ABET Accreditation in Europe: A Comparative Analysis

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Abstract

Accreditation serves as a critical marker of educational quality, with ABET representing a global benchmark in engineering and technology. While European nations maintain robust national accreditation systems, a strategic pursuit of ABET accreditation by select institutions persists. This study presents the first comprehensive, quantitative analysis of ABET-accredited programs across eight European nations, employing a structured benchmarking framework to move beyond descriptive counts. Our analysis reveals that ABET adoption in Europe is a targeted strategy for international differentiation rather than a broad quality assurance measure. This is evidenced by the overwhelming dominance of Engineering Accreditation Commission (EAC) programs (94.34%), a complete absence of Engineering Technology Accreditation Commission (ETAC) accreditation, and a high concentration of programs in elite technical universities in Turkey and Spain. Furthermore, historical data underscores the challenge of sustaining accreditation, highlighting the long-term resource commitment required. The European experience offers valuable lessons for global stakeholders, particularly in emerging educational hubs in the Association of Southeast Asian Nations (ASEAN) region, demonstrating that ABET functions most effectively as a complementary, top-tier credential within a multi-layered quality assurance ecosystem.

Keywords: ABET, Accreditation, Engineering, Technology, Europe, Benchmarking, Internationalization.

Introduction

Quality education is a core aspiration of the United Nations' Sustainable Development Goals, and program accreditation is an internationally accepted mark of academic excellence (United Nations, n.d.). An intense peer-review process, accreditation guarantees programs to be of acceptable international quality, but to remain accredited involves sustained quality enhancement through regular evaluations. Among numerous accrediting agencies, ABET has become the gold standard for quality assurance especially in engineering and technology programs globally.

European nations have established varied methods of quality assurance. Portugal has adopted a double accreditation system with compulsory institutional evaluation and the EUR-ACE quality seal for engineering degrees (Rocha et al., 2010). Spain has some special challenges, with certain Higher Education Institutions (HEIs) seeking ABET accreditation at the expense of money, internal imbalance, etc. while others support having a national-level EUR-ACE quality seal (Suarez et al., 2011). Germany's decentralized system is plagued by fragmentation and lack of alignment with measures of institutional quality, generating a lack of transparency (Kehm, 2013). Portugal's A3ES agency is a model of a centralized program evaluation (Reis et al., 2014), whereas the Netherlands' system is an implementation of New Public Management (NPM) doctrine in its political, institutional, and operational aspects (Enders & Westerheijden, 2014).

The implementation of quality assurance systems usually runs concurrently with other educational reforms. Spain's new accreditation system evolved concurrently with its transition to the European degree system (Ríos, 2015). Portugal exhibits partial compliance with European faculty quality standards (Cardoso et al., 2015), while Turkey has made substantial though unfinished improvements in quality management, as seen in a wide-ranging institutional survey (Eryılmaz et al., 2016). Comparative analyses identify Poland's tighter integration with ESG 2015 than Ukraine's continuous adaptation (Mazurkiewicz et al., 2017), while the Dutch-Flemish systems evidence post-convergence divergence despite their common NVAO framework (Bakhuis, 2019).

Professional quality assurance issues continue in varied educational environments. Spanish higher education institutions struggle with creating useful models of assessment for e-learning (Marciniak, 2018), and engineering schools globally need to include both microethical and macroethical aspects within their curriculum, with cultural background playing an important role in pedagogical strategies (Polmear et al., 2019). Quality assurance development in Turkey has a well-defined policy cycle from formulation to

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implementation (Yilmaz, 2019), whereas Georgia's reforms are mainly based on EU association agreements (Amashukeli et al., 2020). Austrian theory is best explained using historical-pedagogical description and structural-functional modeling (Mukan et al., 2020).

Large-scale educational reform efforts attest to the worldwide significance of quality assurance. Georgia's reforms in STEM education, underwritten by substantial U.S. investment through the Millennium Challenge Corporation, illustrate the international scope of quality improvement efforts (Goldman et al., 2021). Institutionally, studies using the DEMATEL method have found continuous quality improvement and program educational objectives to be the most important ABET criteria, while documentation culture and academic excellence were found to be less significant (Dursun et al., 2024).

While this study's primary data is geographically focused on Europe, its analytical framework and findings are designed for global relevance, with particular implications for emerging educational hubs in the Association of Southeast Asian Nations (ASEAN) region. European nations, with their well-established national accreditation systems (e.g., EUR-ACE), provide a critical case study for understanding why institutions voluntarily pursue additional, resource-intensive international accreditation like ABET. For ASEAN nations, which are actively harmonizing educational standards (e.g., through the ASEAN University Network-Quality Assurance) while competing for global talent and prestige, the European experience offers valuable lessons. Analysing the strategic drivers behind ABET adoption in a mature educational market like Europe can illuminate potential pathways, challenges, and strategic considerations for ASEAN institutions seeking to enhance their international visibility and graduate competitiveness.

