level Portugal lost its weight (INE).

Between 1986 and 1991 the Portuguese economy grew at an annual rate of 5,4%, the real growth of wages was more than 5%, domestic consumption rose at 4% and unemployment lowered from 10,4% to 4,8% (INE). The first phase of privatizations started in 1989 and with it, big sums of foreign investment came into the country, in addition to the structural funds from the EEC. Between 1992 and 1998 Portuguese GDP grew at annual rate of 2,8% converging with the European GDP per capita and the unemployment rate floated between 8% and 5% in 1998 (INE).

In 1999, the adoption of the Euro (although the physical circulation only started in 2002) eliminated the Portuguese currency autonomy with the impossibility of value or devalue the currency to gain competitiveness in the world market and to limit imports. This added to the

mandatory rules of the Maastricht Treaty (budget deficit below 3% of GDP, public debt below 60% of GDP and inflation rate controlled) vanished Portuguese capability to be more competitive. Between 1999 and 2010 Portugal grew at rate of 0,6% and the convergence with the Euro-zone GDP became harder to obtain. Meanwhile, the commercial deficit of 10M € in 1986 was now negative into approximately 16.400 M€ (BdP). This was the situation that led Portugal into its third intervention of the troika and constitutes our starting point.

LITERATURE REVIEW

1. What makes a country competitive

1.1. National competitiveness

In the management and strategy study fields various models of assessing national competitiveness are discussed but none has gained traction and defeated all the others. The discussion can trace back to Adam Smith (1776) and David Ricardo (1817) with the first notions about the wealth of nations and comparative advantages. In this world, competition is a core value at any stage. "*The net effect of this competition is that efficient or innovative firms are more likely to increase their market shares, lower their average costs, and reduce prices for customers*" (Greene *et al, 2007*). The world believes that competition guides markets towards efficiency and in the direction of improvement and innovation of services and goods in order to survive.

This notion of competition is mostly applied to markets but also to countries. Paul Krugman (1994) rejects the usage of the term "competitiveness" in a national context. However, nations are usually treated like companies: assuming that they have similar products and act in the same market. These notions of firm-level competitiveness regarding countries have widely been used. Several authors (Budd and Hirmis 2004, Bristow 2005, Camagni 2002, Cellini and Soci 2002) assert that nations can be competitive at national and regional level fostering policies focused in firm-level competitiveness. The USA, Japan and UK have been compared to enterprises (Kitson *et al*, 2004). Nonetheless, Paul Krugman (1994) disagrees: "*... the major industrial countries, while they sell products that compete with each other, are also each other's main export markets and each other's main suppliers of useful imports*". This view of countries as companies neglects the structure of exports and the degree of dependency of these products on the world market (Boltho 1996). Natural resources are not

equally distributed, limiting trade and favoring some nations. Van Santrum (1986), Krugman (1994), McFetridge (1995) reject the usage of competitiveness at a national level arguing countries do not engage in trade as in a zero-sum game. "*National economies do not go out of business such as uncompetitive firms*" (Kitson *et al,* 2004).

Although there is some uncertainty about measuring national competitiveness there are four concepts of national competitiveness: "*the ability to sell, the ability to earn, the ability to adjust and the ability to attract*" (Thomas Berger, Journal of International Business and Economy, 2008). The concept of competitive advantage of nations is defined as a way to benchmark countries relatively (Berger, 2008).

1.2. The competitive advantage of nations

Porter stated that the future would be the development and sophistication of companies and industries. He believes that regions and nations do not compete, firms do. To assess this, he created a variant of his Diamond framework, which he called the "National Advantages Diamond". Producing a high and rising standard of living is the main economic objective for every nation (Porter, 1990). This standard of living relies on productivity, defined as the "*value of the output produced by a unit of labour or capital*" (Porter, 1990). This is why Porter chooses to refer to the term "competitive advantages" rather than "competitiveness".

To analyse this, Porter combined microeconomic and macroeconomic elements applying his model on firms on a regional/national dimension, creating clusters. "*The incorporation of firms into place-based networks involving trust, reciprocity, loyalty, collaboration, co-operation and whole raft of untraded interdependencies*". (Taylor, 2005).

However, there is some criticism about Porter's model. Rugman and D'Cruz (1993) implemented a Double-Diamond model combining the domestic diamond with that of a relevant economy. To correct multiple valuations of factors Moon *et al* (1998) introduced the generalized double diamond (GDD) model that incorporates the domestic and global diamond allowing analyses of domestic and international perspective in a single model (Kim 2006).

Another criticism regarding Porter's model relies on clusters and their boundaries. According to Martin and Sunley (2003) companies must be geographically close to each other or have visible links, lacking industrial and geographical clear boundaries. However the strength of those links and how specialized they need to be to create clusters are still not well-defined,

not only in Porter's diamond but also on the GDD. In relation to the Diamond model and multinational companies, Dunning (1993) remembers that the "*geographical constituency has to be established on very different criteria*".

The following illustrates the four main determinants of competitiveness:

Figure 1 – Porter's Diamond
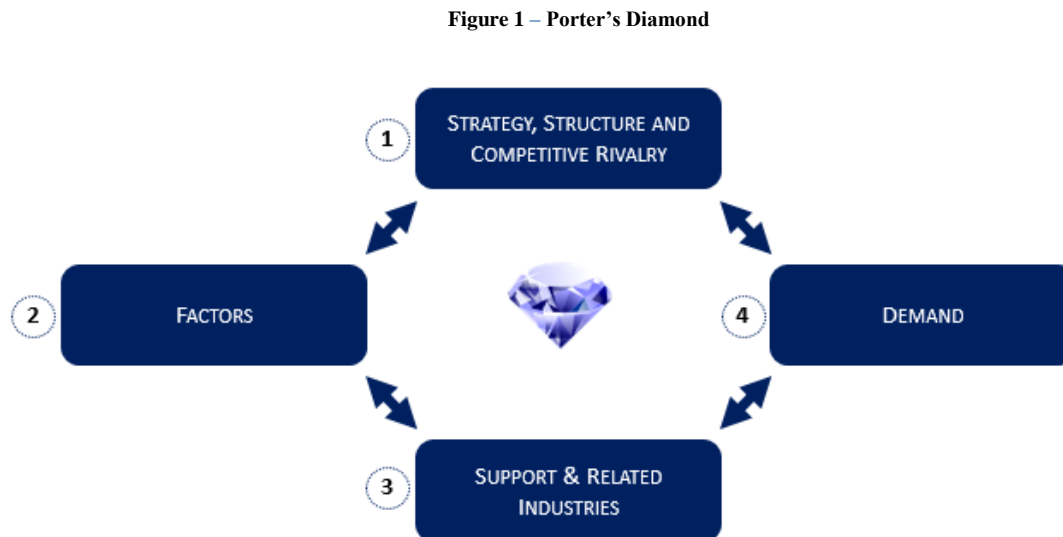
Source: Michael Porter. 1989. The Competitive Advantages of Nations

1) Strategy, Structure and Competitive Rivalry:
   a. Local context that allows strategies, organizational and management processes that support innovation.
   b. Individual objectives meet corporate goals and are supportive to each other in a constant investment.
   c. High competition between local rivalry that put pressure on innovation and internationalization.

2) Factors:
   a. Knowledge, know-how, technology, specialized infra-structure, capital
   b. Specific pressures created by basic factor disadvantages (eg. Low level of specialization of the workforce) that incentive investment and innovation.

3) Support & Related Industries:
   a. Local suppliers capable of specialized inputs (components, machinery and services) essential components to the innovation of the industry.
   b. Local competitive companies in industries related to technology, aptitudes, or clients.

4) Demand:

8

a. Presence of local demanding clients that put pressure on companies to innovate with sophisticated needs representative of global trends.

These four components of competitiveness are a dynamic system in which the total is more than the sum of the parts. The capability to benefit from one of the attributes relies on the result of the other attributes.

Relevance for this study: National competitiveness is the umbrella that links all the main themes of this thesis: Competitiveness, Portugal, Education, MOOCs and Portuguese language. To assess what makes a country competitive, Porter is the reference with the added value of having applied the diamond model to Portugal (this will be approached in the sections below)

2. Portuguese competitiveness

2.1. Micro-Analysis

Portugal's current situation is derived from a serious of conditions and facts. Some are the result of natural evolution, some are the result of erroneous public management, other of strategic mistakes. (Godinho, 2010) has been one of the main authors to discuss Portuguese problems in a structured way. He established in his book eight main problems: Economics, State restructuration, Healthcare system, Education system, Cultural Patrimony system, Justice and Security, Emigration and Planning.

In 2011 a think-thank platform for sustainable growth was created in Portugal: Plataforma para o Crescimento Sustentável (PCS). In December 2012 PCS presented a report for Sustainable Growth called "Uma visão pós-troika" with 27 strategic challenges for the country. Composed of more than 400 influent members of the Portuguese society, they identified the following internal challenges to unleash the country's growth potential:

1 & 2. Demographics & Social Security: The Portuguese demographic evolution in the last decades is remarkable in such indicator as the mortality rate and the child mortality rate that show one of the lowest values in Europe (Eurostat). The fecundity rate is one of the lowest in Europe (Eurostat). The Portuguese population is ageing rapidly and the generation renewal is no longer guaranteed, with the age pyramid inverting (Maria Rosa, 1993). This represents a considerable problem for a country with a welfare state, based in younger generations subsidizing the older generations. "*It is clear that part of the financial problems for the public pensions exist just because the systems are maturing... Inaction now will inevitably condemn*

the current generation of workers to face much higher contributory rates and/or the current beneficiaries to lose in some way part of their benefits" (Alfredo M. Pereira 2001).

(See Appendix 1: Fecundity rate; Appendix 2. Portuguese age pyramid evolution)

3. Energy: It is important to face climate changes and develop an economy of low carbon emissions to help reduce the country's fossil imports. In 2005, some effort was put into renewable energies, making the country pass from an 87,2% dependence index to 76,1% in 2010 (PCS research). In 2011 7,100 M€ of energetic products were bought from sellers outside the country. This represented a 27,7% in comparison with 2010 (PCS research). PCS defines as a goal to achieve 60% of renewable energy produced in Portugal by 2020. Considering the current economic situation it will be difficult for Portugal to achieve a dependence index below 40%.

(See Appendix 3: Energetic dependence)

4. Industrial competitiveness and transition to the information society: The Portuguese economy reveals low specialization patterns, only connected with traditional industries and based on competitive advantages leveraged on low labour costs' and the abundance of some natural resources (textile and forest sector, such as cork). There are only a few competitiveness poles. The country's productivity level is one of the lowest in the European Union and so it is with no surprise that the wages are also some of the lowest of the EU (Eurostat). This is not only a matter of education of the population, but also the acquisition of the right tools and machinery to produce. According to the Eurostat and Pordata, in 2012, considering the EU-27 (as the index = 100) the average productivity per hour in Portugal is 64,3, a little more than half the value of Germany with 124,8 (Pordata).

(See Appendixes 4, 5 and 6: Position in the Global competitiveness index: - global, infra-structure, technological preparation, innovation, productivity, macro-economic environment)

5. Agriculture: The agricultural sector that 50 years ago accounted for more than 50% of people employed is now much less significant (Recenseamento Agrícola – RA 2009). Some new entrepreneurial projects are starting to emerge although it is a sector that has plenty of barriers. Examples of such barriers are producers having to face a very strong bargaining power from wholesalers and retailers that often make discounts in dairy products at the expenses of the producers. In 2009, the RA showed significant debilities with the reduction of the occupied soil for agriculture exploration, with less 112 000 explorations (27%) and a

troublesome evolution of the profile of the professionals: 48% have more than 65 years with less than 50% having more than the first four years of basic education (RA 2009).

6. Debt and rigor in the management of public expenditure: Portugal was one of the countries in the OECD with higher increase in public and private debt since 1980s. Plus, Portuguese banks increased the usage of leveraging tools like the emission of bonds instead of deposits creating a bad ratio of credit on deposits according to the Country Report 2011 from the IMF. Italy and Portugal have almost the same amount of debt to GDP with the difference that in Italy most of the debt is owned by national investors, while in Portugal debt is mostly in possession of foreign investors which places the country in foreign hands. The examples of lack of rigor in public expenditure are many, not only at a local level but also at a national level (IMF).

(See Appendixes 7 and 8: debt rise since the 1980s; bank holdings of home state debt)

7. Employment: Portugal has an unemployment problem, directly related with the performance of its GDP. According to the Okun's law, there is a relationship between losses in GDP and a rise in unemployment (Artur Okun, 1962). Although most of the authors assume that this law is not useful in predicting trends (Laurence Ball *et al* 2014) it explains the impact of the economic crisis in the Portuguese employment. Unemployment in Portugal has been rising since the year 2000 with an estimated one million unemployed people (Pordata). Massive emigration and a slight recuperation in the economic conditions of the country have been decreasing the rate, reaching a record in the first quarter of 2013 of 17.8% (jornaldenegocios.pt)

(See Appendixes 9 and 10: unemployment rate; emigration)

8. Private consumption: the practice of credit and contracting debt is not restricted to the central and local power: - families also owe large amounts of money to banks. Easy access to credit led families to contract loans to buy homes, cars and general consumption. In 2007 this situation was materialized by a debt ratio of the families of 129% (BdP, Relatório de Estabilidade Financeira, 2007) - meaning families were surpassing its possibilities in a total of 29%. Nonetheless the real value must be even higher because in this indicator (debt ratio) debt like ALD, leasing or other financial tools to buy cars or equipment are not included (as debts to be paid by pre-dated checks). It is important to improve the mechanisms of financial information to the consumers and to create legislative protection for the consumers.

(See Appendix 11: debt levels of the families)

9. Environmental: Portugal faces some sanitation problems and waste management treatment facilities - where the coverage level is inferior to the European Community average. Another aspect that should be addressed is the low percentage of national territory with protected areas. PCS defines as strategic orientations the promotion of conservation in the usage of resources and the development of technological innovation towards the usage of more clean technologies. Portugal is ranked in the second quartile (17th) in terms of EPI (Environmental Performance Index) in the European Union (Ienciu Ionel-Alin, 2012).

10. Transportation: The problem is particularly noticeable in the metropolitan areas and clearly Portugal has not yet figured how to come with a system of public transportation that stops losing market share (INE, 2012). Adding to this, the great sums of debt of these companies leaves the Portuguese with no hope for the short-term. Regarding roads, the highway density has increased a lot in last years although it is still ¼ of the average of the EU.

11. Bureaucracy and weight of the state: The bureaucratized model of government is incapable of doing the much needed reforms on the areas of justice, health and education without pressure from the EU. The weight of the state is still too big in some sectors of the economy, the labour market is still too complicated and the process to create and establish a company although it has improved it is still far away from perfection (World Economic Forum, 2011). According to studies from the PCS, three in every four euro of public expenditure are spent in wages, pensions and subsidies meaning that 70% of the population is living, directly or indirectly at the state's expenditure.

12. Innovation and Technology: Portugal is one of European countries where the diffusion of new information technologies internet is lower. The expenditure in R&D represents less than 1% of GDP in comparison with the average of 3% in the EU even though there has been an effort to converge in direction to that average (Eurostat). To change this panorama, PCS points out that it is important to create an ecosystem of start-ups and a culture of entrepreneurship that will shake the competitiveness of the education system and the way we learn throughout life.

(See Appendix 12: %GDP invested in R&D)

13. Education: the illiteracy rate in Portugal is still one of the highest in Europe. Also, the levels of schooling, formation and training are still very low with about 2/3 of the population having less than 10 years of instruction (Pordata). The whole system has several problems and needs urgent reform since it is the basis for most of the other challenges presented by the PCS.

(See Appendixes 13: literacy rate, population that has attained tertiary education, population whose highest level of attainment is upper secondary or post-secondary non-tertiary education)

14. Cultural: the evolution, circulation, investment and import of cultural material (books, magazines, newspapers, etc) assumes in Portugal very low values in comparison with other countries of the EU (Eurostat). PCS refers its importance as factor of social cohesion.

15. Healthcare: According to research from the PCS, the Portuguese population has a high health level. The average life expectancy has doubled during the XX century and the indicators for child mortality are at record low (2,5/1000 in 2010, Pordata). The national healthcare system plays a delicate role as it is facing several: the rise in the number of people needing assistance, the lack of staff, drugs, the long waiting lists and funding needs. It is also a sector that needs to be completely re-designed. Some of the guidelines being followed nowadays are to create public-private partnerships to enhance the quality of the system, despite the results are not being as positive as they should (Tribunal de Contas, 2009).

(See Appendixes 14 and 15: average life expectancy rate; child mortality rate)

16. Sea: Although the size of the country is small, Portugal has the third biggest Economic Exclusive Zone in the EU and the eleventh in the whole world (Eurocean.org). With such a wide variety of resources available, adding to the fact the strategic geographic position Portugal has in the world, could potentiate more carefully the maritime resources. A national maritime strategy should be approved to take advantage of one of Portuguese's core assets (PCS).

(See Appendix 16: Portuguese EEZ)

17. Justice: In Portugal justice is dealing with three different problems. Firstly, there is the accumulation of lawsuits in courts (various news). Secondly the time needed for a court to solve lawsuits and thirdly the general disappointment, disbelief and impunity inherent to the whole system (António Barreto in Portal da Opinião Pública, 2013). On top of such problems

there is the typical Portuguese bureaucracy creating an explosive combination of factors that must be handled with care urgently.

18. <u>Political disbelief and mistrust</u>: Portuguese people are reaching record levels year after year in what disbelieve in politicians and their current system of governance is concerned (António Barreto, 2013). Although being a very young democracy and the right to vote being younger than 50 years, almost 50% of the voting population decided not to vote in the latest national elections (DGAI/MAI - Base de Dados do Recenseamento Eleitoral), usually in protest for the government's policies.

(See Appendix 17: electoral abstention)

19. <u>Fiscal reform</u>: According to Richard Murphy (director of Tax Research UK 2012), the government loses more than 12,000 M€ in tax evasion every year, the triple it wanted to cut in expenses on 2013 and 2014. The losses with the parallel economy are equivalent to 23% of the fiscal revenues, above the average of 22,1% of the EU Portugal is the seventh worst in the ranking of Tax Research UK.

20. <u>*Litoralization* and desertification</u>: A problem since the 90's, desertification has been in part consequence of a *litoralization* of the country with a big concentration of the most important economic activities near the shore and near the important cities especially Lisbon and Porto. Rodrigues (2010) says that Lisbon and Porto together concentrate almost half of the population living in the country.

> **Relevance for this study:** It is important to analyse the micro-economic factors to understand the real situation of Portugal. These twenty internal challenges are keeping Portugal from unleashing its potential. It is important to address each one individually but also to have a macro-picture from the twenty. In this study the option was to address Education due to the belief that it can be the most important factor to unleash the country's potential.

2.2. Growth imperative

In 2011, Mckinsey has produced a document called "Portugal, the growth imperative", where it pointed some sectorial paths for Portugal to capture opportunities and beat the crisis.

After underlining several market opportunities, Mckinsey suggested several actions on the key-sectors of the Portuguese economy with more capabilities to capture external demand or where Portugal has relevant competences.

They divided their analysis output into 3 sectors:

1. Traditional exports - linked to the corporate tradition and relevant portuguese know-how in areas like clothing, glass, wine, tourism, etc;

2. Domestic - related to the capabilities that Portugal has built related to internal demand like specialized services as engeneering, architecture, juridical services, etc, or related with civil construction, infra-structure, retail, etc that can be exported to emerging economies;

3. New clusters: aligned with the greatest world tendencies and leveraged in distinctive competences that the country has or can have, linked with the sector of health, education and technology.

There is a common link between all the Macro and Micro analysis of Portugal and that is corroborated by this set of actions proposed by McKinsey that suggests that the real disease of Portugal is a disease of competitiveness.

In the beginning of the 90's the Portuguese competitiveness was a subject widely discussed by the society as it is today. Regarding competitiveness Michael Porter is considered an expert with several studies published on the theme. Porter is considered to be a leading authority in subjects such as competitive strategy, competitiveness, economic development of nations, states and regions. Besides his books and his work as professor, Porter along with other professors from Harvard Business School founded a company called Monitor Group in 1983. Its core business was strategic consultancy and the main competitors were Bain & Company, McKinsey & Company, AT Kearney, Booz & Company and The Boston Consulting Group. In 2012 Monitor Group was acquired by Deloitte.

Various theoretical approaches have been used to characterize how corporate performance is influenced by internal or external factors of companies: SCP – Structure-Conduct-Performance (Chandler, 1962), TCT – Transactions costs (Coase, 1936; Williamson, 1985), the learning theory (Levitt and March, 1988), the agency theory (Ross, 1973), Social networks (Garnovetter, 1985) RBV - Resource-based view (Barney, 1986, 1991) and knowledge-based view – KBV (Grant, 1996; Serra *et al* 2007). A study from Ruiz-Navarro and Ramos-Rodriguez (2004) conducted between 1980 and 2000 and published in the Strategic Management Journal (SMJ) concluded that Michael Porter has been a predominant influence on the research on strategy. According to Bignetti and Paiva (2011) Porter has been

the dominant author quoted frequently on the competitive analysis of companies. Aktouf (2002) and Blinder (2003) also acknowledge the importance of Porter on the field.

In 1993 the Monitor Company received a proposal from the Industry Minister of Portugal, Engº Luis Mira Amaral, to create a study about the competitive advantages for Portugal. The Portuguese government teamed up with the private sector paying only 30% of the total cost of the project. The output was a report on the matter called "Construir as Vantagens Competitivas de Portugal" with participation of more than 50 opinion-leaders to corroborate the study's conclusions.

The report starts by diagnosing that the main problem with Portuguese companies: lack of posture and mentality. In fact the same diagnosis was confirmed by Professor Rui Vinhas da Silva in a conference about how Portugal could overcome its current situation (TSF/OTOC "O que fazer por Portugal? Medidas para ultrapassar a crise") and through his book "Os Novos Desafios da Economia Global". Both concluded - the Portuguese have a low self-asteem with consequences in the national economy.

The reports mentions the rise of the weight of the State in the economy during the "cavaquismo[1]" era referring that the budgets for Education, Health and Social Security did not rise and that the economic growth of the country was based on the sectors of services and construction, the most protected from external competition. Porter then chose 4 economic sectors (automobiles, fresh fruits and vegetables, woods and tourism) and 5 core themes (science, education, finance, forest management and management capabilities) to analyse. The next step was to diagnose each theme and sector. Objectives were defined and finally calls to action were suggested.

2.2.1 The Portuguese Diamond in 1994 – review

As described above, Porter's diamond is divided into four dimensions: Strategy Structure and Competitive Rivalry; Factors; Support & Related Industries; and Demand. Although Government is not one of the core dimensions of the Portuguese Diamond, Porter states that public politics have a significant influence in each of the core dimensions of the Diamond.

1) Strategy, Structure and Competitive Rivalry

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[1] "cavaquismo" is an expression that was given to the 10 years between 1985 and 1995 that the Prime-Minister was Aníbal Cavaco Silva

In this section Porter studies the national economic environment that influences strategy and the ways companies are organized and managed. He starts by pointing out the Portuguese industry is composed mainly by small family businesses. In 1994, 96% of the Portuguese companies had less than 50 workers (Porter's report). He also characterizes the Portuguese style of management as being self-made, oriented towards production, with a great financially aversion to risk and very hierarchical. This highly centralized structure makes companies unaware of growth opportunities. In 1994, Portugal had a vast majority of industries that were fragmented and focused in low-cost strategies. This led the country to a strategic position made famous by Porter as "stuck in the middle", since the companies in the North of Europe were ahead of Portugal in terms of quality and service, while the emerging countries were more competitive in costs. Adding to this, the Porter's team analyzed the compensations scheme to conclude that in 1994 there was no focus in performance of workers and there was no management by goals and incentive programs on Portuguese companies. Instead of awarding goals accomplishments, companies negotiated with the Unions wages increase's independently of corporate or individual performance making this a system where only few workers were motivated to improve their performance. Last but not least, the career model was typically based on the years a person has in the company relegating performance two a second dimension.

2) Factors

Porter highlighted the lack of qualification as the main Portuguese workforce problem along with the nonexistence of mechanisms to upgrade the qualifications of the workers. He also mentioned as core problems the insufficient flexibility of the labour market, low investment in Science, Innovation and R&D, Energy, Capital Resources and Infra-structures. These problems remain as issues nowadays, as stated in the micro-analysis.

3) Support & Related Industries

Porter defends in this sector the creation of various clusters to enhance competitiveness. Not only because the main advantage of simplifying the access to inputs but a positive co-management of companies where they became more than buyers and suppliers into business partners. In Portugal most of the industries suffered from not being in cluster losing some maneuver margin in between processes.

4) Demand

The Portuguese consumer in 1994 was less sophisticated than in the rest of Europe revealing high price sensitivity. This meant most of the national companies were focused on price while in the rest of Europe the investment was already in products with more added value. Nowadays, some changes have occurred in the society with the consumer being almost as sophisticated as the rest of Europe and with more Portuguese companies betting on other characteristics of products besides pricing (Global Competitiveness Report). Nevertheless, the Portuguese consumer is still very sensible to price.

Porter ends his analysis to the Diamond indicating the three main fields the government should follow:

1. Improve education quality so that companies can have a better workforce.
2. Define a competitive environmental to promote incremental innovation.
3. Challenge industries by putting high standards on the regulation.

Porter then proceeds by stating that the Government should focus on what he calls the new Competitive Paradigm with focus on:

- Public Financing, with new evaluation systems and budget control
- Education, where the Government must connect the sectors of national life through all the levels of education. A taskforce should be created to focus on:
    - Fiscal incentives for companies that invest in training;
    - Complete revision of education reforms, potentiating a higher involvement of parents, businessmen and incorporation of new technologies.

2.2.2. The Portuguese Diamond 2002

In phase 2 of the report, Porter starts by emphasizing the importance of mobilizing the society to this process of change into the new paradigm of competitiveness. The author starts by describing initiatives, first for clusters like wine, tourism, automobile, shoes, textile and wood products. He then approaches Education, Financing, Forest Management, Management Capabilities and Science & Technology.

Porter gave more emphasis on Education on his report not only because it is a factor that is delaying the country's development but also because it is transversal to other themes like management capabilities, Science & Technology and all the others are based on the fact that

it is indispensable to have a population that knows enough to understand what a country needs and align national and individual objectives.

In Education, the sub-system of compulsory school was diagnosed with many problems, such as inconsistent politics with the professionalization of teachers, a lack of autonomy of institutions and a lack of attribution of responsibilities. There is also a lack of a vision for all the Educational system. Priority activities should be defined and given attention in order to create professionals better trained at core activities the country needs. This has influenced the bad quality of management capabilities making it hard to find the suitable human resources for the companies and subsequently for the country.

So Porter designed 8 imperatives for the country:

I.   Focus on more Sophisticated and demanding Clients;

II.   Formulation of Competitive Strategies;

III.   Increase of Productivity;

IV.   Cooperation with Supply, Distribution and Clients;

V.   Creation of representative Associations;

VI.   Creation of a Domestic Base/*Clusterization*

VII.   Enhance and Develop the Civil Society;

VIII.   Invest in Human Capital;

After the report was finished and published an Association was created to guarantee that this work on the Competitive Advantages of the country would continue.

The truth is that, in 1995, when a new Government was elected this report was put aside. In spite of the cost of 1,5 M € and authority and acknowledgement Porter had in the fields of Strategy and Competitiveness this report's implementation was not set as a priority.

In 2002 Porter came back to Portugal to give a lecture. He started by characterizing the evolution of the Portuguese Economy as solid but with a slow growth of productivity and with low innovation rates. Acknowledging that Portugal was going through a cycle change after the successful implementation of the Euro, Porter re-assumes the importance of creating new drivers especially in micro-economics where it still resided the insufficient capacity of Portuguese competitiveness. Despite the sustainability of Portugal's economic growth being uncertain, and that a national economic strategic was necessary, the analysis of the

Portuguese Economic Strategy 1995 to 2001 concludes also that there was a reduction on public sector deficits and that inflation was down.

He then proceeds by presenting data to justify four facts:

- The easy catch-up period was over;
- The reduction of EU structural funds was likely;
- The ability to use devaluation to prop up "competitiveness" was gone;
- Eastern European countries with lower wages were about to enter the EU market;

And so Porter made an update to his diamond.

Figure 2 – **Update to Porter's diamond 1994-2002**
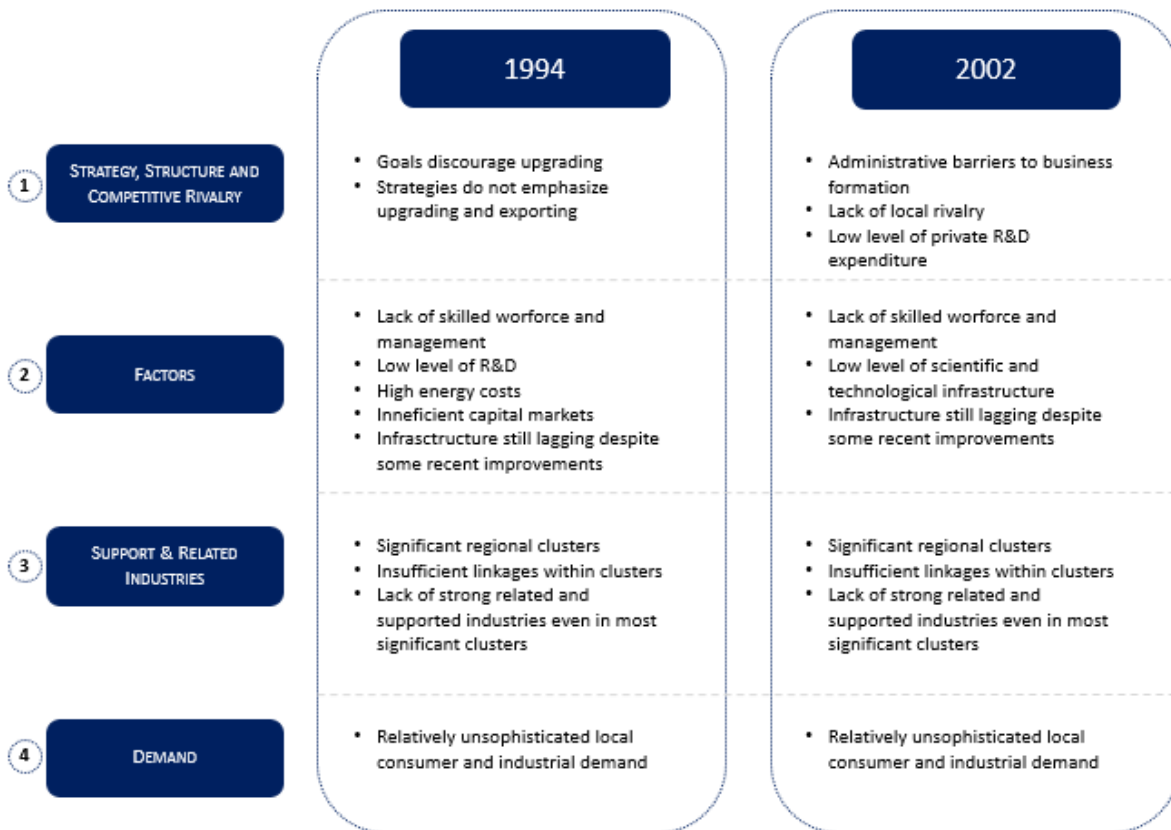
As it is illustrated, not much has evolved since 1994, although this chart cannot evaluate the rise Portugal gave in terms of society. Porter finishes his presentation by underlining that Portugal's new strategy must focus on competitiveness and productivity with a long-term program to upgrade the business environment and a long-term program to build innovate capacity. On the analysis on the fragile indicators of Portuguese competitiveness, Porter re-assured that the evaluation given to the educational system reflects a national crisis, as it was in 1994, and that the problem is in taking actions and change.

Relevance for this study: The analysis from McKinsey in 2011 underlines competitiveness as the real disease of the country. It also points at Education as one of the Achilles' heels. It is with no surprise that we find out that in Porter's 1994 and 2002 analysis of Portugal, Education is considered to be one of the most important factors. It is important to assess that Education still is a pain point nowadays and if it can have a strategic role for Portuguese competitiveness.

Rui Vinhas da Silva (2010) also conducted an analysis about Portugal. While explaining that in Portugal there are great products, he says the country cannot achieve the same quality for the image of those products due to the effect of the country's origin on a nation's competitiveness and production. Innumerous reasons are pointed by Vinhas da Silva (2010) such as the lack of strategic vision of its institutional deciders (government or companies) that reveals something much more important: the main barrier to Portuguese competitiveness is based on the problem of education.

2.2.3. The economic Value of the Portuguese Language

Jacob Marschak (1965) is credited with coining the term "economics of language". In the homonym paper about the term, Marschak reflected from an economic perspective, viewing "language as an object of choice". In the next years more reflections about the same theme arise but more focused on the "relationships between languages than in communication within a particular language" Grin (1994, 1996, 2003), Vaillancourt (1983) and more recently Grin *et al* (2011) among others. More recently Rubinstein (2000; Glazer and Rubinstein, 2001, 2004, 2006) brought a game-theoretical approach.

Figure 3 – **World population by language**   Figure 4 – **Internet users by language**
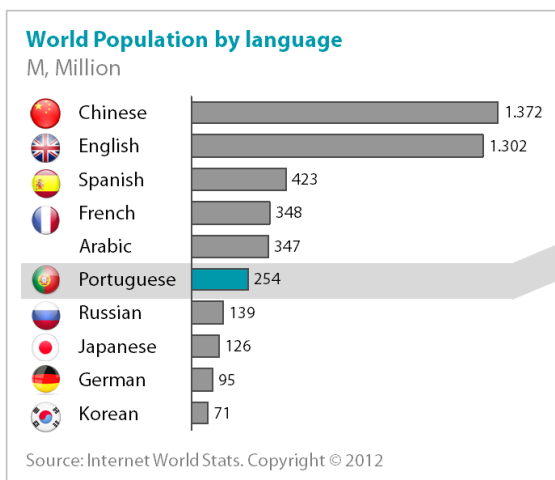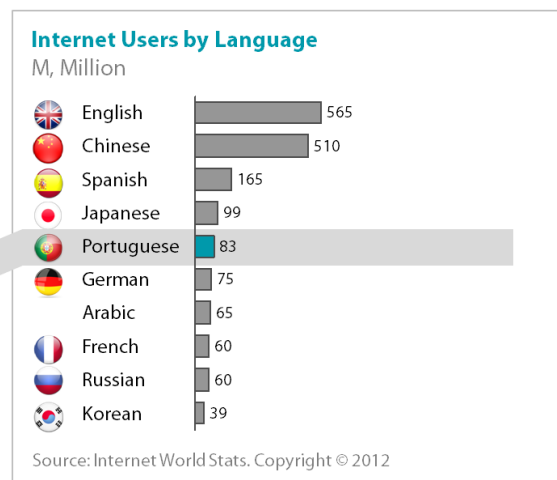
With eight countries and 250 million people, Portuguese is one of the most spoken languages in the world. There is, however, some controversy in this matter: - Some authors like Lewis

(2009) and Calvet (2011) consider Portuguese as the 7th most spoken language in the world with 178-191 million speakers around the world, while the Observatório da Língua Portuguesa (2010) considers Portuguese the 4th most spoken language in the world with 240 million speakers (almost matching the sum of the people living in Portuguese speaking countries).

Portuguese has also one of the highest growth rates in learning as a foreign language, in the internet and in social networks. These speakers represent 3.7% of the world's population and hold approximately 4% of total wealth (Reto *et al*, 2013).

Figure 5: Portuguese-speaking countries
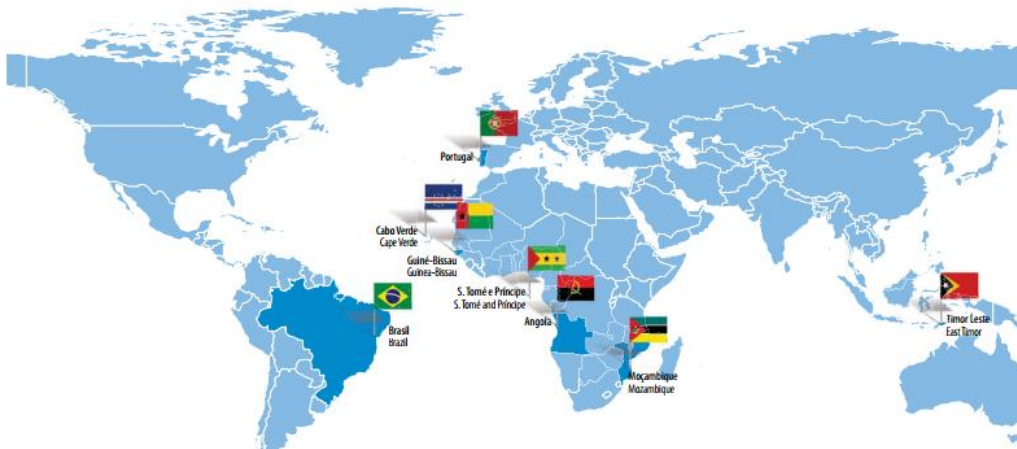
Figure 6 – Comparison of number of speakers
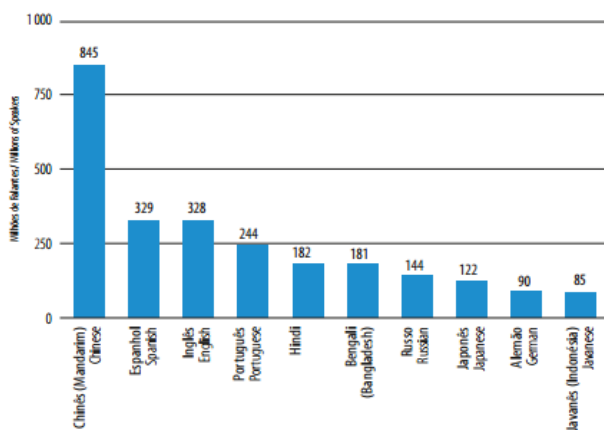
Figure 7 – % World GDP vs. % World Trade
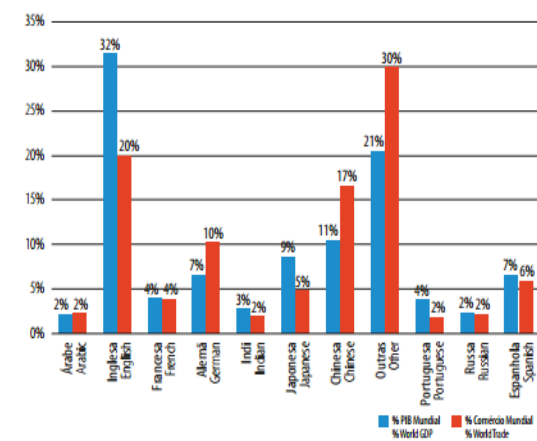
Although its geographical dispersion, as shown in the graph above, the Portuguese language still has much to grow in terms of importance to world trade having a lower weight than expected, given the size of its GDP.

