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11 am to 11:45

Maria João **Pires da Rosa**
(*CIPES – Centre for Research in Higher Education Policies Portugal*)
"Defining Strategic and Excellence Bases
for the Development of Portuguese Higher Education Institutions"

Discussant : Terhi **Nokkala**

Defining Strategic and Excellence Bases for the Development of Portuguese Higher Education

Maria João Pires da Rosa[1]

Abstract

The Portuguese higher education system is undergoing periodic quality assessments of its teaching and research activities. Nevertheless, there is not yet an overall institutional assessment mechanism leading to a careful analysis of each institution as an organisation. Based, on one hand, upon an exploratory empirical study aiming at better understanding these institutions, in particular their strategic and quality management and innovation practices and tools, and, on the other hand, upon the study of several quality assessment models developed both for higher education institutions and business organisations, a self-assessment model was developed for the Portuguese higher education institutions. This model comprises nine criteria, each of them clearly defined, as well as the areas to address within each of them. The proposed model intends to provide a management and assessment tool, supporting self-assessment (including the identification of strong points and areas for improvement), and providing an instrument for quality improvement.

In order to empirically validate the model, two different approaches were used – a qualitative and a quantitative one – the model being applied to a set of Portuguese higher education institutions, to a particular university and to a single organic unit of that same university.

The quantitative approach allowed for the test and validation of the relationships between the model's different criteria. The model's underlying structure was validated through a questionnaire aimed at assessing how each Portuguese higher education institution (and the particular higher education institution considered) is dealing with a series of practices and factors considered critical for its quality improvement. A detailed statistical analysis was performed over the data collected to validate the proposed self-evaluation model structure and the relationships among its 9 underlying criteria. The analysis was made using structural equation modelling (with PLS estimation techniques).

The qualitative approach was applied to the single organic unit, to verify to what extent potential users would be able to understand the model (its dimensions, how it works, how to interpret its key results), while simultaneously getting a preliminary idea of its usefulness to drive improvement in the Portuguese higher education institutions.

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From the results obtained it is possible to conclude that the model can be successfully applied to higher education institutions, as a self-assessment tool to support their continuous quality improvement efforts.

1. Introduction

According to Amaral, Magalhães & Santiago (2003: 131), higher education is being exposed to the influence of significant external pressures that result from the "... convergent effects of financial restrictions, (...) rising expectations and social demand, mandates of the new economy and a weakening of its symbolic capital..."

Starting in the 80's, and especially at political level, several voices were raised against the traditional model of governance and management of higher education institutions considered to be inefficient and outdated to face the new challenges confronting these organisations. In fact, almost everywhere higher education has been under pressure to become "more accountable and responsive, efficient and effective and, at the same time, more entrepreneurial and self-managing" (Meek, 2003: 179).

It is in this context that one situates the rise of managerialism in higher education, usually justified by two types of arguments: on one hand it is considered that both the higher education system and its organisations are not capable of renewing themselves at the pace of the changes that occur in their environment; and on the other hand, it is claimed that the traditional collegial decision making bodies of these organisations tend to perpetuate the academic's corporative interests, "creating irrationalities and inefficiencies, in both the system and its institutions" (Santiago & Carvalho, 2003: 1).

To Santiago & Carvalho (2003: 1), managerialism is usually identified as "... a set of management processes and instruments, technically unquestionable and socially and politically neutral. Its main goals are both the achievement of efficiency, and the measurement of the performance of the higher education system..." Nevertheless, the authors alert to the fact that its frame of reference has a broader scope, being theoretically and ideologically well established. In particular it combines:

> "... (...) political, institutional and organisational assumptions with rationality principles that apparently do not seem to be organised but in which it is possible to detect some coherence around the notions of market, competition, individual choice, responsibility and efficiency." (ibid: 1)

It is important, however, to distinguish between managerialism as an ideology for the strategic change of public services and the need to give higher education institutions a more

flexible and effective administration. In the latter case, the new management processes and tools should be mere instruments at the service of institutions and their governance and management boards, without assuming determinant roles in defining the institution's goals and strategies (Meek, 2003; Amaral, Magalhães & Santiago, 2003). Or, as Trow (1994) claims, when he established a distinction between "hard" and "soft" managerialism:

> "the 'soft' managerialists still see higher education as an autonomous activity, governed by its own norms and traditions, with a more effective and rationalised management still serving functions defined by the academic community itself." (ibid: 11)

To Amaral, Fulton & Larsen (2003: 276), this "soft" managerialism has, in fact, a place in higher education as "no one on his senses will raise his voice against the idea that higher education institutions should be efficiently run".

The present research work should be seen within this perspective of "soft" managerialism. Indeed, the self-assessment model developed and tested is no more than a quality assessment and improvement tool, to be used at the service of higher education institutions, in accordance with their missions and goals. The development of the self-assessment model tried as much as possible to keep in mind the specific nature and characteristics of higher education institutions, considering that some of the principles and tools of strategic management and quality management are sufficiently relevant and important to deserve some research on their application in the context of Portuguese higher education institutions (Rosa, 2003).

2. Strategy, Quality and Evaluation in Higher Education

If we assume, as Drucker (1999: ix-x), that our time is one of "profound transition", in which the society faces everyday new and big challenges, it is easy to understand the relevance of education in today's world and its impact in the economical, social and cultural development of the countries. The profound changes and challenges that humankind faces nowadays will only be successfully overcome in contexts where the capacity to manage information and knowledge, the organisational learning and the intellectual capital promotion are primordial factors, meaning that societies electing as a relevant goal the development of education have a clear competitive advantage.

