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THE CHALLENGES AND OPPORTUNITIES OF EVALUATION: FROM THEORY TO PRACTICE

edited by
Laura Evangelista, Concetta Fonzo



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2. EVALUATING MICRO-CREDENTIALS IN EUROPE & SOUTHEAST ASIA

by Radziah Adam, Manuela Costone, Francesco Sanasi, Federica Sancillo*

Abstract: L'evoluzione del mercato del lavoro e del settore tecnologico ha favorito l'ascesa delle micro-credenziali come alternativa flessibile alle qualifiche tradizionali nell'istruzione superiore. Partendo dall'analisi di politiche, opinioni di *stakeholder* e *best practices*, questo saggio analizza sfide e opportunità della valutazione delle micro-credenziali in Europa e nel Sud-est Asiatico, sottolineando l'importanza di promuovere definizioni standardizzate, garanzia di qualità e allineamento tra accademia e industria.

Parole chiave: micro-credenziali, istruzione superiore, garanzia della qualità, mercato del lavoro, Sud-est Asiatico.

Abstract: The evolution of labour market demands, and technological advancements have driven the rise of micro-credentials as flexible alternatives to traditional higher education qualifications. Starting from policy analysis, stakeholder opinions, and best practices, this essay examines challenges and opportunities in the assessment of micro-credentials in Europe and Southeast Asia, highlighting the importance of promoting standardized definitions, quality assurance, and alignment

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between academia and industry.

Keywords: micro-credentials, higher education, quality assurance, labour market, Southeast Asia.

Introduction

1. Context and objectives

This study aims to provide an analysis on the evaluation of the quality of micro-credentials to foster their recognition in both Europe and Southeast Asia. It was drafted starting from the findings resulting from the already existing collaboration among CIMEA – Information Centre on Academic Mobility and Equivalence¹ and the Universiti Sains Malaysia (USM)² in the field of micro-credentials in the EU funded MICROCASA project³ (Micro-credentials for life long learning and employability: building Capacities for developing Agile

¹ CIMEA is the National Information Centre on the Italian higher education system, recognition of qualifications, and qualifications awarded at national level. It was entrusted with this role in 1984 by the Ministry of Education, University and Research entrusted CIMEA, as deliberated in Art. IX.2 of the Lisbon Recognition Convention. CIMEA is the Italian ENIC-NARIC centre, thus belonging to the European Network of Information Centres of the Council of Europe and UNESCO and to the National Academic Recognition Information Centres in the European Union.

² Universiti Sains Malaysia is a Malaysian higher education institution. The main campus is located in the city of Penang. It gathers 34 thousand students coming from 80 nationalities.

³ The MICROCASA Project (MICRO-Credentials for lifelong learning and employability: building Capacities for developing Agile educational interventions in Southeast Asian universities) is a EU Co-funded project, composed of 11 partners from both the EU and SEA region. The main aim of the project is to share the European experiences and build institutional capacities in Southeast Asia to co-create, promote and deliver short competence-oriented educational units leading to micro-credentials with the goal of solving various economic and social problems. MICROCASA web site: <https://microcasa.uc3m.es>

educational interventions in Southeast Asian universities). The analysis highlights opportunities and challenges that micro-credentials are facing in the higher education sector in both Europe and Southeast Asia.

The Council Recommendation on a European approach to micro-credentials for lifelong learning and employability defines micro-credentials as follows:

«‘Micro-credential’ means the record of the learning outcomes that a learner has acquired following a small volume of learning. These learning outcomes will have been assessed against transparent and clearly defined criteria. Learning experiences leading to micro-credentials are designed to provide the learner with specific knowledge, skills and competences that respond to societal, personal, cultural or labour market needs. Micro-credentials are owned by the learner, can be shared and are portable. They may be stand-alone or combined into larger credentials. They are underpinned by quality assurance following agreed standards in the relevant sector or area of activity» (Council of the European Union, 2022).

