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Evaluation of the Universities Performance

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Júri

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Abstract

The Portuguese higher education sector has suffered profound reforms recently, not only in the governance model, but also in the quality assurance system. The main objective of these reforms is to increase the efficiency and the performance of the Portuguese institutions, allowing them to survive in a very competitive environment. In other countries such as the Netherlands the quality assurance system is based on an accreditation approach, and only the accredited institutions receive public financing. The quality assurance in the United Kingdom is based on the audit perspective, and the allocations of the public resources do not fund teaching provision quality. In Spain the national agency is now launching a set of new programmes which will bring a system based on accreditation. From all the countries analysed, the British system is the one that provides more information to the stakeholders, and Portugal is clearly lagging behind. Therefore, it is important that the Portuguese institutions seek for new instruments to measure their performance. The balanced scorecard is a management tool that allows the institutions to measure their performance under four different perspectives, customer, internal, innovation and learning and financial respectively. The balanced scorecard has numerous advantages when compared with other instruments, for example, it increases the requirements for accountability and allows the institutions to improve the performance continually. The balanced scorecard applied to the DECivil shows that the department needs to improve its performance in some areas, like the R&D activities or the internationalization of their students and activities.

Keywords: Balanced Scorecard; higher education; quality assurance; performance evaluation; regulatory agency.

Resumo

O ensino superior Português sofreu nos últimos anos profundas reformas, não só nos modelos de governação, mas também no sistema de garantia de qualidade. O principal objectivo destas reformas é aumentar a eficiência e o desempenho das instituições Portuguesas permitindo que estas sobrevivam num ambiente muito competitivo. Na Holanda o sistema de garantia de qualidade é baseado na acreditação, e apenas as instituições acreditadas têm direito a receber fundos públicos. O sistema de qualidade no Reino Unido é baseado num perspectiva de auditorias, e a distribuição dos fundos públicos não tem por base a qualidade de ensino, sendo justificado pelo facto que apenas separaria ainda mais as instituições. De todos os países analisados o Reino Unido é aquele que providencia mais informação aos ”*stakeholders*”, e o modelo Português está claramente a ficar para trás. Por isso é importante que as instituições Portuguesas procurem novos instrumentos para medir a sua qualidade. O *balanced scorecard* é uma ferramenta de gestão que permite que as instituições meçam o seu desempenho sob quatro perspectivas, cliente, interna, inovação e financeira. O *balanced scorecard* tem inúmeras vantagens quando comparado com outros instrumentos, por exemplo, aumenta os níveis de responsabilização e permite às instituições melhorarem continuamente o seu desempenho. O *balanced scorecard* aplicado ao DECivil mostra-nos que o departamento necessita de melhorar em algumas áreas, como a produção científica e a internacionalização dos estudantes.

Palavras-chave: Agências reguladoras; avaliação de desempenho; *balanced scorecard;* ensino superior; garantia de qualidade.

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1 Introduction

1.1 The higher education sector challenges

The higher education sector is nowadays facing times of profound transformation and many challenges, not only in Europe but all around the world. To a higher education institution is recognized a role that goes over the simple dissemination and maintenance of knowledge. The higher education institutions are endowed with the mission of producing highly skills graduates, not only with ability of innovation but also with the strength of improving the world's economy and the quality of society in general.

In the last decades of the 20th century, the participation on the higher education had an enormous growth, with many and different consequences to the institutions. One of the main results was the diversification of the sector, with polytechnics, universities and the technological institutes offering many different educational programmes. As a response to the fast growth, the governments and the institutions themselves started a set of reforms with the main purpose of developing a quality assurance system that leads to a continuous improvement of the educational programmes, and increases the levels of accountability.

In Europe, the Bologna declaration is one of the main reasons for the recent transformations. However, the main issues of discussion do not end in the Bologna process, and the institutions are facing many pressures from all the stakeholders. The students are paying high tuition fees, and as a result they are demanding more from the institutions. It is very reasonable to say that they are starting to behave more like clients and not like students. The employers argue that they pay their taxes, and consequently demand more quality not only from the graduates, but also from the research and development (R&D) activities without the support of the higher education institutions. On the other hand, most of the governments are decreasing the public fund, which leads to the increase of competition of the resources available between the different institutions and also demands more accountability from the institutions. Furthermore, the governments also have the necessity of collecting information about the institutions performance to know where to allocate better the public funds. The pressure of the international league tables has also increase the competition between the higher education institutions, which are compelled to perform better than their peers, in a very competitive environment.

In the present context of the higher education, the quality assurance processes become more important, and nowadays are considered a crucial element for the sector's success. The quality assurance systems play an important role for several reasons, from which a few can be pointed out. First of all, the governments have the need to demonstrate that the public funds are being effectively distributed and that the national goals for the higher education are being achieved. The quality in the higher education sector is also fundamental under the perspective of its contribution to the economic growth. The rise of the new economy has made research and innovation the key stone to the global competitiveness. Therefore, in the Lisbon strategy the European countries recognized the importance of excellence in the research and development (R&D) activities to become more competitive and dynamic. Finally, the quality assurance is very important under the employment and social

perspective. It is an indispensable process to guarantee that the higher education institutions are producing graduates with the minimum standards of knowledge and skills that respond to labour market needs (OECD, 2008).

As mentioned before, in the last decades the higher education landscape has changed dramatically. The globalization and the recent developments in the economy put a lot of pressure into the higher education institutions. The recent reforms can be seen as an opportunity for the sector to improve its performance and the levels of quality. However, the reforms have not ended yet and the governments, the institutions, and the society in general will face many challenges in the future. Among these challenges, the following ones can be pointed out, such as to allocate the public resources efficiently, to reach the balance between the governmental regulation and the institutional autonomy, to develop a funding strategy with the goals of the higher education system, to build links with more research organizations, the private sector and the industry, and to establish a culture of quality, information and transparency.

Nowadays, and more than ever in order that the institutions survive in a competitive environment and respond positively to the new challenges, they need to start to monitor their own performance, and to seek for new instruments to achieve higher levels of quality and accountability. The management of a public organization is very complex, and the traditional management tools may not be useful to create value in the higher education institutions. Therefore, it is crucial for the future of the higher education that the institutions define clearly what are the strategies and objectives, in the long term, and seek for more efficient and reliable measurement tools. Only in that way will the institutions know if they are achieving the desired performance, and providing a good service to the society (Eurydice, 2008).

The Portuguese higher education is no exception to these disturbed times, recently the government started a set of new reforms, not only in the quality assurance system, but also in the governance and the management of the higher education institutions. The objective of these reforms is to enhance and modernize the entire system, creating a culture of quality and improvement. The results of these reforms and of the current policies will only be known at long term.

1.2 The higher education sector in Portugal

1.2.1 Introduction

The Portuguese higher education sector is facing at this moment a transition phase and deep changes in the organization system. The Bologna Declaration signed by the majority of the European countries in 1999 is one of the main reasons for this changing process. The Bologna Declaration is a commitment between the assignment countries to achieve a group of goals considered crucial to establish a European Area of Higher Education until the end of the first decade of the new millennium. Therefore, when the Portuguese XVII constitutional government took over the country it already knew the enormous challenge it had to face, but it was also a unique opportunity to reform, restructure, and improve the entire higher education sector.

The main objectives of Bologna Declaration are based on six essential different points (European Ministers of Education, 1999). The academic degrees should be easily readable and comparable to promote European citizens employability and also increase the international competitiveness. A system based on two main cycles must be established, and the access to the second cycle can only be achieved if the first is totally completed, lasting a minimum of three years. The first cycle should be relevant to the labour market as an appropriate level of qualification, and the second one should lead to a master or doctorate degree. A system of credits with the purpose of promoting the most widespread student mobility must be created. The Declaration also states that the credits can be acquired in "non-higher education contexts", such as lifelong learning. The mobility, by overcoming the effective exercise of free movement, not only for students but also teachers, researchers and administrative staff must be promoted as well. Co-operation between countries to develop comparable criteria and methodology in quality assurance should be increased and the necessary European dimensions in higher education, particularly with regard to curricular development, inter-institutional co-operation, mobility schemes and integrated programmes of study, training and research should also be promoted.

The Law 74/2006 of 24 March defines the academic degrees and diplomas of higher education, and also characterizes each of the cycles in the scope of the Bologna Process, described in figure 1.

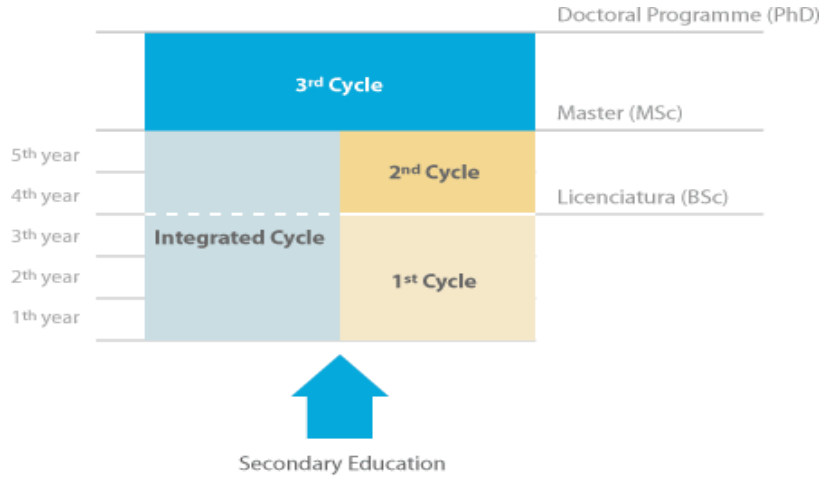

Figure 1 – Bologna's diagram

However, this disturbed times for the higher education in Portugal is not only because of the Bologna Declaration, but also a consequence of the poor performance of the Portuguese economy that demands profound reforms in the sector. Therefore, the higher education context when the Portuguese XVII constitutional government started working was very troublesome. The government defined four main objectives to achieve in the programme for the higher education:

I. To guarantee the qualification of the Portuguese in the European area, accomplishing the Bologna process;
II. To strength the higher education system with more autonomy to the institutions, making more easily to reform the government system of the institutions;

III. To promote a national system of quality assurance;

IV. To promote the access and the equality of opportunities for all Portuguese.

It was in this context that the Portuguese government on November 21, 2005 requested an international evaluation of the Portuguese higher education. These evaluations had the main purpose of evaluating globally the system of Portuguese higher education and its policies, and also evaluating specifically the current processes of accreditation, evaluation, and quality assurance. Therefore, the government aspired an independent evaluation not only of the higher education, but also of the organization that evaluates the institutions, the Portuguese National Council for the Evaluation of Higher Education, "*Conselho Nacional de Avaliação do Ensino Superior*" (CNAVES).

These group of evaluations occurred independently from the national evaluations in progress. The international evaluation had the contribution of the Organization for Economic Co-operation and Development (OECD), the European Association for Quality Assurance in Higher Education (ENQA), the European University Association (EUA), and finally of the European Association of Institution in Higher Education (EURASHE). All these institutions have unique competences in the area of evaluation of higher education systems and institutions, which enable the policy makers to launch new ideas to the Portuguese system with the main purpose of improving and modernizing it. This group of studies made an evaluation of the Portuguese higher education system and was crucial to the sector's future.

1.2.2 The higher education system and organization

The Portuguese higher education system is binary, and the institutions can be universities or polytechnics either public or private, the number of institutions is the table 1.

Table 1 – Number of university and polytechnic institutions in 2006

	University		**Polytechnic**	
	Universities	Other Schools	Polytechnic Institutes	Other Schools
Public	14	5	15	16
Private	13	35	2	60
TOTAL	27	40	17	76

The Science, Technology and Higher Education Ministry (MCTES) has the responsibility for the public higher education institutions. However, the MCTES in its organization and management model delegate functions to other organisms, in a layer system. The MCTES uses the "*Conselho Coordenador de Ciência e Tecnologia"* as a consultive organism, and to support the government and the management the ministry created the "*Gabinete de Planeamento"* and the "*Inspecção-Geral da Ciência e Ensino Superior*". The government system of the ministry also have several organisms to help in the improvement and modernization of the science and higher education in Portugal, like the "*Direcção-Geral do Ensino Superior*" or the "*Fundação para a Ciência e Tecnologia*" (FCT). The FCT has an important role in the resources allocations in Portugal.

The new legal system to the higher education institutions (RJIES) was established in the recent Law 62/2007 of 10 September, and as mentioned before, defines the organization of the higher education in a binary system. The Universities should be oriented to offer degrees with a scientific

component, while the polytechnics must concentrate efforts to offer programs professionally oriented. The Universities are able to offer degrees of Bachelor (BSc), Master (MSc) and Doctorate (PhD), while the polytechnics are only able to provide bachelor and master degrees. The main distinction between the public and private education is the fact that the private education is composed by institutions that belong to particular entities.

In Portugal, generally the universities are more selective than the polytechnics and normally they offer education with more quality. The public universities are the institutions that generally attract the best students. This factor is justified by the access rules more selective when compared with the private universities, but also because of the lower costs to the students.

The Portuguese statistics indicate that the major work of research is located in the major universities. The eight universities that are located in the coastal cities of Portugal produce 85% of the doctorates in the country. The statistics also indicate that 40% of the vacancies available in the public education and 70% of the private sector are in Lisbon and Oporto.

As we can see in the table 2, for the academic year of 2005/2006 there were about 2600 educational programmes registered.

Table 2 – Number of degree programmes registered for the academic year 2005/2006

Sub-system of Higher Education		**Number of degree programmes registered, 2005-2006**		
		"*Bacharelato*"	"*Licenciatura*"	"*Mestrado*"
Public Higher Education	University	5	723	528
	Polytechnic	27	619	--
	Sub-total	32	1342	528
Private Higher Education	University	10	308	63
	Polytechnic	38	213	--
	Sub-total	48	521	63
Catholic University	University	--	69	31
Total		80	1932	622

The universities have the possibility of containing independent structural units, "*unidades orgânicas autónomas*", that are autonomous organisms under the university. Usually these organisms are units of teaching and researching (also called schools), libraries or museums.

1.2.3 Access to higher education

The access to the higher education in Portugal is regulated by the Law 296-A/98, of 25 September, recently changed by the Law 90/2008 of 30 May. The access to an educational programme in a higher education institution is subject to quantitative limitations, according to the number of vacancies established every year. The number of vacancies in public higher education institutions is under exclusive tutorship of the Science, Technology and Higher Education Ministry.

The filling of the vacancies available to each pair institutions/programme is made by competition. The student that intends to enrol in a higher education institution must have the completed secondary education, or a legal equivalent degree, and do the examinations required to higher education attendance. It belongs to the higher education institutions the competence of defining the method to perform these examinations as well the selection criteria of the candidates. Therefore, the higher education institutions are organized between them in the National Commission of Access to Higher

Education, "*Comissão Nacional de Acesso ao Ensino Superior*", (CNAES). CNAES has the responsibility of performing the examinations of the candidates. However, CNAES can decide if the national exams of the secondary education satisfy the requirements of access to higher education, and use them to examine the ability of the students to attend the higher education. Usually, CNAES uses the secondary national exams. The higher education institutions have the responsibility to establish the obligatory exams that the students need to enrol in their courses. The exams are limited to two for each pair institution/programme.

The Portuguese law also allows each institution, annually, to establish and perform prerequisites. These are evaluated in an objective way, are technically rigorous, and their main purpose is to provide helpful criteria for the selection of the candidates. The coordination of this process is under responsibility of the CNAES. The selection of the candidates in each pair institution/programme, usually based on the national exams, requires a minimum classification of 95 in a 200 points scale. If the institution requires that the student needs the prerequisites it is also necessary to achieve a minimum classification of 95 with the same scale.

The final classification of the candidate to a higher education institution is obtained through a algebra formula. This formula is defined by the institutions themselves and it has to integrate compulsorily the following points:

- The final classification of the secondary education (≥50%);
- The classification of the ingress exams, usually the national exams (≥35%);
- The classification of the prerequisites, when demanded (≥15).

The "Direcção-geral do Ensino Superior" is the entity responsible for publishing all relevant information about the national contest, especially related to the law, the ingress exams, the prerequisites, the formulas applied by the institutions, the vacancies and the regulation of the private higher education institutions.

The special conditions to have access to the higher education institutions for the candidates who are more than 23 years old, that did not have completed the secondary education and do not have a higher education degree are regulated by the law 64/2006 of 21 March. The law is very flexible and enables the institutions to choose the criteria of evaluation of the candidate abilities that are more appropriate to the programme or to the candidate profile. Therefore, the institutions have full responsibility for the students' selection. However, the evaluation must include:

1. Evaluation of the candidate's curriculum at an academic and professional level;
2. Evaluation of the candidate's motivations, which can be achieved through an interview;
3. Performance of theoretical and practical evaluations of the candidates' knowledge considered indispensable in the area. These evaluations can be performed according to the programme or candidate profile.

The total numbers of vacancies that open annually to the candidates in this specific situation must be at least 5% of the total number of vacancies in each pair institution/programme in the general regime of higher education access.

Portugal is facing challenging times not only at the higher education level, but also at an economic level. The need for a population with a high level of education that brings more innovation and modernization to the country is required more than ever. Portugal has high rates of students that do not complete the secondary education but has professional abilities that can be very helpful to the Portuguese economy. As we can observe in the figure 2, the level of accomplishment in higher education of the Portuguese population with more than 25 years of age is very low when compared with other OECD countries. It is in this context that the programme New Opportunities, "*Novas Oportunidades*", appeared in the Portuguese system. It represents an important step in the recognition of the urgent need for graduate students, and specially to benefit their capacities towards more innovation and investment.

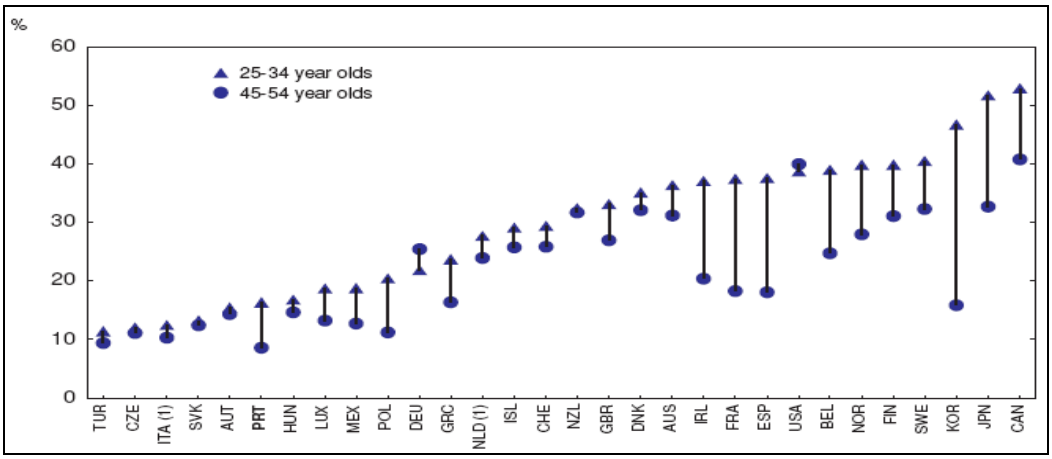

Figure 2 – Higher education attainment as percent of age group population in 2003 (OECD, 2006)

The higher education institutions have full responsibility to create the adequate conditions to receive this "new" type of students with very specific characteristics, and obtain from them the maximum benefits. Therefore, the institutions must adapt their programmes to these students and the private institutions can be crucial to the success of the programme.

1.2.4 The higher education financing

The legal system of the Portuguese higher education, "*Regime Jurídico das Instituições de Ensino Superior*", (RJIES), establishes that the funding to the higher education is regulated by a specific law. The law that regulates the funding of the Portuguese higher education system is the law 37/2003 of 23 August.

The RJIES defines that the higher education institutions have patrimonial, administrative and financial autonomy, and the incomes to the public institutions are defined in the specific law.

The public funding of the Portuguese higher education is based on four main mechanisms. The public funding of higher education institutions that is divided in the direct basic funding made through a funding formula, the contractual funding for institutions which is related to specific subjects considered

as priorities to the country, and the direct funding for social support. The public funding for science and technology, which is divided in the direct funding, based on the Portuguese Science and Technology Foundation evaluations, the contractual funding of institutions, the competitive funding for research activities and the competitive funding for people. Finally the last two funding mechanisms are the public funding for infrastructures and the public funding for diffusion of information and communication technologies.

The formula used to distribute the public funds for the higher education institutions is based on several factors. Therefore, to characterize the institution size the formula has one indicator that is the total number of students. The indicators that help to define the specific institutional features as well as the different areas of study are the staff average cost, the teaching staff/student ratio, and the teaching staff/non-teaching staff ratio. Finally, the quality indicators are measured through the level of academic qualification, graduation efficiency rates, and the post-graduates efficiency rates. The formula to distribute the public funds for the higher education institution is:

$$OT_j = \sum [I_{ij} \times F_{ij} \times E_{ij} \times Q_j] \times D \quad (1)$$

Where:

OT_j – Public basic funding level for higher education institution j;

I_{ij} – Student enrolments estimate in study area I of institution j;

F_{ij} – Cost factor for study area I in institutions j;

E_{ij} – Graduation efficiency for initial training students in institution j;

Q_j – Scientific efficiency for advanced training student in institution j, and Faculty members qualification level in institution j;

D – Theoretical national minimum funding level constant.

The two figures below illustrate how the public funds distributed by the formula are divided by the public universities. The universities that receive more funds per student are the Oporto University and the Technical University of Lisbon.

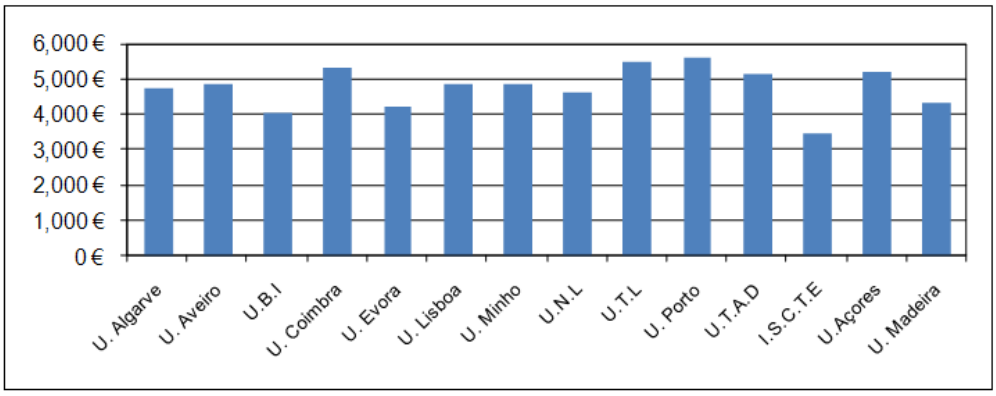

Figure 3 – Financing of public universities per student in 2006 (OECD, 2006)

The next figure gives us the percentage that each public university receives from the direct public funds through the financing formula. It is easily observed that the University of Oporto and the

Technical University of Lisbon are the ones that receive more funds. It is also interesting to notice that the four largest public universities receive about 55% of the total public funds distributed to all fourteen public universities.

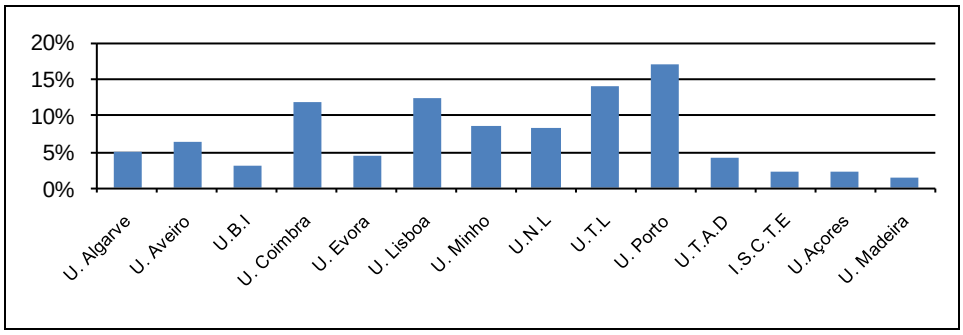

Figure 4 – Distribution of public funds through the public universities 2006 (OECD, 2006)

It is established in the law that the Portuguese higher education institutions are subject to systematic evaluations by the government to verify the applications of the public funds. The institutions are also committed to report their accounting, and to improve it, through the presentation of several documents, and to publish them.

