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Benefits and challenges of cross-border quality assurance in higher education. A case study in engineering education in Europe

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Abstract

Quality assurance in higher education has become a global activity. In the European Higher Education Area, cross-border quality assurance has been heavily encouraged by the European Commission. Behind this, lies the belief that encouraging competition among quality assurance bodies and introducing a liberal 'market' logic into the sector would result in a better overall quality of higher education. However, some critical voices have pinpointed possible risks of this practice. This calls for a better understanding of the actual implications of cross-border quality assurance. Using a purposely chosen case study, this article reflects on the risks and benefits of cross-border quality assurance in Europe. The case study involves the accreditation in the engineering sector in Belgium by a French accreditation agency, in partnership with a Belgian agency. Benefits and challenges of cross-border quality assurance are identified, as well as several key lessons for quality assurance bodies involved in this type of activity.

Keywords

Cross-border quality assurance, accreditation, engineering higher education, French Community of Belgium.

Introduction

Over the last two decades, quality assurance and accountability in higher education have gained momentum worldwide, as a means for increasing performance and efficiency of higher education systems (Billing, 2004; Ewell, 2010).

It has been noted that quality assurance in higher education has become a global activity (Harvey, 2004; Huisman & Currie, 2004; Blanco Ramírez, 2014), with different supranational assessment or control processes in place, particularly in certain disciplines, such as business management and engineering (Patil & Codner, 2007; Thomas & Urgel, 2007; Zammuto, 2008). In the field of development, international and multilateral organisations have engaged in capacity-building initiatives in the so-called Global South (Stella, 2006; Van der Wende, 2007). Furthermore, many countries, particularly from the South, have become importers of quality assurance approaches.
and services coming from foreign quality assurance providers (Blanco Ramírez, 2014).

In the European arena, cross-border quality assurance, that is, activities of a quality assurance agency carried out in a country other than that in which it is based or primarily

operates (EUA, 2017), has been encouraged since the foundation of the European Higher Education Area (EHEA). Indeed, the European Quality Assurance Registry (EQAR), one of the major players in the field within Europe, was conceived from the start by the Ministers as a tool to encourage and facilitate the provision of quality across borders. Particularly, in the Yerevan Communiqué (EHEA, 2015), government ministers in charge of higher education in the EHEA committed to allowing 'higher education institutions to use a suitable EQAR registered agency for their external quality assurance process, respecting the national arrangements for the decision making on quality assurance outcomes'. Behind this favourable policy towards cross-border quality assurance lies the belief that encouraging competition among quality assurance bodies and introducing a liberal 'market' logic into the quality assurance sector will result in a better overall quality of the higher education system (Knight, 2002; Rawazik & Carroll, 2009; Sánchez-Chaparro *et al.*, 2019). However, there is not yet a clear understanding of the actual impact of this strategy in different sectors and geographical contexts.

This article adopts a case-study approach and addresses the following research question. What are the actual benefits and challenges of cross-border quality assurance for the accreditation of engineering programmes in Europe?

Literature review: benefits and challenges of cross-border quality assurance

Quality assurance of higher education programmes and institutions has been one of the cornerstones of the Bologna process since its creation. Quality assurance has the primary mission of building mutual trust among higher education institutions and other stakeholders all over Europe (Bergan, 2011). Together with other structural elements, such as the European Qualification Framework and the European Credit Transfer System, quality assurance constitutes the foundation for a smooth mobility of students and graduates within the EHEA (EHEA, 2015).

The particular European approach to quality assurance is specified in a key document, the *Standards and Guidelines for Quality Assurance in the European Higher Education Area* (ESG) (ENQA *et al.*, 2015). This document reflects a consensus among all the

organisations concerned with the promotion and implementation of quality assurance in the European Higher Education Area and has been seen as an important step towards creating more transparency and accountability in the area of quality assurance in Europe (Stensaker *et al*., 2011). The ESG makes a distinction between 'internal quality assurance', the quality assurance practices and strategies put in practice by higher education institutions to ensure their own educational quality, and 'external quality assurance', the strategies and processes implemented by external bodies (agencies or government). At an institutional level, external quality assurance is supposed to play a double role. On the one hand external quality assurance processes act as a regulatory or control mechanism; on the other hand, external quality assurance should also be a tool to support internal enhancement. The degree to which these two dimensions, accountability and enhancement, are present in the external quality assurance system is different in each national context within the EHEA but there is a consensus regarding the need to balance or at least consider these two aspects when designing an external system (Vroeijenstijn, 1995; Billing, 2004; ENQA *et al*., 2015). Extensive literature has been devoted to analysing the tensions and conflicts between internal quality assurance and the various forms of external quality assurance and particularly between internal improvement and the accountability or regulatory facet of quality assurance (Amaral & Rosa, 2010; Huisman & Westerheijden, 2010; Grochau *et al*., 2018).

