



Accounting for Higher Education Institutions: The Impact of Corporate Social Responsibility

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Nota Introdutória

A Escola Superior de Tecnologia e Gestão (ESTG) do Instituto Politécnico da Guarda IPG) congratula-se pelo facto do Professor Doutor *David Crowther*, da *London Metropolitan University*, Reino Unido ter aceite o convite para realizar uma visita de trabalho e investigação científica a decorrer entre os dias 9 a 15 de Novembro de 2002. Temos a certeza que com esta visita será possível desenvolver um debate privilegiado entre toda a comunidade Docente e Discente.

É igualmente um enorme privilégio dar início à série *Estudos e Documentos de Trabalho* com seis *papers* da autoria do Professor David Crowther. Esperemos que este seja o estímulo e o incentivo que falta para que, em particular a comunidade académica da ESTG, apresente trabalhos científicos que estimulem a discussão científica.

Não se poderá deixar de agradecer à Fundação para a Ciência e Tecnologia que, através do Fundo de Apoio à Comunidade Científica, generosamente aceitou a nossa candidatura, bem como todos aqueles que directa e indirectamente contribuíram para a sua concretização.

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Abstract

Accounting for Higher Education Institutions (HEI) is centred in the new public management practices developed in the management techniques of the private sector. Although in this research, higher education is a Big Option of the Plan and a budget priority adopted by the Portuguese Government; these produce several impacts on the Corporate Social Responsibility (CSR) of HEIs. If neither CSR nor accounting will subordinate to the other, then higher education must be a strategic imperative. We argue that HEI should promote a full disclosure of tri-dimensional accounting information that should be driven mainly by CSR principles.

The empirical evidence is from a sample of 59 HEIs in Portugal. We seek to explain the factors that influence the implementation of the new accounting system in Portuguese HEIs and develop an exploratory factor analysis which analyzes the 106 original variables obtained from the survey. The results show diversification of sub-system, geographical location and legal status.

Also, we discuss the behaviour of HEIs that present several difficulties in the implementation of management accounting and in the implementation of public official accounting plan, while considering accounting information useful and promoting the development of its execution. These factors will make understandable the new role of accounting to achieve the main objectives of the Bologna Process in Portugal, based on the CSR principles of transparency, accountability and sustainability.

Topic: OBA – Organizational and Behavioural Aspects of Accounting.

Category: Empirical Survey.

Key Words: Corporate social responsibility, Accounting, Portuguese Higher Education Institutions.

JEL Classification: M14 – Social responsibility; M40 – Accounting general.

INTRODUCTION

Higher education is a constitutional right (AR, 1976), Big Option of the Plan (PGC, 2005) and a budget priority adopted by the Portuguese Government; these produce several impacts on the Corporate Social Responsibility (CSR) of HEIs. But, the global society, citizens and international institutions have been focus substantial attention on public spending and financial resources, as the report of OCDE (2006: 8) defends:

“While supporting higher education is a budget priority in Portugal, the low growth of the economy and the fiscal consolidation requirements clearly limit the amounts which can be spent.

The new public management practices need to implement changes in the management, but many HEIs are still learning what it means to be a public service and are still in the process of developing approaches and methods to manage their resources (see Deem, 2004). Nevertheless, managing efficiency, with effectiveness and economic in these institution have been a difficult process, because the multiple objectives of public services, among which does not belong profit maximization, have made more difficult its accomplishment. So, among the alternatives developed to allow this sector to operate with appropriate administration mechanisms with the objective of contributing actively and efficiently to the decision-making process, the author note the need of information generated by accounting.

This research presents dual theoretical frameworks for the analysis of accounting in HEIs. The first theoretical framework is based in accounting theory and disclosure information, providing explanations for economic and social decisions (see Gray *et al.*, 1994; Tilt, 1994). The second theoretical framework as its origins in organisational and sociological theory (see Rahaman *et al.*, 2004) that will assure the link of corporate social responsibility as a fundamental objective to influence accounting for health care.

This paper is organized as follows. Section 1 explains the Higher Education System in Portugal. Section 2 presents the implementation of the new accounting system in Portuguese HEIs. Section 3 develops an empirical evidence of the factors that influence the implementation of accounting in HEIs and justify their impact on the CSR principles of transparency, accountability and sustainability. Section 4 discusses the implications, including limitations and issues for further research.

1. THE HIGHER EDUCATION IN PORTUGAL

Since 2006, the Decree-Law 74/2006 (MCIES, 2006b) approves that the Portuguese higher education allows four different levels: the undergraduate degrees (*bacharelato* and *licenciatura*) has six semesters and some of them with a professional experience period and in the postgraduate level appears the master's degree, the doctoral degree and the *agregação*. The Master degree has four semesters with a curricular part and the preparation and public discussion of an original dissertation or professional experience period. The doctoral degree has six semesters with a curricular part and the preparation and public discussion of an original dissertation. The highest possible qualification is the *agregação*, reserved to holders of the doctoral degree.

In February 2005, the Decree-Law 42/2005 was approved regulating the principles and instruments for the creation of the European Higher Education Area (MCIES, 2005a). This new legislation applies to all higher education institutions and degree programmes and it offers three official graduation levels: license, master and doctor. The duration of these levels change according with the degree and field of study. On average, the license degree has 3 years (or 180 credits), but in fields of study such as engineering, law and architecture could be 5 years and in medicine till 6 years; the master degree has 2 years and doctor degree has 3 years.