The government has a commitment to assure a system of social support to the students, with the main purpose of guaranteeing the access to higher education of all students. This system is a certification that anyone stays out of the higher education system for financial reasons. The funds for social support are defined by law through a formula based on criteria of equality, efficiency, and performance. The students also receive indirect support, like the access to food, health services, accommodations and access to cultural and sport activities.

As pointed out above, the Portuguese Science and Technology Foundation (FCT) has a crucial role in the resources allocation for research activities. The FCT was created with the main purpose of promoting advancement of scientific and technological knowledge in Portugal to achieve the highest international standards. The Foundation's strategy is centred in five main guidelines, the promotion of advanced human resources training, the funding of scientific research and technological development projects in all scientific areas, the support for the development and management of R&D infrastructures, the promotion of the mobility of researchers, and finally the promotion of scientific communication.

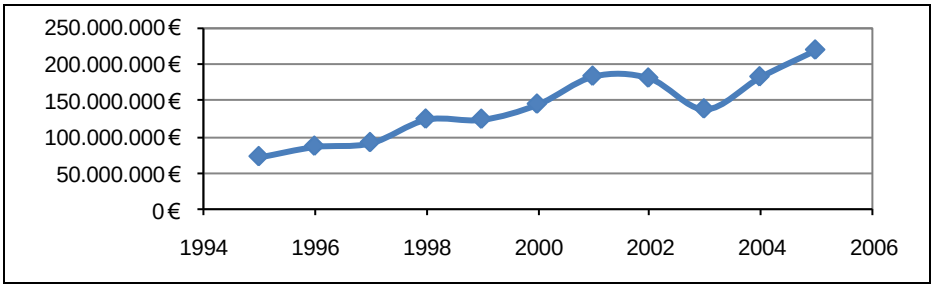

Figure 5 – Total funds distributed by the FCT between 1995 and 2005 (MCTES, 2008)

The figure above gives us the variation of the FCT funds distributed over ten years, between 1995 and 2005. In 2003, the FCT decreased substantially their funding, mainly due to budgetary restrictions. However, it is interesting to notice that in ten years the FCT budget to support the different fields is three times greater.

The FCT distributed their funds to R&D units and science and technological (S&T) institutions (most of them at public universities) based on periodic evaluations of three years. This distribution includes two different components, the basic funding in terms of number of researchers and level of evaluation, and the programming funding for specific actions to be defined by the evaluators.

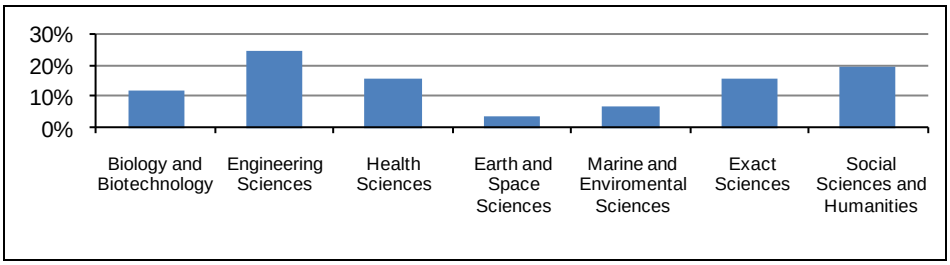

Figure 6 – Distribution of the FCT funds through the different fields in 2005 (OECD, 2005)

In the figure above we can see that the FCT supports different fields of activity. Naturally, the Engineering Sciences is the field that receives more funds from the Foundation, but it is also interesting to notice that the Social Sciences and the Humanities receive more funds than the Exact Sciences or the Health Sciences. This distribution of the FCT funds is related to the year 2005, however the Portuguese government has increased its levels of support to the scientific research activities through different programmes, like the partnership with the MIT.

The higher education institutions have the responsibility for the recruitment and promotion of their academic and research staff. Nevertheless, these activities are regulated by a special law, the regime of the teaching and research staff, "*Regime do Pessoal Docente e da Investigação*".

In brief, we can identify three main sources of incomes to the Portuguese higher education institutions respectively, the public funds, the private funds (includes the tuition fees of the students), and the European funds. The funding in Portugal has decreased in the last years, because of the financial problems of the country, especially the public deficit. Despite a decrease in the public funds, Portugal is still a country with a high proportion of public funds, when compared with other countries of the OECD.

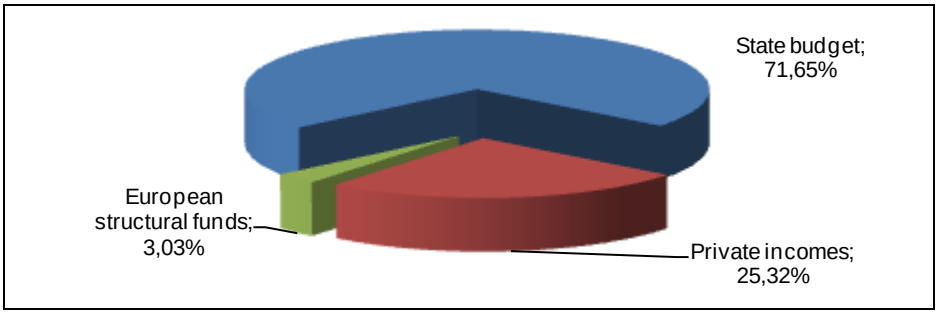

Figure 7 – Sources of incomes of Portuguese higher education institutions in 2006 (OECD, 2006)

The figure 7 is very conclusive about the percentage of public financing in the higher education sector. However the public funds are still the major source of incomes to the Portuguese higher education institutions. In 2004 the level of private funds was about 15%, and it has increased 10% only in two years. The percentage of public funding have decreased in the last years, and the legal framework for the higher education institution provided them with more autonomy and it is expected that the institutions themselves look for new ways of incomes and of increasing the percentage of private funds.

In Portugal, the families are the main responsible for financing the higher education courses of their students. The students usually do not have a part-time job, but at the moment 20% of all students already have one. The loan programmes to higher education students is very recent, only one year old, and the culture of requesting a loan to pay their education is not settled in Portugal. However, the government published that about 3.000 students adhered to the programme, a number that was considered a success for the first year. The loan will be paid in a period of 6 to 10 years, a year after the student finishes the course, and with a lower rate.

The distribution of the social support is based on the incomes of the student's family, and if the total budget divided by all members is larger than the minimum salary the student does not receive social support. However, in Portugal a student is not supposed to subsist only with the scholarship. The students must have another source of support. The Portuguese statistics shows the following interesting data:

- 17% of students in public institutions receive social support;
- 14% of students in private institutions receive social support;
- The average of social support to the universities is 1,481€ per student;
- The average of social support to the polytechnics is 1,201 € per student;
- The average of social support to the private institutions is 1,698 € per student.

1.2.5 The higher education performance

In the decade of the 1970s with the April revolution and the consequent change of regime, Portugal began a new era of many changes and growth. The higher education sector was not indifferent to the political situation, and the access to the higher education institutions started to open for all social classes. Therefore, the number of students enrolled in higher education in Portugal suffered an extraordinary growth. The number of students enrolled in higher education institutions in the beginning of the 70s was about 30.000 and increased almost 400.000 by the end of the 20th century. In the period of time between 1975 and 2001 there was a growth rate close to 6%, it was the highest rate of growth in that period when compared with the EU-15.

The figure below shows the variation of the number of students enrolled in the Portuguese higher education. In the year 2002/2003 the total number of students reached the highest number ever. However in the last year the total number of students has increased for the first time in the last five years. It is interesting to notice that the numbers of students, when compared with the year of 1995/1996, have increased in the public universities and in the public polytechnics, but the private sector has lost students to public institutions almost every year. It is the only sector of the higher education that has lost students since 1995.

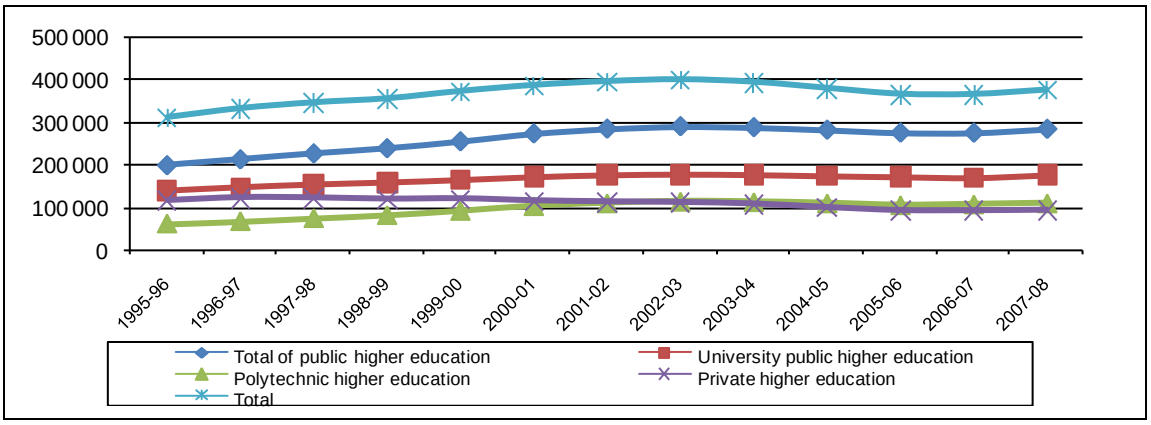

Figure 8 – Evolution of the overall number of students enrolled in higher education in Portugal between 1995/96 and 2007/08 (MCTES, 2008)

Nevertheless, despite the larger growth of the higher education sector the levels of education in the Portuguese population are very low. It is one of the lowest of all OECD countries, only leaving behind Turkey and Mexico. The figure 9 describes the share of people aged between 20 and 24 years old who have not completed the upper secondary school and are no longer in education in 2003. This percentage, when compared with the other countries makes the Portuguese policy makers apprehensive. For example, the percentage in the U.K is less than 10%, and in Greece, a country many times compared to Portugal, is less than 20%, both for males and females.

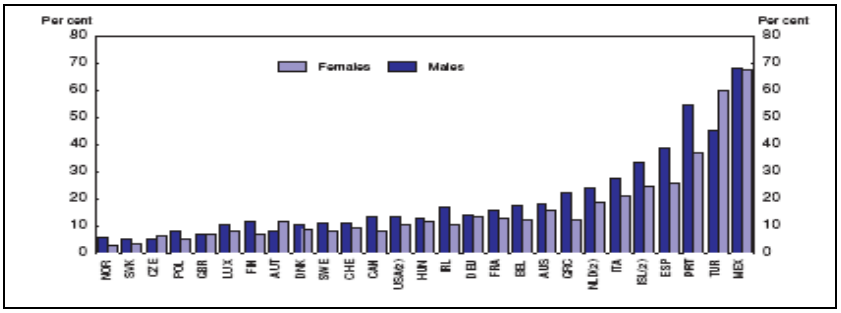

Figure 9 – Early school leavers in OECD countries (OECD, 2006)

The statistics indicate that Portugal has one of the highest drop-out rates, and as we can see in the figure 10, 62% of the population has only 6 years or less of schooling.

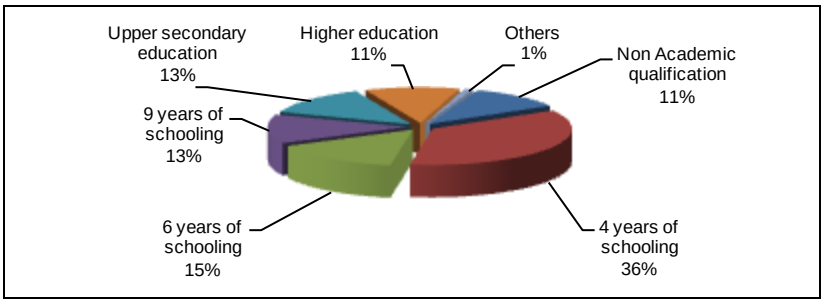

Figure 10 – Academic qualifications in 2001 (OECD, 2006)

The statistics about the Portuguese education also show that although the number of students enrolled in higher education increase in a high rate, the number of students that finish their courses is translated into a much lower rate. This clearly indicates high levels of drop out students and retention

levels. The main cause for these numbers is the inefficiency of the higher education institutions and the education of the younger students that enrol in higher education.

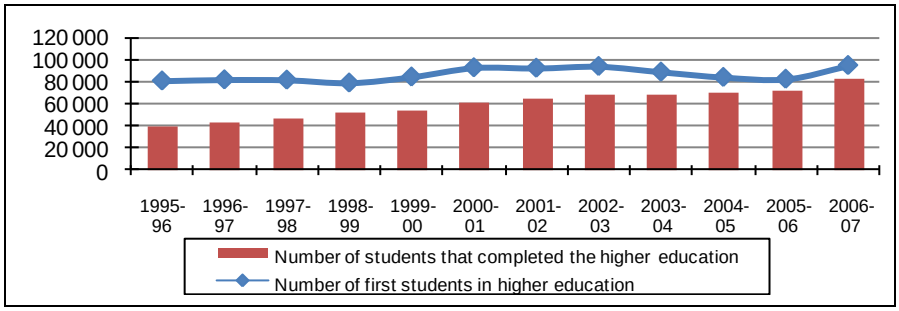

Figure 11 – Number of students that complete higher education and the number of first students between 1995 and 2006 (MCTES, 2008)

As previously mentioned, the levels of education in Portugal are very low, and currently the situation is not very encouraging. The failure of the Portuguese students starts in their first years of school. The data about their performance is very enlightening, 15% of the students drop out before the 9th grade, 60% do not finish the 12th (increase to 70% in the males), and finally 40% of the students that enrol in higher education do not finish their graduation. These numbers are very alarming to a country such as Portugal, and very conclusive about the Portuguese education system.

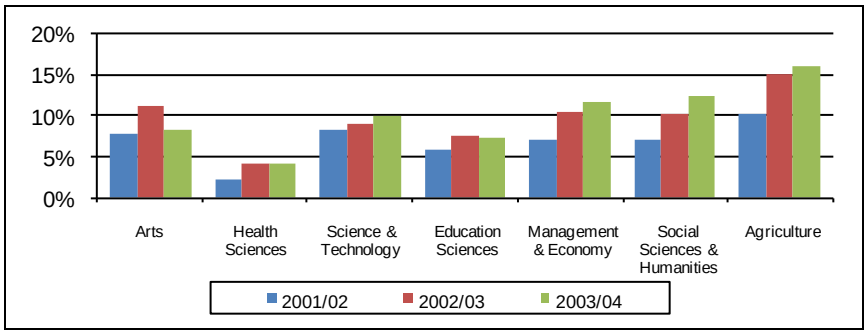

Figure 12 – Academic drop-out rates in public higher education (OECD, 2006)

As we can see in the figure above, the academic drop out from the academic year 2001/200 to 2003/2004 shows the inability of the Portuguese policy makers to increase the success rates of their students. Therefore, only in the field of Arts and Education Sciences the drop outs have decreased in the last year.

The government strategy for the future development is based on the modernization of the country, with a strong commitment to increase the levels of research and innovation. This strategy is reflected in the different government programmes, especially the called Technological Plan. Therefore, the main objectives of the government to the sector were, among others, to raise the PhD degrees to over 1.500 by year and increase the number of scientific publications per million population.

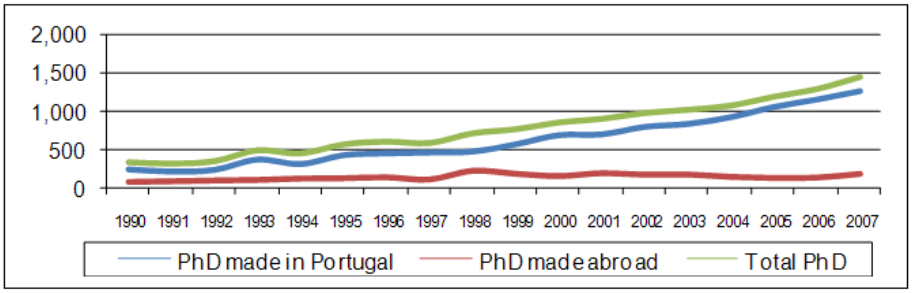

Figure 13 – Evaluation of the number of new PhD between 1990 and 2007 (MCTES, 2008)

The number of doctorates in Portugal is very lower when compared with other European countries, although it has increased in the last years. In the beginning of the 80s Portugal produced about 200 doctors per year, and only ten years later it produced 4 times more, about 800, and in the last year, 2007, Portugal created almost 1500 doctors per year. These results are very positive and encouraging for the Portuguese policy makers. But, when we look at the figure 14, which gives the number of graduates per each new PhD, the conclusion is obvious, despite the recent good results, Portugal still needs to increase the total number of PhDs.

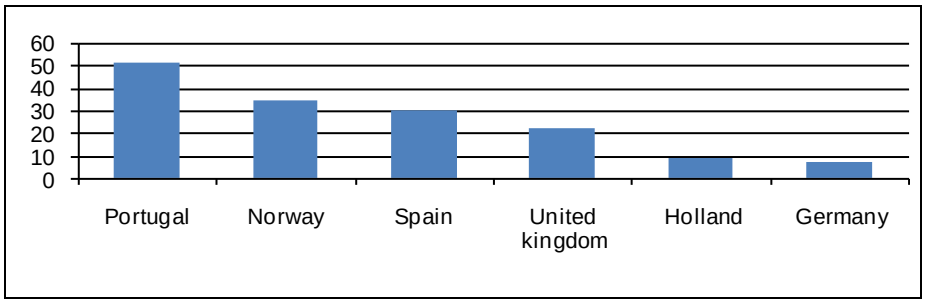

Figure 14 – Number of new graduates per each new PhD (OECD, 2006)

The staff qualification levels in Portugal are significantly lower than other European countries. Figure 15 gives us the percentage of academic staff in the public universities holding a PhD degree. No university reaches the values of 70%, and the institutions that have better rates are the Technical University of Lisbon and the University of Oporto.

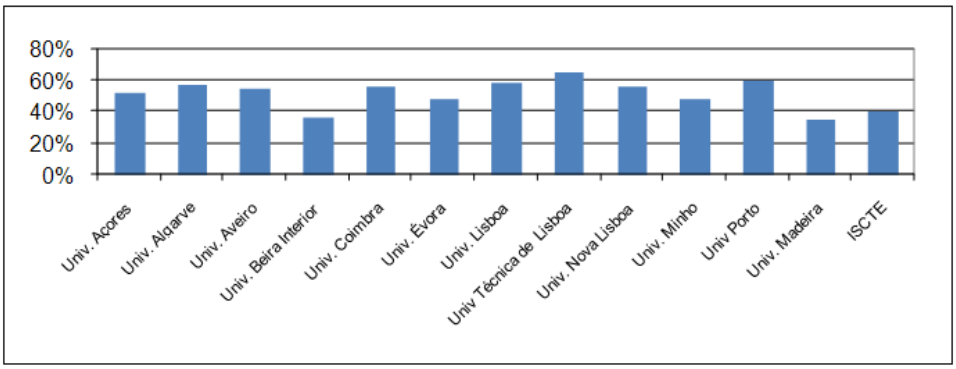

Figure 15 – Percentage of academic staff holding a PhD degree (OECD, 2006)

In 2003 Portugal had one of the lowest rates of expenditure in the research activities of the European countries, only 0.78% of the GDP, although it has been growing much in the last years. However, one of the main problems is the percentage of public funding in R&D, which is very high, over 60%, when compared with other European countries. For example in the EU-15 average is around 35% while in the most developed countries, like Sweden or Finland it is less than 30%. Therefore, Portugal needs to bring the private sector to invest in the R&D activities.

Figure 16 below shows us the total number of publications in classified journal, and non classified journal. It is interesting to notice that the total number of publications has increased seven times more in about sixteen years. This result was somehow expected because the number of PhD in Portugal has also increased much.

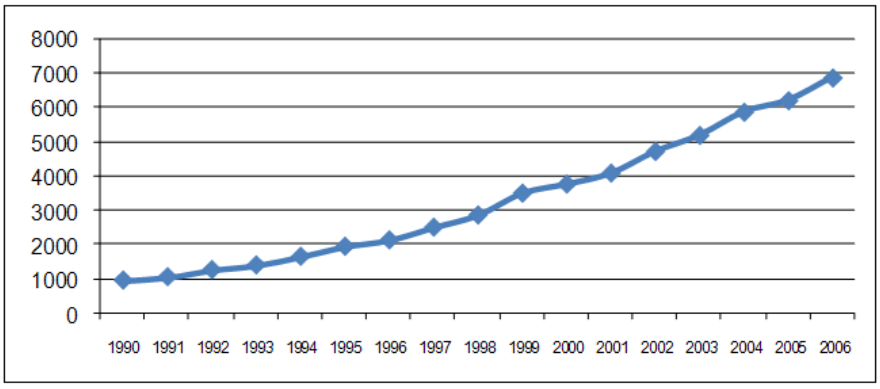

Figure 16 – Total number of publications (MCTES, 2008)

The figure below gives the distribution of the publications in classified journals by the different fields in 2006. The science and engineering fields are the ones that produce more publications. There are a very low number of publications in Arts & Humanities and the Social Behavioural Sciences fields despite the high percentages of funds received by the FCT. However, the publications are not the main source of evaluation of these fields.

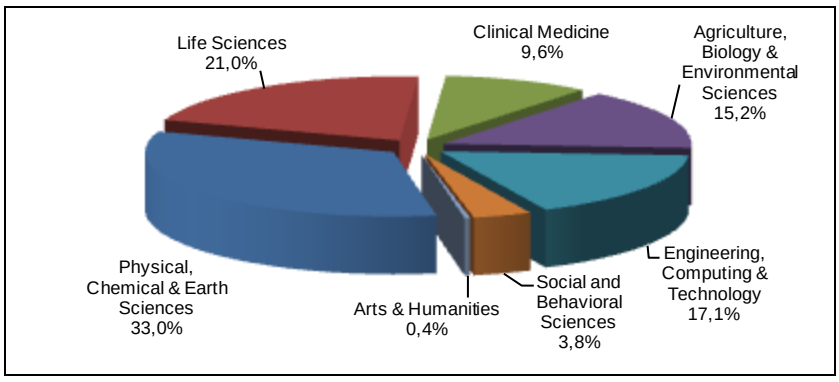

Figure 17 – Distribution of publication by academic field (OECD, 2006)

The OECD report shows that Portugal has high levels of inbreeding rate of Assistant Professors, especially at the two largest engineering schools, at the Instituto Superior Técnico of the Technical University of Lisbon (near 80%) and at the Faculty of Engineering of the University of Oporto (near

90%). This problem does not allow for structural changes or new approaches to the scientific research and educational problems. However, this is not only a problem of Portugal. In Spain the inbreeding levels are very high. In the UK the inbreeding levels rate is only 17%.

It is obvious that the poor performance of the Portuguese economy has a direct relationship whit the failure of the policies to increase the education levels of the population. The OECD report about the tertiary education in Portugal reveals that the relationship between the Portuguese industry and the higher education institution is very low. A large number of Portuguese companies still remain specialised in the production of labour-intensive and low value-added traditional goods but these markets are lost to new EU countries, Africa, or Asia. It is also clear that the productivity of the Portuguese workers is very low, half of the United States of America, and with high levels of labour force participation of the population with lower levels of education. The numbers are easily explained by the difficulty of the Portuguese companies to adapt to new technologies, to innovate, and commercialize their products in other markets. Most of the experts refer that the only way for the Portuguese companies to increase their levels of technology and innovation is with higher levels of education. Portugal has an urgent need to invest more in its human resources, and consequently in the higher education sector.

Sometimes in Portugal it is argued that the levels of graduates are enough for the country, but this is not true, and actually they are very few. In fact, Portugal is one of the European countries with the lowest rate of graduates, so increasing the qualifications of the population at an academic and professional level is an essential factor for the growth of the economic, social and technological modernization. The government needs to attract more students to the higher education and simultaneously create conditions to assure that the students complete their education programmes with the minimum of quality demanded.