The impact of language on exports has been widely discussed lately and there is no evident consensus except about the fact that language is important. Foreman-Peck (2007) declares that the differences in language act like a tax on commerce. Frankell and Rose (2002) and Heliwell (1999) pointed that the differences in languages as barriers to commerce are equal to tariffs between 15 and 22%. They also suggest that sharing a common language can raise the bilateral commerce in values between 75% and 170%. Nevertheless, Hagen (2008) reminds that other studies, as Siscart (2003) refer more modest impacts like a 6% tariff.

A study about Portuguese exports and imports tells us that the main business partners are the countries of the EU especially the ones closest to Portugal geographically. Spain represents 31% of the imports and 27% of the exports (INE, "Estatísticas do Comércio Internacional, 2011).

This also confirms that the language proximity affects positively our trade, especially in what exports is concerned.

Figure 8 – Effects on trade: comparison imports vs. exports
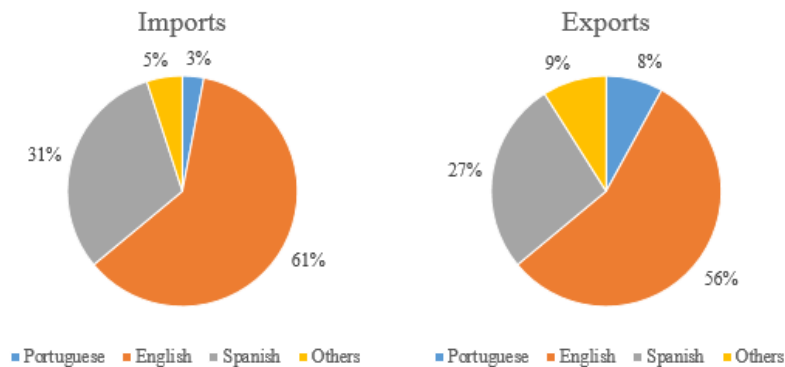
Last but not least, Reto *et al* (2013) applied a methodology developed by Martin Muício that looks at the importance of language in the various sector of the economy and registered a value of 17% for the "economic value of the language", 2% more than the Spanish language. The question of whether the Portuguese language can be used as a factor to leverage our exports imposes. Also, can the 240 million Portuguese speakers, 230 million living outside Portugal, be interested in Education in Portuguese?

H1: *The Portuguese Language has a strategic role on the recovery of Portuguese competitiveness through Education*

2.3. Education as a driver of competitiveness

2.3.1. Education – Review

Any sort of experience in which there is a change on the way a person/an animal/etc. thinks, acts, feels, does, is considered to be educational. When we usually talk about education we are referring to the act of learning, training or teaching a certain skill, habit or amount of knowledge. Education nowadays usually takes place under guidance of others although it can also be autodidactic.

The right of everyone to an education is present in the Article 13 of the United Nations' 1966 International Covenant on Economic, Social and Cultural Rights, enabling "all persons to participate effectively in a free society promote understanding, tolerance and friendship among all nations and all racial, ethnic or religious groups". It also made very clear that primary education should be free, compulsory and available to all, secondary education should be progressively free as higher education should be made equally accessible to all.

Most of the State parties have tried to create public educational systems that complied with that article. In fact, although the scope of education and people with access to it has increased, the way we learn and teach remains mostly the same comparing with other years.

Education has not changed through the years in terms of method. Anant Agarwal, CEO of the nonprofit MOOC platform provider edX said "*It is pathetic that the education system has not changed in hundred years*".

The evolution has been characterized by the change in topics studied. Some of the materials have also changed. Nevertheless there has not been a real revolution in the education sector. The same routines older generations were used to still hold true: students go to a place to listen to some lesson, lectured by professors. In the last years the entrance of technology in the classroom became more evident, with more interactive boards being used but always with the instructor in center of the process of learning. Technology and the internet have deeply changed the way societies live, connect or work. It is also changing the mass adoption process. While the telephone, radio, and television took about 75, 38 and 13 years to reach 50 million users, Internet, iPod and Facebook took only 4, 3 years, and 9 months, respectively to reach mass adoption (UN, 2012). The power of technology has changed profoundly the world. According to a BCG report on education "technology has succeeded in reshaping many other sectors of the economy – from banking to travel – beyond recognition. Even the

staid book-publishing industry is being transformed, as the proliferation of devices such as Amazon's Kindle and Apple's iPad drives sales of e-books. So why has education been left out of this revolution?"

Let us take a look to a sector that changed completely with this revolution: Commerce.

Shopping plays an important role in the economy and life of everyone in the developed world. In 1992, although there had already been some appearances of what the online shopping could be, there was a book with the title "Future Shop: how new technologies will change the way we shop and what we buy" by Snider and Ziporyn. E-commerce was still a distant technology perceived as futuristic endeavour. In 1994, the first online bank opened (Stanford Federal Credit Union, Bangladesh) offering online internet banking services to all of its members following prior experiences by the Bank of Scotland (Crede, 2001) and in 1995 Amazon.com was born (Amazon website). With this new way of making business several innovations appeared: online payments systems like PayPal, new markets like electronic music (with the launch of iTunes store in 2003), new data security standards to store information, new ways to make upsell and cross-sell using information that allowed customized recommendations. E-commerce is still growing exponentially and accounts for almost 10% of total retail sales in the U.S. (Mashable). Nowadays the two main drivers are considered to be the proliferation of smartphones and tablets and the increased investments in their online marketing channels and digital marketing budgets.

Vinhas da Silva (2010) says most of the problems Portugal is facing are based on the same cause: deficiencies on the education sector that affected generations of Portuguese workers and businessmen. Porter (1994) stated that there has always been a significant dependence of Portuguese exports on natural resources and one of the challenges was to break the dependende on the low cost of the factors such as workforce to focus in mechanisms that create specialized factors to make the country grow.

Vinhas da Silva (2010) remembers that higher education was highly restricted by the government before the 25th of April of 1974 as a strategy of ignorance and mediocrity, being described by Noam Chomsky as a strategy to manipulate the population. "The quality of education given to the lower social classes must be the poor and mediocre as possible so that

the gap of ignorance it plans among the lower classes and upper classes is and remains impossible to attain for the lower classes" (Silent Weapons for Quiet War)."[2]

After the Carnation Revolution some things started to change but there were restrictions in some areas with very well organized structures and lobbying power (Vinhas da Silva, 2010). Medicine was a field where the country had staff needs but the *numerus clausus* policy makes it impossible to comply with all the needs, urging the necessity of recruiting foreigners to fill the needs.

Vinhas da Silva (2010) highlights, "there was not a higher net replacement of Portuguese by foreigners in medicine, engineering, economics and other sectors because the Portuguese market has never been economically appealing". Although these are one of the most important questions, some other challenges rise. In most countries, the needs of the domestic economy stimulate the universities and academia that try to fulfill the needs upgrading its techniques and processes to train better citizens for those positions (Vinhas da Silva, 2010). Porter (1994) already declared that the experience and capabilities of the human capital of a country were more important than its costs and that the lack of qualified human resources was already a concern somewhat explained by the historical isolation. Porter (1994) continued saying that the investment in the human resources is particularly significant as a source of competitive advantages in the long run, representing one of the most important issues related to Portuguese competitiveness. Adding to this is a social problem related with the difficulties to attend university some years ago. Historically, the access to the academia was restricted and this is now a problem since there is a belief nowadays that everyone should have a degree (Vinhas da Silva, 2010).

Vinhas da Silva (2010) adds three important remarks: firstly the Portuguese educational system is not a system that stimulates initiative and entrepreneurship. Secondly, the belief that the Portuguese is now adequate to the needs of the people is not true, especially in terms of content. Last but not least, the Portuguese businessmen have not being trained to be competitive.

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[2] *Silent Weapons for Quiet Wars. "This document dated May 1979, was found on July 7, 1986 in an IBM copier bought at an auction of military equipment. Negligence or intentional leak, this text has been in possession of the secret services of the U.S. Navy. For safety reasons, the document does not include the signature of the organization where it came from. But information and dates clippings left believing that these Bilderberg Group, a " discussion club " that meets the extremely powerful worlds of finance, economics, politics, the armed forces and services secrets. Silent Weapons for Quiet Wars was published as an appendix to the book "Behold A Pale Horse" by William Cooper, Light Technology Publishing, 1991."*

2.3.2. Relationship between competitiveness and education

According to Sahlberg (2006) there is no strong correlation between the quality of education and competitiveness, because "*countries like the US (2ⁿᵈ) and Norway (6ᵗʰ) rank high in the 2004 global competitiveness ratings but only modest or poorly in the assessments of their students' learning achievement, such as the OECD (2004) PISA study that is commonly seen as a forward-looking and relevant measure of educational quality*". Other countries like the Netherlands, South Korea and Canada are not at the top in what competitiveness is concerned but are at the top in education. "*Nevertheless some countries seem to do consistently well in both rankings*".

Naturally, some authors disagree: The strength of the link is subject of analysis by Sala-i-Martin *et al* (2004): In 67 explanatory variables in growth regressions on a sample of 88 countries, primary schooling was concluded to be the most robust influence factor (after an East Asian dummy) on growth in GDP per capita in 1960-1996. The explanations of the link can be divided into three conclusions. The first is that education can expedite "*the diffusion and transmission of knowledge needed to implement new technologies*" (Nelson and Phelps 1966, Welch 1970, Benhabib and Spiegel 2005). Secondly, "*increase the human capital of the labor force, which in turn increases labor productivity*" (Mankiw *et al* 1992, Kaganovich and Zilcha, 1999 or Blankeanu and Simpson, 2004). Thirdly, education can "*increase on the innovative capacity of the economy*" (Lucas 1988, Romer 1990, Aghion and Howitt (1998)).

Thomas Verner (2007) used HDI as a comprehensive KPI of national competitiveness measuring the impact of expenditure in education or R&D, (*ceteribus paribus*). The test was conducted with data from Japan, EU27 and USA with data from 2002 and 2007 and concluded that whenever there is an increase in expenditure on education or R&D (*ceteribus paribus*), competitiveness (HDI) also increases.

Hanushek and Woessmann (2009) tested if better schools lead to more growth and concluded "*that differences in cognitive skills lead to economically significant differences in economic growth. Moreover, since the tests concentrate on the impact of schools, the evidence suggests that school policy can, if effective in raising cognitive skills, be an important force in economic development*".

Relevance for this study: The correlation between education and competitiveness is important to establish the links and to pursue new trends in Education like MOOCs that can change the paradigm and work in favour of the country.

2.3.3. Education – Potential vs. costs

There have been several discussions in the last years about the transformation that technology would create in primary, secondary and higher education. In spite of the billions invested in equipping schools the actual impact on student outcomes to date has been disappointing. In some places professors and educators have been introducing devices and software in the classroom but they have often failed to leverage that new technology to improve student performance.

A BCG paper titled "Unleashing the potential of technology in education" claims that "when technology is strategically introduced into every step of the educational value chain, it does, in fact have the potential to enhance every aspect of instruction and learning".

According to the BCG report there are four main drivers of change today:

1) Number of companies focused on deploying technology in education is proliferating

2) Technological innovation is progressing at an accelerated rate

3) Technology increasingly penetrates a greater proportion of children's lives

4) Public scrutiny of the cost and return on investment in public education is escalating

(For an extended analysis and development about this paper please check Appendix 18).

This is verifiable in Portugal. In 2011 the Portuguese Assembly asked the "Tribunal de Contas", the supreme financial controller of how public money is used in Portugal to study the costs of the Portuguese educational system. It analyzed the cost of students distributed through primary and secondary school, totalizing 1.238.599 students along regular paths, recurrent and of double certification. The costs with scholar sports, social aid, or other measures to help families in need were not accounted. In 2012 this Court delivered a report concluding that each student costs the state on average 4.415, 45€ (referring to the school year of 2009/2010). The total cost the Portuguese Government has with primary and secondary education was in the school year of 2009/2010 was 5.903.107.316,36€.

16,7% of this money was used in the first four years of primary school and 71,2% to remaining eight years of compulsory education. 95,5% of this money came directly from the state budget.

The expenses with personnel accounted for 90,2% of the costs. Despite the differences in costs registered along the country this report shows the need to find a way to finance the education sector. With problems regarding retention and drop-out (the school retention and desistance rate in primary and lower secondary education stood at 9,9% in 2011/2012, (Portugal em números, 2012, INE)) compulsory education must definitely improve.

Portugal is among the European countries where the economic effort from the families to have someone studying at higher education level is the highest in relation with the median of the income (IE-UL). In 2011 a team of researchers from the Education Institute of the Lisbon University in a partnership with the Calouste Gulbenkian foundation studied the costs of higher education in Portugal in a logic of cost-sharing between four stakeholders: the Portuguese State, the Families, the Students and Donors. Summing up, the main conclusion of this study is that the average annual cost of a student enrolled in higher education was in 2011 6624€, and that the state only contributes with 3601€. This creates a deficit of 3000€ annual that is supported by the families and students.

In 2008 Portugal was above the average of the EU-27, investing less than 5% of the GDP in Education.

For a deeper analysis on costs please check Appendix 19.

For more information on a comparison of public spending on Education in % of GDP in Europe please check Appendix 20.

For more information about Education please check the Appendixes: Education in Europe – brief history and contextualization – Appendix 21; Education in Portugal – characterization of the system – Appendix 22).

> **Relevance for this study:** When studying the importance of Education for the country we cannot neglect nor the costs nor the discussion in the society about those costs, and to weigh it on the search of alternatives. This is one of the reasons that creates the imperative of looking into solutions with a good ROI (Return on Investment)

2.3.4. Main trends or factors shaping education

Through all over the world Education is having more attention than ever, not only as a way countries can work to increase competitive advantages but especially because it is a sector that has not known crucial development in the last decades. In March 2014, Portugal Telecom's Innovation Director, Ana Dias presented a document at Instituto Superior Técnico in a conference regarding the future of Education that summarizes 7 of the new technologies and trends that will have a huge impact on education. Ana Dias (2014), on her research of various technologies all over the world divided the seven technologies.

Ana Dias (2014) pointed 7 different techs that could change education: MOOCs, Smart Devices, Game-based apps for Education, Big Data in Education, Wearables, 3D Printing and the Cloud.

(For further information about this presentation please check Appendix 23).

One important information to obtain is the massification time-horizon that we can see below. While Wearables, 3D Printing and even Big Data are still far away, MOOCs, Smart Devices, Cloud and Gamification are closer than ever.

Figure 9 – Time-horizon to massification
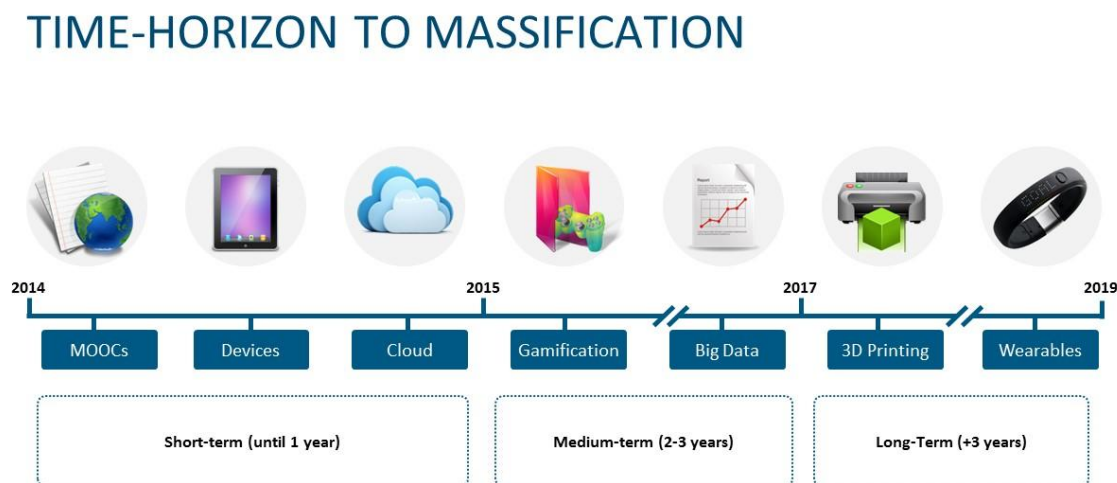
Unfortunately, due to its size and economic power, Portugal is incapable of investing enough in these technologies in order to turn them into an advantage for the country. All except one. Portugal has no experience in wearables, game-based apps and big data in education. Although it once had some advantage in smart devices with the minicomputer Magalhães, exported to various countries, nowadays it is extremely difficult to create a smart device that rivals with the ones built in USA or Asia. Concerning 3D printing, the country has some

history: since the Portuguese were the first to build a 3D printer that cost less than 1000$. Unfortunately this will not change the Portuguese education system as the creation of PT's datacenter in Covilha will not leverage the cloud opportunities in education by itself. MOOCs on the other hand, can be leveraged if Portugal seizes the opportunity and potentiates some of the competitive advantages it already has, particularly CPLP where Portugal is the most advanced country.

Some trends can be already perceived in the change of behaviour that it is happening. In Appendix 24, it is possible to see that the use of devices to work is increasing, and the data for the usage of mobile in learning is increasing with 42% of teachers saying that their students use smartphones in the classroom to search information.

2.3.5. MOOCs

2.3.5.1. MOOCs context

Why do some innovations disrupt existing markets at the expense of incumbent players? The theory of disruptive innovation (Bower and Christensen, 1995) offers an explanation to this, stating that there is a strong argument for "*establishing an autonomous business unit in order to make an appropriate response to these potentially disruptive innovations*".

MOOCs have a very short history. The term MOOC was first introduced by Dave Cormier to describe Siemens and Downes 'Connectivism and Connective Knowledge (davecormier.com, 2008). More than two thousand people signed up for CCK08 (JISC). Despite the course being free and allowing anyone to join there was an option with certification that was paid. Since 2008 more courses have emerged with learning management systems and structures that mix the learning management system with more open web resources.

According to Christensen *et al* (2013) "*MOOCs have taken higher education by storm. Just three years ago, MOOCs were an idea. Today they are an industry. Millions of students from around the globe have enrolled; thousands of courses have been offered; hundreds of universities have lined up to participate*".

In the fall of 2011, Stanford University launched three courses: One was launched by Sebastian Thrun and Peter Norving, Introduction into Al, and had 160,000 enrollments (Udacity.com). Following the awareness brought by this MOOC, Thrun launched a company named Udacity and two other Stanford's professors, Daphne Koller and Andrew Ng launched

Coursera (courser.org). Then in March 2012, MIT launched MITx, renamed eDX after Harvard joined the group (eDX).

In the end of 2012 the New York Times in an article wrote by Laura Pappano declared 2012 as the year of the MOOC (NYT, 2012).

Although much more advanced in the US, the MOOCs uprising can be seen all over the world: in Asia, Japan already has a MOOC provider (Schoo), despite the fact that it was in Malaysia that MOOCs have achieved great success with the first course being launched in March 2013 and having students from more than 110 different countries (openlearning.com). In Australia the OpenLearning platform featuring group work, collaboration, gamification and automated grading was the home of the first MOOC in October 2012 (openlearning.com). In March Open2Study platform was added to Australia's platform portfolio (open2study.com). In Europe the first MOOC experience was leaded by the UK's Open University, an experience that led to OpenupED, a supranational observatorium founded with the sponsorship of the European Union. Iversity in Germany holds the record of Europe's largest MOOC to date, with 82.000 students, as of Nov 2013, with the course "The future of storytelling" (iversity.org) and in October 2013 the French Government announced the creation of national, public-funded, MOOC platform (diplomatie.gouv.fr). In South America some experiences have took place like the launch of Universia-Telefonica's Miriada X, created to encourage dissemination of knowledge in open Space Iberoamerican Higher Education (miriadax.net).

The cMOOC concept was one of the first courses based on the premise of distributed content, where course content is accessed on the Web for free rather than from textbooks. 'c' stands for Connectivist. *Connectivism and Connective Knowledge* was about — and based on — the learning theory of connectivism, developed by one of the instructors, George Siemens. His theory is based on the idea that learning happens within a network, where learners use digital platforms such as blogs, wikis, social media platforms to make connections with content, learning communities and other learners to create and construct knowledge. Driscoll (2000) defines learning as *"a persisting change in human performance or performance potential (…) must come about as a result of the learner's experience and interaction with the world"*. This interaction Driscoll recalls is now based on technology. Karen Stephenson (2004) states: *"Experience has long been considered the best teacher of*

knowledge. Since we cannot experience everything, other people's experiences, and hence other people, become the surrogate for knowledge."

Within a cMOOC, students are encouraged (though not required) to contribute actively, using these digital platforms. Participants' contributions in form of blog posts, tweets etc. are aggregated by course organizers and shared with all participants via daily email or newsletter.

cMOOCs are also not typically sponsored or funded by higher education institutions but rather organized by individuals with a passion for a specific content area. Organizers commit their time to create a framework for learning where participants from all over the world can connect share, contribute, collaborate to learn and expand their network professionally and personally. cMOOCs are also open and flexible, responsive to the needs of its participants which can provide a tailored learning experience.

2.3.5.2. Behind the MOOC platforms

Advocates see MOOCs as a disruptive innovation that will transform higher education (Shirky, 2012).

A great deal of money is required to develop video and other course content in a MOOC and to operate the platform. Funds are provided either by the institution, by private investors or through grants such as those obtained through the Bill and Melinda Gates foundation (MOOC Research Initiative).

Rather than a group of individuals building the course as in a cMOOC, an xMOOC usually has one or more higher education colleges or schools behind it, and, in some cases, a for-profit company.

Both Coursera and Udacity are set up as for-profit companies and have received millions of dollars in funding from venture capitalists, which suggests at some point in time revenue will need to be generated. Other providers, such as edX are set up as not-for-profit organizations, and are funded by the institutions themselves through endowment funds and other sources. edX is a collaborative effort between the two schools, not with the purpose to generate profit, but to use the platform as a vehicle for research and to explore alternative education models. Nevertheless, as Anant Agarwal, president of edX, recently said, "*Even though we are a nonprofit, we have to be self-sustaining over the long term*".

Being fully aware of how each MOOC provider functions will help students make good decisions about what services to pay for (if offered) and how to take full advantage of the course and platform, to meet their personal learning goals. If someone is interested in receiving certification for course completion, for example, they will need to determine what is available by course, whether it is a certificate or a college credit.

At Coursera, for example, students can opt into the Signature Track program that provides students with a certificate of completion on select courses and ties it to a verified identity. The package also includes a digital portfolio option which records course work within the Coursera platform in the form of a personal web portfolio. There is a cost for this service, $69, though currently there is an introductory price available of $39 (Coursera.org)

Udacity, also a for-profit organization, acts as a broker between interested students and Fortune 500 Companies seeking employees and is thus paid referral fees by the companies that recruit and hire Udacity students. Students can post a resume on their Udacity profile if interested, and will be eligible for jobs if they complete certain high-demand courses and do well.

Some courses offered through xMOOC providers also offer college credit, which may have a fee associated with it. For example, some have an arrangement with Pearson Vue or ProctorU, where students pay to complete a comprehensive exam at an exam center or online. Fees vary but are usually under $100 (pearsonvue.com). However, the services and programs offered by Udacity and Coursera are optional — students can participate in xMOOCs without opting into the services offered.

Not-for-profits such as edX or Open2Study may gather data about the online actions of students collectively (not individually) such as completion rates or hours of video watched and number of times logged onto the platform. This data is used for research studies and often for course developers to create more effective learning experiences. At times students may receive questionnaires asking questions that may not be related to the course content but that are geared to determining their impressions of the learning experience (edx.org). This is helpful for the course organizers.

What the for-profit xMOOC will do with the data they collect on their users is unclear. So it's important to keep in point that "*If you are not paying for it, you're not the customer; you're the product being sold*"(Andrew Lewis, 2010).

2.3.5.3. How do MOOCs work – Key features

According to Williams (2013) MOOCs are composed by online models, self-contained batch of information like a video or exercises based on simple open Internet platforms with two key features: lecture design, assessments and completion rates.

Most MOOCs are delivered through online videos. They require the cooperation of many people, including videographers, instructional designers, IT specialists and platform specialists. Altogether these courses require far more labor to produce than a simple course at a university, which could be done by one professor and perhaps a few teaching assistants, reaching 100-300 student maximum. Yet, once produced, their scale is immense. A single professor can reach thousands of students at once.

MOOCs also depends on having access to a reliable high-speed Internet connection and an Internet browser that allows the sharing of media/content. Some companies, like Coursera, commit themselves to their own proprietary platforms for MOOC content delivery. University-run consortiums are developing open-source platforms that anyone can develop on.

Due to the power of today's IT servers, a virtually unlimited number of people can "enroll" in a course. Most courses involve professors or instructors speaking in front of a camera and giving a lecture. Animation or PowerPoint slides usually follow such videos. The level of sophistication of instruction varies.

The key difference between MOOCs and a simple educational video is that MOOCs usually have some form of assessment. There are essentially two ways to assess students. One is the completion of quizzes and multiple choice tests. Another is peer assessment, especially for writing activities. Given the thousands of students that sign up for these courses, grading by the instructor is not practical. Peer assessment helps alleviate that problem. However, peer assessment is not without controversy. There are questions about the quality of grading and how helpful it really is. There has been some discussion on this subject. Hoi K. Suen from Pennsylvania State University (Irrold) states that "*the most glaring problem with peer assessment is how trustworthy the results are.*" Some studies suggest a correlation between peer assessment and instructor ratings in conventional classrooms and online courses for highly structured tasks with narrowly defined correct responses (Bouzidi and Jaillet 2009). Other studies reveal that students in particular do not trust in the results of peer assessment

(Furman & Robinson, 2003). Regarding MOOCs offered in UPenn Suen and Pursel (2014) the University has questioned students about peer assessment and the opinions have been negative. In a deeper analysis a paper from Chris Piech *et al* (2012) from Stanford University and Andrew Ng *et al* (2012) from Coursera propose a new model based in the observation of 63,199 peer grades from Coursera. Using statistics, a model was built based on confidence coefficients, improving peer grading accuracy by up do 30% but still with some controversy. Some prefer the automated feedback through online closed answer assessments, like quizzes. The problem with this method is it cannot be extrapolated to every subject. A mix of peer assessment and automated feedback could be considered in the future. This can also represent an opportunity for professors all over the world and an authentic new market and jobs. Professors could part-time in evaluating online assessments (with the proper certification to perform this taks).

2.3.5.4. The main Issues of MOOCs

Some issues have been raised through the short life of MOOCs:

1. Reach: When MOOCs started to emerge, this technology was supposed to be useful to everyone but especially to those who do not have access to knowledge, materials and lectures due to various constraints such as cost, time, and location. However, shows that most of the students at MOOCs platforms are students that already possess college degrees and live in the most developed countries (Edtechmaganize.com based on University of Pensylvania research)

2. Completion rate: Completion rate of MOOCs is low (Meyer, 2012). Drop-out has always been an issue in education but MOOCs don't seem to have solved this problem: 90% of students fail to finish these courses (Tamar Lewin in NYT). In 2012, Duke University posted the results for one of its MOOCs, a Bioelectricity course. In the Fall of 12725 students registered, 7761 that watched at least one video, 3658 that took at least one quiz during the course, 346 that attempted the final exam, diminishing to a staggering 313 that earned a certificate for completion of the course (261 with distinction), consequently with a drop-out rate of 97%. Advocates say it is because there are no admission requirements and the courses are free, compare it to borrowing a book from the library and browsing it casually or returning it unread (TIME Magazine, 2013). In July 2013 San Jose State suspended its experiment with MOOCs for credit after only half of credit-seeking students who took online courses passed, compared to three-quarters of those who took

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the traditional versions. In one of the three pilot classes, which were offered during the spring, fewer than 30% of the online students passed (SJS University).

3. <u>Cheating</u>: Cizek (1999, 2003) identifies three types of cheating: (a) cheating by giving, taking, or receiving information from others; (b) cheating through use of prohibited materials; and (c) cheating by thwarting the testing process It seems unlikely a student would cheat in a course in which he/she voluntarily enrolled and for which many times there are no tangible rewards. The truth is that cheating is endemic and there is no viable solution yet that has proven to be effective. Examples of cheating in an online environment include online communication, telecommunication, internet surfing (Rogers, 2006), copying and pasting from online sources (Underwood and Szabo, 2003).

4. <u>Measurement</u>: While in assessing the quality of works and projects of the students there is the choice between peer assessment and closed question with automatic grading. There is no reliable way to measure what students have learned, making people to question the real value-added for these courses. J. Patrick Meyer started in 2013 the studying of "*fair and equitable measurement of student learning in MOOCs*" concluding that cheating poses a threat to online assessments (Meyer, 2013).

5. <u>Threat to the current model of higher education</u>: By questioning freedom of learning curriculum, price, format, MOOCs are often linked to accusations of providing an inferior education, increasing the digital divide, cutting human interaction out of the learning process and opening the door to privatizing public education while turning professors into glorified teachers' aides. Other accusations tend to call MOOCs a type of "*banking education*" (Paolo Freire, 2013), where the teacher deposits information in the students' minds instead of "*helping students to think critically and develop understanding*". MOOCs also end to threat the whole academia by reducing the need for new professors and downsizing of the university, in an already tough job market for young academics. MOOCs challenge the model of universal public education, because if people can obtain an education through private sources, then it undermines the model that states high education should be made available to all at a reasonable price. While there are substantial problems with the *status quo*, relying on private MOOCs only exacerbate the problems of access, if not make it worse.

2.3.5.5. The main Challenges of MOOCs

1. <u>Turn discussions into chaos</u> (Kop, 2011): It is nearly impossible to facilitate a meaningful conversation in classrooms with 150,000 students. There are electronic alternatives like

message boards, chat rooms, forums, but the intimacy and experience of face-to-face communication is lost and emotions are often misunderstood (JISC).

2. Grading papers is nearly impossible (Moocsnewsandreviews.com): How can a computer grade something that is not programmed to see? Even with the help of peers to grade papers, not being specialized at the subject plus the competition between peers, can lead into misleading results.

3. Intellectual property (JISC): Who is actually the owner of a course? The professor who invested time, knowledge and method, or the university that allocated financial resources and provided the infrastructure to build the course? What happens to the course when a professor leaves from one university to another? The answers to these questions are not clear in the MOOCs learning model.

4. Collaboration (JISC): genuine human interactions are an important part of exploring a theme, discussing it and working together. This is a type of collaboration that cannot be easily replicated online.

5. College experience (Educase): going to the university does not mean only obtaining a specialization in a subject, but also the possibility to grow and learn how to act in the real world. Teenagers turn into adults, and most of the personality learning is done in-campus but not during classes.

This section leads us to the formulation of the second hypothesis:

- **H2:** *The implementation of MOOCs in Portugal is sustainable and improves Education*

For more information about MOOCs please see Appendixes:

- The first xMOOC – Appendix 25

- Other types of MOOCs besides the xMOOC – Appendix 26

- The MOOC "market" and most important players – Appendix 27

- Benefits of MOOCs – Appendix 28

2.3.6. Education as an export – The Finland example

Finland has experienced a deep crisis in the beginning of the 90's. GDP lost more than 10% and the unemployment rate was at 17%. However, in 2004, the scenario was different with Finland ranking three times in four years as the most competitive economy in the world

(Porter *et al*, 2004). The students in Finland were scoring below average in the PISA ratings in mathematics and science in the 90's but in the next decade they topped the rankings in mathematics, science and literature (OECD 2004). "*Investment in knowledge and competence is the sustainable core of Finland's national success strategy. International comparisons and evaluations have shown that a high-quality education and research system affords us significant strength and a competition edge*". (Henna Virkkunen Minister of Education and Science, 2009).

In 2009 Henna Virkkunem created a working group to leverage the strengths of Finland in the sector of education: a competitive education system and a good reputation paired with demand "*Finnish know-how on the international education market*". An export strategy for education was being created in order to achieve the objective to turn Finland one of the "*world's leading education-based economies resting on the quality of the education system.. By 2015 the proportion of education and knowledge exports will have grown significantly in overall exports*."

To achieve this, the "Future Learning Finland" was created, a national education export programme offering Finnish educational know-how and learning solutions globally.

According to Seppo Holto and Yuzhuo Cai (2012) there are five models of internationalization of education in Finland: 1) traditional individual based mobility; 2) internationalisation based on bilateral institutional agreements; 3) programme based internationalization; 4) internationalisation based on institutional and disciplinary networks; 5) market oriented internationalisation. The same authors also point the "*China Action Plan*" with 8 billion euros of Finnish investment in China and 340 Finnish offices, subsidiaries and joint-venture in China.

Another example of success in deepening the economic linkage between Finland and other countries is with Qatar: - with whom Finland stakeholders have signed a five-year trade agreement on June 2014 to combine the Finnish school model and its best practices with the Qatari school system.

> **Relevance for this study:** The Finland case study shows us that it is possible to export Education, relying on the evidence of having a good product and market for it. The Portuguese language and the new trend of MOOCs can have significant importance in this matter.

This section interconnected with the MOOC section leads us to the last hypothesis:

- **H3:** *There is market in the Portuguese-speaking countries to export MOOCs created in Portugal*

RESEARCH HYPOTHESIS

The literature review says that the notion of competitiveness is mostly applied to markets, but also to countries. There is some controversy in this matter: Krugman (1994), Boltho (1996), Van Santrum (1986), McFetridge (1995) do not agree with the application of the term "competitiveness" to nations whereas Porter (1990), Cellini an Soci (2002), Kitson, Martin, and Tyler (2004), Budd and Hirmis (2004), Bristow (2005), Camagni (2005) agree with the notion.

Michael Porter's diamond model has been widely used to assess the competitiveness of nations based on a firm-clusters approach in each country. Porter did this exercise for Portugal in 1994 and it was proved that Portugal has a problem of competitiveness. Wheeler (1978, 1981) showed evidence of the root of this problem on the beginning of the 20th century.

Not only Porter, a world authority that studied deeply the Portuguese situation in 1994 and revisited it in 2002 but also Vinhas da Silva and the group of think-tankers of the "Plataforma de Crescimento Sustentável" pointed education as one of the major weaknesses of the country.

In terms of competitiveness, the economic value of the Portuguese language was assessed with literature from Reto (2013). This leads to the first research hypothesis:

- **H1:** *The Portuguese Language has a strategic role on the recovery of Portuguese competitiveness through Education*

According to Sala-i-Martin *et al* (2004), in 67 explanatory variables in growth regressions on a sample of 88 countries, primary schooling was concluded to be the most robust influence factor on growth in GDP per capita. Sahlberg (2006) disagrees, presenting data of countries like the USA and Norway that are in the top of the rankings in terms of competitiveness but not in terms of Education. Nevertheless, there are countries that present similar positions in both rankings. Other authors like Hanushek and Woessmann (2009), Verner (2007) demonstrated the correlation between the education and competitiveness in a country.

The costs of education in Portugal have been assessed by the Tribunal de Contas in 2009 and a report from the Caloust Gulbenkian Foundation and were considered to be very high.