Table 1. Number of degree programmes registered for the academic year 2005/06

Sub-system of Higher Education		Number of degree programmes registered, 2005-2006		
		"Bachalato"	"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

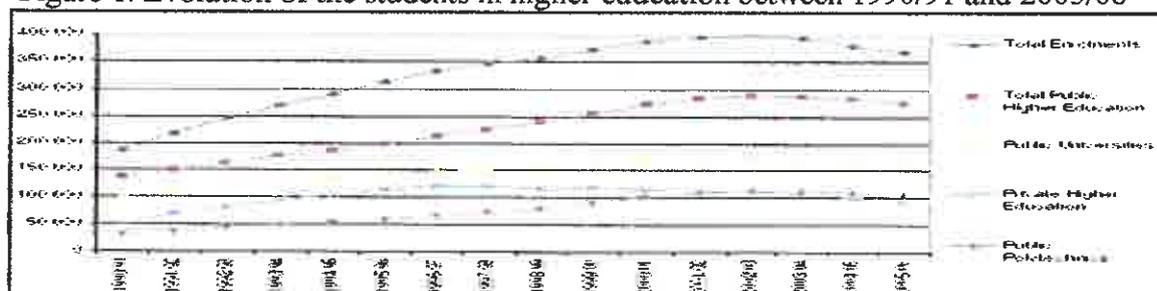
Source: MCIES (2006a).

In table 1 is possible to observe that in the academic year of 2005/2006, before the implementation of the Bologna Process (see MCIES, 2005b), the total number of degrees was 622, subdivide by two-cycle structure (Bachelor and License) and Master in different fields of scientific knowledge and make it available for each of the HEI in a specific sub-system. All these degrees has been in discussion in Portugal as in all of Europe as part of the Bologna Process, but this is not an ending process so many degree are still change and they may occur in the next several years.

Thus, it is true that the main issues with respect to higher education are the accessibility, equality of opportunities, quality, autonomy, professional profiles that tend to be discussed imprecisely by the police-makers. So, the global society and Citizens have to face the gap between the political discourse and the real social needs, but higher education is a strategic imperative and neither CSR nor accounting will subordinate to the other.

In the figure 1 is possible to conclude that the higher education system has rapidly grown from 30.000 students in the sixties, to nearly 400.000 students by the end of the 20th century, as it was opened to young people of all social classes since the early 70s. The new degrees and diversification of the field of study allow the higher education system in the national context to strengthen its capacity and level of specialization, as well as to help broadening the qualification of the Portuguese population and its knowledge base in an international context (MCIES, 2006a).

Figure 1. Evolution of the students in higher education between 1990/91 and 2005/06



Source: MCIES (2006a).

However, as the Portuguese higher education system is characterised by diversification of sub-system (polytechnic versus university), dispersion on geographical location (all over Portugal, *Madeira* and *Açores* Autonomous Region) and different legal status (private versus public) the concept of stakeholder assumes different meanings and weights. The concept of stakeholder in HEIs and their influence in the public management practices are very different. For example, in the governing bodies of each public university the legislation allows the participation of external stakeholders (firms and official entities).

However, in public polytechnics, their influence is much bigger, because the external stakeholders belong to the governing body (as the General Assembly) as well as in the election of its president.

It could mean that each HEI defines itself an attitude in society that contribute to a global environmental. Consequently, as Jones (1980: 65) states:

“once this concept of corporate social responsibility is accepted, the problem, as before, becomes one of implementation”.

These concepts emphasis aspects of the social responsibility of the HEI and shows the growing recognition that values, ethics and behaviour of HEI can have (positive and/or negative) impacts in the society.

One example is the participation of external stakeholders has a potentially valuable to the HEIs, because their autonomy act or Law 54/90 (AR, 1990b) takes a much more forceful position concerning the participation of stakeholders. It is important to argue that the polytechnics have a closer connection with the Portuguese economic and industrial structures, while they are also expected to have a clearly regional orientation that is one of the reasons of their dispersion on geographical location. Almost, each capital of district (administrative subdivision of the Portuguese territory) has one polytechnic institution and the universities are only in the bigger cities of Portugal (such as: *Lisboa, Porto, Coimbra, Braga, Aveiro, Évora, Faro, Covilhã, Vila Real, Ponta Delgada e Funchal*). In the perspective of the OCDE (2006: 8):

“Considering both public and private universities and polytechnics, there is overcapacity in higher education. At the same time, access to tertiary education remains very selective. The system is not fully utilised and needs to be re-organised and rationalised, by merging or closing down some institutions and streamlining disciplines taught, in view of challenges for the future. At the higher education level, policies should focus on increasing success rates. This should be achieved by a diversification of education streams and opportunities and quality improvements gained through enhanced scientific capacity and stronger autonomy and accountability of institutions”.

The authors believe that the higher education system needs to be re-organised and rationalised, because the growth of higher education occurred essentially in the scientific areas of classic studies, social sciences (namely economics and management), and legal studies, which were supported by private education (see Correia et al., 2002), and in technical training, through the expansion of public education.

But the national strategic imperative to higher education system should be the decentralization from the big cities to small cities was student profile is more adaptable. The new lemma will be “learning and good quality of life”, where the students will develop their capabilities as higher level students, with good standards of life, good environment, low cost of living and guaranteed a sustainable development of the country (see Abreu et al., 2003). All these aspects will introduce in HEI and global system the need of sustainability. This principle of CSR has a significant role to play in the development of higher education based on the relationship between Government, Society and Higher Education Institutions. The sustainability principle of CSR proposed by Crowther & Rayman-Bacchus (2004: 239):

“is concerned with the effect which action taken in the present has upon the options available in the future. If resources are utilised in the present then they are no longer available for use in the future, and this is of particular concern if the resources are finite in quantity”.

