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Microcredentials as a Sociological Phenomenon: Transformation of Lifelong Learning in the Digital Society

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Microcredentials are increasingly discussed as an emerging phenomenon of the digital society, reflecting broader transformations in the ways knowledge, skills and employability are recognised and validated. This paper examines the role of microcredentials through a systematic literature review of scientific articles indexed in the Web of Science and Scopus databases, conducted using the PRISMA methodology. The study focuses on how academic research conceptualises microcredentials and how they relate to contemporary changes in education systems, labour markets and lifelong learning. The analysis combines stakeholder mapping with thematic coding focused on recognition, institutional trust, labour-market alignment, and social inequality. The findings indicate that microcredentials create flexible opportunities for reskilling and upskilling and support more modular and demand-oriented forms of learning. From a sociological perspective, microcredentials can be understood as a mechanism through which education systems adapt to digital transformation and labour market pressures. The paper contributes to the broader discussion on how digitalisation reshapes lifelong learning and the institutional structures that govern access to recognised competencies.

Keywords: microcredentials, digital society, lifelong learning, labour market, employability, social inequality

INTRODUCTION

In contemporary organisations, employee learning is increasingly shaped by digitalisation, skill shortages, and post-pandemic restructuring of work and education (Rosenbaum et al. 2021). Despite the rapid growth of research on microcredentials, their broader sociological implications remain insufficiently explored, particularly in relation to social stratification, institutional trust, and the recognition of new forms of learning. Acquiring new skills and continuous learning even in adult life is inevitable, as also declared by the EU Council with the Skills Pact initiative, which aims to develop over 25 million adults by 2030 (European Commission 2024). In addition, microcredentials are also intended to serve as one of alternatives for acquiring and validating new competencies (European Centre for the Development of Vocational Training 2024).

The current scholarly discourse on microcredentials often attempts to bridge technical definitions with deeper socio-economic analysis. For instance, recent research seeks to view these credentials within a wider social, economic and historical context, arguing that qualifications are fundamentally socially embedded and function as signals that confer status and career progression (European Centre for the Development of Vocational Training 2023 a).

The rapid digitalisation of society has intensified this transformation, linking education, employability, and technological change more closely than ever before. Digitalisation does not only bring new learning tools but also changes the very meaning of education as a social institution. In this context, microcredentials can be seen as part of a broader shift in how higher education institutions adapt their educational, societal and labour-market roles (Panizzon, Janissek-Muniz 2026). Digital forms of learning require institutional adaptation, motivation, and a supportive environment to ensure participation and equity (Aouissi 2024). Technological processes make the transfer of knowledge highly mechanical and automated (Valantinaitė et al. 2020). Digitalisation, automation, and changing labour-market demands have accelerated the spread of shorter and more flexible credentials in both public and private learning spaces, particularly in upskilling and reskilling contexts (European Centre for the Development of Vocational Training 2022). This transformation is further reinforced by the growing role of artificial intelligence and digital technologies in reshaping work and organisational structures, which increases the demand for continuous and modular skill development (Krotov 2025). In this sense, microcredentials are not only an educational response to technological change, but also a sociological indicator of how digital society redefines the recognition and valuation of knowledge, skills and competences across institutional settings (European Centre for the Development of Vocational Training 2023 a). From this perspective, microcredentials are not simply a technical format. They are embedded in broader struggles over employability, institutional trust, and the social distribution of opportunities in the digital society.

Microcredentials can be defined as short, targeted certifications that formally recognise specific skills, knowledge, or competences acquired through different learning modalities, often with an emphasis on flexibility, portability and stackability (Yıldırım et al. 2025). However, their recognition is not automatic and depends on institutional frameworks, labour market acceptance, and broader social trust. Microcredentials, or also micro-credentials, focuses on a specific set of learning outcomes in a narrow field necessary for specific jobs or industries (Coursera 2024). Microcredentials are promoted by various governments worldwide, not only in Europe (Council Recommendation of 16 June 2022 on a European Approach to Micro-Credentials for Lifelong Learning and Employability 2022/C 243/02 2022) but also in America, Australia, Africa and Asia, and are one of the megatrends in employee training (European Centre for the Development of Vocational Training 2021). European Centre for the Development of Vocational Training (Cedefop) shows that microcredentials are associated with labour-market relevance, modularity, and recognition of prior learning, but also with uncertainty concerning terminology, comparability, and quality assurance (European Centre for the Development of Vocational Training 2023 b; 2024). Cedefop further emphasises the importance of trust, comparability, and systemic integration for the effective functioning of microcredentials within qualification systems (European Centre for the Development of Vocational Training 2023 a).