A major trend shaping education nowadays is MOOCs. In 2012, the New York Times considered it the year of the MOOC. Massive Open Online Courses can help reduce costs as they create scale economies in education but still do not have an appropriate business model. In order to study the potential of this idea in Portugal, it was developed the second research hypothesis:

- **H2:** *The implementation of MOOCs in Portugal is sustainable and improves Education*

Last but not least, and based on the Finnish example of exportation of Education urges the third and last research hypothesis:

- **H3:** *There is market in the Portuguese-speaking countries to export MOOCs created in Portugal*

The research can be summed up in the next framework:

Figure 10 – Research framework
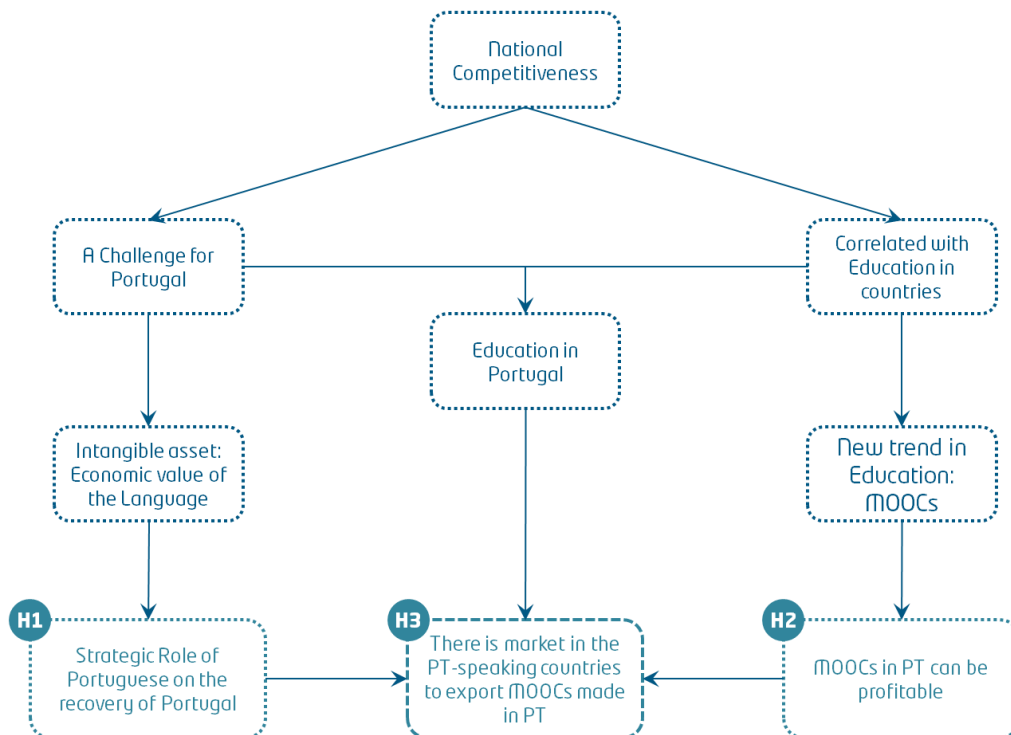
METHODOLOGY

This chapter characterizes the methodological options and the type of research for the collection and analysis of the data in order to sustain scientifically the empirical research**.**

1. Methodological choices

As seen in the previous chapters the main objective of this research is to understand how Education and the Portuguese Language combined can help the country to create a strategy in order to create competitiveness.

This study will be sustained in a mixed method approach of research design, which according to Creswell (2002) is the most useful to this research problem. A research problem, (Creswell, 2002) is an issue or concern that needs to be addressed, in this case three hypothesis that need to be tested. Quantitative approach is the best to use to test a theory or explanation like which business models can MOOCs use in Portugal to be sustainable. On the other hand, MOOCs and the concept of the roles that Education and the Portuguese Language combined can have to help the recovery of Portuguese competitiveness still need to be understood because little research has been done on it, meriting a qualitative research. This second type of research is exploratory and useful especially when the topic is new and has never been addressed with a certain sample or group under study (Morse, 1991). To capture best of both quantitative and qualitative the assumption described by Creswell (2002) was accepted meaning that "*collecting diverse types of data best provides an understanding of a research problem... The study begins with a broad survey in order to generalize results to a population and then focuses, in a second phase, on detailed qualitative, open-ended interviews to collect detailed views from participants.*"

This approach followed the hypothetical-deductive scientific method or test hypotheses, embodied in the techniques of primary and secondary research. This mix of desk-based research and empirical work was used seeking to synthesize the available evidence.

In order to test how The Portuguese Language can have a strategic role on the recovery of Portuguese competitiveness through Education several in-depth interviews related with this matter were steered, that enabled to breed primary data to test the hypothesis.

To test how MOOCs can have sustainable business models, quantitative research in form of a survey was conducted and then approached in in-depth interviews. Before the application of the survey, desk-based research was conducted to assess the possible business models to apply in this sector and to assess the interest of Portuguese students in its viability. After the in-depth interviews, a framework is proposed to assess viability of business models. This strategy permits to generate primary data that met specific objectives and research hypotheses.

To test if there is market in the Portuguese-speaking countries to export MOOCs created in Portugal, desk-based research related with the number of possible interested people in the Portuguese speaking countries was conducted and in-depth interviews were led to produce primary and secondary data that allowed validating the hypothesis.

The survey was conducted according to the description of Robson (1993), for who it is "*commonly applied to a research methodology designed to collect data from a specific population, or a sample from that population, and typically utilizes a questionnaire or an interview as the survey instrument.*" Surveys are widely accepted as a key tool for conducting and applying basic social science research methodology (Rossi *et al,* 1983).

The in-depth interviews were conducted according to one of the approaches suggested by Patton (1987) that suggests three basic approaches to conducting qualitative interviewing: i) the informal conversational interview; ii) the general interview guide approach (commonly called guided interview) and iii) the standardized open-ended interview. The approach chosen was the standardized open-ended interview were a set of open-ended questions are carefully worded and arranged for the purpose of minimizing variation in the questions posed to the interviews (Patton, 1987).

The use of desk-based research was required in the preliminary stages of research to determine what is known already and prepare path for other analysis. The desk-based research involved manual searches of possible business models for MOOCs, the dimensioning of the market of Portuguese-speaking individuals in need of education in Portuguese and the research for an author-made framework to evaluate success of MOOCs' implementation.

2. Population and sampling

Regarding the survey:

To the process of taking a subset of subjects representative of an entire population we call population sampling. The minimum number of elements to be included in the sample size was selected as n=30. This was defined according to law of big numbers and the *rule of thumb* (Hill and Hill, 2000). There is a large number of books that quote around this value, for example, Hogg and Tanis' Probability and Statistical Inference and the critical values (between Student's *t* and Normal) are only off by approximately up to 0.25 from df = 30 to df = infinity.

The type of sampling is a non-probability sampling. According to Pordata (2012), the size of the universe in study is about 116.576 people. Due to time and resources constraints, this type of sampling process was chosen, a process that relies on the arbitrarily or consciously chose of what elements to include in the sample.

The selection of respondents was made by convenience. Convenience sample consists in the interviewers selecting the sampling units, mainly the respondents are selected because they happen to be in the right place at the right time. The main problem of this process is that a sample obtained is a non-representative one, so it is not possible to extrapolate the findings obtained in the sample to the Universe with confidence because there is no guaranty the sample being representative of the population (Hill and Hill, 2000). Although the same authors defend that in an academic research is better to make an investigation of limited scope, while considering a weak research in a great scale. The final results do not allow the extrapolation with confidence for the Universe, although it allows understanding the perception of the inquiries and extracting valid conclusions to the acceptation or not acceptation of the hypotheses and to answer to the research objectives.

Regarding the in-depth interviews: the sampling method was purposive sampling – when a sample is chosen based on who would be appropriate for the study. This is used primarily when there is a limited number of people that have special conditions that make them being chosen. In this case the main criteria to choose the respondents was based on the potential that person has. The goal was to interview a top 7 of people under 30 years that studied in Portugal and derived from their path, have potentially a promising future ahead. The seven persons chosen were 1) Juelson Bartolomeu, degree in Management from ISCTE-IUL, worked at McKinsey & Company and is now based in Luanda, Angola, where he works at Unitel as Head of Telemarketing at the age of 25. 2) Tiago Mourão, a brilliant student from

ISCSP – UTL where he graduated in Communication Sciences with distinction entering in the Marketing world in his masters with special emphasis in political and musical marketing, Tiago was already invited to present papers in the USA at the age of 25; 3) Miguel Morgado aged 24, with a Management degree from NOVA and a MscBA from ISCTE, currently holds the position of Business Developer in Portugal Telecom, has been a Teaching Assistant at ISCTE-IUL of Finance, Vice-President of Consulting at ISCTE Junior Consulting and Director of Summer Camps has a strong position in the technology and start-up scene in Portugal to which he adds the fact of being a finalist of Primus Inter Pares 2013; 4) Pedro Leite, aged 24, was the student with the best grades entering in a management course in Portugal in 2008, graduation with distinction from ISCTE-IUL is now a risk-analyst at Caixa Geral de Depósitos following various entrepreneurial acts and student bodies at the University was also selected to the top 24 at Primus Inter Pares 2013; João Tiago Calqueiro, aged 26, graduated in Management at Católica Lisbon, currently holds the position of Category Manager at Unilever Jerónimo Martins adding to the fact of being in the last 7 of Primus Inter Pares 2011 and a former Professor of Cost Accounting at Católica Lisbon; 6) André Costa, aged 25, is a Senior Consultant at PWC Portugal and has served as Strategy Analyst in Accenture Brasil and Product Development at NOS and also as Vice President of ISCTE Junior Consulting holds a degree in Management and a Master in BA from ISCTE-IUL; 7) Felipe Brand da Costa, aged 24, worked at Boston Consulting Group after which he begun a serious of entrepreneurial investments in Brazil adding to the fact of having been considered the best student of his Management degree at ISCTE and his Master's also at ISCTE.

3. Instrument construction, scales and research variables

As mentioned earlier on this chapter, the quantitative observation technique used was a survey and the qualitative research method was an in-depth interview. Both tools applied in this study can be found in Appendix 29.

The questionnaire was written in Portuguese, as it would be applied to Portuguese students only. It started with the respondents being informed about the assurance of anonymity of the answers and about the scope of the study – context and objectives.

The first question confronted respondents with a filter question to "*enable the research to filter out respondents who were not adequate*" (Malhotra and Birks, 2006). It was based on a

quantitative answer chosen in pool of alternative answers ordinated alphabetically. The question asked the respondent to select if he was a student or working-student or other and if the respondent was not a student than the survey finished in that step.

The following questions assess the knowledge and interest about MOOCs with two yes or no questions. Firstly it is asked if respondents know what MOOCs are. After the answer, respondents are given a definition of MOOCs and asked if they thought MOOCs could have success in Portugal. In the next question is asked if the student would exchange its theoretical lessons for MOOCs. In the end there is an assessment about possible business models to implement in Portugal and respondents are invited to give their opinion. Respondents have to give their opinion in Likert items to allow Likert scaling.

In order to verify the adequacy of the questions, alternative answers and structure of the survey, a pre-test was done, as recommended by Malhotra and Birks (2006). This pre-test was conducted in the online environment to 6 people (20% of the intended sample) that were part of the target population (the future real conditions in which it would be applied), selected by convenience. Some adaptations were made after this pre-test: re-phrasing of the explanations and introductions of the questions in order to be better understandable and Portuguese corrections. Those answers were not considered in the final valid results.

In-depth interviews were also conducted in Portuguese. Rita Berry (1999) defines as one of the essential elements of all interviews the verbal interaction between the interviewer and the interviewer and the interviewees. Berry (1999) summarizes in ten points the questioning techniques:

1) Ask clear questions: to enhance the comprehensibility to the interviewees questions should be easy to understand, short and devoid of jargon (Kvale, 1996)

2) Ask single questions: Patton (1987) suggests that researchers should ask one thing at a time.

3) Ask truly open-ended questions: Patton (1987) recommends truly open-ended questions because do not pre-determine the answers and allow room for the informants to respond in their own terms.

4) Ask experience/behavior questions before opinion/feeling questions: Patton (1987) says it is useful to ask questions about experience or behavior before asking questions about opinions or feelings as this helps establish a context for the informants to express the latter.

5) <u>Sequence the questions</u>: Cohen and Manion (1994) suggest a special technique called "Funneling" meaning that means asking from general to specific, from broad to narrow.

6) <u>Probe & follow-up questions</u>: Patton (1987) indicates that the purpose of probing is to deepen the response to a question and increase the richness of the data being obtained.

7) <u>Interpret questions</u>: Kvale (1996) suggests the researchers should clarify and extend the meanings of the interviewee's statements to avoid misinterpretations.

8) <u>Avoid sensitive questions</u>: Cicourel (1964) advises to avoid deep questions which may irritate the informants and possibly resulting in adopting "*avoidance tactics if the questioning is too deep*".

9) <u>Encourage a free rein but maintain control</u>: Palmer (1928) suggests that proficient interviewers should be always in control of a conversation which they guide and bend to the service of their research interest.

10) <u>Establish rapport:</u> Kvale (1986) suggests that "*a good contact is established by attentive listening, with the interviewer showing interest, understanding, and respect for what the subjects say*".

These ten points served as principles for the creation of the questions and the conduction of the interviews.

The first questions start by assessing the experience the interviewees had during their time in the Portuguese educational system, and to point problems and challenges. The second question redirects the discussion into the cost of education and the search of alternative means of financing education. The third question asks the interviewees to point the five Key Success Factors of learning materials. The fourth question assess the importance MOOCs can have in Portugal and the last question asks about a creation of an educative Portuguese speaking community and the role MOOCs could have on it.

Before the interview all interviewees were asked about MOOCs and advised to search on that subject.

4. Data collection

The data of the survey was collected through a quantitative web-based survey using the Google Docs platform, during 16 days, from September 25th to October 11th 2014. This method was chosen due to two reasons: flexibility of data collection and faster dissemination.

The spread took place mainly through e-mail and social networks. The impossibility of getting more than one answer per personal computer was assured through cookies avoiding duplication of answers.

This method presents some limitations because respondents can easily quit and not answer the entire survey adding to the fact that the sample collected is usually not representative of the population because not all have the same access to the survey (Malhotra and Birks, 2006)

In spite of the limitations several advantages related with speed of collection and data analysis (since the introduction of the data is done by the respondent), the cost factor, the anonymity guarantee and the removal of the interviewer bias were considered.

202 answers were collected with only 164 being considered valid and complete.

The data from in-depth interviews was collected through in person interviews between the 1st of September and the 26th of September. During each interview the answers were written in paper. After some slight modifications, the document was showed to the interviewees to assure there were no misinterpretations.

5. Data analysis procedures

The data of the survey was not inserted because it was sent automatically to Excel through Google Docs exportation and then it was analysed. The tools used to analyse were descriptive statistics (absolute and relative frequencies) as also cross tables in order to characterize the sample, its opinion about MOOCs and business models.

The distributions were considered normal in almost all situations by application of Limit Central Theorem that assumes that a distribution is normal when n > 30.

The analysis of the in-depth interviews was conducted according to the description of Filberto (2013).

Figure 11 – Overview of Qualitative Analysis, Conducting, Analysing and Reporting in-depth interviews, Filberto (2013)
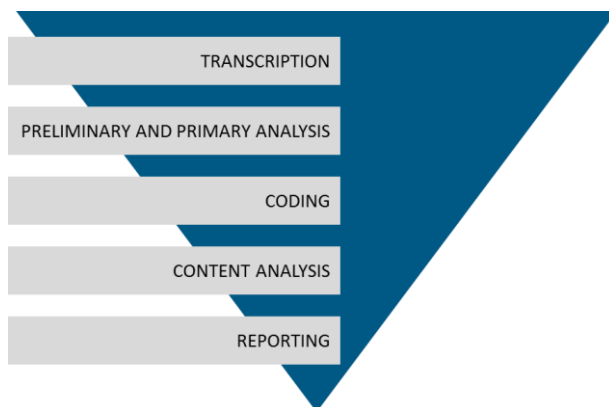
PART II – RESULTS AND ANALYSIS

This section pretends to represent the results of the study done previously with a combination of qualitative and quantitative data and a mix of primary and secondary research. It aims to validate the research hypothesis and is divided into four main topics:

1. An update of Porter's analysis to 2013-2014
2. Research about MOOCs in Portugal and analysis of its viability and ways to assess it
3. Analysis of the main problems of Portuguese Education, alternative means of financing and KSF's of learning material
4. Research about a possible market for educational contents in Portuguese and analysis of the role MOOCs can have in this market

1. Updating Porter's Analysis to 2013-2014

Portuguese economic situation was already attested in the literature review. Back in 2002, education should be one of the main sectors to invest (Porter, 2002) and in 1994 the same (Porter, 1994). It is important to attest the current situation of the country regarding competitiveness in comparison with 2002 to reassure that Education is the right key to press.

To make this update and characterize every section of the diamond Porter built in 2002 the same methodology of using Global Competitiveness Report (the same source used by Michael Porter in 2002) and assessing the ranking of Portugal in the some items was used.

Please note that some of the items could not be matched as they lost sense in 2013 such as availability and cost of cellular phones that disappeared from the analysis.

Porter characterized competitive advantages as items where the country was the 25th or better at that item in the world. When 25 countries scored better than the one in analysis, this constituted a competitive disadvantage because at least 25 competitors were scoring better than the one analysed in the same exact item.

In the next four pictures we can see the scores from 2002 and 2013 organized by advantages and disadvantages, and in the other four below we can compare them and assess at which Macro-Area they belong. To make this analysis easier four main areas that derive from previous analysis were constituted:

- Education & Research, involving all the factors related to education of a society, innovation, patents, research and development;

- Markets & Financing, regarding all the subjects related to the access the organizations and individuals have to money, and micro-factors related to competitiveness in markets;

- Infrastructure, concerning not only physical infrastructure for transportation and public utilities but also clusterization and the country's predisposition to create business parks;

- Bureaucracy, being essentially the interaction with public services (subsidies, processes, barriers) and the burden inherit to that interaction.

Figure 12 – Portugal's Relative position update 2002-2013
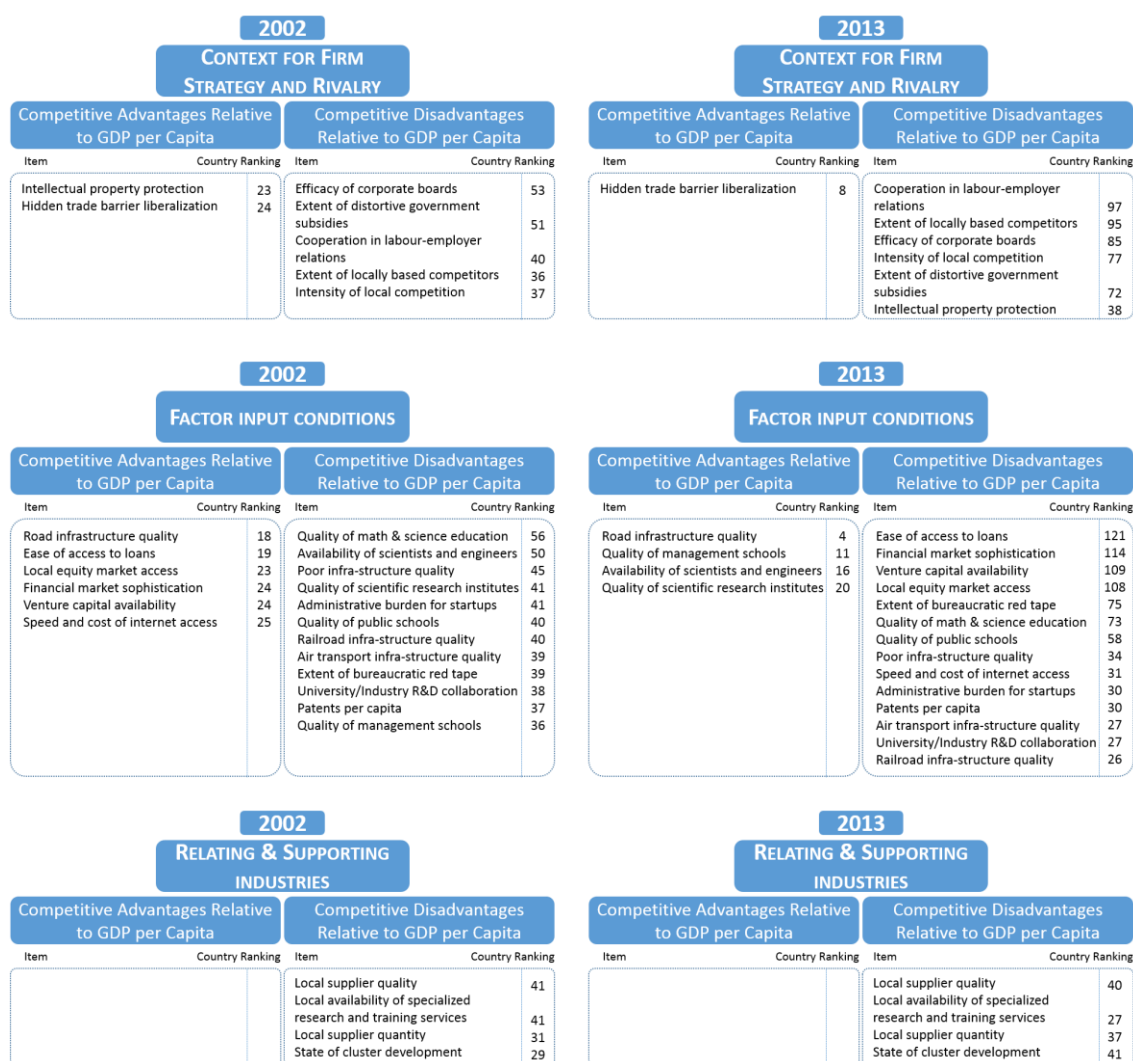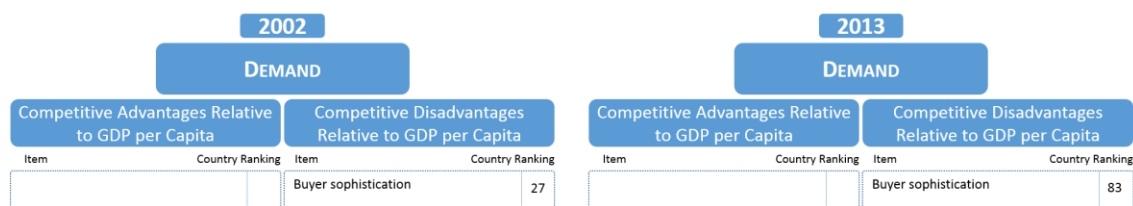
As one can see the global output is that Portugal's relative position in the competitive matter got worse since 2002. This can be explained in part by the fact that Portugal had to ask help from the IMF.

Also one can see the impact of some decisions that were took by the government in terms of public policies. But let's analysis a bit closer each dimension of the diamond.

1.1. A deeper look to each dimension of the diamond

In the next four pictures is the direct comparison between each item in every dimension, the evaluation of it being an advantage, a disadvantage, a new advantage (prior it was a disadvantage but in 2013 it is a competitive advantage to Portugal) and a new disadvantage (before it was considered and advantage of the country and in 2013 it was no longer an advantage and turned into a new disadvantage).

As mentioned earlier there will be a categorization of each advantage and disadvantage into the correct main areas described earlier: Education & Research, Markets & Financing, Infrastructure and Bureaucracy.

Figure 13 – Analysis of changes between 2002 and 2013 – Context
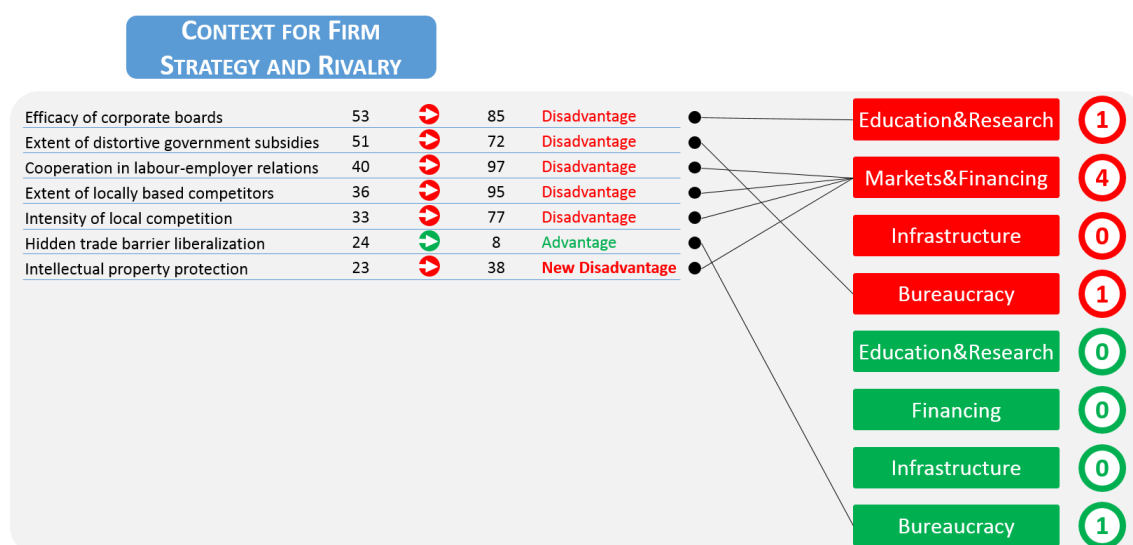
Regarding firm strategy and rivalry one can realize that due to the lack of cash flow in the country the government cut in subsidies and the cooperation between companies and its employees became more aggressive as the legislation for the labour market has been softened. Local competition has suffered due to the consolidation vs death decision that happened in most industries and markets, with many companies filing for bankruptcy while other to survive had to join with others turning competition much less extended and intense.

Figure 14 – Analysis of changes between 2002 and 2013 - Factor

FACTOR INPUT CONDITIONS

Quality of math & science education	56	⬍	73	Disadvantage
Availability of scientists and engineers	50	⬍	16	New Advantage
Poor infra-structure quality	45	⬍	34	Disadvantage
Quality of scientific research institutes	41	⬍	20	New Advantage
Administrative burden for startups	41	⬍	30	Disadvantage
Quality of public schools	40	⬍	58	Disadvantage
Railroad infra-structure quality	40	⬍	26	Disadvantage
Air transport infra-structure quality	39	⬍	27	Disadvantage
Extent of bureaucratic red tape	39	⬍	75	Disadvantage
University/Industry R&D collaboration	38	⬍	27	Disadvantage
Patents per capita	37	⬍	30	Disadvantage
Quality of management schools	36	⬍	11	New Advantage
Speed and cost of internet access	25	⬍	31	New Disadvantage
Venture capital availability	24	⬍	109	New Disadvantage
Financial market sophistication	24	⬍	114	New Disadvantage
Local equity market access	23	⬍	108	New Disadvantage
Ease of access to loans	19	⬍	121	New Disadvantage
Road infrastructure quality	18	⬍	4	Advantage

Education&Research	3
Markets&Financing	4
Infrastructure	4
Bureaucracy	2
Education&Research	3
Financing	0
Infrastructure	1
Bureaucracy	0

As factor input conditions is concerned one can make a deeper analysis. In general Portugal had more items improved, although only three of these improvements have materialized in new competitive advantages. Most of the items still constitute competitive disadvantages, with the addition of five new competitive disadvantages, 80% regarding a worsening of financial markets related to the economic crisis. Some items like the availability of scientists and engineers and the quality of scientific research institutes and also the quality of business schools have improved. Most of these human resources are used by other countries as people tend to emigrate in search of better conditions to pursue a career or research for entities outside Portugal. The improvement of the business schools is a *faux-amis* in terms of analysis due to the fact that only a very low number of people can take advantage of the quality of Portuguese management schools.

One of the most important items as far as Porter is concerned is the quality of math & science education in the country, two core subjects that most of the students have to learn and pass to pursuit their studies, that it is in a worse position in 2013 than it was in 2002 although it had been one of the identified areas that had to improve.

Figure 15 – Analysis of changes between 2002 and 2013 - Industries
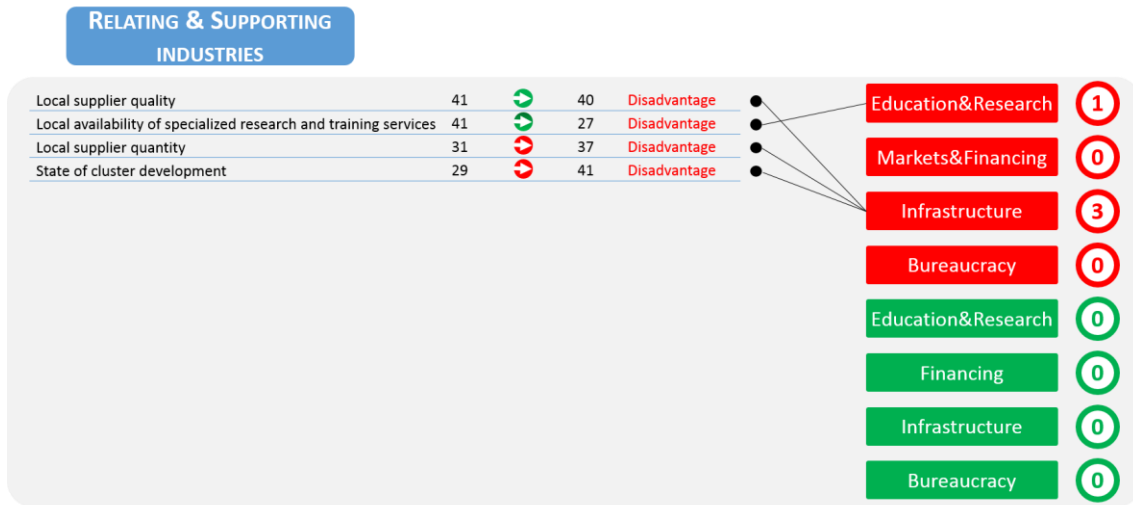
The analysis of the factors linked with relating & supporting industries show us that there are no factors that constitute a competitive advantage, with infrastructure being the aggregator with more disadvantages. Two factors evolved positively through the years, especially the local availability of specialized research and training services, mirroring the improvement of executive education but also demonstrating that it is not an advantage for Portugal.

Figure 16 – Analysis of changes between 2002 and 2013 - Demand
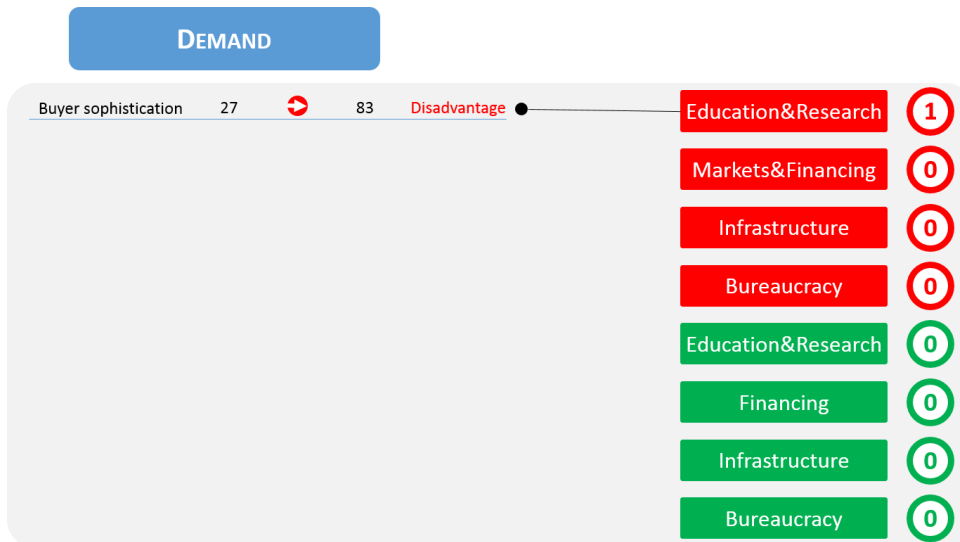
Related with demand there is only one factor relevant for analysis that made sense to analyse through the years: buyer sophistication and it was one of the factors with worst performance in Portugal with the buyers turning much less sophisticated over the years.

The conclusion of this update is that Education is still one of the pain points of Portuguese competitiveness.

2. Research about MOOCs in Portugal, analysis of its viability and ways to assess it

Check Appendix 30 for the questions of the survey.

Check Appendix 31 for the questions made on the in-depth interviews.

2.1. The business model problematic

One of the main problems of MOOCs nowadays is that they do not seem sustainable. Phil Hill (2012) pointed this as one of the four barriers MOOCs must overcome to become sustainable: the development of revenue models to make the concept self-sustaining. Kenneth Freeman (Wall Street Journal, 2013) also underlined that "*currently there is not a sustainable business model for MOOCs. MOOCs are given away for free and MOOC platforms are still trying to figure out how to make money out of them.*" The investment needed to create a MOOC or to be a MOOC provider is very high, and the sources of revenue are scarce in a type of solution that has one of its key success factors the circumstance of being free.

Chrysanthos Dellarocas and Marshall Van Alstyne (2013) discussed in a paper called Money Models for MOOCs some options to implement.

Travel, real estate, movies, music have already crossed the path of digital disruption and have taught us that conventional business models like charging customers directly for products and services are often ineffective online (Dellarocas and Van Alstyne, 2013). Free alternatives such as Youtube, Wikipedia pages, and the ease of piracy limits on charging for content. After years of learning and trying to wrongly replicate old business models online, the industries acknowledge that free services and information can serve as bait to attract users and their activity, and that then you can monetize based on two main axis (Dellarocas and Van Alstyne, 2013):

1. Charge a different group with interdependent demand: like LinkedIn that offers some free features to job seekers and heavily charges recruiters and TripAdvisor offers free advice to travelers and charges airlines and hotels, MOOCs can be sold to universities instead of to students.

2. Charge for complements, in-course complements, including analytics and value-adding activities performed by users: following the example of many companies like Dropbox that gives you for free some space in the cloud and charges you for more space or for a Portuguese example, MEO GO, a product that allows MEO customers

to watch TV on the tablet or smartphone that is free to use in the same wi-fi but needs payment to use everywhere.

It is important to find a business model that do not jeopardizes the entire ecosystem behind MOOCs but also that can establish a model of sustainability for all the stakeholders involved.

Dellarocas and Van Alstyne (2013) proposed a framework for organizing MOOC business models based on who pays what. Five stakeholders have been defined: the state, students, employers, sponsors and other platforms. In terms of what is being paid four areas have been defined by Dellarocas and Van Alstyne (2013): Course content, data and analytics, Platform Activity (student labour) and complementary services. While this can be a good way to structure information, the author of this project thinks Business Models for MOOCs are related with cultural influences and acceptance from the population of countries, being different from country to country. To assess the sustainability of the following Business Models in Portugal (some proposed by Dellarocas and Van Alstyne (DvA) and others by the Author), a survey was made.

i)   Licensing (Author)

ii)   Content Freemium (Author)

iii)   Engagement with the real world (Author)

iv)   Cross-selling (Author)

v)   Tuition (DvA)

vi)   Certification (DvA)

vii)   Tutoring (DvA)

viii)   Peer Assistance (DvA)

ix)   Data analytics for companies (Author)

x)   Academic Research (Author)

xi)   Data Analytics for recruiters (DvA)

xii)   Traditional advertising (Author)

xiii)   Product placement (Author)

xiv)   Suggested collaboration of group learning (DvA)

xv)   Diagnostics (DvA)

xvi)   Sponsored courses (DvA)

xvii)   Course per credit (Author)

xviii) Access to experts/stars/best teachers (DvA)

xix)   Problem-sponsored learning

For more details on each business model please check Appendix 32.

2.2. Implementing MOOCs in a national education system

<u>Example 1: Licensing courses in Antioch University offering versions of the MOOCs for credit as part of a bachelor's degree.</u> (Insidehighred.com; Antioch.edu)

Antioch University was the first University to receive approval from Coursera to offer college credit for specified MOOCs. This made possible to the University to reduce student costs in completing the four-year degree and expand course offerings through free online courses offered by the highly respected universities that have partnered with Coursera.

Each Coursera course was facilitated by an AULA faculty member who was also enrolled in the course, thereby enabling both frequent interaction between students and instructor and augmentation of the course through supplemental exercises and projects focused on expanding the learning experience. A set of workshops, on campus and online were designed to educate students and community members on how to earn academic credit through MOOCs.

<u>Example 2: Maryland College offering credit for MOOCs and Georgia State University</u> (Baltimore Sun)

The hope that MOOCs provide alternative and less expensive means to get a degree is backing the path followed by these two institutions. According to their estimates a three-credit course might cost several thousand dollars at a traditional university, while the same class offered as a MOOC would likely be under $200. UMC has agreed to grant credit for six courses that closely match its own introductory offerings. But to get the credit, students will have to prove that they know the material. That can be done one of two ways: by taking a paid version of the course for $150 or less, which includes proctored exams, or by going through a rigorous "prior learning assessment" process at UMUC, which measures competency in a topic.

Georgia Tech announced plans for a MOOC master's in computer science that will cost less than $7,000 to complete, compared with more than $40,000 for out-of-state students who pursue the same degree on campus. So far, it appears to be the only MOOC degree out there, despite an intense focus on the online classes by university officials across the country.

The first edition of this MOOC-based degree in computer science opened in January 2014 with 375 students chosen from 2,360 applicants, a total success (Campus Technology).

College Board members and trustees are pushing institutions to investigate MOOCs because they're worried that they will be left behind if they don't, education advocates said.

Actually, the political world is already defending this: in Texas, Attorney General and gubernatorial candidate Greg Abbot unveiled in late April 2014 the second phase of his "Education Texans", calling for colleges to give credit to certain students for MOOCs (Houston Chronicle).

2.3. The opinion of Professors

According to a survey by The Chronicle to 103 professors (a great majority in their first MOOC) conducted in February 2013, 79% said MOOCs were worth the hype. Many considered that MOOCs should be integrated into the traditional system of credit and degrees. 2/3 believe MOOCs will decrease cost of earning a degree in their institutions and 85% believe MOOCs will make college less expensive. And why do they MOOC? Due to the desire to increase access to higher education worldwide, reach and 39% to their own visibility. As far as costs are concerned, professors reported more than 100 hours of preparation work plus two to three weeks of recording and editing. Robert Sedgewick from Princeton University says preparation is a full-time job: hundreds of hours preparing plus the weeks of recording. Adding to this the professors said they needed about 8-10 hours per week to follow the course and that it invaded the time they had for other core activities related to their more traditional tasks.

