

Meaning and benefits of the EUR-ACE label

Portuguese Higher Education Institutions

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Abstract— The European Higher Education Area was meant to ensure more comparable, compatible and coherent systems of higher education. This is possible however, only if there is a trustful relationship amongst its members and by the creation of quality assurance mechanisms, such as the European Association for Quality Assurance in Higher Education and its agencies. Nevertheless, it seems that in certain professional areas, like engineering, this European accreditation is not sufficient, and other means of quality assurance with worldwide recognition are sought, such as the EUR-ACE label. The aim of this research is to ascertain how the Portuguese Higher Education Institutions, with studies programmes that were awarded the EUR-ACE label, are using it in their promotion and what are its meanings and benefits. Based on the analysis done, it is possible to conclude that in spite of EUR-ACE labels being awarded to studies programmes and not to Institutions, they are being used to promote the Institutions. The stakeholders that are more frequently mentioned by the Institutions as beneficiaries of the EUR-ACE label are graduates, by means of the European and international professional mobility. The EUR-ACE label is seen by Institutions as a proof of the quality of studies programmes, because of its demanding and rigorous criteria, that assures Excellency and European and international high quality assurance standards.

Keywords—EUR-ACE; Accreditation; Engineering Education; Quality

I. INTRODUCTION

The European objective of promoting students' mobility and internationalization was operationalized by the creation of the European Higher Education Area (EHEA) and by making it a factor of attractiveness and economic competitiveness, whose maintenance is only possible by the establishment of a relationship of trust between its members, and by the creation of mechanisms that guarantee the quality of the studies programmes, by means of its accreditation, as is the case with the ENQA (European Association for Quality Assurance in Higher Education) and respective agencies (A3ES, in Portugal).

That does not prevent the need, in certain professional areas, such as engineering, for other means of certification with, not only European recognition, but worldwide, as is the case with the international label of quality EUR-ACE®. EUR-ACE® is a framework and accreditation system managed by ENAAE (European Network for Accreditation of Engineering Education) and its authorized agencies (almost totally located in Europe), that incorporates the views and perspectives of the

main stakeholders (students, higher education institutions, employers, professional organizations and accreditation agencies) and provides a set of standards that identifies high quality engineering degree programmes in Europe and abroad (29% of the countries with EUR-ACE labels are not in Europe). Its main objective is the academic and professional mobility of students and graduates [1].

ENAAE identifies several benefits of the EUR-ACE® label for the stakeholders. As Higher Education Institutions (HEIs) are concerned, the EUR-ACE® label: (1) Is an additional verification of high quality engineering education— it meets the quality standards set by the engineering profession; (2) Provides an incentive for prospective students to choose a EUR-ACE® labelled programme; (3) Provides reliable information on the quality of First Cycle programmes for admission to Second Cycle programmes; (4) Provides reliable information on the quality of Second Cycle programmes for admission to Doctoral programmes [2].

The benefits for students and engineering graduates are: (1) Assurance that the EUR-ACE® labelled programme meets high European and international standards and is recognised by employers in Europe; (2) Facilitates application to EUR-ACE® Master and Doctoral programmes in other Higher Education Institutions; (3) In countries where the engineering profession is regulated, EUR-ACE® labelled programmes meet the educational requirements for becoming a registered or chartered engineer; (4) The EUR-ACE® label facilitates graduate mobility as promoted by the European Directive on Recognition of Professional Qualification; (5) The EUR-ACE® label is the educational standard for the professional card as promoted by FEANI (Fédération Européenne d'Associations Nationales d'Ingénieurs / European Federation of National Engineering Associations); (6) FEANI automatically includes EUR-ACE® labelled programmes in its Index which lists educational requirements for the European Engineering title [3].

For employers, the benefits are the assurance of: (1) Candidates' knowledge, understanding and practical capabilities meet international standards in engineering education; (2) Consistency with recognised international educational standard descriptors such as the ECTS Diploma Supplement; (3) Reliable verification of the high quality of the engineering degree programme, of candidates, (above the generic minimum

standards set by law), as well as relevance to the engineering profession [4].

The benefits for professional engineering organisations are: (1) Reassurance that graduates meet educational requirements for admission to their registers (if the organisation has set its educational standard at EUR-ACE® level); (2) The EUR-ACE® label is the educational standard for the professional card; (3) FEANI automatically includes EUR-ACE® labelled programmes in its Index which lists educational requirements for the European Engineering title [5].

