Chapter 1

Quality Assurance in Greek HEIs: Convergence or Divergence with European Models?

This chapter discusses the quality assurance schemes applied to Greek Higher Education Institutions (GHEIs), in accordance with the context and specifications induced by the European Higher Education Area (EHEA) and the European Standards and Guidelines (ESG). Section 1.3 summarizes the quality management models with an emphasis on those applied to higher education, while section 1.4 focuses on quality assurance schemes in the EHEA. Section 1.5 examines the case of Greek HEIs.

1.1. Introduction

A core component of higher education reform is the systematic quality assurance and improvement of the Higher Education Institutions (HEIs). The "Communiqué of the Conference of Ministers Responsible for Higher Education" in Berlin on 19 September 2003 establishes that the quality

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of higher education has “proven to be at the heart of the setting up of a European Higher Education Area”. Assuring quality in teaching and learning is no longer a matter only for the higher educational policy programs or broad international professional discussion. Quality development and assurance have for a long time played a central role in strategic higher educational planning and in the everyday work of HEIs [SPA 08].

In many countries and many cultures, the issue of quality management has been firmly on the agenda of HEIs for quite some time. Higher education for the masses and a growing climate of increased accountability are frequently cited as rationales for a greater emphasis on quality [ERI 95, BEC 06]. Other reasons include the greater expectations and diversity of students as consumers, their demand for increased flexibility in provision and increasing levels of competition within and across national borders. The role of HEIs in stimulating national economic growth and the value of international students to national economies, emphasize the need to ensure quality within Higher Education (HE). These forces demand that quality assurance processes are both rigorous and transparent, and that quality enhancement initiatives are firmly embedded in any quality management program.

This has led to the emergence of a debate on the applicability of quality management principles, methodologies and tools for the HE sector. A study of the literature on higher education indicates that a number of researchers support the non-applicability of those management theories, especially because they are derived from industry and have nothing to do with the higher education ethos [HAR 95; PRA 10]. Other authors have given a more balanced view on the subject, claiming that although HEIs are not companies, some of the basic principles and tools could be applied, as long as they were instruments at the service of

institutions and their governance and management boards, subject to the academic mission, goals and strategies of the institution [WIL 93, DIL 95, SPA 08].

Although this is an old debate, no firm conclusions have been arrived at so far. It seems, nevertheless, that in Europe, due to the developments on quality assurance schemes following the Bologna Declaration, HEIs are now being "forced" to implement internal quality assurance systems based on the European standards and guidelines (ESG); see [ROS 12].

1.2. Definitions and fundamentals

In quality management, it is vital to study the meaning of quality in the situation under examination. In the area of higher education, the concept of what constitutes quality has not been thoroughly addressed, although some interesting studies exist; for an overview see [LAG 04, VEN 07]. Furthermore, there is the vast field of general research into quality management in services. The extent to which this research is applicable to the higher education sector also needs to be analyzed.

There are various well-known definitions of quality. Crosby (1979) defines quality as "conformance to requirement" while Juran and Gryna (1980) define quality as "fitness for use". Deming's (1986) definition of quality as "a predictable degree of uniformity and dependability at low cost and suited to the market" is more concerned with quality in operation. Many organizations found that the old definition of quality – "the degree of conformance to a standard" – was too narrow, and have consequently started to use a new definition of quality in terms of "customer focus" [SPA 08].

As far as total quality management (TQM) is concerned, there are a number of researchers who have proposed

frameworks and/or models for quality improvements; it is not the scope of the present chapter to present them critically. In general, it is agreed that TQM consists of two main notions – continuous improvement and the tools and techniques/methods used. In general, TQM encompasses many management and business philosophies while its focus shifts, based on a scenario where TQM is applied. Whether it is in industry or in higher education, TQM philosophy revolves around the customer [SPA 08].

Quality in higher education is even more difficult to define than in most other sectors. Frazer [FRA 94] argues that a first important step would be to agree internationally on terms such as levels, standards, effectiveness and efficiency. Such agreement on basic factors is also an objective for the so-called "Bologna process" of integration currently taking place in Europe. Discussing quality in higher education, Harvey and Green [HAR 93] proposed five discrete but interrelated ways to think about quality:

1) *Quality as exceptional*. Quality is regarded in terms of excellence, which means something special or exceptional. High standards are exceeded.

2) *Quality as perfection or consistency*. The focus is on processes and specifications that are aimed to be perfectly met. Excellence, in this case, means "zero defects", i.e. perfection.

3) *Quality as fitness for purpose*. Quality has meaning only in relation to the purpose of the product. In traditional quality management, the "fitness for purpose" notion was related to the customers; an idea originated by Juran. In higher education, however, a number of researchers view quality as "meeting customer requirements" to be problematic due to the contentiousness of the notion of "customer" and the difficulty for students for example to specify what is required.

4) *Quality as value for money*. Quality is equated with the levels of specifications and is directly related to costs.

5) *Quality as transformation*. The process should ideally bring about a qualitative change, a fundamental change of form, such as the phase transition when water transforms into ice as the temperature is lowered. This view can be found in the thinking of major Western philosophers, as well as in Eastern philosophies. In education, the transformation can take the form of enhancement and empowerment.

Next, in order to set the complete stage, some additional definitions are needed. *Quality assurance* is defined in the ISO 9000:2005 standards as "part of quality management focused on providing confidence that quality requirements will be fulfilled" while *quality management* is defined as "coordinated activities to direct and control an organization with regard to quality" [ISO 05]. Note that *quality assurance* has been defined most broadly in [GRA 09] as "…systematic management and assessment procedures adopted by a higher education institution or system to monitor performance and to ensure achievement of quality outputs or improved quality". On the other hand, [SCH 04a] defines a quality assurance scheme or quality assurance system as "accreditation and evaluation systems together" by defining *accreditation* as "institutionalized and systematically implemented evaluation schemes that end in a formal summary judgment that leads to formal approval processes regarding the respective institution, degree type and/or program". Within this concept, *accreditation* is the element of quality assurance schemes that set the standards for granting the "right to exist" within the system. In turn, *evaluation* activities are defined as "institutionalized and systematically implemented activities regarding the measurement, analysis and/or development of quality for institutions, degree-types and/or programs".

The terms *assessment* and *evaluation* are often used synonymously, denoting both *means*, i.e. techniques, procedures, instruments and methods for measurement and analysis used to monitor performance and, *ends*, "to ensure achievement of quality outputs or improved quality". *Accountability* is another term that has been associated with such a definition and denotes a *responsibility or answerability to external audiences* [GRA 09].

The linking of accreditation, evaluation or assessment and accountability in higher education Quality Assurance (QA) schemes causes considerable tension because of their historical, philosophical, political and social background. Understanding this background can help us, first, to appreciate how the quality assurance movement arrived at where it is today and, second, how development in the future should be guided; see for example [GRA 09, ROS 12].

1.3. Quality management models in HE

1.3.1. *Overview*

While there has been considerable interest in issues concerning how quality could be defined [HAR 93, SPA 08], in the design and relevance of various national quality assurance schemes in higher education [SCH 04b] as well as in the outcomes and effects of such quality assurance processes throughout the world [STE 08], the analysis of models or approaches of quality assurance at the institutional level is rarely addressed. In [BRO 07] a summary of research on quality management at the institutional level has been presented. It points out that the introduction of quality management concepts in higher education are mainly an externally-driven process related to increased demands for accountability and efficiency in the sector. They also found that much attention has been given to quality management models developed for business and

industry, and there is a concern that such models may add little to the improvement of teaching and learning, although they might have advantages for improving accountability.

The review indicates that a range of quality management models developed for industry have been adopted or proposed for adoption within HE institutions on a global basis. Internationally, the model most frequently drawn upon, see for example [MOT 97, CRU 03], is TQM defined as "a management approach of an organization, centered on quality, based on the participation of all its members and aiming at long run success through customer satisfaction and benefits to all members of the organization and to society" [WIN 03, SPA 08].

As the definition implies, TQM has the potential to encompass the quality perspectives of both external and internal stakeholders in an integrated manner. It thereby facilitates a comprehensive approach to quality management that will assure quality, as well as change and innovation. Other models that were tested emulate TQM and concentrate on developing systematic business processes that are required to achieve measurable quality outputs. For example, the balanced scorecard requires the identification of appropriate performance indicators, and the European Framework for Quality Management (EFQM), performance enablers and results. The one exception is SERVQUAL, a model that focuses on the assessment of quality solely from the consumer perspective. Table 1.1 identifies and defines the different models that have been applied internationally in HEIs. The application of these models within HEIs, have been summarized in [BEC 08, THA 12]. In a similar manner, a recent review paper, see [ROS 12], examines which of the several methodologies concerning quality management and improvement in organizations could also be implemented in HEIs and concludes that "the ISO 9000 standards, the

Balanced Scorecard and the EFQM excellence model deserve to be noticed due to their international recognition and previous validation"; see also [BEC 08].