Related Work

Existing research on ABET accreditation in Saudi Arabia reveals distinctive patterns at both institutional and regional levels. Study (Faiz & Almutairi, 2015) documented all ABET-accredited programs (associate to master's) in Saudi institutions as of 2015, identifying a unique concentration in specialized fields like aerospace engineering and biomedical technology—disciplines unaccredited in neighbouring Gulf Cooperation Council (GCC) countries. By 2021, follow-up research (Faiz & Almutairi, 2021) showed a threefold expansion of accredited bachelor's programs, while confirming King Fahd University of Petroleum & Minerals (KFUPM) as the sole institution maintaining ABET accreditation across all degree levels (Faiz & Almutairi, 2015).

Saudi quality assurance studies span multiple scales, from course-level evaluations (Faiz et al., 2014; Faiz & Almutairi, 2015) to program-wide assessments (Faiz & Almutairi, 2021a, 2021b; Faiz, 2023). This work is complemented by recent regional comparisons of GCC, non-GCC, Canadian, and Russian accreditation practices (Faiz et al., 2025a, 2025b, 2025c), which methodologically mirror the approach of the present study.

European ABET research, by contrast, suffers from three persistent gaps: (1) institution- or nation-specific focus, (2) disproportionate representation of faculty-authored case studies on ABET accreditation processes, and (3) lack of comprehensive cross-border analysis—a critical omission given the rising influence of international accreditation standards in higher education quality frameworks.

Methodology

The data for the master's degree programs listed in Table 1 were collected and analyzed according to the following procedure, using the ABET accreditation portal (ABET, 2025):

1. Navigate to the ABET accreditation portal at: https://amspub.abet.org/aps/category-search.
2. Apply the following filters in the drop-down menus:
    - **Commissions:** All Commissions
    - **Lead Societies:** All Lead Societies
    - **Disciplines:** All Disciplines
    - **Degree Level:** Master Degree
    - **Country:** Select each country individually (e.g., Spain), as listed in Table 1.
3. Ensure the following options are unchecked:
    - "Include institutions with historically accredited programs"
    - "Include programs available 100% online"
4. Click the "Export" button and select the "All" option to download the results into an Excel file for analysis.
5. In the downloaded Excel file, count the number of active master's programs by reviewing the appropriate data column.
6. Before querying the next country, click the "Reset" button to clear all previous filters.

This procedure was repeated to collect and analyze the data for all subsequent tables, adjusting the selections in the drop-down menus and checkboxes as required.

Comparative Analysis

To enable a comparative analysis, a benchmarking framework was developed based on the structure of the ABET criteria itself. The analysis proceeds across four key dimensions identified within the data:

1. **Scale and Concentration:** Benchmarking the volume and institutional concentration of

accredited programs to identify leaders and outliers.

2. **Programmatic Focus:** Analyzing the distribution of programs across the four ABET's commissions to reveal strategic priorities and alignment with national strengths.
3. **International Alignment:** Assessing participation in international mutual recognition agreements (e.g., Seoul Accord) as an indicator of global integration beyond the ABET seal itself.
4. **Sustainability and Volatility:** Examining historical accreditation data to gauge the long-term stability and challenges of maintaining ABET compliance.

This framework allows for a systematic cross-national comparison that moves beyond mere counts to interpret the strategic choices and outcomes of ABET accreditation in the European context.

Table 1 (ABET, 2025) displays the count of ABET-accredited programs in European countries as of 2025. Among the eight countries listed, Georgia and Turkey are transcontinental. According to the table, Turkey has the highest number of ABET-accredited bachelor's degree programs, followed by Spain, which leads in ABET-accredited master's degree programs.

Notably, the majority of Turkey's ABET-accredited bachelor's programs are concentrated at Istanbul Technical University (25), while Middle East Technical University offers 19 such programs across its Ankara and Northern Cyprus campuses. Similarly, in Spain, Universidad Politécnica de Madrid offers the highest number of ABET-accredited bachelor's programs (13), while Universitat Politècnica de València leads in master's programs (5).

It should also be noted that none of the listed European countries provide ABET-accredited associate degree programs.