For accreditation agencies the benefits are: (1) Offer of an additional quality label to stakeholders (HEIs); (2) Certification of quality of accreditation agency according to European Standards and Guidelines for Quality Assurance in Higher Education in the European Higher Education Area (ESG) and employers' requirements; (3) Integration into the European network of engineering professionals; (4) Possibility of accrediting in other European countries and worldwide; (5) The emphases of outcome-based accreditation of engineering programmes; (6) Dialogue between ENAEE and other similar organisations such as the International Engineering [6].

The aim of this research is: i) to ascertain how the Portuguese HEIs, with studies programmes that were awarded the EUR-ACE® label, are using them in their promotion; and ii) to identify meanings and benefits that Portuguese HEIs attribute to the EUR-ACE® label, that justifies the investment and commitment to obtaining it.

II. METHOD

A. Participants

There are 207 engineering courses in higher education in Portugal [7], to which applications are done at a national level. These include five-year studies programmes (MI-Master: First and Second Cycles) and three-year studies programmes (L1-bachelor: First Cycle). These First Cycles can be supplemented with two years studies programmes (M2-Master: Second Cycle), but, in these case, the applications are manage by the HEI.

In 2014/15, Portuguese HEIs offered a total of 11,278 studies places in the 207 Portuguese engineering courses taught by 49 Portuguese HEIs (MI and L1; when the same programme offered classes in daytime and after-hours it was considered a single programme with the total number of study places, although formally being different programmes). In these 207 higher education studies programmes, 78 different designations were identified, which allowed the verification of the predominance of some scientific areas, such as Computer Science, Civil, Mechanical, Electronics and Computers and Environment.

As for the EUR-ACE® labels, 35 labels had been awarded to seven HEIs (by 31th December, 2014). Of these 35 labels, 4 (11%) were awarded to First Cycles, 15 (43%) to First and Second Cycles and 16 (46%) to Second Cycles (see table 1) [8].

TABLE I. HEI DISTRIBUTION OF EUR-ACE LABELS

HEIs	Number of EUR-ACE labels			
	M2	MI	L1	TOTAL
Universidade de Aveiro	1	4	0	5
Faculdade de Engenharia-UBI	2	0	0	2
Faculdade de Engenharia-UP	1	9	0	10
Instituto Superior Técnico-UTL	2	2	0	4
Escola de Ciências e Tecnologia-UTAD	3	0	0	3
Instituto Superior de Engenharia do Porto-IPP	5	0	4	9
ISCTE-Instituto Universitário de Lisboa	2	0	0	2

B. Procedure

Data on Portuguese Engineering courses and study places in 2014/15 were collected in the DGES website (provided by the Portuguese Education Ministry) [7].

Data on the awarded EUR-ACE® labels in Portugal was collected in the Portuguese ENAEE Agency, the Portuguese Engineering Association “Ordem dos Engenheiros” [8]

For the meanings and benefits that Portuguese HEIs attribute to the EUR-ACE® label, data was collected on institutional websites in December of 2014. The texts were collected using the BooTcat software [9] and the corpus was collated after a preliminary analysis of these texts, and the paragraphs that make reference to the EUR-ACE® label were selected. After this selection, the corpus was subject to a procedure of content analysis, using categories of quantitative and qualitative analysis. The qualitative analysis was carried out using emerging categories.

III. RESULTS

In the HEIs websites, there were 62 pages with relevant information related to the EUR-ACE® labels (see table 2).

TABLE II. HEIS WEBSITE PAGES

HEIs	N
Universidade de Aveiro	11
Faculdade de Engenharia-UBI	7
Faculdade de Engenharia-UP	15
Instituto Superior Técnico-UTL	5
Escola de Ciências e Tecnologia-UTAD	5
Instituto Superior de Engenharia do Porto-IPP	13
ISCTE-Instituto Universitário de Lisboa	6

As for different designations for the EUR-ACE® labels, the following were identified: “certificate” (15.4%), “diploma” (4.8%), “brand” (61.5%) e “label” (18.3%), with variations that included the terms quality (68.3%), European (22.5%) and international (9.2%) and some of its combinations (see table 3).

TABLE III. DESIGNATIONS USED FOR THE EUR-ACE® LABEL

DESIGNATIONS	N
Certificate	10
Quality certificate	2
European quality certificate (or vice-versa)	4
Diploma	1
European quality diploma (or vice-versa)	4
Brand	5
Quality brand	37
International quality brand (or vice-versa)	11
European quality brand (or vice-versa)	11
Label	6
Quality label	5
European quality label (or vice-versa)	8

As for the entities associated with the EUR-ACE® labels and its attribution, there were mentions to the Portuguese Engineering Association “Ordem dos Engenheiros” (61.9%), to the European Agency “ENAE” (36.5%) and the European Commission (1.6%) (see table 4).