Model	Description
ISO 9000 series	International standard for generic quality assurance systems. Concerned with continuous improvement through preventive action. Elements are customer quality and regulatory requirements, and efforts are made to enhance customer satisfaction and achieve continuous improvement.
TQM	A comprehensive management approach which requires contributions from all participants in the organization to work toward long-term benefits for those involved and society as a whole.
EFQM excellence model	Non-prescriptive framework that establishes nine criteria (divided between enablers and results), suitable for any organization to use to assess progress toward excellence.
M. Baldridge award	Based on a framework of performance excellence, which can be used by organizations to improve performance. Seven categories of criteria: leadership; strategic planning; customer and market focus; measurement, analysis and knowledge management; human resource focus; process management; and results.
SERVEQUAL	Instrument designed to measure consumer perceptions and expectations regarding quality of service in five dimensions: reliability, tangibles, responsiveness, assurance and empathy and identifying where gaps exist.
Balance scorecard	Performance/strategic management system that utilizes four measurement perspectives: financial, customer, internal process, and learning and growth.
Business process reengineering	System to enable redesign of business processes, systems and structures to achieve improved performance. It is concerned with change in five components: strategy, processes, technology, organization and culture.

Table 1.1. *Quality management models applied in HEIs*

Quality management in HEIs has been reviewed in a number of publications; see for example [HAR 95, BRE 00, PRA 10]. It is, in general, agreed that after the first wave of attempts to copy private-sector models in higher education, more attention has been directed toward the development of quality management models that would take into consideration the specific characteristics of HEIs.

Type 1 – Academic	Subject focus – knowledge and curricula Professorial authority Quality values vary across institutions
Type 2 – Managerial	Institutional focus – policies and procedures Managerial authority Quality values invariant across institutions
Type 3 – Pedagogic	People focus – skills and competencies Staff developers/educationalist influence Quality values invariant across institutions
Type 4 – Employment focus	Output focus – graduate standards/learning outcomes Employment/professional authority Quality values both variant and invariant across institutions

Table 1.2. *Categorization of quality management approaches for HEIs [BRE 00]*

An important framework for the taxonomy of quality management models is provided in [BRE 00]. According to this, the choice of an approach to quality management, as well as quality assessment, depends on "quality values" and "conceptions about what constitutes high quality in higher education". Furthermore, the authors also differentiate between four main types of quality values stressing different focuses in approaches to quality management. These are *academic*, *managerial*, *pedagogic* and *employment focus* (see Table 1.2). In the first approach (academic), the focus is on the subject field, which is associated with professorial authority and where the academic values are of great

importance. “Conceptions” of quality are based on subject affiliation and vary across the institution, which has limited scope to define and assess quality. In essence, a quality management system should be decentralized, focusing on disciplinary characteristics and applying different quality standards. The managerial type has institutional policies and procedures as the main focus of assessment, underlying good management practices as the key factor of quality production. The characteristics of quality are considered as being “invariant” across the HEI. Here, centralization is seen as an essential characteristic of a quality management system, along with the coupling to institutional strategies and more coherent quality standards. The third type, described as “pedagogic”, focuses on people and pedagogical aspects of the process, i.e. teaching skills and methods, staff training and development. The characteristics of quality are regarded as invariant, across the whole institution. Unlike the first type, a lot of attention is paid here to a more standardized delivery process rather than the content in education. The “employment focus” approach focuses on learning outcomes, standards and output characteristics of graduates. This approach deals with customer requirements, where the customers are often regarded as being the employers of graduates. It tends to take into account both subject-specific and core characteristics of high quality education. Quality characteristics are seen as both invariant and variant, depending on a specific subject. The invariant dimensions could in this approach be linked to the generic skills often identified in national qualification frameworks.

These four categories offer a simple but efficient way of identifying the key characteristics and focus of a given quality management model and can be used as a heuristic tool for further analysis, although it should also be mentioned that the four dimensions may appear quite stylized and not capable of capturing the complexities of different approaches to quality management [PRA 10].

1.3.2. *Implementation of ISO 9001 in HEIs*

The ISO 9000 series standards emerged in 1987. These standards were subsequently revised in 1994, 2000 and 2008. Right from the release of these standards, the ISO 9000 certification has been implemented at a fast pace [SIN 06, VAX 06]. Today the ISO 9001:2008 standard sets the requirements for implementing a quality management system in an organization, independently of its dimension or type of activity, including educational institutions [HOY 09].

The primary benefit of obtaining an ISO 9001 certification and implementing the criteria of quality awards is to achieve global competitiveness by infusing a higher degree of quality in products, processes and services. A large number of industrial organizations have implemented the requirements of clauses and criteria of these quality models [SIN 06]. However, this kind of progress is not discernable in engineering educational institutions (EEIs).

The ISO 9001:2008 standard specifies the minimum requirements to set up a management system. It is organized in five main blocks: *quality management system*, *management responsibility*, *resource management*, *product realization*, and *measurement, analysis and improvement*; see Figure 1.1.

According to the ISO 9000:2005 standard, developing and implementing a quality management system include a succession of discrete phases that are as follows:

– Determining the needs and expectations of customers and other interested parties.

– Establishing a policy for quality and the organization's quality goals.

– Defining the processes and responsibilities needed to attain the quality goals defined.

– Determining and making available the resources needed to attain the quality goals defined.

– Establishing the methods to measure the efficiency and efficacy for each process.

– Applying these measures to determine the efficiency and efficacy in each process.

– Identifying the means to prevent non-conformities and eliminate their causes.

– Establishing and applying a process leading to the continuous improvement of the organization's quality management system.

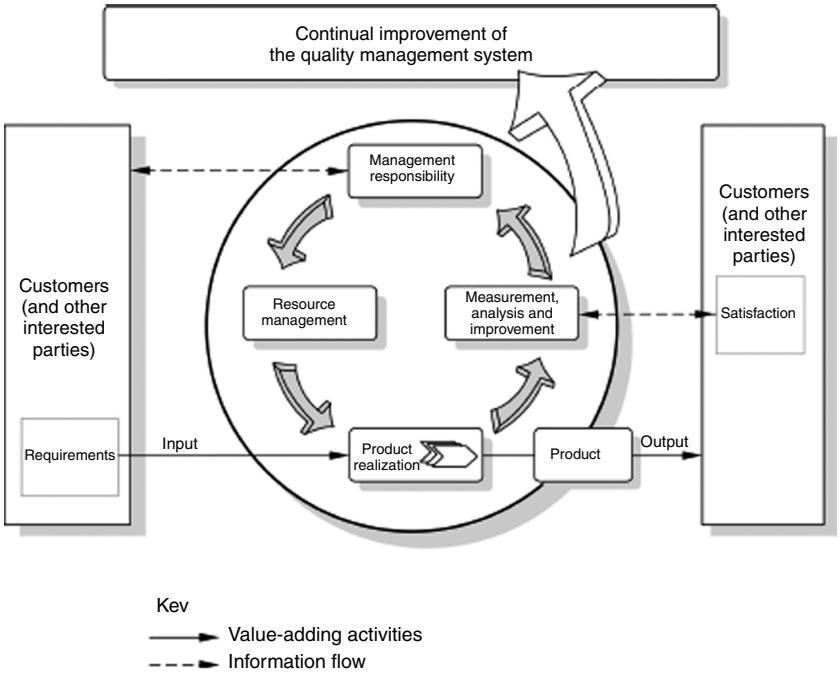

Figure 1.1. *The ISO 9001:2008 standard model (adapted from ISO 9001:2008)*

A lot of criticism has emerged, concerning the application of this standard to HEIs, either because the "ISO approach entails too general a view of the 'production process' of higher education" or because it imposes a high degree of standardization in the process, which is incompatible with the nature of HEIs [ROS 12].

