



The Impact of AUN-QA Certification on Strengthening Internal Quality Assurance Systems in Indonesian Higher Education: A Comparative Study of Mechanical Engineering Programs

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Abstract

Purpose – This study aims to evaluate the impact of AUN-QA (ASEAN University Network-Quality Assurance) certification on strengthening Internal Quality Assurance Systems (SPMI) in Indonesian higher education institutions, specifically in relation to aligning educational outcomes with industry needs. Given Indonesia's global competitiveness ranking and challenges in aligning higher education with labor market demands, the research focuses on how AUN-QA certification affects quality assurance practices at the program level, aiming to close methodological and empirical gaps in the literature on quality assurance in Indonesian universities.

Methods/Design/Approach – A comparative case study approach is used, focusing on two Mechanical Engineering programs at Universitas Gadjah Mada (UGM) and Universitas Sebelas Maret (UNS), which have and have not attained AUN-QA certification. Qualitative data collection was conducted through semi-structured interviews and document analysis, with participants involved in SPMI implementation. Thematic analysis was employed to identify patterns and themes regarding understanding, implementation, and commitment to SPMI and its alignment with industry needs.

Findings – AUN-QA certification enhances the effectiveness of SPMI, promoting better alignment between educational outcomes and industry demands. UGM's certified program showed significant improvements in curriculum development, student outcome measurement, and stakeholder engagement compared to the non-certified program at UNS. However, challenges remain in fully integrating international standards into SPMI practices.

Originality/Value – This study provides empirical evidence on the positive impact of international certification on quality assurance in Indonesian higher education, offering insights into how AUN-QA certification can drive continuous quality improvement and closer alignment with industry expectations, addressing gaps in both theoretical and practical knowledge.

Practical Implications – The findings suggest that higher education institutions should prioritize internal quality assurance alongside international certification to produce industry-relevant graduates. Policymakers and university administrators are encouraged to support the adoption of AUN-QA and similar certifications to enhance the global competitiveness of Indonesian graduates.

Keywords AUN-QA certification, internal quality assurance, higher education, industry alignment, curriculum development, Indonesia

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1. Introduction

Globalization has brought fundamental changes to the dynamics of the global economy and national sovereignty, with significant impacts on labor markets. Globalization offers new economic opportunities for developing countries, including Indonesia, but also presents substantial challenges for countries unprepared to face global competition, particularly in the labor market (Stiglitz, 2002). Globalization has driven increased demand for knowledge-based labor in developed countries, while in developing nations, foreign investment and private sector growth have expanded employment opportunities (Suharsaputra, 2015). However, these opportunities have also intensified competition in both domestic and international labor markets. Those with advanced skills in technology and knowledge gain a competitive advantage, while less-skilled workers face greater challenges (Stiglitz, 2002).

In the ASEAN context, Indonesia faces serious challenges regarding the competitiveness of its human resources. According to the Global Competitiveness Index (GCI) 2017-2018, Indonesia ranked 36th out of 137 countries, lagging behind Singapore, Malaysia, and Thailand. This situation reflects fundamental issues in Indonesia's higher education system, including limited access to quality institutions, the relevance of education to labor market needs, and suboptimal budget allocation (Marginson, 2011). As Marginson pointed out, higher education must align with industry needs to produce graduates competitive in the global job market. This indicates that Indonesia's higher education system needs continuous improvement in the quality and relevance of educational outcomes, particularly in facing the challenges of globalization.

Previous studies have emphasized the importance of quality assurance in higher education as a key instrument to improve graduate quality and align education with industry demands (Altbach & Knight, 2009; Knight, 2004). However, Indonesia's higher education system has placed more emphasis on accreditation than on continuous internal quality assurance, which could hinder the process of ongoing quality improvement (Cao & Li, 2013; Kleijnen et al., 2011). While accreditation plays a crucial role, effective internal quality assurance requires institutional commitment to developing policies, procedures, and strategies that involve all stakeholders (ENQA, 2009). The internationalization of higher education, such as the adoption of AUN-QA (ASEAN University Network – Quality Assurance) certification, can help institutions enhance the quality of education and its relevance to industry needs (Knight, 2004).