Table 2 summarises the latest available statistical data on the qualification progress of the Portuguese population between 1961 and 2001. The illiteracy rate register a big reduction since 1961 and at the same time the ratio of students with higher education in the level of 18-22 years increase and schooling rate at 18 years. All these statistics as the result of the implementation of the Basic Law on the Education System in October 1986 and amended in September 1997 that establishes the general rules governing all levels and types of education, its aims and scope, the conditions for admission to higher education as well as the types of institutions involved. So, probably as the report of OECD (1987: 16) argues the plurality of functions of each HEI is improving in the principal areas as:

“1) to provide post-secondary education; 2) to develop research and new knowledge; 3) to provide society with the necessary skills; 4) to carry out highly specialized training; 5) to strengthen the competitiveness of the economy; 6) to act as a selection filter for highly demanding jobs; 7) to contribute towards social mobility; 8) to provide services to the community; 9) to serve as a paradigm of social equality; and 10) to prepare the leaders of future generations.”

Table 2. Distribution of indicators of the qualification progress of the Portuguese population (%) between 1961 and 2001

	1961	1971	1981	1991	2001
Illiteracy rate	33	26	19	11	9
Students in higher education population 18-22 years old	4	7	11	23	53
% Population with higher education	0.8	1.6	3.6	6.3	10
Schooling rate at 18 years of age	-	-	30	45	62

Source: MCIES (2006a).

The development of the education system will reflect in the society and in the citizens all the concerns in terms of social responsibility (see Teixeira et al., 2003), because education and HEI have an aim as public services they are. One obvious point of discussion is the accountability of the system that will promote equal educational opportunities against the background of the constitutional provision that elevates accountability above a management tool to a national goal and value. The accountability principle of CSR proposed by Crowther & Rayman-Bacchus (2004: 240) is:

“concerned with an organization recognising that its action affects the external environment, and therefore assuming responsibility for the effects of its actions”.

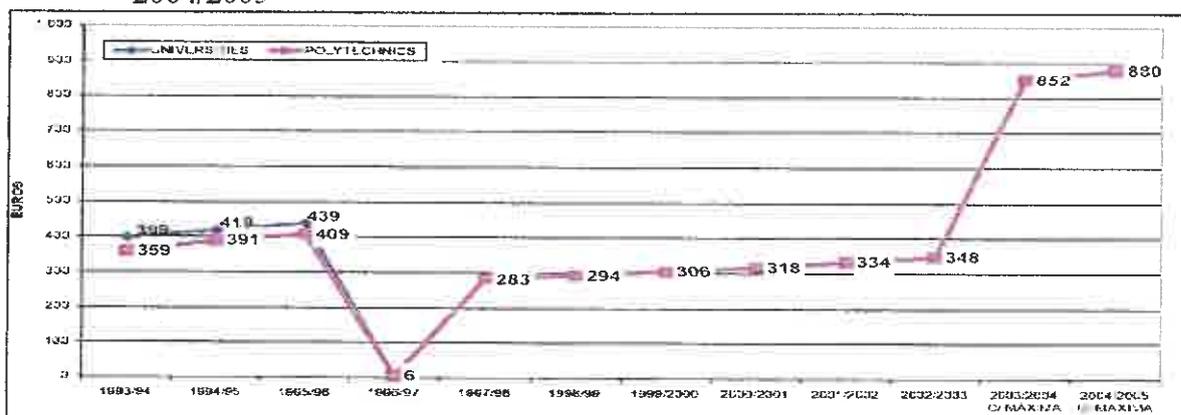
Accountability therefore necessitates the development of appropriate measures of the performance and the reporting actions. This principle of CSR knows that the financial flow of higher education system managed by different entities will recognize trends, recent developments and prosperity in a range of its activity. In the perspective of the OCDE (2006: 8):

“Adequate financing could be provided by a combination of budget resources, tuition fees and alliances with enterprises or research centres. Raising fees for tertiary education while developing the loan system (perhaps with repayment contingent on post-graduation income) would be more equitable and raise

efficiency. Paying higher tuition fees would make students attentive to the quality and subjects being supplied, thereby putting pressure on higher-education institutions to respond to the needs. Moreover the additional resources would allow the quality of staff and research to be raised, even as coverage broadens."

In the Portuguese HEIs each student has to pay tuition fees, but this question has been a disorderly matter, especially in latest years. In the years 60s, the amount usually paid was near € 6,00, because the value was so small, the Portuguese Government decided to introduce the payment of fees. In figure 2, it was possible to observe the changes in the last decade that it was characterised by increasing cost-sharing both by raising the level of tuition fees in public HEIs and by expanding full-cost fee in private HEIs. So, in 2003/2004, the tuition fee in public HEIs was fixed by the Government bodies of each HEI within a range € 455,00 to € 852,00. However, most the HEIs need to finance their activities and large range in the area of engineering decided to charge the maximum tuition. In the 2004/2005, the range was between € 475,00 and € 880,00.

Figure 2. Evolution of the Tuition fees in Higher Education System between 1993/94 and 2004/2005

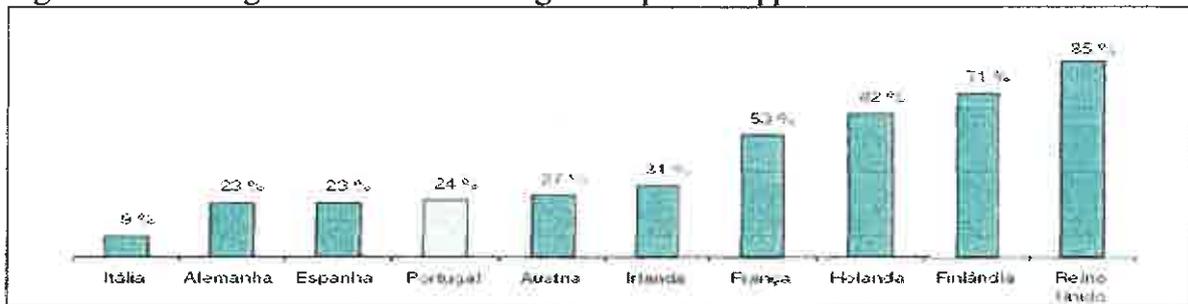


Source: Johnstone (2005: 3).