2.4. MOOCs in the H2020

H2020, Horizon 2020 is a European Union initiative consisting in a budget of more than 77 billion euro to the period of 2014-2020 towards research support and co-financing of research, innovation and demonstration projects. The main aims are to improve research results, create greater efficiency, improve transparency and accelerate innovation.

The financing of European Union and especially in H2020 is based on calls, where institutions can attend competitions to propose to do a specific project. The H2020 programme consists of three pillars: Excellent Science, focusing on basic science, Leadership in enabling and industrial technologies based on innovation strategies, and last but not least Societal Challenges that funds potential solutions to social and economic problems. It is in this last pillar that we find the call we are looking for, that expresses some interest in MOOCs. The call, H2020-INSO-2015 is planned to open in 10-12-2014 and has a total call budget of €13,670,000.

The specific challenge of this call (H2020 – INSO – 2015) is to assist universities to become open innovation centers in cooperation with companies enabling public administrations to drive innovation through the public sector through accessible innovation training platforms. One of the set of actions that is considered, is c) Innovation leadership programme for public administrations and researchers.

This includes actions that focus on developing curricula and providing access freely through online platforms. The R&D efforts required would involve exploration, design, development and piloting of pedagogies as well as methods and tools for collaboration and knowledge sharing, including MOOCs.

MOOCs are referred but are not given a special emphasis.

The call ends establishing that the new courses and platforms should be operational before the end of the EU funding and sustainable after the end of the EU funding, with the Commission considering that proposals requesting a contribution from the EU of between EUR 2.5 and 3.5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Besides the H2020 MOOCs have been gaining traction in Europe since in 2013 the first MOOCs initiative in Europe with the support of the European Commission and it was named OpenupEd referring indirectly to the new program of Opening up Education launched on 25 September 2013. 11 universities from 11 different countries have been contributing to this initiative: Portugal, Spain, Slovakia, the UK, France, Italy, Lithuania, the Netherlands, and outside the EU Israel, Russia and Turkey. 12 languages including Portuguese are having MOOCs. Representing Portugal is Universidade Aberta well known for being a distance teaching university. In Portuguese is only possible to find one MOOC, about "Climate Changes: The context of life experiences".

2.5. MOOCs in Portugal

The Portuguese Government and in particular the current Ministry of Education, Nuno Crato, has never spoken about MOOCs as far as governmental strategy is concerned. But this cannot come as a surprise: a study from the European Commission in 2013 pointed clearly that Portugal was not investing in education since the amount put in Education has decreased more than 5% in Portugal since 2010 due to the crisis. Actually in late 2013, when discussing

the annual budget for the next year the proposals on the Education field were to cut 4% in Higher Education, about €80,5M. And to the compulsory education, basic and high school the cut was about €500M, about 8%. The future looks darker than ever in the financing of new and innovative projects. But a differentiator factor can be a proposal where there is an effective return on investment, in cost savings or actually in making money and inverting the paradigm.

Only recently the Portuguese Universities have turned its attention to MOOCs: IPL (Instituto Politécnico de Leiria), Uab (Universidade Aberta) and UC (Universidade de Coimbra) have already given some steps within the aim of getting advantage of the MOOCs hype. IPL created a platform called UP2U: the first MOOC in March 2014 had 800 people enrolled from 13 different countries in a course about building and sharing mental mapping. The initiative of Uab has been described above while UC started in 2014 through their distance learning website, the first MOOC of creative writing. The vacancies where filled in only six days what is considered an excellent result for the first MOOC ever at that University. To win some experience in this field was the one of the motivations it lead the UC to launch this first MOOC although it still lacks interaction between teacher and students.

Universities are giving some baby steps to accompany this trend, but it is important to create a sustainable strategy. From my point of view, the Universities, as centers of innovation of the country should lead the way.

2.6. Results of the survey and main conclusions

2.6.1. Socio-demographic characterization

Regarding socio-demographic factors, it is important to be aware of the distribution of the sample in terms of age in order to better understand the rest of the analysis. Intentionally there was no questioning about sex.

The intention of the survey was to assess if students knew about MOOCs, if they think MOOCs can be successful in Portugal, if they would exchange the theoretical classes per MOOCs at home, and their opinion about the business models above.

The average age of the 164 valid respondents is 22,4 years. 38 answers were not considered because it corresponded to people who were not students.

One can verify a big presence of the 22yrs in the sample (Figure 17) which can be explained by the non probabilistic sampling process used that collect mostly answers of the researcher's professional and social network. Through the observation of figure y it is possible to understand that more than half of the sample is constituted by individuals who are only students, with more than 80% being students or working-students.

Figure 17 – age in % of respondents   **Figure 18 – distribution of the sample per occupation**
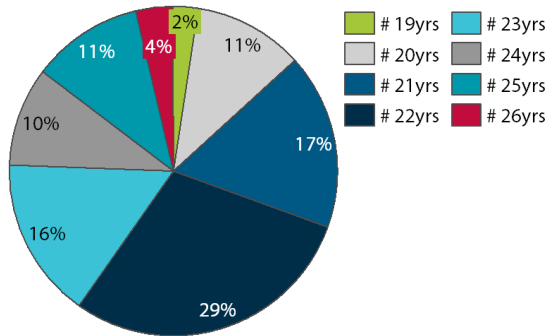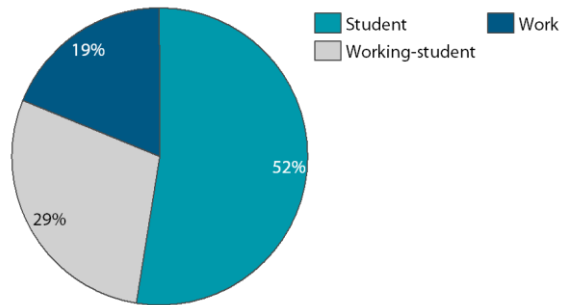
2.6.2. About MOOCs

In this specific sample 74% of the individuals declare not to know what MOOCs are while the other 26% assume they know what MOOCs are. Nevertheless, when they learned what MOOCs were[3], 88% assured they thought MOOCs can be successful in Portugal, with 11% thinking MOOCs cannot be successful and 1% declining to answer.

Figure 19 – % answers – knowledge about MOOCs   **Figure 20 – % answers about potential success of**
                                                             MOOCs in Portugal
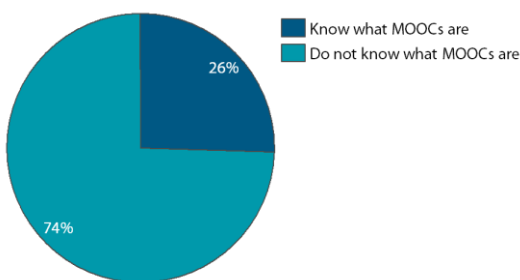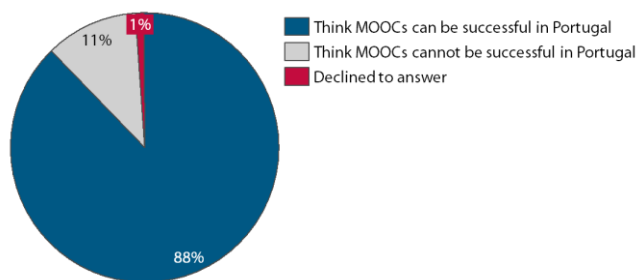
Regarding the matter of exchanging theoretical classes per MOOCs, 61% would exchange those classes for MOOCs while 32% would not. 7% of the respondents gave different answers: four were not sure and answered "maybe", four said it would rely on the theme or

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[3] Before answering the question, respondents were told that "MOOCs (Massive Open Online Courses) are courses and modules from top universities around the world (Harvard, MIT, Stanford, etc), in video format, with the best teachers and available to anyone with an internet connection.

the quality of the professors while other four said they would prefer to use MOOCs as complements.

Figure 21 – % of answers to the question "Would you exchange theoretical classes for MOOCs?"
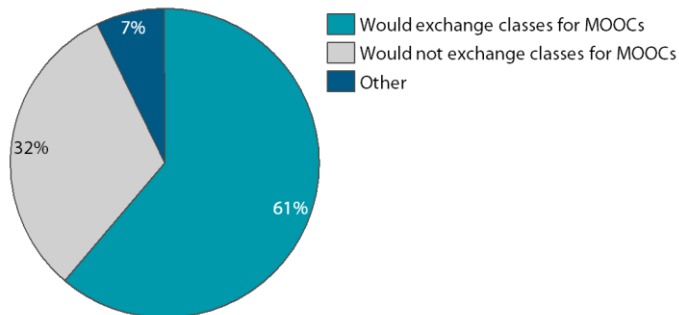
2.6.3. Business Models

Concerning the last question, respondents were asked to classify (using the likert scale) to give their opinion about the business models described in **2.1.**

The ones signaled a red, tuition, academic research, certification, suggested collaborative group learning, peer assistance, diagnostics and traditional advertising were given the lower classification. Traditional advertising had the worst score (2,37), above 2,5.

On the other hand, the five business models best ranked were problem-sponsored learning, sponsored courses, data analytics for recruitment, engagement with the real world and product placement. Problem-sponsored learning scored 3,98 and it is the business model with the best rate of acceptance.

Other business models like access to experts/stars/best teachers, freemium, licensing, modules for credit, data analytics for companies, cross-selling and tutoring should also be considered to test.

Figure 22 – Average of answers about potentail business models for MOOCs in Portugal
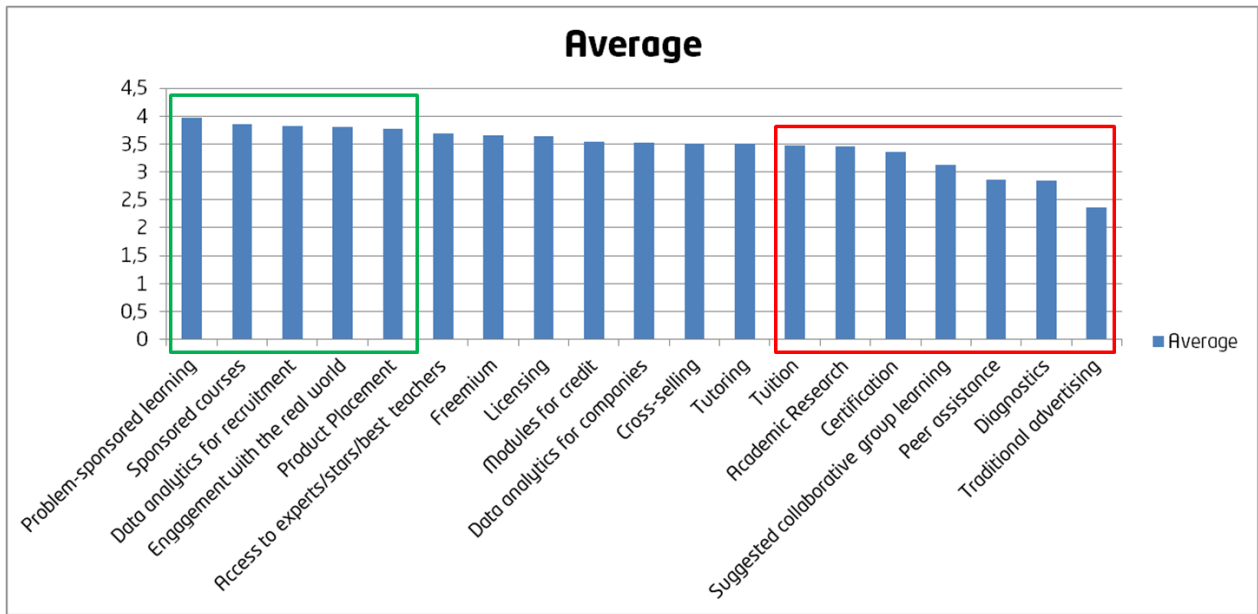
2.7. Results of the in-depth interviews

All the interviewees were unanimous in assuring that MOOCs could be important in Portugal. Juelson Bartolomeu underlined that MOOCs could elevate the general level of capacities of population that is unemployed, active and in scholar age through the exposition to high quality content and especially due to the flexible model adequate do conciliate with work. Juelson, Tiago Mourão and Pedro Leite also referred the flexibility that allows people to work and study at the same time and the flexibility given to the student to choose when and where to choose as one of the strong points of MOOCs. Besides this, Pedro believes MOOCs should mostly be used as complement. João Tiago Calqueiro has the same opinion: MOOCs can be important in two moments of life: as complement of previous training or as introduction to new training, mentioning the importance of having access everywhere.

Miguel Morgado has a slightly different point of view, implying that Universities would benefit with MOOCs because it would bring them more foreign students, the best Portuguese students and could create links with another countries. André Costa also remarked that MOOCs can serve as a differentiation tool for Universities. André also added that MOOCs can be important to the working population to revisit concepts from the degree.

Juelson also brought up the game-changing fact that is people from remote areas having access to contents from the best universities. In his opinion it will also change the paradigm

for universities as an "internet connection and PC's are cheaper than PC's, books, transportation, food, etc."

Summarising, all the interviewed considered MOOCs can have success in Portugal especially due to their flexibility that can change the paradigm to people who study and work at the same time and people living in remote areas. None of them thinks education will be a totally remote and neither the author of this project.

2.8. Conclusions

MOOCs have a business model problem because, nowadays, there is no consensual business model to implement them. But implementing MOOCs in a national education system is possible and was already started in the USA with results. Professors, that most of the times are pointed as one of the barriers of MOOC establishment were inquired and showed surprising results: 79% said MOOCs were worth the hype and 85% said it would make college less expensive.

In Europe, on the H2020, MOOCs are referred but not given special emphasis and in Portugal universities are only at an early stage of adoption with Universidade Aberta naturally in the pole position.

The survey results were not surprising: Portuguese students in their vast majority do not know about MOOCs but when confronted with the definition think MOOCs can be successful in Portugal, with 61% saying they would be ready to exchange theoretical classes by the flexibility of MOOCs.

Regarding business models, problem-sponsored learning, sponsored courses and data analytics for recruitment were the models with best acceptance rate by the students. On the other hand traditional advertising has the worst chance in succeeding with diagnostics and peer assistance also in a bad position.

The in-depth interviews also said the MOOCs could be successful in Portugal, with flexibility being the most important strength. The paradigm could change especially for people living in remote areas that normally do not have access to the best content or people who work and study.

The success of MOOCs in Portugal seems to be possible although there is some unanimity about the impossibility of having a total remote education system.

3. Analysis of the main problems of Portuguese Education, alternative means of financing and KSF's of learning material

3.1. Results of the in-depth interviews

3.1.1. Main problems and challenges

The in-depth interviews were generally corrosive about the Portuguese Education system. Tiago Mourão talks about a chronic problem, the vision of "*laissez faire, laissez faire*", a reflection of what Tiago calls "the failure of the social State in Portugal" with a vision of making the path easy looking to education more as right of the citizen and not as duty. Tiago quotes Professor Cortes Leal saying that "the romance of scholar education is completely disassociated from the reality beyond school doors". Tiago points as one of the pain points the rigid organization and lack of options of specialization criticizing also the age when students have to make that choice preferring a system more likely the Nordic countries, a year later and with more classes each with less students. In fact, the problem of flexibility and quality of contents is brought up by Juelson Bartolomeu and André Costa and its suitability with the real needs of the labour market. João Tiago Calqueiro talks about a separation between companies and universities that must be corrected a preoccupation shared by Miguel Morgado and Juelson.

Miguel Morgado adds that the deficient relation with technology, a vision shared with Juelson, and the inefficient focus in soft skills are also some of the most remarkable problems.

Pedro Leite disagrees about the lack of competitiveness of Portugal being a consequence of the education system, which he categorizes as ample, pointing that cultural questions are the main barrier to Portuguese competitiveness. Despite disagreeing, Leite assume's the system has problems and agrees with the others that the teaching is not adjusted with the needs of the companies.

The cultural problems are evident also in education. Tiago refers the much-heard expression "lack of preparation" as a tentative to justify student's problems. Juelson underlines other expressions that he hears every day dramatizing some of the non-sense of the system: "I learned more in x months of work than in my whole degree and master" and "I remember the excess of subjects and the never-ending study hours". Tiago also notes the excessive timetable charge of students as one of the problems. Associated with this are also the

problems with professors: the working conditions and career model, and the evaluation, a problem also shared by João Tiago Calqueiro and André Costa.

In conclusion we can point as main problems:

- Lack of flexibility of the system;
- Disassociation from what is taught and the reality of companies and needs of the labour market;
- Cultural problems linked with the attitude of students and all the stakeholders towards education;
- Structural problems linked with Professors.

3.1.2. Alternative means of financing and exportation of education

The thematic of costs of education has been brought up to this discussion. The interviewees were asked to think about alternative means to finance education and then to think if it is possible to export education.

André Costa points five alternative ways of financing this sector being one really interesting: assurance mechanisms between the Universities and the student where the student would attend the courses for free and then pay in royalties of his monthly wage until the correct amount. The other four are European community funding, strategic partnerships with companies, donations and pro-bono and a new scheme of benefits for the working-student.

João Tiago, Miguel Morgado and Pedro Leite are also supporters of the idea of company donations. But Pedro and Miguel underline that education should not be faced as an activity to make profit.

Juelson also advocates that the corporate sector should be the main investors in education because they "live of the capacity and intellectual development of the people (they hire)". Juelson also proposes other interesting way of financing: social funding by former students turning universities into clubs where everyone pays a quota.

As far as the exportation of education is concerned, João Tiago assures Portugal already exports education but at a different level with the emigration of professors. "Portugal, directly (professors) or indirectly (workers trained in Portugal) is already a education exporter". Nevertheless João considers that some exportation of content can have success especially "in some areas, Portuguese-speaking countries or other countries where Portugal is a reference".

Pedro Leite talks about a different view of exportation, saying that the current Masters in English offered by Portuguese universities are in fact the start of exportation.

Miguel Morgado says that a strategy of exportation is totally in line with the aim of taking the best of professor's know-how. Miguel points the exportation through the existent technologies not only to less developed countries but also to qualified human resources looking for new training, assuring the two segments have potential. Regarding business models Miguel proposes fee per enrollment or hybrid models like freemium.

Last but not least, Juelson has a strong opinion about this matter, saying that the exportation of education is a real option and that "knowledge should be the merchandise with lower tariffs, transportation and transformation costs".

Summarising, all the interviewees pointed ideas related with companies to fund education, agreeing that exportation can be a path to follow.

3.1.3. KSF's of learning material

Interviewees were asked to bring up with the three most important Key Success Factors regarding learning materials.

Rigor is pointed as one of the most important factors of a learning material with almost all the interviewed mentioning it. Pedro Leite talks about the linkage between the proposed targets and the exigency level and the adaptability to the public. Applicability and clarity are the other two KSF most referred with Juelson, João Tiago, André and Miguel underlining its importance.

3.2. Conclusions

The problems of the Portuguese Education are well-know and have been signaled by almost all of the interviewees (Lack of flexibility of the system; Disassociation from what is taught and the reality of companies and needs of the labour market; Cultural problems linked with the attitude of students and all the stakeholders towards education; Structural problems linked with Professors). To finance education, most of the interviewees talked about the importance companies can have and it was also mentioned the role exportation could have to fund the creation of quality content, that has to be rigorous – the most important KSF of learning materials that was referred.

4. Research about a possible market for educational contents in Portuguese and analysis of the role MOOCs can have in this market

4.1. Assessing the potential market

Figure 23 – Total population and number of students in Portugal, Brazil, Angola, Mozambique

	Portugal	Brazil	Angola	Mozambique
Total Population	10.487.289	202.768.562	24.300.000	23.929.708
#Students				
- Superior	371.000	7.305.977	150.000	105.483
- Primary&Secondary	1.093.523	52.580.452	6.700.000	1.931.990

Source:INE (2012), Min. Educ, Pordata (2013), Instituto Brasileiro de Geografia e Estatística (2014), Censo da Educação, INEP (2014), Censos 2014, LUSA, MPLA, Worldbank (2013), OSISA (2013)

The potential market for educational contents in Portuguese is in theory more than 261 million, for the four most significant countries: Portugal, Brazil, Angola and Mozambique. In terms of population studying, according to the data above about 70 million people could be interested in MOOCs in Portuguese.

4.2. In-depth interviews assessment

Felipe Brand da Costa has been living in Brazil for the last two years. From his point of view an Educational Portuguese-speaking community makes sense and would have advantages such as cultural fit, political appeal, diplomatic appeal, and related advantages with distance learning methods such as low cost and scalability. Nevertheless some challenges are pointed by Felipe: academic recognition, the establishment of English as main language for scientific knowledge, focus on local and competition and positioning. Also some challenges related with distance learning methods. André Costa agrees as well with the idea of the community but it is worried with financing and incentives. Costa also said that MOOCs should firstly serve to solve the problem of access to education retrieving the examples of Brazil, Angola and Mozambique as countries with lots of difficulties in this matter. Costa defends that the main focus of MOOCs should be the creation of a learning alternative and in second place it should be put into the equation the creation of a growth strategy leveraged on MOOCs that would tend to be global.

João Tiago Calqueiro thinks that the creation of this community can be very important for all the countries involved. On one hand Portugal can enlarge its influence to other countries and maybe export some of its goods and services. Calqueiro underlines that the creation of this community of Portuguese MOOCs should deserve the greatest of attentions of all the educational stakeholders and that the "opportunity window".

Pedro Leite is in favor of the creation of this community saying "it would bring benefits at all levels" due to the convergence and establishment of commercial and cultural relations. Leite also believes that MOOCs have a very high internationalization potential.

Miguel Morgado talks about the importance of internet in "leveling the game to its participants" lightening the effect of the size of Portugal. "MOOCs are an excellent opportunity to reach millions of people that speak Portuguese". On the long term Morgado points Culture as an area that can benefit from this community and be leveraged with MOOCs.

Tiago Mourão shows some skepticism saying the idea looks good on paper and that "he believes in potentiating Portuguese as much as potentiating the sea".

Juelson Bartolomeu develops the subject saying that Portugal, Macau and Brazil can be important partners due to its more advanced stage of development at an educational level. Bartolomeu, natural from Angola says countries should constitute a real cooperation model based on equality. He also points as KSF the definition of contents and the definition of a language since Portuguese from Brazil and Portuguese spoken in other countries is relatively different, a situation Pedro Leite also refers, underlining the importance of the role that the orthographic agreement can have. Bartolomeu continues saying that leveraging on MOOCs should be relatively easy due to a good internet access in all the countries, and that a deeper functioning model should be created with recognition from all Education Ministries, and the creation of links between institutions of all the countries.

4.3. Conclusions

The creation of an Educational community based on the Portuguese Language and leveraged on MOOCs makes sense to almost all the interviewed. Brazil, Portugal, Angola and Mozambique could constitute the main pillars of this community. A deeper agreement on MOOCs should be created because they raise questions that must be addressed to create a solid model. Felipe Brand da Costa suggest that to implement it is important to act at a

macro-level (political) to guarantee a diffusion across borders such as partnerships between the Education Ministries, an idea shared with Juelson Bartolomeu.

For more detail on the answers of the respondents please check Appendix 33.

DISCUSSION AND CONCLUSIONS

1. Findings and Conclusions

The historical lack of competitiveness of Portugal is a problem that still remains. The update to Porter's analysis validated Portuguese problems such as Education, which has an important correlation with a country's competitiveness as established in the literature review.

On the topic of the main problems of education, the in-depth interviews were unanimous in four: lack of flexibility of the system, disassociation from what is taught and the reality of companies and needs of the labour market, cultural problems linked with the attitude of students and all the stakeholders towards education and structural problems linked with Professors.

A new trend described in the literature review can help solving all this problems: MOOCs. MOOCs allow the flexibilization putting the student in the center of the system giving him the power to decide what, when and where to learn. It is also much more adaptable to the needs of the labour market. Escalability and its global characteristic turns MOOCs a cultural breaker since it promotes the union and interaction between countries. It also helps to solve the structural problems linked with professors since the professors are international, tend to be the best-in-class and as last resource the student can easily change the instructor with being penalized.

Regarding MOOCs the survey revealed that although most of the Portuguese students do not know MOOCs, when confronted with its description think MOOCs can change the paradigm of education. MOOCs still have problems like business models. This problematic was addressed in two ways:

Firstly a research about possible business models to implement and the creation of a more complete set of 19 possible business models for MOOCs. Secondly a methodology to test the success of this business models in each country, suggesting business models should be implemented locally due to cultural differences. The methodology was applied to Portugal

and revealed that the five business models more likely to be successful in the country are Problem-sponsored learning, sponsored courses, data analytics for recruitment, and engagement with the real world and product placement. On the other hand, traditional advertising, diagnostics, peer assistance, suggested collaborative group learning, certification, academic research and tuition obtained the worst classifications.

It was also concluded that it is possible to implement MOOCs into a national education system with the example of the USA.

Last but not least, the idea of creating an Educational Portuguese-speaking community collected various supporters. The potential market for educational contents in Portuguese in the four most important countries (Portugal, Brazil, Mozambique and Angola) is superior to 260 million creating an incredibly potential market with desire to have contents in Portuguese. MOOCs are the best way to create this online community leveraged on the Portuguese Language.

Figure 24 – Research Hypothesis

H1: It was proved that the Portuguese Language can have a strategic role on the recovery of Portuguese competitiveness due to its economic value. Some research also point that Education can play an important part.

H2: It was proved that it is possible to implement MOOCs in a national educational system and that it can have success in Portugal. According to students it will improve Education. More research on this topic is advised to achieve total validation.

H3: It was proved there is interest in the creation of a Educational Portuguese-speaking community and that there is market for educational contents in Portuguese. Portugal as the most advanced country in terms of technology and education in comparison with the other countries eligible to this community can take advantage to potentiate the exports of MOOCs in Portuguese created in Portugal.

2. Pratical contribution

- List of the 20 main micro-economic challenges of Portugal;

- Update of Porter's diamond model for Portugal to 2013;

- Main trends shaping education;

- Main problems of the Education system in Portugal;

- Complete dossier of information on MOOCs;

- Complete list of possible business models to implement MOOCs;

- Soft research on best business models to implement MOOCs in Portugal;

- Concept of an Educational Portuguese-speaking community leveraged on MOOCs and the Portuguese language;

3. Ideas for future research

As stated throughout this thesis, the main problem of MOOCs is related with financial sustainability. One of the main targets is to discover business models than can be applied to MOOCs. To do this a framework is suggested based on three steps:

1. **Matrix of viability:** The creation of a matrix evaluating the viability of business models described in the last chapter. This involved two different criteria:
    i. Potential value – The expected return on investment that the usage of each business model would bring. The ratio between investment and costs.
    ii. Easiness to deploy – Based on the natural barriers besides costs like the need to invest in R&D, create a totally new system, etc.
2. **Matrix of the country:** The creation of a matrix that evaluates how a specific business model would fit in a country. This involved two different criteria:
    i. Contribution of Country specificities: mentality, tradition, social dogmas and other barriers related to each country's differences.
    ii. Impact on the users of the national education system: the change and impact each business model is going to have in the public system of education based on the expectation of people adhering.
3. **Matrix of viability per country:** The combination of the two previous matrixes that would give us the viability of each business model in each country of analysis.

For future research a pilot project could be conducted. ISCTE-IUL with its strong relationship with Mozambique and Angola and its close bond with the corporate world could be a good candidate.

A deep study of the interest in other countries of the creation of an Educational Portuguese-speaking community should be a step to take.

4. Limitations of the research

- <u>The need of updating the study of Portuguese Competitiveness and having to choose a factor to work on</u> – The update on Porter's study validated most of the problems pointed. Education itself is not pointed as the platform where all the problems lay in. To empower the choice of Education as main factor other authors were quoted and the correlation between Education and Competitiveness was established.

- <u>MOOCs are a relatively new subject</u> – it was relatively difficult to find information from well-established sources.

- <u>The success of MOOCs are not guaranteed</u> – linked with the limitation above, although the year 2012 was considered the year of the MOOC in 2012, most recently some disbelief on its impact has been emerging.

- <u>Projection of the results for the population</u> - the research design was adopted is related with impossibility of results' extension to the population due to utilization of non-probabilistic methods. Nevertheless the statistical techniques used and sample size assure empirical evidence to answer the research hypothesis;

- <u>Preliminar studies</u> – the research was a direct and immediate application of constructions from the referenced authors and due to time constraints. The constructions were not subject to a test of reverse tradition to check if it were adequate;

- <u>Some control in the hands of respondents</u> – Some of the findings evaluate perceptions of individuals in respect to the specific topics, which can originate deviations in respect to reality if individuals don't understand correctly or mistake what is asked.

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APPENDIXES

Appendix 1 - Portuguese fecundity rate (2012)

Source: World Bank

Appendix 2 - Portuguese age pyramid evolution 1960-2011
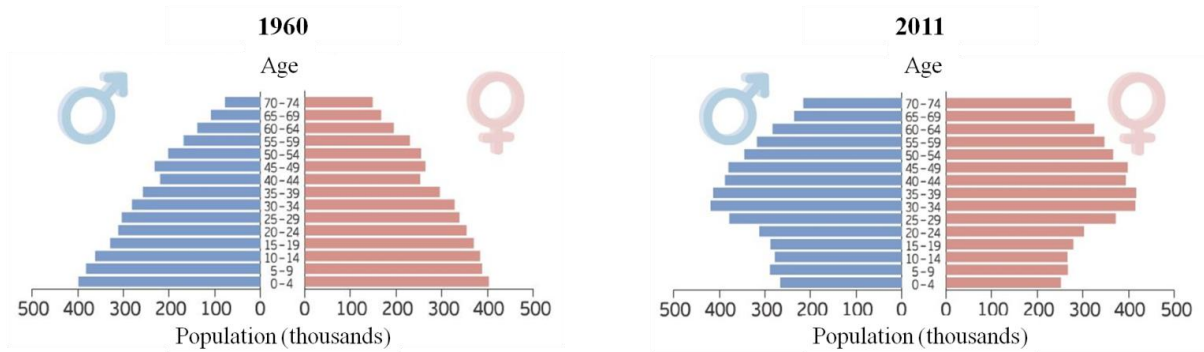
Source: Profareal

Appendix 3 – Portuguese Energetic dependence
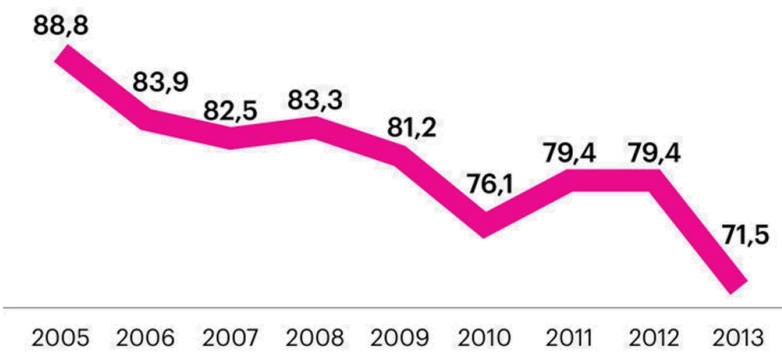
Source: Direcção-Geral de Energia e Geologia

Appendix 4 – Overview of the country in terms of competitiveness
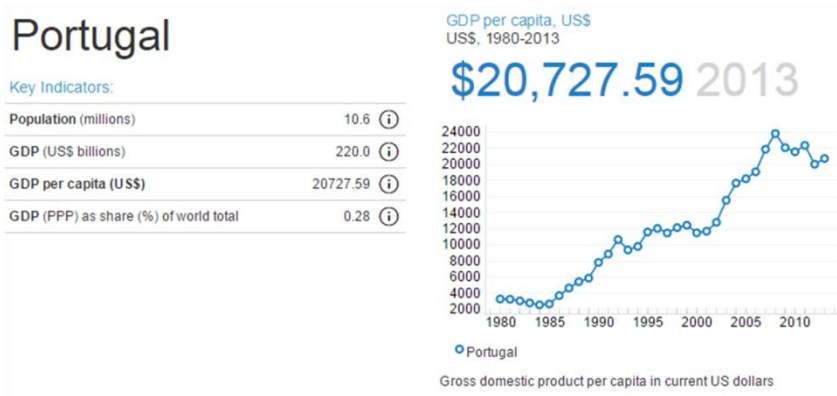
Source: World Economic Forum 2014

Appendix 5 – Performance by main pillars
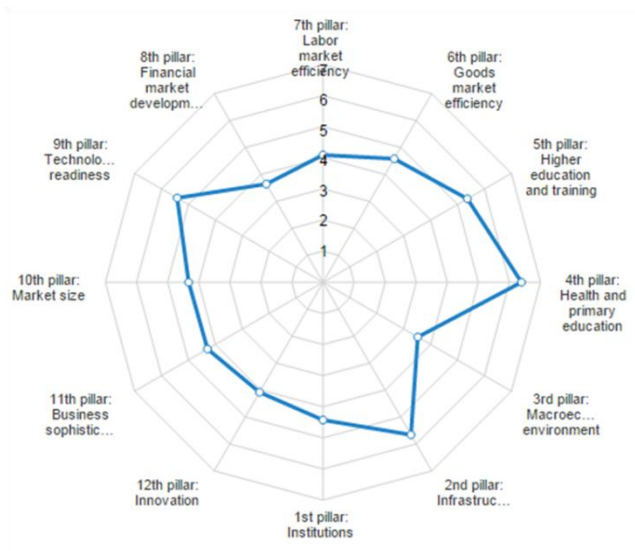
Source: World Economic Forum 2014

Appendix 6 – Portugal's position on the Global Competitiveness Index per pillar
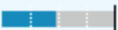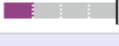
	Info	Rank / 144	Score	Distance from best
Subindex A: Basic requirements, 1-7 (best)	ⓘ	41	5.0	
1st pillar: Institutions, 1-7 (best)	ⓘ	41	4.4	
A. Public institutions, 1-7 (best)	ⓘ	40	4.4	
1. Property rights, 1-7 (best)	ⓘ	38	4.8	
Property rights, 1-7 (best)	ⓘ	42	4.8	
Intellectual property protection, 1-7 (best)	ⓘ	35	4.6	
2. Ethics and corruption, 1-7 (best)	ⓘ	39	4.1	
Diversion of public funds, 1-7 (best)	ⓘ	41	4.0	
Public trust in politicians, 1-7 (best)	ⓘ	67	3.0	
Irregular payments and bribes, 1-7 (best)	ⓘ	32	5.2	
Irregular payments in exports and imports, 1-7 (best)	ⓘ	25	5.3	
Irregular payments and bribes: Public utilities, 1-7 (best)	ⓘ	27	5.9	
Irregular payments and bribes: Annual tax payments, 1-7 (best)	ⓘ	34	5.4	
Irregular payments and bribes: Awarding of public contracts and licenses, 1-7 (best)	ⓘ	38	4.1	
Irregular payments and bribes: Obtaining favorable judicial decisions, 1-7 (best)	ⓘ	35	5.2	
3. Undue influence, 1-7 (best)	ⓘ	43	3.9	
Judicial independence, 1-7 (best)	ⓘ	44	4.5	
Favoritism in decisions of government officials, 1-7 (best)	ⓘ	54	3.3	
4. Government efficiency, 1-7 (best)	ⓘ	94	3.2	
Wastefulness of government spending, 1-7 (best)	ⓘ	88	2.8	
Burden of government regulation, 1-7 (best)	ⓘ	108	3.0	
Efficiency of legal framework in settling disputes, 1-7 (best)	ⓘ	111	3.1	
Efficiency of legal framework in challenging regulations, 1-7 (best)	ⓘ	77	3.3	
Transparency of government policymaking, 1-7 (best)	ⓘ	81	3.9	
5. Security, 1-7 (best)	ⓘ	11	6.0	
Business costs of terrorism, 1-7 (best)	ⓘ	7	6.5	
Business costs of crime and violence, 1-7 (best)	ⓘ	10	6.0	
Organized crime, 1-7 (best)	ⓘ	13	6.3	
Reliability of police services, 1-7 (best)	ⓘ	29	5.3	
B. Private institutions, 1-7 (best)	ⓘ	40	4.5	
1. Corporate ethics, 1-7 (best)	ⓘ	42	4.5	
Ethical behavior of firms, 1-7 (best)	ⓘ	42	4.5	
2. Accountability, 1-7 (best)	ⓘ	48	4.6	
Strength of auditing and reporting standards, 1-7 (best)	ⓘ	53	4.9	
Efficacy of corporate boards, 1-7 (best)	ⓘ	76	4.5	
Protection of minority shareholders' interests, 1-7 (best)	ⓘ	47	4.4	
Strength of investor protection, 0-10 (best)	ⓘ	45	6.0	