Earlier, in [KAR 98] it had been mentioned that certain universities and community colleges in Europe, Singapore and Canada have obtained an ISO 9000 certification. This publication listed as many as 13 benefits of obtaining an ISO 9000 registration in higher education, while high costs and a great amount of staff time were considered the main disadvantages. Similarities and differences between an ISO 9000 certification and accreditation requirements were also listed. Similar findings were also reported in [SAR 00]. However, as indicated in [THA 12] both papers have dealt with the earlier version of ISO 9000 series standards released in the year 1994; hence their contributions have become obsolete. Newer publications indicate that although the ISO 9000 series quality management system was designed for manufacturing, the ISO 9001 standard has also become a popular choice for educational systems worldwide [KAR 02, SIN 06, THO 06]. At the end of 2008, the service sector, including education, accounted for 40% of all ISO 9001 certificates [GAM 12]. In general, there is little published research about the implementation of ISO 9000 in educational institutions. The literature surrounding ISO implementation in education indicates that the application of ISO standards to education remains debatable, the implementation process is time-consuming and difficult and the subject is under-studied empirically [THO 06, PAP 10]. In [GAM 12], it has been pointed out that further research is necessary to assess the consequences of ISO 9000 implementation entirely in educational institutions, including an identification of the factors affecting its success. Moreover, it is indicated that the application of the ISO 9001

in higher education has been generically limited to the institutions' services and not to their core functions, namely teaching and learning (see [ROS 12]).

1.3.3. *Implementation of EFQM model in HEIs*

The quality award model most widely used in Europe has been developed by the European Foundation for Quality Management (EFQM). The EFQM was formed in 1988 by 14 leading European businesses organizations, and it encourages European firms to improve competitiveness through the use of TQM philosophy. The EFQM has provided a holistic model (termed "business excellence" or the "excellence model") to facilitate such a purpose. The model and the associated self-assessment process have given a new direction to the quality movement and have driven deep and lasting changes into participating organizations.

The EFQM excellence model was introduced at the beginning of 1992 as the framework for assessing organizations for the European Quality Award (EQA). It is now the most widely used organizational framework in Europe and has become the basis for the majority of national and regional Quality Awards [VAX 06, SAM 12].

The EFQM excellence model is a powerful tool that can be used in a number of different ways:

– as a tool for *self-assessment*;

– as a way to *benchmark* with other organizations;

– as a guide to identify areas for *improvement*;

– as the basis for a common *vocabulary* and a way of thinking;

– as a *structure* for the organization's management system;

– as a *learning opportunity* for stakeholders to view strengths and identify improvement opportunities.

The EFQM model is based on nine criteria. Five of these are "enablers" and four are "results". The "enablers" criteria cover what an organization does. The "results" criteria cover what an organization achieves. "results" are caused by "enablers" and feedback from "results" help to improve "enablers" [SPA 08, EFQ 12]. In particular, the "enablers" are leadership, people, strategy, partnerships and resources, processes, products and services while the "results" are people results, customer results, society results and key results. The EFQM model is presented in diagram form in Figure 1.2.

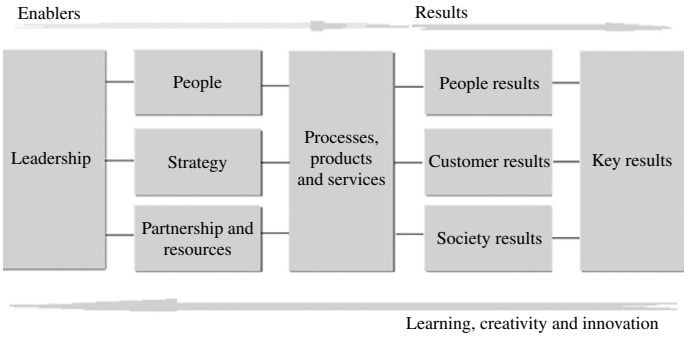

Figure 1.2. *EFQM excellence model [EFQ 12]*

The EFQM suggests a number of approaches for implementing the EFQM excellence model. However, it is not possible to point out a unique best approach to use it, because each implementation is organization specific. The use of the EFQM model in the public sector, and particularly in HEIs, has been significant. This is mainly because in the past few years there has been an increase in the pressure over public institutions to fulfill customer requirements through continuous improvement, as well as being a result of EFQM efforts in this area [HID 04, SAM 12].

Some additional information and milestones associated with the EFQM model in education are as follows [SAM 12]:

– In 2000, a university did reach the finalist category for the first time – Marmara University, Faculty of Engineering, Turkey.

– In 2001, for the first time a teaching institution won an award – St. Mary's College, Northern Ireland.

– During the time period that ranged from 1992 to 2009, 13 teaching institutions reached the final phase of the EQA, including three universities.

1.4. European focus on quality in HE: a historical perspective

1.4.1. *Historical perspective*

Accreditation and quality assurance processes in Europe have their roots in the 1950s, when several initiatives at regional and national levels were carried out in the form of educational audits, intended to assess pedagogical skills in higher education [IRA 00]. The establishment of the European Federation of National Engineering Associations in 1951 was an important initiative intended to foster a common accreditation approach for engineering education in Europe.

Note that quality assurance of higher education in the United States, based on a scheme of professional authority gained through experience, began in the late 1800s while QA in engineering and technology programs began as a voluntary effort organized by the Accreditation Board for Engineering and Technology (ABET, Inc.) in 1936 [GRA 09]. However, as indicated in [AUG 07], "the word accreditation, used in the United States since the 1930s, did not find its way into European specialized literature and official

documents until very recently, but since then it has rapidly become a catchword".

From the 1980s onward, the development of quality assurance in Europe was fast. A number of reasons contributed to the establishment of quality assurance or accreditation agencies in the mid-1980s as was the case in the United Kingdom, in France (1984) and in the Netherlands (1986). During the 1990s, evaluation and accreditation agencies were established not only in most of the former Eastern Bloc countries (Czech Republic in 1990; Slovakia in 1990; Hungary in 1993; Latvia in 1994; Estonia in 1997) but also in most of the European Union countries (Denmark in 1992; Sweden in 1995; Finland in 1996). The Mediterranean countries were quite late in developing quality assurance national agencies, such as Spain (ANECA in 2002), Greece (HQAA in 2005) and Turkey (YÖDEK in 2005) [ASD 09].

Moreover, with the internationalization of higher education, the emergence of new providers and new methods of delivering higher education, and the need to evaluate their quality, as well as the inclusion of higher education services within the GATS negotiations, and the development of inter-university cooperation addressed the need for setting standards and criteria at an international level [SAD 00]. As a result, the quality assurance schemes linked with the recognition of degrees became a crucial issue within the fora of international organizations such as the Council of Europe, OECD and UNESCO. The most important international attempts to address the need for a consensus on quality provisions among countries, international players, HEIs and stakeholders in cross-border higher education are summarized in [SAD 00, RAU 05, ASD 09].

During the 1990s, the evaluation of higher educational systems was placed at the center of the European Union initiatives. On the initiative of the Dutch European Union's

Presidency (1991), the European Pilot Project for Evaluating Quality in Higher Education (1994–1995), in which a total of 46 institutions participated, was introduced. The Council's Recommendation of 24 September 1998 (98/561/EC) encouraged the European Union member-states to establish national quality assurance systems for higher education, based on the four-stage model; this included the establishment of an independent agency, internal and external institutional evaluation procedures, the involvement of various stakeholders and the publications of the results [ENQ 03]. The European Network for Quality Assurance in higher education (ENQA) was established in 2000 and consisted of independent bodies and quality assurance agencies recognized by competent public authorities of the EU member-states, the EEA/EFTA countries and the countries that participate in the EU programs on Education and Training. Nowadays, ENQA is open to quality assurance agencies coming from the Member-States of the Bologna process [ASD 09].

The Bologna process gave new impetus to the development of national quality assurance systems. "Promotion of European co-operation in quality assurance with a view to developing comparable criteria and methodologies" was set as the fifth axis of the collaboration between the 29 founding Member States of the process [BOL 99]. In Prague, on 19 May 2001, the Ministers "encouraged closer cooperation between recognition and quality assurance networks" and "they emphasized the necessity of close European cooperation and mutual trust in and acceptance of national quality assurance systems", as well as the need for cooperation between national agencies, HEIs and ENQA to "collaborate in establishing a common framework of reference and to disseminate best practice". As a result, bilateral and regional cooperation on quality assurance issues was developed after Prague and various networks were established; see [ASD 09, KAV 11] for details.

The mid-term goal that was set up in the Berlin Ministerial Meeting (19 September 2003), concerning quality assurance, gave an additional push to those countries that were behind time. The ministers agreed that by 2005 national quality assurance systems would include the following:

1) Definition of the responsibilities of the bodies and the institutions involved; evaluation of programs or institutions, including internal assessment, external review.

2) Participation of students and the publication of results.

3) A system of accreditation, certification or comparable procedures.

4) International participation, cooperation and networking [BER 03].