The relevance given to higher education issues nowadays, especially those related to the improvement of its quality and to the development of more adequate institutional management models, clearly justify the need for research that looks for some answers, which will benefit not

just higher education but society as a whole. The fact that higher education institutions (HEIs) face several multidimensional problems, which they have to address in order to survive, leads to three essential questions:

- HEIs need to think about their future: will it be possible for them to develop the basis for the implementation of strategic thinking?
- HEIs must be able to do "more with less" (in terms of teaching, research and services) and still maintain their quality: will the internal adoption of some of quality management principles and tools make sense?
- HEIs must be able to internally evaluate their performance as a driver for improvement: what will be the more appropriate assessment mechanisms for this kind of organisations?

This triangle was the basis for the development of a self-assessment model specifically tailored for the Portuguese HEIs, intended to be used as a management tool capable of improving not only the quality of each institution as a whole, but also the quality of each one of its core activities (teaching, research and services to the community).

During the last decades it was possible to find in western Europe what Neave (1988) has denominated *"The Rise of the Evaluative State"*, meaning by that the emergence of a new relationship between Government and higher education institutions. For many years, the State controlled tightly the higher education system, through the *a priori* definition of its main inputs and desired outputs (students, curricula, degree requirements, etc.), the so-called *"State Control Model"*. More recently, governments have recognised that this approach did not allow systems to be flexible enough to adapt and evolve in today's permanently changing environments. Therefore, a paradigm shift has occurred, creating a new model of relationship designated as the *"State Supervision Model"*, where the government steers "from a distance" the higher education system while giving HEIs more autonomy and freedom to identify their own strategic answers to the national education policies. Under this new framework, evaluation assumes a critical role, becoming the *a posteriori* mechanism to assess and control performance (Neave and van Vught, 1994).

At the same time, in many countries, more and more students have entered into the higher education subsystem (at undergraduate and graduate levels), leading to increased diversity and the need to promote learning in a larger scale. Additionally, some market competition elements, such as the demand for efficiency and effectiveness in the use of resources became quite relevant (Rosa, Saraiva & Diz, 2002).

We believe that the implementation of assessment and quality management systems (including a strategic thinking component) will induce institutions to think where they stand, where they want to be in the future, how to get there and to continuously improve their performance, thus meeting the ambitious challenges just pointed out. However, it is well known that the peculiar nature of higher education organisations does not favour the adoption of some common management methodologies (Rosa, Saraiva & Diz, 2002).

HEIs are organisations with thousands of people in contact with each other and with their environment, they have budgets of millions of Euros, and in many regions they act as a developmental key-factor. HEIs obviously work in an organised manner and sometimes, even if not intentionally, they already have strategic management practices (Tabatoni & Barblan, 1996).

Management is a term associated with companies, but that can be applied to any organisation. According to Drucker (1999), the first application of management theory did not took place in a company, but happened in governmental, not for profit organisations. It was only after the Great Depression that the concept became identified with for profit organisations' management. To the author, there are certainly differences between the management of a hospital and of a software company. But the greatest differences lie in the terms that each individual organisation uses; if these are not considered, then differences occur mainly in applications', rather than in the underlying principles.

The management of an organisation has to do with the conduction of collective action, according to the mission, or missions, previously defined. Management includes the definition of objectives and development policies, as well as the co-ordination between different initiatives and the assurance that there will be enough resources to implement them. The term management is applicable to HEIs: any organisation that has a mission to accomplish, resources available to implement collective organised actions and that has to be accountable to someone, needs to be managed (Tabatoni & Barblan, 1996). The truth is that strategic management, focused on the quality of services and activities as well as on the capacity to satisfy each time more and complex requisites in a context of growing competition, is today an essential need of HEIs.

To Maassen & van Vught (1992), the governmental demands for "value for money" in the public sector were a lever for the emergence of HEIs' interest in strategy. This is certainly the business concept more adequate to the situation faced by HEIs nowadays: the need to be aware of and to adapt to environment changes.

Even though the application of strategic management concepts, principles and tools to HEIs is possible, one should not forget the specific characteristics of these organisations, which make more difficult their direct application. To Hardy et al. (1988), the conventional vision of strategy is too limited to understand strategy formation in the university context. If one thinks that strategies are formulated before they are implemented, that planning is the central process

through which they are formulated and that structures must be conceived to implement the defined strategies, then it will be difficult to find a strategy formation process in any HEI (Hardy at al., 1988). According to Mintzberg (1995), the strategy concept, understood as a unique and integrative structure of the organisation's common decisions, loses a good part of its sense in a professional bureaucracy, as is the case with universities. Therefore, in a higher education institution the strategic development process must derive mostly from actions and goals assumed by individual actors or groups. This fact does indeed reinforce (rather then preclude) the need for each institution to think in a collaborative way about its own future, and its external environment trends (Rosa, Saraiva & Diz, 2001). In any case, a more formal process of strategy formation, through the definition of development plans and, more important, their fulfilment, can only benefit the sustained success of each institution (Rosa, 2003). Tabatoni & Barblan (1996) present some procedures adopted by universities and that in their opinion may serve as evolutionary moments for the adoption of a strategic management approach, such as the existence of mid-term (3 to 4 years) action plans, the launching of a systematic quality assessment and improvement policy, the availability of an effective management information system or the existence of an efficient internal communications policy.