At the same time, this technological and educational shift can be seen as part of a broader societal transformation shaped by digitalisation and automation. Technological progress simultaneously creates opportunities and new risks, reflecting a dual nature of innovation that

affects both individuals and institutions (Xie 2025). In the context of education, microcredentials embody this duality, they increase flexibility and access but also raise questions about quality, recognition, and social inequality. Contemporary research on microcredentials shows that the field is dominated by higher-education implementation studies and general discussions of opportunities and challenges (Ahsan et al. 2023; Varadarajan et al. 2023; Yıldırım et al. 2025). The sociological questions such as unequal recognition, institutional legitimacy, symbolic value, and stratifying effects of alternative credentials (Ahsan et al. 2023; Martínez Rodríguez-Osorio et al. 2023; Varadarajan et al. 2023; Yıldırım et al. 2025).

From an economic perspective, microcredentials can be interpreted through the lens of human capital theory (Becker 1993), where education is understood as an investment enhancing productivity and employability. However, this perspective does not fully capture the social mechanisms that shape the value and recognition of such credentials. From a sociological perspective, microcredentials can also be analysed through the framework of credentialism and social stratification, where educational credentials function not only as indicators of skills but also as signals that structure access to opportunities. Drawing on Bourdieu's concept of capital (Richardson 1986), microcredentials may represent emerging forms of institutionalised cultural capital, whose value depends on recognition within specific social and organisational fields.

The article examines how researchers discuss microcredentials in scientific literature, specifically focusing on their role in reshaping education and work in the digital age. In contrast to existing systematic literature reviews, this study contributes by explicitly integrating a sociological perspective with a focus on business and management contexts and by analysing microcredentials through the lens of stakeholder-specific implications. The aim of this article is to analyse how academic literature in business and management conceptualises microcredentials as a sociological phenomenon in the digital society, with particular attention to their implications for employees, employers, and educational providers, as a social mechanism linked to employability, trust, recognition and inequality.

LITERATURE REVIEW

One of the key challenges facing European businesses and employers today is acquiring and developing employee competencies (Council Recommendation of 16 June 2022 on a European Approach to Micro-Credentials for Lifelong Learning and Employability 2022/C 243/02 2022). The perceived value of educational outcomes is strongly influenced by institutional support, career services, and the alignment between education and labour-market expectations (Diaconita, Dinca 2026). For employers and policy makers, microcredentials are attractive because they promise a faster alignment between learning provision and changing skill demands. The literature frequently connects them to employability, modular learning, and workforce responsiveness (Ashcroft et al. 2021; Salmon 2023). From a theoretical perspective, these interpretations are often grounded in human capital theory, where education and training are seen as investments that enhance productivity and employability (Becker 1993). In parallel, universities increasingly participate in workforce development (Cumberland et al. 2023), from which companies can also partly acquire employee development activities (Stoten 2022). The effectiveness of microcredentials in enterprises, however, depends on implementation design and organisational attitudes (Weller 2023).

In labour-market settings, microcredentials operate as social markers through which organisations classify candidates, allocate opportunities, and interpret competence. This perspective aligns with theories of credentialism, which emphasise that educational credentials

function not only as indicators of skills but also as signals that structure access to labour market opportunities. Cedefop explicitly notes that the value of microcredentials are not only inherent properties of credentials themselves, but are socially and economically attributed by their users, including employers and education institutions (European Centre for the Development of Vocational Training 2023 b). From this viewpoint, the value of microcredentials is not inherent but socially constructed, depending on institutional recognition, employer perceptions, and broader systems of trust. Users evaluate them through accreditation, provider reputation, assessment, quality assurance, transparency, and their relationship to recognised qualification systems (European Centre for the Development of Vocational Training 2023 a; 2023 b). For example, Hayes and Rangus (2026) demonstrate that microcredentials in tourism education simultaneously reflect strong vocational orientations while also incorporating elements of critical reflection and societal responsibility. Their findings indicate that the educational and social value of microcredentials depends on how they are embedded within wider curricular pathways rather than treated as isolated credentials. From a sociological perspective, microcredentials function as new forms of social recognition mediating transitions between education and work within the digital society, with implications for access, equity and status. Drawing on Bourdieu's concept of capital (Richardson 1986), microcredentials may be interpreted as emerging forms of institutionalised cultural capital, whose value varies across different social and organisational fields.

Continuous technological innovation and the growing need for new skills in the workforce also require new approaches to verifying the competencies of employees or job applicants. Thus, microcredentials can also help, for example, in the recruitment process (Perkins, Pryor 2021; Kässi, Lehdonvirta 2024). West et al. (2020) propose microcredentials as one way of ascertaining comprehensive competencies, including knowledge and skills (West et al. 2020). Similarly, Zhang and West (2020) mention microcredentials in the context of competency-based education. The competency-based or skill-based approach is one of the recommended trends for higher competitiveness of business globally (World Economic Forum 2024). Microcredentials gain value only when users perceive them as comparable, transparent, and supported by trusted institutions or industry-recognised standards (European Centre for the Development of Vocational Training 2023 a; 2023 b).