Taking one step further, 45 countries adopted the *European Standards and Guidelines for Quality Assurance* in EHEA as proposed by ENQA and its partners in Bergen (2005) (EUA, EURASHE and ESIB), while the European Quality Assurance Register for Higher Education (EQAR) was approved in London (2007) [BER 05, ASD 09].

The ESG for quality assurance are a set of standards, procedures and guidelines that HEIs and accredited agencies (the ones responsible for assessing and accrediting higher educational programs and institutions) should follow to implement, assess and accredit quality assurance systems in the EHEA; see [ESG 09]. They constitute a first step to the establishment of a widely shared set of underpinning values, expectations and good practices in relation to quality and its assurance, by institutions and agencies across the EHEA, aiming at providing a source of assistance and guidance to both HEIs and agencies, while contributing to a common frame of reference. The ESG are divided into three parts: Part 1, referring to standards and guidelines for internal

quality assurance within HEIs; Part 2, referring to standards for the external quality assurance of higher education and Part 3, referring to standards for external quality assurance agencies [ROS 12].

A fruitful outcome of the Berlin Communiqué was the introduction of the so-called "stocktaking exercise", which would record the progress achieved in the three priority action lines including quality assurance, i.e. the establishment and the implementation of national quality assurance systems [BER 03]. Representatives of countries, as well as, the European Commission, EUA, the European Student's Union (ESU) and Eurydice were involved in this exercise. Scorecards were set up according to certain criteria and benchmarks, following the traffic lights performance system; green stands for excellent (5), light green for very good (4), yellow for good performance (3), orange for some progress (2) and red for little progress (1) [BOL 05].

The scorecard criteria concerning quality assurance were as follows:

1) Stage of development of the quality assurance system.

2) Key elements of evaluation systems.

3) Level of participation of students.

4) Level of international participation, cooperation and networking.

As might be expected, the traffic lights scorecards that were issued to country representatives in March 2005 for comments or additional justification exerted considerable pressure on the countries, which in several cases tried to improve their national status. Traffic light scorecards, actually, were a visual representation of the achievements or the delays for each country and respectively an assessment of the national ministries' accomplishment within the two-year period. Each country's scorecard would

have two-level recipients: peers and the European Commission at the European level, as well as, the domestic political elite, interest groups and the public opinion at national level [ASD 09].

Part of the results of the "stocktaking exercise" is presented in Table 1.3; the gap between North Europe and Southern Europe, at that time, as far as the development of quality assurance system in HEIs is concerned, is evident.

Stocktaking Report (2005) Criterion 1: Stage of development of quality assurance system.			
Finland	5	Greece	3
Sweden	5	Italy	3
Estonia	5	Turkey	2
Germany	5	Slovenia	3
Denmark	5	Bulgaria	3
United Kingdom	5	Romania	3
Iceland	5	Serbia	3
Ireland	5	Bosnia-Herzegovina	3

Table 1.3. *Part of the Bologna scorecard summary [BOL 05]*

The development of QA in Europe is discussed in detail in [SCH 04a, AMA 10]; therefore, it is not considered here, further. However, if a comparison is made between state approval and accreditation schemes, a profound movement toward accreditation is identified. All recently implemented quality systems are based on accreditation, while old systems based on quality assessment were replaced by accreditation systems under the aegis of independent accreditation agencies. A key contributor to this movement has been the Bologna declaration (as indicated above), signed by 29 European countries in 1999 and the process that followed [ROS 12].

The ESG establish seven standards for quality assurance within HEIs, complemented with guidelines for

their implementation. These standards and guidelines are reproduced below [ESG 09].

1.4.1.1. *Policy and procedures for quality assurance*

1.4.1.1.1. Standard

Institutions should have a policy and associated procedures for the assurance of the quality and standards of their programs and awards. They should also commit themselves explicitly to the development of a culture, which recognizes the importance of quality, and quality assurance, in their work. To achieve this, institutions should develop and implement a strategy for the continuous enhancement of quality.

The strategy, policy and procedures should have a formal status and be publicly available. They should also include a role for students and other stakeholders.

1.4.1.1.2. Guidelines

Formal policies and procedures provide a framework within which HEIs can develop and monitor the effectiveness of their quality assurance systems. They also help to provide public confidence in institutional autonomy. Policies contain the statements of intentions and the principal means by which these will be achieved. Procedural guidance can give more detailed information about the ways in which the policy is implemented and provides a useful reference point for those who need to know about the practical aspects of carrying out the procedures.

The policy statement is expected to include:

– the relationship between teaching and research in the institution;

– the institution's strategy for quality and standards;

– the organization of the quality assurance system;

– the responsibilities of departments, schools, faculties and other organizational;

– units and individuals for the assurance of quality;

– the involvement of students in quality assurance;

– the ways in which the policy is implemented, monitored and revised.

The realization of the EHEA depends crucially, on a commitment at all levels of an institution to ensure that its programs have clear and explicit intended outcomes; that its staff are ready, willing and able to provide teaching and learner support that will help its students achieve those outcomes and that there is full, timely and tangible recognition of the contribution to its work by those of its staff, who demonstrate particular excellence, expertise and dedication. All HEIs should aspire to improve and enhance the education that they offer their students.

1.4.1.2. *Approval, monitoring and periodic review of programs and awards*

1.4.1.2.1. Standard

Institutions should have formal mechanisms for the approval, periodic review and monitoring of their programs and awards.

1.4.1.2.2. Guidelines

The confidence of students and other stakeholders in higher education is more likely to be established and maintained through effective quality assurance activities, which ensure that programs are well-designed, regularly monitored and periodically reviewed, thereby, securing their continuing relevance and currency.

The quality assurance of programs and awards are expected to include:

– development and publication of explicit intended learning outcomes;

– careful attention to curriculum and program design and content;

– specific needs of different modes of delivery (e.g. full time, part-time, distance learning, e-learning) and types of higher education (e.g. academic, vocational, professional);

– availability of appropriate learning resources;

– formal program approval procedures by a body other than that teaching the program;

– monitoring of the progress and achievements of students;

– regular periodic reviews of programs (including external panel members)

– regular feedback from employers, labor market representatives and other relevant organizations;

– participation of students in quality assurance activities.

1.4.1.3. *Assessment of students*

1.4.1.3.1. Standard

Students should be assessed using published criteria, regulations and procedures, which are applied consistently.

1.4.1.3.2. Guidelines

The assessment of students is one of the most important elements of higher education. The outcomes of assessment have a profound effect on the future careers of students. It is, therefore, important that assessment is carried out professionally at all times and that it takes into account the

extensive knowledge that exists about testing and examination processes. Assessment also provides valuable information for institutions about the effectiveness of teaching and support for learners.

Student assessment procedures are expected to

– be designed to measure the achievement of the intended learning outcomes and other program objectives;

– be appropriate for their purpose, whether diagnostic, formative or summative;

– have clear and published criteria for marking;

– be undertaken by people who understand the role of assessment in the progression of students toward the achievement of the knowledge and skills associated with their intended qualification;

– where possible, not rely on the judgments of single examiners;

– take account of all the possible consequences of examination regulations;

– have clear regulations covering a student's absence, illness and other mitigating;

– circumstances ensure that assessments are conducted securely in accordance with the institution's stated procedures;

– be subject to administrative verification checks to ensure the accuracy of the procedures.

In addition, students should be clearly informed about the assessment strategy being used for their program, what examinations or other assessment methods they will be subject to, what will be expected of them and the criteria that will be applied to the assessment of their performance.

1.4.1.4. *Quality assurance of teaching staff*

1.4.1.4.1. Standard

Institutions should have ways of satisfactorily maintaining that staff involved with the teaching of students are qualified and competent to do so. They should be available to those undertaking external reviews and commented upon in reports.

1.4.1.4.2. Guidelines

Teachers are the single most important learning resource available to most students. It is important that those who teach have a full knowledge and understanding of the subject they are teaching, have the necessary skills and experience to transmit their knowledge and understanding effectively to students in a range of teaching contexts and can access feedback on their own performance. Institutions should ensure that their staff recruitment and appointment procedures include the means of making certain that all new staff have at least the minimum necessary level of competence. Teaching staff should be given opportunities to develop and extend their teaching capacity and should be encouraged to value their skills. Institutions should provide poor teachers with opportunities to improve their skills to an acceptable level and should have the means to remove them from their teaching duties if they continue to be demonstrably ineffective.

1.4.1.5. *Learning resources and student support*

1.4.1.5.1. Standard

Institutions should ensure that the resources available for the support of student learning are adequate and appropriate for each program offered.