Williams (1993) considers that the rise of TQM in HEIs is a "product of the market ideologies of the 80's and of the managerialism that accompanied it" (*ibid*: 229). Although the author considers that HEIs have specific and particular characteristics, connected to the existence of a set of activities based on knowledge creation and dissemination, that must not be forgotten, still there is potential for the application in these organisations of certain TQM principles and concepts. Continuous quality improvement, quality consistency, participation of academics, students and non-academic staff, satisfaction of the clients' needs and the existence of management procedures that reinforce quality are a number of principles that nobody would consider irrelevant within the higher education context. In the author's opinion all these principles can significantly contribute to the development of massified higher education systems and their institutions, either explicitly oriented towards the market or not.

It is well known that the application of TQM principles, methods and tools to higher education institutions is not free of criticisms, due to their alleged specific nature. In fact, although not publicised, it is well known that in several institutions the application of this management philosophy did not contribute to internal quality improvement (Harvey, 1995). Nevertheless Harvey (1995) defends that some TQM aspects can be useful to HEIs:

> "The debate is repetitive, tedious and sterile and it is time to go beyond TQM. Rather than debate suitability it is time to look at practice and determine the worthwhile aspects of TQM and relocate them in the higher education context, stripped of alienating managerialist jargon and linked firmly to existing quality processes". (*ibid*: 123)

To the author (1995), when going beyond TQM one is re-evaluating and re-orientating the HEIs collegial values and it is in this context that TQM lessons are most beneficially situated. The new collegialism, that the author defends, puts its emphasis on professional accountability and co-operation, reflecting two of TQM key-elements: delegation of the responsibility for quality and teamwork. The new collegialism emphasises the continuous improvement within the existent academic framework.

To Dill (1995) there are also some important lessons that HEIs can learn from TQM, the most relevant being the central place that human capital should occupy inside organisations. The author defends that

> "Through Deming's eyes we can see that assuring quality in academic programmes will require more than encouraging rational university choices by students, or providing positive incentives for faculty members to teach. It will also require re-weaving the collegial fabric of academic communities, the collective mechanisms by which faculty members control and improve the quality of academic programmes and research." (Dill, 1995: 107)

This is especially relevant in higher education systems massified and with self-regulated HEIs, because it is in these contexts that academic cohesion becomes more problematic. Quality efforts should then be put in the identification of the networks and integration mechanisms that promote the human capital development, leading to increased academic cohesion, communication and integration (Dill, 1995).

It is also argued that performance measurement and evaluation are very hard or even impossible to address in higher education. But the growing concern with quality, and the need to be accountable towards society, have made evaluation an unquestionable reality, covering teaching, research, services and institutional level approaches (Rosa, Saraiva & Diz, 2002). Several countries have thus developed higher education assessment systems and mechanisms, usually composed of self-assessment processes that are complemented by external assessment practices. Lately, schools have also been considering and applying quality models such as the ISO 9000 standards (Saraiva et al, 2000), or different models of excellence (EFQM[a], 1999; BNQP, 2003; Kanji, 1998) based in TQM principles and concepts.

The Portuguese higher education system is at present undergoing periodic assessments of its quality, namely of teaching (CNAVES[a], 2000; CNAVES[b], 2000) and research (MCT, 2000) activities. Nevertheless, in most cases there is no overall institutional assessment mechanism leading to a careful analysis of each institution as an organisational entity. We believe that such analysis, of an institution as a whole, is very important to improve its quality and the quality of its activities. The goal was thus to develop an institutional self-assessment model that could be

applied by these institutions to support their continuous quality improvement efforts (Rosa, Saraiva & Diz, 2002). Such model will only be verifiable, relevant and valid if based on the careful analysis of quality assessment models already conceived, either specifically for HEIs and/or their activities or for other type of organisations, complemented with a good knowledge of the present management situation of the Portuguese HEIs.

3. Development of a Self-Assessment Model for the Portuguese HEIs

An exploratory study was conducted in order to determine the present management situation in Portuguese higher education institutions, with emphasis on the implementation of strategic management and TQM principles, concepts and tools. Site visits and in-depth interviews were conducted in 16 different higher education institutions, in order to better understand their daily reality regarding strategic and quality management, and innovation practices and tools being adopted. The group of 16 institutions selected for this phase comprised public universities and polytechnics. A total of 21 interviews was conducted, covering areas such as the Portuguese higher education system and its recent evolution, how schools reacted to such changes and the ways strategy, quality, innovation and assessment are being dealt with and managed. A qualitative analysis of the transcribed interviews was performed using the software *NUD*IST 4*. This treatment allowed to identify and to structure a set of ideas about perceived relevant realities of Portuguese higher education institutions (Rosa, Saraiva & Diz, 2001):

- there is no management or decision board that can be considered as having a single leadership role for all HEIs;
- performance or merit based recognition or rewarding schemes are very weak or do not exist at all;
- there is no strong concern over the definition of clients, nor with the identification and fulfilment of their needs;
- on the other hand, most of the schools are really concerned with the possible shortage of incoming traditional students in the future, due to demographic reasons;
- strategic management is associated with thinking about the future, creation of an organisational culture and a harmonious internal environment that makes possible the flourishing of development proposals and initiatives. This demands an enormous amount of effort, commitment and leadership;
- innovation is seen as a changing process, focused in particular around research (technological developments) and teaching (new methodologies) activities. No systematic mechanisms to promote innovation are in place, and innovation efforts are pretty much the result of spontaneous generation;

- quality and quality management are strongly associated with the evaluation processes that are currently in progress, covering teaching and research activities;
- there are no clearly assumed quality objectives nor any formal or systematic mechanisms to assure and improve quality;
- no formal benchmarking practices are being applied, although their potential for improvement is well recognised;
- quality models, such as the ISO 9000 standards or Models of Excellence, receive considerable amounts of criticism, even when they are not known in detail by the interviewees, but there are already schools (two, at least) that are using them;
- the particular characteristics of a school's President (specially his will and persistence) play a really important role in and are critical for the development of many of the initiatives linked with the implementation of strategic, innovation and quality management mechanisms;
- quality assessment is focused around the evaluation of teaching and research activities. Such evaluations, although sometimes not resulting in improvement plans or actual changes, are regarded as positive;
- there are no mechanisms to assess academic and non-academic staff levels of satisfaction.