1.3 Objectives and organization

The main goal of this work is to study how the quality of the higher education sector is measured by the stakeholders, with especial relevance to the government and the institutions themselves. Therefore, the main purpose of this thesis is not only the analysis of different quality assurance systems, but also to study the instruments for evaluation of the performance of the higher education institutions, including the balanced scorecard, and finally apply the balanced scorecard methodology to the Civil Engineering and Architecture Department of the Instituto Superior Técnico (DECivil). The thesis is organized into five different main chapters respectively, the introduction, the regulation of quality in the higher education sector, the measuring the performance of the higher education institutions, the application of the balanced scorecard to the DECivil, and finally the conclusions.

The introduction as we saw, gives us not only a presentation of the higher education challenges for the future, but especially a description about the Portuguese higher education sector, its organization and performance in the recent years.

The second chapter has the purpose of analysing the background and the recent reforms in the Portuguese quality assurance system, and also how some European countries manage the quality of their higher education institutions, such as Holland, Spain and the United Kingdom.

The following chapter is related to the traditional tools used to measure the performance of the higher education institutions. This chapter analyses the importance of the performance indicators to measure the quality of the institutions, especially in the context of national regulation. The reliability of the academic rankings is also discussed and the most famous rankings are presented, as well as their methodology and results. Finally, the balanced scorecard is introduced tool and described. This tool is used all over the world to measure the performance of the organizations, including the universities.

In the final chapter dedicated to the application of the balanced scorecard to the DECivil the department's objectives and strategy, the evaluation procedures and methodology of the balanced scorecard are described with more detail, and finally the results are analysed. The main purpose of this chapter is to provide the higher education institutions, especially the DECivil, with guidance and an evaluation instrument so that the institutions can measure and improve themselves. The analyses of the results are not the most important aspect of the chapter, as the quality of data is recuced. The main goal is to present to the higher education institutions, especially to the DECivil, the balanced scorecard tool, provide the proper procedures and give an example of how it can be used to improve the institutions performance.

Finally, the last chapter has the main objective of making a summary of all the conclusions, ideas and suggestions proposed in the thesis, as well as the recommendations for following research.

2 Regulation of quality in the higher education sector

2.1 Portugal

The Portuguese quality assurance system, as the entire higher education sector, has recently suffered a profound reform, which changed all the evaluation processes in Portugal. At the moment the reforms are still in motion, and the Portuguese quality assurance agency is not operational. The damages of this inoperative system to the Portuguese higher education are incalculable, and the system must restart as soon as possible. However, more important than time is the quality of the new system, and the guarantee that the new evaluations are reliable and improve the Portuguese higher education institutions performance.

2.1.1 The quality assurance system in Portugal

The Portuguese quality assurance system was under the responsibility, for several years, of the National Council for the Evaluation of Higher Education, created by the Law 205/98 of 11 June. CNAVES was created with the main purpose of assuring the harmony, cohesion, and credibility in all evaluation process in higher education. In the law it is also stated that the Council should establish European and International criteria of excellence in the process of evaluation.

The evaluation of the programmes was carried out by evaluation councils under the supervision of CNAVES. The evaluation councils have the responsibility of proposing the composition of the peer review panels, the guidelines for the self-evaluation process, and the most important, publishing the external evaluation report with the suggestions and the recommendations to the higher education institutions with the main goal of improving the quality of their services.

Table 3 – Number of programmes evaluated by CNAVES

Year	University Study Programmes			Polytechnic Study Programmes		
	Public	Private	Total	Public	Private	Total
2000/01	86	11	97	66	61	127
2001/02	414	59	200	57	46	103
2002/03	100	24	124	75	13	88
2003/04	49	32	81	98	39	137
2004/05	56	38	94	125	33	158
Total	432	164	596	421	192	613

The same law that created CNAVES also regulates the consequences of the results of the evaluations. This law, meanwhile replaced by a recent law, states that as a result of the final evaluation the institutions may receive an increase of the public funds, incentives to the creation of new programmes, or more support to the research activities in case the evaluation was good. If the results of the evaluation are not positive the consequences can go from the decrease of public funds to the closing down of the programmes.

However, with the new challenges that the Portuguese higher education will face in the future, and is facing at this moment, the government has decided to review all the system of quality assurance in Portugal. Therefore, the Portuguese government have asked to the ENQA a review of

the quality assurance system, with the objectives already referred to before. This report was very polemic in Portugal and has enormous consequences to the future quality assurance system.

The previous Portuguese quality assurance system was inspired in the Dutch model, but there were some significant differences. Therefore, the model was created based on the fact that the higher education institutions should evaluate themselves, with the main purpose of improving themselves. In Portugal, the evaluation criteria and the requirements to the programmes were negotiated with all the higher education sub-sector, the universities and the polytechnics, and the CNAVES was ascribed the responsibility of assuring the credibility of the process. However, in the import process of the Dutch model it was not taken into account that in Holland the government has inspectors that effectively supervise all the system and the Association of the Universities in the Netherlands (VSNU) activities, which have the same role of CNAVES (ENQA, 2006a).

The ENQA report "Quality Assurance of Higher Education in Portugal – An Assessment of Existing System and Recommendations for a Future System" presented several problems in the Portuguese system, and defended a profound reorganization of the system. However, the panel praised some aspects of the past organization that should be pointed out, and that are useful for the new system.

One of the main advantages of the previous quality assurance system was the culture of self-evaluation established in Portugal. The report also states that many institutions have created their own processes of internal quality assurance system, and as well the equity of representation of all sub-sectors, because all higher education institutions are represented in the system, the universities and the polytechnics, both public and private. The panel has concluded that the process was correct and contains many characteristics of other systems of European countries that include the self-evaluation, an external evaluation and finally the publication of the results. The ENQA panel also made a reference to the existing information about the employability of the Portuguese courses, but they stated that this information was not public and it was not distributed to the Portuguese higher education institutions by CNAVES.

Unfortunately for Portugal, the conclusions of the report were very clear and the disadvantages of the Portuguese quality assurance system were in a large number, and demanded major reforms in all the system, such as the creation of a new accreditation and evaluation agency. One of the main problems pointed out by the ENQA was the limited independence of the evaluation process, not only from the government but especially from the institutions. There was a strong presence of people related to the institutions in CNAVES, and an excess of reliance in the Portuguese experts. This reliance in national experts in a small country like Portugal can corrupt all the process because there is familiarity between them, and the lack of international specialists does not bring different criteria and international standards of evaluation. The organizational structure of the process in a two-tier was referred to as complex, and as a consequence all the organization suffered from a certain level of operational inefficiency and inconsistency. The report also referred that the organization's structural level leads to a system of bureaucratic control and is time consuming. Finally, it pointed out the lack of consequences or follow-up to the evaluation reports, which is a crucial element for the success of the system and cannot be ignored. The ENQA identifies the government passivity to the bad evaluations

as one of the main points for this negative aspect. However, the lack of CNAVES activity is also pointed out as a decisive factor. The final reports were frequently vague, with no clear and precise recommendations. The Dutch model, the government experts made regular visits to the higher education institutions to verify if they were following the recommendations of the evaluation reports. In this aspect the Portuguese model did not accomplish the European standards.

The report of the Portuguese quality assurance model was very relevant for the evaluation process and it had a huge influence in the future model. The major recommendations of the report were very clear and specific. Portugal urgently needs to create a new accreditation system based on the establishment of a strong and independent national agency, with the power of evaluation and accreditation. The ENQA also states out the importance of defining clearly the consequences of the external evaluations, the follow-up procedures, and the requirement for international experts to guarantee international standards and high levels of independence.

In 19 September of 2003 the ministries of the signatory countries of the Bologna Declaration invited the ENQA in cooperation with EUA, EURAHE and the ESIB to create a document with the main purpose of establishing a set of standards and guidelines about quality assurance in higher education, and giving advice about the best procedures to the quality assurance systems. The final result was a document of mandatory reading for all people interested in the area called "*Standards and Guidelines for Quality Assurance in the European Education Area*". Therefore, it was in this context that the Portuguese government began the reforms in the quality assurance system.

The Portuguese XVII constitutional government, in accordance with its programme, establishes the Evaluation and Accreditation Agency for Higher Education called "*Agência de Avaliação e Acreditação do Ensino Superior*", (AAAES), through the Law 369/2007 of 5 November. The Portuguese government enacted this law based on three main documents, such as the OECD report about the Portuguese higher education sector, the Standard and Guidelines for Quality Assurance in the European Education Area, and especially the report of the ENQA about the Portuguese quality assurance system which ended with CNAVES activity.

The future Agency will have the full powers not only of evaluation but also of accreditation of all higher education institutions and their programmes. The Agency can also participate in other type of evaluations, especially of scientific nature. It is expect that the Agency participates with other international organizations similar to AAAES, and if requested, to evaluate other international higher education institutions.

The establishment of the Agency caused discussion within the Portuguese higher education sector and one of the most polemic topics was the loss of accreditation power of the professional associations. As it was stated in the report of the ENQA, the professional associations always have an important role in the programmes accreditation, or the institutions themselves. This process brings many benefits for the Portuguese higher education, such as the prestige for the institutions that provide most qualified students or more rigour to the process itself. However, the report states that the fact of existing two different process of evaluation at the same time can generate different conclusions about individual quality of the programmes. It recommends to the government that only one organization should have the accreditation decision power, to not create confusion in the process.

Therefore, the Portuguese government has followed the ENQA recommendation, and only the new Agency has the accreditation decision power, but the government cannot in the future ignore the professional associations experience and knowledge in the area, and should also follow the other recommendation for the including of these associations in the Agency procedures of evaluation and accreditation.

2.1.2 The evaluation criteria in Portugal

Until very recently the Portuguese criteria of evaluation were regulated by the Law 30/94 of 21 November, changed later by the law 1/2003 of 2003 January. The changes in this older law referred only to one topic, which was related to the criteria of evaluation of the higher education programmes. The topic was not specific about the criteria to follow, and only mentioned that the evaluations of the higher education should consider the following aspects:

- The teaching process, especially the curricular aspects and their innovating characteristics;
- The qualifications of teaching agents;
- The research produced;
- The connection to the society, through the services provided
- The quality of the facilities and technological equipments
- The international cooperation projects.

As previously stated, the national law also regulates the consequences for the institutions with negative evaluations. However, it was not very clear when an institution has a negative or positive evaluation, which was a direct consequence of the non-explicit criteria. Therefore, it was supposed that the government analysed the report and made a decision about the accreditation.

Meanwhile the evaluation criteria remain the same, but the higher education sector, as the world itself, evolved and changed much since the creation of the first criteria. Thus, when the government reformed the entire higher education sector, also faced the need to update and define different evaluation criteria. To this new group of evaluation criteria it is demanded a response to the country needs of international standards and to help to improve the quality of the higher education institutions. The new evaluation standards are defined in the recent law 38/2007 of February.

The standards to measure the quality of the university are divided into two groups. The first group is related to the performance of the higher education institutions. In this group the law has defined the following standards to measure the programmes: teaching quality, staff qualifications, internal quality assurance, research activity, international cooperation, institutional cooperation, organization and management, facilities and equipment, and finally the social support. The second group of standards is connected with the outcomes of the institution activities, as the services to the community, the incomes produced by the university, success rates, employment, and public information about the institution and its student's tasks.

The evaluation methods are based on two different processes, the self-evaluation carried out by the institution itself, and an external evaluation made by the new accreditation and evaluation agency. The external evaluation will be the main support to the accreditation decision, and the external evaluation report should contain clear and unambiguous assessment of the programmes evaluated,

and should be expressed through a qualitative scale. It is also mandatory that the report include specific recommendations with the main purpose of seeking a continuous improvement of the quality of the programmes evaluated. It is the responsibility of the new Agency to establish the specific standards of the external evaluations, and publish them previously to the evaluations. When the report defines specific recommendations, the Agency must announce to the institution the improvement time it has to accomplish it. The accreditation decision is based on the evaluation report, and is presented in three different categories of decision respectively, favourable, unfavourable, and favourable but with conditions. If the decisions are unfavourable the institution is not authorized to maintain the educational programme in operation. In case of a favourable decision, but with conditions the institution will have an improvement period to perform the agency recommendations. Later the agency confirms if the programmes meet all requirements that leads to a favourable or not favourable decision. The accreditation decision cannot be longer than eight years.

The new law also innovates in an important point. It compels the institutions to collect and public all important information, with special attention to the careers of their students. However, the most controversial issue about the new legal framework of the higher education evaluation system is the presentation of the external evaluations results into a grade, or the creation of a ranking between the universities.

2.2 Holland

The Dutch higher education system is binary and consists of research universities and universities of professional education. They can be either public or private. In the Netherlands everyone is free to set an educational institution and to offer course programmes. Because of this there are numerous private institutions that were not founded and maintained by the state. However, many private institutions have been given recognition by the government (Netherlands Bureau for Economics, 2002).

Since 2000 the Netherlands and the Flanders intend to establish a joint accreditation organization that would be in charge of the accreditation of higher education programmes in both the Netherlands and Flanders. In 2000, with the creation of the Netherlands Accreditation Organization (NAO), the first step was taken and finally three years later, in 2003, the two governments signed the treaty for the establishment of the Accreditation Organization of the Netherlands and Flanders (NVAO). NVAO is a bi-national independent agency financed both by the Netherlands and the Flanders, 60% and 40% respectively of the total budget. It should be pointed out that both the Netherlands and Flanders had already external review systems before NVAO, but with the introduction of the new system efforts have been made to strengthen the former system of external review and to make it internationally more acceptable. The main purpose of NVAO is the accreditation of programmes of higher education and giving advice on the possible extension of academically oriented master programmes, including the research masters.

The accreditation system is three tiered. The first is the institutions, the second is the external quality assessment agencies and finally NVAO is the third one (ENQA, 2007b). The main purpose of this system was to establish an open system of quality assurance agencies, a free market. Every year

NVAO draw up a list with the quality assurance agencies that meet the requirements demanded to produce reliable assessment report. In the Self Evaluation Report that NVAO has done to the ENQA it identifies some “tensions” between the quality assessment agencies and the NVAO. The ENQA panel reported two solutions for this problem. One is to remove the second tier and give all assessment responsibilities to NVAO, and the second is to put the agencies clearly as part of the accreditation system through a certification given by NVAO. The higher education institutions in the Netherlands benefit from a worldwide reputation for their high quality standards. The Accreditation of Higher Education Act 2002 requires that all educational programmes offered by the institutions are evaluated against a specific set of criteria. Only if the programmes are accredited are they eligible for government funding and can be listed in the Central Register Education Study Programmes.

The accreditation process is divided into three steps. The first step is the self-evaluation report. This report is not public and is not included in the accreditation report. It should contain self-critical and reflective aspects in a way that the panel may be able to form balanced judgements. The second step is the external assessment. The evaluation panel should be composed by experts in specific areas and always have members from the students. Finally, the last step is the accreditation decision. If the decision is negative the institution will be granted an improvement period and it can appeal after the final decision is taken. If a programme receives accreditation it means that the institution is entitled to award recognized diplomas and degrees for that programme for the next six years and that students may obtain a student grant and a student loan while enrolled on that programme. Furthermore, government-funded institutions receive funding in respect of their accredited study programmes (Faber and Huisman, 2003).

In brief, we can distinguish three categories for the Dutch educational institutions (ENQA, 2007b):

Government funded institutions – they are entitled to award officially recognized degrees and legally protected titles for their accredited programmes. Students may apply for student grants and/or a student loan if they follow an accredited programme of study at a government-funded institution. To obtain government funding, institutions must satisfy a number of quality requirements. This number is fairly stable and only rarely are there changes in the group of government-funded institutions.

Government-approved institutions – the government approval is the official recognition of the quality of private educational institutions. This form of approval grants institutions certain benefits. For example, government-approved institutions have the same entitlement as government-funded institutions to award officially recognized diplomas and legally protected titles for their accredited programmes. Likewise, their students may apply for a student grant and/or a student loan. A private institution seeking government approval must submit an application to the Ministry of Education. With this application they send the judgment to the NVAO.

Institutions without government funding or approval – the quality of the institution has not been approved by the government, and they do not receive any funding from the government. The fact that an institution is not government-funded or approved does not automatically mean that the quality it provides is below peers. There are many organizations in the Netherlands that provide quality assurance services, but are not officially recognized by the government.

The consequences of a negative accreditation decision are different to the Netherlands and to Flanders. In Flanders the institutions have an improvement plan for the programme and three years later can they apply to a new application for accreditation. In the Netherlands the consequences are harsher, they also have an improvement plan, but as long the programme is not accredited the institution will not receive public funds and cannot enrol new students.

The Netherlands does not have any official ranking system for study programmes or educational institutions, but the assessment agency uses a scale for their assessment of standards listed in the assessment framework. The scale has four points: “excellent”, “good”, “satisfactory” and “unsatisfactory”. In order that the programme receives a positive final assessment the agency panel must award each theme with a satisfactory score. A positive decision can only be based on positive judgements of the themes in the assessment framework. The evaluation of a theme in the assessment framework is done on the basis of the evaluations of separate standards leading to the conclusion concerning that theme. In other words, the panel has to clarify how the evaluation of a theme is based on the assessment of the underlying standards (NVAO, 2003).

Because there is no system of ranking, and the quality assurance is based on an accreditation process, when the Dutch students choose the programme they want to study, they do not think in terms of best institution, but look for particular features that may distinguish one university from another, such as specialization (VSNU, 2007).

The Dutch research quality assurance system has been in use since the 1990s. It is under the responsibility of the Association of Universities in the Netherlands (VSNU). Since 2003 the universities themselves are responsibly for organizing the research assessment based on the Standards Evaluation Protocol (SEP). The role of VSNU, the National Research Council (NWO), and the Royal Academy of Arts and Sciences (KNAW) is to establish a committee which reviews the way the universities organize their evaluations based on the SEP.

The quality of the research is evaluated by external committees every six years, but the universities are obliged to carry out self-evaluation every three years. The SEP established four main criteria to be used in the evaluation such as, the quality (international recognition and innovative potential), the productivity (scientific output), the relevance (scientific and socio-economic impact), and finally vitality and feasibility (flexibility, management, and leadership). This different criteria represent how well the institution or research group is performing, and the evaluation committees make their judgements based on a five point scale respectively, “excellent”, “very good”, “good”, “satisfactory” and “unsatisfactory”. The conclusion of the evaluation is present in the evaluation report.

The funding structure of the Netherlands is based on three pillars. The first flow of funds contains public core funding and revenuers from revenues tuition feesç. The second flow of funds consists of project-based public payments allocated by the Dutch research council. The third flow of funds comprises income from contract activities (Netherlands Bureau for Economics Policy Analysis, 2002). The teaching funds depend essentially on the number of students enrolled in the institution and studies performed. The funds for the research activities depend on the social and scientific needs, the profile of the university and the research quality. The evaluation report is a crucial element for the policy makers to decide where to allocate the public funds.

2.3 Spain

The first initiative to provide quality assurance in the Spanish higher education sector was in 1992 with an experimental programme to evaluate the quality of the universities. This programme was launched by the "*Consejo de Coordinación Universitária*" (CCU), the predecessor of ANECA. Later, in the year 1994-1995, four Spanish universities took part in a European project funded by the European Commission on Evaluation of Quality in Higher Education. This project shows the value of sharing experience in the quality assurance sector. The result of this previous experience was the National Plan for Quality in the Universities, set in motion by the CCU and developed between 1996 and 2000. The objectives of the plan were to promote institutional assessment, provide objective information to the decision-making and a homogenous methodology within the context of the European Union.

With the Bologna Declaration in 1999 the European Ministers of Education signed a commitment to establish the European Higher Education Area by 2010, the Spanish minister included. Therefore in 2000 the Second Universities Quality plan was implemented.

The parliament reformed the legislation and passed the Spanish Universities Act that aim at structuring and bringing together the university system by strengthening relations between university and society and especially improving the quality of teaching, research and management. The new law was an enormous step to the new quality assurance system in Spain. The article 32 of Organic Law 6/2001 authorised the establishment of the National Agency for Quality Assessment and Accreditation (ANECA) which was set up as a public trust by the Spanish Ministry of Education and Science on 19 July 2002. However, the law does not specify any regulation about the process of evaluation to apply by the new quality agency which leads to a commitment by the governing bodies of ANECA to organise the process of evaluation on the quality in higher education in accordance with the Standards and Guidelines for Quality Assurance (ESG) in the European Higher Education Area (ENQA 2006b).

The Spanish higher education quality assurance system is composed by three national agencies, the National Agency for the Quality Assessment and Accreditation, "*Agencia Nacional de Evaluación de la Calidad y Acreditación*", (ANECA), the National Research Assessment Commission, "*Consejo Nacional de Evaluación y de la Investigación*" (CNEAI) and the National Evaluation and Planning Agency, "*Agencia Nacional de Evaluación y Planificación*" (ANEP).

The main role of ANECA is to monitor, by means of evaluation, the promotion and quality of both private and public universities and their integration in the European Higher Education Area. The Spanish system has also 11 regional agencies for quality evaluation (ENQA 2006b). The CNEAI is responsible for establishing the procedures of evaluating, and evaluate all research activities in Spain. The evaluation is made through assessment committees composed by experts in eleven different areas, for each area there are distinct criteria. The ANEP was established with the objective of evaluating the quality of the scientific and technical proposals that require public funding, with these evaluations the government enhance the capacity of the public scientific and technical system and contribute to resource allocation decisions on the basis of criteria of excellence.

The Spanish agency ANECA is a relatively young organisation, it only started working about six years ago and for that reason some of their evaluation programmes are new and have never been

done before. ANECA has a crucial role in the Spanish quality assurance system and performs it through several evaluation programmes.

The institutional assessment programme despite the name assesses degrees rather than institutions, and it was created with the main purpose of improving quality of the educational programmes through an improvement plan as the result of the evaluation with public criteria, identifying their main strengths and weaknesses.

The quality label recognition programme has the objective of recognizing the scientific, technical and educational credibility of the doctoral programmes and also the groups that carry out the doctoral studies.

Recognised postgraduate programmes evaluation programme became operational in 2006, and it aimed to evaluate proposals for postgraduate degrees in universities in Autonomous communities that do not have an evaluation agency.

Library services evaluation programmes have the responsibility of evaluating university library service, providing an improvement plan.

Library services quality certification programme confers recognition of university library services as consequence of an evaluation process.

University services Evaluation Programme was launched in 2006 and helps the universities to improve their services and management units based on the European Foundation for Quality Management model.

Teaching staff assessment programmes for recruitment purposes guarantees that the minimum standards are fulfilled by applicants for positions as contracted teaching staff at public and private universities.

Teaching activity assessment support programme aims to provide a model of guidance for the universities to design their own models and procedures for evaluating teaching activity and teaching staff.

ANECA is at this point launching new programmes of assessment, whose objectives are to improve the quality of the Spanish higher education and enlarge the role of ANECA in the quality assurance system. The new programmes are:

The AUDIT programme that seeks to provide guidance to institutions in designing quality assurance systems for universities studies and to implement an evaluation procedure that leads to the recognition of the design.

The VERIFICA programme objective is to verify the conformity of proposals for new curricula with the guidelines that structure new undergraduates and master degrees.

The ACREDITA programme has the main objective of establishing standards and guidelines for the accreditation of recognised undergraduate and master degrees.

The TRAINING programme aims to provide a series of instruments and evaluation indicators for units in charge of training plans that wish to be evaluated as a stimulus for improvement.

The objectives of the institutional assessment programme is to facilitate an assessment process to officially improve the quality of education leading to obtain university degrees through the territory of

Spain and, at the same time, provide information about the study programmes to the students, families and society, to the government bodies of the universities and to the public administration.

The process of institutional assessment is divided into three phases; the first one is the self-assessment report that should identify the main strengths and weaknesses of the programme, and also describe and evaluate the situation of the assessed degree with respect to the criteria established. The second phase is the external assessment by a group of external assessors to the teaching staff of the university, appointed by ANECA. Their function is to analyse the self-assessment report and, through visits, evaluate the programme and then report the main issues and recommendations. The last step is a plan of improvement. This phase concludes with the plan for improvements of the educational programme. The tasks to be performed depend on their accomplishment, the people responsible, the resources involved and deadlines for their implementation, the indicators to monitor the actions proposed and the benefits expected from them (ANECA, 2007b). The criteria used in the institutional assessment programme are divided in themes. Each theme is then split into criteria and then into sub-criteria to facilitate the evaluation. The scale used to evaluate the sub-criteria has four points: A – “excellent”, B – “good”, C – “satisfactory” and D – “unsatisfactory”. With this scale for the sub-criteria the institutions will exactly know what they are doing right and which areas they need to improve in their programmes.