Many quality assurance agencies have been developed since the beginning of the century and are now well established in the majority of EHEA countries. The European Network for Quality Assurance in Higher Education (ENQA) is an association whose members are the external quality assurance bodies officially recognised in each country. As of October 2021, ENQA included 54 members in 29 EHEA countries.

Another key actor in the external quality assurance landscape in Europe is the European Quality Assurance Registry (EQAR). This registry, funded in 2008 after a request from the Ministerial Conference in London (EHEA, 2007), is meant to be a transparency tool, listing those agencies that have demonstrated their substantial compliance with the ESG. EQAR was also conceived from the start by the ministers as a key tool to encourage and facilitate cross-border quality assurance, which would result in a better overall quality of the European higher education system.

Indeed, potential benefits of cross-border quality assurance have been identified in literature, such as a better match between a higher education institution's mission and

profile and the chosen quality assurance body (EQAR, 2014); better external recognition of higher education institutions and qualifications (Knight, 2005; Gift *et al*., 2006; Hou, 2012); increased stakeholder engagement (Elliott & Goh, 2013; Cooper *et al*., 2014); learning opportunities for all involved parties as well as increased prestige for quality assurance agencies engaging in cross-border activities (EQAR, 2014).

However, other voices present a less positive view on the matter. Several issues have been highlighted that make quality assurance in the cross-border context problematic; particularly, the lack of a global definition of quality (Lagrosen *et al*., 2004; Pyvis, 2011; Blanco Ramírez, 2014), as well as questions about how market forces, legitimate differences of quality and conceptions of trust affect quality assurance of foreign education institutions (Hoecht, 2006; Kinser & Lane, 2013; Stensaker & Maassen, 2015). Beyond the European context, certain authors warn about possible colonial effects of cross-border quality assurance, as higher education institutions in less developed countries could be prone to uncritically adopt quality assurance approaches developed in the North (Harvey, 2004, Chung Sea Law, 2010; Blanco Ramírez, 2014). The high costs and resources invested in cross-border quality assurance activities are also pinpointed as an additional risk (Grifoll *et al*., 2015).

In the face of these contrasting views, more research is needed regarding the actual risks and benefits of cross-border quality assurance. Valuable lessons can be extracted from the analysis of case studies in specific contexts.

Objective and methodology

The goal of this article is to contribute to the reflection around the risks and benefits of cross-border quality assurance and, specifically, cross-border accreditation in higher education, through the analysis of a purposely-chosen case study.

In particular, this study analyses the case of the accreditation of the engineering programmes in the French Community of Belgium by the French engineering accreditation agency, Commission des Titres d'Ingénieurs (CTI). This accreditation mission, which has been conducted in collaboration with the incumbent national quality assurance agency, Agence pour l'Évaluation de la Qualité dans l'Enseignement Supérieur (AEQES), is of particular interest due to its wide scope and duration. The collaboration between the two bodies began in December 2009 and is still ongoing as of October 2020.

As for its scope, accreditation has been conducted at the level of the whole French Community of Belgium higher education system and has encompassed most programmes in the field of agronomic sciences, biological engineering and engineering sciences offered by four universities.

This research follows a case study methodology, based on the analysis of a variety of data sources that offer rich empirical descriptions of specific instances of a contemporary phenomenon, 'the case' (Yin, 1981). Case studies enable insights into complex cause-effect relationships that can provide useful pointers for addressing major substantive themes in a field (Yin, 1992). A wide range of fields have used case studies, including education (Yazan, 2015; Yin, 2017; Sánchez-Chaparro *et al*., 2020).

This case study drew on the following sources of information: institutional assessment reports, institutional accreditation reports, cross-sectional report (or 'thematic analysis') and direct observation in the field (including participating in actual assessment missions). This material was analysed using coded-based content analysis techniques (Miles & Huberman, 1994; Saldana, 2015).