To conclude one can say that Portuguese HEIs do not have yet formal mechanisms to assure, assess and improve their quality. Nevertheless they are aware of the need to think about these questions and implement systems and processes that allow them to analyse their quality, to think about their future development, to define their main goals and to delineate actions to achieve them.

The empirical work pointed towards a number of key issues to be taken into account in the model's development (Rosa, Saraiva & Diz, 2002):

- it should comprehend an analysis of the whole institution (university, school or department), covering in an integrated way all its relevant activities;
- a set of result's indicators, broad enough to address several types of stakeholders and their levels of satisfaction, should be included;
- a special focus should be placed upon the school's actors (namely students, faculty and other employees);
- it should address the institution's internal structure and organisation, relevance of leadership and of who is responsible for decision and management bodies, strategy definition, policy and organisational culture;
- the State, as well as other society organisations, still have an important decision and regulative role in higher education institutions, and thus must also be considered.

One of the interviewees referred that more than trying to explore new quality assessment systems or models, higher education actors should be concerned with the thorough analysis and application of the available ones. On the other hand, an examination of several quality assessment models developed both for higher education institutions (CNAVES[a], 2000; CNAVES[b], 2000; CNE, 2001; CRE, 2000) and organisations in general (EFQM[a], 1999; Kanji, 1998; BNQP, 2003) allows the identification of some common criteria that are fundamental to achieve excellence in organisations. Taking this into account, as well as the need to integrate strategic management, quality experiences and evaluation concerns mentioned by the interviewees, we derived an overall institutional model that covers both process management and results criteria (Rosa, Saraiva & Diz, 2001).

The suggested self-assessment model (figure 1) is built around 9 criteria and clearly assumes that the quality of a higher education institution will depend primarily upon its **processes** (namely teaching/learning, research and services provided) and its achieved **results**. **Actors**, **resources** and, in most cases, **partnerships**, are also important factors in a higher education institution that wants to assure and/or improve its organisational quality. But actors, partnerships, resources, processes and results alone do not define a HEI. It also depends and is characterised by its internal **structure and organisation**, **leadership**, **policy, strategy and culture**, and it is influenced quite strongly by other entities and **external regulation** mechanisms. Efforts made by the institution to periodically and systematically assess each one of the nine criteria, innovating and renovating itself, will lead to its continual and sustained improvement towards excellence.
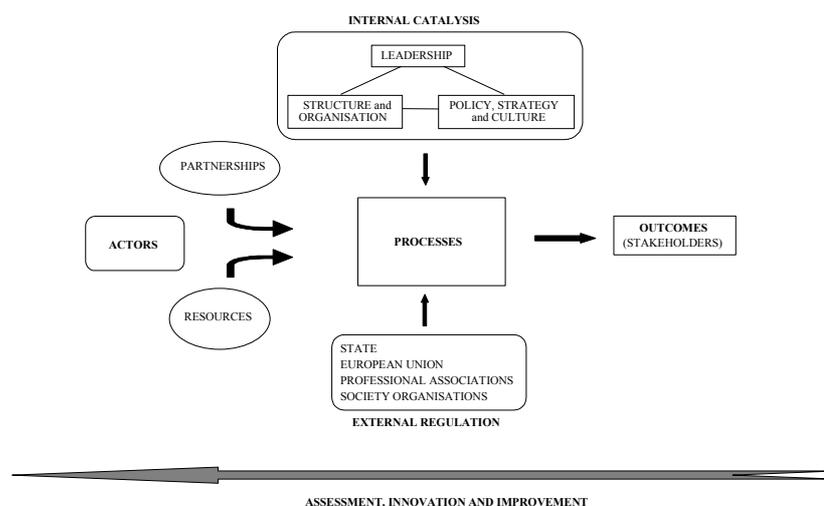
Figure 1 - A model of excellence for Portuguese higher education institutions

This model presents a number of differences when compared with other previous models that supported its development (CNAVES[a], 2000; CNAVES[b], 2000; MCT, 2000; CNE, 2001; CRE, 2000; EFQM[a], 1999; Kanji, 1998; BNQP, 2003): as opposed to other models used just in higher education contexts, it covers a set of criteria and their relationships in an illustrative graphical perspective, allowing each institution to have a clear idea about the areas under analysis, reflection, assessment and improvement. Rather than being a list of indicators, the model tries to capture the inherent complexity of a higher education institution and, simultaneously, presents a coherent picture of its performance, where different sub-pictures can be made in a consistent way, according to a particular perspective (teaching, research, services provided); furthermore, it conveys a structure and relationships amongst criteria that can be statistically tested for significance and provides a semi-quantitative basis for analysis and priority setting (Rosa, Saraiva & Diz, 2002).

The model's development included the definition of each of the nine criteria and identification of the areas to address when an institution analyses itself according to each of them. The model's criteria are divided into sub-criteria, leading to a better understanding of the points to be studied in each one of them (see annex).

3. Validation and Application of the Self-Assessment Model

In order to empirically validate the proposed model, two generic methodological approaches – a quantitative and a qualitative one – were used. The model was applied in three different contexts: a set of Portuguese higher education institutions, a particular university and an organic unit of that same university.