Info	Rank / 144	Score	Distance from best

	Info	Rank / 144	Score	Distance from best
2nd pillar: Infrastructure, 1-7 (best)	ⓘ	17	5.7	
A. Transport infrastructure, 1-7 (best)	ⓘ	18	5.2	
Quality of overall infrastructure, 1-7 (best)	ⓘ	12	6.0	
Quality of roads, 1-7 (best)	ⓘ	2	6.3	
Quality of railroad infrastructure, 1-7 (best)	ⓘ	23	4.4	
Quality of port infrastructure, 1-7 (best)	ⓘ	23	5.4	
Quality of air transport infrastructure, 1-7 (best)	ⓘ	20	5.7	
Available airline seat kilometers, millions of seats km/week	ⓘ	31	802.9	
B. Electricity and telephony infrastructure, 1-7 (best)	ⓘ	14	6.1	
Quality of electricity supply, 1-7 (best)	ⓘ	18	6.4	
Mobile telephone subscriptions, /100 pop.	ⓘ	69	113.0	
Fixed telephone lines, /100 pop.	ⓘ	18	42.7	
3rd pillar: Macroeconomic environment, 1-7 (best)	ⓘ	128	3.5	
Government budget balance, % of GDP	ⓘ	107	-4.9	
Gross national savings, % of GDP	ⓘ	97	16.0	
Inflation, annual % change	ⓘ	59	0.4	
Government debt, % GDP	ⓘ	138	128.8	
Country credit rating, 0-100 (best)	ⓘ	-	-	

	Info	Rank / 144	Score	Distance from best
4th pillar: Health and primary education, 1-7 (best)	ⓘ	24	6.4	
A. Health, 1-7 (best)	ⓘ	26	6.9	
Malaria incidence, cases/100,000 pop.	ⓘ	-	-	
Business impact of malaria, 1-7 (best)	ⓘ	27	6.7	
Tuberculosis incidence, cases/100,000 pop.	ⓘ	56	26.0	
Business impact of tuberculosis, 1-7 (best)	ⓘ	28	6.5	
HIV prevalence, share (%) of adult pop.	ⓘ	97	0.7	
Business impact of HIV/AIDS, 1-7 (best)	ⓘ	32	6.2	
Infant mortality, deaths/1,000 live births	ⓘ	11	2.9	
Life expectancy, years	ⓘ	26	80.4	
B. Primary education, 1-7 (best)	ⓘ	26	5.9	
Quality of primary education, 1-7 (best)	ⓘ	33	4.8	
Primary education enrollment rate, net %	ⓘ	17	98.6	
Subindex B: Efficiency enhancers, 1-7 (best)	ⓘ	37	4.6	
5th pillar: Higher education and training, 1-7 (best)	ⓘ	24	5.4	
A. Quantity of education, 1-7 (best)	ⓘ	30	6.3	
Secondary education enrollment rate, gross %	ⓘ	8	112.9	
Tertiary education enrollment rate, gross %	ⓘ	29	68.9	
B. Quality of education, 1-7 (best)	ⓘ	24	5.1	
Quality of the educational system, 1-7 (best)	ⓘ	40	4.3	
Quality of math and science education, 1-7 (best)	ⓘ	43	4.5	
Quality of management schools, 1-7 (best)	ⓘ	4	5.9	
Internet access in schools, 1-7 (best)	ⓘ	28	5.7	
C. On-the-job training, 1-7 (best)	ⓘ	28	4.6	
Local availability of specialized research and training services, 1-7 (best)	ⓘ	24	5.1	
Extent of staff training, 1-7 (best)	ⓘ	54	4.2	

	Info	Rank / 144	Score	Distance from best
6th pillar: Goods market efficiency , 1-7 (best)	ⓘ	44	4.6	
A. Competition, 1-7 (best)	ⓘ	48	4.7	
1. Domestic competition , 1-7 (best)	ⓘ	52	4.6	
Intensity of local competition, 1-7 (best)	ⓘ	63	5.1	
Extent of market dominance, 1-7 (best)	ⓘ	58	3.9	
Effectiveness of anti-monopoly policy, 1-7 (best)	ⓘ	48	4.3	
Effect of taxation on incentives to invest, 1-7 (best)	ⓘ	129	2.9	
Total tax rate, % profits	ⓘ	89	42.3	
Number of procedures required to start a business, procedures	ⓘ	10	3.0	
Time required to start a business, days	ⓘ	5	2.5	
Agricultural policy costs, 1-7 (best)	ⓘ	85	3.7	
2. Foreign competition , 1-7 (best)	ⓘ	29	5.0	
Prevalence of trade barriers, 1-7 (best)	ⓘ	7	5.2	
Trade tariffs, % duty	ⓘ	5	0.8	
Prevalence of foreign ownership, 1-7 (best)	ⓘ	82	4.4	
Business impact of rules on FDI, 1-7 (best)	ⓘ	79	4.3	
Burden of customs procedures, 1-7 (best)	ⓘ	26	5.1	
Imports as a percentage of GDP, % of GDP	ⓘ	86	40.6	
B. Quality of demand conditions, 1-7 (best)	ⓘ	41	4.3	
Degree of customer orientation, 1-7 (best)	ⓘ	33	5.1	
Buyer sophistication, 1-7 (best)	ⓘ	64	3.5	

	Info	Rank / 144	Score	Distance from best
7th pillar: Labor market efficiency, 1-7 (best)	ⓘ	83	4.1	
A. Flexibility, 1-7 (best)	ⓘ	119	4.0	
Cooperation in labor-employer relations, 1-7 (best)	ⓘ	65	4.3	
Flexibility of wage determination, 1-7 (best)	ⓘ	93	4.7	
Hiring and firing practices, 1-7 (best)	ⓘ	113	3.3	
Redundancy costs, weeks of salary	ⓘ	108	23.1	
Effect of taxation on incentives to work, 1-7 (best)	ⓘ	131	2.8	
B. Efficient use of talent, 1-7 (best)	ⓘ	58	4.2	
Pay and productivity, 1-7 (best)	ⓘ	113	3.4	
Reliance on professional management, 1-7 (best)	ⓘ	73	4.2	
Country capacity to retain talent, 1-7 (best)	ⓘ	91	3.1	
Country capacity to attract talent, 1-7 (best)	ⓘ	72	3.4	
Female participation in labor force, ratio to men	ⓘ	32	0.9	
8th pillar: Financial market development, 1-7 (best)	ⓘ	104	3.6	
A. Efficiency, 1-7 (best)	ⓘ	73	3.4	
Availability of financial services, 1-7 (best)	ⓘ	43	4.9	
Affordability of financial services, 1-7 (best)	ⓘ	61	4.2	
Financing through local equity market, 1-7 (best)	ⓘ	93	3.0	
Ease of access to loans, 1-7 (best)	ⓘ	108	2.4	
Venture capital availability, 1-7 (best)	ⓘ	84	2.5	
B. Trustworthiness and confidence, 1-7 (best)	ⓘ	113	3.9	
Soundness of banks, 1-7 (best)	ⓘ	111	4.2	
Regulation of securities exchanges, 1-7 (best)	ⓘ	46	4.6	
Legal rights index, 0-10 (best)	ⓘ	113	3.0	

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	Info	Rank / 144	Score	Distance from best
9th pillar: Technological readiness, 1-7 (best)	ⓘ	26	5.4	
A. Technological adoption, 1-7 (best)	ⓘ	11	5.7	
Availability of latest technologies, 1-7 (best)	ⓘ	11	6.3	
Firm-level technology absorption, 1-7 (best)	ⓘ	22	5.6	
FDI and technology transfer, 1-7 (best)	ⓘ	14	5.2	
B. ICT use , 1-7 (best)	ⓘ	30	5.1	
Internet users, % of pop.	ⓘ	48	62.1	
Fixed broadband Internet subscriptions, /100 pop.	ⓘ	32	23.8	
Internet bandwidth, kb/s per user	ⓘ	14	181108.9	
Active mobile broadband subscriptions, /100 pop.	ⓘ	58	36.7	
10th pillar: Market size, 1-7 (best)	ⓘ	51	4.3	
A. Domestic market size, 1-7 (best)	ⓘ	50	4.1	
Domestic market size index, 1-7 (best)	ⓘ	50	4.1	
GDP (PPP), PPP $ billions	ⓘ	52	244.8	
B. Foreign market size, 1-7 (best)	ⓘ	48	5.0	
Foreign market size index, 1-7 (best)	ⓘ	48	5.0	
Exports as a percentage of GDP, % of GDP	ⓘ	66	40.9	

	Info	Rank / 144	Score	Distance from best
Subindex C: Innovation and sophistication factors, 1-7 (best)	ⓘ	31	4.2	
11th pillar: Business sophistication , 1-7 (best)	ⓘ	51	4.3	
Local supplier quantity, 1-7 (best)	ⓘ	27	5.0	
Local supplier quality, 1-7 (best)	ⓘ	30	5.0	
State of cluster development, 1-7 (best)	ⓘ	42	4.2	
Nature of competitive advantage, 1-7 (best)	ⓘ	53	3.8	
Value chain breadth, 1-7 (best)	ⓘ	50	4.0	
Control of international distribution, 1-7 (best)	ⓘ	66	4.0	
Production process sophistication, 1-7 (best)	ⓘ	40	4.4	
Extent of marketing, 1-7 (best)	ⓘ	49	4.5	
Willingness to delegate authority, 1-7 (best)	ⓘ	80	3.6	
12th pillar: Innovation, 1-7 (best)	ⓘ	28	4.1	
Capacity for innovation, 1-7 (best)	ⓘ	37	4.3	
Quality of scientific research institutions, 1-7 (best)	ⓘ	18	5.4	
Company spending on R&D, 1-7 (best)	ⓘ	38	3.6	
University-industry collaboration in R&D, 1-7 (best)	ⓘ	23	4.7	
Government procurement of advanced technology products, 1-7 (best)	ⓘ	42	3.8	
Availability of scientists and engineers, 1-7 (best)	ⓘ	8	5.2	
PCT patent applications, applications/million pop.	ⓘ	33	13.0	

Source: World Economic Forum

Appendix 7 – Debt rise since the 1980's

PORTUGAL GOVERNMENT DEBT TO GDP
Percentage of the GDP

SOURCE: WWW.TRADINGECONOMICS.COM | EUROSTAT
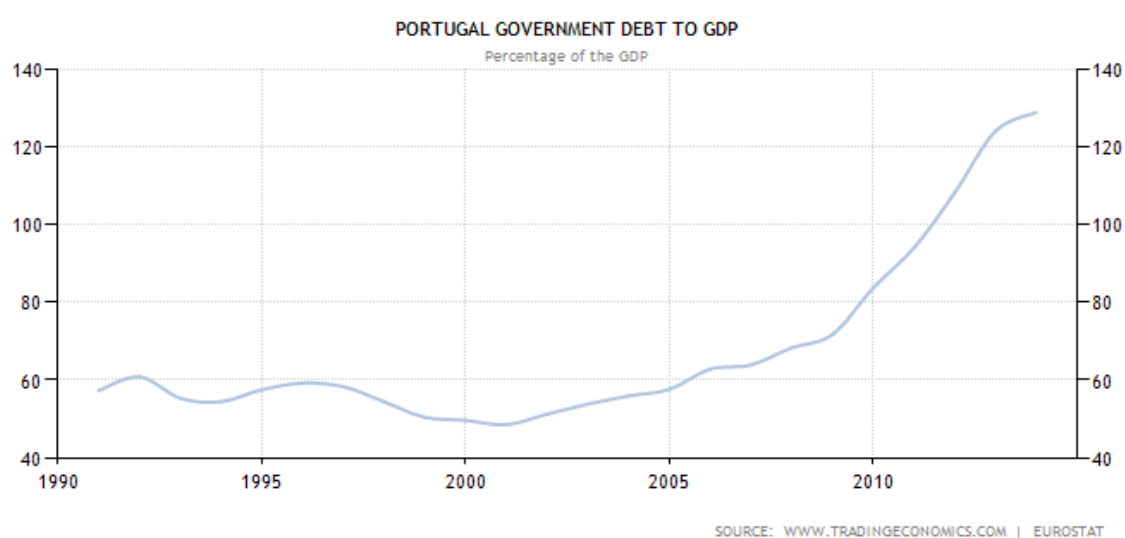
Appendix 8 – Bank holdings of home state debt
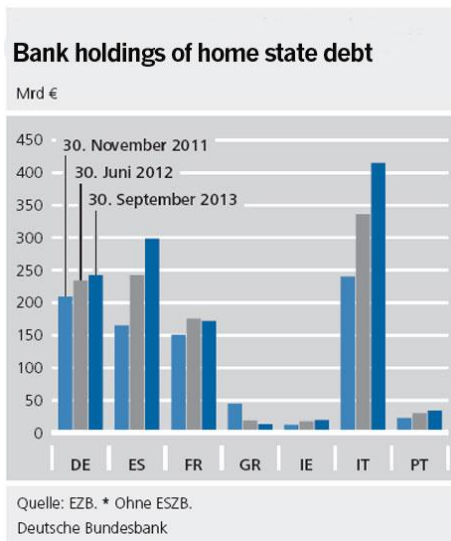
Source: Deutsche Bundesbank

Appendix 9 – Portuguese unemployment rate evolution
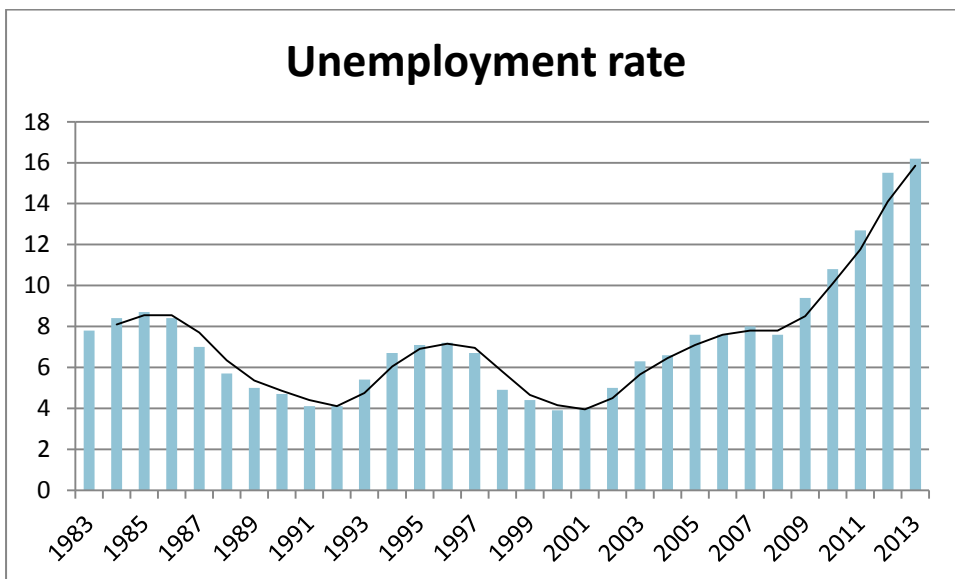
Source: Pordata

Appendix 10 – Portuguese emigration numbers
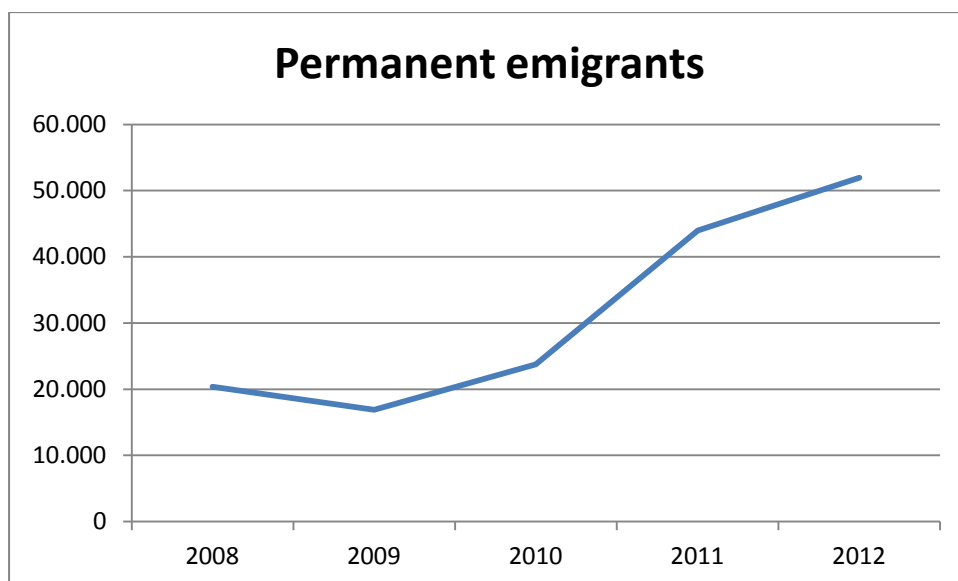
Source: Pordata

Appendix 11 – debt levels of the Portuguese families
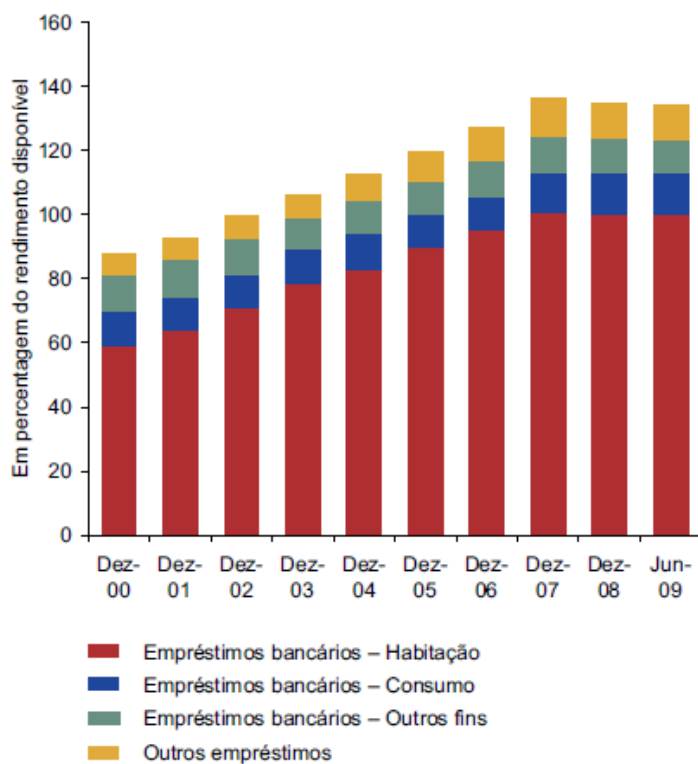
Source: Banco de Portugal

Appendix 12 – % of GDP spent in R&D
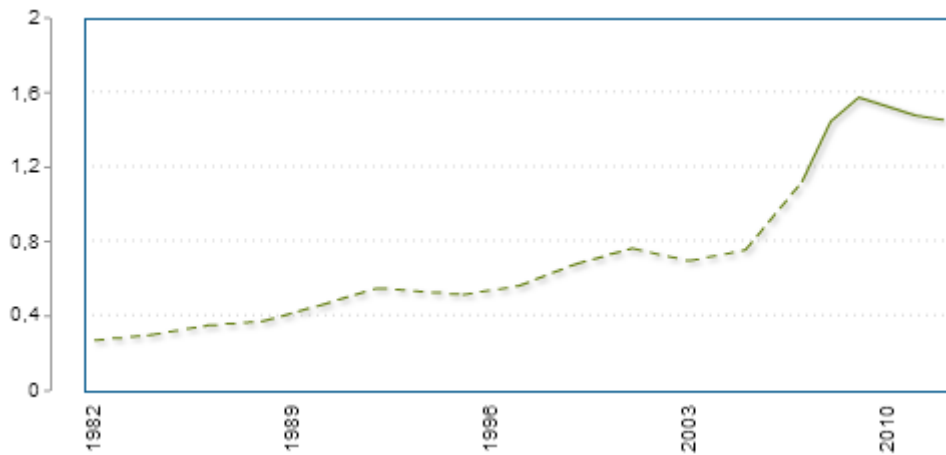
Source: Pordata

Appendix 13 – Literacy rate in the world

Global Literacy Rates

Source: UN Human Development Report 2011
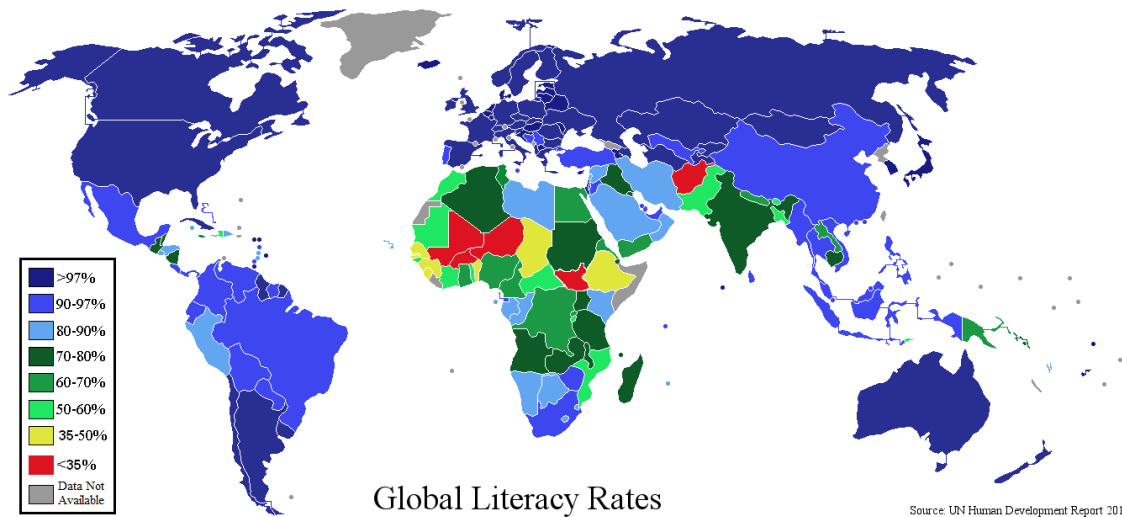
Source: UN

Chart A1.1. Population that has attained tertiary education (2011)

Percentage, by age group

▲ 25-34 year-olds   ☐ 25-64 year-olds
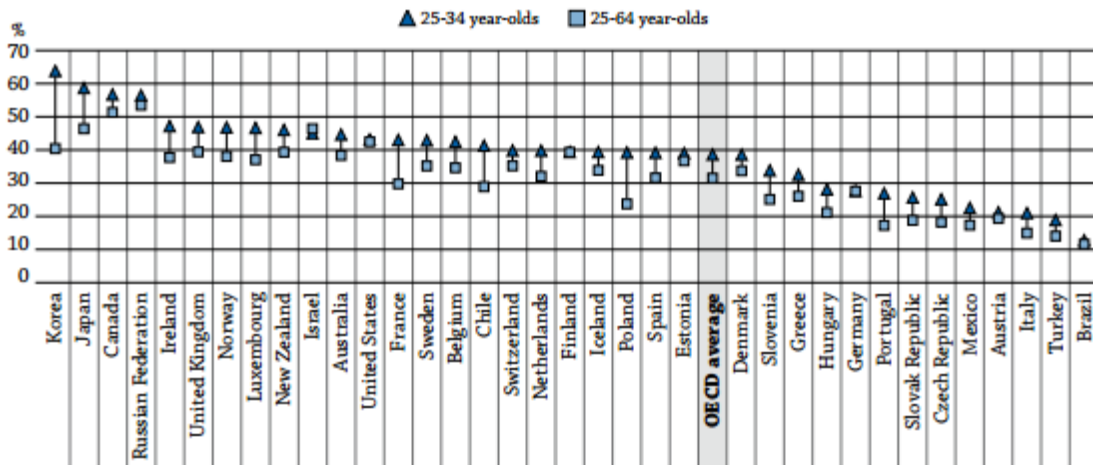
Countries are ranked in descending order of the percentage of 25-34 year-olds who have attained tertiary education.
Source: OECD. Table A1.3a. See Annex 3 for notes (*www.oecd.org/edu/eag.htm*).
StatLink ⟰ http://dx.doi.org/10.1787/888932846215

Chart A1.2. Population whose highest level of attainment is upper secondary or post-secondary non-tertiary education (2011)[1]

Percentage of 25-64 year-olds who have attained ISCED level 3 or 4 as the highest level, and programme orientation

☐ Upper secondary or post-secondary non-tertiary (ISCED 3/4) with general orientation
☐ Upper secondary or post-secondary non-tertiary (ISCED 3/4) with vocational orientation
☐ Upper secondary or post-secondary non-tertiary (ISCED 3/4) with no distinction by orientation
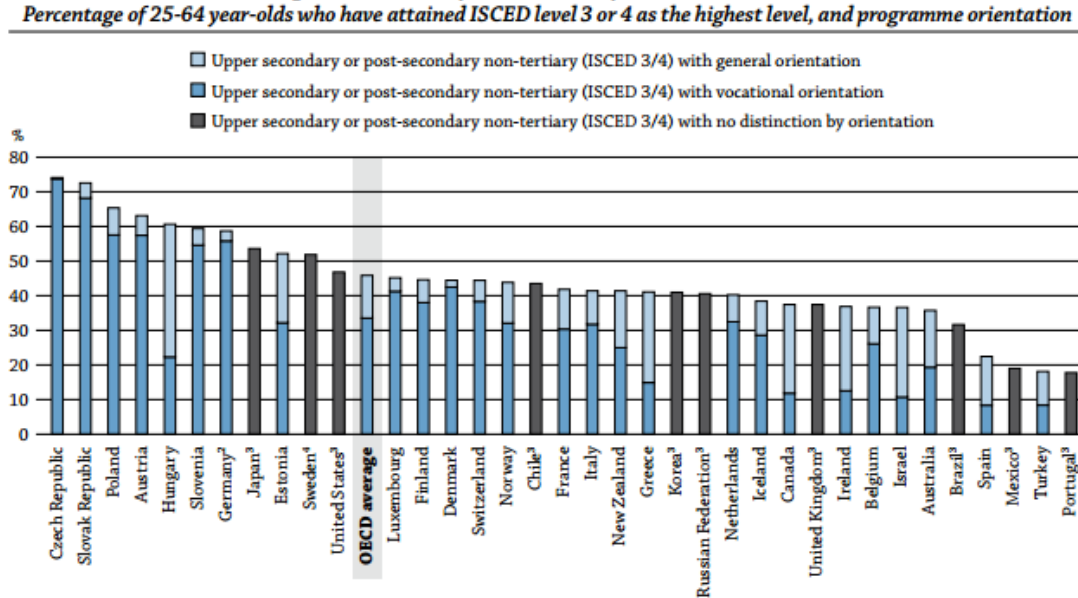
1. Excluding ISCED 3C short programmes.
2. Persons with ISCED 4A attainment in Germany have successfully completed both a general and a vocational programme. In this chart they have been allocated to vocational.
3. Countries for which no information about programme orientation is available.
4. Figures for Sweden include about 10% of 25-64 year-olds who have attained ISCED 3 or 4 in programmes that cannot be allocated by orientation.
Countries are ranked in descending order of the percentage of 25-64 year-olds with upper secondary or post-secondary non-tertiary attainment (ISCED 3/4) regardless of the orientation of the programmes.
Source: OECD. Table A1.5a. See Annex 3 for notes (*www.oecd.org/edu/eag.htm*).
StatLink ⟰ http://dx.doi.org/10.1787/888932846234

Appendix 14 – Average life expectancy rate evolution in Portugal
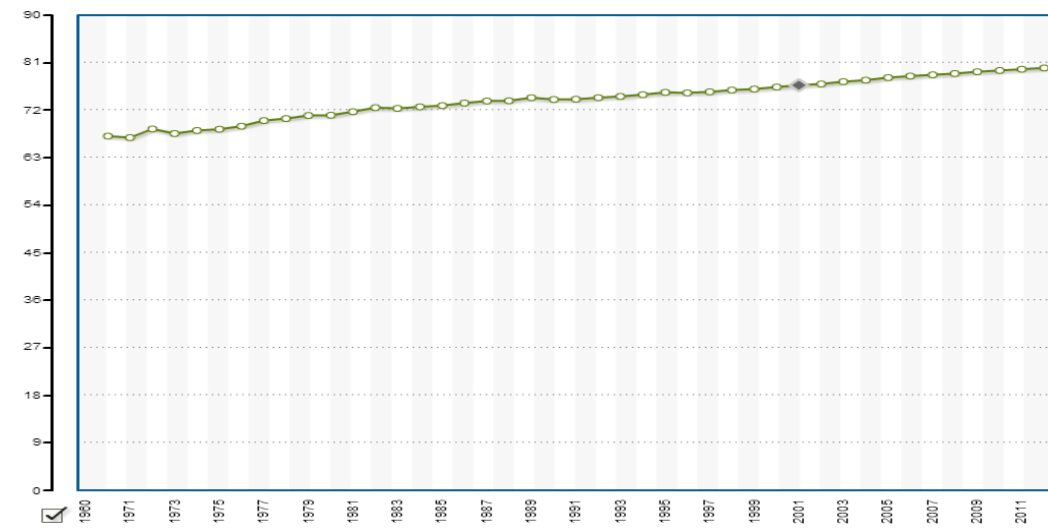
Source: Pordata

Appendix 15 – Child mortality rate in Portugal vs. other countries (2004)

Figure 2. Infant mortality rates, excluding births at less than 22 weeks of gestation, United States and selected European countries, 2004
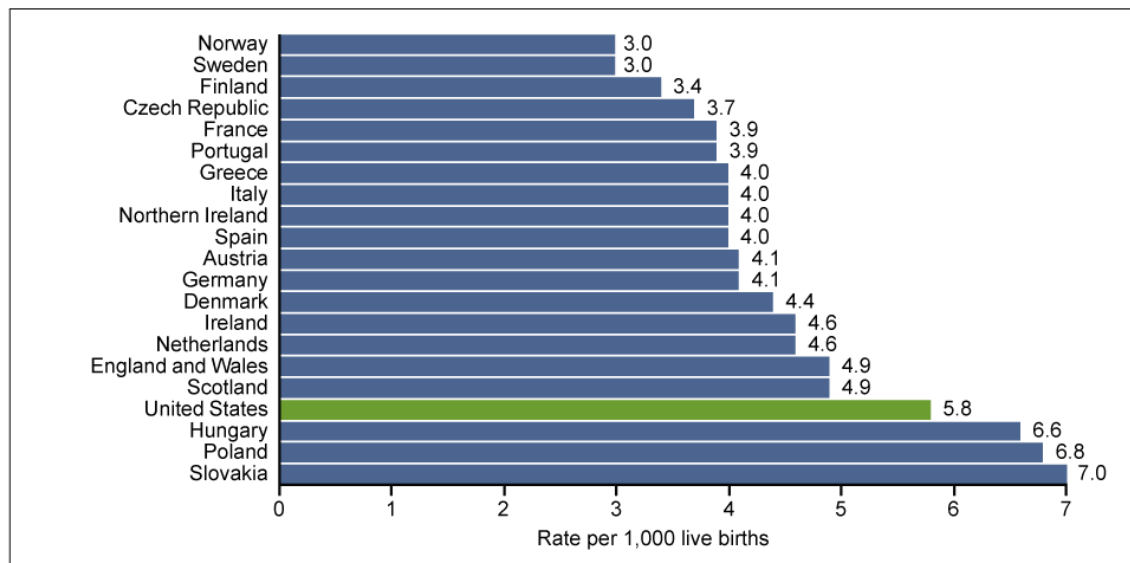
SOURCE: NCHS linked birth/infant death data set (for U.S. data) and *European Perinatal Health Report* (for European data).

Appendix 16 – Portuguese EEZ
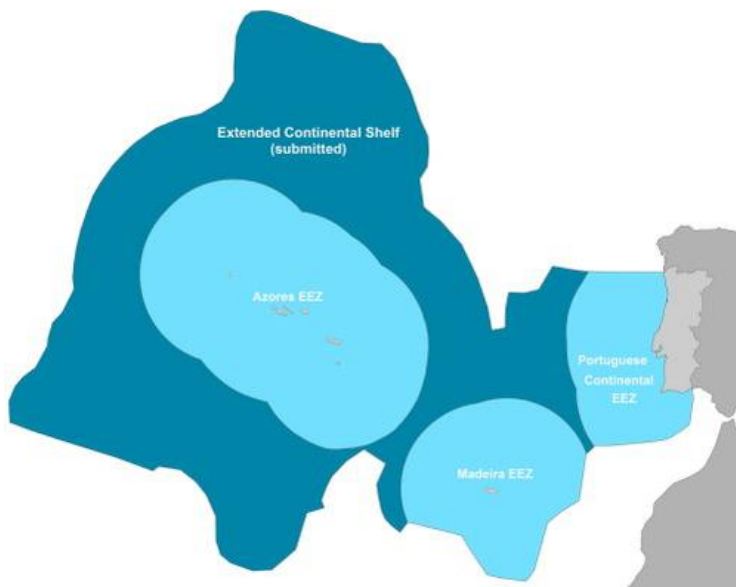
Source: European Union

Appendix 17 – Electoral abstention
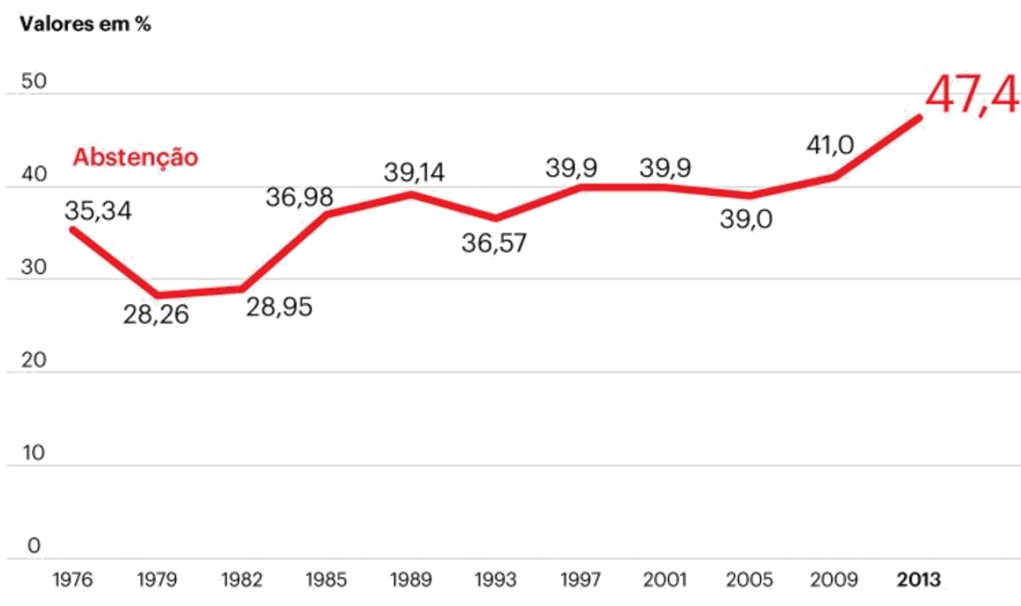
Source: CNE

Appendix 18 – Analysis of BCG paper "Unleashing the potential of technology in education"

A BCG paper about "Unleashing the potential of technology in education" has no problems in saying that "when technology is strategically introduced into every step of the educational value chain, it does, in fact have the potential to enhance every aspect of instruction and learning".

This report, which aims to point a path to improve for real student outcomes in primary and secondary education, describes the ideal system as "a deeply aligned set of educational objectives, standards, curricula, assessments intervention and professional development" with technology being capable of enabling continuous improvement at every level: a closed-loop instructional system.

As the report states, technology is already disrupting higher education in the U.S. with the explosion of online learning. But it is failing to really transform and improve this sector. So why is it now that the revolution is beginning?

Some factors are with us: we have seen a proliferation of interactive white-boards, computers and other technologies in classrooms – and where today's tech-savvy students are usually armed with personal laptops, smartphones, and other devices. In recent years, an abundance of innovative digital content has also emerged, propelled by a new generation of education companies. Moreover, the access is expanding to more students across all levels with the cost of technology continuously dropping.

According to the BCG report there are four main drivers of change today:

1) the number of companies focused on deploying technology in education is proliferating: the report points out not only that this may be the strongest driver but also that most of these companies did not even exist five years ago. This cannot be seen as a surprise as education is a sector that was worth in 2012 $4.4 trillion and set to grow over the next five years as we can see in the picture below.[4]

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[4] http://www.washingtonpost.com/blogs/answer-sheet/wp/2013/02/09/global-education-market-reaches-4-4-trillion-and-is-growing/
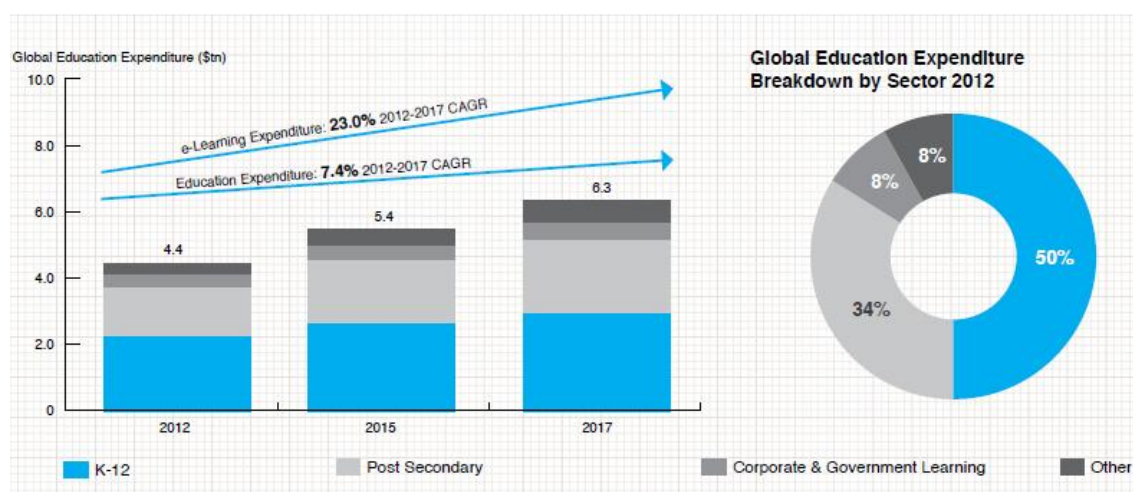
This picture was part of a report by the London-based investment bank IBIS Capital, pointing also that the fastest-growing sector is e-learning, expected to grow 23% by 2017.