Engineering education and accreditation in Europe

Several regulatory frameworks and bodies, as well as several cultural conceptions regarding the level and profile of engineering programmes coexist in Europe (Augusti, 1999; Heitmann & Augusti, 2001; Patil & Codner, 2007).

Regarding the level, as a general rule, engineering programmes follow the standard Bologna bachelor-master cycle structure and adhere to the descriptors of the European Qualification Framework. Master-level integrated programmes, such as the French 'diplôme d'ingénieur', which don't normally include the award of an intermediate bachelor degree, are also possible in certain national systems. As for the profile, there are well-known dichotomies that can even co-exist in different institutions in the same national context, such as application-oriented versus more theoretical-oriented programmes, or specialised versus generalist degrees (Lemaître, 2017).

This diverse engineering education ecosystem is considered an asset to preserve. Indeed, 'responding to the diversity of higher education systems, institutions, programmes and students' is acknowledged as one of the guiding principles of quality assurance in Europe (ENQA *et al*, 2015). However, diversity in engineering education can be an obstacle to

transnational recognition and mobility of engineering students and professionals within and outside Europe (Augusti, 1999).

A pan-European system for the accreditation of engineering programmes, has been developed as a mechanism to address these difficulties. The EUR-ACE system defines a set of standards for programme outcomes at bachelor and master levels, as well as several standards regarding the way a programme is managed (ENAEE, 2015). Even though EUR-ACE standards were the result of a wide consensus among engineering accreditation agencies in Europe, applying a common framework for the accreditation of highly diverse engineering education programmes remains a challenge (Augusti, 2007).

The accreditation is currently managed by the European Network of the Accreditation of Engineering Education (ENAEE), created in 2006. Accreditation is delivered in a decentralised manner through national engineering accreditation agencies. A mutual recognition agreement of EUR-ACE-labelled degree programmes was signed in 2014 by all concerned agencies. Regarding cross-border accreditation experiences, guidelines for good practice have been produced by ENAEE (ENAEE, 2016), which particularly encourage the foreign agency to establish collaborations with the assessment and accreditation bodies existing in the target country. However, this concerns a minority of ENAEE agencies because most are neither allowed by their statutes nor equipped for transnational activities.

Results of the case study

CTI and AEQES

CTI was established in 1934 by French law. It is responsible in France for setting the standards for the 'Titre d'ingénieur diplômé' (master degree of engineering science) and for the programme accreditation in higher education institutions willing to deliver it. It is a member of ENQA since 2005 and is registered in EQAR since 2010. Cross-border accreditation has been part of CTI's mission since its creation. Indeed, its founding law states that the graduates of foreign accredited programmes are entitled to hold the 'Titre d'ingénieur diplômé' and have the same professional recognition in France as graduates from national institutions. CTI is currently active in 12 countries outside France; specifically, Belgium, Bulgaria, Burkina Faso, Cameroun, China, Ivory Coast, Spain, Lebanon, Morocco, Switzerland, Tunisia and Vietnam.

AEQES was established by the French Community of Belgium in 2002 and restructured in 2008. AEQES uses a formative quality evaluation process, focusing on the development of a true quality culture within each evaluated institution. The results of the evaluation process has no formal effects on an institution's funding or authorisation. AEQES is an active participant in the European Higher Education Area. It has been a member of ENQA since 2011 and registered in EQAR since 2012.

Timeline and scope of the collaboration

The collaboration between CTI and AEQES started in December 2009 after an official demand from the four universities of the French Community of Belgium offering 'ingénieur civil' and 'bio-ingénieur' engineering programmes. CTI and AEQES initiated a collaboration to organise a joint mission whose objective was twofold:

- The evaluation of engineering programmes according to AEQES and French Community of Belgium legal requirements.
- The accreditation of engineering programmes according to CTI's accreditation criteria, which would provide access to the 'admission' of the programmes by the French Government and to the EUR-ACE label.

The demand included five master-level engineering programmes in the field of agronomic sciences and biological engineering and fifteen in the field of engineering sciences (Table 1) in four universities: the Catholic University of Louvain, the Free University of Brussels, the University of Liège (including the Faculty of Agricultural Sciences of Gembloux) and the University of Mons.

Table 1. Engineering programmes and number of students per programme delivered by universities in the French Community of Belgium (academic year: 2009–2010).