Although some higher education institutions in Indonesia have made efforts to strengthen internal quality assurance, the implementation of the Internal Quality Assurance System (SPMI) remains suboptimal. Despite being mandated by Government Regulation No. 19/2005 and the Higher Education Law No. 12/2012, its implementation faces various obstacles. This gap highlights the methodological and empirical gaps in quality assurance practices, particularly concerning how international certifications like AUN-QA can impact the strengthening of SPMI at the study program level (Knight, 2004). This research aims to bridge the gaps in the existing literature by analyzing the impact of AUN-QA certification on the effectiveness of SPMI and the alignment between educational outcomes and industry needs in Indonesia.

This study has three main objectives:

1. To assess the differences in understanding, implementation, and commitment of internal stakeholders to SPMI among study programs that have and have not obtained AUN-QA certification.
2. To evaluate the impact of AUN-QA certification on strengthening SPMI, particularly in improving the alignment between educational outcomes and industry needs.
3. To describe the SPMI model at the study program level by analyzing the differences between programs that have and have not obtained AUN-QA certification.

To achieve these objectives, this study will address the following questions:

1. How do the understandings of SPMI differ between study programs that have and have not obtained AUN-QA certification?
2. How is SPMI implementation influenced by AUN-QA certification at the study program level?
3. What is the level of commitment to SPMI in study programs that have obtained AUN-QA certification compared to those that have not?
4. What is the impact of AUN-QA certification on the alignment between educational outcomes and industry needs in certified study programs?
5. How does the SPMI model differ between study programs that have and have not obtained AUN-QA certification?

This research is expected to make significant contributions both theoretically and practically. Theoretically, this study aims to enrich the understanding of how international certifications can influence internal quality assurance systems in higher education. By examining the impact of certification implementation on the quality and relevance of education, this study seeks to fill gaps in the existing literature. Practically, the results of this research are expected to provide valuable insights for higher education administrators and policymakers, particularly regarding steps that need to be taken to strengthen internal quality assurance processes, thereby producing graduates who are better prepared to meet industry needs. Thus, this study has the potential to contribute to improving the quality of higher education in Indonesia and enhancing the competitiveness of graduates in the global labor market.

2. Literature Review

Quality has emerged as a central topic in various sectors, including higher education. Organizations at all levels, whether profit-oriented or non-profit, must focus on quality management to remain competitive, from local to global scales. Several factors make quality a priority, such as competition, evolving customer needs, and increasing expectations for products and services (Juran & Gryna, 1993).

2.1 Quality in Higher Education

In the context of higher education, universities play a central role in shaping high-quality human resources. Perceptions of quality assurance within universities vary widely (Sallis, 1993). Some institutions recognize the importance of quality, while others have not yet prioritized it. This disparity stems from differing perceptions of the definition of quality, which is often considered subjective and ambiguous (Sallis, 2006).

Scholars have attempted to define quality from various perspectives. Juran defines quality as "fitness for use as perceived by the customer" (Juran & Gryna, 1993). Crosby describes it as "conformance to requirements," while Deming views quality as "uniformity and predictability of reliability." Quality is always associated with meeting or even exceeding customer expectations. The commonality among these definitions is the central role of customer satisfaction in defining quality (Goetsch & Davis, 2006).

2.2 Quality Assurance in Higher Education

Quality assurance in higher education refers to systematic efforts to ensure that all educational activities meet established standards. It includes plans and actions designed to provide certainty that a product or service will meet specific quality requirements (Harackiewicz & Elliot, 1993). In this context, quality assurance involves continuous

evaluation as a management tool to ensure that educational activities are conducted according to standards (Juran & Gryna, 1993).

Quality assurance encompasses all planned and systematic activities aimed at ensuring that products or services conform to established requirements. In higher education, this includes the entire process from planning to implementation, with the goal of ensuring that educational outcomes meet or even exceed stakeholder expectations (Cartin, 1999).