The higher education student support system aims to mitigate the economic difficulties faced by students from disadvantaged social backgrounds (see Dima, 2005). Thus, the Decree-Law 132/80 established a comprehensive student support system by creating an autonomous service associated to each HEI (MEC, 1980). About 24% of higher education students receive direct public support in the form of a grant as shown in figure 3, which represents a fraction similar to that in Spain and considerably higher than Italy, but still considerably smaller than United Kingdom, Finland, Netherlands, France, Ireland and Ostrich.

The implementation of institutional, administrative and financial autonomy, in 1988, for the Universities, and in 1990, for the Polytechnics, had an important impact upon the students' support system (see AR, 1990). In fact, the University Autonomy Act conferred public universities an increased degree of autonomy and responsibility for staff and students, and committed to the rector the definition of the policy for the students support system. So, each HEIs offers grants to their students that follow a group of rules published each school year that will allow to promote a contest between all students and the grants are provided through the system of social support operating at full expenses.

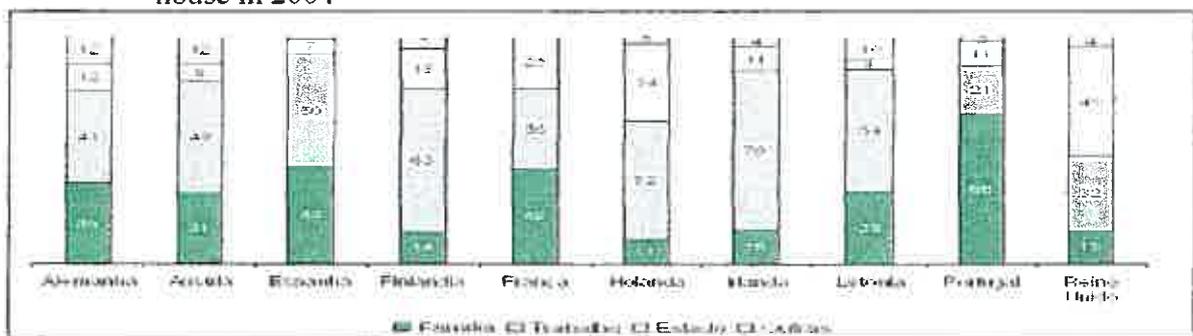
Figure 3. Percentage of students receiving direct public support in 2004



Source: MCIES (2006a).

In addition, a loan system is provided through commercial banks at commercial rates, but a very limited number of students choose this option. The authors believe that one reason is the financial help of the family and this was justify by 66% of students explain that the income is provided by their families, independently of where the students are living, as it was show in figure 4.

Figure 4. Relative level of the sources of income for students staying at their parent's house in 2004



Source: MCIES (2006a).

It is important to remember that each public HEI has complete institutional, administrative and financial autonomy and only need to present at the Minister of Science, Technology and Higher Education (MSTHG) the new degrees. In contrast, the private HEIs have a firm need to be approved before the creation of the institution itself and require always prior approval from the Minister of the new degrees. Between other aspects, private and public HEI do not have the same conditions. It is understandable that the transparency and at the same time responsibility for the harmony, cohesion and credibility of the national quality assurance system rests with the National Council for the Evaluation of Higher Education (NCEHE) established by Decree-Law 205/98 (ME, 1998). It is consultancy body of the evaluation system that includes professors from the different sub- systems (universities/polytechnics and public/private), with representatives from the Government.

Table 3. Number of study programme evaluated through CNAVES since 2000 till 2005

Year	University Study Programmes			Polytechnic Study Programmes		
	Public	Private	Total	Public	Private	Total
2000/01	86	11	97	66	61	127
2001/02	141	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

Source: NCEHE (2006:32).

The authors argue that, during that period, each Governments and policy-makers did not take any action or position based on the reports from the evaluation process presented in table 3. An excessive number of undergraduate degrees (*bacharelato* and *licenciatura*), in a total of 1.763, with very imaginative denominations with distribution of 647 in public universities, 58 in the catholic university, 299 in private universities, 532 in public polytechnics and 227 in private polytechnics. Also, another problem that have financial implication in the budget of each HEI is that some of the study programmes are attracting a low number of students, for example, 842 courses enrol a total of less than 100 students each; 502 of these have less than 50 students and 212 have less than 20 students each (NCEHE, 2006).

Thus, there is no national accreditation system run by the Government or by any other independent agency. In view of the above, the official recognition of a study programme obeys to mere bureaucratic process. This question raises the problem that the Bologna Process needs to justify the overall evaluation requested to OECD, together with that requested to European Association for Quality Assurance in Higher Education (ENQA) in November 2005. In this process another principle of CSR is putting in question that is the Transparency. This principle of CSR is not followed by HEIs, society, government and citizens in the higher education system despite of being used in promotion information. Transparency proposed by Crowther & Rayman-Bacchus (2004: 241) is:

“the external impact of the actions of the organization can be ascertained from that organization’s report, pertinent facts are nor disguised within that report and can be seen to be a part of the process of recognition of responsibility”.

On the other hand, Gelb & Strawser (2001: 1) express that:

“socially responsible firms are more likely to provide this increased disclosure through better investor relations practices”.

Against this tendency the disclosure of information does not include the available choices made by the citizen and usually promote disinformation to the society, especially based in the political objectives. In countries where entities in the HEI are financed through the public spending, the problem of the orientation of the all system is fundamental. In those entities an economic conception of the social responsibility as a global corporate citizenship and stakeholder management practices will emerge as an alternative to traditional management practices (Windsor, 2001).