1.4.1.5.2. Guidelines

In addition to their teachers, students rely on a range of resources to assist their learning. These vary from physical resources such as libraries or computing facilities, to human support in the form of tutors, counselors and other advisers. Learning resources and other support mechanisms should be readily accessible to students, designed with their needs in mind and responsive to feedback from those who use the services provided. Institutions should routinely monitor, review and improve the effectiveness of the support services available to their students.

1.4.1.6. *Information systems*

1.4.1.6.1. Standard

Institutions should ensure that they collect, analyze and use relevant information for the effective management of their programs of study and other activities.

1.4.1.6.2. Guidelines

Institutional self-knowledge is the starting point for effective quality assurance. It is important that institutions have the means of collecting and analyzing information about their own activities. Without this, they will not know what is working well and what needs attention, or the results of innovative practices.

The quality-related information systems required by individual institutions will depend to some extent on local circumstances, but it is at least expected to cover:

– the progression and success rates of students;

– the employability of graduates;

– the students' satisfaction with their programs;

– the effectiveness of teachers;

– the profile of the student population;

– the learning resources available and their costs;

– the institution's own key performance indicators.

There is also value in institutions comparing themselves with other similar organizations within the EHEA and beyond. This allows them to extend the range of their self-knowledge and to access possible ways of improving their own performance.

1.4.1.7. *Public information*

1.4.1.7.1. Standard

Institutions should regularly publish up-to-date, impartial and objective information, both quantitative and qualitative, about the programs and awards they are offering.

1.4.1.7.2. Guidelines

For a fulfillment of their public role, HEIs have a responsibility to provide information about the programs they are offering, the intended learning outcomes of these, the qualifications they award, the teaching, learning and assessment procedures used and the learning opportunities available to their students. Published information might also include the views and employment destinations of past students and the profile of the current student population. This information should be accurate, impartial, objective and readily accessible and should not be used simply as a marketing opportunity. The institution should verify that it meets its own expectations with respect to impartiality and objectivity.

1.4.2. *ESG standards versus typical quality systems*

The ESG standards are definitely a European outcome, designed for implementation in EHEA. It is interesting, in the light of globalization, to examine how these standards fit

and/or complement the universal, market-oriented quality models described in section 1.3.1.

By comparing the paragraphs and clauses of ENQA standards with the corresponding paragraphs in the ISO 9000 series, a number of similarities arise. This comparison is summarized in Table 1.4.

Bologna process	ISO 9001:2008 standard
Establish the EHEA and clearly define the position and role of each higher educational institution in it.	Define the vision and mission of a higher educational institution, as well as the quality policy.
Assure the ability of students. Lecturing and administrative personnel through compatible curriculum and clear definition of inputs, outputs and mutual relations inside an institution aiming their mutual recognition.	Define the key and other own processes, their inputs, outputs and mutual relations inside the higher educational institution and related to the surrounding.
Put in agreement the standards and outputs of higher educational institutions aiming for their mutual recognition.	Define the goals of quality plan, their realization and continuously re-examine them.
Assure corresponding resources to realize the principles of the Bologna process.	Assure necessary resources to realize defined goals and processes.
Define and establish the obligations, responsibilities and rules of the behavior of all participants in higher education in a way of corresponding curriculum and of the credit system (ECTS) of evaluation, as well as corresponding models of following the progress of the students, lecturing and administrative personnel.	Define and establish the competences, responsibilities and rules of behavior of all participants inside each identified process in a way of corresponding documentation.

Table 1.4. *Comparison of ESG standards with ISO 9001:2008 requirements*

Assure equal standards, easily understandable and comparable diplomas, to realize pass ability and equilibrate quality of higher educational system.	Establish a system of collecting the information from the process and from the service users, as well as adequate methods of satisfaction measurement, aiming at continuous improvement of higher educational activity.
Assure and promote whole life learning.	Plan and perform continuous qualifying and additional education with the proof of their realization.
Accreditation of curricula and programs and higher educational institutions.	Certify the system of the quality management.

Table 1.4. *(Continued) Comparison of ESG standards with ISO 9001:2008 requirements*

A study of the ISO 9001:2008 requirements indicates that their implementation will answer to the ESG. "Addressing management responsibility" will lead to the implementation of *policy and procedures for quality assurance*, while the *approval, monitoring and periodic review of programs and awards* and the *assessment of students* are covered under the "realization of the product". When implementing the "resource management" requirements, the *quality assurance of teaching staff* and the *learning resources and student support* standards are addressed. Finally the requirements put under "measurement, analysis and improvement" allow for the implementation of the *information systems* and *public information* standards. The idea underlying the ISO 9001:2008 standard that there is the need to continuously improve an organization's quality management system, based on the application of the PDCA (plan–do–check–act) cycle, that contributes to establish a link between the seven standards of ESG presented above, allowing for the implementation in the HEIs of a quality assurance system with a truly developmental character [ROS 12].

Similarly, a considerable number of similarities can be identified between the EFQM excellence model and the ESG standards. By analyzing the EFQM criteria, it is evident that they cover the standards for quality assurance predicted under [ESG 09]: *Policy and procedures for quality assurance* is addressed under the "Leadership and Strategy" criterion; *approval, monitoring and periodic review of programs and awards* and *assessment of students* under the "Processes, Products and Services" criterion; *quality assurance of teaching staff* under the "People" criterion; *learning resources and student support* is covered by the "Resources and Partnerships" criterion and finally both the *information systems* and the *public information* standards may be addressed through the different enablers and results criteria, depending on an institution's local circumstances [ROS 07, ROS 12].

1.4.3. *Accreditation of engineering education*

Challenged by globalization (especially the General Agreement on Trade in Services, GATS) and by European developments (the Bologna process), program accreditation was introduced in EHEA as a new form of quality assurance. Other, sometimes similar, initiatives are found in other countries and at the international level [WES 03].

The literature dealing with accreditation in engineering education was reviewed recently in [GAM 12, THA 12]. The accreditation process in engineering education was initiated by the Accreditation Board for Engineering and Technology (ABET) in the United States, in 1932 [PAT 07]. After that, the European Federation of National Engineering Association was established in the year 1951; see also section 1.4.1. Another important development in the accreditation scenario

was the Bologna declaration of 1999 in Europe. As a result of this, the declaration, integration and mobility of engineers within Europe were facilitated [LUC 08].

In accreditation schemes, two relative terms are usually referred to: "General accreditation" and "engineering accreditation". According to [PRA 05], the difference between them is that general accreditation is applied to the entire institution, whereas engineering accreditation is applied to specified engineering educational programs. Moreover, it is agreed, in general, that, accreditation serves two purposes. The first purpose is to enable the engineering undergraduate, postgraduate and PhD scholars to achieve mobility throughout the world. This is achievable if all the EEIs in the world are accredited by a commonly agreed standard and agency. The second purpose of accreditation is to achieve quality assurance and continuous quality improvement by the EEIs; a common objective of ISO 9001:2008 and ESG too. Based on information collected in [THA 12], it is evident that to achieve the global competitiveness and continuous quality improvement in engineering education, the majority of engineering HEIs tend to adopt ABET criteria. Initiatives such as the so-called "Washington accord" contribute significantly toward the same result; see also [PRA 05, THA 12].

For many decision-makers in European higher education, accreditation seemed to be the answer to the Bologna challenge. Judging on the basis of its sudden popularity after June 1999, there was not much of a survey of alternative policy options. A final argument in favor of accreditation is that it gives better consumer protection than the traditional Western European quality assessment does because a fixed quality threshold is established under which accreditation is denied [WES 03].

1.5. Quality assurance in Greece: a long and winding road

1.5.1. *Higher education in Greece*

Issues concerning the structure and operation of Greek higher education are presented in a number of recent publications; see for example [KYR 08, ASD 09, KIP 11, PAP 11].

Higher education in Greece is provided, according to the Constitution, by self-governed, legal entities under public law (Article 16 par. 5), which are supervised by the Ministry of National Education and Religious Affairs[1] (renamed recently M. of Education, Lifelong learning and Religious Affairs). Establishment of private HEIs is strictly forbidden (Article 16, par. 8).

The first Greek university (called "Hellenic University of Otto") was founded in Athens in 1837. In 1873, the National Technical University was established, also in Athens. Following the turn of the century, other universities were established all across Greece. The great expansion of Greek higher education started during the 1970s, while from the mid-1980s, up till today, it has developed according to a regional approach. This means that universities and technological educational institutions were founded within a region and their schools or faculties or departments were spread in the capitals of the prefectures or other big cities.