2.3 A Systematic Approach to Quality Assurance in Universities

Quality assurance in universities is comprehensive, covering the evaluation, monitoring, assurance, and improvement of quality across the entire higher education system (Miroiu & Vlasceanu, 2012). Since the 1980s, quality and quality assurance have become a global focus, including in the United States, where accreditation and quality assessment have been traditions for over a century. Universities worldwide have begun adopting internal quality assurance systems to ensure consistency and commitment to quality management.

Internal quality assurance systems focus on self-evaluation, involving the input, process, and output of educational activities. Input includes resources such as management, staff, and facilities. The process encompasses the implementation of the university's threefold mission: education, research, and community service. Outputs, such as graduates and research results, serve as key indicators of success. These systems aim not only to meet standards but also to encourage continuous improvement by identifying weaknesses and implementing corrective measures.

Internal quality assurance in universities plays a crucial role in ensuring that educational quality standards are met. It involves comprehensive evaluation of all aspects of university operations, with the goal of enhancing stakeholder satisfaction and supporting the achievement of the institution's vision and mission. With consistent implementation, a quality assurance system helps foster a strong quality culture and promotes continuous improvement in higher education.

3. Methods

3.1 Research Design

This study employs a comparative study design, which aims to understand the differences and similarities between two or more groups concerning a specific variable, in this case, between study programs that have and have not received AUN-QA certification (Nazir, 2005). This design was chosen due to its relevance in assessing differences in understanding, implementation, and commitment to the Internal Quality Assurance System (SPMI) between the two groups of study programs and evaluating the impact of AUN-QA certification on strengthening SPMI.

3.2 Research Approach

The research approach used is qualitative, employing a case study method. This qualitative approach allows for an in-depth exploration of the dynamics of SPMI in study programs that have and have not obtained AUN-QA certification, as well as the impact of this certification on aligning educational outcomes with industry needs. This approach is suitable for answering exploratory and in-depth questions (Hancock et al., 2009). Case studies allow for the integration of various data collection techniques, such as interviews and document analysis, to understand the dynamics occurring in a particular context (Eisenhardt, 1989).

3.3 Participants and Data Collection Techniques

The sampling technique used is purposive sampling, which allows for the selection of subjects based on specific criteria relevant to the research objectives (Arikunto, 2010). The informants selected are individuals directly involved in the implementation of SPMI and AUN-QA certification in the relevant study programs. The criteria for informant selection are based on the theories, with an additional focus on the informants' understanding of the alignment between educational outcomes and industry needs, as shown in Table 1 (Kenny, 2005; Morse, 1997).

Table 1. Informant Categories

No.	Informant	Category Based on Graham's Theory
1	Head of Study Program	Actor
2	Dean	Actor
3	Faculty Quality Assurance Unit	Actor
4	University Quality Assurance	Actor
5	Research Unit	Supporter
6	Vice-Rector I	Supporter

Data were collected through two main methods: semi-structured interviews and document analysis. *Interviews:* Semi-structured interviews were conducted, allowing for an in-depth exploration of SPMI and the impact of AUN-QA certification. The interview questions were designed to explore the understanding, implementation, commitment, and impact of certification on aligning educational outcomes with industry needs, as described in Tables 2 and 3. *Document Analysis:* Document analysis was conducted to obtain written data that can be used for triangulation, strengthening and validating the data obtained through interviews. The documents analyzed included procedure manuals, quality policies, and academic documents related to quality assurance implementation in the two study programs investigated.

Table 2. Interview and Document Analysis Guide

No.	Research Question	Data Collection Method	Data Source
1	How is the understanding of SPMI in study programs with and without AUN-QA certification?	Interview	Head of Study Program, Dean, Quality Assurance Unit
		Document Analysis	Academic Documents, Procedure Manuals
2	How is the implementation of SPMI influenced by AUN-QA certification at the study program level?	Interview	Head of Study Program, Dean, Quality Assurance Unit
		Document Analysis	Academic Documents, Procedure Manuals
3	What is the level of commitment to SPMI in study programs that have received AUN-QA certification compared to those that have not?	Interview	Head of Study Program, Dean, Quality Assurance Unit
		Document Analysis	Academic Documents, Procedure Manuals