3.1 The Quantitative Approach – Validation of a Structural Equation Model

According to Rosa et al. (2003) three key benefits emerge from the application of a quantitative approach in the model's validation stage: (1) it allows for the participation of a large number of actors in the process; (2) the relationships between the model's criteria can be quantified, as well as their relative impact on a final measure of excellence; and, (3) it pinpoints, by assigning a score to each model's dimension, the areas where the organisation is not doing so well.

As in other similar approaches, the present one relied upon the use of questionnaires (EFQM[b], 1999; Tambi, 2000). The questionnaire covered principles and practices identified as quality drivers (or critical success factors) that generally corresponded to the nine model's criteria. However, since these critical success factors are abstract constructs, which cannot be

directly observed or measured, they were translated into indicators (or manifest variables). These measurement items were then incorporated into the questionnaires used to gather data, resulting in a total of 66 questions. They were derived from a comprehensive analysis of the quality assessment models already mentioned, which are currently used in higher education institutions (CNAVES[a], 2000; CNAVES[b], 2000; CNE, 2001; CRE, 2000; EFQM[a], 1999; Kanji, 1998; BNQP, 2003), as well as from the fieldwork conducted. Therefore the final content is the result of considerable previous research effort, aimed at increasing its *a priori* validity. In line with what previous research suggests (Sá, 2002), closed questions were used to ask the respondents about their perceptions of the organisation's performance on the various critical success factors in a 1 (Very Little) to 10 (Very Much)-points scale.

The proposed self-assessment model reflects an underlying structure, which can be graphically represented, and covers relationships between its nine criteria. Within this framework, a set of causal relationships was developed, portrayed in the path diagram presented in figure 2.
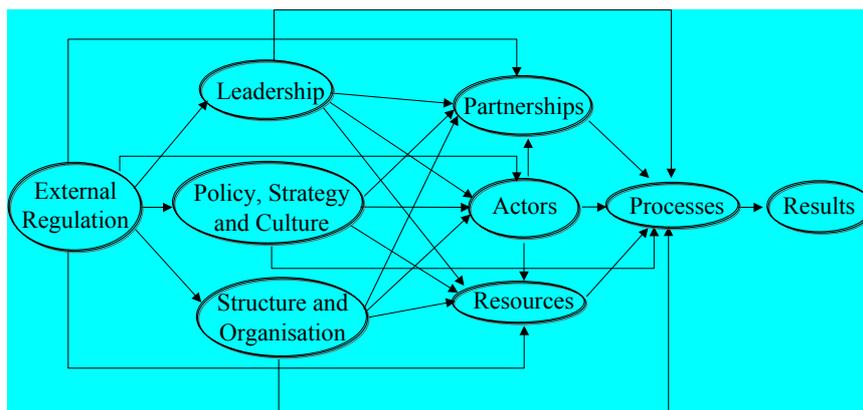
Figure 2 - Path diagram for relationships between the model's 9 criteria.

The suggested causal relationships result both from theoretical assumptions and empirical results obtained in the exploratory study. From figure 2, it is then possible to see that the structural equation model contains 9 latent variables, or constructs, "external regulation" being the only exogenous one. In the questionnaire each of the 66 questions provides results associated with a particular manifest variable, and all of these together allow for the operationalisation of the 9 structural equation model's latent variables. Thus, the structural equation model proposed combines both latent and measurement components. It can be expressed as a set of related equations, some of which are related to the causal relationships between constructs (structural equations), and others to the relationships established between

the manifest variables and the construct they operationalise. Detailed statistical analysis was performed on the collected data. Structural equation modelling (SEM) was selected from among the techniques available since it offers important advantages over traditional multivariate techniques (Rosa et al., 2003). The structural parameters (or path coefficients) of the entire structural equation model were estimated using partial least squares (PLS), which is a rather robust estimation approach that deals with "multicollinearity, manifest skewness and misspecification of inner and outer structures in a reasonable robust way" (Hackl and Westlund, 2000).

In a first phase the questionnaire was sent to all the Portuguese HEIs (mailed to their rectors/presidents and to the directors and scientific councils' presidents of their organic units), leading to a total of 129 valid answers (30% response rate). These were then used as input data for validation of the model, including PLS parameter estimation (for both outer and inner path coefficients). In a second phase the same questionnaire was sent to the academic and non-academic staff of a particular university, resulting in 62 valid answers. The main goal underlying this second phase was to compare the answers given by the top management of HEIs against those obtained from the people that work on them. Our hypothesis was that the top management had given a too optimistic panorama of the implementation of the management practices under analysis (principles and practices identified as quality drivers) in their own HEIs. Moreover this second phase allowed verifying if the structural equation model developed in phase one was still valid as a self-assessment tool for one particular HEI.

In order to validate the structural equation model developed (in phase 1) the answers were statistically analysed using PLS structural equation modelling. The validity of the measurement models (for HEIs and the particular university) was established through the inspection of the constructs' validity and reliability for the scales used. In table 1 we present the main results obtained from the correlation analysis performed, as well as the Cronbach coefficient (α) computed for the nine constructs (criteria) under analysis. According to Van de Ven and Ferry (1979) (cited in Curkovic et al, 2000), Cronbach's coefficient (α) should be of 0,7 or higher for narrow constructs, and 0,55 or higher for moderately broad constructs. Looking at the values presented in table 1, it is possible to say that the constructs proposed have an acceptable reliability. The discriminant validity of the scales was confirmed using the two approaches suggested by Ghiselli et al (1981, cited in Flynn and Saladin, 2001). In fact, the comparison of the scales' internal consistency values (Cronbach's alpha values) with average inter-scale correlations indicates that the reliability for each scale is higher than its correlation with the other scales. Furthermore the analysis of the table 1 last four columns (two by two) clearly shows that the average correlation between the scale and non-scale items is substantially lower

than between the scale and scale items, indicating that the items selected for each scale do indeed operationalise the latent variable they are suppose to address.