Higher education comprises two parallel sectors: the university and the technological sector. Nowadays, 18 universities, two technical universities, the International Hellenic University, the Hellenic Open University and the School of Fine Arts compose the university sector and 15 Technological Education Institutions (TEI), as well as

1 We use the term MoE (Ministry of Education) in the text for referring to this Ministry, irrespectively of its official name.

the School of Pedagogical and Technological Education (ASPETE) compose the technological sector. Note that until 2001, higher education included only the universities and not the TEIs, which were considered as professional institutions (polytechnics). HEIs consist of schools or faculties, departments and sections. A department is the autonomous educational unit entitled to award degrees [KYR 08, PAP 11]. In 2003, there were 240 university departments and 170 departments at the TEIs, a number that has increased by 43% over the period 1993–2003. The Ministry of Education is responsible for the approval of new institutions and new departments. However, the development of the corresponding study program is the responsibility of the institution [BIL 04]. Around 70.3% of the Lyceum graduates were admitted to higher education in 2008. Still, the demand is so high that Greece is an exporter of students to the United Kingdom, Germany, Italy, France and the United States [ASD 09].

There are three levels of study in Greek universities. The first is the undergraduate level, which leads to the basic degree, called "diploma". The length of studies at this level varies from four to six years. Studies in medicine last for six years, whereas engineering, agriculture, dentistry and pharmacy, fine arts and music last for five years. Studies in all other fields last for four years.

Postgraduate studies are divided into two levels. The lower level is of one year's duration in most cases and leads to the equivalent of a Master's degree. In 1993, there were 53 postgraduate programs in universities, 111 in 1995 and 212 in 2000. This number exceeded 500, for all HEIs, in 2010. The higher level is the doctorate level and it lasts for at least three years.

Studies in the TEIs last for three-and-a-half to four years. Graduates have access to postgraduate studies, which are offered exclusively by the universities or a

collaboration scheme between a TEI and an accredited HEI from EHEA [BIL 04].

The higher educational system is public funded, based on the notion that "Education constitutes a basic mission of the State" (Greek Constitution, Article 16 par. 2). Study programs, with the exception of the programs of the Open University and the majority of the postgraduate programs, are free of charge and students enjoy several benefits (healthcare, free text books, scholarships, interest-free loans, free accommodation and board or a housing grant, depending on their income, reduced price tickets for transportations, cinemas, etc.). Professors, according to the Constitution, are public functionaries while the administrative staff of HEIs are civil employees.

The main teaching staff at universities in Greece in the last seven years grew from 7,258 in the academic year 1996–1997 to 9,776 in the academic year 2002–2003. In the academic year 1999–2000, 128,976 students were active at the universities. This gives a ratio of main teaching staff to students of about 1/16. In the academic year 2000–2001, 1,48,772 were active students at the universities, bringing the ratio down to 1/17, while in the academic year 2007–2008 this ratio was 1/16.5 [ADI 11].

At the TEIs, the main teaching staff numbers grew slightly over seven years, from 2,201 (1996–1997) to 2,302 in 2002–2003. With 79,102 active students in the academic year 1999–2000, the ratio of main teaching staff to students was 1/34. In the academic year 2000–2001, when 86,659 students were active, it dropped to 1/38. From the published data, see [ADI 09], the ratio is further decreasing; it was 1/53 for the academic year 2007–2008. Worth mentioning here is that in TEIS there is an extra number of teaching staff who are contractual and part-time teachers.

1.5.2. *Greek HEI quality assurance system*

Attempts made to introduce evaluation and/or quality assurance procedures at an institutional and/or departmental level in Greek HEIs have been reviewed in a number of recent publications; see [BIL 04, ASD 09, KAV 11, PAP 11].

The first law that enacted evaluation processes for every activity of a HEI was voted in 1992 by a conservative government. The 24th article of Law (Law 2083/1992) entitled "Evaluation of activities of Higher Education Institutions" promoted the enactment of an evaluation system for Greek universities. The legislator settled that in the evaluation should "*be taken under consideration the official planning of each Higher Education Institution (HEI)*". It has been mentioned in the second article of the Law that the Senate has the responsibility for the preparation of the official planning of the university. The Law also established a connection between the results of the evaluation process with the extra public funding of the university. The legislator regulated the creation of an "Evaluation Committee" determining its composition. The evaluation method, the criteria and indicators were not determined, although the Law forecast the procedure under which the research for the best international practices would take place [BIL 04]. The Law was treated from both the opposition political parties and universities as an attempt from the MoE to control universities and was not actually implemented [ASD 09].

Despite the strong resistance against any national evaluation framework, Greek universities and TEIs have participated in various international evaluation projects since the mid-1990s. However, this participation has not been sufficient for the development of a quality culture [ASD 09, KAV 11].

Greece was a signatory country of the Bologna Declaration (1999). Nevertheless, the Declaration did not receive the appropriate approval, especially from the universities. The controversial issue was the reference to the three-year minimum duration of the first cycle, since most of the universities' first-cycle study programs last four years, those of technical universities' last five years and those of medical schools' last six years. The three-year Bologna bachelors' programs corresponded to those of the TEIs which, at that time, did not belong to higher education. Note that TEIs were recognized as HEIs by the Law 2916/2001, without any previous evaluation, a fact that caused additional strong reactions from the universities.

The Law 3374/2005 (the draft of which entered Greek Parliament before the Bergen Ministerial Conference) introduced a national quality assurance system in higher education, according to the *ESG* and established the European Credit Transfer System (ECTS) and the Diploma Supplement. It ensured the independent, objective and transparent function of the national system, which included the main elements of the four-stage model, i.e. internal and external evaluation processes, publication of the report and international participation, as well as a peer review for the quality assurance agency. The law clearly stated that the quality assurance system would be both an improvement and information tool and not a compliance one. A brief account of the opinions expressed by the various political parties during the discussion of the law in Greek Parliament is given in [KAV 11] and therefore it is not presented here.

The ECTS, as it is referred above, was also established under Law 3374/2005, with the objective of evaluating the study program undertaken by students and recognizing the students' achievements during their period of study at a European university. The system of transfer and accumulation of units is already in use at universities in EU

member countries at both the undergraduate and graduate levels. The system is based on the rule that 60 credit units represent one academic year's workload for a full-time student. That is, 30 credit units per semester or 20 units per trimester. In addition, the *Addendum of Degree* was established, which is an explanatory document that will be attached to the title of studies (degree). The document's purpose is to provide comprehensive information on the studies and the exact content of the studies undertaken by graduates [BOU 09].

The approval of the law caused reactions against universities by professors and student unions, on the other hand, it was supported by all the TEIs, who declared their willingness to be evaluated. They considered the evaluation as an opportunity to upgrade their status and to gain the competence to organize and operate postgraduate programs independently; see [ASD 09]. QA Law only became an active law (policy) in 2007.

According to the Law 3374/2005, the main goal of the Greek quality assurance system is to establish an integrated approach to record, comprehend, evaluate systematically and improve the activity and tasks of all HEIs regarding their mission and their profile. The quality of teaching and research, study programs and all other services provided by HEIs are assessed by internal and external procedures, using objective indicators and standards to note their achievements and also to trace their weaknesses in such a way that they can be treated accordingly, with state support. Evaluation may concern HEIs as a whole, or particular faculties or departments, or particular independent units.

The law establishes an independent administrative authority called the Hellenic Quality Assurance Agency for higher education (HQAA or ADIP in Greek) located in Athens, which coordinates the evaluation processes at a national level. HQAA consists of 15 members, including

professors nominated by the rectors and presidents of TEI conferences, student representatives, researchers and social partners. The HQAA is the body responsible for the smooth operation of the national quality assurance system. It supports the HEIs during their self-evaluation processes and keeps the competent bodies of the state and HEIs up to date concerning the international trends and developments in quality assurance. HQAA compiles, keeps and revises a register of Greek and foreign experts and specialists; it organizes the external evaluation process, keeps an archive containing all evaluation reports and annually submits a general report to the Parliament. In this report, it makes suggestions and recommendations regarding the improvement of the national higher educational system. Last but not least, HQAA is also placed under a self-evaluation and peer-review process. Since September 2007, HQAA has been an associated member of ENQA [ASD 09].

The "heart" of the Law 3374/2005 is article 3 entitled "Evaluation criteria and indices". These criteria and indices refer to the following four axes:

1) *Quality of tuition*: the efficiency of the teaching staff, the quality of the teaching process, the organization and implementation of the teaching tasks, teaching aids, media and infrastructures, the use of new technologies, the ratio of students to teachers and cooperation between teachers and students, the level and timeliness of the knowledge provided, the interrelation between research and teaching, the mobility of teaching staff and students.