	ULg	UCL	ULB	UMons	Total
Sciences agronomiques et ingénierie biologique	***684***	***659***	***314***		***1657***
Bachelier en sciences de l'ingénieur (Bioingénieur)	493	486	229		1208
Master bioingénieur : sciences et technologies de l'environnement	61	48	33		142
Master bioingénieur : gestion des forêts et des espaces naturels	26	10			36
Master bioingénieur : sciences agronomiques	65	65	15		145
Master bioingénieur : chimie et bio-industries	39	50	37		126
Sciences de l'ingénieur (ingénieur civil)	***853***	***1388***	***1000***	***724***	***3965***
Bachelier en sciences de l'ingénieur (Ingénieur civil)	523	818	616	425	2382
Master ingénieur civil des mines et géologue	17			26	43
Master ingénieur civil en chimie et science des matériaux	17	58	23	18	116
Master ingénieur civil physicien	15	13	32		60
Master ingénieur civil électricien	33	42	40	59	174
Master ingénieur civil électromécanicien	33	65	50		148
Master ingénieur civil en aérospatiale	46				46
Master ingénieur civil mécanicien	25	79	47	54	205
Master ingénieur civil biomedical	21	13	23		57
Master ingénieur civil en informatique	22	39	39		100
Master ingénieur civil en informatique et gestion				83	83
Master ingénieur civil en mathématiques appliquées		58			58
Master ingénieur civil des constructions	49	68	49		166
Bachelier en sciences de l'ingénieur (Ingénieur civil architecte)	38	90	54	42	224
Master ingénieur civil architecte	14	45	27	17	103
TOTAL	***1537***	***2047***	***1314***	***724***	***5622***
Nombre de spécialités (bacheliers + masters)	***18***	***17***	***15***	***8***	***59***
Nombre de spécialités (masters)	***15***	***14***	***12***	***6***	***48***

Source: AEQES.
Key: UCL, Catholic University of Louvain; ULB, the Free University of Brussels; Ulg, the University of Liège, including the Faculty of Agricultural Sciences of Gembloux; UMons, the University of Mons

The two agencies started an intense collaboration to prepare the joint mission. Preparations included a feasibility study, the signature of a collaboration agreement, the preparation of a joint reference framework and the joint appointment of an expert panel. Missions were conducted according to the classic four-step process: self-assessment by the institution, external assessment including a site-visit, report by the experts and follow-up. The site visits took place in 2012–2013. A follow-up mission took place in 2015–2016. Further details on the development of this initial collaboration are described in previous publications (Sánchez-Chaparro *et al*., 2013).

Reports and formal outcomes of the missions

After the site visits, the following reports were produced by the experts.

- A review report per institution, published at full length on the AEQES website.
- A thematic analysis published on the AEQES website (AEQES, 2013), pinpointing general trends and challenges for all programmes assessed throughout the campaign and delivering some general recommendations.

- An accreditation report per institution containing the accreditation decisions on each master programme and specific recommendations, published on the CTI website.

As for the formal outcomes of the accreditation by CTI, three different decisions were possible:

- No accreditation.
- Accreditation with a duration below the maximum possible period.
- Accreditation for the maximum possible period (six years at the time).

The specific outcomes of the 2012–2013 accreditation campaign in French Community of Belgium show that accreditation results were successful for more than 80% of the engineering programmes under review (Table 2). Overall, engineering programmes in French Community of Belgium were judged to fulfil high academic standards and to adequately prepare students for the engineering profession. However, several critical problems were found in certain programmes, which resulted in a partial or negative accreditation. Recommendations for further improvement were also issued by the experts even when full accreditation was granted. The recommendations and critical problems found are presented in the following section.

Table 2. Outcomes of the accreditation campaign (n=43)

Type of decision	% or number of programmes
Accredited (full period)	49%
Accredited (partial period)	35%
Not accredited	16%
EUR-ACE® labels awarded	84%
Total number of programmes	43

Source: prepared by the authors

Recommendations of the 2012–2013 campaign

As a result of the accreditation exercise, recommendations were made at three levels: system level, institutional level and programme level.

System-level recommendations

CTI experts made recommendations regarding the governance model of the institutions and their level of autonomy (both subject to national regulation). Accreditation reports made repeated reference to a model of governance that the experts judged to be excessively complex, including a multiplicity of committees and organs. The search for consensus is a fundamental cultural and institutional value in-the French Community of Belgium, which was considered to hinder the reactivity and decision-making capacity of the institutions.