2.4 United Kingdom

The United Kingdom higher education has been subject to rigorous quality evaluations for a long time. These evaluations ensure that high standards of teaching and learning as well as research are offered. But in the last decades the stakeholders have demanded more from the higher education institutions, especially the government arguing that the public investment in higher education justifies closer scrutiny of the outcomes achieved by public funded institutions and from students who expect to receive good quality teaching and sufficient learning resources to meet their needs (Gosling and D’Andrea, 2001).

Previously, there were two government bodies that carried out the assessments, but they employed different criteria and scales of measurement. They were the Higher Education Funding Councils for England, Scotland and Wales, respectively (HEFCE, SHEFC, HEFCW), and the Higher Education Quality Council (HEQC). The main purpose of quality assessment was to ensure that the public funding provided was supporting education of acceptable quality, to provide public information on that education through the publication of reports and to provide information and insights to encourage improvements in education (Kanji; Malek; Tambi, 1999).

In 1997 the Quality Assurance Agency (QAA) was established to provide an integrated quality assurance service for the UK higher education, replacing the HEQC. The agency is an independent body funded by subscriptions from universities and colleges of higher education, and through contracts with the main higher education funding bodies (QAA, 2003). It is the agency’s role to provide public assurance that the standards of quality within higher education are being safeguarded and enhanced. This is done mainly through a peer review process of audits and reviews. These are

conducted by teams of auditors and reviewers, most of them academics. They have four activities (QAA, 2003):

Institutional audit – ensures that the institutions, on the one hand, provide higher education awards and qualifications with minimum quality and with the appropriate academic standards and, on the other hand, when relevant, exercise their legal powers to award degrees in a proper manner.

Development engagements – aim that the institutions test their internal review process at the level of the discipline programme, and also the robustness of the evidence they use in those procedures.

Academic review – the objective is to evaluate the academic programmes of the higher education institutions and express their confidence in the academic standards.

Major review of NHS-funded healthcare programmes – the department of Health care, in partnership with the nursing and Midwifery Council, the health professions council and the workforce development confederations, has contracted with the agency to carry out reviews of all national health services (NHS).

The process of institutional audit in England has been developed by the QAA in cooperation with the HEFCE, and the audit teams will focus their evaluation on six specific areas, presented below. The audit team makes a judgement to each area, not about the academic standards but about the way the institution ensures that its academic standards are being secured (QAA, 2006). If the audit verifies that the institution is managing the assurance of academic standards soundly and effectively the judgement will be expressed as “confidence”. When the audit team has substantial doubts about the current, or future, management of security of academic standards the judgment will be expressed as “limited confidence”, it is not a judgment of failure but indicates that improvements need to be made (QAA, 2006). Finally, if the audit team has serious concerns about the capacity of the institution to secure academic standards, the judgement will be “no confidence”, which means that the evaluation of the institution is unsatisfactory. These cases are very rare in the UK system but when they occur all stakeholders know about them. The specific areas evaluated by the audit team are:

a) Institutional management of academic standards;
b) Institutional management of learning opportunities;
c) Institutional approach to quality enhancement;
d) Collaborative arrangements;
e) Institutional arrangements for postgraduate research students;
f) Published information.

At the academic review, in England, when the evaluation is finished the process ends with a report that will include recommendations for further consideration by the institution. These recommendations will be categorized as “essential” if the team believes that matters are putting the standards and the quality at risk and require urgent corrective actions, “advisable” if the recommendations refer to matters that have potential to put quality and standards at risk and require preventive action, and finally “desirable” recommendations when they refer to matters that have potential to improve the quality of the institution (QAA, 2004).

The HEFCE contracts the QAA to carry out reviews and to report their findings to them, but the agency works independently, and the HEFCE has no statutory power to change or affect the reviews. The process of academic review continues to comprise an approach focused on the establishment, maintenance and enhancement of academic standards and quality of learning opportunities. On each academic review, the team expresses “confidence”, “limited confidence” or no “confidence” about the academic standards, and makes judgements of “commendable”, “approved” and “failing” for the quality of the learning opportunities (QAA, 2006).

The HEFCE receives money from the government to fund all universities. The funds are divided according to a formula that is published, which uses inputs such as the number of students, research quality and volume from research councils, industry and charities. Therefore the HEFCE does not fund teaching provision based on quality, they consider that giving extra funding for better quality would drive the extremes further apart, instead they expect a basic threshold of good quality and standards. Currently the HEFCE is developing an approach to what actions to do in case of consistent poor quality at an institution. The QAA is an organisation funded by the Higher Education sector to safeguard quality, and has referred yearly do it by inspection. If they provide a negative conclusion about any institution, it will not be able to continue recruiting new students and teaching. However, because the students are free to apply to any university, it would stop attracting students in the current market and would then find the income falling from HEFCE because there were fewer students. No institution wants this and so a publicly proclaimed plan will be immediately set.

The Research Assessment Exercise (RAE) is carried out jointly by the four higher education councils. The main objective of RAE is to produce quality profiles of research activities made by the institutions, on which the distribution of the HEFC funds would be based (Gema and Martin, 2006). The first RAE was in 1986, and similar exercises were repeated until 2001. In 2001 the RAE was carried out by the higher education funding bodies.

The RAE is divided into 15 different main panels and in 67 units of assessment. To all units of assessment the panels will judge their quality against the published criteria rating on a five point scale, classified, 1, 2, 3, and 4. If a unit of assessment is judged with an unclassified that means quality that falls below the standard of national recognised work, and on the other hand, if it is judged with a 4 that means that the quality is world-leading in terms of originality, significance or rigour.

In the UK there are no official rankings between universities, the higher education sector is very diverse and it is very difficult and subjective to rank the institutions. Nevertheless, several newspapers produce their own rankings using a variety of sources and indicators, however these may not have input or support from the universities.

In 1999 the Performance Indicators Steering Group (PISG) was established by the EHFCE with the support of all funding councils and following the recommendations of the National Committee of Inquiry into Higher Education, with the main objective of developing suitable indicators and benchmarks of performance in the higher education sector (HEFCE, 1999). Since 2002/2003 the Higher Education Statistics Agency (HESA) has published the performance indicators on behalf of the EHFCE and, every year, the PISG oversees the production of these indicators, the development of new indicators, and agree amendments required to existing indicators. These performance indicators

are composed by statistical indicators intended to offer an objective measure on the performance of the higher education institutions. They currently cover widening participation indicators, non-continuation rates (including projected outcomes), module completion rates, research output and employment of graduates (HEFCE, 2006b).

The objectives of producing these indicators are to provide reliable information on the nature and performance of the UK higher education sector, allow comparison between individual institutions of a similar nature, enable institutions to benchmark their own performance, inform about policy developments and contribute to the public accountability of higher education. Because there are such differences between the universities the benchmark should be used in two different ways, first to see how well an institution is performing compared to the higher education system as a whole, and second to decide whether to compare two institutions (HEFCE, 2006a).

3 Measuring the performance of higher education institutions

3.1 Performance indicators

It is of general knowledge that the higher education is in times of profound changes. The sector is becoming much more competitive, and the demands to the higher education institutions are increasing to a level never seen before. The reasons for these changes are very diverse and appear from different sectors of the community, not only because the governments are decreasing the public funding, but also because the higher education institutions are facing many pressures from the international league tables, and the contract-based funding.

The main consequence of this pressure to the institutions is the competition that is created between them. However the competition varies with the institution and whereas some are facing local or regional competition, others are facing national or international competition. The competition is not only to attract the best students, but also to research contracts, the financial opportunities and especially to attract the best staff. At an international level the staff competition is very agressive, since it is considered one of the most important resources of any institution. Academic staffs are probably the main source of income to the institutions, but they are also one of the main elements of cost. The academics are not like the other professional classes. They have a high level of autonomy, and sometimes do not work in fixed hours. Therefore, the higher education institutions compete between them so that staff can bring more profits to the institution but they also create mechanisms to monitor and manage their staff.

The higher education is now facing new challenges. It is a very expensive area, and by nature, it can be sometimes uncertain and a risky activity. In times of fiscal restraint, the stakeholders demand to know if the money that they are investing in the institutions are well spent and have a return.

The higher education institutions need to be able to respond to the pressure that the sector is suffering, and if on the one hand the stakeholders demand more from them, on the other hand they need to respond to those demands and create self-mechanisms to verify if the expectations are being achieved, in others words, they need to demand more from themselves. They have to rapidly understand the changes in the community and develop strategies to respond to those changes.

As referred to before the competition between the institutions is very high, and it is expected that they respond to those pressures. In order to “survive” in this competitive environment the institution needs to be able to offer high quality academic programmes that influence and answers the society needs, promoting excellence in all aspects, like the research, teaching or the services. The innovation and the learning principles are crucial for the future of any institution, it is required that the institutions look at themselves and answer the question, “How can we improve ourselves?” the answer to this question is not always easy, but the institution’s strategy depends on it. The recruiting process is a challenge to some institutions, so to recruit and maintain a diverse population is a key aspect of every university. They also have to provide effective and efficient physical facilities. The institution services need to be responsive, prompt and low-cost.

It is widely known that the governments are decreasing the public funds for teaching, and in some cases also for the research. Therefore, the governments, more than ever, wish to know where to

allocate the public funds, in a way that can produce the best investments. The higher education institutions themselves are recognizing that they need to adapt to a new reality. They urgently need more information, on which to base their decisions concerning the productivity, or the global performance of the institution. The performance indicators and the benchmarking can be a decisive tool to help improving the quality of the higher education sector.

3.1.1 The characteristics of performance indicators

A performance indicator is normally described as a range of statistical or non-statistical data with the intention of offering objective measures about how a higher education institution is performing. These performance indicators can be quantitative or qualitative. The quantitative indicators are the ones that can be expressed and presented in terms of a numerical figure. And the qualitative indicators are required to be used when the indicators cannot be measured arithmetically, one of the most common examples is the satisfaction. The performance indicators are based on data from different sources of evidence and information, the qualitative data usually comes from surveys, or self-assessment questions (Chande, 2006).

A performance indicator is a relevant statistic, a number or, in some cases, a qualitative description that provides a measure about the performance of the institution in some aspects. However, the performance indicators need be the chosen in accordance with the particular features of the institution. The universities are complex organizations, and with different goals from one another. Therefore, when the use of performance indicators is chosen, an explicit statement of objectives or goals is essential to provide reference points to the measures of a university performance over time, or to compare the performance with other institutions. If the performance of an institution is compared with the performance of a different institution, with different objectives, goals, or strategies, the conclusions of that comparison are unhelpful.

The number of performance indicators is a crucial aspect of the entire assessment process. Several studies have pointed out that the policy makers have some difficulty to deal with a large amount of information. The number of performance indicators should not be in excess. The performance indicators chosen should be only the ones that are crucial for the success of the institution, strategic for the interests of the policy makers, and the ones which governors need to monitor on a continuous basis. It is also important that the group of performance indicators is able to cover the entire field of activity and identify the essential areas of the institution.

A coherent, concise and reliable group of performance indicators is essential to help not only the institutions, but all the stakeholders to assess and understand the performance of an institution. However, the discussion about the quality in the higher education area is not consensual. The quality in the higher education means different things to different people. We can draw the conclusion that there is no single correct definition of quality in the sector. But this aspect does not mean that the institutions do not need to be monitored, or evaluated. We can notice that necessary the concern about the quality of the higher education institutions has been growing at different levels, and Portugal is no exception. As mentioned in previous chapters, the Portuguese higher education has suffered a revolution, not only at an organizational level, but also in the quality assurance system. The new law

defines the standards that the higher education in Portugal should evaluate, but besides that information the government should publish a set of performance indicators every year, like HESA does in the United Kingdom. With this information the higher education institutions will be more open to all the stakeholders and the students can decide which institution they want to choose for their education based on official information. Performance indicators will enable benchmarking between the institutions, with many benefits for the country, especially for the institutions that will become more competitive and improve their quality. This does not mean that the institutions must be ranked, but like the United Kingdom higher education system, the institutions will be able to see how well they are doing in the sector and which areas need more improvement. These statistical data are also an important help for the government to define the policies to adopt for the higher education.

It is important that the general public realizes that no performance indicator alone can ensure an effectiven measure, and consequently that all the indicators have equal importance. The students will look at the same performance indicators differently from the employers, or the government. However, it is important that the performance indicators serve all stakeholders and the general community in a way that they can chose what is more important for them, and take their own conclusion based on consistent and reliable data (Australian Higher Education Division, 2000).

A further aspect about the performance indicators is to benchmark the results of the institutions against their peers and competitors, or their past performance. The performance indicators should always have a comparison dimension, or some reference points. Only with the benchmark it is possible to make value judgements related to the university performance, policies and systems. These benchmarks appear from different sources, like the past performance of the institution, an objective, or like in many cases, from the comparison across other universities.

The benchmarks are not a fixed value over the time. They could change to respond to the needs of the stakeholders, and especially to changes of the society. In the last years we can observe that the institutions, and the governments, are not interested in comparing their performance with the national average, sometimes it is meaningless. Therefore, it is possible to observe that they are more interested to benchmark with their past performance, to their stated mission, goals, or finally with other institutions that have in the same contexts and objectives.

There are two different types of benchmark (Australian Higher Education Division, 2000). First, we have the criterion reference approach that simply defines the attributes of a good practice in a functional area. The benchmark could be simply a checklist of essential steps to achieve the good practices. Many universities can achieve these good practices with this type of benchmark. Secondly, there are the quantitative benchmarks, with the purpose of distinguishing normative and competitive levels of success. The difference between universities often means that a university is performing better, however sometimes they are related to matters of choice and policy.

3.2 Examples of the use of performance indicators

3.2.1 Performance indicators used by HESA

As previously stated, the United Kingdom in 1999 created the Performance Indicator Steering Group (PISG) with the purpose of developing a suitable collection of indicators and benchmarks of the performance in the higher education sector. The set of performance indicators that was published in July 2007 by HESA is the ninth in the series.

The higher education sector is of considerable diversity, not only in terms of the institution's mission, but also the activities undertaken by the nature of its student populations. When the PISG started its work, it has chosen an approach to develop a set of performance indicators which allows all the stakeholders to extract what they recognize as the most important, and create their own group of key indicators. Different stakeholders give different importance to different indicators.

Performance indicators calculated by the HESA are a variety of statistical data intended to offer an objective measure of the performance in the higher education institutions. The PISG have clearly pointed out that it is not a "league table".

The differences between the institutions prevent the average values for the whole of higher education sector to be always a helpful tool of comparison. Therefore, the HESA calculates a sector average to take into account some of the factors which contribute for the differences between them. The average, adjusted for these factors, is called the adjusted sector benchmark. The factors allowed for are the subject of study, qualifications on entry and age on entry.

The benchmark is useful in two different ways. First, to see how an institution is performing compared with the higher education sector. If an institution has a significant difference in the benchmark it is market with a symbol, a "plus" if it is performing better, or a "minus" if it is performing worse. And second, to decide whether to compare two institutions. If two institutions have very different benchmark it is an indication that they are different and it is not helpful to compare them (HEFCE, 2006b). Every year HESA calculates and publishes 15 different performance indicators:

1. The percentage of entrants who attended a school or college in the state sector (young full-time students);
2. The percentage of entrants who were returned with National Statistics socio-economic categories 4 to 7 (young full-time students);
3. The percentage of entrants whose home area (as denoted by they postcode) is known to have a low proportion of 18 and 19 years-old in higher education (young full-time students);
4. The percentage that come from "low participation" neighbourhoods (young full-time students; mature part-time students);
5. The percentage that come from "low participation" neighbourhoods (mature full-time students);
6. Percentage of disabled students in the sector;
7. Percentage of students not continuing in higher education after first year of entry;
8. Percentage of students returning to higher education after a year out following the year of first entry;
9. Projected outcomes – obtain a degree, leave with no award;
10. Completion rates of part-time students;
11. Employed or studying six months after graduation;
12. PhDs per academic staff costs;
13. Income from research grants and contracts per academic staff costs;
14. PhDs per research funding;
15. Income from research grants and contracts, per research funding.

3.2.2 Performance indicators used by ANECA

The national agencies for quality in the higher education generally provide a large amount of information about their activities, and about the processes used to carry out their missions and objectives. However, it is not very general to find examples of performance indicators used by the government agencies. The Spanish agency ANECA collects a lot of information on which the analysis of the Institutional Assessment Programme is based on.

As referred to in the previous chapter, the Institutional Assessment Programme is based on six different criteria, and each one of them is divided into one or more subcriteria. The committee of evaluation make use of several performance indicators, as part of all the information collected about the institution are very useful to measure compliance with each of the criteria (ANECA, 2007).

The performance indicators used by ANECA to develop and help to lead a final judgement of the higher education institutions in the Institutional Assessment Programme are:

1. Data and indicators related to the offer, demand and registration in the first year;
2. Computers and internet connections per student;
3. Percentage of academic staff with teacher training;
4. Summary of the results of the investigation activity;
5. Index of recognised investigation activity;
6. Type of space used for work and student study and the available equipment;
7. Average students per group;
8. Description of the library and reading rooms;
9. Reading positions available in the library per student;
10. Library stock;
11. Availability of bibliography and information sources;
12. Number of students that carry out non-obligatory external internships;
13. Student mobility;
14. Efficiency rate;
15. Success rate;
16. Average duration of studies.

This group of indicators was created with the purpose of helping the committees of evaluation to collect information about the institution. There is a big difference to the performance indicators produced by HESA in the United Kingdom. The Spanish indicators are not used to do benchmarking, or to compare the institutions with each other.

3.3 Rankings

3.3.1 Introduction

The use of rankings in the higher education sector is a very controversial theme, and leads to many discussions about the benefits and the costs of their use. However, it is almost impossible to talk about evaluation of the higher education institutions without referring to the academic rankings. Generally the institutions do not like to be ranked or compared with others, but the truth is that the rankings are here to stay and are unavoidable. It is very frequent to see that the objective of several universities is to belong to the top of a ranking. This happens because the world class rakings are very famous in the sector and give good reputation to the institutions. A good example was the Victoria

University of Wellington when it went down several positions in the media ranking Asiaweek. Among its top goals for the coming decade, it chose to improve its position (AUQA, 2006).

In a little while all the higher education stakeholders should have a serious discussion about this question, “Who should perform the higher education rankings”?

3.3.2 The benefits and the costs of the academic rankings

Many critical aspects are pointed out to the rankings by the universities. The main point is that the universities are different and we cannot compare two institutions with different goals and missions. In addition, the universities are internally different, and it is very hard or impossible to be measured as a whole (Bonden, 2000).

The academic rankings are criticized most of the times due to the choice of performance indicators. Very often most academic rankings indicators are based on what can be measured rather than on what is significant and important. In 2005 seven out of ten rankings did not include any indicator related to the teaching quality because it is very hard to obtain an objective measure (AUQA, 2006).On the other hand the research activity always has a large influence in the rankings results. It is easily measured relatively to the teaching quality, for example, by the number of articles published. Historically if we look at the indicators chosen to elaborate the ranking we can see that there is a predisposition to natural sciences in most of the cases.

One of the most complicated aspects of doing an academic ranking is the danger that the results become a popularity contest, and not a serious discussion about which institutions are performing well. In general, this is a problem that occurs in rankings based on academic reputation, and that use information based on polls and surveys. As a consequence, this methodology leads to a distortion of the perception and to the halo-effect. For example, there was an US survey that found the Princeton Law School ranked as seventh in the country, but Princeton did not have a law school (AUQA, 2006).

The weights are very controversial in the higher education rankings. Some experts argue that the choice of the weights is sometimes subjective and arbitrary, with no theoretical basis. The challenge is how to report results without assigning the weights (Clark, 2002).

The fact that the formula generally changes every year is also pointed out as a negative aspect of the rankings. This is a problem more related to the media rankings. If the formula is changed every year it means that the result, or the “quality” of the institution also changes significantly, and it becomes very hard to interpret shifts in the performance of an institution.

The same conclusions can also be applied to the statistical data or validity. If the data used to perform the rankings are not uniform the results from it cannot be conclusive. Sometimes the difference between the score of two institutions is statistically insignificant, but the methodology grades them in different positions. For example, the difference in quality between two institutions can be minimal and the gap between them has several positions, which means that there is a risk that the community in general interprets it wrongly.

Finally, one of the most criticized aspects about the academic rankings is that they produce unhealthy competition between the higher education institutions. The danger of the institution

competing to improve their ranking position may lead to the decrease of cooperation with other institutions, with losses to students and to the higher education in general (Dyke, 2005).

However, at the beginning the rankings were indifferent to the academics, specially the media rankings, but gradually they started to gain some of respect from them and can even bring some positive aspects to the higher education sector.

The use of rankings in higher education is a very attractive and controversial subject, and the number of organisations that issue rakings is now considerable, as well as the experts on this theme. In 2004, on a meeting in Washington DC a group of present experts formed an International Rankings Expert Group (IREG) with the purpose of advising Unlimited Export Services Corporation – European Centre for Higher Education (UNESCO-CEPES) and the Institute for Higher Education Policy (IHEP) in this area. Two years later the IREG met again in Berlin and developed the Berlin Principles on Ranking of Higher Education Institutions.

The Berlin Principles introduced something new in the production of rankings. It was not focused on the problems of the rankings, its focus was not only on their benefits, but also included a collection of recommendations about what should be done when an organization produces a ranking. These recommendations were divided in four groups respectively, the purposes and goals of rankings, the design and weighting of the indicators, the collection and processing of data and finally the presentation of rankings.

The higher education rankings phenomenon appears as a response to the increasing demand from the consumers to easily understand the information about the performance of higher education institutions. However, this may not be the main advantage that can be taken from the rankings. As generally acknowledged, the higher education is facing profound changes at this moment worldwide, but especially in Europe. The global expansion of access to higher education, and the emergence of an international market demand more from the higher education institutions, and the rankings can bring something positive to the market competition. The academic rankings can help to distinguish among the different types of institutions, and bring a new market competition, within and across countries, for students and funding. The European Union, in the Lisbon Treaty, defines that the governments need to invest more resources in R&D, 3% of the GPD, and the universities rankings can be useful to provide some of the rationale for allocations of the funds. It is better to give more money to successful institutions that guarantee a highly return on the investment. In summary, the Berlin Principles assume that if the higher education rankings follow some basic recommendations, and if correctly understood and interpreted they can bring many positive outcomes to the community.

Despite all the criticism and the negative aspects about the rankings, the academics still discuss their use and benefits. The truth is that all the stakeholders use the academic rankings and recognize that they are here to stay and can be very useful. Most of the institutions do not like to be ranked, but the reaction from the universities to the rankings is mixed. Some support their use and others boycott the rankings. Even if they are sometimes unhappy with the methodology used in the rankings, the large majority of the institutions feel compelled to contribute as the possibility of a good position in the ranking rewards them with a large amount of free publicity and may have several effects on the university's reputation.

The students are the first to use the academic rankings. It reasonable to expect that when a student chooses an institution he/she takes a decision based on many sources, and not only on the academic rankings. A student's choice may depend on many different factors, such as the location, the sports facilities or the fees charged by the institution. But several studies indicate that one of the most common factors that lead to that choice is the university reputation (AUQA, 2006). The students do not always have an official data about the reputation, or the performance of the institutions, and use the academic rankings as an answer to their questions.

In the same side of the students are the employers. In general the most important criteria to the recruitment choices are the personal qualities of the candidate, such as their communication skill or ability to teamwork. But the institution prestige is frequently acknowledged and taken into account. A high position on the academic rankings and league tables is certainly prestigious to the institution, and many times the employers use that information. On the other hand, the government and the funding agencies rarely consider the academic rankings. The quality assurance agencies normally are the source of the higher education data for the governments, and in their decision of financing the institution more attention is generally given to the academic efforts. However, some governments also use the academic rankings, like Philippines when the government contacted the Asiaweek to obtain more information in order to take budget decisions (AUQA, 2006).