2) *Quality of the research work*: the fostering of research in the framework of the academic unit, the scientific publications, research infrastructures, research programs, the effectiveness of the research work, the originality of the research, the acknowledgment of the research by third parties, the research partnerships, research distinctions and

awards, as well as the participation of students in the research.

3) *Quality of curricula*: the degree to which the curriculum meets the academic unit's objectives and society's demands, the cohesion and applicability of the curriculum, the coordination of the syllabus, the rational organization of the educational institutions, the examination system, the support by available educational infrastructure.

4) *Quality of other services*: the effectiveness of the administrative services, student welfare services, all kinds of infrastructures, the use of new technologies, the transparency and efficiency in the management of financial resources, as well as in the use of infrastructure and equipment, cooperation with other educational or research institutions, whether Greek or foreign, and with the community.

It should be noted that according to this Law, "the evaluation procedure taking place pursuant to the provisions of this law may not be replaced by other forms of quality assurance and improvement which are not anticipated hereby".

Each HEI in Greece is required under the Law 3374/2005 to establish an institutional QA unit (MODIP), to coordinate and support evaluation procedures. This unit is to be chaired by the HEI's vice-rector or vice-president and involves representatives of the academic and administrative staff. Additionally, each academic department appoints an Internal Evaluation Committee (OMEA) to collect data, documents and information to develop the department's self-assessment report. From the academic year 2009–2010, the "new" MoE requires all HEIs to submit a self-assessment report and to invite external evaluators for review. Without adoption of evaluation, departments will face problems in relation to their operation (funding and human resources) [PAP 11].

Following the general guidelines of HQAA, the QA process at TEIL works on a four-year cycle, as illustrated in Figure 1.3. The internal processes lead to the compilation of self-evaluation reports, while the HQAA controls the external review process (i.e. maintaining registry of reviewers, setting up the review teams and compiling the external review reports).

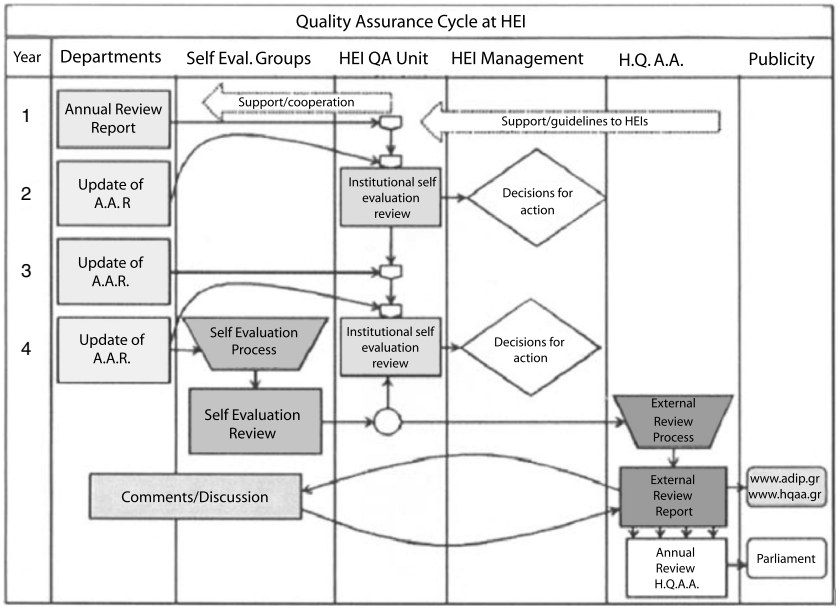

Figure 1.3. *Typical Quality Assurance cycle of an HEI (proposed by the HQAA)*

According to the latest published report from ADIP [ADI 12], the internal self-evaluation of Greek HEIs has been completed to a level of 85%. 285 university departments and 186 TEI departments have submitted their internal evaluation with only 72 departments remaining to submit the required report. As far as the progress of external evaluation is concerned, Table 1.5 summarizes the situation up to now (06/2012).

Year	Universities	TEIs	Total
2008	2	3	5
2009	–	–	–
2010	19	19	38
2011	48	33	81
2012	23	20	43
		Total	167
Independent support academic units			4
		Grand total	171

Table 1.5. *External evaluations of Greek HEIs by year*

The status of Greek higher education, according to the Bologna process stocktaking, is presented in Table 1.6.

Degree system		Degree
1	Stage of implementation of the first and second cycle	5
2	Access to the next cycle	5
3	Implementation of national qualifications framework	1
National implementation of ESG		
4	Stage of development of external quality assurance system	4
5	Level of student participation in quality assurance	4
6	Level of international participation in quality assurance	5
Recognition		
7	Stage of implementation of diploma supplement	5
8	National implementation of the principles of the Lisbon Recognition Convention	1
9	Stage of implementation of ECTS	5
10	Recognition of prior learning	2

Table 1.6. *Bologna process stocktaking [BOL 09]*

The difficulty in the application of a quality assurance policy in Greek HEIs is, by analysis of Greek policy documents, well established as indicated in [KAV 11]. It is important to note the existence of difficulties in the implementation of quality assurance procedures after the voting of a law. ADIP (Hellenic Quality Assurance Agency for Higher Education) reported that it has encountered a number of difficulties and bureaucratic problems in its operation. As ADIP stated in four different reports, these problems often did not emanate from actors, who were against the philosophy, structures and implementation of the law, but from the political leadership and the government itself; see for example [ADI 09, ADI 12].

The latest reform of Greek higher education was imposed by Law 4009/2011. The new Framework Act for higher education entitled "Structure, operation, quality assurance and internationalization of HEIs" was the first, in the history of modern Greece, to gain support from both major political parties (the socialists and the conservatives). For the first time, three-quarters of the Greek Parliament voted in favor of the Framework Act for higher education.

One of the major reforms was the change in the electoral system of rectors. Under the new system, rectors are appointed by a governing board following an internationally published call for applications. The aim is to tackle a long-lasting problem in Greek higher education, which is the active involvement of political parties, through their youth, in the election of the rector. Another notable reform was the abolition of the academic asylum law. The so-called university asylum, or academic asylum as stated in the law, had been a result of the student uprising in 1973. The initial purpose of this was to reassure the free movement of academic ideas within a safe university environment. However, for many years, this part of the law had been violated by extremists who used university grounds to avoid arrest, before, after or during violent demonstrations [PAP 11].

Contrary to expectations, the introduction of this reform has been received positively by the general public and most importantly by the majority of the students, as is revealed by an overview of Greek media of the period. On the other hand, there was a strong opposition from a number of university rectors and a left-oriented minority of academic staff and students. For the time being, part of the law concerning the rectors' election has not been implemented. At this moment (05/2012), taking into account the Greek debt crisis, the strong public opposition to the austerity measures by the IMF and the Troika and the somewhat unstable political situation, the implementation of the latest Framework Act remains uncertain.

1.5.3. *Accreditation of higher engineering education in Greece*

A brief description on an accreditation scheme for Greek higher engineering education is presented in [TRE 07]. In Greece, the engineering academic title "Graduated Engineer" followed by the respective specialization, e.g. *Civil Grad. Eng.*, is protected by the Law 1477/1938; therefore only an engineering department belonging to one of the technical universities or faculties of engineering in universities is allowed to award this title.

The equivalence of foreign academic titles, along with the previous title of Graduate Engineer is granted by the DOATAP (previously DIKATSA) (Inter-university Center for the Recognition of Foreign Titles of Studies) being the competent authority for the recognition of diplomas of foreign universities. As all Greek engineering faculties offer curricula of five years for the first degree (diploma), equivalence is recognized only for those diplomas from abroad that have a similar total duration of studies. For degrees of duration less than five years, the candidate has to

follow and pass exams in additional courses so that equivalence can be granted.

The accreditation and admission to the profession of engineer in Greece is the responsibility of the Technical Chamber of Greece (TEE), established to "advance the education and training of engineers and to promote the science of and practice of engineering for the public benefit". TEE has the right and the duty to evaluate the adequacy of the graduate's preparation to start on a professional career. To this effect, it awards the "Permission of Exercising the Profession of Engineer" under the fulfillment of two prerequisites:

– A "Graduated Engineer" diploma, obtained (as previously explained) after a five-year engineering curriculum or an equivalent foreign title.

– An examination organized and run by the TEE. After successfully passing this exam, the applicant is enrolled in the TEE.

Once the "Permission of Exercising the Profession of Engineer" is granted to a graduate engineer, this remains valid for his whole professional life. It is to be noted that to date no similar examination procedure and acceptance exists for graduates from the short-cycle (three years) engineering curricula provided by the TEIs, a fact that leads to a lack of established "professional rights" for these graduates.