2. THE ACCOUNTING FOR HIGHER EDUCATION INSTITUTION

All over the world as in Portugal and in recent decades, important reforms have begun to be implemented in public accounting in order to improve the disclosure of economic and financial information presented by HEIs and other public entities (see Jacobs & Van der Ploeg, 2006). These reforms have been made in a context of the redefinition of the public sector in the national economy in the framework of the new public management practices that aim to control public expenses through the implementation of objectives to each entity, as well as the introduction of administration techniques that enhance the concept of public service.

As public service, the funding is allocated directly to the HEIs (public or private), including: the basic funding for teaching in the public institutions, through a funding formula; a contractual funding for specific issues; direct funding to grants students and indirect funding to students in the public institutions (meals, accommodation, sports, healthcare). Additionally, the each HEI based in a contract-programme negotiate with the Ministry the funding for investments on new buildings and equipment, based on the proposed institutions' development plans some of them also financial supported by the European Union Funds.

Financial and management accounting in the public sector was introduced by law in 1997 (MF, 1997), with the publication of Public Official Accounting Plan (in Portuguese: *Plano Oficial de Contabilidade Pública* - POCP). After this plan several other accounting plans also appeared, adapted to the specifics of each activity of the public sector, and providing respective entities with a self-information system and administration. The Official Accounting Plan of the Education System (in Portuguese: *Plano Oficial de Contabilidade para o Sector da Educação* - POC-E) is a good example, integrating three aspects: budget, financial and management accounting; giving significant emphasis to the last one (MFE, 2000). At the same time, the Public Administration Accounting Normalisation Commission has been approved to promote all this new is of public accounting (MF, 1998, 1999a, 1999b, 2001). However, the implementation of one system like this, within an organization is actually a complex activity that, besides demanding numerous human, physical and financial resources and faces limitations of time.

The authors argue that HEI should promote a full disclosure of tri-dimensional accounting information that should be driven mainly by CSR principles. The disclosure and interpretation of the accounting information is an important skill of accountants. However, the accounting for higher education system starts to follow the Official Accounting Plan of the Education System. For this reason, more accurate and reliable accountability must be developed for the higher education system to be transparent to society needs. It will be necessary that different approaches of financial analysis are recognise the benefits of the integrate the economic and financial indicators used in the financial and management accounting as well as assess the health care indicators based on CSR principles. This offer a context to study several and fundamental social responsibility aspects that allows the right of all citizens to have higher education that provides well-being and good quality of life.

The Decree-Law 197/2003 specifies the economic activity classification (PCM, 2003). In this sense, two legal status institutions exist: the private that must follow the Official

Accounting Plan published in the Decree-Law 410/89 (MF, 1989) like firms do; and the public that must follow the Official Accounting Plan of the economic sector. This legislation allows that a public entity could develop any economic activity. As Groot (1999: 353) defends:

"In each sector a clearly different set of measures has been applied, the choice of which seem to be greatly influenced by the major problems faced by each sector and the strategy chosen to solve them".

What concerns accounting practitioners most are the implementation process and expected problems in relation with financial, management and budget accounting. Also, accounting practitioners are worried with access to information especially when they are unable to obtain the information necessary to include in the financial report and the timeliness of reporting, particularly, when they will be delay issuance of an entity's financial report.

The Decree-Law 155/92 establish the State Financial Administration Regimen (in Portuguese: *Regime de Administração Financeira do Estado*) that specifies the basis of the public accounting and it wants to change the Public Administration with better control of public accounts and better administration of public services (MF, 1992). The Public Official Accounting Plan details in number 1 of article 2 (MF, 1997: 4595), that:

"The Public Official Accounting Plan is statutory applicable to all services and institutions of the central and local administration that do not have nature, model and designation of public firm in the same way as Social Security..."

Following this the POC-E will present the financial statements, such as: activity plan, investment annual plan, annual execution map, budget and other information as administration report, budget of execution statement, cash-flow statement, Balance sheet, Income statement, Income statement by function, Notes and the report of auditor. This plan has some particularities as the POC-P and the main objectives are: implemented in one accounting information system focus on the three main accounting areas: budget, financial and management allowing the government bodies to take decision based in information; and give efficiency, economy and effectiveness to all the public expenses. The Official Accounting Plan of the Education System (POC-E) details in number 1 of article 2 (MFE, 2000: 4977), that:

"Plan is statutory applicable to all services and institutions of the Ministry of Education, as well as other institutions in the same are that do not have nature, model and designation of public firm."

These improvements in Accounting for Higher Education Institutions reflect the growing concerns, developments and challenges that each HEI wants, or desires, to play in global society. This behaviour presents the new age of globalisation. Because resources are scarce and needs infinity, the organizations should play an important role in the social responsibility and this not a new concept that should be promoted.

3. AN EMPIRICAL STUDY ON ACCOUNTING FOR HIGHER EDUCATION INSTITUTIONS

The motivation of the study is to develop a model for the understanding the impact of corporate social responsibility of HEI which has been rare. In this research, the methodology presented is an exploratory level and is based on the HEIs, located in

Portugal, heterogeneity performing the function of a standard of comparison, testing multivariate differences among groups of HEIs and reflecting events occurring in an identical period with consequences in similar activities. In this section, as a starting point, it will be developed a principal component analysis¹, as a powerful data analysis procedure that allows the authors by reducing the initial variables to conclude about the principal components as relations in the CSR. Finally, it will be analyzed the survey and present the results.

The authors used the same research design by Llewellyn & Northcott (2005). Several sources and types of documents were employed. Firstly, statistics related with Portuguese higher education system obtained through the Minister of Science, Technology and Higher Education that allow authors to collect the data. Secondly, Government documents and European Union papers and official statements were analysed. Third, academic papers were used to conceptually frame the issues under discussion.

The universe of the study

The universe of this study was supported in the list of HEIs presented in the official guide of MSTHG - "Guia de Candidatura ao Ensino Superior Público" in the year 2004 (DGES, 2004). The distribution of HEIs is subdivided by city and classification as it was show in table 4.