3.3.3 The most famous rankings

As we have seen before, the higher education rankings play an important role in the quality assurance systems, and not always for the best reasons. Therefore, when we look at the rankings as a measure for the performance of the higher education institutions we must consider the indicators and the weighs that are used by those rankings. The most famous and respected higher education rankings are the THES (Times Higher Education Supplement), the Shanghai Ranking (Shanghai Jiao Tong University) and the CHE Ranking (Centrum für Hochschulentwicklung). The THES is probably the most reputed media ranking in the world, The Times is also an extremely respected newspaper in the United Kingdom. This ranking is a composite indicator integrating peer review and opinion with quantitative data. The 2007 methodology is based on the fact that the experts' opinion is the most valid way to assess the standing top universities. The THES methodology contains two criteria based on peer review, and the more relevant are the academic opinions that are worth 40% of the total score available (THES, 2008).

Table 4 – The THES ranking indicators

Criteria	Indicator	Weight
Peer Review	Opinions of 5,101 experts, of whom 41% are in Europe, the Middle East and Africa, 30% in the Americas, and 29% in the Asia-Pacific region	40%
Research Excellence	Number of citations by the number of full-time equivalent staff	20%
Size	Staff-to-student ratio	20%
Employer's view	QS asks major global and national employers across the public and private sectors with universities they like to hire from. This year sample includes 1,471 people, with 43% in the Americas, 32% in the Europe, and 25% in the Asia-Pacific	10%
International students	Number of international students at institution	5%
International staff	Number of international staff who come from other countries at institution	5%

The Shanghai Ranking is compiled by the Shanghai Jiao Tong University's Institute of Higher Education, and it began with the objective of finding out the gap between the Chinese universities and the world class universities. The Shanghai ranking is nowadays one of the most prestigious academic ranking in the world. The universities are ranked based on several indicators of academic and research performance. A weight is given to each indicator,, and the highest scoring institution is assigned a score of 100, and the other institutions are given a score as a percentage of the top score, (Shanghai Jiao Tong University, 2008).

Table 5 – The Shanghai ranking indicators

Criteria	Indicators	Code	Weight
Quality of Education	Alumni of an institution winning Nobel Prizes and Fields Medals	Alumni	10%
Quality of Institution	Staff off an institution winning a Nobel Prize and Fields Medals	Award	20%
	Highly cited researchers in 21 broad subject categories	HiCi	20%
Research Output	Articles published in Nature and Science	N&S	20%
	Articles in Science Citation index-expanded, Social Sciences citation index, Arts & Humanities citation index	SCI	20%
Size of Institution	Academic performance with respect to the size of an institution	Size	10%

The German Centre for Higher Education Development is responsible for the CHE Ranking. The ranking was created with the main objective of informing the students that want to enrol in the higher education, or would like the change to another institution, and of providing information to all the stakeholders that want to know how the institutions are performing when compared to other institutions. The CHE ranking is different from the other rankings because it does not have an overall point score. It justifies its choice arguing that there is no "best higher education institution". Therefore, instead of the traditional rank positions, it was decided to offer a multidimensional ranking and always specifically about the different fields of study. The final results are not present on "league positions", but in league groups. At this point there are three different groups, the top group, the middle group and the bottom group. This approach ensures that the top and the bottom groups deviate to a statistical significant extent from arithmetic mean (CHE University Ranking, 2008).

Table 6 – The CHE ranking indicators

Criteria	Description
Job market and career-orientation	The transition into the job market and the career orientation of the academic studies are important orientation points.
Equipment	CHE examined the quality of the equipment.
Research	It is determined how much third party funding is available, where the most PhD degrees are undertaken and published and how many patents have been submitted.
Overall opinions	The future fellow students can give the best opinion on the state of the study conditions. The professors are also asked to name higher education institutions for their subject.
International orientation	Where are foreign language degrees courses offered? How comprehensive is the offered range of foreign languages?

Result of study	The average duration of studies and the average grade in exams are examined amongst other things.
Study location and higher education institution	An important question for prospective students: Where do I feel most comfortable?
Students	The sizes of the area of studies and the combination of the student body can also play a decisive role in the selection of a tertiary institution
Academic studies and teaching	First-year students are interested in the opinion of professors and students of their faculty

As we have seen before, there are positive aspects about the ranking, and negative points that advise the consumers to look at them with some care. However the discussion about the rankings is far from being over and it is here to stay, and the big question still remains, “are the rankings reliable?”

Looking at the top 15 universities of the THES Ranking and to the Shanghai Ranking, that have a league table methodology, we can bring some ideas to the rankings discussion. These two rankings are very renowned, and they use different criteria, and different weights to each criteria. However, despite the obvious differences in the top 15 of both rankings, we can observe that the first university is the same, Harvard University. But the most impressive conclusion is that ten universities are in both top 15, which shows that the consumers can take some conclusions about the institutions quality, but with some precautions.

However, analysing with more attention both rankings, we can see that the second and the third institutions of the Shanghai Ranking do not appear in the top 15 of the THES Ranking. This is probably the main discrepancy between the two rankings. The Stanford University is only the 19th, and the University of California Berkeley is the 22th, in the THES ranking. Another institution that shows a significant difference between the two rankings is the Imperial College of London, number 5 in the THES Ranking, but only 23th in the Shanghai Ranking.

Table 7 – Top 15 of THES and Shanghai rankings

Position	THES Ranking	Shanghai Ranking
1	Harvard University	Harvard University
2	University of Cambridge	Stanford University
3	University of Oxford	University of California - Berkeley
4	Yale University	University of Cambridge
5	Imperial College of London	Massachusetts Institute of Technology
6	Princeton University	California Institute of Technology
7	California Institute of Technology	Columbia University
8	University of Chicago	Princeton University
9	University College London	University of Chicago
10	Massachusetts Institute of Technology	University of Oxford
11	Columbia University	Yale University
12	McGill University	Cornell University
13	Duke University	University of California – Los Angeles
14	University of Pennsylvania	University of California – San Diego
15	Johns Hopkins University	University of Pennsylvania

These differences can be explained by the criteria used on the rankings methodology, and their weights. As mentioned above the choice of the weights is very controversial, because the choice is itself a value of judgement, which is different according to the person that takes the decision. The institution that is performing the ranking needs to be very careful with the weights given to the criteria.

The possibility of one statistical dimension dominates all the other is very real or, for example, several trivial dimensions prevail over more crucial ones.

The way that the information is presented to consumers can be a helpful mechanism to decrease the rankings' errors. That is why the CHE Ranking has chosen not to create league tables but to differentiate the results by the different criteria used. This way the universities can still be compared with each other, but there is no rank position that can lead to wrong conclusions.

The academic rankings are very controversial, in part because there is no consensus about what is the quality of a higher education institution, and also there is no agreement that the quality of a school or programme can be quantified. However, the rankings are here to stay and the lack of other public attractive methods for comparing the institutions will make them part of the educational landscape for many years or maybe forever.

It will be very complicated to develop a universal ranking methodology that can provide reliable and international comparable performance data about the higher education institutions. However, if the ranking producers follow some basic recommendations both the information and the conclusions will be more reliable. The selection of the indicators and the assignment of weights are one of the most important aspects of the ranking methodology. The selection of the performance indicators should have scientific basis, reliability and validity. The collection of the data must be coherent, public and transparent to avoid statistical errors. The weights assignment should appear from the conclusions of extensive analysis of the contribution of each indicator in the institution performance. The higher education sector is always responding to the society needs, and the ranking systems should follow its changes. Therefore the evaluation procedures should be dynamic and able to change when the sector or the society demands, which include the indicators and the weights.

Some specialists argue that the rankings compare institutions that cannot be comparable, because they have different missions and contexts. Thus, every ranking system should state clearly the objective of the measure, and identify precisely the audience addressed. This way we can improve some approaches to evaluate the institutions performances, which sometimes are inadequate and, with some changes, transform them in to useful tools for the students and other stakeholders.

3.4 Balanced Scorecard

3.4.1 The balanced scorecard

Along the years the higher education institutions have always looked for new ways to evaluate themselves. In 1992, Robert S. Kaplan and David P. Norton brought a new methodology called the balanced scorecard, which is probably the best tool that the institutions have to measure their performance.

At the time, executives around the world were a little disappointed with the traditional financial performance measures that worked well in the industrial sector but that were inadequate to the new challenges of the market. The key to the new approach was that "what you measure is what you get". The main objective of the balanced scorecard was to provide the top managers with a set of measures that would lead to a fast and comprehensive view of the business. The authors used an example of an

airplane cockpit to better explain the balanced scorecard. To perform the tasks of navigating and flying the pilot needs detailed information about many aspects of the flight, and the reliance in one instrument would be fatal. Therefore, the balanced scorecard is a tool that provides answers to the following questions:

I. How do customers see us? (Customer perspective)
II. What must we excel at? (Internal perspective)
III. Can we continue to improve and create value? (Innovation and learning perspective)
IV. How do we look to shareholders? (Financial perspective)

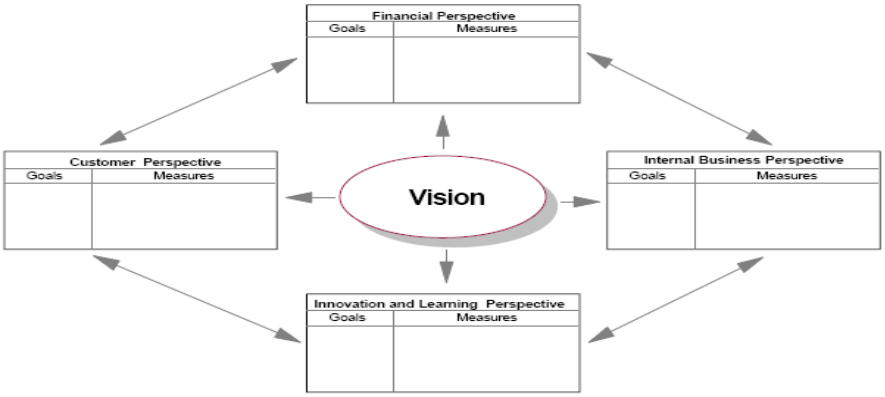

Figure 18 – The balanced scorecard organization

These four different perspectives allow that the information in excess is released, and the managers can focus only on the fundamental measures. The balanced scorecard is a tool that puts strategy at the centre rather than control, in that way it keeps companies looking forward. The involvement of senior managers is crucial for its implementation, because they have the most complete picture of the company's vision and priorities (Kaplan and Norton, 1992).

I. *How do customers see us?* (Customer perspective)

The main priority of the companies nowadays is to deliver value to the customers. Therefore the way the organization is performing from the customers' view is probably the most important concern of top managers. The great advantage of the balanced scorecard is that it forces managers to focus on specific measures, the general mission statement of the company on customers' service, and on what that really matters to the customers.

A good example of the customer's perspective applied to the higher education institution is the students' satisfaction. All institutions desire to improve the students' satisfaction, and consider that it is a crucial element for their success in the sector. However, the students' satisfaction is usually measured based on students' surveys, and each student has a different perception of satisfaction. Therefore, the university depends on the students' evaluation to define some of their performance measures, and in that way the institution is being forced to see its performance through the customers' eyes, in this case the students.

II. *What must we excel at?* (Internal perspective)

As we have seen before, the measures based on the customers are a very important task of the total evaluation, but they would be useless if the company does not have an internal system to meet the customers' expectations. The main objective of the second perspective of the balanced scorecard is to guarantee that managers have an internal perspective. In that way they can focus on critical internal operations to satisfy the customers' needs. The crucial aspect in the internal perspective is that the measures should come from the processes in the company that will have major impacts on customer satisfaction, such as the productivity, for example. In short, the company will have to decide on what competencies and processes it must excel at and define specific measures for each of them.

The universities generally recognize the importance of the teaching staff as a crucial element for the students' productivity or the scientific publications of the R&D productivity. This is a perfect example of the internal perspective in the balanced scorecard. The managers can chose a performance indicator that reflects how the institution is performing in these fields, like the ratio students/staff ratio, or the number of publications.

III. *Can we continue to improve and create value?* (Innovation and learning perspective)

The customer perspective and internal perspective are more related to the current evaluation of the company, and the goals to improve its services at short time. However, the markets are always changing, such as the opponent organizations, and the targets that lead to the success are in constant change as well. The global competition demands a continuous process of improvement from the organizations. The managers need to create instruments for the organization to have the ability to introduce new products in the market with extended potential. Without the ability to innovate, learn and improve itself an organization is in the route to failure. The managers know that only by improving the operating efficiencies continually and by creating new products can they increase the company's value.

The higher education sector should be an example in terms of innovation and learning perspective, but this is not always true. An example of how this perspective of the balanced scorecard could help the universities to measure their improving capacities is the teaching staff. All institutions want the best teaching staff for themselves, and the ability to innovate and create better curricula that responds to market demands depends on a staff with experience and with capacity to keep learning. To respond to this objective the universities choose some performance indicators like the percentage of international staff, the percentage of staff attending training events, or the flexibility of their educational programs.

IV. *How do we look to shareholders?* (Financial perspective)

The last perspective of the balanced scorecard has the objective of verifying how the organization's strategy, implementation, and execution plan are leading to improvement. The typical financial goals are usually related to the profitability, growth and the shareholders value. However, the critics to the use of financial performance measures argue that they are looking backward and that they are unable to reflect contemporary value-creating. Some go even farther arguing that they do not

improve customer's satisfaction, quality, cycle time, and employee motivation. But any statement that the financial perspective is unnecessary is incorrect. A company that improves the quality of the services, or the customers' satisfaction, but is not successful to convert into improved financial performance measures should reflect about its strategy and implementation plan.

The financial perspective is a crucial aspect of all companies, and the universities are no exception. As it was mentioned before, the higher education sector is facing times of change, and the government is reducing the investments on the institutions. Therefore, the last step of the balanced scorecard is a crucial one in the process. The universities generally establish as a short goal the improvement of their incomes that are not provided from public funds, and the performance indicator that can be easily measured is the percentage of incomes provided from research activities and contracts.

3.4.2 The balanced scorecard used in universities

As previously mentioned, the balanced scorecard is an important communication and strategy tool. This tool is widely used by companies all over the world and is an excellent tool used by the universities to measure their performance, define strategies, and provide a comprehensive measure of how the institution is achieving its strategic goals to the stakeholders.

When compared with other instruments, the balanced scorecard has great advantages that make it a very used tool by the higher education institutions. It gives not only the financial measures but a major focus of all the key outcomes, increasing the requirements for accountability and enabling the policy makers to keep their concentration on what is more important. However, the balanced scorecard is generally chosen by the universities because it allows the institution to continually improve performance.

The success of a balanced scorecard depends on the performance indicators that the institutions decide to apply. It is essential for the success of the balanced scorecard that the institutions do a serious reflection about their mission (what we do?), the vision (what we aspire to be?), the strategies (how do we accomplish our goals?), and finally the measures (indicators of the progress). The source of these different performance indicators may come from the strategic plan, and the items that they need to monitor related to key decisions or objectives, but always related to the institution vision (Bressiani, Renato and Massote, 2001). The performance indicators should be numerical representations, and the number of performance indicators should not be excessive. The indicators chosen are called key performance indicators and it is important that they represent the four different perspectives or categories.

After the key performance indicators are identified, it is essential to set the benchmarks, the targets or the objective that the university proposes to perform. These objectives usually depend on the comparison with other institutions, the comparison with the past performance, and should be related to the goals of the institution. In some situations, the universities opt to choose not only one simple target or level, but at least two, with the purpose of achieving better levels of quality. It also recommended that the final results of the balanced scorecard should be presented on a screen or

page and avoid cluster. The decisions makers need to see the comparisons between the goals and the real performance, to identify where the problems are and where to act.

The higher education institutions use the balanced scorecard for many reasons. It is very simple to use and easily understandable. Because it is based on vision and strategies of the institutions, one of the main advantages of the balanced scorecard is that it is a useful tool in the guideline plan development. The performance indicators also give a multidimensional vision about the institution's performance, the measures are qualitative and quantitative, and also present and future oriented. With these measures the institutions are able to identify which areas are performing below the targets and make improvement plans.

The balanced scorecard is acknowledged by changing the people views on what is more important to the institution, increasing the internal alignment and consequently improve the institutional performance. The simple fact that the performance of the institution is clearly displayed and discriminated leads to a culture of evidence, and the myths about the institution performance have a propensity to disappear (Hafnar, 1998). According to Paul Niven (2003) the balanced scorecard serves as three things such as, a measurement system, a strategy management system and a communication tool. Doing a balanced scorecard is a process with many steps, and the first results are not the end of it. Therefore, the institution can always improve some of the measures like the ones that were difficult to measure, or not valid. If the outcome does not translate the objectives that were proposed, the performance indicators can be changed and all the process need to be repeated. The institution can also decide that the desired performance has been achieved and develop more robust targets, or benchmark with better institutions. Therefore, the balanced scorecard is a process of evaluation and continuous improvement, where the performance indicators or the benchmarks can be redefined and adapted to new goals.

The balanced scorecard has been used by many companies or commercial organisations like the Royal Bank of Scotland, the Ericsson, the BMW or the Mobil Oil. The higher education sector is no exception and a lot of universities have adopted this instrument, such as the Glasgow Caledonian University, the University of California, the Ohio State University, or the University of Edinburgh. To better understand how this tool is important to the institution's management, we present some examples of balanced scorecard used in Universities and the performance indicators adopted.

3.4.3 Examples of universities that used the balanced scorecard

3.4.3.1 University of Edinburgh

The University of Edinburgh is a public institution established in 1582, located in Edinburgh, the capital of Scotland, United Kingdom. It is a big university with more than 25.000 students.

The balanced scorecard is used by several higher education institutions, and the University of Edinburgh was one of them. They justify their choice on the argument that this approach is based on a balanced set of performance indicators covering entirely an organisation's goals, rather than just financial indicators. This aspect is very important, especially in the non-profit sector, where the financial indicators are less relevant.

The development of the balanced scorecard provided to the University of Edinburgh a management tool to help the institution ensuring that the University's strategic goals and mission are being accomplished. It also helps to confirm to the stakeholders, especially the government, that their expectations are being met, if not being exceeded.

The University of Edinburgh developed the first balanced scorecard in 2002 and the performance indicators chosen remained unchanged for three years. Later, in 2005 following the publication of the University's Strategy Plan 2004-2008, a review of the performance indicators was taken with the aim of considering each indicator continued relevance and of ensuring that the balanced scorecard best supported the University's Strategy Plan. They hope that the revised set of indicators will remain unchanged over at least the period covered by the Strategy Plan, allowing to determinate trends over time and to identify any shift in these trends. The University of Edinburgh balanced scorecard defines a framework for measuring its performance in four perspectives such as: the organizational development perspective, the financial perspective, the stakeholder perspective, and finally the internal business perspective.

The University made efforts to combine the balanced scorecard data with benchmarks to provide that the University is in the direction of their goals. These benchmarks are based on the performance of institutions with similar size, teaching and research patterns and similar sized country or state. This way the board ensures that the targets to achieve are realistic.

I. Organizational Development Perspective

The performance indicators used in the organizational development perspective provides a measure of the methods used by the University of Edinburgh to improve themselves and to provide better services. For example, the performance indicator E, flexibility of curriculum, has the purpose of measuring if the University is offering flexible curricular choices, according to the strategy plan that has stated that one of the Institution goals is to provide flexible and better informed curriculum choice. The performance indicator G is a measure of the University's commitment to promoting opportunity and diversity.

A. Percentage of full-time undergraduates from Scotland;
B. Headcount of research postgraduate students;
C. Fee income from taught postgraduate students;
D. Lifelong learning registrations;
E. Flexibility of curriculum;
F. Research grant applications submitted per member of academic staff;
G. Percentage of new appointments at lecturer, senior lecturer/reader and Professional/Chair level who are female;
H. Number of staff development events attended per FTE member of staff;
I. Percentage of staff on fixed term contracts.

II. Financial Perspective

The financial perspective performance indicators are an excellent measure of the University performance not only in a budget viewpoint but also in other areas, like the research. The first

performance indicator of this group is a common one, because the governments are decreasing their funding to higher education and this performance indicator evaluates the University's ability to obtain incomes from other sources. To the University of Edinburgh it is a measure of the goal to increase effective governance and ensuring sustainability. Another good example is the performance indicator D, which it is not only a measure of the research quality but also evaluates the University objective of diversifying and increasing the sources of funding.

A. Percentage of total income from non-formulaic funding sources;
B. Historic cost surplus as percentage of turnover;
C. Administrative operating costs as percentage of academic operating costs;
D. Research indirect cost recovery contribution as percentage of total research income;
E. Commercialisation of research: licenses signed;
F. Fundraising: total raised (3 year average) and number of donors;
G. Ratio of current assets to current liabilities;
H. Usage of key information services resources provided, per £ of investment;
I. Utilities, maintenance and servicing costs per square metre of gross internal area.

III. Stakeholder perspective

A good example of performance indicators in the stakeholder perspective is the proportion of undergraduates achieving a first or upper second class degree. This performance indicator measures not only the objective of the University of "ensure fair access and progress for all those who can benefit whilst maintaining the high quality of our student intake and graduate output", but also the goal of enhancing the quality of their education. Other good example of the direct relation between the University's strategy plan and the balanced scorecard is the performance indicator E. This indicator is evaluating the Institution's reputation nationally and internationally, and also if the goal of engaging with the wider community is being achieved.

A. Headcount of non-EU international students;
B. Proportion of undergraduates achieving a first or upper second class degree;
C. Widening participation: percentage of young full-time first degree UK entrants from state schools/colleges;
D. Intake of home/EU students from ethnic minorities as percentage of total intake of home/EU students;
E. Newspaper cuttings analysis: percentage of column centimetres positive;
F. % academic staff in 5 and 5* RAE units of assessment.

IV. Internal Business Perspective

The internal business perspective is related to the enhancement of the internal processes. The performance indicator A, harmonisation of common systems and services, is monitoring the University's strategy of develop and improve an efficient and effective information system. However, the performance indicator that is more interesting in this group is the total income per square metre of gross internal area, D. This indicator evaluates not only the quality of the infrastructures but also if the institution is optimising and managing effectively their space, and diversifies their sources of funding.

A. Harmonisation of common system and services;
B. Percentage of users satisfied with information services;

C. Proportion of usable publication scheme resources;
D. Total income per square metre of gross internal area;
E. Capital expenditure and planned maintenance as percentage of estate value;
F. Total property cost as percentage of University total income;
G. Backlog maintenance spend required to meet disability discrimination act requirements;
H. Room utilisation.

3.4.3.2 The Trent University

The Trent University is a public institution, established in 1964, located in Peterborough, Ontario, Canada. It is a small university with about 8.000 students.

The Trent University developed a new strategy plan, "A Strategy for Trent University 2007-2014", and has chosen the balanced scorecard, based on the concept of Kaplan and Norton, to verify if its vision and strategy was following the right direction, and to translate its goals into action. The objective of the balanced scorecard is also to turn public the university performance. Therefore, every year the University's services publish a report that will enable all the stakeholders to assess and monitor the strategic plan progress.

The balanced scorecard will measure the performance of the University from four different perspectives, the Student and Alumni Outcomes (Client Perspective), the Commitment to the Employers (Human Resource Perspective), the Revenue Allocation and Fiscal Health (Financial Perspective), and finally the Academic Mission (Vision and Values Perspectives). To each indicator chosen a target is assigned using the strategic plan goals as the benchmarks.

The performance indicators used in the Trent University balanced scorecard are:

I. Student and Alumni Outcomes

The Trent University identifies as its clients or customers all the students, and its main objective is to provide high levels of educational quality for all them. Therefore the University has developed a set of performance indicators that translate this objective. With these performance indicators the University wants to know if the students are engaged with the University learning process, if the students are satisfied with their educational experience, if it is easy for them to enter the labour market, and finally if the students are completing the degree in the expected time. An example of the clear relation between the University's goals is the performance indicator I, which was created with the purpose of verifying if the institution is really recruiting more international students, as it was stated in the strategy plan.