Many authors identify microcredentials as one of the tools that help to bridge the gap between market demands and graduates (Ashcroft et al. 2021; Salmon 2023; Ward et al. 2021). This may also apply to graduates of doctoral programmes (van de Laar et al. 2022). In addition, to support life-long learning, microcredentials can serve as a tool for changing or acquiring new skills, so-called reskilling and upskilling (Ashcroft et al. 2021; Caetano et al. 2023; Sargent et al. 2023; Ahsan et al. 2023; Yıldırım et al. 2025).

The impact of microcredentials and their effectiveness is influenced by their design, structure and context of implementation (Chandler, Perryman 2023; Zhang, West 2023). Their potential is not only in educational settings (Selvaratnam, Sankey 2021) but also in technical professions (Micali 2023) and even within the broader discourse on social inequality and access to education (Hill 2024). These findings suggest that microcredentials are more than a pedagogical innovation, they represent an institutional and social mechanism through which individuals gain recognition, status and employability in the digital society. However, existing studies remain largely descriptive and focus primarily on functional benefits, with limited attention to the underlying social mechanisms that shape recognition, inequality, and the stratifying effects of microcredentials.

This study explores how academic research in business and management discusses and conceptualises microcredentials, emphasising their social implications amid the digital transformation of education and work linking to some identified research gaps (Ahsan et al. 2023; Varadarajan et al. 2023; Yıldırım et al. 2025).

METHODOLOGY

A systematic literature review can be conducted according to different guidelines. This study adopts the PRISMA 2020 Protocol (Page et al. 2021), which provides a transparent and replicable approach to identifying, screening and synthesising peer-reviewed research. Both have a long tradition of publishing peer-reviewed academic research and allow the precise filtering of results. The following research questions (RQs) guided the systematic review:

RQ1: Which peer-reviewed research articles indexed in WoS and Scopus focus on microcredentials in the context of the digital society related to business or management between 2020 and 2025?

RQ2: What are the key findings of these studies regarding the role of microcredentials in the digital society, particularly their implications for employers, employees, and educational providers?

The data collection was conducted in April 2026. In the first part, two reputable scientific databases WoS and Scopus were selected. Within the databases in the category of business or management, the search fields were entered with the terms 'microcredential*' and 'micro-credential*'; both forms are used in scientific literature. To obtain as many expert contributions as possible, the term has been supplemented with an asterisk symbol, which allows for the possible addition of another character or the plural form of the term.

A comprehensive initial search in the WoS and Scopus targeted title, abstract and keywords (WoS also included topic). While 151 articles were found in WoS, and 188 in Scopus, the review was limited to scientific articles. The final dataset was refined by removing duplicates, non-English works, and articles published before 2020, ensuring the literature review covers the most recent period from 2020 to 2025. Although the search covered publications up to 2025, only a limited number of studies indexed in Scopus for this year were identified, and those were not directly relevant to the focus on microcredentials in business and management.

The initial pool of articles was reduced using a subject-specific filter. Since this paper focuses on the relationship between microcredentials and business and management, the articles were refined using the Business, Management, and accounting subject areas from Scopus and the Business and Management categories from WoS which explicitedly addressed managerial, organisational, or labour-market implications. This filtering process identified 30 unique scientific articles. After removing a summarising editorial (Ali et al. 2024) and excluding articles without a full access, a systematic literature review was conducted on ten fully accessible articles in business- or management-related categories and discussed organisational, labour-market, or managerial implications of microcredentials. The findings from these articles are then analysed, discussed in line with the research questions, and followed by the research's limitations. The analysis followed a thematic synthesis approach, combining stakeholder-oriented categorisation (employees, employers, educational providers) with thematic coding focused on recognition, employability, institutional trust, and social inequality.

RESULTS

Microcredentials in employee training can play an important role and are considered one of the new global trends (European Centre for the Development of Vocational Training 2021). In 2022, the Council of the European Union recommended the introduction of microcredentials to enhance, reskill and upskill employees and adults in order to increase the competitiveness of the European Union (Council Recommendation of 16 June 2022 on a European Approach to Micro-Credentials for Lifelong Learning and Employability 2022/C 243/02 2022).

Following the PRISMA 2020 method, ten scientific articles published since 2020 to 2025 that focus on microcredentials in business and management were selected, and Table 1 provides their complete bibliographic details and key findings. Although the dataset is relatively small, it allows for an in-depth qualitative interpretation of key themes and patterns within the selected studies.