Table 4. Distribution of HEIs by city and classification

City	Classification							Total
	University	Faculties	Polytechnic	Schools	Nursery schools	Military schools	Services of social action	
Açores	1				2		1	4
Aveiro	1			3			1	5
Beja			1	4			1	6
Braga	1		1	2	1		2	7
Bragança			1	5			1	7
Castelo Branco			1	6			1	8
Coimbra	1	8	1	5	3		2	20
Covilhã	1						1	2
Évora	1				1		1	3
Faro	1	5		5			1	12
Guarda			1	4			1	6
Leiria			1	5			1	7
Lisboa	5	22	1	7	7	6	5	53
Madeira	1				1		1	3
Portalegre			1	4			1	6
Porto	1	14	1	6	4		2	28
Santarém			2	8			2	12
Setúbal			1	5			1	7
Viana do Castelo			1	5			1	7
Vila Real	1				1		1	3
Viseu			1	5			1	7
Total	15	49	15	79	20	6	29	213

Source: Martins (2006).

¹ See Field (2000) and Hair (2005).

Based in the Berlin Principles (see UNESCO, 2005), each HEIs to be classified as a separate and formal institution, it has been recognize the diversity of institutions in higher education system in Portugal, take the different missions and goals of each HEI into account; be transparent in the information that offers to researchers; each measure outcomes explain the inputs; use audited and verifiable data; and provide to the researchers with a clear understanding of all of the factors used to develop the research.

In table 4, the number of HEIs are schools integrated in polytechnic institutions with 37,1%, followed by faculties integrated in universities with 23,0%, services of social action with 13,5%, nursery school not integrated neither in polytechnic institutions neither in universities with 9,4%, the rector (or dean) of the universities and the president of polytechnic with each one 7,1% and, at last, military schools with 2,8%.

In a geographical perspective, the results reflect dispersion, specifically it is possible to observe that Lisboa has 24,8%, Porto has 13,1%, Coimbra has 9,4%, Faro and Santarem with 5,6% and the other location are very similar in the Portugal.

The sample of the study

On balance, the shortcomings of this survey are the sample size² and the sensibility on statistical analysis and inferences³. However, same information is missing, but the authors believe that with the available data could express an independent opinion. As McNeil (1990) defends the methodological axioms of research projects should have reliability, validity, representativeness and generalizability. As the table 5 show the representatives of the sample is distributed by each classification.

Table 5. Distribution by classification of sample of the survey

Classification	Population		Sample	
	N	%	N	%
University	15	7,1	5	8,5
Polytechnic	15	7,1	8	13,6
Military school	6	2,8	1	1,7
Faculty integrated in University	49	23,0	13	22,0
School integrated in Polytechnic	79	37,1	20	33,9
Nursery school	20	9,4	5	8,5
Service of social action	29	13,5	7	11,8
Total	213	100	59	100

² Following the opinion of Hair *et al.* (2005) the sample size as a general rule, the minimum is to have at least five times as many observations as there are variables to be analyzed. The sample size is 53 and represents a subset of the population of HEIs in Portugal. So, the results should be interpret any findings cautiously. This aspect is very important to this research, because the lower cases-to-variable ratio this means the introduction of bias in the analysis, but it is an exploratory study and the enterprises are representative case studies of the Portuguese Higher Education System. And, there are not available data about this subject of research in Portugal, the authors decide to continue the study and analysed the effects and causes in CSR knowing that the results could be inconsistent.

³ See Greene (2003: 435-455).

Nevertheless, a similar research in these matters does not exist in Portugal, so it is better to have less evidence that could be improved the knowing of Portuguese reality of CSR than not knowing at all of the reality. But as Riley *et al.* (2001: 20) defends:

“facts, research methods and research data do not speak for themselves; they are interpreted by researchers and others”.

Figure 5. Sample of the survey



Source: Martins (2006).

The sample of this research is 59 HEIs concerned with 28 % of answer from the universe and 72% of the HEIs did not answer. It will include private HEIs, but also various other types of not-for-profit institutions, such as the churches institution. The results show diversification of sub-system, geographical location and legal status.

The variables of the study

The survey was develop with the main objective of understand the behaviour of the Higher Education Institutions when they implemented the new accounting information system. The survey has four main areas of information in a total of 160 variables that are:

- A) Characterisation of the HEI: geographical location, number of students, human resources, financial resources, investments in personnel training and acquisition of software/hardware, other questions related with the conditions necessary to the Public Accounting Official Plan.
- B) Official Accounting Plan of Education: implementation or not of the accounting plan, principal difficulties and reasons for the options made.
- C) Management Accounting: implementation or not of the management accounting, principal difficulties and reasons for the options made.
- D) Characterisation of the accountant: age, academic degrees and professional level in the HEI.

The information system is composed by twenty-six original variables such as: Changes on the organizational structure of the HEI (v1), Changes on the statutory model of the HEI (v2), Comparison between HEIs (v3), Control of public accounts (v4), Definition of overhead allocation criteria/bases (v5), Definition of costs centres (v6), Difficulties in the process of execution (v7), Consolidate accounts (v8), Implementation of POC-E (v9), Personnel qualification (v10), Reorganization of flow documents in public official accounting plan (v11), Reorganization of the HEI to face the new demands (v12), Security of public accounts (v13), The statutory auditors' services (v14), Hardware and software misadjusted (v15), Transparency of public accounts (v16), Administrative and financial autonomy of the HEI (v17), Final report following the Public Official Accounting Plan (v18), Reorganization of flow documents of POC-E (v19), Final report following the Education Official Accounting Plan (v20), HEI classification (v21), Internal control practices (v22), Changes in administration due to management accounting (v23), Efficiency, economy and effectiveness indicators (v24), Accountability for Administration (v25) and Resources internally compensate (v26) for each Higher Education Institution.