No.	Research Question	Data Collection Method	Data Source
4	What is the impact of AUN-QA certification on the alignment between educational outcomes and industry needs in certified study programs?	Interview	Head of Study Program, Dean, Quality Assurance Unit
5	How do SPMI models differ between study programs that have and have not received AUN-QA certification?	Interview Document Analysis	Quality Assurance Unit Quality Policies, Quality Manuals, SPMI Guidelines

Table 3. Interview Question Framework

No.	Research Question	Sub-Questions
1	How is the understanding of SPMI in study programs with and without AUN-QA certification?	a. What is your understanding of learning outcomes in your study program? b. Whose feedback do you think would significantly improve curriculum quality? Why? c. Do you believe that curriculum design and development should be conducted periodically? d. Does faculty research contribute to improving the quality of teaching and learning processes? How relevant is it? e. Should student services and support facilities be continuously evaluated and improved? Why?
2	How is the implementation of SPMI influenced by AUN-QA certification at the study program level?	a. Has your study program made significant changes in SPMI after receiving AUN-QA certification? b. Can you provide concrete examples of how SPMI implementation has addressed industry needs? c. How does your study program apply industry feedback to improve SPMI?
3	What is the level of commitment to SPMI in study programs that have received AUN-QA certification compared to those that have not?	a. Is there stronger institutional support for SPMI after the study program received AUN-QA certification? b. Have any new initiatives been taken related to SPMI after certification?
4	What is the impact of AUN-QA certification on the alignment between educational outcomes and industry needs in certified study programs?	a. How has AUN-QA certification influenced the alignment between educational outcomes and industry needs in your study program? b. Has there been any change in stakeholder involvement from the industry after your study program was certified by AUN-QA?
5	How do SPMI models differ between study programs that have and have not received AUN-QA certification?	a. Can you explain the main differences between SPMI models in certified and non-certified study programs? b. How does the quality assurance cycle differ between certified and non-certified study programs?

3.4 Data Analysis Method

Data were analyzed through a process of coding and categorization. After transcription of the interviews, data were reduced and classified into themes relevant to the research objectives. The codes used reflect the source and line number of the data. Coded data were then presented for further analysis, and conclusions were drawn from emerging patterns until data saturation was reached.

3.5 Data Validation

The validity of the data in this study was tested using the criteria of credibility, transferability, dependability, and confirmability (Satori & Komariah, 2009). Credibility was achieved through the researcher's deep involvement in the field, continuous observation, and triangulation of methods and sources. Transferability was ensured by providing detailed contextual descriptions, while dependability and confirmability were achieved through an audit trail involving discussions with advisors and experts in the relevant field.

4. Results

This study aims to evaluate the implementation of the Internal Quality Assurance System (SPMI) in the Mechanical Engineering programs at Gadjah Mada University (UGM) and Sebelas Maret University (UNS) and analyze its impact on curriculum development, the synergy between research and teaching, and the effectiveness of support services and facilities. A qualitative approach was used, with data collected through in-depth interviews, document analysis, and direct observation at both universities.

The subjects of this research include two Mechanical Engineering programs at UGM and UNS. The primary participants comprised lecturers, students, and members of the advisory board. Participants were selected based on their active involvement in quality assurance processes and curriculum development. Data were collected over six months, with each interview lasting between one and two hours. Data analysis was conducted using a thematic approach to identify patterns and key themes emerging from the interviews and analyzed documents.

4.1 Implementation of Learning Outcomes

At UGM, the implementation of Outcome-Based Education (OBE) is the foundation of curriculum development in the Mechanical Engineering program. The study found that OBE facilitates the achievement of measurable learning outcomes aligned with industry needs. This process is supported by significant changes in the Semester Learning Plan (RPS), which require lecturers to establish specific student outcomes and measure their attainment systematically.