Table 1. **Summary of the results of the systematic literature research (SLR) conducted in August 2024 in the WoS and Scopus**

No.	Title	Authors, year	Location	Research method	Sample	Target group
1	European skills strategy for the agri-food and forestry sectors – key challenges and prerequisites	(Trienekens et al. 2022)	Europe	Trend analysis, focus groups	25 key stakeholders	Provider
2	Inegrative literature review of the implementation of microcredentials in higher education: Implications for practice in Australasia	(Selvaratnam, Sankey 2021)	Australasia	SLR (2016 to 2021	NA	Provider (HEI)
3	Blockchain-based micro-credentialing system in higher education institutions: Systematic literature review	(Alsobhi et al. 2023)	Australia	SLR (2016 to 2022)	NA	Provider (HEI)
4	Credentialling: Educational pathways in design	(Davis et al. 2023)	US	SLR, comparison	NA	Employees, provider (HEI)
5	Digital badges: Pinning down employer challenges	(Perkins, Pryor 2021)	Scotland	SLR, quantitative method (survey)	73 employers from 700	Employers
6	Do microcredentials help new workers enter the market? Evidence from an online labour platform	Kässi, Lehdonvirta 2024)	Online/ Global	Theoretical and empirical method	46, 791 workers	Employees
7	Escaping from the valley of death: Reconfiguring executive education through a differentiated curriculum	(Stoten 2022)	UK	SLR, secondary data analysis	NA	Provider

Table 1. **(Continued)**

No.	Title	Authors, year	Location	Research method	Sample	Target group
8	Extending micro-credentials to micro-apprenticeships for the Fourth Industrial Revolution: Enhancing vocational education and training in the post-pandemics's 'new normal'	(Seet, Jones 2021)	Australia	SLR, politician recommendation	NA	Provider
9	How education and training systems can support a digitally-enabled workforce for the manufacturing industry of the future: an exploratory study	(Laundon et al. 2023)	Australia	Qualitative (semi-structured interview)	17 interviews	Employer
10	Micro-credentials: A learner value framework	(Beverley 2021)	Australia	SLR, customer value proposition	NA	Employee

Source: Own processing.

The results are interpreted not only descriptively but also sociologically, how microcredentials are framed in relation to employability, institutional trust, differentiation, access, and the balance of interests among employees, employers, and educational providers. Current research mainly focuses on the sociological dynamics of the microcredential ecosystem, with most studies centred on providers (especially universities and their role in lifelong learning). However, a significant portion of the literature also explores the social impacts on employees (individual beneficiaries) and employers (organisational adoption). The results are broadly consistent with more recent systematic reviews, which show that microcredentials are increasingly discussed as labour-market instruments for targeted competence development, but less often analysed as mechanisms of symbolic recognition, institutional legitimacy, or unequal access (Varadarajan et al. 2023; Yıldırım et al. 2025). This suggests that the dominant discourse remains closely aligned with a human capital perspective, while the sociological dimensions of recognition and stratification are still underexplored.

Table 2 illustrates an overview of the advantages and disadvantages of microcredentials, from the perspective of the employee, the employer and the provider of the microcredentials and thus confirms that the topic is relevant to different societal groups. At the same time, the findings highlight that the perceived value of microcredentials differs across stakeholders, reflecting their position within organisational and labour-market structures.

The stakeholder structure used in Table 2 is not only practical but also analytical, because it reflects the fact that microcredentials generate different forms of value and different forms of uncertainty depending on whether they are viewed by learners and employees, by employers, or by providers embedded in formal and non-formal education systems (European Centre for the Development of Vocational Training 2023 b). Taken together, these insights reinforce the argument that microcredentials should be understood as a sociological interface between labour-market demands, institutional credibility, and individual learning strategies. Their importance lies not merely in what they certify, but in how they are inter-

Table 2. **Advantages and disadvantages of microcredentials from the perspective of the employee, the employer and the provider, with the order number of the selected scientific articles**

	Advantage of microcredentials (No. of article)	Disadvantage of microcredentials (No. of article)
For employees	Upskilling/reskilling in relation to the labour market of company requirements (1, 2, 3, 4, 8, 9)	Low awareness of the impact of microcredentials in terms of adult lifelong learning (2, 5, 6, 8)
	Alternative to formal degrees (2, 3, 4, 5, 8, 9, 10)	Lack of harmonisation of standards and recognition of microcredentials (1, 2, 5, 8)
For employers	Taking advantage of technological progress and digitalisation, thus developing digital competencies (1, 2, 5, 6, 7, 8, 9)	Data security and disclosure of data from the database to different entities (3)
	Flexible online form or combination with other methods, possible asynchronicity (1, 2, 3, 7)	Lack of evidence of positive impacts and effectiveness of microcredentials (1, 2, 6)
	Possibility of use as one of the activities for employee development in the future (1, 2, 7, 8, 10)	Low awareness of employers about what microcredentials are (3, 5, 7, 8)
	Validation of competencies, e.g. in recruitment, employee training, cost reduction for competency validation (2, 3, 5, 6, 9)	Question of financing, cost sharing for obtaining certificates, low state support for financing the use of microcredentials in the company (1, 2, 10)
Fors providers/universities	Possibility of linking to the education system (1, 7, 8), especially to the higher education system (2, 3, 4, 5, 9), or VET training (1, 8, 9)	Unclear implications for competencies in vocational skills and/or soft skills, question of combination with other forms of education, especially full-time (5, 6, 10)
	For groups that do not have the possibility to obtain a university degree, increase their own income (1, 4, 7, 8, 9)	Low integration with current curricula, lack of standards for recognition of micro-certificates (2, 4, 8, 9, 10)
	Possibility of closer cooperation with companies, more focus on practice, for example, in the form of micro-apprenticeship (2, 4, 7, 8, 9, 10)	Mismatch of topics with market requirements, need for more flexible response to company needs, need to expand offer (1, 2, 4, 5, 6, 7, 8, 9, 10)
	Policy support – Green Deal (1) or, e.g. Industry 4.0 (2, 8, 9)	Different approaches to national education frameworks across countries (1, 2, 4, 7, 9)

Source: Own processing.

preted and used by different actors. This further supports the view that microcredentials function as socially constructed signals, rather than purely objective indicators of skills and competencies.