Similarly, UNESCO provided the following definition:

«Micro-credentials are focused on a specific set of learning outcomes in a narrow field of learning and achieved over a shorter period of time. Micro-credentials are offered by commercial entities, private providers and professional bodies, traditional education and training providers, community organizations and other types of organizations.

A record of focused learning achievement verifying what the learner knows, understands or can do; includes assessment based on clearly defined standards and is awarded by a trusted provider; has standalone value and may also contribute to or complement other micro-credentials or macro-credentials, including through recognition of prior learning; meets the standards required by relevant quality assurance» (UNESCO, 2022).

Both definitions provide valuable insights into the concept of micro-credentials, as well as the objectives behind their development and implementation. In the light of their differences, national systems may draw from these definitions to adopt a national one. In any case, adopting definitions that do not deviate from those proposed at international level could facilitate comparison and recognition in the event of their use in countries other than those of delivery.

Micro-credentials are part of a particular historical moment during which several factors are radically changing the world of higher education and related issues such as mobility, quality and recognition of qualifications. In the international context, the UNESCO Global Convention on the Recognition of Qualifications in Higher Education acknowledges the growing significance of distance learning and cross-border higher education, laying the foundation for understanding how virtual learning formats, fit within the broader framework of academic developments.

In this context, micro-credentials allow individuals to accumulate various short-term training achievements, leading to recognised certifications for employment purposes. This is especially significant in today's competitive, globalised, and technology-driven job market, in which continuous learning throughout careers is essential. Therefore, micro-credentials represent the possible solution to keep up with the fast-developing labour market and can also represent a solid bridge with the academic sector, not always moving at the same speed.

However, micro-credentials also represent various challenges that can hinder their widespread adoption, recognition and impact. One of these challenges is the consistency in quality control mechanisms, their evaluation and consequent recognition methods, which are often not aligned in the different sectors within the same country and among different national contexts.

Building on the existing collaboration between CIMEA and Universiti Sains Malaysia, this study delves into the multifaceted challenges and opportunities in evaluating micro-credentials in both EU and the Southeast Asia (SEA) region, characterized by diverse educational frameworks and socio-economic conditions. This will be done by collecting relevant experiences in the evaluation and recognition of micro-credentials in both the academic sector and the labour market. The role of technology, such as blockchain and digital platforms will be emphasised as a way to address evaluation and recognition and consequently foster cross-border mobility. Therefore, this work aims to explore the common challenges and opportunities in the field of quality evaluation and recognition of micro-credentials in EU and SEA, enhancing their potential to support lifelong learning and global employability in an increasingly interconnected world.

Methodology

This essay employs an integrative methodology that merges three layers of analysis: policy review, stakeholder consultation⁴ and good practices.

First, an extensive review of official documents and reports from both regional and international bodies provided a foundation for understanding the regulatory environment, definitional issues, and strategic goals surrounding micro-credentials in Europe and Southeast Asia.

Second, the perspectives of diverse stakeholders – including policymakers, educators, industry partners, accreditation bodies, and learners – were examined through qualitative document analysis and literature review. They were consulted by the

⁴ Consultations were carried out in the framework of projects and initiatives in which the authors of this paper participated.

MICROCASA project team through such research activities as surveys and roundtables organized in the involved countries. Further information about actors and results are provided below. Finally, exemplary practices from institutional and industry-led micro-credential initiatives were analysed to identify models of effective implementation and collaboration. These layers were synthesized to present key findings on challenges and opportunities, emphasizing the need for stronger quality assurance, standard definitions, and better alignment between educational outcomes and workforce expectations.

2. The rise of micro-credentials

2.1 Why micro-credentials?

Micro-credentials are not a new concept. Short learning experiences have existed for years, answering to the growing request of specific skills in the labour market. In the last few years, they gained prominence as flexible and targeted educational tools, addressing the evolving demands of the job market and the need for continuous skills development. Given their rapid evolution, accelerated by the digital shift following the Covid-19 pandemic, it became imperative to ensure that the competencies gained through these short forms of learning were transparently recorded and recognized. In this context, the EU Council Recommendation was proposed and approved in 2022, introducing a clear definition, principles and standards elements of a micro-credential.