Institutional-level recommendations

An important part of recommendations referred to the management capacity of the institution and, in particular, to the capacity for formulating a strategy and linking it with an operational and feasible action plan.

There were also recommendations referring to the quality assurance system, most frequently addressing the convenience of incorporating industry representatives as part of external feedback mechanisms. An important number of recommendations referred to the development of formalised relationships with both alumni and industry, such as a formalised follow-up of the careers of graduates and the creation of advisory boards including industry representatives.

Issues regarding different aspects of internationalisation (lack of an overall strategy, low mobility rates, or insufficient language skills included in the programme) were also reflected in the recommendations. Finally, issues regarding human and material resources were also mentioned, especially pointing out the need to reinforce certain professional skills among teaching staff.

Programme-level recommendations

Most recommendations referred to issues regarding the programme profile. According to the experts, some programmes needed to work on enhancing the applied character of the curriculum and clearly drawing the frontiers with other related programmes in basic sciences or architecture. Experts recommended involving industry representatives in the definition of programme profiles as a first step towards developing and deploying a competence-based approach.

Issues related to recruitment, management and coordination were mentioned in several recommendations. Finally, the most important number of recommendations referred to

the contents and pedagogical methods. Regarding the contents, experts identified the need to include content elements related to applied or engineering technology in a cursus that was judged too close to basic science education. A lack of transdisciplinary components was also pointed out on several occasions, pointing out the lack of content elements related to the development of transferable and soft skills among engineering students.

Finally, regarding the methods, several recommendations stressed the importance of introducing specific approaches to enhance the engineering application competences of the students. The introduction or improvement of internships within industry was particularly stressed in the reports.

Negative accreditation decisions

Negative accreditation decisions were mainly linked to issues at the programme level and, in particular, to issues regarding the programme profile. Such profiles were considered too theory-oriented, lacking training in engineering practice and therefore excessively close to a programme in basic sciences. Another decisive factor was the defective implementation (or absence) of a competences-based approach.

Negative accreditation decisions were pronounced despite the acknowledgement in the reports that the programmes were of a high scientific quality and were appreciated by the stakeholders.

Challenges and Benefits of cross-border quality assurance for the accreditation of engineering programmes

Through the reported cross-border accreditation exercise, a national engineering accreditation agency was confronted by an engineering education system different from its own. A first consideration is the fact that the exercise was run smoothly and with considerable success as to the achieving of formal outcomes. Despite obvious differences between their contexts, as well as educational approaches and structures, French and Belgian engineering programmes were considered to some extent comparable. A discussion of the main challenges and benefits of cross-border quality assurance found in this particular case is presented below.

Challenges

Adaptation to the context

Even though fully immerse in the learning outcomes paradigm, CTI has inherited a long tradition of working with process-oriented criteria. National CTI's standards have been revised several times to adjust to the outcomes rationale but they still included specific 'à la française' requirements, such as the inclusion of compulsory professional internships, a minimum level of English proficiency for all graduates and specific governance models (Remaud *et al*., 2010; Rouvrais *et al*., 2018). CTI realised that the reference framework traditionally used in its national accreditation missions needed considerable adaptation to be applicable in the new context. Accreditation standards were reformulated to pay more attention to 'what' (the outcomes) than to 'how' (the specific strategies and practices).

Despite the adaptation effort, in the case of French Community of Belgium accreditations, CTI's experts were frequently referring to typical French strategies in the recommendations (internships or "stages" of different nature and extension, advisory boards with a specific structure or "Conseils de perfectionnement"). Certain accredited institutions felt that the reviewers were making a comparison between the French and the Belgian models, somehow imposing criteria that were not adapted to the context. During the 2015–2016 follow-up, it was obvious that recommendations related to the introduction of compulsory 'à la française' internships or mobility periods were considered problematic by the accredited institutions. Alternative solutions were negotiated at that time, such as the implementation of student portfolios, simulations, or serious games that would enable the institutions to respect the spirit (if not the 'letter') of the recommendations.

Control versus enhancement approach

EUR-ACE accreditation has two purposes (ENAEE, 2015): ensuring that all engineering programmes fulfil certain standards for programme outcomes and management (control); and contribute to raise the quality level of European engineering programmes (enhancement). However, as has often been noted, it is difficult to seamlessly combine accountability and enhancement within a single quality assurance process (Thune, 1996, Bogue & Hall, 2003).