1.5.4. *Selected cases on QA applications in Greek (engineering) HEIs*

In the early 1990s, an attempt was made to introduce institutional or departmental evaluation (Article 24, Law 2083/1992) but met strong reactions from the opposition political parties and universities as well [ASD 09]. As indicated in [BIL 04], "in Greece, assessment or evaluation

could not be discussed by the university community until the early 1990s, since all initiatives in the past were taken by the Ministry of Education. Evaluation thus became another field for the traditional opposition between universities and state in Greece".

Despite the strong resistance against any national evaluation framework, Greek HEIs have participated in various international evaluation projects since the mid-1990s. This "initial" movement toward a quality culture is attributed mainly to two interrelated reasons: the first reason is the sensitization of some Greek HEIs (faculty staff and leadership) to the whole concept of quality and evaluation; this has resulted in a number of initiatives that were taken by the HEIs themselves. The second was the change in the policy applied by the State, i.e. a transition from a top-down process (where the MoE centrally plans and controls the evaluation procedures) to a bottom-up process where the institutions are taking initiatives.

In the European pilot program "European Pilot Project for Evaluating Quality in Higher Education" implemented in 1994–1995, two Greek HEIs, namely the Department of Electronic Engineering and Computer Engineering of National Technical University of Athens (NTUA) and the Department of Electrical Engineering of TEI of Patras, participated [MOE 96].

Greek HEI participation in international quality assurance initiatives, as well as, similar national attempts as part of the Europeanization process is presented in [BIL 04, ASD 09, KAV 11]; therefore, they are not discussed here.

The evaluation of a Greek engineering department (Department of Production Engineering and Management of the Technical University of Crete) is reported in [POL 04]. The method used was a value-focused approach within the

framework of multi-criteria analysis methodology. According to this methodology, the department's global performance depends on a set of criteria representing service characteristic dimensions. The department's performance on these discrete criteria is able to prescribe its global performance. For the identification of the effect that the different dimensions and functions of the department exerted on its global performance, performance/importance diagrams were constructed.

The process used for the evaluation of the department consisted of four phases: (1) preliminary analysis, (2) self-evaluation, (3) review visit and (4) results.

The evaluation model consisted of five basic dimensions: (1) administration, (2) education, (3) research, (4) graduate satisfaction and (5) acceptance from the labor market.

The external reviewers, along with representatives of the department (professors, staff office, students), specified the weights of the five basic dimensions according to the objectives and scope of the department. The resultant excellence model of the department closely resembles the EFQM model. The evaluation process of the department was initiated on March 1999 and ended in December of the same year.

Some years later (2005), the Department of Electronics/ School of Technological Applications/TEI of Thessalonica decided to use a modified EFQM model for self-assessment and (in accordance with Law 3374/05) for satisfying the requirements implied by possible collaborations within the EHEA. A task-force group was formed and the self-assessment process was realized during the academic year 2006–2007. The outputs were as follows:

– A definition of strengths and areas for improvement against each sub-criterion of the model, i.e. a type of SWOT analysis.

– A set of prioritized actions that can be integrated into the business planning process.

– A score for each sub-criterion and criterion.

– An overall score.

The modified EFQM model, as well as the implementation process, were presented in [SPA 08] and therefore not considered here.

The extent of use of the ISO standards in Greek universities till 2006 was reported in [PAP 10]. Data revealed that ISO standards were applied in 6 Greek universities out of the total 21. When a university was implementing ISO standards it was usually in separate laboratories or academic support services but not in the entire university. Authors found 23 cases in which ISO 9001:2000 were applied and 11 cases for EN 45001/ISO 17025 application. Out of the wide variety of laboratories implementing ISO standards, ISO 9001:2000 and ISO 17025 were the most "popular" in engineering (mechanical, chemical and civil) laboratories and in the medical field laboratories. On the other hand, academic support services such as research committees and libraries had also implemented ISO 9001. Authors also pointed out the difficulties in obtaining reliable information regarding the number of ISO 9000 registered educational institutions.

To the author's knowledge, there is no updated data available concerning the diffusion of ISO standards to Greek HEIs. On the other hand, the Hellenic Open University, from 10/2008, is the only Greek HEI certified according to ISO 9001:2008 for its entire operations (provision of distance education in both undergraduate and postgraduate levels,

development and utilization of appropriate learning material and methods of teaching, planning and implementation of research projects, etc.).

The procedures followed for the application of quality principles and practices to an engineering department (Department of Mechanical Engineering/University of Thessaly) in the period 2002–2008 are presented in [STA 10]. It should be noted that the time period referred to is the transition period for HEIs, from voluntary participation to European quality initiatives to the implementation of the national quality assurance framework (Law 3374/2005); see also section 1.5.2.

In the case of this department, a mission statement was finally agreed upon, in 2008 focusing on the following objectives:

– To produce new fundamental and applied knowledge and know-how, through systematic research.

– To promote critical thinking aimed at enhancing the knowledge, skills and capabilities of its students and researchers through inspired teaching.

– To provide high-level services and consulting at a local, national and international level.

– To succeed in the competitive contest for research funding and human resources.

– To ensure the quality of all types of service that it provides and to reward its staff for its efforts in the best possible way.

The curricula reform was designed along the following lines, which reflect a strategy toward the development of a quality culture:

1) Reinforcement of the laboratory skills of the students and integration of case studies in all courses.

2) Training in the use of modern computational tools, introduction of new subjects and teaching modes.

3) Development of an inclusive diploma study plan (course credits – weekly student load – interdependence of courses – integration in course cycles).

4) Support for all courses via the development of functional web pages, including course material, a variety of references, books, foreign language bibliography, software, technical rules, professional regulations and directives.

5) Establishment of a quality assurance office, to coordinate and support the continuing development of teaching, research and service quality standards, indices and self-evaluation processes and also to develop and maintain a network for regular contacts and feedback reception by the alumni.

An overview of the QA system applied at the Technological Education Institute of Larissa is presented in [TRI 12]; see also [TRI 09]. The road to application of Law 3374/2005 is described through the investigation of leadership, culture, student satisfaction, graduate assessment and teaching performance evaluations. Two frameworks of service quality measurement based on SERVQUAL were summarized referring to the quality of teaching and administration: First, Owlia and Aspinwall's theoretical framework of service quality [OWL 96] with an emphasis on teaching aspects of education (academic resources, competence, attitude, content, etc.) and second, Waugh's [WAU 01] model of administrative and supportive services quality (tangibles, reliability and responsiveness, assurance and empathy). Quality assessment by students and graduates was performed by properly designed questionnaires. A previous study on service quality assessment at the Technological Education Institute of Serres was based on similar methodologies, i.e. the standardized SERVQUAL instrument [PAR 97] was used,

in which only the language adjustment was made, to fit in the academic environment; see [ZAF 08]. The findings revealed an existing gap in the way students and staff regarded education quality. This gap consisted mainly of differentiations concerning expected and perceived quality. Staff had greater expectations, but they perceived current educational services, on the other hand, to be of a higher level. Students had lower expectations and they perceived current educational status to be of a lower level [ZAF 08].

As has already been mentioned in section 1.5.2, one of the four axes of "evaluation criteria and indices" of the Law 3374/2005 is the "quality of the research work" performed in the HEI. In general, for the assessment of this aspect, a variety of approaches have been proposed, including expert-based qualitative approaches, such as evaluation by widely accepted researchers in specific disciplines with broad recognition in the scientific community (peer-review methodology). However, the rapid Internet proliferation and the easier access to scientific databases offer an alternative approach to assessing the scientific outcome of a researcher or a faculty. Nowadays, there seems to be a movement toward bibliometric measures and indices [ALT 12].

To the author's knowledge, there are only a few published studies by bibliometric methods concerning evaluation of HEIs or their departments in Greece and in south-eastern Europe. A piece of research in 2010 was focused exclusively on Greek Computer Science departments examining 552 faculty members using the Google Scholar and Publish or Perish software [LAZ 10]. In a similar previous publication, in 2008, an evaluation of Chemistry, Materials Science, Chemical Engineering and Physics in Greek university departments was presented. Six-hundred-and-one faculty members were assessed using the h-index as calculated from the Web of Science scientific database [KAT 08]. Recently, 93

Greek university departments from the fields of social sciences and humanities, sciences, engineering, pharmacy and economics were evaluated according to their faculty members' h-index using the Google Scholar scientific database [ALT 12], while the evaluation of the engineering departments of TEIs was done by a combination of a number of simple bibliometric indices and by using Scopus and was presented in [VAX 11].

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