A. Percentage of new secondary school entering Trent with a high school grade point average greater than or equal to 80%;
B. Percentage of first year and graduating students that were satisfied by their education experience;
C. Percentage of first year and graduating students who would recommend Trent if they could start over again;
D. Students and faculty interaction – Trent professors treat student as individuals, not just numbers;
E. Graduates students – Quality of overall experience at the University;
F. Employment rates – 6 months and 2 years after graduation;
G. Major graduate scholarships received as a proportion of graduate student enrolment;
H. Financial support per student;

I. Internationalization of the campus – ratio of full-time international students versus domestic students;
J. Trent on Oshawa – ratio of student enrolment studying in Oshawa;
K. Retention rates – Peterborough campus: The number of first year students returning in fall of the next academic year;
L. Retention rates – Trent in Oshawa: The number of first year students returning in fall of the next academic year;
M. Graduation rates by entering cohort after 6 years at the University.

II. Commitment to the Employers

The Trent University has in its strategy plan "retained and attract" the best skill and highly motivated staff possible to provide the best education to the students and quality research. The board considered that the best way to assure that these goals in the strategy plan, and in the employment equity plan, are achieved is investing in permanent full-time faculty and staff. Therefore, the board has developed a set of performance indicators that meet the requirements. For example, the performance indicator C below has the function of giving an objective measure of the staff qualifications, and the performance indicator F has the purpose of verifying if the University is promoting equity between its employers.

A. Proportion of faculty full-time equivalents in a tenure tracks stream versus contract stream;
B. Proportion of non-academic staffing in permanent positions versus contract positions;
C. Proportion of full-time faculty with a Doctorate degree;
D. Proportion of full-time faculty by academic rank and gender;
E. Full-time female faculty salaries as a proportion of male salaries by rank;
F. Full-time female non-academic staff salaries as a proportion of male salaries;
G. Retention of full-time faculty;
H. Staff training and professional development per full-time employee.

III. Revenue Allocation and Fiscal Health

The financial perspective is a key aspect for all companies in the world, and as the universities are not typical companies, it is crucial for them to measure and control their financial health. Therefore the Trent University board has developed a set of performance indicators with the purpose of evaluating the "way that the University is allocating resources to maintain a level of financial solvency". The resources allocation and the financial decisions and health are a crucial aspect to determinate if the University can accomplish the goals and its mission.

In its strategy plan for 2007-2014 the Trent University defines clearly the goals for the financial perspective. The main objective is to strengthen the financial stability and accountability of the University. For example, the University's board states that they want to "strength capabilities to track pension plan and endowments performance in order to maximize returns on investments", therefore to monitor these financial aspects we can see the performance indicators A and B.

A. Endowment funding per student;
B. Ratio of endowment to operating expenses;
C. Academic/instructional expenses as a proportion of operation of operating expenses;
D. Administrative expenses as a proportion of operating expenses;
E. Building maintenance liability per square foot;
F. Bequest and other expectancies;

G. Domestic and international student aid as ratio of tuition fees;
H. Provincial government funding units as a ratio of domestic undergraduate enrolment.

IV. Academic Mission

The perspective of the academic mission is related to the objective of the Trent University to be a leader in liberal arts and science education within Canada and abroad. The university defines in its strategy plan to enhance the learning experience of students and one way to accomplish this goal is creating class sizes with a small number of students, therefore there are some performance indicators referring to this aspect. Another example is the performance indicators A and B. They are used with the purpose of verifying if the University is increasing its research importance and enhancing the University position as a highly ranked research institution, like the goals established in the strategy plan.

A. Total research funding per full-time faculty;
B. Total research funding source;
C. Proportion of faculty holding tri-council awards;
D. Students to faculty ratio by campus;
E. Percentage of first year and second year lectures in the 1-25 and 26-50 class size range;
F. Percentage of first year and second year labs, seminars and tutorials 1-19 and 20-40 class size range;
G. Percentage of third and fourth year lectures in the 1-25 and 26-50 class size range;
H. Percentage of third and fourth year labs, seminars and tutorial 1-19 and 20-40 class size range;
I. Honours Degrees: Percentage of students graduating Trent with a 4 year degree;
J. Proportion of library expenditures on electronic versus non-electronic holdings;
K. Proportion of undergraduate students studying in joint degree programs;
L. Proportion of courses using MyLearning System.

4 Application of the balanced scorecard to the DECivil

4.1 Methodology

The higher education institutions are nowadays looking for new management instruments, and the levels of quality achieved by them are the central question of a University organization. Therefore, one of the main objectives of this dissertation was to provide to the higher education institutions, with special relevance to the Civil Engineer and Architecture Department of Instituto Superior Técnico, Technical University of Lisbon (DECivil), a management tool to evaluate the performance, and consequently improve themselves.

The higher education sector has unique characteristics and is very specific. Therefore, when the institutions decide to monitor their own quality levels there are several questions that do not exist in the performance evaluation of others sectors. The traditional instruments to measure an organization performance cannot respond to higher education institutions needs, and most of the times are based on the financial aspects. Therefore, as it was referred to before, the balanced scorecard is a management tool that allows universities to measure their own performance through different perspectives, and not only through the traditional ones. In addition, the balanced scorecard is based on the strategy and the goals of the organization, allowing the DECivil to combine objectives at short, medium and long term, and it is also an excellent communication tool that enables a constant revision of the strategy.

The definition of the different perspectives to be used in the balanced scorecard is a crucial aspect to its success. According to Kaplan and Norton (1997), the strategy and the goals should be translated into performance indicators through four different perspectives mentioned above, the customer perspective, the internal perspective, the innovation and learning perspective, and the financial perspective, respectively. However, the number of different perspectives is not a mathematical formula, and some organizations have adopted a system with more perspectives. This situation is more usual in the public sector than in the private companies, because the organizations are complex, with very specific objectives and thus an extra perspective is added to the balanced scorecard, often a social perspective.

The performance indicators used in the balanced scorecard to the DECivil are translated into the four original perspectives of Kaplan and Norton. This conclusion was reached after analysing the department's strategy and goals and it was verified that an extra perspective was not needed and that the traditional four perspectives covered all the essential measures. As referred to in the chapter of the balanced scorecard, some experts believe that the financial perspective is not relevant, especially in the higher education institutions. Nevertheless, in times of financial constraint and decrease of the public funds by the national government, the financial indicators are an essential element to be monitored by the Universities.

The customer perspective is the key aspect in the process of developing a balanced scorecard, especially to the higher education sector. However, in opposition to the private organization, a university does not have their clients clearly defined and identified. Therefore, it is important to state out that the clients of the higher education institutions are the society in general, with special

relevance to the students and their families, the employers and the government. The success of any evaluation in the higher education depends on putting the clients at the centre, and look at the institutions from the client's point of view. From all the clients the students receive a special attention, not only because they pay tuition fees directly to the institutions but also because they are the centre of all strategy to the universities, and can give an important contribution for the improvement of the higher education.

The objective of the internal perspective is to measure the outputs of the results from the essential processes to achieve the goals of the customer perspective and the financial perspective. The internal perspective depends directly on the customer and financial perspective and should only be defined after these are finished. In other words, the internal perspective measures what the institution can do to improve the customer satisfaction and the financial indicators. This perspective is very important also from an improvement point of view.

The innovation and learning perspective is crucial for the success of any higher education institution, and the sector should be an example for all organizations in other areas. In this perspective the academic staffs have special relevance and their qualifications, ability to improve and innovate are the main guarantee for the future of the institution and for its success. The technology, the information systems and the library resources are also a good indicator of any university capacity to improve their quality and provide better services.

The financial strategy and objectives of a higher education organization are very different from those of the private sector. The financial performance indicators of a public university are more related to the management of the resources available than to the profits. Therefore, in the present context the financial indicators express more the competiveness of the institution and the ability to attract private funds, which is especially made through the quality of its graduates and the R&D activities.

The balanced scorecard is an instrument that puts the strategy and the objectives at the centre, and these ones are the starting point for all evaluation activities. Therefore, before the balanced scorecard is put into action, the board of the organization must do a serious reflection about the objectives of the department, and translate them into a strategy plan for the future. The definition of the objectives is not always easy and sometimes it is very controversial, but the board must define them in a clear and unambiguous way (Rocha, 2000).

The objectives chosen to be measured in the balanced scorecard must not be in excessive number, only the most important goals must be translated into performance. The experts also say that the goals must be the most specific possible. In a way that avoids general objectives and consequently ambiguous conclusions. The strategic objectives must be stated in such a way that action is expressed. Some experts go even farther stating that they should be expressed by a verb. Finally, the measures of the goals are defined in a second phase of the balanced scorecard, and the objectives set must be the most important for the institution and not the ones that are easy to measure or evaluate (Rocha, 2000).

The DECivil does not have a public strategy plan that defines the goals and the objectives of the department for the future. However, the department is integrated in one of the best engineering schools in Portugal, and its educational programmes are very prestigious not only at the national level,

but also abroad. Therefore, in the department website, the DECivil presents its activities and states some of the main objectives for the future, and we can observe that the goals of the department are very similar to the goals of the Instituto Superior Técnico itself. Therefore, previous to the choice of the performance indicators it is important to know the main characteristics of the DECivil and its main goals for the future.

The DECivil is a reference within Instituto Superior Técnico, not only because of the strong tradition in the school but also due to their contribution to the modernization of the entire country. The DECivil programmes have the reputation of producing graduates with a high capacity of work to different fields of the labour-market. One of the main objectives of the Department is to conciliate the education of graduates with high levels of adaptability and flexibility in their professional life with a good adjustment to the market needs, which should result in a high level of qualified employability rates after finishing the graduation. The IST, in which the DECivil is incorporated, has the most demanding admission requirements at the national level. The DECivil strategy consists of attracting the best students, with the appropriate profile to engineering sciences.

The DECivil offers to its students several different educational programmes, two of them with the bachelor degree, and four with the master degree. The programmes of masters appeared with the Bologna process and are very recent. The two educational programmes of Bachelor are the Environmental Engineering (“Engenharia do Ambiente”) and the Territorial Engineering (“Engenharia do território”). The four different master programmes are the Environmental Engineering (“Engenharia do Ambiente”), Territorial Engineering (“Engenharia do Território”), Architecture (“Arquitectura”), and the Civil Engineering “Engenharia Civil”. From all different educational programmes of the DECivil, the master of Civil Engineering is definitely the one with more tradition, importance and influence, not only at a national level but also abroad. This educational programme has a duration of five years, and the end of the first cycle of Bologna, the first three years, does not correspond to the title of engineer, but rather provides a large background in sciences, like maths or physics, and in sciences of engineering, with the main purpose of promoting the European mobility in the scope of the Bologna Declaration. In the second cycle of the programme the students have to choose their specialization area, the department offers five: Construction (“Construção”), Strutures” (“Estruturas), hydraulics and water resources (“Hidráulica e Recursos Hídricos”), Transports, Systems and Infrastructures (“Transportes, Sistemas e Infraestruturas”), a finally Geotechnique (“Geotecnia”). All the Civil Engineering students, in the last year, perform a master dissertation or project with the characteristics of integration in the labour market or research. The department believes that this thesis in very important for the education of the graduates, because it is able to provide more specialization, and consequently more skills in a specific field of the labour market, or the first contact to the R&D activities. Therefore, the programme has a curriculum which offers an embraced education, which associated with the qualified academic staff and the laboratories, provides the graduates with high standards of teaching quality recognized by the companies in different fields. The DECivil, specifically the Civil Engineer programme, has the tradition of creating highly skilled graduates that are employed in the best companies, in high qualified jobs, including the government or European associations in the civil engineering area.

Table 8 – Description of the DECivil programmes

Programme	Nº of vacancies	Nº of students	Nº of graduates in the last year
Architecture	50	328	21
Environmental Engineering	35	206	16
Civil Engineering	175	1419	164
Territorial Engineering	20	63	26

The Research and Development (R&D) activities represent an important part of the DECivil mission, which is organized in three different research units, the ICIST, CEHIDRO and CESUR. The ICIST "Instituto de Engenharias de Estruturas, Território e Construção" is the largest R&D unit of the DECivil, and it was created with the purpose of developing several different areas of civil engineering, like the structures' analysis, construction, rehabilitation, or seismic analysis. The CEHIDRO "Centro de Estudos de Hidrossistemas" is the shortest unit of the DECivil, and it was created with the main objective of serving the technological development in the field of hydraulics, water resources, and the environment. Finally, the CESUR "Centro de Sistemas Urbanos e Regionais" was created in 1975 with the purpose of developing research activities in different fields, like transportations, urbanization, and systems. The table 9 shows the number of elements in the R&D units.

Table 9 – Number of elements in the DECivil R&D units

Research unity	Nº of elements
CEHIDRO	41
CESUR	63
ICIST	180

These organizations have a large number of activities with international partners, and generally the R&D units are recognized by the quality of their participations. The scientific production is formally evaluated by the FCT, and the units are systematically classified as the best at national levels, when compared with their peers. Therefore, it is in this context that the DECivil has the purpose of promoting R&D activities with the best level of quality produced nationally and abroad. The Department's board states out that one of the most important objectives is to increase the number of PhD students, especially international students. At this moment the DECivil has about 70 PhD students, 10 of them international.

The DECivil considers that the Library resources and the experimental Laboratories are crucial elements in the teaching and learning process. Therefore, the Department invests important resources in these spaces, like the acquisition of new books, scientific journals or new materials to the labs, every year. The objective of the department is not only providing the students with the best education possible, but also following the changes in the labour-market and in the scientific world.

The DECivil is integrated in one of the best engineering schools, with several different departments also with an international reputation. The Instituto Superior Técnico has a responsibility to the country that goes beyond the "traditional" programmes offered by other universities. Nevertheless, the DECivil feels that it has an enormous responsibility of providing the society the best services possible. The board of the DECivil states that a direct and strong relationship with the outside community is crucial to expose their students to the best professional experience, increasing their professional skills and also their integration in the labour-market. The Department strengths the

relationship with the outside community through a high qualified staff, that are also prestigious professionals in the area. It also offers to the academic community, students and academic staff, a set of conferences and seminars given by the most prestigious people and experts in the field. For example, the conferences about some specific work of engineering or the seminars about leadership and ethics. However, the DECivil activities have other strong component very important in the relationship with the community, the “Further Education”, which is made through the “Fundação para a Formação Contínua em Engenharia Civil”, FUNDEC. The FUNDEC was created in 1995 with the main purpose of providing a continuous training in the scope of civil engineering and respond to the needs of each economic activity where civil engineering plays an important role. To achieve its goals, the FUNDEC counts with a high qualified staff with experience in the field, and also with the collaboration of many national and international experts besides the academic staff of the DECivil. It is clearly stated that the DECivil has the objective of promoting the intensification and diversification of the FUNDEC activities, considering the impact that they might have in the modernization and in the increase of competitiveness to many companies in the sectors involved.

In the recent years the DECivil has increased the support to the participation of their students in international exchange programmes. The Department also receives every year a considerable number of international students. It believes that the international experience is very important for the education of their students and also crucial in an innovation and learning perspective, improving the quality of its educational programmes. The main programmes of the department are the ERASMUS and the Brazilian exchange programmes for the exchange of international students.

However, besides the good reputation of the DECivil programmes and the levels of quality achieved by them and recognized by the market, the department is aware of the challenges and the difficulties in the future. The Bologna declaration aspires to establish a European Area of Higher Education, so the entire University, not only the DECivil, will have to compete at an international level with the best European institutions. Therefore, the DECivl main objective for the future is not only to maintain the levels of quality, where its programmes are recognized as the best in Portugal, but also to compete at a European level to attract the best students in the transition of the first cycle to the second cycle, and produce educational programmes with the standards of the best European universities.

4.2 The performance indicators of the balanced scorecard

The definition of performance indicators is a complex process, because they must evaluate the strategy goals of the DECivil in a clear and unequivocal way. The result of the performance indicators allows understanding if the goals are being achieved and if the implementation of the strategy is being successful.

The performance indicators chosen to measure the performance of the DECivil must follow some basic specific conditions:

- The performance indicators must cover all perspectives of the balanced scorecard;
- The definition of performance indicators should be coherent not allowing any subjective interpretation and evaluation of the results;

- The performance indicators should be independent, not overlapping each other;
- The performance indicators must be relevant and describe the objective that is being measured;
- The results of the performance indicators should be easily understood by non-specialists, like the students or the politicians.

To each objective that the DECivil is proposed to achieve more than just one performance indicator might exist. For example, if the institution's goal is to attract the best students the performance indicator chosen can be the number of students that apply to university, the average classification of those students, or the percentage of students that choose the university as first choice. However, the total number of performance indicators should not be excessive, and only the most important ones must be measured.

There are explanatory factors for all performance indicators that directly influence the results obtained and are helpful to understand and justify them. The explanatory factors could be classified as controllable and non controllable. The controllable explanatory factors are related to elements or factors that the higher education institution can control at least at long term, the most common example are the institution facilities. The non controllable explanatory factors are the factors that the institution cannot control and do not have any possibility of change, like the population living in the area of influence of the institution.

The definition of the objectives and of the performance indicators is concluded when the targets or the benchmarks are set. The targets are a crucial element of the evaluation process, and they can only be valid and give consistent conclusions if they are coherent with the vision and the strategy of the DECivil. The choice of the benchmarks is a very complex process of the balanced scorecard, and the good practices tell us that they should be demanding and ambitious. However, the benchmarks should also be credible and achievable to establish a spirit of union and in order that every member of the staff accepts the goals as their own.

The definition of the targets is not a rigid process and the designer of the balanced scorecard can opt for several different targets for the same performance indicator, for example at short, medium and long term. In the case of the balanced scorecard to the DECivil the benchmarks were defined to be achieved at short time, one year. However, the process of defining the performance indicators and the benchmarks should be in accordance with the board of the department. Therefore, the targets in the future must be redefined according the board's choice.

Once again, it is important to refer that the main objective of this work is not to measure the performance of the DECivil, but to provide guidance and instruments for the board to do the evaluation in the future. Therefore, the performance indicators and the targets should be decided by the board of the department.

4.2.1 Customer perspective

a) **Drop out rate**

The drop out rate is the relationship between the numbers of students that leave an educational programme and the number of students that attend the programme. The drop out rate is a very

important indicator to measure the ability of the DECivil to correspond to the students' expectations and keep them in the educational programmes.

Explanatory factors: The nature of the programmes, the individual expectations and institution location.

Target: 1.0%

b) Number of years needed to finish the programme

The number of years needed to finish the programme is the average number of years that a student takes to complete his graduation. It is a good indicator not only of learning and teaching effectiveness but of also the adequacy of the programmes and of the students' motivation and preparation. In order to define the target it was considered that 80% of the students must finish the graduation in the regular time, 5 years, 15% of the students in 6 years, and finally only 5% of the students in 7 years.

Explanatory factors: The size of the classes, the evaluation model, the nature of the programme, the institution infrastructures, the individual expectations and the lack of resources.

Target: 5.25 years

c) Student's satisfaction

The student's satisfaction is achieved through a survey with the main purpose of measuring to what extent the students are satisfied with the education and the services provided by the institution, given their expectations and their experience in the course. The best way of benchmarking the students' satisfaction is with the past performance and not with other institutions, because it would refer to different things. The evaluation of the students' satisfaction was done through a survey based on the Course Experience Questionnaire (CEQ). The CEQ was developed in Australia by Ramsden (1991), with the main purpose of measuring the students' perceptions and satisfaction of their courses. The main objective of Ramsden was not to capture all the aspects of teaching effectiveness, but to create a reliable and valid tool which collets those elements of teaching that the students experience directly. At the beginning, the CEQ consisted only in five elements of scale: Good Teaching scale, Clear Goals and Standards scale, Appropriate Workload scale, Appropriate Assessment scale, and finally the Emphasis on Independence scale, later replaced by the Generic Skill scale. The items are measured using a 5-point Likert scale (where 1 means strongly disagree and 5 strongly agree). Meanwhile, the CEQ revealed to be a very useful tool and very reliable. Therefore, nowadays it is used all over the world and it has been improved. The questionnaire used to measure the students' satisfaction has the five scales referred to above together with the Learning Resources scale (Byrne and Flood, 2003). The survey is found in annex 1.

Explanatory factors: Nature of the programmes, the institution location and the individual expectations.

Target: 3.5

d) Quality of teaching

The quality of teaching is achieved through a survey with the main purpose of measuring the quality of teaching on the student's perspective. The survey that measured the students' satisfaction had a set of questions with the purpose of measuring also the quality of teaching.

Explanatory factors: The size of the classes, the resources available, the institution location, the institution reputation and the institution age.

Target: 3.5

e) Share of first preferences

The share of first preferences is the relationship between the number of students that enrol to the DECivil as first choice and the total number of students enrolled for the first time in the DECivil. The share of first preferences is a very useful indicator because it assesses the ability of the institution to attract the best students. It provides an indication not only of the success of the recruitment efforts but also the institution reputation and the competiveness.

Explanatory factors: The institution location, and the institution reputation.

Target: 90%

f) Average of first students

The average of first students is the relationship between the sum of all scores of the students that enrolled for the first time in the DECivil and the total number of students enrolled for the first time in the DECivil. The average of first students is an indicator to measure the reputation and the competiveness of a higher education institution. This indicator reflects the institution's ability to attract a well-qualified student body. A comparison over time also provides the ability to consistently attract high quality students.

Explanatory factors: The institution location, the nature of the programmes, and the institution reputation.

Target: 160.0

g) Graduate Employment

The graduate employment is the relationship between the number of students that have finished their programmes and are employed six months after with the total number of students that have finished their programmes. The employment of the graduates is a crucial indicator because it is an excellent indicator of the quality of the learning outcomes of the institution. It is an aspiration of all universities to provide relevant courses with high standards and consequently have the recognition from the employers of their quality.

Explanatory factors: The institution location, the nature of the programmes and the institution reputation.

Target: 95%

h) Average of first salary

The average of the first salary is the relationship between the sums of all salaries of all DECivil students that finish their programme and are employed and the total number of students that finish their programme. The average of the first salary is an indicator of the quality of the graduates, the prestige of the institution and finally the acceptance of the graduates from the labour market.

Explanatory factors: The location of the institution, the nature of the courses and the institution reputation.

Target: two minimum salaries, 852€.

i) Employers' satisfaction

The employers' satisfaction is measured by a survey answered by the employers of the graduates of the institution. It is a very important indicator because it measures not only the professional abilities of the graduates, but also other skills, like the communication skill or the ability to work in a team. The survey was created according to different perspectives. First, it asks about the satisfaction of the employers with the DECivil graduates in different aspects, and secondly asks the employers what abilities they want from DECivil graduates. Therefore, the department will know exactly where to improve the quality of programmes, under the employers' perspective. A proposal to the survey is in the annex 3.

Explanatory factors: The location of the institution, the employers' expectations, and the institution reputation.

Target: 3.5

4.2.2 Internal perspective

a) Number of theses oriented per academic staff member

The number of theses oriented per academic staff member is the relationship between the number of theses completed and the number of elements in the academic staff. Because the theses have different relevance it was attributed a weight to each one. Therefore, the PhD theses have a weight of 1.0, the master theses before the Bologna process, now called "*Diploma de Formação Avançada*", 0.15, and finally the present master theses 0.05. The number of theses oriented per academic staff member has the objective of measuring not only the ability of an institution to attract students to perform research work and measuring the research production, but also of measuring the quality of the academic staff.

Explanatory factors: Offer of post-graduate courses, the institution reputation and the institution age.

Target: 0.5

b) Number of courses, conferences, workshops or seminars to the outside community

The number of courses, conferences, workshops or seminars to the outside community in one year is an indicator of the work produced to the society out of the institution. This indicator is used not only by the institutions, but especially by the governments that are demanding more from the higher education institutions to the society.

Explanatory factors: Institution location, and the institution reputation.

Target: 24

c) Student staff ratio

The Student Staff Ratio is the relationship between the numbers of students that attend the DECivil programmes and the number of professors in DECivil. The Student Staff Ratio is one of the indicators more used to assess the higher education institutions. It is an indicator of the productivity of the teaching staff, and it is also a signal of resources or quality issues in the institution.

Explanatory factors: The institution age, the institution resources, and the institution location.