TABLE IV. ENTITIES ASSOCIATED WITH THE EUR-ACE® LABEL

ENTITIES	N
Portuguese Engineering Association “Ordem dos Engenheiros”	39
ENAE	23
European Commission	1

The corpus analysis allowed the identification of two major qualitative categories: (1) EUR-ACE® label characteristics (53.1%); and (2) EUR-ACE® label benefits (46.9%).

As for the EUR-ACE® label characteristics emphasised by the HEIs, it stands out the ones associated with quality and Excellency (50.0%), the European (18.3%), and international aspect of the label (14.0%), as showed in table 5.

TABLE V. EUR-ACE® LABEL CHARACTERISTICS

Category 1: EUR-ACE® label characteristics	N
QUALITY: quality and excellency are associated with the label	82
EUROPEAN: the fact of being an European label is mentioned	30
INTERNATIONAL: the international character is emphasised	23
DURATION: the certification duration is stated	12
SYSTEM: the EUR-ACE system is described	12
CRITERIA: the criteria used in the evaluation are described	3
PROCESS: the certification process is described	2

As for the EUR-ACE® label benefits highlighted by the HEIs, it stands out those associated with students and graduates (44.8%). Professional mobility of graduates is the most mentioned one (27.6%), followed by the European and

international recognition of Diplomas (7.1%). Other less mentioned aspects (<2% each) are students mobility, the access to the Portuguese Engineering Association, to Engineering Card and to the European Accredited Engineer title.

However, the majority (55.2%) of the benefits of the EUR-ACE® label are those directly related to the promotion of Engineering courses (22.8%) and HEIs (32.4%).

In the case of courses, the most frequent is the mention to having the EUR-ACE® label next to the course name (42%), the reference to unique aspects which may be distinctive aspects (24%) and ongoing certification processes not yet concluded (21%). Other less mentioned aspects (three or fewer occurrences each) are the EUR-ACE® label meaning a particular teaching methodology, and the using the EUR-ACE taxonomy for the definition of the expected learning outcomes of graduates.

Regarding the HEIs, the total number of labels obtained and the reference to unique aspects that can be distinctive are the most mentioned (34% each), followed by indirect references, on which the label is used to promote related courses that do not have the label (17%). Other less mentioned aspects (three or fewer occurrences each) are the expectation that obtaining the EUR-ACE® label may increase the international partnerships, that obtaining the EUR-ACE® label is a part of the strategic management of HEIs and that the quality of the facilities may be attested by the EUR-ACE® label.

From all the references identified, those that associate the EUR-ACE® label with a certain level of quality (see table 5) stand out, as illustrated by the following excerpts, which tend to be repeated several times:

“The EUR-ACE **quality label** represents the beginning of a new cycle of evaluation of quality of engineering courses at a European level...”

“... aiming the mutual accreditation of engineering courses with **criteria of recognized requirement.**”

“... is based on a **set of requirements** that distinguish the high quality Engineering courses in Europe and abroad.”

“This certificate recognizes the **high standards of quality** of the course.”

“... fulfillment of **educational requirements** for courses ...”

“... a **reference and quality** course in higher education...”

“... the potential of this distinguishing mark **recognizes the quality and generates confidence...**”

“... **maximum European quality reference** for courses of engineering.”

“... that attests that the course meets **high requirements of quality.**”

“... the **demanding** EUR-ACE certification..., which attests to the **quality of training...**”

“... recognized the **excellence** of Masters this year...”

“... this **award of excellence** in engineering education in...”

“... it is a stimulus for the development of qualifications in engineering and **quality assurance systems...**”

“... it is a strong contribution to the **continuous improvement of the quality of training** of future Masters in engineering ...”

“ the professional recognition legitimized with the **quality assurance** in its formation ...”

“... the basis of a **consolidated comprehensive quality system**.”

“... a vision of a **future of quality** ...”

The professional mobility of graduates tends to be referred to in a manner almost standard way by the different HEIs:

“... it is internationally recognized, **facilitating** professional **mobility**... “

“... **recognized by employers** in Europe ...”

“... the promotion of **professional mobility**...”

“... to promote a **wider acceptance** of engineers ... in **all of Europe**.”

“... supports the **graduate’s internationalization**.”

“... it naturally **opens doors in foreign markets**.”

Also a mention to the use of distinctive aspects, as here exemplified:

“... the **only school in the country** that can offer all courses with this mark ...”