These short-learning paths support lifelong learning by offering personalized and cost-effective educational experiences that align with industry needs (Vasilev, 2024; Kayyali, 2024) and a streamlined approach to certify specific skills, making them

particularly valuable in fields where rapid technological advancements necessitate frequent upskilling and reskilling (Vasilev, 2024). As previously mentioned, the rise of micro-credentials is partly driven by the growing skills gap in the workforce, as traditional educational institutions not always succeed in equipping graduates with the competencies required by employers, according to the rapid changes in the labour market (Epaphras, 2025). In this context, the practical integration of the digital component with micro-credentials offers a practical solution, enabling learners to demonstrate their skills through such tools as digital credentials, which employers increasingly recognize as valid indicators of proficiency (Epaphras, 2025; Vasilev, 2024).

Moreover, micro-credentials represent a significant advancement in certification of non-formal education, providing a flexible pathway to skills acquisition and professional development in a rapidly changing economic landscape (Stamatakis *et al.*, 2024; Kayyali, 2024). In vocational education and training (VET), micro-credentials are particularly effective, offering a model that aligns educational offerings with labour market demands, thereby enhancing employability and workforce readiness (Vasilev, 2024). The growing attention on micro-credentials indicates a shift towards more inclusive and adaptable educational models, which can facilitate lifelong learning and mobility of skilled workers across regions (Ashizawa *et al.*, 2024).

2.2 Challenges in evaluation and recognition

Despite the described potential of micro-credentials, challenges such as the alignment with traditional education systems persist, necessitating strategic integration and collaboration between educational institutions and industry stakeholders (Surono, 2024, Epaphras, 2025). Moreover, micro-credentials design typically

follows an outcome-focused approach, yet challenges related to assessment of their quality and recognition persist across various education systems (Petkov, 2024). The absence of a universally accepted definition complicates implementation and recognition, although competency-based and modular features are increasingly emerging as common elements (Wihendro *et al.*, 2024).

Within this context, the limited integration of micro-credentials into national qualifications frameworks (NQFs) undermines their official recognition and hampers their transferability across institutions and borders. While some Southeast Asian countries like Malaysia are beginning to incorporate micro-credentials formally in their qualifications frameworks, comprehensive regional frameworks remain underdeveloped (MQA, 2020; MICROCASA, 2024). European Union strategy includes the recommendation to integrate micro-credentials within existing EU frameworks, yet challenges persist regarding consistent application at national level.

Moreover, digital solutions have to be considered for micro-credentials development and implementation as they significantly enhance their credibility, transparency, and portability. However, portability of micro-credentials across borders is limited due to the above-mentioned lack of coherent quality assurance, evaluation and recognition standards. At the European level, this is addressed through different online digital tools, such as the Europass Digital Credentials Infrastructure (EDCI), as a platform to create, issue, view, store, share and verify digital credentials for learning, aiming for interoperability (European Commission, 2024).

In the SEA context, discussions taking place in the framework of the Association of Southeast Asian Nations (ASEAN) indicate growing potential for mutual recognition (MICROCASA, 2025). The adoption of digital solutions strengthens the trustworthiness, openness, and transferability of micro-credentials.

Transparent and effective quality assurance frameworks are necessary to support the legitimacy of these credentials. On this aspect, unlike Europe, where there are such organisations as the European Association for Quality Assurance in higher Education (ENQA) and the European Quality Assurance Register for Higher Education (EQAR) supporting the coordination of quality assurance efforts, Southeast Asia shows greater variability in quality assurance practices (MICROCASA, 2024).

Resistance in adopting micro-credentials may also arise among stakeholders such as employers, learners, and educators, often due to a lack of clarity about their value and concerns over how they are recognized within existing education systems (Epaphras, 2025). Employers, in particular, are hesitant on this topic, driven by their unfamiliarity with them and inconsistency of credentialing standards. This situation underscores the need for active employer engagement and awareness-building, especially within Southeast Asian contexts, where such concerns are more pronounced (MICROCASA, 2024).