Target: 20

d) Research and development publications

The number of R&D publications is the relationship between the number of total publications in DECivil and the total number of elements in the DECivil R&D units. The number of R&D publications is one of the most used indicators in the world by the higher education institutions. This indicator has the purpose of measuring the output of the academic research, and its contribution to the scientific knowledge. The publications of the investigation groups are not considered on equal basis. Therefore the weights attributed to the publications are in the table 10.

Table 10 – Publication's weights

Publication		Weight
Book	Author	30
	Editor	10
	Chapter	10
Article in a magazine	National	7.5
	International	40
Proceedings presentations		2.5

Explanatory factors: The of pos-graduates courses, and the nature of the institution.

Target: 1.0

e) Consultancy work

The consultancy work is the relationship between the number of consultancy work and the number of academic staff member. The consultancy work is a measure of the outputs of the academic staff of an institution. It evaluates also the relationship between the institution and the labour market.

Explanatory factors: Location of the institution, prestige of the institution

Target: 1.0

f) Patents per academic staff member

The patent per academic staff member is the relationship between the number of total patents and the total number of academic staff member. The number of patents is also an indicator that measures the R&D activities.

Explanatory factors: Location of the institution, prestige of the institution.

Target: 0.5

g) Staff Qualifications

The Staff Qualifications is relationship between the number of professors with a doctor degree and the total number of professors in the DECivil. The staff qualification is a very important indicator to measure the staff qualifications and the overall strength.

Explanatory factors: The age of the institution, the nature of the institution, and the institution reputation.

Target: 75%

h) Student Computer Ratio

The student computer ratio is the relationship between the total number of students in DECivil and the total number of computers available for the students in DECivil. The student computer ratio is a direct measure of the resources and facilities of the institution. There is a direct relationship between the resources available and the quality of the graduates.

Explanatory factors: Nature of the courses.

Target: 15

4.2.3 Innovation and learning perspective

a) Annual expense with computer and library

The annual expense with computer and library per student is the relationship between the amounts of money spent with computers and the library in one year and the total amount of money spent by the DECivil. The annual expense with computers and the library per student is an important indicator not only of the resources available in the institution, but also a measure of the institution efforts to improve its resources and adapt to the labour market changes.

Explanatory factors: Location of the institution, the institution resources.

Target: 5%

b) Staff Satisfaction

Traditionally the academic staff satisfaction is not one of the most common indicators, however recently the higher education institutions have extended their processes of evaluation to the academic staff, and not only to the students. It is an important tool to collect information about the department under the academics point of view, and to improve the services and the quality to the students. The staff's satisfaction is achieved through a survey with the purpose of measuring their level of satisfaction, and it also collects their opinions about what can be improved in the DECivil. A proposal to the survey is in annex 2.

Explanatory factors: The institution location, the institution facilities.

Target: 3.5

c) Percentage of international students

The percentage of international students is the relationship between the number of foreign students enrolled in the DECivil and the total number of students enrolled in the DECivil. The percentage of international students in an institution is a key indicator to measure the internationalization of the institution, the institution reputation, and the ability of the institution to recruit the best students. It is also important in a perspective of innovation and of learning, because international students bring experience and knowledge from other countries.

Explanatory factors: The location of the institution, the nature of the courses, the institution reputation, and the country of origin.

Target: 10%

d) Percentage of national students studying abroad

The percentage of national students studying abroad is the relationship between the number of national students with international experience enrolled in the DECivil and the total number of students enrolled in the DECivil. The percentage of national students with international experience is an important indicator to measure the internationalization of the institution and the institution reputation. It is also important in a perspective of innovation and of learning, because the national students bring experience and knowledge from other countries.

Explanatory factors: The institution reputation, the nature of the courses, and the institution location.

Target: 10%

e) **Academic staff rotation (Inbreeding**)

The academic staff rotation is the percentage of academics in one institution that have a PhD and is working in the same institution that awarded the PhD degree. This indicator allows for measuring the ability of an institution to renew itself, and chose an academic staff based on merit and not in friendships. The international experts refer that when the staff rotation increases the quality of the staff and the research production also increases, besides the competiveness it brings.

Explanatory factors: The nature of the institution, the institution prestige, and the institution location.

Target: 65%

f) Staff self-improvement

The staff self-improvement is the total number of hours spent in courses, conferences, workshops or seminars attended by the academic staff member in one year. This indicator provides a measure of the academic staff to improve their abilities. It is an important indicator because the higher education institutions need to respond to the market demands, and keep creating new curricula and innovating.

Explanatory factors: The financial strength of the institution, the location of the institution.

Target: 80 hours

4.2.4 Financial perspective

a) Research Income

The research income is the relationship between the total incomes provided from the R&D activities and the total number of elements in the investigation groups of the DECivil. This indicator has the objective of measuring the importance of the research work to the financial health of the institution, and its importance to the labour market.

Explanatory factors: The institution age.

Target: 5.000€

b) Percentage of incomes from private sources

The percentage of incomes from private sources is the relationship between the private incomes and the total incomes of the DECivil. This indicator has the main purpose of evaluating the department's ability to attract private investment, and it is also an indirect measure of the R&D activities.

Explanatory factors: The institution age and the institution reputation.

Target: 50%

c) Costs with the staff per student

The cost with staff per student is the relationship between the total expenditures with the total number of elements of the academic staff. In the institutions with a large number of elements it is very easy to lose control of the amounts spent. This indicator has the main objective of checking if the department is losing the control of the budget, and managing well its resources.

Explanatory factors: The size of the institution.

Target: 50% per student

d) Maintenance and operational costs per staff

The maintenance and the operational costs per staff is the relationship between the maintenance and operational expenses with the staff cost and the total number of elements of the academic staff. This indicator has the purpose of measuring and controlling the financial wastes of the DECivil.

Explanatory factors: The size of the institution.

Target: 25% per staff member

4.3 Analysis of results

4.3.1 Customer perspective

Drop out rate

Unfortunately it was impossible to collect the drop out rates for the academic year 2006/2007. However, the activities report of the IST for the academic year 2006/2007 it is present the drop out rates of the DECivil courses in the year 03/04 to 04/05. Therefore, the drop out rates were:

Table 11 – Drop out rates

Programme	Drop out rate
Architecture	4.9%
Environmental Engineering	4.8%
Civil Engineering	2.9%
Territorial Engineering	7.9%

The average of the drop out rate of the DECivil is 3.60%. The value is very high to a department like the DECivil. If we consider that in the academic year of 2003/2004 the number of students in the department was the same as now, the DECivil loses about 72 students per year. The Territorial Engineering programme presents the worst performance to this indicator, while the Civil Engineering is the best. The DECivil performs above the target in the drop out rate.

Number of years needed to finish the programme

The average of the number of years needed for the students to finish their programmes in the DECivil are:

Table 12 – Number of years need to finish the DECivil programmes in 2006

Programme	Number of years needed to finish the programme
Architecture	5.6
Environmental Engineering	6.4
Civil Engineering	6.5
Territorial Engineering	6.7

The average of the number of years needed to finish the programme for the DECivil is 6.35 years. The table above shows that the Territorial Engineering students are the ones that need more time to finish their programme and, on the other hand, the Architecture students are the ones that finish their programme faster. In this indicator we can verify that the average of the department is better than the average of the IST, near seven years. The department is performing above the target defined above.

Students' satisfaction and quality of teaching

As mentioned before, the students' satisfaction and the quality of teaching of the DECivil are two indicators measured under the students' perspective and using the same survey, the Course Experience Questionnaire. The surveys were made on 24 June 2008, at the DECivil computer room (LTI CIVMAT) and the study rooms between 2:30pm and 17:00pm. It was decided that the students that had exams on that day would not perform the questionnaire, because that could influence their answers.

Table 13 – Student's satisfaction survey statistics data

Scales	Questions	Average	S. Dev.	Mode	Max	Min
Learning Resources	Q5; Q9; Q14; Q21; Q28	3.03	0.95	3.00	5.00	1.00
Good Teaching	Q3; Q8; Q18; Q19; Q20; Q23	2.54	0.93	3.00	5.00	1.00
Clear Goals and Standards	Q1; Q7; Q16*; Q27	3.05	0.79	3.00	5.00	1.00
Appropriate Workload	Q4*; Q17, Q24*; Q26*	2.30	0.96	2.00	5.00	1.00
Appropriate Assessment	Q10*; Q15*; Q22*	3.36	1.07	3.00	5.00	1.00
Generic Skill	Q2; Q6, Q11, Q12, Q13, Q25	3.60	1.04	4.00	5.00	1.00
General	Q29	3.51	0.90	4.00	5.00	1.00

* Reverse coded items.

Analysing the table above, we can observe that all the levels of satisfaction were, from the best to the worst, the generic skills, the general question, the appropriate assessment, the clear goals and standards, the learning resources, the good teaching and finally the appropriate workload.

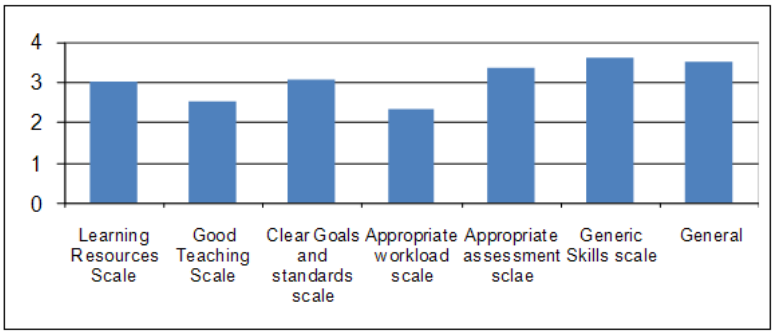

Figure 19 – Average of the levels of satisfaction

The figure above shows that the generic skills scale is the only that reaches the target defined before, (3.5). The appropriate workload scale and the good teaching scale are the only ones that are performing below the 3.00. Therefore, we can conclude that the students of the DECivil are unsatisfied with the quantity of work, and also with the teaching methods. However, the question that had better answer on the good teaching scale was the one directly related to the quality of the teachers, "My lectures are good at explaining things". It is an indicator that shows that the students believe in the competences of the academic staff, but are unsatisfied with the time that they spend with them. The fact that the workload had the worst result confirms the reputation of the DECivil, and the IST, of

demanding high levels of quality from the students and as it was mentioned before, the DECivil attracts the best Portuguese students.

Table 14 – Lowers average questions

	Question	Average	S.Desv
Q4*	The workload was to heavy	2.11	0.89
Q8	The staff put a lot of time into commenting on my work	2.11	0.84
Q19	The teaching staff normally gave me helpful feedback on how I was doing	2.14	0.92

* Reverse coded items.

Table 15 – Betters average questions

	Question	Average	SD
Q2	The course developed my problem solving skills	4.07	0.91
Q6	The course sharpened my analytical skills	4.05	0.78
Q25	My course helped me to develop the ability to plan my own work	3.84	0.81

The questions with the lowest and the highest score are described in the two tables above. The question with the lowest score of all is related to the workload, an expected result because as it was seen before this is the area where the students are more unsatisfied. The other two lowest scores are related to the questions on the teaching staff. This result does not mean that the students do not like the teaching staff, because other survey indicates otherwise (Brochado and Marques, 2008). However, the questions are more related to the time and the attention that the teaching staff gave to students and in this perspective the results are very poor, and the DECivil needs to improve this aspect. On the other hand, the questions with highest scores are all related to the generic skill scale. It is the recognition that the students are satisfied with the final result and that they are improving not only in the technical skills. These results are very interesting, and there is one question that still remains, if the academic staff increases their levels of attention to the students and the workload decreases, do the generic skills improve as well?

The students's satisfaction is a very subjective indicator, and the questionnaire can be changed and improved according to the DECivil objectives. If the target defined before was only related to the last question, "Overall, I am satisfied with the quality of my course", the indicator evaluation was positive. Nevertheless, the survey has several different points, and we can say that the DECivil is performing below the target defined.

Share of first preferences

The share of first preferences of the DECivil students in the academic year of 2006/2007 for the different programmes is:

Table 16 – Share of first preferences

Programmes	Share of first preferences
Architecture	61%
Environmental Engineering	52%
Civil Engineering	93%
Territorial Engineering	25%

The average of first preferences of the DECivil is 82%. It is interesting to notice that in this year only 4 students enrolled in the Territorial Engineering programme and in the first call from the 3 students that enrolled the programme none of them did it as first preference. In the academic year of 2007/2008 the Territorial programme closed and no students enrolled. The Civil Engineering programme is the one that is performing above the target, all the other programmes are performing very badly and the strategies need to be reformulated. Therefore, the DECivil is performing below the expectations of the stakeholders in this indicator. It is interesting to notice that Civil Engineering in the previous year had a share of first preferences of 98%, and in the year of 2007/2008 a share of 82%. Therefore, it is performing worse than the Architecture programme, 85%. This is an indicator that the DECivil board should take very seriously.

Average of first students

The average of first students in the academic year of 2006/2007 of the DECivil courses is displayed at the table 17:

Table 17 – Average of the first students

Programmes	Average of first students
Architecture	163.7
Environmental Engineering	128.8
Civil Engineering	150.3
Territorial Engineering	131.4

The DECivil average of first students is 149.7. It easily observed that the Architecture programme is the one that has the best average of the first students, and the Civil Engineering has decreased, some points in the 2006/2007 academic year. However, although the average of the Civil Engineering decreased it still is the highest of the country in the area. In the academic year of 07/08 all the programmes have increased their average of first students.

Graduate Employment

The indicator graduate employment is based on the data revealed by the Portuguese government office the "*Gabinete de Planeamento, Estratégia, Avaliação e Relações Internacionais*" (GPEARI) in a study called "*A procura de emprego dos diplomados com habilitação superior*". The Portuguese higher education institutions do not have the tradition of following the careers of their graduates. Therefore, the data available about the employment of the higher education graduates was until recently very few, and not public. However, the IST is an example to the Portuguese universities in this field, and recently the Office of studies and planning, "*Gabinete de Estudos de Planeamento do IST*" (GEP) has created a new office to follow the carriers of the IST graduates, the "*Observatório de Empregabilidade do IST*" (OEIST). The IST also has the reputation of having a good relation due with the employers, and every day the OEIST announce new offers for the IST students. For example, to the Civil Engineering course on the month of June 2008 the OEIST announced 17 job offers. The graduate employment rates to the DECivil programmes are presented in table 18:

Table 18 – Graduates employment

Programmes	Graduates employment
Architecture	100%
Environmental Engineering	99.5%
Civil Engineering	99.9%
Territorial Engineering	99.86%

The results of the study are very clear, and as anyone can see in the table above the employment of the DECivil graduates is excellent in all educational programmes. This refers to the number of graduate that are registered in the unemployment office, and have finished their graduation one year before. In this area the Department is not facing any problems, and it is obvious that is the national leader in the area, beating all Portuguese higher education institutions by far. The DECivil is performing above the indicator with distinction.

Average of first salary

Unfortunately, it was impossible in the scope of this dissertation to collect the values of the first salary of the graduates from the DECivil programmes. However, the office of studies and planning, "*Gabinete de Estudos e Planeamento*" of IST published the document,"*III Percurso Sócio-Profissional dos Diplomados do IST*" in November 2006 about careers of its graduates, and the data available related to a survey carried out in the period of 2002-2005.

Table 19 – Average of the first salaries

Programme	Up to 750€	751€ to 1500€	Over 1500€
Architecture	42.9	57.1	0
Environmental Engineering	35.7	53.6	10.7
Civil Engineering	6.2	69.1	24.7
Territorial Engineering	33.3	55.6	11.1

For this indicator it is impossible to calculate an average of the first salary for the entire department. However, looking at the result we can easily observe that for the majority of all programmes the graduates receive in their first job a salary between the 750€ and the 1500€. A special reference must be made to the Civil Engineers from whom only a small percentage receives less than 750€, while none of the Architecture graduates receives more than 1500€ in their first salary. The results are not exact, due to the process of collecting the information, but it can be said with no doubts that the DECivil is performing well, and above the target established.

Employers´ satisfaction

It was not possible to gather the data to calculate this indicator, and subsequently compare it to the target that was defined. However, beside this impossibility a proposal of the employers' satisfaction survey was defined, and it can be useful to anyone that desires to measure this indicator. Therefore, is recommended that the DECivil starts to monitor this indicator, not only to measure its own performance but also to increase the relationship to the employers.

4.3.2 Internal perspective

Number of theses oriented per Academic

The report activities of the IST published in 2007 only has the number of theses completed in the year of 2006. Therefore, there is no master thesis of Bologna included. The number of thesis completed in 2006 by the DECivil was:

Table 20 – Number of theses oriented in the DECivil

R&D Unit	*Diploma de Formação Avançada*	Doctor theses	Total weighted
CEHIDRO	10	1	3
CESUR	7	2	3.4
ICIST	20	7	11
Total	37	10	17.4

Therefore, the total number of theses oriented with success per member of the academic staff at full-time is 0.13. This number is very below the target defined before. However, it impossible to state if the DECivil is performing on the target in the year 2007, because all the graduates need to perform a master thesis to finish their graduation and the number of PhD completed in the DECivil almost certainly has increased. It is crucial to this indicator for collect the data of a most recent year to verify if the target as been achieved.

Number of courses, conferences, workshops or seminars to the outside community

Unfortunately, it was impossible to know exactly the precise number of courses, conferences, workshops or seminars provided by the DECivil. However, it is possible to verify the number of courses given by the FUNDEC and to present a general idea of the department activities in this area.

Therefore, according to the report of activities published in 2007, the FUNDEC provided to the outside community 33 courses, in a total of 896 hours. However, these numbers do not translate the actual dimensions of the FUNDEC activities. The FUNDEC has growth in the last years, and only in the first semester of 2008 it offered more than 30 courses. The DECivil is an example to all national higher education institutions in this area, and beside the department has increased its activities to the outside community the objectives have been achieved.

Student staff ratio

The student staff ratio of the DECivil is present in the report of activities for the academic year of 2006/2007 divided into two categories, the "*Professor ETI*", and the "*Docente ETI*". Therefore, the student staff ratio for the DECivil is:

Table 21 – Student staff ratio of the DECivil

Category	Student staff ratio
Professor ETI	12.6
Docente ETI	17.7

In this indicator, the DECivil is clearly achieving the objective it has set, and also the target established previously.

Research and development publications

The Research and the development publications, according to the weighs established before, in the year of 2006 are presented in the table 22.

Table 22 – Number of publications of the DECivil in 2006

Publications		CEHIDRO	CESUR	ICIST	TOTAL
Book	Author	1	4	5	10
	Editor	4	0	5	9
	Chapter	10	10	20	40
Articles	National	12	16	20	48
	International	15	26	20	61
Communications in Proceedings		40	52	230	322
Number of publications with weights		9.6	15.1	19.25	43.95
Number of elements		41	63	180	284
Number of publications with weights per element		0.234	0.240	0.107	0.155

The average of R&D publications by the weighs defined before for the DECivil is 0.155 per element of the investigation group. The numbers of publications are very below the expectations from a department with the prestige and the quality like the DECivil. It is interesting to notice that the CESUR is the investigation group that publishes more, not only per element but also in absolute values, like the international articles. The ICIST is by far the largest group of investigation of the DECivil, 180 elements. However, the publications are well below the expectations, especially the number of international articles. The evaluation of the R&D work of a higher education institution, or investigation unit, is very controversial and cannot be measured only by the number of publication, especially in a department of engineering, like the DECivil, and should never be seen without other indicators. Nevertheless, the number of publications is very important and a reflection of the research staff activity. Therefore, the conclusion is that the DECivil is performing below the target, and needs to increase the publications, or the R&D work.

Consultancy work

The consultancy work is an important part of the higher education institutions in the engineering area. The DECivil is no exception and it is a crucial element in the department activities. The DECivil has the reputation of being an example in the consultancy work, however it was impossible to collect the data about the department and confirm the DECivil prestige. It is crucial for the Department to collect and publish this data, not only for statistical reasons, but also in a self improvement perspective. The evaluation of the consultancy work should not be seen only by this indicator, because different works demand different durations, and other indicators, like the R&D incomes can also be an indirect measure of the consultancy work.

Patents per Academic

The patents were not always a priority for the Portuguese researchers. However, recently the academic community has paid more attention to this issue. The IST, through the office of support to the intellectual propriety "*Gabinete de Apoio à Propriedade Industrial*" (GAPI), have worked in the dissemination and information of the industrial and intellectual propriety, and inmany initiatives of sensitization, like seminars or conferences. Unfortunately, it was impossible to determinate the number of patents published by the DECivil. However, in 2006 the IST had 35 national patents and 3 international patents. The IST and the national higher education institutions need to increase the support for the intellectual propriety, not only to protect the researchers but also to be more competitive abroad.

Teaching staff qualifications

The data used to calculate the staff qualifications is available on the internet, on the DECivil webpage. Therefore, the teaching staff elements are "divided" in to several different categories, from the highest to the lowest, "*Professor Catedrático*", "*Professor Associado*", "*Professor Auxiliar*", "*Professor Assistente*", and finally "*Professor Estagiário*". The professors that belong to the first three mandatory categories mandatory must have a PhD degree. The professors can also be invited to teach because they have experience of special abilities, and these ones are called Invited professors ("Professores Convidados") and can belong to any category, holding or not a PhD degree. For the calculation of the Teaching staff qualifications only the permanent staff is considerate without including the invited professors. Therefore in the table below is presented the characteristics of the DECivil teaching staff as present in the table 23.

Table 23 – Number of professors in the DECivil

Category	Number of professors	% of professors
Catedrático	13	8.1
Catedrático Convidado	6	3.7
Associado	32	19.9
Associado Convidado	3	1.9
Auxiliar	55	34.2
Auxiliar Convidado	13	8.1
Assistente	33	20.5
Assistente Convidado	3	1.9
Estagiário	3	1.9
Total of full-time professors	136	84.5
Total of invited professors	25	15.5
Total number of professors	161	100

The qualification of the teaching staff is 74%. As it was expected this value is not only above the national average, as also above any average of any university in Portugal, as you can see in figure 15. It is below the target that was defined before, because the target is ambitious and considered the European goals of the department. In addition, the target could be increased if the initial goals were achieved. Therefore, the DECivil must invest more in the qualification of its teaching staff if they want to increase their competition internationally, and maintain the good quality levels nationally.

Student Computer Ratio

The computers and technological resources of the DECivil for the graduate students are available in the "*Laboratório de Tecnologias de Informação do Departamento de Engenharia Civil e Materiais*", LTICIVMAT. The resources available are very recent and all computers contain the software necessary for the students work. The LTICIVMAT at this moment has about 152 computers, but some of them are only the classes and are not available for the students to work. Therefore the number of computers to calculate this indicator is 84. Consequently the student computer ratio is 24.

This indicator does not consider the high level of students that have a laptop. However, 24 students for one computer is a very high number, and the DECivil did not achieve the target that was defined before. The department, besides the good quality of the LTICIVMAT, need to improve their technological resources.

4.3.3 Innovation and learning perspective

Annual spend with computer and library per student

Owing to the complex organization of the DECivil, and to the different sources of incomes it was impossible by the 2007 DECivil budget to know exactly the annual spend with computer and library resources per student. This indicator is very important in an innovation and learning perspective, and it is recommended that the DECivil collects this information, publishes it, and verify if it is according to the goals defined for the department.

Staff Satisfaction

Unfortunately, it was impossible to collect the data to calculate, and subsequently compare it to the target that was defined. However, besides this impossibility a survey about the staff satisfaction was defined, and it can be useful to anyone that desires to measure this indicator Therefore, it is recommended that the DECivil starts monitor this indicator, not only to measure its own performance but also because an organization that does not have statistical data, does not know itself.

Percentage of international students

The office of international relationships, "*Gabinete de Relações Internacionais*" (GRI) is responsible in the IST to provide support to all the international students, and calculate all the data related with them. Unfortunately, the GRIP only gave the numbers of the Erasmus students and the Brazilian students. However, these ones are a majority and can give a general idea of the DECivil indicators. Therefore the percentage of international students in the DECivil is present in the table 24.