Interviews with UGM lecturers revealed that these changes have reinforced the focus on concrete learning outcomes, both in theory and practice. One lecturer explained:

"With ABET, the focus is on Outcome-Based Education, so what is assessed is the graduates' competencies... The changes in our RPS are very noticeable, especially in terms of measuring the achievement of each course through specific Student Outcomes (SO) and Key Performance Indicators (KPI)." (KM)

Conversely, at UNS, learning outcomes are viewed as part of a broader educational cultural transformation. The primary emphasis at UNS is on a more critical assessment and evaluation of the learning process. This is reflected in a more targeted curriculum mapping effort, where learning outcomes are used as a basis for aligning teaching with both industry and academic needs.

A UNS lecturer shared:

"Designing outcome-based education at UNS involves a cultural transformation that is not easy. We need to ensure that our graduates possess relevant and up-to-date competencies, based on input from industry stakeholders." (SA)

4.2 *Feedback and Curriculum Development*

UGM has adopted a comprehensive approach to curriculum development by involving an advisory board composed of alumni and industry practitioners. The findings indicate that feedback from this advisory board is crucial in ensuring that the curriculum remains relevant and adaptive to changes in the industry. This feedback process is not only limited to the planning stage but also extends to the implementation and evaluation of the curriculum.

One UGM informant stated:

"The advisory board plays a vital role as a link between the study program and industry. They provide valuable input on the competencies needed in the workforce, which we then integrate into the curriculum." (ID)

At UNS, curriculum development is also driven by feedback from various stakeholders, including alumni and industry. However, the approach at UNS places a greater emphasis on user satisfaction as the main indicator of curriculum success. Curriculum reviews are conducted periodically, considering input from alumni and user satisfaction surveys.

A UNS lecturer highlighted the importance of this feedback:

"User satisfaction is very important to us. Feedback from alumni and the companies they work for is our primary source of information for updating the curriculum." (SH)

4.3 *Synergy between Research and Teaching*

UGM has successfully integrated research into the teaching process, particularly in more applied elective courses. The study found that lecturers often use their research findings in teaching, providing students with opportunities to apply theory in real-world contexts. Additionally, students are encouraged to participate in faculty research projects, especially for their final projects, enriching their learning experience and preparing them for careers in engineering.

One UGM lecturer explained:

"In elective courses, we often use our research findings as case studies in class. This helps students understand how theory is applied in practice and gives them the opportunity to participate in relevant research." (ID)

At UNS, the synergy between research and teaching is facilitated through the formation of research groups focused on specific study areas. Students are invited to join these research groups, allowing them to develop research skills while learning. This approach helps connect theory and practice, preparing students to contribute to larger research projects.

A UNS lecturer noted:

"We encourage students to join research groups early on, so they can learn directly from ongoing research. This helps them develop the skills needed in the workforce." (PM)

4.4 *Support Services and Facilities*

The study found that the management of support facilities at UGM is coordinated by the Asset and Human Resources Development Unit. This unit is responsible for ensuring that all facilities supporting the learning process, including laboratories, libraries, and IT facilities, are always in optimal condition. Regular evaluations are conducted to ensure that these facilities meet the needs of both students and lecturers.

An informant from UGM noted:

"Our unit has strict SOPs to ensure that all support facilities are always ready for use. We continuously evaluate and update these facilities as needed." (KM)

At UNS, a similar unit exists and reports directly to the dean. This unit ensures that all learning support facilities are well-managed and meet the established standards. The findings indicate that the coordination between this unit and the faculty is smooth, allowing for prompt handling of any issues that may arise.

A UNS informant explained:

"We have clear SOPs for managing support facilities, and any problems are quickly addressed to ensure that the learning process is not disrupted." (SH)

Findings from UGM and UNS demonstrate that the implementation of outcome-based curricula has significantly impacted the quality of education. At UGM, the OBE approach allows for clearer and more structured assessments of student achievement. Meanwhile, at UNS, learning outcomes form the basis for changes in the evaluation culture, ensuring that every graduate possesses relevant competencies aligned with industry needs.

This analysis further shows that this approach is consistent with outcome-based education theory, which emphasizes the importance of measuring specific and measurable learning outcomes. It is also aligned with international standards applied by accreditation bodies like ABET, which focus on learning outcomes as the primary indicator of educational quality.