Lastly, a key challenge in both Europe and Southeast Asia lies in balancing the flexibility needed for innovation with the necessity of maintaining robust evaluation systems. Ensuring that micro-credentials are credible, interoperable, and aligned with educational and labour market demands require coordinated efforts from multiple stakeholders. Advancing regional frameworks and cross-border recognition will be essential to unlock the full potential of micro-credentials in promoting lifelong learning and employment mobility.

3. Stakeholder perspectives and best practices

3.1 Perspectives on evaluation and recognition by key stakeholders

The evaluation and recognition of micro-credentials involves multiple stakeholders, each with distinct perspectives, priorities, and challenges. In particular, engaging external stakeholders in the accreditation process is crucial to enhance transparency and trust (Rosenberg and Clayton, 2024).

Different international organizations at global level have made important steps towards the further promotion and development of a common framework for micro-credentials. UNESCO, in the framework of Sustainable Development Goal 4 (SDG4) on quality education for all, highlights the role of higher education in promoting responsive and flexible lifelong learning pathways and facilitating cross-border recognition of work-ready skills and qualifications. UNESCO has initiated efforts to develop shared principles for micro-credentials, emphasizing their role in lifelong learning and skilled labour mobility and to ensure fair and transparent recognition of qualifications across different countries and regions (Ashizawa *et al.*, 2024). UNESCO also facilitates mobility through advancing ratification and implementation of fair recognition policies and practices throughout ASEAN member states. The Organisation for Economic Co-operation and Development (OECD) Learning Compass 2030 highlights the importance of adaptable education systems that integrate micro-credentials, promoting continuous skills development aligned with labour market needs (Galvão *et al.*, 2024).

Regional actors in both EU and SEA are also to be considered as relevant in this sector. The European Union plays a crucial role in supporting the recognition of micro-credentials in the EU Member States. It advocates for a common European Union

approach to ensure transparency, quality assurance, and interoperability. The above-cited Council Recommendation on micro-credentials (2022) aims to facilitate recognition of micro-credentials across EU member states, fostering their integration into education and training systems, employment, and lifelong learning initiatives. In the ASEAN context, by contrast, the regional strategy centres on the ASEAN Qualifications Reference Framework (AQRF), a voluntary meta-framework that allows diverse national qualifications frameworks to be referenced to a common set of levels and learning outcomes. The AQRF supports the recognition of qualifications, promoting lifelong learning, and encouraging worker mobility without imposing uniform qualifications or strict regulatory standards. Within this context, micro-credentials fit into the AQRF by aligning national qualifications frameworks (NQFs) to common regional benchmarks, thus promoting mutual understanding and transparency (Bateman & Coles, 2022). ASEAN's AQRF serves primarily as an enabling tool rather than a recommended standard, with national authorities maintaining considerable autonomy regarding the evaluation and recognition of micro-credentials (ASEAN Secretariat, 2020; Bateman & Coles, 2022).

National authorities in Europe are responsible for implementing policies and ensuring alignment with the European Qualifications Framework (EQF) and National Qualifications Frameworks (NQF), promoting consistency and interoperability among frameworks across the continent. The EQF emphasizes clear recognition and quality assurance procedures, significantly reducing variability and enhancing mobility within the European Union. Some countries have already established national guidelines for micro-credentials, while others are in the process of defining recognition mechanisms. Also ASEAN member states show different national approaches, at different stages of development – some with established comprehensive NQFs, others with established sectoral

frameworks, and others that have yet to develop or implement qualifications frameworks. In section 3.2 some good practices are reported for both EU and SEA regions.