Several crucial elements, such as transparency and openness of higher education institutions during the self-assessment phase, the behaviour and tone of panel members during site-visits and a balance between quantitative and qualitative criteria were fundamentally influenced by the fact that higher education institutions were undergoing

a process with formal consequences as opposed to going through a purely formative evaluation. Being able to effectively combine the accountability and the quality-enhancement approaches came up as one of the challenges of the collaboration.

Throughout the process, AEQES was vigilant in keeping the analytical and formative nature of the assessment at the same level as other 'standard' AEQES processes. However, some tensions inevitably arose along the way (Sánchez-Chaparro *et al*, 2013) and it could be argued that, to some extent, the particular national conception of external quality was altered due to this collaboration.

Problems of transparency and impact on the local higher education market

Some institutions understood the fact of having obtained a full-duration accreditation as a competitive advantage. Such was the case of one of the institutions that, being the only one to have obtained full-duration accreditations for all its programmes, presented itself as 'the *best* engineering HEI in the French Community of Belgium'.

As has been noted in previous publications (Lin *et al*., 2009; Gibbs, 2012; Sánchez-Chaparro *et al*., 2019), quality assurance has market and positional implications. In this case, maintaining that a longer accreditation duration means a superior performance over competitors is hardly legitimate. The quality assurance process is presented as an 'Excellence' certification, similar to other international accreditations in the field, while the truth is that CTI's accreditation ensures a certain programme profile and quality standards beyond a threshold. A restricted accreditation is just used by CTI as a tool to induce a rapid change in a particular field but it is not to be interpreted as a sign of inferior quality. Similar misleading statements concerning the meaning of accreditation durations have also been observed among engineering higher education institutions in France (Sánchez-Chaparro *et al*., 2019). In cross-border quality assurance situations in which the accreditation is a new element in the higher education landscape, public opinion could be particularly sensitive to this kind of distorted messages.

Feasibility issues

Cross-border accreditation experiences are often a one-shot experience. However, ensuring an appropriate follow-up requires the long-term engagement of the foreign agency. As of publication, the collaboration between CTI and AEQES, and the synchronisation of their respective calendars, has enabled such follow-ups but this is

complex and resource-intensive. The feasibility of the collaboration in the long term has always been under question, ever since the beginning of the AEQES-CTI joint missions. In fact, AEQES has recently put in place a new procedure which enables the recognition by AEQES of evaluation of accreditation processes carried out by other quality assurance bodies without direct participation of the local agency (AEQES, 2018).

Benefits

Sectorial approach

Higher education institutions stressed the fact that the quality assurance process was specifically adapted to the engineering education sector, which they regarded as a benefit. Furthermore, certain higher education institutions found it enriching to get specific first-hand advice regarding particular French practices that are widely recognised as good practices, such as the 'stages' (Rouvrais *et al.*, 2018). It seems that imported experiences can be a valuable input as long as they are not perceived as an imposition.

Stakeholder engagement

After the accreditation campaign, engineering higher education institutions in the French Community of Belgium were confronted with several challenges, such as developing appropriate links with industry or introducing compulsory internships. Remarkable changes were witnessed in most institutions in the 2015–2016 follow-up, in order to respond to CTI's recommendations. In fact, all programmes which had obtained a restricted accreditation (three years) in 2012–2013 were granted an extension of their accreditation duration for up to six years.

A true transformation dynamics was set in place, with all relevant internal and external stakeholders involved in a wide reflection process to internalise CTI's recommendations. Specifically, an internal discussion was initiated at the level of each institution around the value of mobility and industry internships and the extent to which these elements should be introduced within the cursus.

Better understanding of diversity

It is made clear by the EUR-ACE standards that engineering programmes must incorporate both theoretical and applied or practical components. However, the standards describe the level to be attained in each of these outcomes in a qualitative manner (for example, bachelor graduates must demonstrate knowledge, whereas master level graduates must demonstrate 'in-depth' knowledge), therefore leaving considerable room for interpretation and for accommodating different national traditions, as well as different institutional strategies.