The research is based on a survey analysis develop to Higher Education Institutions. After a measurement convention⁴, it will be developed a principal component analysis⁵, as a powerful data analysis procedure that allows the authors by reducing the initial variables to conclude about the principal components as relations in the CSR. It observes the relative influences in the implementation process of management accounting and verifies it to each institution (see Lewis & Pendlebury, 2002 and van Helden, 2005).

The hypothesis of the study

The exploratory model proposed four hypotheses that are extremely difficult to quantify, not only because they have uncertainty, but because they are intangible variables.

1st Hypothesis - The difficulties in the implementation of management accounting in each HEI is justified the definition of overhead allocation criteria/bases (v5) costs centres (v6), the personnel qualification (v10), and the reorganization of the HEI to face the new demands (v12) as argue by Marburger & Casper (1992).

2nd Hypothesis – the difficulties in the implementation of public official accounting plan in each HEI is justified by changes on organizational structure (v1) and on the statutory model (v2), the reorganization of flow documents in the public official accounting plan (v11) and software and hardware misadjusted (v15).

3rd Hypothesis – the useful of the accounting information could be justify by needs of comparison between HEIs (v3), control (v4), security (v13) and transparency of public accounts (v16) as Fisher et al. (2004) defends accounting choice provides managers with discretion in communicating to the user community.

4th Hypothesis – the accounting development and execution in the HEI could be justified by the consolidate accounts (v8), implementation of POC-E (v9) and the statutory auditors' services (v14).

The methodology of the study

The multivariate technique used was principal component analysis with *varimax* rotational approach. This technique can achieve their purposes from an exploratory perspective whose primary purpose is to analyse the structure of the interrelationships among a large number of original variables by defining a set of common underlying dimensions (see Hair *et al.*, 2005). This issue is addressed through an analysis of the sources of variability of original variables and a consideration of potential techniques to reduce or eliminate the incidence of this instability as a means to reduce complexity and enhance performance.

The methodology of this analysis is to present the global perspective using a panel data. So, the sample consist in n HEIs [a_1, a_2, \dots, a_{59}] described over a set of m evaluation criteria with variables [f_1, f_2, \dots, f_m]. Henceforth, f will be used to construct the vector of the evaluation criteria, and vector [f_j] will be the representation of the performance of the enterprise [a_j] on the criteria vector [f]. It is developed the R-type factor analysis that analyzes seven variables as set to identify the dimensions that are latent and not easily observed (see Hair *et al.*, 2005). The R-type factor analysis is to find a way of

⁴ The transformation of qualitative variables into quantitative variables could introduce some error for certain categories, it will be test by a homogeneity analysis to confirm the appropriateness of the results from the principal component analysis.

⁵ See Field (2000: 423-470) and SPSS (2004a).

summarizing the data into a smaller set of new composite factors of components PC_1, PC_2, \dots, PC_q con $q=4$. There would be a minimum loss of information from the seven original variables, with mean μ , covariance and correlation matrix Σ .

$$\underline{X}' = [X_1 \ X_2 \ \dots \ X_{106}] \quad [1]$$

The software package *SPSS* for *Windows*®, version 12.0 was used (see *SPSS*, 2004a, 2004b, 2004c). When selecting the factor method, the authors wanted the total variance so the procedure used was the principal components analysis. This method of statistics analysis should lead to uncorrelated results, so the authors used all the extraction method available $\text{Var}[PC_1] \geq \text{Var}[PC_2] \geq \text{Var}[PC_q]$:

$$\begin{aligned} PC_1 &= a_{11}x_1 + a_{21}x_2 + \dots + a_{106_1}x_{106} \\ PC_2 &= a_{12}x_1 + a_{22}x_2 + \dots + a_{106_2}x_{106} \\ &\dots \quad \dots \\ PC_q &= a_{1q}x_1 + a_{2q}x_2 + \dots + a_{106_q}x_{106} \end{aligned} \quad [2]$$

One important step in factorial analysis is the estimation of number of factors or principal component that results from the twenty six original variables. The perspective of analysis relies upon explanatory models of CSR theoretical that are proposed by many experts presented before. The method applied is a principal component analysis that attempts to identify the principal components with the experience of the analysts, which try to explain the pattern of correlations within the information system. As factor analysis, the main objective is used to data reduction and to identify a small number of factors or components, which explain most of the variance observed in the seven original variables (see Field, 2000; Hair *et al.*, 2005) and with the authors best knowledge it will be represent conceptually what the component means.

In the factor analysis, the main objective is used to data reduction and to identify a four factors or components, which explain most of the variance observed in the one hundred six original variables and with the authors best knowledge it will be represent conceptually what the component means. In this case with some original variables in the health care the interpretation of factors is much more difficult, but one of the most interesting works that is the analysis and understanding of them.

$$\text{Cov}(PC_j, X_i) = a_{ij} \text{Var}(PC_j) = a_{ij} \lambda_j$$

$$\text{Corr}(PC_j, X_i) = \frac{a_{ij} \lambda_j}{\sqrt{\lambda_j}} = a_{ij} \sqrt{\lambda_j}$$

Factor analysis, and in particularly the technique of principal components analysis, are examples of data. The factorial analysis without the original variables fools the rule that has absolute value of the measure of sampling adequacy smaller than absolute value of *Kaiser-Meyer-Olkin* for each year (see Hair *et al.*, 2005). In this case with some original variables the job of interpreting the factors is much more complex, but one of the most interesting works in the analysis is to analyse and try to understand them.

The impact of corporate social responsibility

There is some point of view from researchers that especially devoted their attention to CSR in the literature. The authors defend that the definition of CSR as other many factors interfere in this concept so it will be show some aspects that share the idea of this concept and its origins that are inside of the HEI (Peyró, 1997).