Quality Assurance authorities ensure the credibility of micro-credentials. At EU level, ENQA, which represents the interests of quality assurance agencies in the EU at international level, are working towards establishing guidelines for micro-credentials quality assurance. The report “Quality Assurance of micro-credentials. Expectations within the Context of the Standards and Guidelines for Quality Assurance in the European Higher Education Area” provides an overview with some examples on how the quality assurance of micro-credentials is being addressed in the European Higher Education Area (EHEA)⁵, providing also detailed considerations for applying the ESG⁶ to micro-credentials (ENQA, 2023). The key challenge is balancing flexibility and innovation while maintaining rigorous evaluation standards. The evaluation and recognition of micro-credentials in the EU require a coordinated effort among stakeholders to ensure credibility, interoperability, and alignment with labour market and educational needs. The development of a robust European framework and enhanced cross-border recognition will be critical in leveraging micro-credentials as a valuable tool for lifelong learning and employment mobility across Europe. In the ASEAN region, quality assurance of micro-credentials is managed at the national level by such agencies as the Malaysian Qualifications Agency (MQA), Indonesia’s National Agency for Academic Assessment and Accreditation (BAN-PT), and the

⁵ The EHEA is the area defined by the countries signatories of the Bologna Declaration of 1999. This declaration started the so-called Bologna process, which is an intergovernmental process at the European level concerning higher education and aiming to the harmonisation and enhancement of the competitiveness and attractiveness of higher education in Europe.

⁶ The European Standards and Guideline for Quality Assurance in the EHEA (ESG), provide a framework for the internal and external quality assurance.

Professional Regulation Commission (PRC) and Commission on Higher Education (CHED) in the Philippines. These institutions are responsible for upholding rigorous standards to support the credibility and recognition of micro-credentials (MQA, 2021; Ministry of Education and Culture of Indonesia, 2020; TESDA, 2022).

Universities and colleges are both issuers and evaluators of micro-credentials. Many HEIs support micro-credentials to offer flexible learning pathways, stackable credentials, and continuous professional development. However, HEIs often face challenges in ensuring credit recognition across institutions, integrating micro-credentials into degree programmes, and maintaining quality assurance standards. The EU Council Recommendation on a European approach to micro-credentials for lifelong learning and employability supports HEIs in addressing these challenges. Within the SEA region, many institutions face challenges, including technological barriers and the need for alignment with existing accreditation systems. As micro-credentials respond to specific skills demands, their recognition may shift the focus of accreditation from traditional degree-based systems to competency-based evaluations. The integration of micro-credentials necessitates new accreditation standards that ensure quality and transferability across institutions. Institutions may face challenges in integrating the necessary technology to support micro-credentialing systems. For this reason, aligning respective national qualification frameworks with the ASEAN Qualifications Reference Framework (AQRF) can facilitate cross-border acceptance of micro-credentials by promoting standardization and transparency in skills recognition processes across ASEAN member states, ultimately improving skilled labour mobility within the region.

Employers see micro-credentials as a tool to bridge skill gaps, particularly in fast-evolving sectors like digital technology,

green energy, and healthcare. While some large corporations actively issue and recognise micro-credentials, there is still a need for greater awareness and trust in their quality and relevance. Standardization, reliable validation methods, and alignment with industry needs are key concerns for businesses in evaluating micro-credentials. In the EHEA context, various alternative providers offer a wide range of micro-credentials, which learners seek to have recognised for access to higher education or as part of their higher education path. The interviews conducted as part of the IMINQA project⁷ show that most of these offerings primarily aim to meet the needs of both the labour market and the targeted learner group. However, many of these learning paths do not include the assessment of learner knowledge, which in the EU approach is considered a mandatory element of micro-credentials, and their recognition outside their higher education system may be limited due to a lack of trust (IMINQA, 2023).

Individuals benefit from micro-credentials as a mean for upskilling and reskilling in a flexible and accessible manner. However, they require clarity on how micro-credentials can be translated into job opportunities and further education. Ensuring that programmes are modular and stackable, allowing learners to build qualifications over time, is critical for enhancing their practical utility and integration into career paths (Rosenberg and Clayton, 2024). Moreover, offering online and blended learning options to cater specifically to working professionals further expands accessibility and enables learners to engage with education in alignment with their employment and personal commitments (Selvaratnam, 2023). Consequently, trust in the value and

⁷ Implementation and Innovation in quality assurance through peer learning (IMINQA), is a three-year project, co-funded by the Erasmus+ Programme, which supports the work of the Bologna Process Thematic Peer Group C on Quality Assurance (TPG C).

recognition of micro-credentials by employers and educational institutions is essential for widespread adoption.