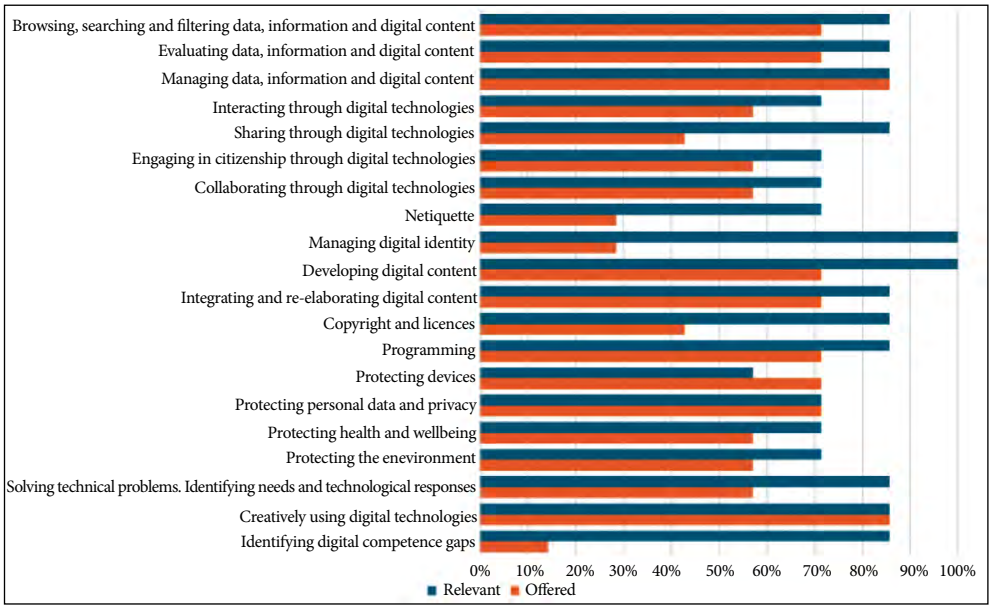
As part of the literature review, some articles recommend how to structure microcredentials to motivate employees and benefit employers (Beverley 2021; Trienekens et al. 2022). Generally, it is recommended that the aspects of time, structure and communication related to microcredentials and financing should be considered (Trienekens et al. 2022). The actual motivation of the learner to obtain the microcredential is also an important element (Beverley 2021). For example, in the context of recruitment or selection of a candidate for a project, microcredentials can help in the selection of a new employee (Beverley 2021; Kässi, Lehdonvirta 2024;

Perkins, Pryor 2021). Microcredentials, or digital badges, can help companies, for example, in the context of competency-based recruitment, which is increasingly used (Perkins, Pryor 2021).

Employees also need to consider their motivation to have the certificate, taking into account his or her learning experience and the knowledge and skills already acquired, as well as life situation, career goals and time requirements, financial resources and other preferences (Beverley 2021). The employee should consider microcredentials participation as a possible investment. Research has shown that microcredentials can also provide a competitive advantage and additional resources, especially for junior workers with less experience (Kässi, Lehdonvirta 2024). However, these benefits are not equally distributed, as their effectiveness depends on recognition by employers and their integration into existing qualification and organisational systems.

However, a particular microcredentials design should depend on the provider and its relationship with the business. The extent to which given microcredentials will be usable in practice for businesses or employees is discussed in the following section.

As the microcredentials started to be implemented into the higher education more and more, they become an important part of international education in alliance, and they offer a significant promise for addressing evolving education and workforce needs by offering flexible, targeted and accessible learning opportunities. At the same time, their increasing adoption raises questions about comparability, recognition, and their actual value within different institutional and national contexts. An important area, where microcredentials are used, are digital skills. This section focuses on the diffusion of micro-credentials for the digital transition by presenting initiatives across EU Member States (European Commission. Joint Research Centre 2025).



Source: European Commission. Joint Research Centre, 2025.

Figure. Relevance and offer of digital skills in micro-credentials in European Alliance

Micro-credential courses cover a wide range of digital skills across various sectors and levels of complexity. These skills are offered at various levels. Data from the selected European alliance prove that the portfolio of digital skills offered via micro-credentials (Figure) seems to be more in line with the relevance of these skills, although there are areas where improvement is needed, like in the case of 38 netiquette, managing digital identity, or identifying digital competence gaps (European Commission. Joint Research Centre 2025). This indicates that while microcredentials are aligned with labour-market needs in some areas, gaps remain in addressing broader or less tangible competencies, which may influence their overall effectiveness and perceived value.