Table 1. Number of active ABET-accredited programs in European countries (2025)

Countries	Associate	Bachelor's	Master's
Austria	0	1	0
Georgia	0	4	0
Germany	0	0	0
Netherlands	0	2	0
Poland	0	4	1
Portugal	0	1	1
Spain	0	21	11
Turkey	0	73	0
Total	**0**	**106**	**13**

Table 2 (ABET, 2025) presents the number of higher education institutions offering ABET-accredited programs in European countries as of 2025. The data shows that Turkey has the highest number of institutions with ABET-accredited bachelor's degree programs, followed by Spain, which also leads in institutions offering ABET-accredited master's degree programs.

In Turkey, some ABET-accredited bachelor's programs include Aeronautical Engineering and Textile Engineering, among others. Similarly, in Spain, accredited bachelor's programs include Aerospace Engineering and Telematics Engineering, along with others.

Table 2. Number of higher education institutions offering ABET-accredited programs in European countries (2025)

Countries	Associate	Bachelor's	Master's
Austria	0	1	0
Georgia	0	3	0
Germany	0	0	0
Netherlands	0	2	0
Poland	0	3	1
Portugal	0	1	1
Spain	0	4	4
Turkey	0	9	0
Total	**0**	**23**	**6**

Table 3 (ABET, 2025) displays the number of ABET-accredited programs in European countries that hold international mutual recognition agreements as of 2025. The data indicate that none of these countries have such agreements for associate or master's degree programs. At the bachelor's level, Poland leads with the highest number of ABET-accredited programs covered by international mutual recognition agreements. Notably, all four ABET-accredited bachelor's degree programs in these countries are recognized exclusively under the Seoul Accord, as highlighted in Table 3. It should also be noted that while Turkey and Spain collectively host the highest number of ABET-accredited bachelor's degree programs, none of these programs from either country have international mutual recognition agreements.

Table 3. Number of ABET-accredited programs covered by international mutual recognition agreements in European countries (2025)

Countries	Associate	Bachelor's	Master's
Austria	0	0	0
Georgia	0	1	0
Germany	0	0	0
Netherlands	0	0	0
Poland	0	2	0
Portugal	0	1	0
Spain	0	0	0
Turkey	0	0	0
Total	**0**	**4**	**0**

Table 4 (ABET, 2025) outlines the accreditation commissions responsible for ABET-accredited programs in European countries as of 2025. The table shows that three out of the four ABET accreditation commissions oversee accreditation activities at both bachelor's and master's degree levels in these countries. These commissions are: the Applied and Natural Science Accreditation Commission (ANSAC), the Computing Accreditation Commission (CAC), and the Engineering Accreditation Commission (EAC).

Table 4. Recognized accreditation commissions overseeing ABET-accredited programs in European countries (2025)

Countries	Associate	Bachelor's	Master's
Austria	-	EAC	-
Georgia	-	CAC, EAC	-
Germany	-	-	-
Netherlands	-	ANSAC	-
Poland	-	CAC, EAC	EAC
Portugal	-	CAC	EAC
Spain	-	EAC	EAC
Turkey	-	EAC	-

Table 5 (ABET, 2025) presents the number of ABET-accredited programs under ANSAC in European countries as of 2025. The data show that the Netherlands is the only country among these nations that hosts ANSAC-accredited bachelor's degree programs. Also, ANSAC-accredited programs constitute only 1.89% of all ABET-accredited programs in the 8 European countries compared.

Table 5. Number of ANSAC-evaluated ABET-accredited programs in European countries (2025)

Countries	Associate	Bachelor's	Master's
Austria	0	0	0
Georgia	0	0	0
Germany	0	0	0
Netherlands	0	2	0
Poland	0	0	0
Portugal	0	0	0
Spain	0	0	0
Turkey	0	0	0
Total	**0**	**2**	**0**

Table 6 (ABET, 2025) displays the number of ABET-accredited programs under CAC in European countries as of 2025. In Poland, the two CAC-accredited programs are Computer Science and Information Technology. Similarly, in Georgia and Portugal, the accredited programs are Computer Science and Information Systems, respectively. Also, CAC-accredited programs constitute only 3.77% of all ABET-accredited programs in the 8 European countries compared.

Table 6. Number of CAC-evaluated ABET-accredited programs in European countries (2025)

Countries	Associate	Bachelor's	Master's
Austria	0	0	0
Georgia	0	1	0
Germany	0	0	0
Netherlands	0	0	0
Poland	0	2	0
Portugal	0	1	0

Spain	0	0	0
Turkey	0	0	0
Total	**0**	**4**	**0**

Table 7 (ABET, 2025) presents the number of ABET-accredited programs under EAC in European countries as of 2025. The data show that Turkey has the highest number of EAC-accredited bachelor's degree programs, while Spain leads in EAC-accredited master's degree programs. Also, EAC-accredited programs constitute 94.34% of all ABET-accredited programs in the 8 European countries compared.