3.2 Relevant initiatives and collaborations

Various practices started to rise in the past few years to work towards the further refinement of micro-credentials and to face the challenges of the different national and regional contexts. Some practises are described below for promotion and enhancement of the evaluation and recognition of micro-credentials, jointly with examples at national level in the following section (3.3).

The first good practice that is worth mentioning is the work carried out within the above-mentioned MICROCASA project, resulting from the joint effort and cooperation of representatives from both the European Union and the ASEAN regions. The document “*White Paper: Action Plan for micro-credentials adoption in Higher Education for Southeast Asian countries*”, developed in the framework of the project, summarises the conclusions and results of several activities aimed to promote necessary regulatory frameworks to facilitate the adoption of micro-credentials in the SEA region, starting from three countries, Indonesia, Malaysia and the Philippines. Built on several activities carried out during the project implementation, such as desk research, surveys and roundtables, the document provides 10 recommendations for further implementation of policies, regulations and recognition frameworks for micro-credentials in the three involved countries, working as a recommendations plan to be scalable to the whole SEA region. The consultations were carried out for one year, including different stakeholders and specifically directed towards higher education institutions.

More broadly, the TPG-LRC Constructing Recognition in the EHEA (TPG-LRC CoRE) project, developed in the framework of the

work done by the Bologna Follow-up Group (BFUG)⁸ at European level, worked towards fostering the transparent and clear recognition of credentials. In coherence with its main objectives, a joint document on micro-credentials was developed named “*Micro-credential for Higher Education Institutions. Approaches developed in the EHEA using peer support*”. The document provides guidelines to support HEIs in the process of designing, implementing, awarding and recognising quality-assured micro-credentials⁹. Starting from the willingness of the EHEA Ministers in charge of Higher Education to better explore how and to what extent this flexible units leading to micro-credentials can be defined, developed, implemented and recognized using EHEA tools (Rome Ministerial Communiqué 2020), the document developed nine guiding questions in the framework of international policy documents and existing literature. Key elements such as the type of micro-credentials, their learning outcomes, quality frameworks and workload, the application of the learner-centred approach, their recognition, and the use of digital solutions were further examined. As highlighted in the document, specifically in the section “*How to Support the Recognition of Micro-Credentials*”, transparency and completeness of information provided are essential to facilitate fair evaluation and recognition.

To effectively support international mobility, micro-credentials should be assessed for transparency and clarity,

⁸ Three Thematic Peer Groups (TPG) were established by the Bologna Follow-up group (BFUG) in September 2018 in order to offer peer support for the implementation of three key commitments: Qualification Framework (TPG A), compliance with the Lisbon Recognition Convention (TPG B), and Quality Assurance (TPG C). The TPG-LRC CoRE project aims to support the work of the TPG B.

⁹ The document was developed by a working group composed by CIMEA, the European Universities Association (EUA) and the Dutch organization for internationalization in education (Nuffic), in cooperation with the Thematic Peer Group A on Qualification Framework (TPG A on QF) and with the Thematic Peer Group C on Quality Assurance (TPG C on QA).