Data are from the European Commission. Joint Research Centre (2025) show that digital skills are more prevalently offered within micro-credential courses, clearly defined, and widely adopted. Member States have adopted different strategies to incorporate micro-credentials into the national agenda, ranging from developing normative frameworks and using EU funds to deploying national financial mechanisms based on well-established national funding systems. However, these differences across countries also suggest that the value and recognition of microcredentials are shaped by national institutional frameworks, which may contribute to uneven adoption and potential inequalities in access and outcomes.

DISCUSSION

Microcredentials have their pros and cons, but it always depends on the point of view, as already shown in Tables 1 and 2. The findings suggest that microcredentials cannot be evaluated in isolation from the social relationships in which they are embedded. Their benefits and disadvantages depend on who evaluates them, under what institutional conditions, and for which purpose. This relational perspective is one of the key reasons why microcredentials can be interpreted as a sociological phenomenon rather than only as a pedagogical or managerial innovation (European Centre for the Development of Vocational Training 2023 b). This confirms that their value is not fixed but socially constructed and context-dependent, shaped by institutional trust and recognition.

For employees or potential employees of the company, microcredentials bring an opportunity to complement or increase their competencies related to the company's or the labour market's requirements. These may be not only professional or vocational competencies, the so-called hard skills, but also soft skills (Alsobhi et al. 2023; Davis et al. 2023; Laundon et al. 2023; Perkins, Pryor 2021; Stoten 2022; Trienekens et al. 2022). Soft skills, such as communication, problem-solving, teamwork, leadership and others are possibly developed by microcredentials (Alsobhi et al. 2023; Davis et al. 2023; Kässi, Lehdonvirta 2024; Laundon et al. 2023; Perkins, Pryor 2021; Stoten 2022; Trienekens et al. 2022). Soft skills will continue to be a topic in corporate employee training (Stoten 2022). However, some authors mention that microcredentials are unsuitable for validating soft competencies (Kässi, Lehdonvirta 2024). From a sociological perspective, this also shows that microcredentials do not validate all forms of competence equally well. Technical and job-specific skills are usually easier to formalise, assess and signal through short credentials, whereas more tacit, relational, or context-dependent competences may remain less visible or less credibly validated. This reflects a key limitation of the human capital perspective, as not all forms of valuable knowledge can be easily measured or transferred into recognised credentials.

On the other hand, the applicability of microcredentials related to professional competencies, the so-called hard skills, was mentioned in various sectors. For example, within

the manufacturing industry (Laundon et al. 2023), IT (Kässi, Lehdonvirta 2024) or automation (Seet, Jones 2021), microcredentials can provide a flexible solution for bridging the gap between the required competencies of companies, the labour market, and the existing competencies of employees or applicants (Laundon et al. 2023). However, in other fields, such as design, microcredentials are perceived as beneficial for vocational and soft skills (Davis et al. 2023). Microcredentials can also be suitable for employee development also in terms of digital skills (Laundon et al. 2023; Trienekens et al. 2022) or even competency development related to Green Deal and sustainability (Trienekens et al. 2022), or automation related to Industry 4.0 (Laundon et al. 2023; Seet, Jones 2021; Selvaratnam, Sankey 2021), or business competencies (Trienekens et al. 2022). In the context of rapid technological change, organisations increasingly require hybrid human–AI competencies, which strengthens the relevance of modular and flexible learning formats such as microcredentials (Krotov 2025). Recent research on digital transformation and AI also suggests that modular learning formats become more relevant where organisations need workers to continuously update hybrid digital and human competencies (Krotov 2025; Panizzon, Janissek-Muniz 2026). This reinforces the alignment between microcredentials and human capital development, particularly in rapidly changing technological environments.

With this, it is also important to monitor the impact and effectiveness of micro-certificates. For instance, microcredentials holders' employability can be one indicator for employees or even providers (Selvaratnam, Sankey 2021). Kässi and Lehdonvirta (2024), who investigated the effect of microcredentials in the online job market, suggest a different approach. In an online platform, candidates could test their competencies using 300 micro certificates on programming languages, graphic design techniques, and office software. They show that microcredentials could help junior workers get new projects and increase their confidence (Kässi, Lehdonvirta 2024). Given that candidates are often unaware of the value of microcredentials, the sociological challenge remains to continuously motivate employees and graduates to engage in upskilling and reskilling through these micro-certificates as a form of lifelong learning. This is where trust becomes central. Even when microcredentials may support employability or career mobility, their practical effect depends on whether employers, institutions and learners themselves perceive them as credible and worthwhile. Their value is therefore partly social and relational, not purely technical (European Centre for the Development of Vocational Training 2023 b). This supports the argument that microcredentials function as signals within labour markets, consistent with theories of credentialism.