Table 7. Number of EAC-evaluated ABET-accredited programs in European countries (2025)

Countries	Associate	Bachelor's	Master's
Austria	0	1	0
Georgia	0	3	0
Germany	0	0	0
Netherlands	0	0	0
Poland	0	2	1
Portugal	0	0	1
Spain	0	21	11
Turkey	0	73	0
Total	**0**	**100**	**13**

Table 8 (ABET, 2025) presents data on historically ABET-accredited programs in European countries as of 2025. The historical data show that Turkey has the highest number of previously accredited bachelor's programs, while Spain has the highest number of previously accredited master's programs.

Table 8. Historically ABET-accredited programs in European countries (2025)

Countries	Associate	Bachelor's	Master's
Austria	0	0	0
Georgia	0	0	0
Germany	0	0	1
Netherlands	0	0	0
Poland	0	0	0
Portugal	0	0	0
Spain	0	1	5
Turkey	0	8	0
Total	**0**	**9**	**6**

Table 9 (ABET, 2025) displays the number of higher education institutions with historically ABET-accredited programs in European countries as of 2025. The data show that Germany and Spain are tied, with one institution in each country offering historically accredited programs: a bachelor's degree program in Spain and a master's degree program in Germany.

Table 9. Institutions with historical ABET accreditation in European countries (2025)

Countries	Associate	Bachelor's	Master's
Austria	0	0	0
Georgia	0	0	0
Germany	0	0	1
Netherlands	0	0	0
Poland	0	0	0
Portugal	0	0	0
Spain	0	1	2
Turkey	0	3	0
Total	**0**	**4**	**3**

While the majority of Turkey's current ABET-accredited bachelor's programs are concentrated at Istanbul Technical University (25), it has only one historically accredited bachelor's program. This contrasts with Bogazici University, which has six of Turkey's eight historically accredited bachelor's programs.

Figure 1 illustrates the percentage distribution of ABET-accredited programs in European countries as of 2025. As shown in the figure, Turkey accounts for the highest percentage of active ABET-accredited bachelor's degree programs, while Spain holds the highest percentage of active ABET-accredited master's degree programs.

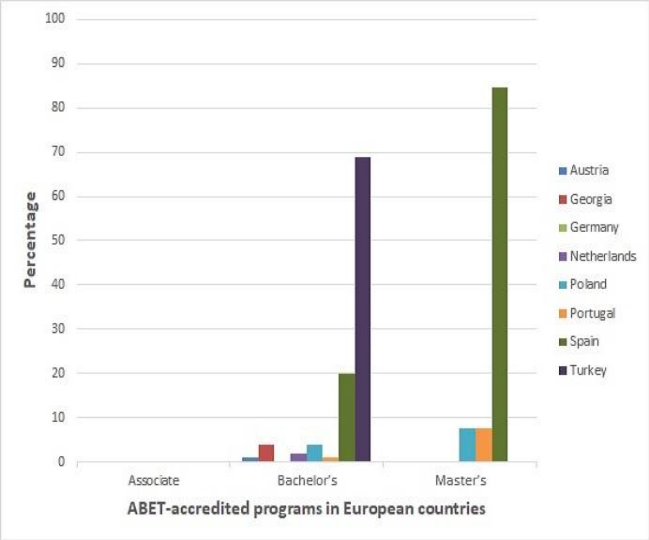

Figure 1. Percentage of ABET-accredited programs in European countries (2025)

Figure 2 presents the percentage distribution of historically ABET-accredited programs in European countries as of 2025. The figure shows that Turkey accounts for the highest proportion of historically ABET-accredited bachelor's degree programs, while Spain represents the highest percentage of historically ABET-accredited master's degree programs.

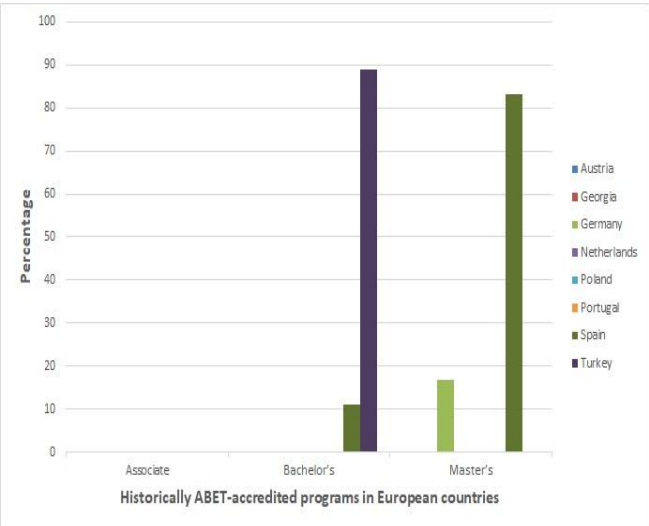

Figure 2. Percentage of historically ABET-accredited programs in European countries (2025)