Table 24 – Number of international students in the DECivil in 2007/2008

Programme	Erasmus programme	Brazilian exchange programme
Architecture	13	14
Environmental Engineering	9	1
Civil Engineering	24	6
Territorial Engineering	1	2

Table 25 – Number of international students in the DECivil in 2008/2009

Programme	Erasmus programme	Brazilian exchange programme
Architecture	21	3
Environmental Engineering	12	4
Civil Engineering	21	1

The number of international students in the DECivil at the academic year of 2007/2008, from the Erasmus programme and Brazil programme was 70. And in the academic year of 2008/2009 will be 62. The most obvious conclusion is that the number will decrease in the next year, and finally that in 2007/2008 it represents about 3.5%, a very low number for a department with the European reputation and goals like the DECivil. In this indicator the department does not achieve the target defined.

Percentage of national students studying abroad

The number of Portuguese students studying abroad by the Erasmus programme and the Brazilian programme to the academic years of 2007/2008 and 2008/2009 are:

Table 26 – Number of DECivil students studying abroad in 2007/2008

Programme	Erasmus programme	Brazilian exchange programme
Architecture	4	6
Environmental Engineering	22	
Civil Engineering	13	

Table 27 – Number of DECivil students studying abroad in 2008/2009

Programme	Erasmus programme	Brazilian exchange programme
Architecture	18	1
Environmental Engineering	6	0
Civil Engineering	67	3
Architecture	1	0

The total number of Portuguese students studying abroad by the Erasmus programmes and the Brazilian programme in the year of 2007/2008 is 45, and for the next year it will be 96. The number of students increased in only one year to more than the double, it is a very indicator and we hope the number to achieve higher rates. Despise the good news, the department still does not achieve the target that it was defined before and the percentage in 2007/2008 was only about 2.3%. However, it must be stated out two essential points to both indicators. The first one is that the numbers presented are below the real number, and do include other students, like the Africans that still are significant. The second one is that the targets defined are very robust and ambitious, this decision is based on the fact that the DECivil must increase its competition at international levels.

Academic staff rotation (Inbreeding)

It is very difficult to collect precise data related to the academic staff rotation, or the inbreeding in a higher education institution. The DECivil does not have any data available about its inbreeding levels. However, some FCT reports about the research units reveal that the inbreeding levels in the Portuguese universities are very high, causing many damages to the R&D production. Therefore, it is expected that the IST and consequently the DECivil has also high inbreeding levels, and the department board must increase the staff rotation as a priority for the future

Staff self-improvement

Unfortunately, it was impossible to collect the data to calculate, and subsequently compare it to the target that was defined. Therefore, it is recommended that the DECivil starts to monitor this indicator, not only to measure its own performance but also because an organization that does not have statistical data does not kwon itself.

4.3.4 Financial perspective

Research income per academic

The research income per academic indicators was calculated with the values available in the 2007 Budget to the DECivil. The budget shows the incomes from the different R&D groups, the CEHIDRO, CESUR and ICIST. Each group gives to the DECivil 5% of the incomes for its activities, therefore it is possible to know the total income from the investigation groups.

Table 28 – Incomes of the R&D units

Group	Amount from the budget (€)	Total amount (€)
CEHIDRO	11.000	220.000
CESUR	39.000	780.000
ICIST	30.000	600.000
Total	80.000	1.600.000

Therefore, the percentage of research income per element of investigation is 5.633€. The target defined before was achieved, and the DECivil is an example to all the departments. However, to the next year the target must be increased and be more ambitious, always in a perspective of self improvement.

Percentage of incomes from private sources

The percentage of incomes from private sources is based on the budget from 2007 to the DECivil. Therefore, the incomes of the DECivil are provided from two different sources, the incomes from the central bodies of the IST and the private sources.

Table 29 – Incomes of the DECivil

Incomes from the IST	260.580€
Incomes from privates' sources	214.459€
Total	475.039€

Therefore, the percentage of incomes from private sources of the DECivil is about 45%, below the target defined before. The department needs to raise its amounts of private sources.

Costs with the staff per student

Because the complex organization of the DECivil, and the different sources of incomes it was impossible by the 2007 DECivil budget to know exactly the costs with the staff per student. This indicator is very important in a financial perspective, and it is recommend to the DECivil that collects this information, publishes it, and verify if it is according to the goals defined to the department.

Maintenance and operational costs per staff

Outing to the complex organization of the DECivil, and the different sources of incomes it was impossible for the year 2007 DECivil budget to know exactly the annual maintenance and operational costs per staff. This indicator is very important in a financial perspective, and it is recommend to the DECivil that collects this information, publishes it, and verifies if it is according to the goals defined for the Department.

5 Conclusions

The Portuguese higher education sector is nowadays in times of profound changes, with a set of reforms in the Portuguese legal framework being undertanken. These reforms will not only restructure the governance and the management models of the higher education institutions, but also the quality assurance system. It is of the general knowledge that the Portuguese higher education institutions are performing below the expectations and their real capacity. Therefore, when the conclusions of the international evaluations of the sector, requested by the Portuguese government, were made public it was not shocking that the main recommendations included transversal changes in the entire system.

The international evaluations, and also a set of different reports about the higher education performance, clearly indicate that the Portuguese institutions are performing worse than the European institutions. Portugal has the third highest rate of early school leavers of the OECD countries, and in 2001 only 11% of the population had a higher education qualification. In the R&D activities the performance is not better, and besides the investments and improvement of the recent years, it is below its peers, for example, the number of new graduates per the number of new PhDs is more than the double of the United Kingdom. The poor performance of the Portuguese higher education has a direct relationship with the poor performance of the Portuguese economy in the recent years.

The critics of the international evaluations also included the quality assurance system, which was accused of being ineffective and with no consequences. The government rapidly began the urgent reforms, but ended with the previous system without the new system being operational. As a result the Portuguese higher education had no quality assurance system in the last couple of years, with the obvious consequences in the quality of the sector.

The national quality assurance systems in Europe are very diverse, and are a reflection of the country's culture and history. The Netherlands has a bi-national quality assurance agency in cooperation with Flanders. The Dutch system is based on the accreditation approach, where the final decision has a direct relationship with the public funds. Spain is at these moment launching a set of new evaluation programmes, a situation very similar to Portugal, but with some years of vantage because the Spanish agency is already in operation since 2002. The Spanish quality assurance system will be, in the future, based on accreditation, combined with the audit in some regions, and the assessment perspective, the only operational at the moment. The United Kingdom system is based on the audit perspective, a reflection of the country's culture where the institutions also have a higher level of governance autonomy. The allocation of the public resources do not fund teaching provision based on quality, justified on the argument that it only drives the extremes further apart. However, the analysis of the three different quality assurance systems shows that the British is the one that provides more information about the performance of the institutions to the general public, especially through the performance indicators published by HESA. It is also the one most based on a culture of evidence and information.

The main conclusion about the Portuguese quality assurance system is that much time has been wasted, and the Portuguese government should put the new agency in operation as soon as possible, but not at any price. The first objective is to guarantee that the new agency is completely independent,

not only from the government but especially from the institutions. This is the key element of the new system. The new agency must also have a legal framework to protect its decisions, and follow up procedures. It is also important that the procedures of evaluation are coherent and public, only that way a culture of evidence and information be established. Finally, we believe that is important to increase the competition levels between the higher education institutions, and that the allocating of the public funds has a clear relationship with the agency evaluations. In addition, it is also recommended that the Portuguese quality assurance system establishes and publishes every year a set of performance indicators, in accordance with the national goals, similarly to the performance indicators of HESA. We believe that this information will have a positive influence in the sector, creating a more open and transparent system for all the stakeholders, and increasing the levels of competitiveness between the institutions. The institutions will be able to see how well they are doing compared with its peers or past performance, and finally help the government to define their policies to the sector. It is fair to say that much hard work is done, and important reforms were made by the Portuguese government, however there is still much work to do and probably the hardest is still to do in the near future.

The use of performance indicators is almost inevitable when the evaluation of the higher education institutions is involved. The use of performance indicators implies some precautions, especially the assurance that they are translating exactly the objectives that are supposed to be measured. When the subject is the use of performance indicators to rank the institutions, the topic is much more controversial. The main goal of this thesis is not to debate the value of the academic rankings. However, this is an unavoidable subject. The rankings can bring many positive aspects to the higher education institutions, but always associated with the risk of producing wrong conclusions about the institutions performance. However, the main conclusion is that the rankings are here to stay, and the discussion about this subject is who should perform the academic rankings? and how can we make them more reliable?

The competitive environment of the markets, including the public sector, and the new economy based on knowledge demands more from the higher education institutions. Only with higher levels of accountability and with a culture of continuous improvement and innovation can the institutions survive, achieve their goals of producing highly skilled graduates and excellence in the R&D activities. The only way for the Portuguese higher education institutions achieve higher levels of quality and compete at a European level is to monitor itheir own levels of quality, creating a culture of innovation and improvement. The balanced scorecard is a management tool that can supply to the institutions the information that the traditional instruments do not, because it is based on four different perspectives, the customer perspective, the internal perspective, the innovation and learning perspective and the financial perspective, respectively. Many organizations in the world are using the balance scorecard tool to measure their performance, including world class universities. The advantages of using this tool are numerous. The balanced scorecard provides not only the traditional financial measures but a major focus on all the key outcomes. It increases the requirements for accountability, enables the policy makers to focus on what is more important, identifies the areas that are performing below the targets and performs the respective improvement plans. Besides, it is very simple to use and

understand. It is able to change the people's view on what is more important because the performance of the institution is clearly displayed, and leads to a culture of evidence. The most important aspect is that it allows to the institution to improve performance continually. The Portuguese higher education institutions need to monitor their own performance, and the balanced scorecard may be the perfect tool to do that.

One of the main conclusions of this dissertation is that Portuguese higher education institutions do not have a culture of accountability and evaluation, when compared with other European countries. The Portuguese higher education institutions do not have a public strategic plan, with their vision and clear goals and objectives defined to achieve in the future. It must be also referred to that it is very hard to find information and statistical data about the institutions' performance. In the specific case of the DECivil, some of the data was available in the "Relatório de actividades do IST". However, some data were impossible to collect, while other was not accessible to the students or other stakeholders, like the employers. It is important to state that despite the difficulties to collect data about the DECivil, the data available is more than in other Portuguese institutions.

The balanced scorecard applied to the DECivil can bring some important conclusions. The DECivil is definitely a reference point in the field in Portugal. The Department is performing very well in some specific areas, for example, it is certain that the DECivil courses are recruiting the best students in the country, and this has reflections on the programmes employability, which is very high and opposite to the country's tendency. It is also clear that the DECivil has an excellent performance in the services to the community, through the conferences, or the FUNDEC. However, despite the good performance at the national level, the Department needs to improve its performance in some areas, such as to expand the number of R&D publications, to increase the number of international students and invest more in the qualification of the academic staff, through the decrease of the inbreeding levels, and to establish a culture of innovation. Only in this way can the Department compete at an International level and not lose the best students to other European institutions.

In Portugal a culture of autonomy and accountability is not established in the higher education culture. The past governments had a great responsibility in this environment. However, the initiative of improving the sector's performance should begin in the institutions themselves. They should seek for new management models that decrease the financial wastes and create more value for the community. The stakeholders should also demand more information and quality from the institutions, especially the students and the employers. The future of the Portuguese higher education is in the hands of the reforming culture of the Portuguese community.

There is a need to further research in the issues related to the new governance models of the higher education institutions. The new Portuguese legislation gives the public universities the possibility of changing their status to foundation. It is important, not only for the institutions but especially for government, to study deeply the effects of increasing the autonomy levels of the universities for their future performance and competitiveness. It is jointly relevant to research what is the relationship between autonomy and the performance of the higher education institutions for the different governance and management models.

In addition, it is also important to develop different evaluation models of the higher education institutions and their relationship with the allocation of the public resources. The additional research about evaluation should focus especially in a set of performance indicators, to each different field, that translates the institutions goals and allows to the different stakeholders to take their own conclusions about the institutions performance. It is also interesting to study how the higher education institutions respond to a distribution of the public funds directly related to their performance, not only in terms competitiveness, but mainly regarding the effects in their performance.

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Annex 1 – Students’ satisfaction survey

Com este questionário pretendemos saber a opinião dos alunos sobre o DECivil. Lembramos que não há respostas certas nem erradas e que as mesmas são confidenciais.

1. Questões Gerais

1.1. Sexo: |__| Feminino |__| Masculino

1.2. Idade: _____ 1.3. Curso: _____

1.4. Ano: _____ 1.5. N.º de inscrições: _____

2. Avalie o seu grau de concordância com as afirmações abaixo apresentadas, numa escala de 1 a 5, em que 1 significa "discordo totalmente" e 5 significa "concordo totalmente". Assinale a sua resposta com uma cruz no espaço respectivo.

		1	2	3	4	5
1	Foi sempre fácil perceber o nível de qualidade esperado do meu trabalho					
2	O curso desenvolveu as minhas capacidades para resolver problemas					
3	O corpo docente motiva-me para dar o meu melhor					
4	A carga de trabalho é demasiado pesada					
5	Os Recursos bibliotecários correspondem às minhas necessidades					
6	O curso desenvolveu as minhas capacidades analíticas					
7	Eu normalmente tenho uma ideia clara sobre o que estou a fazer e do que é esperado de mim no curso					
8	O corpo docente perde tempo a comentar o meu trabalho					
9	Os materiais de estudo são claros e concisos					
10	Para o curso correr bem tudo o que preciso é uma boa memória					
11	O curso desenvolveu as minhas capacidades de trabalhar em equipa					
12	O curso deu-me confiança para enfrentar problemas não familiares					
13	O curso desenvolveu as minhas capacidades de comunicação escrita					
14	Foi sempre claro que materiais de estudo é que eu tinha à disposição para me ajudar					
15	O corpo docente parece mais interessado em testar o que eu memorizei em vez do que eu realmente sei					
16	Foi frequentemente difícil descobrir o que era esperado de mim no curso					
17	Geralmente tenho tempo suficiente para compreender os assuntos que tinha de aprender					
18	O corpo docente esforça-se para entender as dificuldades que eu possa ter para fazer o meu trabalho					
19	O corpo docente geralmente dá-me um feedback sobre como eu estou a ir					
20	Os meus professores são bons a explicar as matérias					
21	Os materiais de estudo são relevantes e actualizados					
22	Geralmente o corpo docente faz-me perguntas apenas sobre factos					
23	O corpo docente esforça-se para tornar as matérias interessantes					
24	Sinto muita pressão para ter sucesso neste curso					
25	O meu curso ajudou-me a desenvolver as minhas capacidades de planeamento					
26	A quantidade de trabalho neste curso significa que nem tudo pode ser realmente compreendido					
27	O corpo docente tornou claro desde o início o que era esperado dos alunos					
28	Quando usados, os recursos informáticos usados nas aulas foram eficazes e úteis					
29	De uma forma geral, eu estou satisfeito com a qualidade do curso					

Annex 2 – Proposal to staffs' satisfaction survey

Com este questionário pretendemos saber a opinião do corpo docente sobre o DECivil. Lembramos que não há respostas certas nem erradas e que as mesmas são confidenciais.

1. Questões Gerais

1.1. Nº de Anos de Ensino ____
1.2. Nº de anos no DECivil _____
1.3. Nº Anos na mesma categoria ___

2. Avalie o seu grau de concordância com as afirmações abaixo apresentadas, numa escala de 1 a 5, em que 1 significa "discordo totalmente" e 5 significa "concordo totalmente". Assinale a sua resposta com uma cruz no espaço respectivo. No caso de não ter opinião ou a situação não se aplicar marque 0.

2.1 Desenvolvimento da carreira

	1	2	3	4	5	0
Tenho oportunidades para desenvolver as minhas capacidades profissionais						
Tenho o apoio financeiro necessário para desenvolver as minhas actividades profissionais						
Tenho tempo disponível para desenvolver as minhas capacidades profissionais						
Sou encorajado para desenvolver as minhas capacidades profissionais						
No DECivil tenho oportunidades para subir na carreira						
As práticas de contratação de novos elementos são justas						

2.2 Liderança e Supervisão

	1	2	3	4	5	0
Tenho confiança na liderança da minha unidade						
Tenho oportunidade de avaliar os meus superiores						
Recebo feedback sobre o meu desempenho						
Tenho uma boa comunicação com os meus supervisores						
Existe um clima de confiança e respeito mutuo com os meus supervisores						

2.3 Avaliação e Reconhecimento

	1	2	3	4	5	0
As avaliações de desempenho são justas						
Os procedimentos de avaliação são justos e claros						
Tenho oportunidade para contestar à minha avaliação						
Existe equidade no mérito e nos aumentos dos salários						
Existe uma política de sanções para os desempenhos fracos						
Sou reconhecido pela minha contribuição para a minha unidade						

2.4 Condições de Trabalho

	1	2	3	4	5	0
Existe uma distribuição justa de trabalhos na minha unidade						
A quantidade de trabalho na minha unidade é equilibrada						
Tenho os recursos adequados para realizar o meu trabalho						
Sou pago justamente pelo trabalho que produzo						
As instalações físicas no trabalho têm as condições necessárias						
O meu grupo de trabalho tem boa reputação a nível nacional						

2.5 Relações externas do DECivil

	1	2	3	4	5	0
As relações com os estudantes são boas						
As relações com os directores são boas						
As relações com outras unidades são boas						
As relações com outras universidades são boas						
As relações com o mundo empresarial são boas						
As relações com a comunidade são boas						

2.6 Satisfação Geral

	1	2	3	4	5	0
O DECivil é um bom local para se trabalhar						
Eu gosto de trabalhar no DECivil						
Eu estou orgulhoso de trabalhar no DECivil						
Eu estou empenhado em trabalhar no DECivil						
Eu tenho independência no meu trabalho						
Eu confio nos meus colegas de trabalho						

3. Os meus planos para o futuro incluem:

a)	Continuar na minha posição actual e procurar uma promoção	
b)	Continuar no DECivil, mas mudar de unidade	
c)	Abandonar o DECivil e procurar lugar noutra universidade	
d)	Abandonar a carreira académica	
e)	Abandonar o DECivil para me reformar	
f)	Outra	

Se escolheu outra, Qual? _____

4. O que eu gosto mais no DECivil é (escolher 3 das seguintes opções):

a)	Nada	
b)	Os benefícios	
c)	Os meus colegas de trabalho	
d)	Os Estudantes	
e)	A missão e os objectivos	
f)	O trabalho que eu faço no DECivil	
g)	As oportunidades para desenvolver a minha carreira	
h)	A localização	
i)	O ambiente de trabalho	
j)	A formação e as oportunidades para desenvolver as minhas capacidades profissionais	
l)	O salário	
m)	A variedade do trabalho	

n)	A flexibilidade do horário	
o)	O reconhecimento de um trabalho bem feito	
p)	O trabalho é gratificante	
q)	Outro	

Se escolheu outro, Qual? _____

5. O que é que podia melhorar no DECivil para me ajudar no meu trabalho (escolher 3 das seguintes opções):

a)	Nada	
b)	O meu supervisor podia ser mais apoiante	
c)	Aumentar os salários	
d)	Melhorar outros benefícios (saúde, dentista,…)	
e)	Clarificar e comunicar a missão e os objectivos do DECivil	
f)	Participar nas decisões que afectam o meu trabalho	
g)	Providenciar mais e melhor formação	
h)	Reduzir os conflitos entre membros do DECivil	
i)	Melhorar as relações entre os supervisores e os empregados	
j)	Aumentar o número de trabalhadores do DECivil	
l)	Melhorar no reconhecimento e no feedback	
m)	Melhorar a orientação para os novos membros	
n)	Melhorar as oportunidades para subir na minha carreira	
o)	Reduzir o número de novas vagas do DECivil	
p)	Outro	

Se escolheu outro, Qual? _____

6. Os principais factores que me fazem querer abandonar o DECivil são (escolher 3 das seguintes opções):

a)	Baixo salário e poucos benefícios	
b)	Conflitos com outros membros do DECivil	
c)	Poucas horas de trabalho	
d)	Trabalho demasiado stressante, difícil ou exigente	
e)	A missão ou os objectivos	
f)	Exigências do meu outro emprego	
g)	Falta de oportunidades para subir na carreira	
h)	Razões pessoais	
i)	A localização	
j)	Conflito com o meu supervisor	
l)	Favoritismo e falta de equidade	
m)	Falta de pessoal	
n)	Demasiado criticismo sobre o meu trabalho	
o)	Falta de oportunidades para desenvolver as minhas capacidades profissionais	
p)	Nenhuma das razões anteriores	
q)	Outro	

Se escolheu outra, Qual? _____

7. Quais os principais factores que me fazem querer ficar no DECivil (escolher 3 das seguintes opções):

a)	Nada	
b)	Os benefícios	
c)	Os meus colegas de trabalho	
d)	Os meus supervisores ou gestores	
e)	Os estudantes	
f)	Os estudantes apreciam o meu trabalho	
g)	A missão e os objectivos	
h)	O trabalho que eu faço	
i)	Oportunidade para subir na carreira	
j)	Localização	
l)	O ambiente de trabalho	
m)	Oportunidade para melhorar as minhas capacidades profissionais	
n)	O salário	
o)	A variedade do trabalho	
p)	O reconhecimento pelo meu trabalho	
q)	O trabalho é gratificante	
r)	Trabalhar no DECivil é prestigiante	
s)	Outro	

Se escolheu outra, Qual? _____

Annex 3 – Proposal to employer's satisfaction survey

Com este questionário pretendemos saber a opinião do empregadores sobre os alunos graduados do DECivil. Lembramos que não há respostas certas nem erradas e que as mesmas são confidenciais.

Classifique as capacidades abaixo descritas sobre os alunos graduados do DECivil e a importância que tem para o desempenho da sua actividade profissional, numa escala de 1 a 5, em que 1 significa "Muito Insuficiente" ou "Muito Pouco importante" e 5 significa "Muito Bom" ou "Muito Importante". Assinale a sua resposta com uma cruz no espaço respectivo. No caso de não ter opinião ou a situação não se aplicar marque 0.

1 – Conhecimentos e compreensão

		Importância	Avaliação
1.1	Conhecimentos do empregado no campo de estudo		
1.2	Compreende a informação relacionada com o emprego		
1.3	Conhecimento técnicos específicos exigidos para o emprego (menos os informáticos)		
1.4	Conhecimento específicos informáticos exigidos para o emprego		
1.5	Compreende o contexto organizacional		
1.6	Compreende o ambiente internacional do negócio		
1.7	Compreende os sistemas e organizações (sistemas políticos, mercados, culturas)		
1.8	Conhecimento de pessoas e culturas de outros países.		
1.9	De uma forma geral estou satisfeito com os conhecimentos e compreensão dos empregados		

2 – Qualidades esperadas os graduados

		Importância	Avaliação
2.1	Flexibilidade (responde bem às mudanças)		
2.2	Criatividade (identifica novas abordagens aos problemas)		
2.3	Empatia (compreende as situações, sentimentos ou motivos dos outros)		
2.4	Fiabilidade (pode-se depender dele para completar os trabalhos)		
2.5	Integridade (compreende e aplica princípios éticos nas decisões)		
2.6	Autodisciplina (exibe controlo no comportamento pessoal)		
2.7	Atitude positive perante o trabalho		
2.8	Vontade de aprender		
2.9	Compreende e executa os trabalhos propostos		
2.10	Aceita a responsabilidade pelos seus actos		

3 – Capacidades Gerais

		Importância	Avaliação
3.1	Comunicação escrita		
3.2	Comunicação geral		
3.3	Ouve os outros		
3.4	Organizar informação para apresentação		
3.5	Pensamento crítico (avaliar a informação, tomar decisões)		
3.6	Cálculo numérico		
3.7	Ler		
3.8	Conhecimentos básicos de informática		
3.10	Conhecimentos avançados de informática		
3.11	Usar equipamento ou tecnologia específica para o trabalho		
3.12	Liderança		
3.13	Trabalho de equipa		
3.14	Relações comerciais		

4 – Capacidades Específicas

		Importância	Avaliação
4.1	Gestão de recursos organizacionais (orçamentos, etc…)		
4.2	Línguas estrangeiras		
4.3	Gestão de projectos		
4.4	Negociação		
4.5	Capacidade de orientar outros colegas de trabalhos		
4.6	Capacidade para definir objectivos e o tempo para os cumprir		
4.7	Capacidade para passar da teoria à prática.		