Another advantage of microcredentials is that they are one of the alternatives to formal education. Especially, if regular university studies are becoming more and more expensive for students (Davis et al. 2023) and are not as responsive to rapid changes in the business environment (Seet, Jones 2021; Selvaratnam, Sankey 2021) or are too general (Davis et al. 2023). This is where microcredentials could be helpful (Seet, Jones 2021). Other authors also support the new approach of education institutions and greater cooperation with business (Alsobhi et al. 2023; Davis et al. 2023; Laundon et al. 2023; Selvaratnam, Sankey 2021; Trienekens et al. 2022). However, the lack of standardisation, harmonisation of systems and recognition of microcredentials is a barrier (Perkins, Pryor 2021; Seet, Jones 2021; Selvaratnam, Sankey 2021; Trienekens et al. 2022). This tension between flexibility and recognition is one of the core sociological dilemmas of microcredentials. What appears attractive from the perspective of speed, modularity and accessibility may simultaneously appear weak, fragmented, or uncertain from the perspective of formal recognition and long-term status (European Centre for

the Development of Vocational Training 2023 b). This tension reflects broader processes of social stratification, where not all credentials carry an equal symbolic value or legitimacy.

Thanks to the constant technological progress and expanding digitalisation, digital tools make online education possible nowadays. After COVID-19 pandemic, many new educational tools have spread worldwide (Laundon et al. 2023). The fact that many microcredentials are now acquired online or using new technology, indicates that the microcredential holders themselves develop their digital skills as well (Kässi, Lehdonvirta 2024; Laundon et al. 2023; Perkins, Pryor 2021; Seet, Jones 2021; Selvaratnam, Sankey 2021; Stoten 2022; Trienekens et al. 2022). This is, for example, greatly needed in the manufacturing industry (Laundon et al. 2023) or within design (Davis et al. 2023).

However, with the use of new technologies, there is also a need to be aware of the sensitivity of the data shared across different entities within microcredentials (Alsobhi et al. 2023). This has been mentioned in detail by Alsobhi et al (2023) but has not been mentioned in detail in other selected articles.

From the *employer's point of view*, the authors of the selected articles mentioned the advantage of online access or at least partial asynchronous completion of microcredentials as one of the benefits for the company. This allows employees to complete microcredentials at appropriate times and is not limited to a very specific time as in the case of face-to-face courses. This is important, for example, in the food, agriculture or forestry sectors (Trienekens et al. 2022). It is also in line with future trends in adult education (Selvaratnam, Sankey 2021; Stoten 2022). But again, with the awareness of data security (Alsobhi et al. 2023). Here, more information on the impacts and effects of microcredentials would certainly help employers (Kässi, Lehdonvirta 2024; Selvaratnam, Sankey 2021; Trienekens et al. 2022) to help companies further decide on this option. For employers, microcredentials are attractive mainly when they reduce uncertainty. They become useful when they make skills more visible, support recruitment or internal development, and are issued by trusted providers. If these conditions are missing, the microcredential may fail to function as a credible signal despite its pedagogical quality (European Centre for the Development of Vocational Training 2023 b). This again highlights the importance of trust and institutional legitimacy in determining their labour-market value.

Employers should start considering microcredentials as one possible form of training and development for their employees (Beverley 2021; Seet, Jones 2021; Selvaratnam, Sankey 2021; Stoten 2022; Trienekens et al. 2022). Microcredentials could help companies overcome the current shortage of certain competencies flexibly. However, this would mean raising awareness of the benefits of microcredentials among employers and HR professionals (Alsobhi et al. 2023; Perkins, Pryor 2021; Seet, Jones 2021; Stoten 2022). So far, HR practitioners have an idea of a classic college degree but less information about microcredentials. The microcredential can save a company the cost of validation of competence, both in the recruitment or in employee development (Perkins, Pryor 2021) or university graduates (Davis et al. 2023; Laundon et al. 2023; Selvaratnam, Sankey 2021).

On the other hand, unclear financing can be a disadvantage for companies regarding microcredentials. Whether the costs should be covered only by the employee or also by the employer, but there is still limited government support for financing the use of microcredentials in enterprises (Beverley 2021; Selvaratnam, Sankey 2021; Trienekens et al. 2022).

Providers also play a major role in the expansion of microcredentials. Integrating the course into the country's educational system can benefit microcredentials (Seet, Jones