particularly in relation to their learning outcomes and quality and in alignment with the labour market demands. A good practice in this context was the EU funded project MARTe - *A technological approach to micro-credentials*¹⁰. By using the text-mining technology¹¹ applied to learning outcomes of several micro-credentials developed by HEIs in the EU countries partner to the project (Italy, Ireland, the Netherlands), this project was useful to understand that there are currently no common patterns in the learning outcomes of the gathered micro-credentials. Therefore, clear standard elements should still be introduced to enhance the comparability of micro-credentials. This experience is also to be considered important with regards to the definition of the gaps that still hinder the evaluation of these small units of learning, as well as to measure whether higher education institutions were really able to keep up with the labour market requirements. In the light of these results, the project consortium cooperated with Leica Camera Srl¹² and Iuav University of Venice¹³ to build three pilot micro-credentials able to (i) respond to the needs of the labour market; (ii) be suitable for recognition in a higher education institution; (iii) in line with the EU regulations thanks to all experts in recognition part of the project consortium¹⁴. The MARTe project results represent a first step towards the facilitation of the evaluation process of micro-credentials, also in the case of alternative providers offering them.

¹⁰ <https://www.cimea.it/pagina-marte>.

¹¹ The text-mining application was carried out thanks to the cooperation of the project consortium with researchers and experts in the field from the University of Pisa <https://www.unipi.it/>.

¹² <https://leica-camera.com/it-IT>.

¹³ <https://www.iuav.it/it>.

¹⁴ Three sets of contents have been identified in the field of Street Photography to structure three different micro-credentials, autonomous and stackable at the same time, designed to be cumulated in a sequential path: 1) Street Photography: shape and content; 2) Street Photography: report and technique; 3) Street Photography: project development, with an in-depth portrait.

Regarding the digital tools to support standardized assessment, secure credential management, and transparent quality assurance, a notable example is the SOI Asia project's platform, Inxignia, which demonstrates how blockchain-based credentials can promote secure, interoperable verification across institutions in the region (SOI Asia, 2022).

3.3 Approaches at national level in both EU and SEA

At EU and SEA level, different examples of implementation and development of micro-credentials within the national legal systems can be reported, highlighting the efforts towards a common interest of regulating micro-credentials and ensuring their quality for transparent evaluation and recognition.

In Italy, for example, the focus is on aligning micro-credentials with vocational education and training systems and recognising non-formal and informal learning. Moreover, micro-qualifications¹⁵ are components of the national system and undergo a referencing process to the National Qualifications Framework (Quadro Nazionale delle Qualificazioni - QNQ). When public bodies apply for referencing a qualification, they may also submit references for the micro-qualifications that compose it, in order to be able to indicate the NQF/EQF level in the certificates attesting the possession of those competences. Another example is Spain, where the implementation of micro-credentials is supported by the EU's Recovery and Resilience Facility (RRF) Funding (OECD, 2023).

¹⁵ In the Italian Referencing Report on the qualifications to the European Qualification Framework, "micro-qualifications" are "qualifications composed of one or more competences, as part of a broader qualification, issued at the end of short-term and modular (also flexible and personalised) learning pathways". The definition aims to promote the wide use of micro-qualifications in public lifelong learning offer, also considering the opportunities for recognising, validating and certifying competences in a tailored learning pathways perspective (ANPAL, 2022).

The Royal Decree 822/2021 authorised universities to provide their own continuing courses in the form of micro-credentials or micro-modules, of less than 15 ECTS, and provided that micro-credentials may be subject to credit recognition permitting learners to obtain an official degree (OECD, 2023; BOE, 2021). Moreover, lifelong learning was recognized as a basic function of universities through the Organic Law 2/2023 of the University System (BOE, 2023).

In Southeast Asia, several countries have developed national qualification frameworks that promote lifelong learning and integrate formal, non-formal, and informal education. Malaysia's approach to micro-credentials aligns closely with international best practices. It draws on models from Australia, where micro-credentials are embedded within national qualification frameworks and use industry-led, competency-based assessments; the United States of America, where universities and platforms like Coursera and edX offer stackable credentials recognized by employers; and the European Union, which utilizes the European Credit Transfer and Accumulation System (ECTS) to support credit transfer and mobility across institutions. In Malaysia, the Accreditation of Prior Experiential Learning for Micro-credentials (APEL.M) administered by MQA enables the recognition of prior learning through unbundled or stand-alone micro-credentials, allowing learners to earn qualifications within the Malaysian Qualifications Framework (MQF). In addition, the Human Resource Development Corporation (HRD Corp) further supports the use of micro-credentials to enhance workforce mobility and upskilling (HRD Corp, 2023). These practices help ensure that micro-credentials are relevant, accessible, and valuable to learners. Continuous professional development is integrated to maintain industry relevance and support diverse learning pathways, particularly for lifelong learners (Semigina, 2024). When it comes to other countries within the region, the Philippine Qualifications Framework (PQF) adopts a comprehensive