CTI has always emphasised the importance of transferable skills, international awareness and work experience in the curricula. In the French Community of Belgium , the curricula are more knowledge-oriented; only a minority of students have prior work experience and an interest in international mobility. At the same time, programmes are traditionally among the highest ranked and most selective programmes, attracting the smartest students and providing the best doctorate students after graduation. Even if one of the main motivations of the programme managers for pursuing CTI accreditation was to assess and improve their current policies regarding the introduction of engineering application components into the curriculum, the extent to which CTI should enforce its criteria was a standing problem throughout the process.

Although diversity in the European context is considered a wealth to be preserved, there should still be certain limits. The EUR-ACE standards should define the limits of what can legitimately be considered engineering education in Europe in different national traditions and which must nevertheless be able to clearly differentiate itself from other educational offers, such as basic-science or management degrees. Otherwise, the EUR-ACE accreditation would be no more than a relativistic exercise, completely bound to national specificities and not useful for mutual recognition. The analysis of the French Community of Belgium engineering degrees through a French prism has clearly brought up this issue. Some of the French Community of Belgium programmes were considered too close to a basic sciences degree. However, it is clear that these frontiers were established mainly based on the French model. A European perspective on the matter is yet to be developed and cross-border quality assurance experiences can provide a significant input in this regard.

Conclusions, implications for practice and limitations

This study answers the research question initially formulated and identifies several challenges and benefits of cross-border quality assurance in the context of European higher education in engineering (Table 3). The findings mirror some of the risks and benefits previously identified in literature (Van Damme et al., 2004; Knight, 2005; Gift et al., 2006; Hou, 2011; Pyvis, 2011; Elliott & Goh, 2013; Blanco Ramírez, 2014; Cooper et al., 2014; EQAR, 2014; Grifoll et al., 2014) but also pinpoint new elements. The study also produced several valuable lessons about implementing CB accreditation experiences in the higher education sector (Table 4).

Table 3. Benefits and risks of cross-border quality assurance identified in this case study.

Benefits	Challenges
The quality assurance process is specifically adapted for the engineering education sector. Specific challenges of cross-border quality assurance increase stakeholder engagement and create a true internal transformation dynamics. Learning opportunities arise to improve processes and methodologies for the participating agencies. Institutions can learn from specific practices coming from another national system (e.g., work-based experience- 'stages'- in the French system). Cross-border accreditation can help to initiate a deeper discussion at the European level on the diversity of educational models (in this case in engineering), resulting in better recognition.	Some experts tend to impose their national specificities as requirements. Tensions between the local and the imported quality assurance approach. Great effort and resources invested in the experience by the two participating agencies. Difficulties for ensuring long-term follow-up and support institutional improvement. The real nature and consequences of the accreditation can be misunderstood by the institutions and the general public (problems of transparency).

Source: prepared by the authors

Table 4. Lessons learned about cross-border quality assurance

	Lessons

Fit-for-purpose approach	Importance of following an outcome-oriented approach. Specific national practices must be clearly identified as 'recommendations' or 'good practices' versus 'requirements'. Particular emphasis must be made in the establishment of effective relationships with industry and alumni, as a mean to develop, validate and implement a specific programme profile A close collaboration is needed with the national quality assurance body
Control versus enhancement approach	A control-accreditation approach must be combined with mechanisms to enable medium to long-term follow-up and support institutional improvement
Programme profile	Different programme orientations are possible (i.e., research versus vocational oriented) and this diversity must be acknowledged within a specific national and institutional context and respected.

Source: prepared by the authors

This study has limitations derived from the fact that it is restricted to a particular discipline and national context. Although it can be argued that the case is a unique example of cross-border accreditation at a national scale, more research aimed at exploring the benefits and challenges of cross-border quality assurance in other contexts and national settings would be of interest.

Perhaps the most valuable finding is that cross-border quality assurance could be used as a tool to better understand higher education diversity in Europe. The Dublin descriptors, as well as subject-specific standards (such as EUR-ACE in engineering) provide a general common core but difficulties of interpretation and consistency remain. Cross-border accreditation experiences provide interesting learning opportunities, as accreditation agencies find themselves in a good position to reflect upon how to apply the common standards to an educational model that is different from their own. Particularly, agencies need to adapt the way they implement the standards to clearly differentiate essential or core requirements from those that depend on the national context and that would not be appropriate to apply to a different national and cultural context. Indeed, cross-border accreditation can help to initiate a much-needed discussion at the European level aimed at clarifying the links and differences among different educational models, ultimately resulting in better recognition, enhanced institutional collaboration and greater graduate mobility.

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