Feedback from external stakeholders, particularly alumni and industry, has proven highly effective in curriculum development at both universities. UGM uses its advisory board as the main tool for integrating industry input into the curriculum, while UNS places more emphasis on user satisfaction surveys.

The findings support existing literature, which emphasizes the importance of external stakeholder participation in curriculum development to ensure program relevance and sustainability. However, a more structured and periodic approach like UGM's, where the advisory board is involved throughout the curriculum development process, yields more consistent results in maintaining curriculum relevance.

The integration of research into teaching at UGM and UNS has enhanced the quality of education and the relevance of study programs to industry needs. Involving students in faculty research not only enhances their technical skills but also enriches their learning experience. This approach supports the learning-by-doing method, long recognized as one of the most effective approaches in engineering education.

Additionally, this synergy creates a more dynamic learning environment where students are encouraged to think critically and apply their knowledge in real-world situations. This aligns with the concept of student-centered learning, which positions students as the main actors in the learning process.

Effective management of support facilities at UGM and UNS demonstrates that a supportive learning environment is a key factor in student academic success. Regular evaluations and facility upgrades ensure that students have access to the resources needed to achieve optimal learning outcomes.

This analysis aligns with theories that emphasize the importance of support facilities in the learning process. Well-managed facilities not only support teaching and learning activities but also contribute to student and faculty satisfaction, which in turn improves academic performance and learning outcomes.

This study reveals that the implementation of SPMI in the Mechanical Engineering programs at UGM and UNS has successfully strengthened curriculum development, the synergy between research and teaching, and the management of support facilities. While both universities have made significant progress, there is still room for improvement, particularly in diversifying funding sources and strengthening the synergy between

internal and external stakeholders. By continuing to adopt more adaptive and structured approaches and enhancing collaboration with industry, both universities can further improve the quality of education and the relevance of their programs in the future.

5. Discussion

This study aims to assess the implementation of the Internal Quality Assurance System (SPMI) in the Mechanical Engineering programs at Gadjah Mada University (UGM) and Sebelas Maret University (UNS) and evaluate the impact of AUN-QA certification on strengthening this system. The primary focus of the research is on the development of outcome-based curricula, the synergy between research and teaching, and the management of support services and facilities. The key findings indicate that AUN-QA certification has significantly enhanced the quality of education, particularly in aligning educational outcomes with industry needs and assessing learning outcome achievement.

At UGM, the adoption of Outcome-Based Education (OBE) facilitated the structured and measurable development of curricula to achieve specified learning outcomes. This involved significant changes in the design of the Semester Learning Plan (RPS) to ensure that each course had clear learning outcomes. The findings suggest that the implementation of OBE has strengthened students' ability to achieve learning outcomes relevant to industry needs. This is consistent with the theory of OBE, which emphasizes the importance of systematically assessing measurable outcomes.

At UNS, learning outcomes serve as the foundation for curriculum evaluation, highlighting the importance of aligning educational outcomes with labor market needs, supported by industry feedback. This approach aligns with previous research, which emphasized the importance of international certification in ensuring curriculum relevance to industry requirements (Knight, 2004).

The integration of research and teaching at both UGM and UNS has been successful, with students actively involved in faculty research projects. This enhances students' technical skills and prepares them for immediate entry into the workforce. This synergy supports the learning-by-doing approach, which has proven effective in engineering education, as practice-based learning is an effective method for increasing student engagement (JOHN DEWEY, 1938).

The use of advisory boards at UGM and user satisfaction surveys at UNS underscores the importance of external stakeholder involvement in curriculum development. At UGM, the advisory board has played a critical role in ensuring curriculum relevance, while at UNS, user satisfaction surveys have provided valuable insights into curriculum effectiveness from an industry perspective. This approach aligns with the literature that highlights the importance of external stakeholder feedback in improving educational quality (Altbach & Knight, 2009).