The education market is undoubtedly one of the traditional sectors that had the fastest growth in the past decade: according to Apollo Global was worth $2.3 trillion in the beginning of the millennium and in 2005 it was worth $2.5 trillion. 7 years have passed and the estimates are that in 2012 that value almost doubled to the $4.4 trillion.

The e-learning itself is set to reach $169 billion by 2018 and private tutoring nearing $103 billion in market value. So there is no surprise more and more companies are targeting this sector.[5]

2) Technological innovation is progressing at an accelerated rate: The proliferation of mobile devices is a reality making much easier for students to access a lot of digital content anywhere, anytime. With the prices of devices falling it is turning easier for the educational stakeholders to join the technology revolution. In fact by 2014, global shipments of smartphones, netbooks, e-readers and tablets are expected to top 800 million units – four times the number in 2009. We can check in the picture below the expected evolution and relation between shipments and prices since 2010 and expected numbers until 2017.
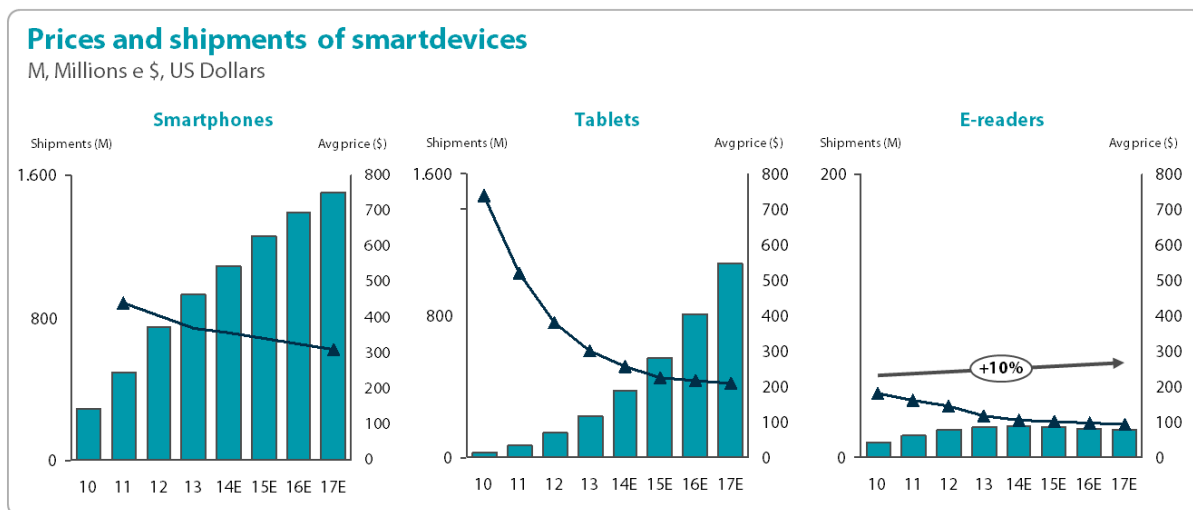
Prices and shipments of smartdevices
M, Millions e $, US Dollars

source: Shipments- Yankee Group - Mobile and Connected Devices Forecast & Monitor ; Avg Price – IDC Worldwide

3) Public scrutiny of the cost and return on investment in public education is escalating: A topic of day even more since the economic crisis has arrived with no surprise that the cost and value of education have taken center stage. The trend of recent decades is simply not sustainable. In Portugal the political options have been more of administering a band-aid like

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[5] http://www.prnewswire.com/news-releases/global-market-for-elearning-to-reach-169-billion-by-2018-private-tutoring-nears-103-billion-in-market-value-180027521.html

closing some schools rather than cure the whole system by reforming it. Worldwide significant demand awaits the creation of new models in education that show the ability of improve outcomes at a lower-cost, mostly based on the promise of technology. One study estimates that this is possible: Florida Virtual School, the first and largest state-run online school is said to have saved Florida $38 million over the past four years. In the other side of the country in California, the Riverside Unified School District is piloting a program based on BYOD (bring your own device) and expect saving of 30 percent over traditional textbooks, while also appealing to many students. In Portugal there are some pilots in this area such a pilot in Cuba do Alentejo, where students were gave tablets instead of textbooks. Although some improvements on motivation could already be seen, with less than an year of pilot it is very hard to conclude about real improvements. Critical is the training work that must be done with teachers no only to guarantee their buy-in but also that they get acquainted with the tools and do not feel anxious about manipulating it in front of a generation that has born with taught fingers for touch screens. Other key aspect resides on the need to implement a digital-friendly curriculum not only to reduce cost but to create a real engaging set of studies and to effectively cut with the stigma of the textbook dictating what students learn and how they are taught. It is almost unconceivable how two decades into the 21st century, students are deprived of an amazing wealth of digital content that can awaken curiosity, deepen engagement with a subject and ultimately greatly expand the knowledge they effectively acquire. From other point of view, the digitalization of classes frees up teachers to spend more time coaching and mentoring students instead of just lecturing and reading about facts.

4) Technology increasingly penetrates a greater proportion of children's lives: This generation is totally at ease with the sense of touch screens and technologies at our hand palm from where we control everything. Not adapting to this new kids and the kind of interaction they live throughout their days outside school will make them lose interest and ultimately fail to learn. But it is not only kids: the massification of smart devices is shaping the content consumption experience, the way we work today and will impact in the way we educate the future generations as we can see in the picture below.

Time spent per app type by smartphone users
Minutes per day and by type of app

25 | 17 | 16 | 14 | 12 | 11 | 10 | 9 | 9 | 3

🕐 **128min**
Total per day

Source: GSMA, O2

Reading in mobile devices
By type of device

- E-readers
- Smartphones
- Tablets

2% · 23% · 75% · 30 · 10 · 3 · 2

Reading sessons | # Pages read | Readings monthly
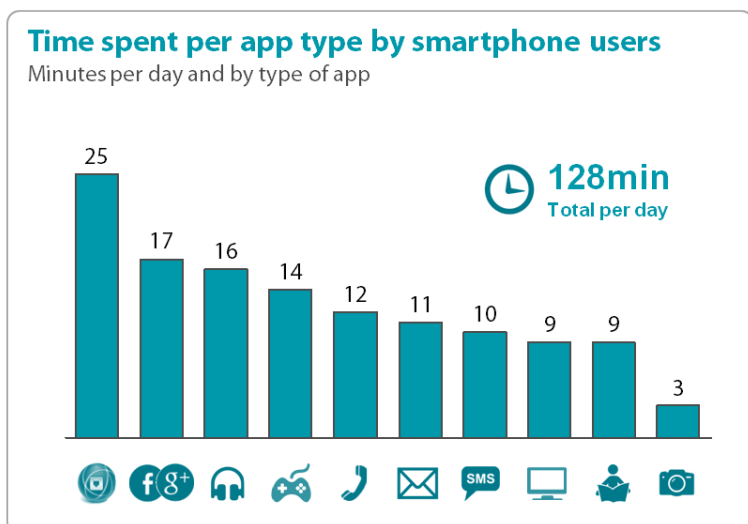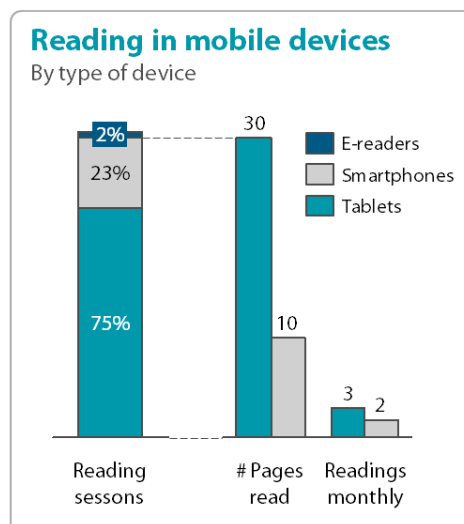
Source: Adobe

Considering an active day of sixteen hours, 12,5% of that time is spent using apps in smartphones. Adding to this there is the evidence that a lot of reading is happening in smart devices what may makes us think what should be the role of this devices in the classroom and learning of tomorrow.

Appendix 19 – Education costs (in Portuguese)

		Un: Euro
Classificação Económica	**Valor**	**%**
01. Despesas com pessoal	**5.324.261.949,15**	**90,2%**
01.01 Despesas com pessoal - RCP	4.615.511.426,04 78,2%	
01.02 Abonos variáveis ou eventuais	56.608.278,63 1,0%	
01.03 Segurança social	652.142.244,48 11,0%	
04.Transferências correntes	**180.967.243,23**	**3,0%**
04.03 Transferências Adm. Central	2.320.800,00 0,0%	
04.05 Transferências Adm. Local	171.013.038,26 2,9%	
04.08 Transferências - Famílias	7.633.404,97 0,1%	
06.02.03 Outras despesas correntes	**381.030.655,72**	**6,5%**
11.02.00 Outras despesas de capital	**16.847.468,26**	**0,3%**
Total Geral	**5.903.107.316,36**	**100%**

Fonte: DGPGF

Appendix 20 – Public spending on Education in % of GDP Europe (in Portuguese)

Quadro 1. Despesa pública total em educação em % do PIB, nos países da UE-27 (2008)

País	%
Dinamarca	7,8
Chipre	7,4
Suécia	6,7
Bélgica	6,5
Finlândia	6,1
Malta	6,0
Letónia	5,7
Estónia	5,7
Irlanda	5,6
França	5,6
Países Baixos	5,5
Áustria	5,5
Reino Unido	5,4
Eslovénia	5,2
Hungria	5,1
Polónia	5,1
UE-27	5,1
Lituânia	4,9
Portugal	4,9
Espanha	4,6
Bulgária	4,6
Itália	4,6
Alemanha	4,6
República Checa	4,1
Eslováquia	3,6

Fonte: Eurostat.
Nota1: os dados para a UE-27 são estimativas elaboradas pelo Eurostat.
Nota2: não há dados para a Grécia, o Luxemburgo e a Roménia.

OBSERVATÓRIO DAS DESIGUALDADES

Source: Eurostat

Appendix 21 - Education in Europe – brief history and contextualization

The process of organized learning transmission is thought of having its roots on the Middle Bronze Age with the first development of writing, languages and alphabets especially in Egypt. In Europe, Greece, Sparta and Rome during the 5th and 4th century BC were the first European civilizations with some sort of formal education. Until the 11th century AD, European higher education took place in Monastic Schools related with Christians, where monks and nuns taught classes. Then in the 11th and 12th centuries the first organizations that we can trace universities back to were established in Italy, England, France and Spain. University in the conception as we know today, a degree-granting institution of higher-learning, is a form of legal organization born in Europe. Associated with this, despite the link with religion, is the notion of academic freedom that accompanied the creation of the first universities: Bologna (1088), Oxford (1096/1167), Paris (1150), Modena (1175), Palencia (1208) Cambridge (1209), Salamanca (1218), Padua (1222), Naples (1224), Toulouse (1229), Siena (1240). In Portugal the first university was the *Universidade de Coimbra*, established in 1290 by the Portuguese King D. Dinis and recognized by the Pope Nicolau IV in the same year. Universities kept growing and spreading across the continent most of the times created

by Kings and Popes. But it was between the 16th and 18th century that education become significantly more widespread. The 18th century marks also the time when states started to invest more public money in Universities. The first notions of pedagogy were also born in this century with the creation of academic rationales for teaching methods. Humboldt University founded in Berlin in 1810 changed notions of research for many universities. Nevertheless, during all this years, classes consisted in a group of students that gathered around the figure of the teacher that taught according to its knowledge, a fixed and closed curriculum. Flexibility was almost null, not to talk about the background of the students: attending the university was an absolute privilege as the access to wherever type of learning until the late 19th century. It was in this time when most of European countries began to provide elementary education in essential skills like arithmetic, writing and reading based on the conviction that education was needed for orderly political behavior. As more people had access to the elementary school and became literate, more people realized that most of the secondary education that was available at the time was only open to the higher classes that could afford it. The entrance in the 20th century brought equality of access issues related with money, sex and race, resulting in the opening of universities in the second half of the century especially after the World Wars and with more emphasis in the last thirty years of the century. The evolution came and today, in most countries, some kind of education is compulsory to all people. According to UNESCO, in the next 30 years more people worldwide will be graduating through formal education than since the beginning of history.[6]

Appendix 22 - Education in Portugal – Characterization of the system

In Portugal education has followed the path described above as all education in Europe. It was only in the 18th century that the scenario started to change: Marques de Pombal, a Minister of the King D. José I was the first person with a political agenda in education implementing some reforms in this area. Linked with the deportation of the Jesuits and the "Companhia de Jesus" who were responsible for most of the free schools around the country, Marques de Pombal started a general reform in education in 1772 including the opening of "Escolas Menores" little schools that spread around the country and the creation of a special tax, the literary subsidy to finance the investments on education. Also it has worked in higher

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[6] http://blog.ted.com/2006/06/27/sir_ken_robinso/

education pointing to the disruption of the classic methods in order to place the Universidade de Coimbra in the same path as the best European universities, creating the Mathematics and Medicine Department. In the next years most of the education would fall back into religious hands until the beginning of the 19th century. The constitution that arises from the Liberal Revolution of 1820 refers specifically to the education problem leading to the General Ruling of Primary Instruction and the creation of the regulator of education in the country, the Superior Council of Public Instruction. In the following year the reform of primary, secondary and higher education are published being the main measures the creation of schools for girls, introduction of gymnastics, creation of high schools in every district of the country and two in Lisbon, and addition of two superior schools to the higher education in Lisbon and Oporto. In 1884 a second reform is published expanding and re-organizing education with the elevation of the Superior Council to Ministry, the foundation of commercial, industrial and design schools and the hiring of international professors due to the inexistence of qualified professors in Portugal. Until the implantation of the Republic some measures were taken towards progress: creation of schools only for *enfants*, for adults and for disabled, the reform of high school in five different years of school with two more creating the general course and the complimentary course.

From 1910 to 1926, with 70% of illiteracy rate, education was a priority during the first republic. Nevertheless the inconsistent government and the disperse and parceled legislation due to the political, economical and social instability made impossible to put into practice the reforms. But in 1926 a military revolution created great changes in education, changing into a nationalist school, based in strong values of morality. In Estado Novo, the period comprehend between 1933 and 1974, programs were reduced into the basis apprentice, primary school is reduced, complementary and regular higher schools are extinguished and the in the rural areas "postos de ensino" are created, little schools which professors most of the times only knew how to read and write, but that were of a proved moral and political suitability. Fighting the illiteracy rate stops being a priority because as stated before, ignorance of reading and writing helps this kind of regimes, hardening the "contamination" by other theories considered to be destabilizing. In 1936 some reforms are made: the creation of "Mocidade Portuguesa" a group to control the youngsters and disseminate the values of the "Estado Novo", there is the separation between the higher via and the technical via in secondary school making the gap between rich and poor grow. In 1950 the illiteracy rate is still 40% and there's when a small mindset change has impact in the government that implements four

mandatory years of school for boys (girls would follow in 1960). Some reforms concerning compulsory schooling to six years for both boys and girls, creation of preparatory school, equivalent to high schools to nurture the vocational worries felt by the needs of the country. In 1969 a protocol incident in Coimbra would dictate the exchange of education Minister, replacing Hermano Saraiva a conservator by Veiga Simão, a disruptor that presented in 1971 a big reform on the educational system introducing the democratization of access to universities. This reform was not totally implemented due to the Carnation Revolution of 1974.

Within the first two years after the revolution and despite the social conflicts that normally assist this periods of revolution, the role of education in the economic development of the country and modernization of Portugal is widely discussed throughout all the sectors that reach the consensus that it is important to reform the system. The primary and secondary schools are reformed not only in what content is concerned but also the model used. Universities gain pedagogical, scientific and financial independence. In 1976 the Portuguese Constitution is published and deliberates that everyone has the right to have an education, and that the Country has to promote it through schools and other training methods contributing to the equality of opportunities and the overcoming the social and economical inequalities. In the IV section, (Cultural Rights and Duties), article 74 number 3[7] it is described the action plan proposed along seven principle basis:

i) Grant universal, compulsory and free access to basic education;

ii) Creation of a public pre-school system;

iii) Grant a continuous education and elimination of illiteracy;

iv) Granting all citizens, according to one capabilities, the access to the higher levels of education, scientific research and artistic creation;

v) The progressive establishment of a free education in all levels of learning;

vi) Establishing the connection between learning and the economic activities;

vii) Stimulation of training of scientific and technical workers with origin from the lower classes;

The next phase, between 1976 and 1986 observes the democratic consolidation above the ideologies with reforms in curriculum, technical and professional's aspects, a new concern about the quality of education following the path pointed by the Constitution. The access to

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[7] Portuguese Constitution 1976

universities is restructured with the creation of *numerus clausus* for each degree. Although there is this progress there is also observed a structural block from the way Portuguese economy is based that is constantly stopping the educational reform. And so in 1986 is approved the publication of the law that would finally make the turnaround in the Portuguese educational system, drafting the basis for what we have today and guaranteeing what had been established in the Portuguese Constitution of 1976: the universal, compulsory and free access to the education system based in nine years divided into three different sequential cycles.

The publication of this law, the "Lei de Bases do Sistema Educativo Português" also added the notion of three types of education: the pre-school, the scholar education, and the extra-school education, this last comprehending activities concerning literacy and other basis activities. Concerning the three cycles:

Primary Education: Comprehending the first nine years of education, is compulsory and supported by various measures such as school transportation, the creation of canteens, food supplement, accommodation, and for the first time, financial aid to families in need.

Secondary Education: Comprehending the following three years, divided into two types: the general path that sub-divided into five study fields and was a preparation to university and the vocational path that aimed to prepare students to start to work after those three years although it also granted the access to universities. Artistic education is also reformed by the introduction of music, dance, theatre and cinema in the cycles.

Higher Education: with the granting of autonomy to universities the expansion is natural. A division is created between two approaches characterized by the local where the learning occurs:

University: path towards a perspective of knowledge and research. Aims to create a solid scientific and cultural background and a technical training that prepares to the professional activities and stimulates skills of conception, innovation and critical analysis.

Polytechnic: path oriented by a perspective of applied research and development towards comprehension and finding of solutions of factual problems. Aims to create a solid cultural and technical background and train to specific and practical situations.

Until 1997 some minor changes have been done do the system described above, most importantly the introduction of national exams in secondary school and reforms concerning

professors and the management of schools. A reform of the curriculums is also done culminating in a curricular re-organization in 2003 especially in primary school. During these years there has been a boom in private institutions on higher education creating some problems regarding quality. The EU funding contributed strongly for the investment in this area towards the reduction of the gap between Portuguese and other European citizens. In 2007 Bologna came to initiate the European harmonization in higher education. Unfortunately that gap is still deep as we can see in the pictures in the annexes. In the OECD context Only in Mexico, Portugal and Turkey, less than 20% of the population attained upper secondary education as the highest level of education. The illiteracy rate, near 5% is still one of the biggest in Europe.

The system today:

Structure of the national education system 2013/14
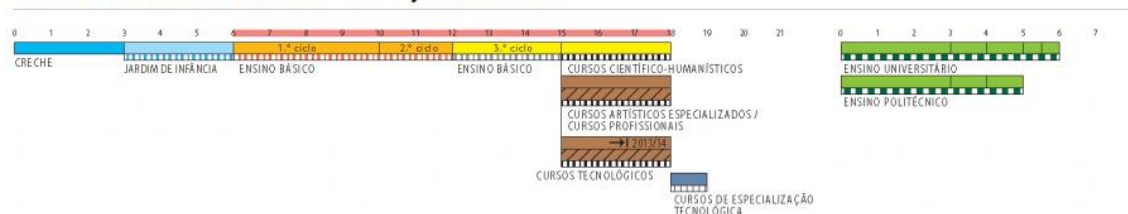
Note: Cursos tecnológicos are no longer provided to new students. However, students enrolled in the 12th grade are still able to complete the courses
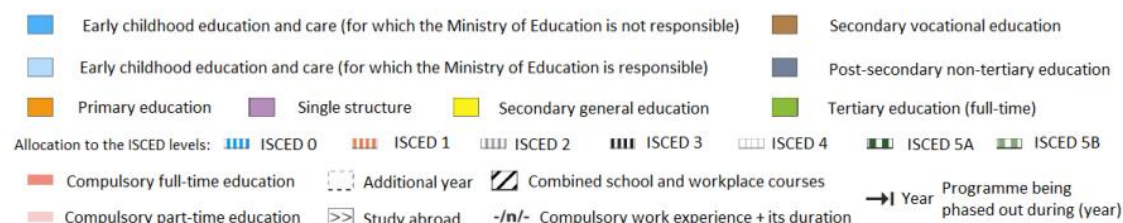
source: Eurydice

In Portugal, Education is regulated by the Ministry of Education and Science who is responsible for designing the strategy and coordinate the implementation and evaluation of all the national policies regarding education, training, science, qualification and training.

The pre-primary school is the first stage of Portuguese education system. Aimed at children between three and five years had its universality established but not compulsory. The network is composed by private, state, cooperative, non-profit and social solidarity institutions.

Compulsory education begins after pre-primary school at the age of six and lasts for twelve years comprehending basic or primary education and secondary education. Primary education still lasts nine years divided into three phases: the first with the duration of four years, the

second the next two years and the third that has the duration of three years. All are sequential and with specific goals to achieve the objectives of basic education and curriculums adapted to the age and stage of development.

Secondary school lasts for three years and evolves some specialization with students having to choose a path from various options that comprises courses aiming to prepare for a professional path or further studies. Public, private and cooperative schools are in charge of this education. Public schools are free of charge.

Higher education is as stated above structured between university and polytechnic education by public, private and cooperative institutions and according Bologna principles.

Appendix 23 – Top 7 new techs on Education

TOP 7 NEW TECHS ON EDUCATION
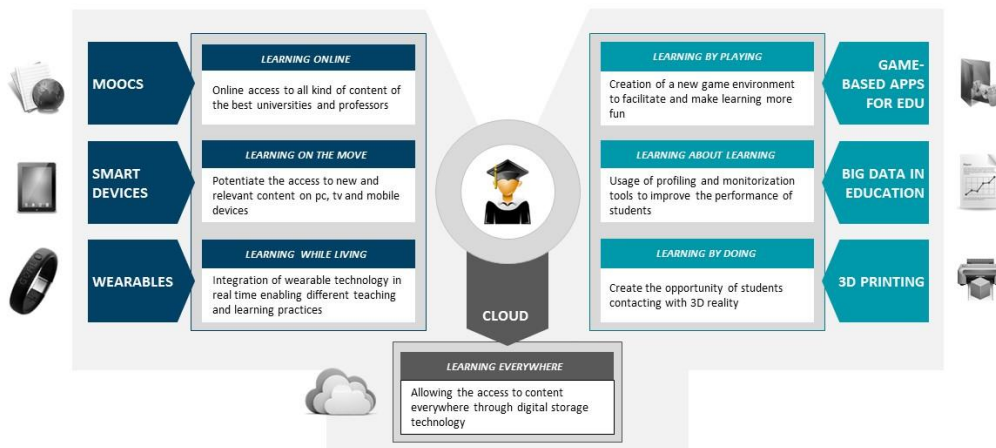
MOOCS – LEARNING ONLINE
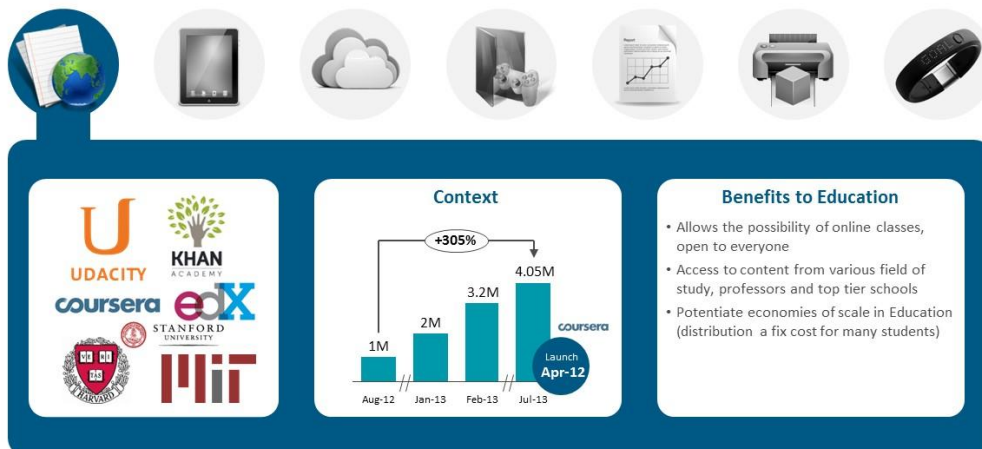
Source: New York Times

SMART DEVICES – LEARNING ON THE MOVE

Context

- The average time spent per day with a smartdevice is 128min
- 2013 was the turning point in Portugal:
  - Smartphone sales in Portugal surpassed the sales of feature phones (2,13M – 52% of total, +21% vs. 2012)
  - Tablets sales surpassed sales of PCs (673k vs. 627k, +79% vs. 2012)

Benefits to Education

- Allowing the access to a set of information sources in the internet in mobility
- Helping to deal with different types of students, customizing content and activities
- Pilot projects in Portugal:
  - 7th year Cuba, Alentejo
  - 12th year Quinta do Marquês - Oeiras

Source: GSMA, Adobe, ipadsinschools.com

CLOUD – LEARNING EVERYWHERE

Context

- 2000-2005 – dot-com bubble urges the need of IT modernization
- 2006 – Amazon enters the cloud market
- 2008 – Cloud goes mainstream (Google, Amazon, Microsoft, Cisco, Myspace)
- 2009 – Private Clouding
- 2010 – Cloud for the consummer

Benefits to Education

- Allows democratization of access in all devices, everywhere
- Potentiate stability and safety
- Make possibly the sharing and creation of collaboration environments
- Allows a general cost saving

Source: Guardian, Pearson, MEO Cloud

APPS FOR EDU – LEARNING BY PLAYING

Context

- Games increase retention 9% vs. Classes or online tutorials
- The download of educative apps is superior to the average of the apps
- 2013 – Duolingo – *iPhone App of the year* – 1st year that was an educative app
- QuizUp – 8 days to reach 1M people (only in iOS)

Benefits to Education

- Increase of retention
- Change the experience into something more enthusiastic and engaging
- Give the possibility to simulate real case studies (eg: SimVenture)
- Passing values to the new generation (eg: World Peace Game)

Source: Mckinsey, Education to Employment – Getting Europes youth into work full report

BIG DATA IN EDU – LEARNING ABOUT LEARNING

Context

- Big Data is a growing industry
- It analyses and combines various personal and school date of a person
- In Florida University, a programme "eAdvisor" suggests courses and monitors performance
- In Texas University, professors use technology to stimulate classes through the real-time analysis of answers

$16.1B in 2014

Benefits to Education

- Creates a customized educational approach to students
  - Allows the adaptation of the different students' pace, improving on the subjects the students needs more help
  - Stimulates and challenges the student according to his interest and capacity

Source: chronicle.com, nytimes.com, Forbes, IDC

3D PRINTING – LEARNING BY DOING

Context

- The first 3D printer dates more than 30 years ago
- The lower cost (< 2,000€) will allow massification:
  - There is a project in the US to put a 3D printer in every classroom
  - The use of a 3D printer is becoming more common in universities

Benefits to Education

- Prototype printing (Engineering)
- 3D modelation (Architecture)
- Map printing, topography and demography (Geography)
- Molecular Models (Chemistry)
- Sections of hearts and other organs (Medicine, Biology)

Source: Forbes

WEARABLES – LEARNING WHILE LIVING

Context

- 1975: first wearable: watch-calculator form HP & Hamilton
- 2014: Wearables year
  - Forbes & Entrepreneur dixit
  - Stars of the CES (Consumer Electronic Show) and MWC (Mobile World Congress)
  - 90M products are projected to be sold in 2014, an increase of 350% vs. 2013

Benefits to Education

- Sharing data and evidences of the daily routine with professors, pointing diary questions and acquiring knowledge
- Record topics through the day, new experiences, history related topics to discuss a posteriori
- Underline books and send automatically questions to the professor

Source: Forbes, Entrepreneur, Credit Suisse, ABI World Market Forecast

Appendix 24 – Trends on Education

Use of devices to work
%, percentage

Smartphone

	2008	2009	2010	2011	2012
No use/won't use	15%	10%	7%	4%	3%
Is considering to use	57%	61%	56%	56%	53%
Using	28%	29%	37%	41%	44%

Tablet

	2011	2012
No use/won't use	10%	5%
Is considering to use	60%	54%
Using	30%	40%

- No use/won't use
- Using
- Is considering to use

Source: Elearning Guild

Use of mobile in learning
%, percentage of teachers that say that their students use smartphones for:

Search of info in the classroom	42
Photos or videos for homework	38
Upload of content on the internet	18
SMS in the classroom as part of a task	11
Use of online edu-plataforms	2

Source: Pew Research Center

Virtualization and online learning are already going mainstream as we can see below.

 # Students that finished at least one online course
M, Millions

6.715

+17%

1.603

2002 2003 2004 2005 2006 2007 2008 2009 2010 2011

Source: Rabson Research Group, Pearson & Sloan-C

Growth potencial for online learning
% of university presidents that say

Now: Most of the students had one online course	In 10 years: Most of the students is going to have online classes
15%	50%

Source: Pew Research Center

The importance of Social Media and networking is increasing. Notice also that Google already surpasses Wikipedia and online encyclopedias. Scholar books are nearly in the bottom.

Searching tools more likely to be used by students
%, Percentage (teacher's point of view)

	Very likely	Likely	Unlikely	Very unlikely
Google or other search engine	94%		5%	
Wikipedia/online encyclopedias	75%		19%	4%
Youtube/Social Media	42%	46%	10%	
Friends network	41%	34%	19%	6%
Scholar books (text or e-books)	18%	48%	28%	6%
Online database	17%	29%	36%	18%

75%

- Very likely
- Likely
- Unlikely
- Very unlikely

Source: Pew Research Center

And the growth of Educational Apps is growing at a superior rate than average.

CAGR of free apps by download category
2009 - 2011, %, percentage

News	342
Travel	270
Education	**239**
Healthcare&Fitness	234
Lifestyle	232
Books&Reference	226
Music	226
Overall	188

Source: Mckinsey

CAGR of paid apps by download category
2009 - 2011, %, percentage

Business	221
Healthcare&Fitness	213
Music	212
Social Networking	208
Books&Reference	201
Entertainment	185
Education	**180**
Overall	178

Source: Mckinsey

Prices and shipments of smartdevices
M, Millions e $, US Dollars

Smartphones | Tablets | E-readers

source: Shipments- Yankee Group - Mobile and Connected Devices Forecast & Monitor; Avg Price – IDC Worldwide

Time spent per app type by smartphone users
Minutes per day and by type of app

25, 17, 16, 14, 12, 11, 10, 9, 9, 3

🕐 **128min**
Total per day

Source: GSMA, O2

Reading in mobile devices
By type of device

■ E-readers
▫ Smartphones
■ Tablets

Reading sessons: 2%, 23%, 75%
Pages read: 30, 10
Readings monthly: 3, 2

Source: Adobe

Appendix 25 – the first xMOOC

MOOCs started getting more attention when Sebastian Thrun and Peter Norvig from Stanford University opened up enrollment to their Artificial Intelligence course in 2011. They expected a few thousand students, but within the first few days enrollment hit 10,000, then

100,000 and the final number of registered students was 160,000, making it indeed massive. The course was a life changing experience for many students including the course instructor Sebastian Thrun:

One of the most amazing things I've ever done in my life is to teach a class to 160,000 students. In the fall of 2011, Peter Norvig and I decided to offer our class "Introduction to Artificial Intelligence" to the world online, free of charge. (Gee, 2012)

Shortly after Artificial Intelligence finished, Thrun started Udacity, a platform offering MOOCs that mostly focus on science and technology (udacity.org). Coursera opened soon after, followed by edX.

These MOOCs offer an university-based experience and are modeled on traditional course materials, learning theories and higher education teaching methods. For example, they are usually organized around lectures and quiz-type assessment methods. Plus, these courses usually use little distributed content that's available on the Web outside the platform. Most course content is prerecorded video lectures which are posted on the courses' home page.

It was for these reasons that Stephen Downes came up with the terms to differentiate between two concepts, as mentioned earlier. xMOOCs are not better or worse than a cMOOC, just different. xMOOCs fit the needs of many (though not all) learners looking for academic courses that meet a specific interest and need.

Appendix 26 – other types of MOOCs

There are also some other type of MOOC that are worth mentioning:

The DOCC – Distributed Online Collaborative Courses are courses in which the same core course material is distributed to students at multiple institutions, but the exact administrations of the material can vary and students can engage with each other across institutions via the online component.

The BOOC – Big Open Online Courses are very similar to the MOOC logic. The difference resides in the fact that are limited to a smaller number of students, most of the times 50.

The SMOC – Synchronous Massive Online Courses differ from xMOOCs in that the lectures are broadcast live, requiring students to log in at specific times in order to hear the lectures.

The SPOC – Small Private Online Courses follow some of the logic of BOOCs in the view that classes a limited number of students but in this model the teacher interactions are more

closely modeled after traditional classroom interactions, although some of the most success case studies of the implementation of SPOC are related to flipped classroom.

Appendix 27 – The MOOC market and its most important players

In 2014, 1200 courses were available. (edsurge.com). The courses can be organized into areas of knowledge with the following result:

- Humanities (20% of the courses)

- Computer Science and Programming (16% of the courses)

- Business & Management (15% of the courses)

- Science (11% of the courses)

- Health & Medicine (11% of the courses)

- Education & Teaching (8,6% of the courses)

- Math & Stats (6,6% of the courses)

- Engineering (5,1% of the courses)

- Social Sciences (5,7% of the courses)

Coursera is nowadays the most important MOOC provider in the world. Coursera, which is a for-profit provider, has more than five million students enrolled and offers more than 532 courses. Reaching students in 190 countries, Coursera has partnered with 107 schools. (Coursera.org)

EdX was started by Harvard and MIT in May 2012 and is a non-profit MOOC provider. With more than 1.65 million students enrolled, offers 125 courses in partnership with 30 other schools to students from 225 countries and territories. (edx.com)

Udacity is also a for profit organization. With 1.8 million students from more than 190 countries, has partnered with 16 schools to offer 33 courses. (udacity.com)

Other relevant providers are Canvas Networks, Iversity, Alison, Open Learning, Udemy, Miriada X.

Regarding the user demographics, with analytics via Coursera, the median age of enrolled students is 35 and only 40% of MOOC users come from developing countries. Concerning the employment status, the large majority is a full-time worker (73,3%), with only 19,7% of unemployed students, 14,2% as a part-time worker, 4,2% as retired and the other 2,1% with different employment status (coursera.org).

Appendix 28 – Benefits of MOOCs

1. A world of knowledge totally for free with a plus of contacting with people from all over the globe: MOOCs are free or nearly free, and bring the possibility to work with people from different backgrounds and with different experiences.

2. Provide a solution to overcrowding: most of the best courses have waiting lists or a big number refused candidates due to lack of possibility of the school to provide a good education to these students.

3. Force professors to improve lectures: Not only because their work will be exposed to the whole world but also because due to the nature of MOOCs' lectures, every tiny bit of material and teaching methods will be enhanced at their maximum.

4. Courses designed to ensure that students keep up: MOOCs are real college courses complete with tests and grades. They are filled with multiple choice questions and discussions that test comprehension. The online testing mechanism explains the right response when student miss an answer, and it lets them see the reasoning behind the correct choice when they are right.

5. Allow teachers to make the most of classroom time in blended classes: teachers can use the time in class to really work on the subjects that their students have more difficulty to understand.

Appendix 29 – Support to Methodology

Table 1.2   Alternative Strategies of Inquiry

Quantitative	Qualitative	Mixed Methods
Experimental designs Non-experimental designs, such as surveys	Narratives Phenomenologies Ethnographies Grounded theory Case studies	Sequential Concurrent Transformative

Table 1.3   Quantitative, Qualitative, and Mixed Methods Procedures

Quantitative Research Methods	Qualitative Research Methods	Mixed Methods Research Methods

Predetermined
Instrument based
   questions
Performance data,
   attitude data,
   observational data,
   and census data
Statistical analysis
	Emerging methods
	Open-ended questions
	Interview data,
	   observation data,
	   document data,
	   and audiovisual data
	Text and image analysis
		Both predetermined
		   and emerging
		   methods
		Both open- and
		   closed-ended
		   questions
		Multiple forms of
		   data drawing on
		   all possibilities
		Statistical and
		   text analysis

Table 1.4   Qualitative, Quantitative, and Mixed Methods Approaches

Tend to or Typically	Qualitative Approaches	Quantitative Approaches	Mixed Methods Approaches

Use these philosophical
   assumptions
Employ these strategies
   of inquiry
	Constructivist/Advocacy/
	   Participatory knowledge claims
	Phenomenology, grounded
	   theory, ethnography, case
	   study, and narrative
		Postpositivist knowledge
		   claims
		Surveys and
		   experiments
			Pragmatic knowledge
			   claims
			Sequential, concurrent,
			   and transformative

Employ these methods	Open-ended questions,
	   emerging approaches, text
	   or image data
		Closed-ended questions,
		   predetermined
		   approaches, numeric
		   data
			Both open- and closed-ended
			   questions, both emerging and
			   predetermined approaches,
			   and both quantitative and
			   qualitative data and analysis

Use these practices of
   research, as the
   researcher
	Positions himself or herself
	Collects participant meanings
	Focuses on a single concept
	   or phenomenon
	Brings personal values into the study
	Studies the context or setting of
	   participants
	Validates the accuracy of findings
	Makes interpretations of the data
	Creates an agenda for change
	   or reform
	Collaborates with the participants
		Tests or verifies theories
		   or explanations
		Identifies variables
		   to study
		Relates variables in
		   questions
		   or hypotheses
		Uses standards of validity
		   and reliability
		Observes and measures
		   information numerically
		Uses unbiased approaches
		Employs statistical procedures
			Collects both quantitative
			   and qualitative data
			Develops a rationale for mixing
			Integrates the data at different
			   stages of inquiry
			Presents visual pictures of the
			   procedures in the study
			Employs the practices of
			   both qualitative and
			   quantitative research

Appendix 30 – Questions of the survey

MOOCs

Este questionário pretende avaliar o interesse e conhecimento da população jovem Portuguesa sobre MOOCs e o impacto que acham que poderá ter na forma como educamos as próximas gerações.