approach, involving key government agencies such as the Department of Education (DepEd), the Technical Education and Skills Development Authority (TESDA), the Commission on Higher Education (CHED), the Professional Regulation Commission (PRC), the Civil Aviation Authority of the Philippines (CAAP), and the Maritime Industry Authority (MARINA) (TESDA, 2022). Similarly, the Indonesian Qualifications Framework (IQF) is supported by a series of legislative instruments that define its structure and implementation. These include laws covering construction services, health, notarial work, education, and national work training systems (Ministry of Education and Culture of Indonesia, 2020).

3.4 The role of digitalization in micro-credentials evaluation

Across countries, digital technologies – including learning management systems (LMS), digital badges, and blockchain – are playing a key role in enhancing the effectiveness and credibility of micro-credentials. Digital badges offer a visual and easily shareable representation of skills and achievements, making them suitable for online portfolios and professional networks. Blockchain technology further strengthens the verification process by ensuring secure, tamper-proof credentials, thereby contributing to countering fraud in education and increasing transparency (Grech and Camilleri, 2017).

Digital badges and blockchain technology play a pivotal role in the evaluation and recognition of micro-credentials across various industries and countries, as they enhance transparency, security, and accessibility. Digital badges serve as visual representations of micro-credentials, which are small, specialized certifications that validate specific skills or knowledge acquired through targeted learning experiences (Stamatakis *et al.*, 2024). Platforms such as Coursera and edX now widely use micro-credentials to formally

certify the outcomes of short, skill-based learning experiences (Stamatakis *et al.*, 2024). Badges also enhance learner motivation and engagement by offering tangible proof of accomplishments. Blockchain technology underpins these badges by providing a secure, immutable ledger for storing and verifying credentials, thereby reducing fraud and streamlining the validation process across institutions and borders (Bhavani, 2024). This combination allows for the efficient transfer of credits and recognition of achievements, particularly as students increasingly engage in diverse learning environments globally (McGreal, 2024). This global approach addresses the growing need for flexible learning pathways in an increasingly interconnected world. Furthermore, the integration of artificial intelligence with blockchain can facilitate the management and dissemination of these credentials, ensuring that learners maintain control over their achievements while enhancing the overall educational ecosystem (McGreal, 2024).

Conclusions

In the light of all the above, both European and SEA regions are characterised by common opportunities and challenges regarding the implementation of micro-credentials. The added value represented by the above-discussed experiences could positively impact the evaluation of micro-credentials as described in the following two main perspectives.

First, stronger collaboration among higher education institutions and alternative providers should take place in the field of micro-credentials. In fact, the fast development characterising the labour market in the past few years continuously requires new and specific competences to learners. The academic sector is not always able to respond to these needs with the traditional study programmes.

Nevertheless, HEIs can ensure teaching and learning quality standards that are not always met by courses delivered by alternative providers. A more solid bridge among the different sectors could be represented by experiences of co-designing and co-delivering micro-credentials, so that the contents are aligned with the actual necessities of the labour market but at the same time are underpinned by the necessary elements of clarity, quality and transparency for their evaluation by higher education institutions and systems.

Second, digital tools are useful instruments to facilitate cooperation. In fact, the absence of clear quality standards is the main barrier for the evaluation (and consequent recognition) of micro-credentials, especially when referring to micro-credentials issued by alternative providers. The use of trusted technologies, as blockchain, is useful to easily share credentials with employers and higher education institutions in a simple, secure and certified way, and guarantee its quality assurance and authenticity.

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