Table 1 - Measurement model analysis (for HEIs and a particular university, Uni)

Criteria	Mean		S.D.		Cronbach Alpha		Average inter-scale Correlation		Average item correlations			
									Scale items		Non-scale items	
	Uni	HEIs	Uni	HEIs	Uni	HEIs	Uni	HEIs	Uni	HEIs	Uni	HEIs
External Regulation	8,1	8,1	0,09	0,38	0,80	0,77	0,52	0,45	0,53	0,34	0,30	0,18
Leadership	6,7	7,9	1,09	0,30	0,70	0,83	0,69	0,66	0,61	0,64	0,49	0,42
Policy, Strategy and Culture	6,8	7,7	0,38	0,50	0,90	0,83	0,66	0,67	0,83	0,59	0,49	0,40
Structure and Organisation	6,2	7,4	0,56	0,53	0,76	0,71	0,73	0,59	0,60	0,47	0,50	0,33
Partnerships	6,0	7,6	0,75	0,40	0,82	0,85	0,64	0,54	0,51	0,74	0,40	0,35
Actors	6,7	7,4	0,38	0,72	0,79	0,83	0,68	0,59	0,59	0,48	0,46	0,33
Resources	6,8	6,9	0,47	1,15	0,80	0,69	0,60	0,56	0,51	0,34	0,37	0,27
Processes	5,6	6,8	0,34	0,54	0,88	0,92	0,69	0,64	0,67	0,63	0,45	0,44
Results	7,1	7,1	0,56	0,71	0,88	0,87	0,72	0,56	0,52	0,48	0,44	0,30

For the structural model under analysis (see figure 2), the first results obtained (in phase one) showed that some of the relationships originally proposed did not turn to be statistically significant. Therefore several alternative models were analysed, differing in the type and number of the relationships considered. In figure 3 a simplified version of the structural model initially proposed is presented, which includes only the relationships between criteria that were found out to be statistically significant (in both phases one and two). The values presented are the structural parameters of the models (for HEIs and the particular university), showing the strength of the relationships between the independent and dependent variables of the models.
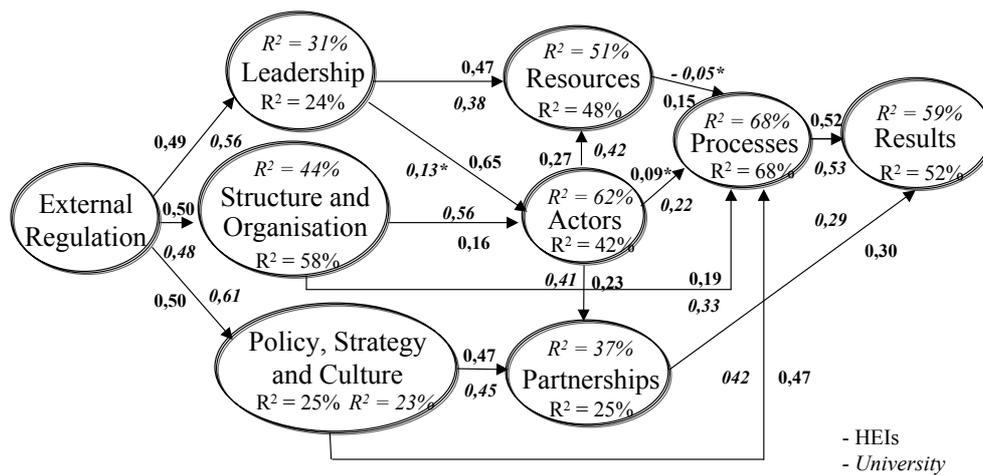
* Relationships not statistically significant for an $\alpha=0,05$

Figure 3 - Structural equation model (obtained for HEIs and a particular university) with estimated causal connections between criteria and the percentage of variation in each of the endogenous constructs accounted for by those with which they are related (R^2).

As it is possible to see from figure 3, all structural parameters have positive values, indicating that the causal connections in the model have a symmetrical relationship (Kanji and Wallace, 2000). The results show that "external regulation" has a strong causal connection with the institution's "leadership", "structure and organisation" and "policy, strategy and culture". Those in turn affect "resources", "actors", "partnerships" and "processes". It is worthwhile to notice that the three criteria that constitute the internal catalyst[2] do not exert the same influence over the other four. Apparently, and according to the data collected, it seems more plausible to admit that each of the catalyst's criteria has strong causal connections with only some of the other four remaining criteria. That does not invalidate that the catalyst as a whole is in fact responsible for each institution's global management, acting over processes and contributing significantly for improvement. The criterion "processes" makes evident its strong causal connection to "results", as predicted. Finally a remark must be made about "partnerships", a criterion that ended up as having a statistically significant direct causal connection with the "results" criteria, something that had not been initially anticipated.

To assess the latent variable model, one computed for each structural equation the percentage of variation in each of the endogenous constructs accounted for by the others with which they are related (R^2), leading to the results presented in figure 3. For the HEIs model there are 3 values that are not so good (bellow 0,25), while for the particular university model there is only one R^2 above the 0,25 threshold. Nevertheless the R^2 computed can be considered as quite reasonable values, especially when compared to other studies reported in the literature, e.g. Flynn and Saladin (2001); Bart, Bontis & Taggar (2001). Given such results, and the fact that individual structural parameters are meaningful and statistically significant, the survey results indicate that the proposed structural equation model is a plausible representation for the data.