*Obrigatório

Idade *

[   ]

Qual o seu emprego? *

○ Estudante
○ Trabalhador-Estudante
○ Trabalhador por conta própria
○ Trabalhador por conta de outrém
○ Outro: [   ]

Sabe o que são MOOCs? *

○ Sim
○ Não

[Continuar »]   33% concluído

MOOCs

Resumidamente, MOOCs (Massive Open Online Courses) são cursos e módulos de universidades de topo mundiais (Harvard, MIT, Stanford, etc), em formato vídeo, com os melhores professores, abertos a qualquer pessoa conectada à Internet.

Atendendo ao seu conhecimento sobre o assunto (e à descrição acima), acha que os MOOCs podem ter sucesso em Portugal? *

☐ Sim
☐ Não
☐ NS/NR

Trocaria as aulas teóricas por MOOCs? *

Esta pergunta pretende avaliar a preferência dos alunos em assistir às aulas teóricas em casa através de vídeo tendo a possibilidade de o fazer à hora que mais lhes convenha e repetir o vídeo.

☐ Sim
☐ Não
☐ Outro: [   ]

[« Voltar] [Continuar »]   66% concluído

MOOCs

Uma das grandes vantagens dos MOOCs é a perspectiva de descida dos custos da educação tanto para o estado como para o estudante, como igual ou maior qualidade de conteúdos. Pede-se que avalie agora outras formas de financiamento dos MOOCs.

Qual a sua opinião sobre os seguintes modelos de negócio dos MOOCs? *
Escala (1 - Discordo totalmente; 5 - Concordo totalmente)

	1	2	3	4	5
Licensing (Compra/venda de MOOCs entre Universidades)	○	○	○	○	○
Freemium (O curso é gratuito mas alguns conteúdos e funcionalidades-extra são pagos)	○	○	○	○	○
Engagement with the real world (os cursos são gratuitos mas as visitas de estudo e outras actividades são pagas)	○	○	○	○	○
Cross-selling (ex: inscrevendo-se num MOOC de psicologia é-lhe sugerido inscrever-se numa Associação de Psicologia)	○	○	○	○	○
Tuition (O curso é pago normalmente, embora a um preço bastante inferior dos cursos actuais)	○	○	○	○	○
Certification (o curso é gratuito mas para obter certificação e diploma tem que pagar)	○	○	○	○	○
Tutoring (o curso é gratuito mas o acesso a um tutor é pago)	○	○	○	○	○
Peer assistance (semelhante ao tutor mas o acesso é aos melhores estudantes)	○	○	○	○	○
Data and analytics for companies (os estudantes respondem a perguntas relacionadas com provas de conceito de empresas. Ex: Samsung quer testar o interesse do público entre os 2 sistemas operativos, perguntaria no meio do curso)	○	○	○	○	○

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Academic Research (estudantes podem responder a questionários no meio do MOOC)	○	○	○	○	○
Data analytics for recruitment (Empresas de recrutamento podem ter acesso ao desempenho dos estudantes)	○	○	○	○	○
Traditional advertising (publicidade no meio dos cursos)	○	○	○	○	○
Product Placement (case studies com exemplos sobre determinados produtos)	○	○	○	○	○
Suggested collaborative group learning (definição paga que faz match com os melhores alunos)	○	○	○	○	○
Diagnostics (definição paga para identificação do estado da pessoa)	○	○	○	○	○
Sponsored courses (cursos patrocinados por determinados empresas)	○	○	○	○	○
Modules for credit (módulos e cadeiras pagos à parte trocáveis por ECTS)	○	○	○	○	○
Access to experts/stars/best teachers (acesso aos melhores profs)	○	○	○	○	○
Problem-sponsored Learning (curso gratuito que culmina na realização de um projeto proposto por uma empresa)	○	○	○	○	○

« Voltar **Enviar**

100% concluído.

Nunca envie senhas em Formulários Google.

Appendix 31 - Questions made on the in-depth interviews

1.   Vários estudos e artigos têm ligado a histórica falta de competitividade Portuguesa a um sistema de educação deficitário. Na sua opinião, e na qualidade de ex-estudante do sistema de ensino Português, quais os 5 maiores problemas que identifica no sistema atual? Que desafios trazem estes problemas? E porquê?

2.   Está cada vez mais presente na sociedade civil o debate sobre os gastos do Estado em Educação. No entanto Portugal não é dos países que mais investe em Educação em percentagem do PIB estando até abaixo da média da UE27. Faça o seguinte exercício em cinco minutos: quais os meios alternativos para financiar a Educação. Poderemos exportar Educação? S/N, porquê?

3.   O que define para si a qualidade de um material de aprendizagem? Pense nos 3 KSF mais importantes e explicite-os.

4.   Os MOOCs (Massive Open Online Courses) são cursos online caracterizados pelos seguintes factos: na sua maioria de Universidades de topo, abertos para as populações de todo o mundo via internet, com um índice estruturado e correspondente a um tópico inteiro, contendo conteúdos online através de aulas-vídeo e documentação suporte como case studys, legislação, ações colaborativas e de avaliação, etc. Acha que os MOOCs poderiam ser importantes em Portugal? Se sim, que disciplinas escolheria para fazer os MOOCs e porquê? Acha possível uma visão de futuro em que todo o ensino será online e remoto? Explicite a sua resposta.

5.   A língua Portuguesa é vista cada vez mais como um bem valioso. O que lhe parece a criação de uma comunidade educativa de Língua Portuguesa composta pelo Brasil, Angola, Moçambique, e outros países lusófonos? Com a tendência dos MOOCs como seria possível alavancar a língua Portuguesa?

Appendix 32 – Detail of proposed MOOCs Business Models

Licensing: using MOOCs to replace or complement some University courses, lowering the fix cost of the academia. Licensing a MOOC has a real impact on various stakeholders and can create a new market for content where the best universities create a new source of revenue by investing in the creation and foment of University-MOOCs, other schools can buy this courses and put them to complement or replace part of the studies, lowering fix costs and improving overall education quality. Students would gain better contents and the possibility to interact with people from all over the world.

Content Freemium: Charge students for some of the content may sound a risky option in a business that has its strongest factor based on the free access to content, but some of the best content can be charged as long as it has no impact in the quality of the main learning, and it has only purposes of enrichment. For example, while studying nuclear energy, a paid-content could be a virtual visit to a nuclear plant, or in the future, a trip in first person mode (Google Glass would help on this)

Engagement with the real world: While in-person trips inside the program of a MOOC usually do not work, due to the constraint of having students from different countries and places, some could be offered real study trips contributing to the enrichment of the learning. For example in a MOOC about Finances, a trip do the central banks of each country could be organized, in a MOOC about architecture students would be offered to accept a trip to visit iconic architectural monuments near their place of living, or in another example, in a MOOC about the second World War, people living in Germany would be asked if they wanted to participate in a trip to Berlin, while those living in France or the United Kingdom would have similar offers para to Paris, Normandy, or London in the case of UK to study specific details of each country. In a more extreme example, a MOOC about cinema could offer only to students living near Hollywood a study trip to the movies studios.

Cross-selling: This concept can actually work very well on the MOOCs, taking advantage of the fact that a big number of consumers of a specific subject are all in the same place. For example, while enrolling in a MOOC about Psychology, students can be asked to enroll in one Association of Phycology (with a special price), order a book with discount and subscribe specialized magazines.

Tuition: This one consists in the payment of the MOOC. It would have to be a very inferior value compared to those practiced by the universities but it had to come with a quality certification to make people pay for something they are used to look as free.

Certification: One of the business-models that are already in practice but that are taking a long time do take-off. Certificating students that they conclude the courses seems a genius idea to make money but you have to guarantee some things: first, that the course is recognized, secondly that the University that created the MOOC has a great reputation in that field of study, third, that MOOCs are recognized as curriculum improvements. While the first two we can debate if are guaranteed, the third is not unfortunately guaranteed at all.

Tutoring: Just like in traditional learning, a tutor can be hired to explain some difficult subjects or just to enhance the learning. Here the logic is the same: hiring a tutor may not only help learners to understand better the subjects, but also may add the social component needed in every piece of learning. Tutors can also be levelled regarding their level of knowledge and the business model can involve a package of hours or a more substantial aid, working also as someone who triggers someone who triggers the will to improve more the knowledge about a specific subject.

Peer assistance: Looking a bit like tutoring, peer assistance has the core difference that the assistance is not made by a professor or someone very specialized in the subject but a peer with more knowledge, explaining things in terms that only the fact of being peers allow, making connection, learning, and improving much more easy and natural.

Data and analytics for companies: Imagine you have to make a proof-of-concept of a new product or a new idea of business. Now imagine you can have thousands of people rating your idea without sometimes knowing their actually doing it. MOOCs can help a lot on this: engaging the proof-of-concept in the middle of the learning process can lead to some work in preparing it but the results are probably going to be fantastic: students most of the times do not know they are being used to test something, and so they will answer with their real sense about what is being put into proof. And it gets even better: with the account details, companies can target their questionnaires to a certain gender or group age, or even interests.

Academic Research: Sometimes it is difficult to have people working on subjects that tend to sound a little bit more effortful or too subjective. But if you can gather a numerous group of people studying a specific topic, you can also give different sub-topics for them to research and create papers on, and then you also have the bonus of having them peer-graded, creating

an almost instantaneous ranking of the biggest breakthroughs obtained in that field of research with this technique.

Data and analytics for recruitment: Recruiters can have here a huge opportunity to look and find for the best suitable candidates into a precise job vacancy, or just to assess who are the best students and therefore candidates to hire. Important for organizations who need highly specialized staff (because you can look for people that only have studied a specific topic) and important for organizations who are looking for people with knowledge in different fields, or just people that can proof they are really capable of doing what they are saying they can.

Traditional Advertising: This one is an easy model, it just involves capitalizing the fact that a great deal of people are visiting the website or looking at the videos, putting the provider into a position where they can sell advertising. It is proven that people are not against advertising if it allows them to access to what they want for free. Some studies even recommend people are not against giving away personal details in order to obtain access for free, but if a provider or a MOOC opts for this option it must be cautious enough to create a paid version with advertising.

Product placement: A little bit different from the traditional advertising that capitalizes with ads during videos or banners in the pages visited, product placement can be a much more effective of way to make money and much less intrusive to students. Let us imagine a MOOC about innovation. What if one of the lectures talked about Mercedes and the new Mercedes features? That is good product placement in the middle of a learning piece.

Suggested collaborative group learning: Sometimes it happens with students at MOOCs that they have to work in groups, and collaborate with other students. A way to make some money could be to create a group-matcher, a paid feature that looked into group age and interest to create the best fit for students.

Diagnostics: to identify strengths and weaknesses, adjust pace of delivery to match, extra-credit practice. This can be one of the first examples of Big Data in Education. Students could have an especial assistant based on the analysis of this big data that would suggest them what items they should improve, and where to find the best material to improve those items.

Sponsored courses: This can be a business model that has another businesses models within. Not only this can be a place where companies launch their challenges to the academic

community but also can combine the recruitment, advertising and product placement, and prove concepts in the same place.

Course for credit: Being used in some universities already, this gives the opportunity to students to replace some of the optional studies they have to do but that are worth credits in their track for credit-approved MOOCs in the subjects they prefer.

Access to experts/stars/best teachers: Despite being an elitist business model it can have a lot of success if you can pay to select the best experts on a subject.

Problem-Sponsored Learning: Companies and organizations facing important challenges can sponsor student projects. This would be an example of a MOOC with a much more closed reach.

Organizations' MOOCs: Organizations have a commitment with their workers, to offer them training. Most of this organizations already provide most of the training through online learning, most recurrently the e-learning model. But what can be a good alternative is to create a MOOC tailored to a specific subject or organization.

Appendix 33 – Details on the answers of the respondents of the in-depth interviews

Answers of Juelson Bartolomeu

1. Vários estudos e artigos têm ligado a histórica falta de competitividade Portuguesa a um sistema de educação deficitário. Na sua opinião, e na qualidade de ex-estudante do sistema de ensino Português, quais os 5 maiores problemas que identifica no sistema atual? Que desafios trazem estes problemas? E porquê?

1. Conteúdos programáticos com reduzida aplicabilidade nas rotinas do mercado laboral
2. Tardia exposição dos alunos a realidade do mercado laboral
3. Parcerias limitadas com o tecido empresarial (não envolvimento de Empresas de referência nas aulas práticas ou na definição da curricula)
4. Estímulos reduzidos a Investigação e Inovação
5. Impossibilidade de customização da carreira académica (cursos demasiado rígidos e sem adequação a diferentes perfis)

Actualmente, são quase unânimes duas afirmações no seio dos ex-alunos universitários das mais variadas áreas de formação: "Lembro-me do excesso de matéria e das horas

intermináveis que tive que ficar a estudar", "Aprendi mais em alguns meses de trabalho do que na minha licenciatura/mestrado completo". Com isso, introduzo o primeiro desafio a que o Sistema de Ensino Português deve responder, **como tornar os conteúdos programáticos mais úteis e garantir efectivamente a absorção de conhecimento**?

A resolução desta temática urge por um "sem fim" de motivos, dos quais vou mencionar apenas alguns, o primeiro e mais óbvio, **profissionais sem *expertise* são menos atractivos para as empresas porque exigem um investimento financeiro e de tempo adicional na capacitação**. A competitividade económica na conjuntura actual que, exige resultados a curto-prazo fica comprometida porque passa-se a contratar por ser um recurso com uma massa salarial inferior e apto para "trabalhos menores" e para uma carga horária superior e não por ser alguém capaz de trazer valor acrescentado a curto/médio-prazo. Motivos de saúde pública também deverão ser incluídos, porque sobrecarregar a mente com informação que não vamos usar futuramente, para além de ser contraproducente, traz desmotivação que comprovadamente afecta o rendimento humano. Sendo a memória limitada, um volume excessivo de informação dificulta a compartimentação do cérebro e inerente segmentação/definição do que é útil. Resultado, perda ou mistura de conceitos estruturais/fundamentais.

Foco-me no mundo universitário por estar mais ligado ao mercado de trabalho, mas este fenómeno de ausência de aplicação prática dos conteúdos verifica-se nos níveis secundário e básico. A especialização é feita quase sempre no último ano dos cursos superiores (estágios também) e os conteúdos do ensino de base são completamente distintos do ensino superior. Resumindo, o que aprendemos no básico/secundário não aplicamos na universidade e o que aprendemos na universidade não aplicamos no trabalho. É uma cadeia de valor, decisivamente, pouco eficiente e sobretudo ineficaz.

No final da cadeia verifica-se uma relação *lose-lose*, porque o recurso humano é incorporado com reduzido valor (exemplo claro é a proliferação de contratação em regime de *trainee* por períodos longos) e a Empresa contrata sem garantias de estar a incorporar um profissional capaz de trazer valor acrescentado. Adicionalmente, a exposição quase nula ao mercado de trabalho enquanto se estuda, também traz cepticismo ao tecido empresarial. Profissionais com perfis desadequados às necessidades empresariais e com dificuldades de adaptação, fazem com que as Empresas corram o risco de vir a investir novamente na contratação adicional ou na substituição. Este efeito de repetição pode ser nefasto.

O segundo desafio é estabelecer um modelo Ensino-Mercado onde haja uma relação de simbiose entre as duas entidades. Na minha óptica, os cursos deveriam ser desenhados à medida das necessidades do tecido empresarial, existindo cooperação em todo horizonte temporal e em cada etapa do processo. Começando na definição das disciplinas, conteúdos das cadeiras, corpo docente e terminando no modelo de absorção de quadros.

Este modelo de encadeamento traz vantagens porque garante uma utilização mais eficiente de recursos humanos e financeiros, porque trabalha-se com os pressupostos de adequação das matérias às necessidades reais, o que é vantajoso para as empresas e; de minimização do risco de ausência de retorno, vantajoso para as universidades. Outra vantagem, é a optimização da utilização de recursos através da partilha de custos e *know how*.

 Por fim, aumenta a fiabilidade competitiva do tecido empresarial devido a "queima de etapas" porque o aluno chega ao mercado com um nível diferente de capacitação técnica que encurta os períodos de adaptação e aumenta os graus de responsabilidade, autonomia e criação de valor.

O terceiro desafio e quiçá o maior e mais importante é a criação de novas ideias e negócios que, surge devido a estandardização excessiva dos cursos e a adopção apenas superficial do conceito de incubadoras de empresas nas universidades.

Estão a ser produzidos "clones", com raciocínio lógico forte mas sem imaginação para ideias disruptivas e com baixos índices de motivação para absorver os conteúdos da maioria das cadeiras. A maioria dos alunos limita-se a cumprir o dever de fazer as cadeiras e não de reter a longo-prazo os conteúdos base.

 Disciplinas estruturais deveriam manter-se como obrigatórias, mas o leque de cadeiras práticas e de escolha pessoal deveria aumentar. Primeiro, para garantir a adequação da formação ao que cada futuro profissional almeja. Segundo, para garantir maiores índices motivacionais que, melhoram a absorção de conteúdos e fomentam a especialização.

É fundamental, a criação de novos conceitos e ideias, porque é a única forma de responder aos entornos económicos nacional e mundial cada vez mais competitivos e saturados. Portugal não é um país com uma indústria extractiva forte, não tem abundância de recursos naturais e nem possui um mercado de grande dimensão populacional para garantia de níveis de consumo aceitáveis.

Então existe uma probabilidade elevada da viabilidade económica do país estar assente na qualidade e quantidade de propriedade intelectual produzida. Só explorando novos nichos de mercado, quadrantes inexplorados ou através de melhorias incrementais de serviços/produtos existentes, é que será possível produzir riqueza.

2. Está cada vez mais presente na sociedade civil o debate sobre os gastos do Estado em Educação. No entanto Portugal não é dos países que mais investe em Educação em percentagem do PIB estando até abaixo da média da UE27. Faça o seguinte exercício em cinco minutos: quais os meios alternativos para financiar a Educação. Poderemos exportar Educação? S/N, porquê?

Na minha opinião, os principais investidores na educação devem ser as instituições que não sendo o seu *core business*, vivem da capacidade e desenvolvimento intelectual das pessoas. Ou seja, **o sector empresarial privado.**

O mundo empresarial sendo o principal *player* na absorção de talentos criados nas instituições de ensino deve ter um papel relevante na garantia de qualidade e sustentabilidade do ensino. É quase elementar esta ideia, quem beneficia mais com a existência do ensino deve contribuir de forma proporcional ou pelo menos relevante para o desenvolvimento e manutenção do mesmo.

Nesse sentido, as empresas em relação ao Ensino Superior deveriam comparticipar os principais cursos que criam ou capacitam as suas principais forças de trabalho. Também deveriam criar modelos institucionais de responsabilidade social que patrocinassem instituições de ensino em toda sua abrangência (ensino primário, básico, secundário e superior). O Estado logicamente não se escudaria de responsabilidades, talvez se pudesse estudar formas de incentivo a essas práticas, como incentivos fiscais ou condições mais favoráveis na aquisição de empréstimos em instituições bancárias públicas.

Paralelamente, acredito em duas fontes alternativas de investimento igualmente válidas, **os fundos sociais de ex-alunos e a auto-suficiência.**

A primeira, porque o nosso sucesso profissional e crescimento pessoal estão intimamente relacionados com a qualidade de ensino, qualidade de experiências e prestígio das instituições onde estudamos e dos recursos que investiram em nós. Naturalmente, a maioria dos ex-alunos

"carrega" durante toda vida um sentimento de pertença e identificação com as instituições onde estudou.

Todos anos existem turmas novas, o que significa que anualmente também crescerá o número de *alumnis*. Facto que pode revelar-se financeiramente relevante através de doações simbólicas que, unitariamente serão de reduzido valor mas que a nível de quantidade agregada tornam-se quantias importantes. Funcionaria como se fosse um clube, com quotas para pagar e contrapartidas inerentes aos doadores.

Para concluir, é fundamental as instituições de ensino passarem de centros meramente de custos para centros que geram receitas (principalmente as universidades), reduzindo assim o custo líquido.

Para isso acontecer é fundamental, a componente prática dos cursos ser mais forte e a implantação efectiva do conceito de *mentoring*. Com os professores como mentores dos alunos, é perfeitamente viável a criação de novos negócios, resultados de investigações importantes para indústrias e estabelecimento de actividades de prestação de serviços a clientes externos.

Para além da criação de valor, a "profissionalização" dos alunos é uma óptima iniciativa para exposição atempada ao mundo empresarial e aquisição de experiência e brio profissional.

Exportar educação é uma opção bastante real. O saber deve ser a mercadoria com taxas alfandegárias, custos de transportes e transformação mais baixos que existe.

Sendo um produto intangível e totalmente conveniente com o desenvolvimento das TIC, com a massificação do uso da língua inglesa e com um mercado de países de língua portuguesa com graves lacunas no sector da Educação ávido para receber apoios e estabelecer parcerias. Pelos factores que enumerei, as barreiras para a internacionalização das Instituições de Ensino Portuguesas não parecem ser grandes.

Logicamente, apesar de não se perguntar como deve-se fazer essa exportação, passará quase obrigatoriamente por estabelecimento de parcerias com instituições de ensino e empresas doutras localizações, produção de conteúdos *e-learning*, workshops/palestras, cursos intensivos/curta-duração de especialização, etc.

3. O que define para si a qualidade de um material de aprendizagem? Pense nos 3 KSF mais importantes e explicite-os.

Pessoalmente, identifico como três principais factores chaves de sucesso para qualidade de um material de aprendizagem, o papel que o mesmo desempenha no **desenvolvimento do pensamento crítico ou como veículo de raciocínio, a sua aplicabilidade prática e a clareza/simplicidade da sua exposição.**

O saber não deve ser limitado e deve ser utilizado como alavanca para criação de mais saber. Ou seja, devemos ser expostos a conteúdos que fazem os nossos neurónios tornarem-se mais eficientes de modo a melhorarmos a nossa estrutura mental e velocidade de processamento de informação.

Com a melhoria da estrutura mental para além de trazer a segmentação de informação que permite absorver e reter conteúdo útil, adquirimos a capacidade de analisar informação em múltiplas vertentes (sentido do conteúdo, robustez cientifica, oportunidades de melhoria de informação, lacunas, principais mensagens,etc.).

A nossa passagem pelo ensino tem como principal objectivo a para preparação conveniente para vida activa. Sendo o tempo e a memória dois recursos limitados, é necessário que os conteúdos programáticos estejam alinhados com o objectivo final.

Clareza/simplicidade na exposição dos conteúdos são fundamentais, porque está cientificamente provado que estruturas complexas de informação exigem um esforço cognitivo superior para retenção. O oposto seguindo esta lógica, sem deixar obviamente de conter os conteúdos fundamentais, garante uma retenção mais eficaz e ajuda o cérebro a funcionar de forma mais eficiente e rápida.

4. Os MOOCs (Massive Open Online Courses) são cursos online caracterizados pelos seguintes factos: na sua maioria de Universidades de topo, abertos para as populações de todo o mundo via internet, com um índice estruturado e correspondente a um tópico inteiro, contendo conteúdos online através de aulas-vídeo e documentação suporte como case studys, legislação, ações colaborativas e de avaliação, etc. Acha que os MOOCs poderiam ser importantes em Portugal? Se sim, que disciplinas escolheria para fazer os MOOCs e porquê?

Acha possível uma visão de futuro em que todo o ensino será online e remoto? Explicite a sua resposta.

Sim, porque **permite elevar o nível de capacitação da população desempregada, activa e em idade escolar através da exposição a instituições de ensino de melhor qualidade e devido ao modelo mais flexível e adequado para conciliação com uma actividade laboral.**

Os MOOCs podem elevar o nível de educação do país, porque permitem pessoas de localizações remotas longe dos principais pólos de educação em Portugal, serem expostas a conteúdos das principais universidades portuguesas e mundiais. Por outro lado, para população que está localizada nos principais pólos educação que pode ter acesso físico as melhores universidades do país abre-se mais uma opção que são os cursos das principais instituições de ensino mundiais.

O impacto para pessoas inseridas no mercado de trabalho,é bastante positivo porque os principais constrangimentos para quem está empregue e pretende estudar são, a disponibilidade e o facto de ser difícil interromper a carreira para estudar.

Cursos à distância são modelos mais adequados para a conciliação com uma actividade laboral, porque normalmente são mais práticos e exigem menos tempo para assistência de aulas. Para quem está desempregado também é vantajoso, porque permitem uma pessoa capacitar-se enquanto não está a produzir riqueza, sendo uma fonte de enriquecimento do currículo e normalmente apresenta modalidades de pagamento de valor inferior ao modelo de aprendizagem físico, porque não se gasta tanto dinheiro em infra-estruturas e produção de materiais. As escolas não necessitam de investir tanto e o aluno também não, porque pacotes de internet e um computador são significativamente mais económicos do que livros, computador, transporte, alimentação, fotocópias, etc..

Resumindo, a barra de aprendizagem e capacitação, acaba por elevar-se em todos os segmentos da população.

Acredito que as principais disciplinas seriam as que possuem conceitos universais, pouco mutáveis culturalmente, como as ciências exactas (Física, Biologia,Química,etc.), ciências económicas (Finanças, Investimentos, Estratégia, Gestão,etc.) e áreas relacionadas com

Marketing e Publicidade. Logicamente, para as ciências económicas e para o Marketing/Publicidade falo apenas dos fundamentos, o restante processo deve ser adequado as realidades distintas de cada país.

Não acredito que um modelo totalmente remoto seja possível. Porque definitivamente o *coaching* é fundamental para a assimilação de conteúdos.

Fisicamente já existe o problema dos alunos não terem horas suficientes de exposição ao modelo *see and do to know*. Remotamente torna-se ainda mais difícil garantir os tempos de respostas às dúvidas e uma aprendizagem constante em um modelo de transferência de conhecimento pela visualização de comportamentos de implementação prática dos conceitos e retirada de dúvidas em *real time*.

5. A língua Portuguesa é vista cada vez mais como um bem valioso. O que lhe parece a criação de uma comunidade educativa de Língua Portuguesa composta pelo Brasil, Angola, Moçambique, e outros países lusófonos? Com a tendência dos MOOCs como seria possível alavancar a língua Portuguesa?

Faz todo sentido, primeiro porque se existe a CPLP a cooperação deve ser em todos sentidos e a educação é dos principais pilares de desenvolvimentos dos povos.

Portugal, Macau e Brasil podem ser parceiros importantes para os PALOP devido ao seu estágio mais avançado a nível de instituições de ensino e os PALOP trazem mais-valias a nível do grande universo de alunos face as suas populações jovens e as sua economias pujantes que necessitam do desenvolvimento de *know how* em todos sectores de actividade.

Para além disso, o facto de geograficamente os países da cooperação estarem dispersos, faz com que estejam expostos a entornos económicos e sociais bastante distintos. Isso significa que todos os países têm nichos de actividade onde podem acrescentar valor mutuamente.

Antes de pensar nos MOOCs, o primeiro pressuposto para este modelo de cooperação funcionar é a equidade. Porque quando se fala em matérias da lusofonia, tem-se a percepção de uma subjugação ou decisão constante em favor de interesses de Brasil e Portugal (p.ex. Acordo Ortográfico de Língua Portuguesa sem a ratificação de todos países da CPLP).

A nível de modelo de alavancagem da Língua Portuguesa, antes do ensino, passa pela promoção adequada dos vários países lusófonos.

Cada país lusófono tem os seus parceiros económicos preferenciais, então os "tentáculos da lusofonia" estendem-se para além dos falantes de português. De forma prática, isto significa que com a devida publicidade institucional (turismo, negócios e oportunidades de emprego, etc.) dos diferentes países da cooperação torna a língua mais atractiva, porque dá um cunho prático a necessidade de aprendizagem da língua.

A nível de definição de conteúdos programáticos deve ser conjunto e acordado. Depois a nível de grafia deve definir-se se desenhasse na forma de português mais comum entre todos países acrescida de um glossário explicativo dos termos diferentes para os utilizadores brasileiros da língua portuguesa ou se faz-se duas versões visto que o português do Brasil possui termos bastante diferentes dos restantes.

Alavancagem a nível de MOOCs parece ser simples, visto que a qualidade de sinal de Internet e a conveniência de acesso são razoavelmente boas em todos os países da cooperação.

Então a questão prende-se mais no modelo de funcionamento que, antes de mais deverá garantir que os MOOCs são reconhecidos pelos Ministérios de Educação de todos países como cursos legítimos de Ensino Superior e legalmente estejam definidas as suas regras.

Acredito que a alavanca seria credível, com a criação de centros próprios para apoios de estudantes a nível de dúvidas, realização de *workshops* com professores de várias proveniências, realização de testes para garantir uniformidade de métodos de avaliação e uma plataforma única de partilha do saber.

Adicionalmente, quiçá para completar a qualidade do Ensino Cooperante da Lusofonia, deveriam proliferar as parcerias entre diferentes instituições de ensinos dos países lusófonos que contemplam graduação dupla e programas de intercâmbio obrigatório.

Tiago Mourão

1. Vários estudos e artigos têm ligado a histórica falta de competitividade Portuguesa a um sistema de educação deficitário. Na sua opinião, e na qualidade de ex-estudante do sistema de ensino Português, quais os 5 maiores problemas que identifica no sistema atual? Que desafios trazem estes problemas? E porquê?

Um dos problemas crónicos do nosso sistema é a visão de "laissez faire, laissez passer" que contribui para um elevado desfasamento entre os nossos valores escolares e académicos e os

dos países com melhores resultados educacionais. Apesar do retumbante falhanço do Estado social no nosso país, a mentalidade de quem dirige o nosso ensino, não só politicamente, reflete uma visão facilitista da ideia do "direito à educação", ao invés de termos progressivamente vindo a considerá-la também como um dever, elevando gradual e sustentadamente as expectativas de gerações vindouras para as suas capacidades e competitividade num mercado global. Lembrando o professor Cortes Leal, o romantismo da educação escolar está completamente dissociado da realidade que se encontra além dos seus portões. A organização dos cursos de ensino secundário é demasiado rígida e feita um pouco cedo de mais, na minha opinião. A idade de entrada no ensino secundário deveria ser feita um ano mais tarde, à semelhança dos países nórdicos, pois existe uma notória diferença de maturidade neste intervalo etário e penso que esse é o critério fundamental para justificar mais tempo na importante tomada de decisão da nossa futura formação. Ainda assim, quanto à organização, deveria haver programas mais especializados que os agrupamentos de que agora dispomos e, em simultâneo, outros mais gerais aos quais os alunos pudessem ir progressivamente adicionando disciplinas ao seu gosto. Quem sabe se não ajudava a um problema também crónico, como o abandono escolar. Já no ensino primário, há que apontar o excesso de alunos para o número deficitário de turmas. Deveríamos ter mais turmas com menos alunos e não o contrário pois é neste ponto inicial que muita da nossa educação falha; quantas vezes é que ouvimos a redução dos problemas de um aluno, já no ensino preparatório e/ou secundário, à expressão "falta de bases"? Pois bem, não só com menos alunos os professores conseguem dar um acompanhamento mais personalizado aos mesmos, como também detectar muito mais cedo os gostos, facilidades, dificuldades e inaptidões dos mesmos, exercendo sobre eles uma influência ímpar no que diz respeito à importância da escola e ao significado que um investimento pessoal na nossa própria educação representa – não basta educar, temos igualmente de dizer o porquê de educarmos; no nosso percurso académico só voltamos a ter professores na qualidade de mentores na faculdade, mas nesta altura isso muitas vezes tem de partir de nós, da nossa convicção de que vamos aprender mais do que aquilo que temos de estudar ao investirmos numa relação com determinado professor - e ainda temos de esperar que ele reveja o seu interesse em nós -, mas no ensino primário isso começa com o próprio professor, sendo a sua capacidade de motivar um aluno desde tenra idade a base daquilo que define a progressão do mesmo, quando salta para a "agressividade" da exigência e carga horária do ensino preparatório. Associado parcialmente a isto, surge a precariedade dos professores, a lentidão dos concursos públicos e a facilidade com que a carreira de docente fica estagnada/congelada; façamos apenas a seguinte questão: como é que

pretendemos ter alunos motivados desde a pré-adolescência, se não possuímos professores que se sentem apoiados e motivados para árduo trabalho a que se têm de dedicar, à excepção de alguns que realmente vêm o ensino e o acompanhamento de jovens como uma recompensa em si? Sob outro prisma, focado igualmente nos professores, surge a questão das avaliações de desempenho - quais os critérios que lhe subjazerão? Qual o volume de burocracia que irá adicionar a um sistema já sobrecarregado com "papelada"? Não faria sentido existir um referencial individual com base em testes sobre aptidão pedagógica, ou outro tipo de avaliação nas faculdades após a formação de professores, para aferir da propensão dos mesmos a leccionarem?

2. Está cada vez mais presente na sociedade civil o debate sobre os gastos do Estado em Educação. No entanto Portugal não é dos países que mais investe em Educação em percentagem do PIB estando até abaixo da média da UE27. Faça o seguinte exercício em cinco minutos: quais os meios alternativos para financiar a Educação. Poderemos exportar Educação? S/N, porquê?

Não sendo despiciendo que a proporção de investimento em Educação em Portugal é manifestamente inferior à média comunitária – e ainda com a apresentação do Orçamento de Estado ficámos a saber de uma nova redução de 704,4 milhões de euros para 2015 –, continuam a existir ineficiências que precisam de ser corrigidas. Desde logo, na inversão da prioridade do investimento. Creio ser da mais elementar necessidade que haja maior cuidado – financeiramente falando – na formação pré-primária e primária, prevenindo até custos futuros com conteúdos mal assimiladas. Em segundo lugar, defendo o reforço do Ensino vocacional – técnico, tecnológico, profissional ou outra designação afim -, em que se dotem os alunos de ferramentas orientadas para o mercado de trabalho, caso assim o entendam, ainda que recuse a lógica estigmatizante e discriminatória que actualmente esta via tem assumido. Seja como for, é no Ensino Superior que a lógica tem de ser outra. O modelo de propina tende a equalizar cursos com contornos (e custos) evidentemente díspares, ao invés de tornar a frequência de um curso socialmente justa. Na prática, e em termos genéricos, o que defendo é um sistema de Ensino menos burocrático e pesado, com maior riqueza lectiva (e menos disciplinas e cursos de manifesta inadequação à realidade – nem digo ao mercado de trabalho, porque o Ensino não deve ser eugénico e cingir-se a esse fim) e uma ponderação entre os rendimentos de quem o frequenta, os cursos

escolhidos e as efectivas possibilidades de financiamento público. A exportação de educação é um neat package que tenta "vender" Portugal como um país em crescimento, uma mentalidade empreendedora, uma vontade inalienável de fazer mais e melhor; contudo, sem mudanças estruturais, o conceito não passa, na minha perspectiva, de mais um filão de suposta originalidade e inovação, que será socialmente aproveitado por alguns e financeiramente benéfico para poucos.

3. O que define para si a qualidade de um material de aprendizagem? Pense nos 3 KSF mais importantes e explicite-os.

Não existe, na minha óptica, um bom material de aprendizagem. Não querendo correr o risco da excessiva relativização, cada discente tem as suas especificidades, daí ser contra a formatação e padronização do Ensino.

4. Os MOOCs (Massive Open Online Courses) são cursos online caracterizados pelos seguintes factos: na sua maioria de Universidades de topo, abertos para as populações de todo o mundo via internet, com um índice estruturado e correspondente a um tópico inteiro, contendo conteúdos online através de aulas-vídeo e documentação suporte como case studys, legislação, ações colaborativas e de avaliação, etc. Acha que os MOOCs poderiam ser importantes em Portugal? Se sim, que disciplinas escolheria para fazer os MOOCs e porquê? Acha possível uma visão de futuro em que todo o ensino será online e remoto? Explicite a sua resposta.