“This classification puts... in a **level unheard of** in higher education in Portugal...”

“It was not by chance that it was the **first HEI** in which all its courses were recognized...”

“... the **first national HEI** to certify a bachelor degree...”

“... the **second** school of engineering in Portugal with the **largest number** of certificated courses...”

“... it is among the **four** national institutions of higher education **with more** OE+EUR-ACE courses.”

“... the **first** and for a long time, the **only** ...”

“Is the **only** master's degree course in computer science to have the demanding certification...”

“... the **first** Physics Engineering, in the country, to receive the distinction ...”

“... the **first** Second Cycle Masters in the country to obtain this distinction ...”

A reference to the use of EUR-ACE® label to promote courses that do not have the EUR-ACE® label, is shown below with excerpts concerning uncertified courses, but which allow students to pursue studies in Second Cycles that have the EUR-ACE® label:

“For those interested in **pursuing their studies**, LETI can be complemented with a master's degree in telecommunications engineering and computer science (METI), holder the EUR-ACE quality label, awarded by the European Network for Accreditation of Engineering Education (ENAE).”

“If, at the same time, they decided to **continue their training**, they might enter a 2nd cycle course, like the Master in Computer Engineering (MEI), holder of the EUR-ACE quality label awarded by the European Network for Accreditation of Engineering Education (ENAE).”

“To finish the LETI, students **have direct access** to a Master's degree in Telecommunications and Computer Science Engineering (METI). The METI received in November 2009, the EUR-ACE quality label...”

“A degree in Electromechanical Engineering allows direct access to a Master's degree in Mechanical Engineering that has the EUR-ACE® label.”

IV. DISCUSSION

In Portugal, the majority of Engineering courses do not yet have the EUR-ACE® label. The first certifications of Second Cycles date back to 2008, but certification of First Cycles was only possible in 2013. The HEIs that invest in this certification tend to do so for more than one course, and there is evidence in some of the excerpts of the HEIs wanting to be the one that has more EUR-ACE® labels, or have all courses with EUR-ACE® labels, or be the second with more EUR-ACE® labels, or even be part of the group that have more EUR-ACE® labels. That is, the amount of EUR-ACE® labels, being significant and representative is not seen by the HEI only as an indicator of the quality of their courses, but also of the HEI itself.

Even with regard to Engineering courses, there is an attempt to differentiate themselves, being the first to have a course with certification, or a certain kind of course, or the first course in a certain scientific area, taking advantage of transitional situations unlikely to be repeated in the future (at the time this text was written, many of the declarations made by HEIs are dated, and no longer true. For example, Instituto Superior de Engenharia now has 11 EUR-ACE® labels, being the leader in the Iberian Peninsula).

Resorting to EUR-ACE® labels of Second cycles to promote the First Cycles that accessed them, may be explained by the fact that until 2013 the Portuguese Certification Agency did not do the certification of the First Cycles. Remains to be seen if this type of indirect reference continues in the future.

Also, as the evidence clearly shows there is some proliferation of designations. In addition to "brand" and "label", used officially by the ENAE and by the Portuguese Engineering Association, HEIs also used terms like "certificate" and "diploma". The word "quality" is associated with the EUR-ACE "label" or "brand", which is expected because the EUR-ACE® label was defined in this way. To strengthen the quality aspect of the EUR-ACE® label, the HEIs also associate it with high standards, the requirements compliancy, trust, and excellence, accompanied by a set of superlatives such as higher, maximum, among others.

Although the label is assigned by the Portuguese Engineering Association, its European character is often referred to, as well as its relationship with the ENAE. Even if the majority of courses certificated are Europeans, there are labels assigned in America, Asia and Australia, which may justify the multiple references made by the HEIs to the international character (instead of merely European) of the EUR-ACE® label.

In terms of direct beneficiaries, the emphasis is given to graduates and professional mobility, and European and international recognition that the EUR-ACE® label aims to

provide them with. Secondly are the benefits to the curricular aspects of the course and for students.

Thus, based on the analysis undertaken it is possible to conclude that: Portuguese HEIs, with studies programmes to which the EUR-ACE® label has been assigned, are using it in the promotion not only of Engineering Courses, but also to promote First Cycle courses that precede them, as well as in the promotion of their own institutions; most frequent recipients of the benefits of the EUR-ACE® label are the graduates by means of European and international professional mobility that the label can give them; that the quality provided by the EUR-ACE® label is, according to the HIE, guaranteed by the fulfilment of criteria and demanding requirements that ensure excellence and high standards of European and international quality.

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