The authors studied the descriptive statistics of each original variable. Over these variables, there were changes in the main the factor analysis procedure and extraction method used was principal components analysis and *varimax* rotation (maximizes the sum of variances of required loadings of factor matrix). After several tests, this solution produced better results than the others. The factor scores are based in the KMO analysis, MSA analysis, *Bartlett's* test of *sphericity* and *Eigenvalue* problem.

Table 6. Statistics of the exploratory model

Measures of adequacy		Model
Kaiser-Meyer-Olkin		0.776
Bartlett's test sphericity	Approx. Chi-Sq.	1,081.474
	d.f.	120
	Sig.	0.0000
Total variance explain		87.76%

Table 6 presents the distribution of measures of adequacy. One interpretation made by Farhangmehr (1997) and Reis (1997) analysis, allows to classify as reasonable because the KMO is between] 0.7, 0.8 [as show in Table 1. Another test to confirm the results is the *Bartlett's* test of sphericity that gives significant values with lower levels of significance (0.00) for the same degree of freedom. These means not accepted the null hypothesis that the correlation matrix between variables are equal to zero, so it is reasonable the use of principal component analysis.

The results from the component score coefficient matrix are expressed in table 7. One interesting step, like Hair *et al.* (2005) specifies, is the interpretation process of the pattern of principal component loadings from original variables, including their signs, in an effort to name each one.

In this case with many original variables, the interpretation of each principal component is difficult, but it is one of the most interesting aspects in the impact of CSR allowing to develop analysis and understand them. After identifying each component, the authors are interested in the spatial distribution of each HEI by each component presented before and the authors conclude that accounting remains focused upon the actions of the HEIs and ignore the effects of the institution upon its external environment.

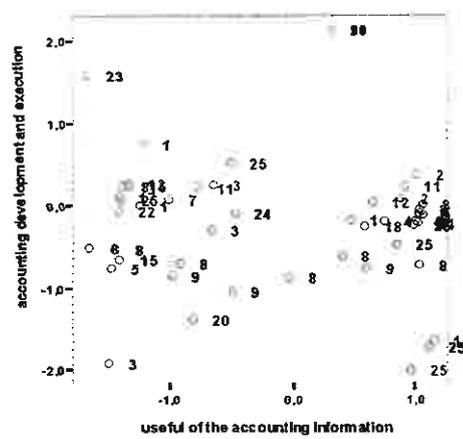
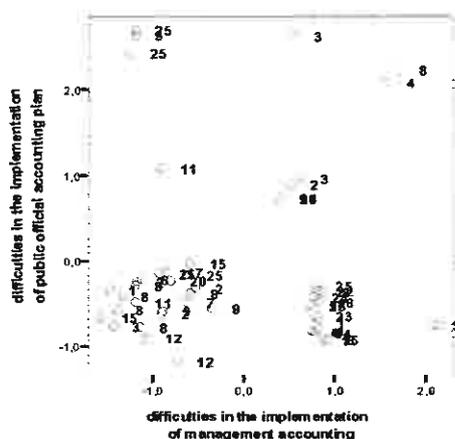
Table 7. Distribution of variables between the principal component

Principal Component	Weight	% explain variance
1. Difficulties in the implementation of management accounting		36,95
Personnel qualification	0,95	
Definition of overhead allocation criteria/bases	0,95	
Definition of costs centres	0,94	
Difficulties in the process of execution	0,92	
Reorganization of the HEI to face the new demands	0,92	
2. Difficulties in the implementation of public official accounting plan		21,50
Changes on the statutory model of the HEI	0,97	
Changes on the organizational structure of the HEI	0,94	
Reorganization of flow documents in public official accounting plan	0,91	
Software and hardware misadjusted	0,89	
3. Useful of the accounting information		17,29
Control of public accounts	0,94	
Security of public accounts	0,94	
Transparency of public accounts	0,93	
Comparison between HEIs	0,88	
4. Accounting development and execution		12,02
Consolidate accounts	0,89	
The statutory auditors' services	0,89	
Implementation of POC-E	0,80	
Total of the explain variance		87,76

The figure 6 will show the distribution of each HEI by the 1st factor - difficulties in the implementation of management accounting and 2nd factor - difficulties in the implementation of public official accounting plan. At the same time, the Figure 7 will show the distribution of each HEI by the 3rd Factor - useful of the accounting information and 4th Factor - accounting development and execution.

Figure 6. Distribution of each HEI by the 1st factor and 2nd factor

Figure 7. Distribution of each HEI by the 3rd factor and 4th factor



The exploratory model proposed in Table 7 shows the complexity and different scale in the 59 HEIs presented in Table 8. The impact of corporate social responsibility of HEIs is concentrated in the difficulties in the implementation of management accounting especially in the main definition that overhead allocation criteria/bases and costs centres oblige to apply it. This factor must be combined with the difficulties in the implementation of public official accounting plan, the useful of accounting information and accounting development and execution. The exploratory model shows the intensifying competition between all the

Issues for further research could be the replication of the survey to confirm the results and take the advantage of the information offered by the continuous variable itself. Another is to conduct a confirmatory research, using structural equation modelling support of Lisrel Software, because the knowledge from the exploratory analysis could be classify as insufficient. The aim of the authors with this exploratory study is to provide another perspective on this important field.

The practical implications of this research are to promote the awareness of the influences and complexities that involved the implementation process of the management accounting in higher education institutions. This will allow that human resources management use these information in the institutions to improve the efficiency, economy and effectiveness of them through offering maximum benefit but with limited resources, because everybody has a place in a collaboration and constructive environment.

In summary, the higher education is an essential need of the society and disclosure full accounting information that yields better policy to be promoted by policy-makers. Effectively, the diversification of the Portuguese higher education system answers to the scientific and technical progress, to the individual interests and the social needs of qualified personnel's. The higher education system exists as a fundamental element that assures quality of living and it should be available to everybody and for everybody...

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