Based upon the input data and the structural models obtained it is possible to compute a score for each one of the 9 model criteria, according to a mathematical expression derived by Fornell (1994) (cited in Kanji and Wallace, 2000). Figure 4 presents, in a graphical format, the scores obtained for each one of the nine criteria, both for the HEIs and the particular university.

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[2] It is assumed that leadership, policy, strategy and culture and structure and organisation work as an internal catalyst that inside each institution is responsible for its global management, acting upon each one of its processes and contributing significantly for improvement. This catalyst also has direct influence over the institution actors, partnerships, and resources management (Rosa, Saraiva & Diz, 2001).
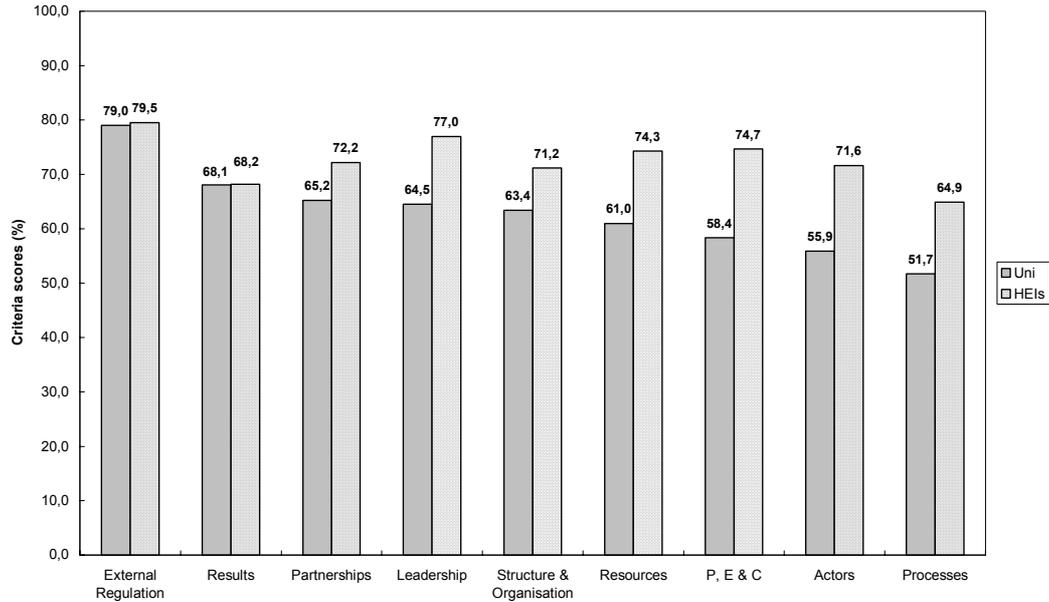
Figure 4 - Scores obtained for each one of the nine criteria applied to Portuguese higher education institutions and the particular university under analysis.

From the values presented in Figure 4 one can get a general idea about the criteria where the Portuguese HEIs and the particular university have better performance, as well as the ones where further improvement seems to be needed. One can see that overall both the institutions analysed and the university studied did get quite good scores for all the criteria, the lowest values corresponding to "processes". It seems that the HEIs and the particular university have in fact implemented a series of management practices considered to be relevant to assure and improve quality. Nevertheless this was not the expected scenario after the treatment of the data collected during the exploratory study (interviews' material) and bearing in mind the opinions usually transmitted by the Portuguese HEIs rectors and presidents.

It is also worth mentioning that the results obtained from the particular university are only as favourable as those obtained from the set of HEIs studied in the case of two of the nine criteria under analysis ("External Regulation" and "Results"). For the remaining criteria, the results from the set of HEIs are more favourable than those from the particular university, the differences being particularly relevant for the "Actors" and the "Policy, Strategy and Culture" criteria.

A Mann-Whitney non-parametric test was used to test the null hypotheses that the medians of the answers' distributions were the same for HEIs and the university. It was quite interesting to find that for 48 in 73 variables (questions) it was possible to reject the null hypothesis (for a significance level of 0,05), meaning that the HEIs claim a higher degree of implementation of the quality practices under analysis. These results point to the suggestion that all the institutions' actors (top management, intermediate management, teachers,

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researchers, non-academic staff and students) should be involved in the process of institutional self-assessment using this model.

3.1 The Qualitative Approach

The use of a mere quantitative approach to validate the self-assessment model was considered to be insufficient, essentially because it does not allow finding out if the institution's actors understand and can apply the model. It was thus felt that there was a need to complement the quantitative validation with a qualitative one.

This qualitative approach was based on the use of a set of forms (one for each of the model's criteria or sub-criteria) that had to be filled by the assessment teams. In the evaluation process, the main goal was not only to get a picture identifying the strengths and weaknesses of a particular unit of the chosen higher education institution, but also to highlight some improvement actions that needed to be implemented. In the validation (and subsequent application) of the self-assessment model according to this qualitative approach, the following steps were followed under the supervision of the so-called self-assessment process co-ordinator: (a) selection and training of self-assessment teams, (b) self-assessment meetings, (c) preparation of a self-assessment report (Rosa et al., 2003).

The application of the self-assessment model based on this approach was done in one organic unit of a particular university, since it was not possible, due to size, to extend the exercise to the whole institution. The process led to a set of filled forms, where strong points, areas for improvement and improvement actions for each sub-criterion are identified (figure 5, for sub-criteria C2.2).