Effective management of support facilities at both universities ensures that students have access to the resources they need to achieve optimal learning outcomes. Regular evaluation and maintenance of these facilities help create a conducive learning environment. These findings are consistent with the argument that well-managed facilities contribute to user satisfaction and better learning outcomes (Juran & Gryna, 1993).

The findings of this study contribute to the development of theory in the context of higher education, particularly regarding the effectiveness of SPMI in improving the quality and relevance of education. This research underscores the importance of international certification, such as AUN-QA, in strengthening internal quality assurance and aligning educational outcomes with industry needs (Knight, 2004). Additionally, this study reinforces the idea that integrating research and teaching, supported by adequate facilities, can enhance the overall student learning experience.

From a practical perspective, the findings offer several recommendations for higher education administrators. First, strengthening internal quality assurance by involving external stakeholders such as industry and alumni in curriculum development is crucial. Additionally, the management of support services and facilities must be prioritized to support more effective learning processes. These findings also provide a foundation for policies encouraging the implementation of OBE across more study programs, while promoting the synergy between research and teaching.

This study has several limitations, particularly concerning the limited scope of subjects, which only includes two universities. Another limitation is the data collection method, which relied primarily on interviews and document analysis, potentially introducing bias from the interviewed subjects. Additionally, given the case study approach, the findings may not be generalizable to all universities in Indonesia. Future research should include more universities and study programs to provide more representative results.

Based on these findings, future research should focus on broader comparative analyses, encompassing more study programs from various disciplines and universities in Indonesia. Further studies could also explore the impact of other international certifications on the effectiveness of SPMI and how these certifications support the development of workforce skills more relevant to global industry needs.

This research demonstrates that AUN-QA certification has a significant impact on strengthening SPMI and aligning educational outcomes with industry needs. By enhancing outcome-based curricula, integrating research into teaching, and improving the management of support services and facilities, both UGM and UNS have successfully improved the quality of their education. These findings make a substantial contribution to the literature on quality assurance in higher education and its relevance to the global job market.

5. Conclusion

This study reveals that AUN-QA certification has a significant impact on strengthening the Internal Quality Assurance System (SPMI) in the Mechanical Engineering programs at Gadjah Mada University (UGM) and Sebelas Maret University (UNS). This impact includes improved alignment of curricula with industry needs, implementation of outcome-based curricula, integration of research into teaching, and enhanced student support services and facilities. AUN-QA certification strengthens the relevance of education to global labor market needs and enhances graduate quality.

This research clearly addresses questions regarding how the understanding, implementation, and commitment to SPMI differ between programs that have and have not received AUN-QA certification. Additionally, it identifies the role of certification in strengthening the alignment of educational outcomes with industry needs, with both UGM and UNS demonstrating increased synergy between academia and the workplace through industry feedback.

Theoretically, this study enriches the literature on the importance of quality assurance in higher education, particularly in the Indonesian context. International certification, such as AUN-QA, has been shown to promote continuous quality improvement, especially in the development of outcome-based curricula and the integration of research into education. Practically, this study provides recommendations for educational institutions to strengthen internal quality assurance, ensure industry involvement in curriculum development, and improve student support services to create a more conducive learning environment.

However, this research has limitations, particularly concerning its focus on only two universities. Therefore, generalizing the results to other universities in Indonesia must be done cautiously. Future research should include more universities and disciplines to

provide a broader understanding of the impact of international certification on higher education.

The practical implications of this research suggest that higher education institutions in Indonesia must proactively adopt international certification and strengthen internal quality assurance to increase the competitiveness of their graduates in the global labor market. Thus, this study provides a strong foundation for developing more relevant higher education policies and practices oriented toward future industry needs.

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Declarations

Author contribution statement

Fitriyani: Conceptualization, Writing - Original Draft, Writing - Review & Editing, Project Administration. **Titi Savitri Prihatiningsih:** Methodology, Investigation, Writing - Review & Editing, Formal Analysis, Resources, Data Curation, Visualization. **Wahyu Supartono:** Writing - Review & Editing, Supervision, Data Curation, Visualization.

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The data that support the findings of this study are available from the corresponding author upon reasonable request.

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No potential conflict of interest was reported by the authors.

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