The quantitative dominance of EAC-accredited programs (94.34%) and the complete absence of ETAC accreditation reveal a strategic prioritization within European ABET-seeking institutions. This pattern suggests that European HEIs pursue ABET not for technical or vocational program validation, which is likely covered by robust national frameworks, but specifically to gain a competitive edge in the globalized market for traditional engineering education. The concentration of accredited programs in a few countries (notably Turkey and Spain) and a handful of elite technical universities further indicates that ABET accreditation is a resource-intensive strategy employed by specific institutions aiming to signal international comparability and attract a global student body and faculty. Moreover, the scarcity of programs under international mutual recognition accords (only 3.77% under the Seoul Accord) highlights a potential misalignment or a lack of perceived need to integrate ABET's outcomes-based approach with other global qualification frameworks, underscoring that for most European institutions, ABET serves as a standalone mark of excellence rather than a component of a broader international credentialing strategy.

Discussion and Implications

This study's quantitative findings, when analyzed through the proposed framework, reveal distinct strategic models of ABET engagement in Europe, offering lessons for global audiences, including ASEAN countries.

1. **Strategic Accreditation as a Niche Differentiator:** The overwhelming dominance of EAC accreditation (94.34%) and its concentration in elite technical universities in Turkey and Spain suggests that ABET is not used for foundational quality assurance, a role filled by national agencies, but as a strategic tool for *international differentiation*. For ASEAN institutions, this underscores that ABET accreditation is likely not a mass-quality solution but a high-investment, high-reward strategy for flagship engineering programs aiming to compete for international students and research partnerships.
2. **The Limited Role of Technology and Computing Accreditation:** The complete absence of ETAC-accredited programs and the low share of CAC programs indicate a European alignment where "engineering" (EAC) holds more global prestige than "engineering technology" (ETAC). This presents a strategic consideration for ASEAN countries, where polytechnics and universities of applied sciences might find more value in ETAC. The choice of commission signals a specific institutional identity to the global market.
3. **Insights on Sustaining Accreditation:** The historical data revealing lapsed accreditations, particularly in Spain (5 master's programs) and Turkey (8 bachelor's programs), serves as a critical warning. It highlights the significant, ongoing resource commitment required beyond initial certification. For ASEAN policymakers and university leaders, this emphasizes the need for long-term financial and administrative planning, ensuring that the pursuit of accreditation is coupled with a sustainable plan for its maintenance.

4. **Broader Relevance for ASEAN Quality Assurance:** The European experience demonstrates that ABET accreditation coexists with, rather than replaces, robust regional (EUR-ACE) and national quality assurance systems. For ASEAN, which is developing its own quality assurance paradigms, this suggests that international accreditations like ABET can be a complementary, top-tier layer within a multi-level quality ecosystem, rather than a substitute for developing strong regional and national standards.

Conclusions

This study, employing a structured benchmarking analysis, has provided the first comprehensive overview of ABET accreditation in Europe, moving beyond descriptive counts to reveal the strategic rationales behind its adoption. Our findings demonstrate that ABET accreditation is not a broad-based quality assurance tool in Europe but a targeted, resource-intensive strategy for international differentiation. The overwhelming dominance of EAC accreditation (94.34%), coupled with its concentration in elite technical universities in Turkey and Spain, underscores its role as a niche marker of excellence aimed at enhancing global competitiveness and attracting talent. The complete absence of ETAC accreditation further signals that European institutions leverage ABET to validate traditional engineering programs, not to certify technology-focused curricula.

The analysis of historical data serves as a critical warning, revealing that the challenge of accreditation lies not only in its initial achievement but in its long-term sustainability. The significant number of lapsed programs in key countries highlights the substantial, ongoing commitment required. For global observers, particularly in regions like ASEAN, the European experience offers a clear lesson: pursuing ABET accreditation is a strategic decision that must be coupled with a sustainable, long-term plan for institutional support and resource allocation. Ultimately, this study illustrates that in mature educational ecosystems with robust national accreditation systems, ABET functions not as a replacement but as a complementary, top-tier credential for institutions seeking a distinct advantage in the globalized education market. These insights provide a valuable, evidence-based framework for institutions and policymakers worldwide when evaluating the strategic value of international accreditation.

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Conflict of Interest Statement

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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