Criteria C2 – *Resources*	
How the department manages its internal resources (financing, facilities, equipment, materials, information and knowledge) in order to support its processes performance and its policy, strategy and culture.	
Sub-criteria C2.2	
How the department manages its facilities, equipment and materials.	
Strong points	**Areas for improvement**
• Professionals' commitment. • Adequate management of facilities. • Adequacy and quality of the spaces.	• Information, dissemination and communication.
Improvement actions	
• To make public the rules defining resources' usage.	

Figure 5 – Example of form completed by the organic unit's self-evaluation team for sub-criteria C2.2.

From the exercise it was possible to conclude that the model is an adequate and useful tool to deal with the quality assurance and assessment problems that HEIs face. The actors that

participated in the self-assessment exercise (teachers and students) were capable of understanding and applying the model properly. While considering that the exercise had been useful to assess the unit's internal quality (see table 2), they made interesting suggestions and comments that can be used to further improve the model:

- *"Globally I think that it is a well developed mode; it can be an important management tool."*
- *"Questions tend to be too broad in scope and/or not as objective as they should."*
- *"I think that it [the self-assessment exercise] would be more positive if the forms were completed individually [and not in self-assessment teams]."*

Table 2 - Qualitative assessment of the proposed model (number of answers in each category).

Statements	Totally disagree	Disagree	Nor agree/ nor disagree	Agree	Totally agree
The model is a useful tool for the self-analysis of a higher education institution.	0	0	0	7	2
By applying the model in the department it was possible to make a diagnosis of its present situation.	0	0	3	5	1
Each of the model's criteria is adequately explained, being understandable what each of them intends to assess.	0	2	3	3	1
It is useful that every criterion is divided in sub-criteria.	0	0	0	6	3

Conclusions

Although in Portugal there is a national system for quality assessment of education, and international peer review teams assess periodically research, so far there is not any system for institutional assessment and institutions are still in the first steps of building a quality culture. Therefore, a holistic model for institutional assessment was developed, capable of serving as a quality tool for self-assessment and continuous improvement of Portuguese HEIs

The model is based on common criteria derived from available quality assessment models (both for higher education and for the business world) and integrates suggestions and concerns resulting from in-depth interviews conducted in 16 Portuguese HEIs, thus aiming at creating an institutional self-assessment model tailored to these institutions.

The model was applied in three different contexts (a set of Portuguese HEIs, a particular university and a single organic unit). In order to validate the model's underlying structure and relationships two generic approaches, a quantitative and a qualitative one, were conceived, and both were applied within the scope of the Portuguese higher education system.

A structural equation model was built, based on the self-assessment model previously developed and in possible cause-effect relationships between the nine criteria used. The results obtained indicate that this model can be considered, both theoretically and empirically, a plausible representation of the data collected, either in the set of Portuguese HEIs analysed or in the case of the particular university under study. Thus there are sufficient reasons to believe that this model can be used by HEIs in order to assess and continuously improve their quality.

On the other hand, the application of the self-assessment model in the context of a single organic unit of the university, based on a qualitative approach, indicates that the model is viable, insofar as the participating actors understood its principles and were able to use the methodology within its organisation. Therefore it can be concluded that the model can be successfully applied in this type of organisations.

However, the results obtained from the model's application lead to the conclusion that both approaches (the qualitative and the quantitative one) should be combined and simultaneously used. This means that during the institutional self-assessment, while the self-assessment teams must fill a set of forms, the institution's actors (including students) must answer a questionnaire. Through this combination it is possible to quantify the quality level of the institution (obtaining a quantitative score for each one of the criteria under analysis), and to estimate the intensity of the criteria's relationships and, simultaneously, to obtain a set of the institution's strong points and areas for improvement, and to identify which improvement actions need to be implemented.

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Annex – Institutional Self-Assessment Model for Portuguese HEIs

C1 – Actors (academics, students and non-academic staff)

    C1.1 Selection and recruitment

    C1.2 Training and development

    C1.3 Work conditions

C2 – Resources

    C2.1 Management of financial resources

    C2.2 Management of facilities, equipment and materials

    C2.3 Management of information and knowledge

C3 – Partnerships

    C3.1 Partnerships established with external entities

    C3.2 Relationship between the institution and its providers

    C3.3 Internationalisation

C4 – Leadership

    C4.1 Institution's mission, vision and values

    C4.2 The institution's actors

    C4.3 Relationship with external environment

    C4.4 Institution's continual improvement

C5 – Policy, Strategy and Culture

    C5.1 Development of the institutional policy and strategy

    C5.2 Quality – policy, strategy and culture

    C5.3 Teaching/learning – policy, strategy and culture

    C5.4 Research – policy, strategy and culture

    C5.5 Services to the community – policy, strategy and culture

    C5.6 Other institutional policies and strategies

C6 – Structure and Organisation

    C6.1 Structure and organisation

    C6.2 Internal structures created by the institution

    C6.3 Quality – structure and organisation

C7 – External Regulation

    C7.1 Relationship with external entities

    C7.2 Institution's autonomy degree

C8 – Processes

       C8.1 Processes' identification and design

       C8.2 Processes' development and control

       C8.3 Processes' revision and improvement

C9 – Results (Stakeholders)

       C9.1 Results – Accomplishment of the defined mission and goals

       C9.2 Results – Stakeholders

       C9.3 Results – Teaching/learning

       C9.4 Results – Research

       C9.5 Results – Services to community

       C9.6 Results – Financial performance

       C9.7 External society impact