Penso que poderiam ser importantes, ainda para mais dada a conjuntura: trabalhar e estudar são uma realidade crescente e, muitas vezes, o estudo é que tem de sofrer as consequências de uma economia e organização laboral que não permitem a confluência das duas actividades. Nesse sentido, existe uma oportunidade para as pessoas obterem um curso, com maior flexibilidade, feito em termos mais autónomos, e ainda assim com um grau de autenticidade e credibilidade que tem de ser avaliado caso a caso, no contexto do ensino online. No meu caso específico, gostaria de fazer disciplinas ligadas à economia e à política, à escrita e ao cinema, à psicologia e ao design. Não acho, todavia, que devamos apostar num futuro inteiramente cibernético e controlado à distância, no que concerne à educação. Se ele é possível? Infelizmente, acho que sim, pois a evolução no século XXI caminha a um ritmo galopante, mas não sei como será o mundo daqui a 75 anos. O regime presencial do ensino é fundamental pois fomenta a competitividade na sala de aula, algo importante, maior parte

das vezes saudável para o crescimento de um aluno, e que confere os primeiros reality-checks de que muitas vezes as coisas não resultam bem só porque as fazemos e que existe sempre alguém em nosso redor com talentos e objectivos semelhantes ou até melhores que os nossos. Precisamos de nos reinventar constantemente, melhorar aquilo que já somos bons,minimizar aquilo que são as nossas fraquezas e isso começa a acontecer logo quando nos começamos a avaliar informalmente em relação aos nossos pares. Na vida adulta, no mundo do trabalho e fora dele, nunca estaremos sozinhos falando e agindo como se tivessemos um só interlocutor, ainda para mais à distância. Um ensino que corporize isso é um ensino que nunca aprenderá com os seus erros e que nunca contribuirá para que a educação seja realmente a mais valia de um povo e país.

5. A língua Portuguesa é vista cada vez mais como um bem valioso. O que lhe parece a criação de uma comunidade educativa de Língua Portuguesa composta pelo Brasil, Angola, Moçambique, e outros países lusófonos? Com a tendência dos MOOCs como seria possível alavancar a língua Portuguesa?

Acredito que a Língua Portuguesa é, de facto, um recurso que toda a lusofonia, sem excepções, poderia explorar. Assente nas diferenças que sempre a enriqueceram, claro está. Contudo, tem vindo a fazer caminho a tese – sem qualquer sustentação de estudos prévios - de que só a uniformização da Língua nos permitirá rentabilizá-la. Por isso, mesmo que haja essa abertura ao universo online e atendendo à importância dessa ferramenta, tenho um certo grau de cepticismo. Dito de outra forma: acredito tanto na potenciação do português como no aproveitamento do mar.

Miguel Morgado

1. Vários estudos e artigos têm ligado a histórica falta de competitividade Portuguesa a um sistema de educação deficitário. Na sua opinião, e na qualidade de ex-estudante do sistema de ensino Português, quais os 5 maiores problemas que identifica no sistema atual? Que desafios trazem estes problemas? E porquê?

O ensino em Portugal, desde a primária à Universidade, foca-se demasiado em garantir que os alunos memorizem a matéria que é dada, em vez de garantir que a matéria é compreendida. Esse simples foco na forma como são estruturados os programas educativos têm um impacto imenso na estruturação do raciocínio dos alunos. A principal diferença está

na "flexibilidade" mental com que dotamos os nossos alunos. Um aluno que memorize algo é capaz de repetir o que aprendeu apenas se as condições em que aprendeu se verificarem novamente. Um aluno que interiorize uma lição é capaz de compreender as bases do que aprendeu e assim adaptar-se conforme as situações se forem alterando. Naturalmente que estes "vícios" se mantêm ao longo da vida, pelo que vão ter como resultado final pessoas que apenas sabem fazer aquilo que lhes ensinaram, adversas à mudança e incapazes de se adaptarem conforme as condições do mercado assim o exigirem.

Outro dos problemas que identifico no sistema atual é o distanciamento entre os conteúdos lecionados e a sua aplicabilidade. Não creio que faça sentido impor o mesmo currículo escolar a todos os alunos do país, sem margem para certas adaptações aos contextos locais/regionais. Para além disso, creio que os alunos saem da escola sem preparação para certas experiências que a larga maioria, senão mesmo todos, terão de enfrentar em algum ponto da vida. Um exemplo disso é a iliteracia financeira na sociedade portuguesa. Habilitar os alunos com certos conceitos financeiros ajudaria a evitar situações de sobreendividamento, com todos os prejuízos que essas situações causam à economia. Sem dúvida que esta habilitação financeira teria um impacto positivo nas iniciativas empreendedoras ou na gestão das PME's em Portugal. Nos EUA, por exemplo, é lecionada a cadeira de "Home Economics" onde se preparam os alunos para a gestão de uma casa/família e a convivência em comunidade.

Outro ponto no qual acredito que haja espaço para melhoria é na relação entre empresas e universidades/escolas secundárias. Apesar de encontrar sinais de melhoria neste ponto ao longo dos anos, não creio que o potencial esteja a ser devidamente explorado. Os liceus e as Universidades portuguesas deveriam ter a iniciativa e a liberdade para explorarem o estreitamento dos seus laços com a realidade empresarial. Alunos a contribuírem para projetos empresariais é uma situação win-win. Na minha área de especialização, gestão de empresas, isso é especialmente relevante com projetos de consultoria para PMEs ou grandes empresas feitos por estudantes universitários. Estas experiências permitem aos alunos consolidarem certos conhecimentos, "testar" a sua aplicabilidade no mundo real e ao mesmo tempo enriquecerem os seus CVs.

O quarto ponto com potencial para melhorar o sistema de educação em Portugal é a sua relação com a tecnologia. Não só a experiência de aprendizagem nas escolas portuguesas deveria tomar partido de ferramentas como a vídeo-chamada, os chats ou os elearnings, como

os alunos deveriam ter mais preparação para compreenderem todas as potencialidades e ameaças da Internet. Também aqui os benefícios de longo prazo se iriam sentir a nível económico. Sendo Portugal um país periférico, com excelentes infraestruturas de telecomunicações, só tem a beneficiar com a Internet.

Por fim, o último ponto que considero como um aspeto a melhorar é a falta de foco que é dada ao desenvolvimento de competências pessoais, particularmente antes do ensino Universitário. Trabalhos de grupo, apresentações de trabalhos, resolução de conflitos, negociação e muitos outros módulos fizeram parte da minha experiência pessoal e deveriam fazer parte da experiência de todos os alunos, independentemente da sua área de estudo. Infelizmente ainda hoje encontro muitos colegas de escola ou de profissão com um claro deficit em certas competências pessoais chave, que os impede de serem melhores profissionais. Estas são capacidades que deveriam, desde a mais tenra idade, ser trabalhadas e que infelizmente o sistema educativo português como um todo ainda não as desenvolve.

2. Está cada vez mais presente na sociedade civil o debate sobre os gastos do Estado em Educação. No entanto Portugal não é dos países que mais investe em Educação em percentagem do PIB estando até abaixo da média da UE27. Faça o seguinte exercício em cinco minutos: quais os meios alternativos para financiar a Educação. Poderemos exportar Educação? S/N, porquê?

Em primeiro lugar, a Educação nunca deverá ser encarada como uma atividade que deve ser lucrativa. Essa é uma visão redutora do problema. A Educação é um investimento na valorização dos recursos humanos de um país pelo que, embora a despesa seja feita na "rúbrica" Educação, os ganhos poderão vir de diversas áreas. Uma empresa que decida abrir uma fábrica em Portugal devido ao know-how dos trabalhadores portugueses é um ganho que deve ser contabilizado na "equação" da Educação. Dito isto, também não é realista que a Educação absorva recursos descontroladamente, recursos esses que poderiam ser canalizados para atividades eventualmente mais benéficas. O objetivo deverá ser uma Educação que tenha os recursos necessários para proceder ao seu normal funcionamento, que seja sustentável no contexto do país mas que não tenha o lucro como um dos principais fatores na tomada de decisão. Assim, também concordo que a Educação, particularmente a Educação pública, deve procurar novas formas de financiamento para além do Orçamento de Estado. Para isso as escolas e Universidades devem ter independência para estabelecerem parcerias com os stakeholders que considerarem apropriados, seguindo um conjunto de regras definidas à

partida. Naturalmente que para encontrar novas formas de financiamento a Educação só pode seguir uma direção: rentabilizar melhor os seus ativos. Não quero com isto dizer que o lucro deva ser um objetivo, mas também não há razão para se ignorarem novas formas de ganhar receitas. No caso da Educação os seus ativos são, de forma geral, o know-how dos seus docentes e o valor potencial que os alunos têm.

Para rentabilizar o potencial dos alunos, as empresas poderiam perfeitamente investir em Universidades para que: 1) tivessem acesso privilegiado e antes dos seus concorrentes aos CV's dos melhores alunos de determinadas cadeiras; 2) incluíssem problemas reais com que a empresa se depara nos trabalhos de curso de forma a poder captar o capital criativo dos alunos ou 3) aproveitassem os espaços das faculdades como espaços privilegiados de acesso a potenciais/futuros consumidores. A estratégia de exportar educação enquadra-se perfeitamente no ponto de rentabilizar o know-how dos professores. Se uma determinada instituição de ensino tem um corpo docente que é valorizado por pessoas que não frequentem essa instituição mas que gostariam de ter acesso aos mesmos, a exportação de educação vem exatamente endereçar esse ponto. Aproveitando as tecnologias de informação, imagino um futuro onde professores portugueses (ou que trabalhem para uma instituição de ensino portuguesa) possam ter oportunidade de ensinar alunos de todo o mundo. Quer essa educação seja direcionada para países menos desenvolvidos, onde o acesso a professores qualificados é escasso, ou para pessoas qualificadas à procura de novos conhecimentos, deverá depender da vontade da instituição. Os dois segmentos têm potencial e cada instituição saberá adequar-se àquele que achar mais apropriado. Os modelos de negócio também podem ser os mais variados, com receitas diretas, através do pagamento de um fee por inscrição/aula, gratuitos, indo a instituição buscar as suas mais-valias na divulgação do seu nome e consequente atração de mais alunos ou inclusivé em modelos híbridos com estratégias de ofertas freemium.

3. O que define para si a qualidade de um material de aprendizagem? Pense nos 3 KSF mais importantes e explicite-os.

Clareza, rigor e capacidade de expôr diversos pontos de vistas são os 3 KSF que considero mais relevantes nos materiais de aprendizagem. A clareza é crucial para se poder entender a mensagem que está a ser transmitida. Normalmente a clareza nos conteúdos está aliada à simplicidade na explicação, o que não significa que os temas abordados não sejam complexos. A expressão "An alleged scientific discovery has no merit unless it can be

explained to a barmaid" atribuída a Ernest Rutherford, descreve exatamente a importância de, mesmo as teorias mais complexas poderem ser explicadas da forma mais simples possível. Tipicamente quem entende verdadeiramente o que está a ser explicado, consegue transmitir esse conhecimento da forma mais simples possível.

O 2º KSF, o rigor, é a condição necessária, mas não suficiente, para um material de aprendizagem poder ser considerado de qualidade. Se a informação que está a ser passada não é rigorosa nos factos que apresenta ou se apresenta argumentos que não verdade então toda a lógica da aprendizagem é inválida.

Por fim, escolhi a capacidade de expôr de diversos pontos de vistas como um dos principais KSFs uma vez que acredito que uma verdadeira experiência de aprendizagem não deve ser fechada nela própria. A aprendizagem deve antes dotar o aluno de diversos pontos de vistas para que possa ser o aluno a fazer a sua análise e chegar à sua conclusão, fundamentando-se nos argumentos apresentados. Claro que esta abertura pode não se aplicar em todos os momentos de ensino (2+2 é verdadeiramente e unicamente 4) mas particularmente no ensino superior seguramente que faz sentido. Acima de tudo, um material de aprendizagem de qualidade é aquele que permite enriquecer o aluno com o conhecimento que se propõe ensinar. Com os 3 KSFs descritos, creio ser mais fácil cumprir esse objetivo.

4. Os MOOCs (Massive Open Online Courses) são cursos online caracterizados pelos seguintes factos: na sua maioria de Universidades de topo, abertos para as populações de todo o mundo via internet, com um índice estruturado e correspondente a um tópico inteiro, contendo conteúdos online através de aulas-vídeo e documentação suporte como case studys, legislação, ações colaborativas e de avaliação, etc. Acha que os MOOCs poderiam ser importantes em Portugal? Se sim, que disciplinas escolheria para fazer os MOOCs e porquê? Acha possível uma visão de futuro em que todo o ensino será online e remoto? Explicite a sua resposta.

Sem dúvida alguma que Portugal ainda não aproveita todo o potencial que os MOOCs têm. Aliás, nenhuma das 4 maiores instituições de ensino superior na área da economia/gestão oferecem atualmente MOOCs. Curiosamente, este desinteresse aparente nos MOOCs é contraditório com as campanhas de marketing destas instituições, que procuram cada vez mais captar aluno estrangeiros e orgulham-se em publicitar quando a percentagem de estudantes estrangeiros é suficientemente alta.

Acredito que em Portugal existem essencialmente 3 potenciais benefícios para desenvolver os MOOCs: 1) na captação de alunos estrangeiros, através de cursos lecionados em inglês, particularmente nas instituições com maior reputação internacional; 2) na atração de alunos do secundário, com conteúdos introdutórios para criar uma relação com o estudante antes da escolha da universidade e 3) no estreitamento de relações com países menos desenvolvidos, onde o acesso a professores qualificados pode ser escasso e onde os professores poderiam acrescentar valor partilhando os seus conhecimentos, administrando cursos em parceria com as instituições locais.

Em termos de MOOCs, as minhas escolhas recaem em conteúdos ligados à tecnologia e programação uma vez que, atualmente, creio ser essencial os gestores terem conhecimentos aprofundados no que toca à tecnologia. Seja para aumentar a eficiência das suas empresas ou para compreender os desafios e potencialidades dos mercados, o benefício de compreender e estar a par da tecnologia é evidente.

No que toca a substituir o modelo atual por um modelo puramente online e remoto não acredito que seja viável. Creio que o futuro seja antes um modelo híbrido, onde as potencialidades dos 2 modelos são aproveitadas, numa combinação entre aulas no mesmo espaço físico, conteúdos e exercícios online e palestras lecionadas por peritos espalhados pelo mundo inteiro. Embora os MOOCs possam ser importantes para complementar certas lacunas do sistema atual, a experiência do mundo físico e o desenvolvimento pessoal subjacente ao sistema atual é praticamente insubstituível. Naturalmente que certos cursos são mais permeáveis aos MOOCs do que outros, pelo que a sua penetração na Educação em Portugal será feita, seguramente, com intensidades diferentes nas várias áreas do conhecimento. Embora um contabilista ou gestor possa adquirir uma boa parte do seu conhecimento técnico online e remotamente, o mesmo não pode ser dito de um cirurgião, onde nem os MOOCs podem substituir a experiência de estar presente num bloco operatório. É este balanço entre o mundo físico e mundo online que determinará o sucesso dos MOOCs, aumentando a qualidade do ensino sem necessitar de grandes investimentos adicionais.

5. A língua Portuguesa é vista cada vez mais como um bem valioso. O que lhe parece a criação de uma comunidade educativa de Língua Portuguesa composta pelo Brasil, Angola, Moçambique, e outros países lusófonos? Com a tendência dos MOOCs como seria possível alavancar a língua Portuguesa?

Sendo Portugal o país mais desenvolvido da CPLP e partilhando com estes países um dos principais ativos no processo de aprendizagem, a língua, os MOOCs são naturalmente uma das principais formas de potenciar estas parcerias. Um dos principais benefícios da Internet é nivelar o plano de jogo para os seus participantes e, sendo Portugal um país pequeno, tem nos MOOCs uma excelente oportunidade para atingir milhões de pessoas que falam português, ganhando uma escala mundial apesar dos seus recursos limitados. A criação de uma comunidade educativa onde Portugal poderia ensinar e ser ensinado traria benefícios mútuos para todos, ao mesmo tempo que valorizava um ativo que nos distingue da grande maioria dos países – a língua portuguesa. Mesmo aquele que poderia ser um dos principais entraves ao desenvolvimento desta iniciativa - a falta de infra estruturas de telecomunicações em alguns destes países - seria uma oportunidade para explorar o know-how técnico português nesta área. Esta parceria significaria também um ainda maior estreitamento das relações económicas entre os vários países, proporcionando novos mercados e ofertas de emprego para os portugueses, não só na área da Educação, mas também ao possibilitar o estabelecimento de contactos que poderiam resultar em novas iniciativas empresariais.

No longo prazo, esta comunidade educativa focada nos países de língua portuguesa tem o potencial também para ter um papel importante na área da Cultura, enriquecendo os países participantes através da partilha de experiências e promovendo o conhecimento de outras culturas. Assim, os MOOCs focados nos países de língua portuguesa representam uma excelente oportunidade para todos os membros da CPLP com potenciais beneficios transversais à sociedade. No entanto, e para que tal iniciativa seja possível de concretizar, é preciso garantir uma vontade política disposta a levar a cabo o projeto, que possibilite o estabelecimento de relações com os Estados envolvidos. Essa vontade surgirá apenas quando o país realizar o potencial que os MOOCs têm. Como tal, são necessários mais trabalhos como esta tese que alertem e dispertam as pessoas para esta nova tendência que são os MOOCs.

Pedro Leite

1. Vários estudos e artigos têm ligado a histórica falta de competitividade Portuguesa e a um sistema de educação deficitário. Na sua opinião, e na qualidade de ex-estudante do sistema de ensino Português, quais os 5 maiores problemas que identifica no sistema atual? Que desafios trazem estes problemas? E porquê?

Em primeiro lugar, na minha opinião, a falta de competitividade do setor empresarial português, que é uma realidade histórica, vai muito para além das falhas no sistema de educação.

Eu acredito até que a Educação é uma das áreas onde Portugal se pode destacar como um país desenvolvido, com um sistema suficientemente amplo e com muitos exemplos de excelência. Olhando para a realidade da educação em Portugal, não ignorando os problemas estruturais e pontuais existentes, de uma forma geral considero que continuamos a ter um sistema de ensino público absolutamente capaz, desde o ensino primário ao ensino superior. Não são raros os exemplos de portugueses que emigram e se destacam noutras realidades empresariais, assim como não podemos ignorar a quantidade de cursos e universidades portuguesas (muitas delas públicas) que têm surgido com frequência destacadas nos melhores rankings internacionais.

Mas se, por um lado, considero o sistema de ensino capaz, o mesmo não se pode dizer dos resultados, essencialmente no ensino primário e básico, onde Portugal se continua a destacar pela negativa, ficando consecutivamente na cauda da União Europeia.

O facto é que acredito que a causa principal não são os problemas no sistema de ensino! Fazendo uma analogia: se atribuirmos um carro a um indivíduo para testar o seu rendimento e os resultados foram muito maus, a conclusão mais simples e direta é que o carro ou tem problemas ou não tem capacidade. Mas se se tratar de um indivíduo que nao tem carta de condução e não gosta de conduzir, até pode ser um Ferrari que os resultados nunca serão bons.

Voltando à ideia inicial, na minha perspetiva as causas dos problemas da Educação em Portugal são as mesmas que levam á falta de competitividade no tecido empresarial, e prendem-se essencialmente com questões culturais.

Ainda assim, seria irrealista considerar o sistema de educação português um "mar de rosas", e, nesse sentido, identifico os 5 principais problemas:

1- Ensino vs. Realidade profissional - O sistema de educação encontra-se ainda muito desajustado da realidade profissional a vários níveis. O foco do ensino em Portugal continua a ser a obtenção de conhecimento conceptual, quando se torna necessário um contacto com a aplicabilidade prática desse conhecimento cada vez mais cedo, porque é a observar e a fazer que se aprende. Para além disso continuamos a assistir à criação\existência de cursos

superiores que pouco ou nenhum valor acrescentado trazem, com taxas de empregabilidade cada vez mais reduzidas.

Apresento um exemplo claro deste problema por experiência pessoal: ao longo de 15anos de formação académica em nenhum momento me foi "ensinada" a forma de produzir um Curriculum Vitae, um dos instrumentos mais importantes no mundo profissional, que promove a apresentação ao mercado de trabalho.

2- <u>Formação vs. Inovação tecnológica</u> - Um dos grandes desafios do sistema de educação é garantir o acompanhamento da contante inovação tecnológica, através da introdução de novos métodos e equipamentos de ensino. Essa integração, de forma mais ou menos conseguida, tem sido feita. No entanto a grande dificuldade passa pela formação dos professores que permita a sua adaptação a esses novos métodos e equipamentos. Muito do que se tem observado é que não adianta investir muito em novos equipamentos, se o modelo de ensino não está adaptado a essa mudança, o que, assim, não irá gerar quaisquer mais-valias.

3- <u>Ensino vs. Educação tecnológica</u> - O tema da inovação tecnológica traz ainda um outro problema, que diz respeito à necessidade de promover educação tecnológica. É importante desde cedo, e cada vez mais, ensinar a utilizar todo o tipo de equipamentos digitais que vão surgindo, essencialmente o bom uso de computadores e o infinito número de programas\softwares que podem significar reais mais-valias futuras num contexto profissional\empresarial.

4- <u>Tomada de decisão vs. Realidade escolar</u> - As decisões relevantes para o sistema de educação são muitas vezes tomadas com algum distanciamento da realidade escolar, o que acaba por causar entropias na aplicação de mudanças. É necessário envolver cada vez mais os professores e os próprios alunos no processo de tomada de decisão e promover o seu contributo a nível de ações e ideias com vista a melhorar o sistema de educação.

5- <u>Estimular os alunos</u> – Afigura-se como o principal desafio do sistema de ensino, uma vez que o maior problema na obtenção de resultados na Educação é o crescente desinteresse dos estudantes. Por melhor que seja o sistema de ensino, se o aluno manifesta desinteresse os resultados não vão ser os melhores.

O espírito de meritocracia e pro-atividade deve ser promovido desde cedo, premiando e reconhecendo os alunos que mais se destacarem e se envolverem em atividades extracurriculares de interesse.

2. Está cada vez mais presente na sociedade civil o debate sobre os gastos do Estado em Educação. No entanto Portugal não é dos países que mais investe em Educação em percentagem do PIB estando até abaixo da média da UE27. Faça o seguinte exercício em cinco minutos: quais os meios alternativos para financiar a Educação. Poderemos exportar Educação? S/N, porquê?

A Educação por definição é uma área cuja orientação não é gerar dinheiro, sendo vista essencialmente como um investimento no desenvolvimento intelectual e cultural da sociedade. Tendo por base essa perspetiva, à primeira vista, será sempre complicado arranjar meios alternativos para financiar a Educação, visto que na ótica financeira não gera retorno.

Ainda assim, fazendo uma análise mais profunda, podemos dividir a educação entre ensino obrigatório (primário, básico e secundário) e o ensino superior ou formação profissional\executiva.

Ensino Obrigatório - dadas as atuais restrições orçamentais em Portugal, é de certa forma expectável que Portugal seja dos países que investe menos em Educação, no seio da UE, cenário que deverá permanecer ao longo dos próximos anos. Não havendo outras fontes de financiamento, o "investimento", nesta fase, passará mais por uma reforma estrutural, que já está em curso, de aproveitamento e rentabilização dos recursos e equipamentos já existentes.

Ensino Superior e Formação Profissional\Executiva - quando o contexto académico já se encontra mais focalizado no mercado do trabalho, como é o caso dos cursos superiores, cursos profissionais ou formação executiva já será possível perspetivar eventuais fontes de financiamento alternativas, essencialmente por parte de empresas ou instituições que surjam como partes interessadas nessa educação\formação.

Quando se fala em "exportar" educação, podemos considerar que já acontece ainda que de uma forma embrionária. Começam a surgir cada vez mais cursos e pós-graduações lecionados em inglês, com uma forte vertente internacional, que os torna atrativos para estudantes residentes fora de Portugal, especialmente em países fora da Europa que tenham boas relações com Portugal. Quanto maior for o reconhecimento internacional das universidades e cursos portugueses, mais atrativos se tornarão como "produtos" a exportar.

3. O que define para si a qualidade de um material de aprendizagem? Pense nos 3 KSF mais importantes e explicite-os.

O material ou as ferramentas utilizadas num processo de aprendizagem podem ter maior ou menor relevância consoante o tipo de aprendizagem e a área de estudos em questão.

A qualidade do material de aprendizagem, a meu ver, deve ser sempre medida em função do resultado que se obteve, i.e. se a utilização desse material passou com sucesso a mensagem ou o ensinamento pretendido.

Nesse sentido, identifico aqueles que considero os três fatores críticos de sucesso (KSF) mais importantes:

1. Enquadramento com os objetivos propostos e com o nível de exigência.

2. Adaptado ao público-alvo.

3. Elemento diferenciador que permita tornar o processo de aprendizagem marcante.

4.Os MOOCs (Massive Open Online Courses) são cursos online caracterizados pelos seguintes factos: na sua maioria de Universidades de topo, abertos para as populações de todo o mundo via internet, com um índice estruturado e correspondente a um tópico inteiro, contendo conteúdos online através de aulas-vídeo e documentação suporte como case-studies, legislação, ações colaborativas e de avaliação, etc. Acha que os MOOCs poderiam ser importantes em Portugal? Se sim, que disciplinas escolheria para fazer os MOOCs e porquê? Acha possível uma visão de futuro em que todo o ensino será online e remoto? Explicite a sua resposta.

Os MOOCs representam uma oportunidade muito interessante essencialmente para formação pós-laboral e\ou complementar. Quem tem uma ocupação a tempo inteiro geralmente apresenta sempre maiores dificuldades de disponibilidade para integrar novas formações ou cursos, especialmente se forem de longa duração.

Nesse sentido, os cursos intensivos surgem como uma alternativa atrativa. Os MOOCs, sendo cursos intensivos que são lecionados online, apresentam ainda maior flexibilidade uma vez que não implicam horários fixos.

Caso optasse por um MOOC, certamente escolheria uma área dentro da minha formação base que me despertasse algum interesse pessoal ou profissional.

Sou da opinião que este tipo de cursos deve ser apenas utilizado como um "complemento" à formação base, porque existem vários fatores essenciais à aprendizagem que só são adquiridos através do contacto e vivência interpessoal. A obtenção de soft skills, como trabalho em equipa, técnicas de apresentação ou métodos de pesquisa e organização, cada vez mais fundamentais para a formação base, não são adquiridos através de cursos online e requerem uma presença física para vivenciar vários tipos de experiência.

Por essa mesma razão não acredito que um ensino totalmente efetuado online e/ou remotamente seja uma visão de futuro a seguir.

5. A língua Portuguesa é vista cada vez mais como um bem valioso. O que lhe parece a criação de uma comunidade educativa de Língua Portuguesa composta pelo Brasil, Angola, Moçambique, e outros países lusófonos? Com a tendência dos MOOCs como seria possível alavancar a língua Portuguesa?

A adoção de uma comunidade de países de língua oficial portuguesa só traria benefícios aos mais diversos níveis, dado que a convergência dos vários países permite estabelecer relações comerciais e culturais com maior facilidade.

O novo acordo ortográfico que foi implementado, teve em vista essencialmente proporcionar essa convergência, não tendo no entanto gerado consenso em nenhum dos países.

Creio que é perfeitamente claro que os MOOCs têm um potencial de internacionalização elevadíssimo. Contudo, acredito ser complicado alavancar a língua portuguesa para além dos países lusófonos. Ainda assim, sem dúvida que uma comunidade educativa que promovesse MOOCs lecionados em português seria um passo importante para se concretizar.

João Tiago Calqueiro

1. Vários estudos e artigos têm ligado a histórica falta de competitividade Portuguesa a um sistema de educação deficitário. Na sua opinião, e na qualidade de ex-estudante do sistema de ensino Português, quais os 5 maiores problemas que identifica no sistema atual? Que desafios trazem estes problemas? E porquê?

Problemas:

- Falta de um sistema de avaliação exigente e estimulante aos professores

- Um problema na cultura do país que não dá o devido valor a profissões essenciais e com uma vocação mais técnica

- Implementação de uma cultura de desresponsabilização dos jovens

- Criar um programa que envolva empresas e universidades para que os alunos comecem a partir do 2º anos a ter estágios/palestras

- Jovens emigram muito cedo (secundário e universidades)

Desafios:

- Conseguir implementar umnsistema de avaliação que consiga ser exigente e estimulante para a classe dos professores. É um lobby com um peso muito grande na sociedade, mas seria importante conseguir um sistema de exigência, rigor e que garantisse que seria possível sermos capazes de avaliar e premiar os melhores

- O sistema de educação já apresenta soluções que não apenas o ensino secundário e universitário. No entanto este não é ainda percepcionado por muitos como uma alternativa capaz e nobre. O caminho passa por valorizar profissões técnicas e que são indiscutíveis para o futuro do pais

- As gerações actuais de jovens cresceram numa sociedade cada vez mais consumista, com uma alteração profunda dos conceitos tradicionais de família. Esta situação teve e terá uma influência grande no crescimento dos jovens. O crescimento em famílias disfuncionais e monoparentais, aliada às ambições familiares de pais e mães, tenderá a que as crianças sejam menos acompanhadas pelos pais. Decorrente disso, será natural uma tentativa de compensar essa ausência com uma protecção maior culminando numa desresponsabilização dos jovens. Apesar desta ser uma questão fruto dos tempos e de cariz cultural, seria importante criar um "contrato de compromisso" de modo a conseguir envolver os pais na educação dos alunos de modo a conseguir um compromisso que vise a responsabilização dos jovens

- Conseguir criar um programa Dinâmico que aproxime universidades e empresas, de modo a diminuir a distancia entre o mundo académico e as empresas. Esta formação permitirá aos universitários uma maior aplicabilidade de conteúdos, conhecer durante o seu período de formação novas e diferentes realidades, experiências essas que serão importantes para criar profissionais capazes e com maior experiência.

- Criar benefícios fiscais duradouros para as empresas que empreguem jovens até aos 28 anos; Simultaneamente criar um regime fiscal progressivo e diferenciado para os

jovens até aos 28 anos. Deste modo conseguia-se criar incentivos para reter os melhores e simultaneamente proporcionar facilitar o inicio de vida destes.

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<u>3. O que define para si a qualidade de um material de aprendizagem? Pense nos 3 KSF mais importantes e explicite-os.</u>

- Qualidade das Fontes – credibiliza. Permite confirmar se estamos a falar de material de referência ou meras opiniões

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- Na minha opinião os MOOCS são importantes em 2 momentos da vida: complemento de formação **previamente obtida,** funcionando como um refresh ou formação **nova, numa área até então desconhecida**.

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lugar onde se está não será uma barreira ao acesso a informação de qualidade. No entanto o ensino presencial tem uma componente que não pode ser menosprezada, a proximidade física e o contacto visual são catalizadores de debates, de interacções e de discussões de uma enorme mais valia. A fluidez e a qualidade dessas interacções é tanto maior quanto a proximidade.

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5. A língua Portuguesa é vista cada vez mais como um bem valioso. O que lhe parece a criação de uma comunidade educativa de Língua Portuguesa composta pelo Brasil, Angola, Moçambique, e outros países lusófonos? Com a tendência dos MOOCs como seria possível alavancar a língua Portuguesa?

- Penso que a criação de uma comunidade lusófona pode ser bastante importante para todos os países. Por um lado Portugal alargar a sua influência junto dos outros pais, conseguindo um mercado para exportar alguns dos seus activos. Para os outros países, uma maneira de conseguir aceder a conteúdos modernos, na mesma língua, de um modo mais fácil

- Nesta questão não é por demais mencionar o Acordo Ortográfico, com o qual não concordo. A partilha de conteúdos é saberes é bastante mais relevante do que criar uma harmonização linguística, que não é mais que a imposição de um português mais correcto que os outros, ignorando as origens do mesmo

- Na mesma perspectiva usada anteriormente, os MOOCs podia acelerar a assimilação de alguns conteúdos entre países, partilhando conhecimentos diferentes e eliminado as barreiras físicas.

- Considero que deve ser uma área a merecer a maior atenção por parte de todos os agentes educativos em Portugal. É uma janela de oportunidade, atendendo às dificuldades que se vivem em Portugal e ao desejo de formação e informação que sentem a maior parte desses países. Vejo com naturalidade a criação dessa comunidade educativa.

André Costa

1. Vários estudos e artigos têm ligado a histórica falta de competitividade Portuguesa a um sistema de educação deficitário. Na sua opinião, e na qualidade de ex-estudante do sistema de ensino Português, quais os 5 maiores problemas que identifica no sistema atual? Que desafios trazem estes problemas? E porquê?

Problemas:

- Falta de um sistema de avaliação exigente e estimulante aos professores
- Um problema na cultura do país que não dá o devido valor a profissões essenciais e com uma vocação mais técnica
- Implementação de uma cultura de desresponsabilização dos jovens
- Criar um programa que envolva empresas e universidades para que os alunos comecem a partir do 2º anos a ter estágios/palestras
- Jovens emigram muito cedo (secundário e universidades)

Desafios:

- Conseguir implementar um sistema de avaliação que consiga ser exigente e estimulante para a classe dos professores. É um lobby com um peso muito grande na sociedade, mas seria importante conseguir um sistema de exigência, rigor e que garantisse que seria possível sermos capazes de avaliar e premiar os melhores
- O sistema de educação já apresenta soluções que não apenas o ensino secundário e universitário. No entanto este não é ainda percepcionado por muitos como uma alternativa capaz e nobre. O caminho passa por valorizar profissões técnicas e que são indiscutíveis para o futuro do pais
- As gerações actuais de jovens cresceram numa sociedade cada vez mais consumista, com uma alteração profunda dos conceitos tradicionais de família. Esta situação teve e terá uma influência grande no crescimento dos jovens. O crescimento em famílias disfuncionais e monoparentais, aliada às ambições familiares de pais e mães, tenderá a que as crianças sejam menos acompanhadas pelos pais. Decorrente disso, será natural uma tentativa de compensar essa ausência com uma protecção maior culminando numa desresponsabilização dos jovens. Apesar desta ser uma questão fruto dos tempos e de cariz cultural, seria importante criar um "contrato de compromisso" de modo a conseguir envolver os pais na educação dos alunos de modo a conseguir um compromisso que vise a responsabilização dos jovens

- Conseguir criar um programa Dinâmico que aproxime universidades e empresas, de modo a diminuir a distancia entre o mundo académico e as empresas. Esta formação permitirá aos universitários uma maior aplicabilidade de conteúdos, conhecer durante o seu período de formação novas e diferentes realidades, experiências essas que serão importantes para criar profissionais capazes e com maior experiência.

- Criar benefícios fiscais duradouros para as empresas que empreguem jovens até aos 28 anos; Simultaneamente criar um regime fiscal progressivo e diferenciado para os jovens até aos 28 anos. Deste modo conseguia-se criar incentivos para reter os melhores e simultaneamente proporcionar facilitar o inicio de vida destes.

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Felipe Brand da Costa

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<u>Moçambique, e outros países lusófonos? Com a tendência dos MOOCs como seria possível alavancar a língua Portuguesa?</u>

A criação de uma comunidade educativa baseada em países de língua portuguesa e assesente numa plataforma virtual de dispersão de conteúdos (MOOCs) apresenta, na minha perspectiva, <u>vantagens relacionadas com:</u>

Fit cultural, pois todos os países mencionados partilham para além da língua portuguesa uma forte base cultural que poderá servir de catalizador para a dispersão de conteúdos educativos (assumindo que a uniformização de um método de ensino numa plataforma MOOC deverá ser mais simples entre países que partilham traços culturais);

Apelo político, pois a maioria dos países mencionados encontra-se em fase de desenvolvimento (e.g. Angola, Moçambique e Brasil) o que poderá significar que uma pequena parcela da população terá acesso ao ensino superior. Deverá ser do interesse de países em desenvolvimento a dispersão de plataformas de ensino que irão contribuir para o desenvolvimento económico e social;

Apelo diplomático, pois o estreitamento de laços diplomáticos entre países de língua portuguesa tem sido almejado nos últimos anos e diversas políticas de convergência têm sido implementadas (e.g. acordo ortográfico);

Vantagens relacionadas com métodos de ensino à distância, como o baixo custo de desenvolvimento e custo marginal de utilização negligenciável, capacidade de escalar a utilização, etc.

<u>E problemas/desafios relacionados com:</u>

Reconhecimento académico, quer na perspectiva do reconhecimento de órgãos nacionais competentes (e.g. Ministério da Educação) para a atribuição de graus de ensino (e.g. licenciaturas, mestrados, etc.) quer na perspectiva do reconhecimento da comunidade científica e empresarial da validade dos graus de ensino conferidos;

Tendência de concentração na língua inglesa, nomeadamente na produção de conhecimento científico e a nível das populações (mais predisposição a um conhecimento global da língua inglesa);

Foco na realidade local, na medida em que os conteúdos e procedimentos seriam estandardizados para servirem a mais do que um contexto económico e social (e.g. o mesmo conteúdo programático serviria diversas populações) e as diferenças e especificidades locais poderão exigir um certo grau de adaptação de conteúdos;

Concorrência e posicionamento, pois os diversos players a nível local poderão facilmente copiar e competir com um sistema MOOCs internacional (e.g. diversas universidades no Brasil têm programas de graduação 100% online);

Problemas relacionados com métodos de ensino à distância, tais como realização de momentos de avaliação, validade dos graus conferidos, etc.

- - -

Sugestão de implementação: agir a nível macro (político) para garantir uma difusão do sistema entre fronteiras, conseguindo dessa forma ultrapassar os principais desafios mencionados. Exemplo: estabelecer uma parceria internacional entre ministérios de educação dos países mencionados, para que o sistema MOOC seja comprado por governos e posto à disposição da população sem meios/disponibilidade para frequentar o sistema de ensino regular.