2021; Stoten 2022; Trienekens et al. 2022). In particular, microcredentials should be provided by universities (Alsobhi et al. 2023; Davis et al. 2023; Laundon et al. 2023; Perkins, Pryor 2021; Selvaratnam, Sankey 2021) and furthermore reflect new educational approaches (Stoten 2022) or be included in VET training (Laundon et al. 2023; Seet, Jones 2021; Trienekens et al. 2022). Here, however, the impact on individual competencies would also need to be assessed, or possibly the need for a combination with another method to ensure that the benefits of microcredentials are sufficient and appropriate to the effort involved (Beverley 2021; Kässi, Lehdonvirta 2024; Perkins, Pryor 2021). Lack of public awareness about microcredentials remains a top challenge for 50% of institutional leaders who do not yet offer them, underscoring the ongoing need for social and professional communication (Coursera 2024). Microcredentials can strengthen outreach, attract non-traditional learners, and increase cooperation with employers, but they also require providers to balance flexibility with legitimacy so that shorter forms of learning do not become associated with lower status or weaker academic value (European Centre for the Development of Vocational Training 2023 b; Varadarajan et al. 2023). Universities are increasingly expected to act not only as providers of education but also as institutions shaping long-term societal and labour-market developments through innovation, foresight, and collaboration with stakeholders (Panizzon, Janissek-Muniz 2026). This further supports the interpretation of microcredentials as part of broader transformations in the role of educational institutions within the digital society.

Microcredentials can be a flexible alternative for those who do not want to study at university due to different reasons, such as cost (Davis et al. 2023) or the need to gain valid qualifications quickly as in the case of migrants (Davis et al. 2023; Trienekens et al. 2022). Similarly, some industries have a shortage of women, and microcredentials could provide a quick upskill for this group (Council of the European Union 2022; Trienekens et al. 2022). For providers, this means that these new target groups can also help increase their income (Stoten 2022). At the same time, research shows that microcredentials may improve access to learning for diverse groups, including migrants and non-traditional learners, but their real impact depends on whether these credentials are recognised and trusted within labour-market and institutional contexts (European Centre for the Development of Vocational Training 2023 a). This highlights a paradox: while microcredentials are often presented as tools for inclusion, they may also reproduce or reinforce existing inequalities if their recognition remains uneven across social groups and institutional contexts.

Much of the existing literature is dedicated to initial mapping exercises, identifying the 'current use of microcredentials' and positioning them within existing national systems rather than offering new sociological insights. At present, microcredentials are still relatively poorly linked to the educational curricula, and standards for the recognition of microcredentials are lacking (Davis et al. 2023; Laundon et al. 2023; Seet, Jones 2021; Selvaratnam, Sankey 2021). Participants in microcredentials should also consider this link regarding how the credential will benefit them in the context of the education they have already received (Beverley 2021).

Microcredentials would also allow providers to become more connected to businesses and labour market needs (Davis et al. 2023; Laundon et al. 2023; Selvaratnam, Sankey 2021; Stoten 2022, 2022). In particular, there is a great need to increase competencies related to Industry 4.0 (Laundon et al. 2023). For example, the authors Seet and Jones (2021) proposed the introduction of very practice-oriented microcredentials, the so-called micro-apprenticeship, which should be developed in close cooperation with companies. Lifelong learning is

now inevitable (Perkins, Pryor 2021; Seet, Jones 2021). For example, two out of five working-age adults in the USA hold a non-degree credential (Davis et al. 2023). From a sociological perspective, this closer connection between providers and employers highlights the role of microcredentials as intermediaries linking education systems with labour-market demands, where their legitimacy depends on mutual trust and shared understanding of competencies (Varadarajan et al. 2023).

Microcredentials' owners also show their willingness to continue learning. For example, by obtaining digital badges, they can quickly provide validation of their competencies on LinkedIn or their CV (Alsobhi et al. 2023; Perkins, Pryor 2021). This is more detailed information about the competencies acquired than, for example, in the form of a university degree (Laundon et al. 2023). However, the degree is still perceived by most employers as important information about the validated competencies of the candidate (Perkins, Pryor 2021).

This illustrates a key sociological tension, where traditional degrees still hold stronger symbolic value and legitimacy, while microcredentials function as emerging but not yet fully institutionalised forms of cultural capital (Bourdieu 1986).This interpretation is supported by recent research showing that microcredentials can embody both instrumental and broader educational purposes, depending on their design and institutional context (Hayes, Rangus 2026).

For this reason, the topics of the microcredentials themselves have become crucial. By offering suitable topics, providers can also respond more flexibly to labour market or social needs (Beverley 2021; Davis et al. 2023; Kässi, Lehdonvirta 2024; Laundon et al. 2023; Perkins, Pryor 2021; Seet, Jones 2021; Selvaratnam, Sankey 2021; Stoten 2022; Trienekens et al. 2022). Microcredentials could even support policies such as the Green Deal (Trienekens et al. 2022) or, for example, Industry 4.0 (Laundon et al. 2023; Seet, Jones 2021; Selvaratnam, Sankey 2021). With the cooperation of all actors, even across different continents or countries, progressive harmonisation can also take place in the field of adult education (Davis et al. 2023; Laundon et al. 2023; Selvaratnam, Sankey 2021; Stoten 2022; Trienekens et al. 2022). Proposals for harmonisation are gradually emerging in Europe (Trienekens et al. 2022), Australasia (Laundon et al. 2023; Selvaratnam, Sankey 2021) or America (Davis et al. 2023). However, approaches are inconsistent across countries, and some authors see this as a current negative aspect of microcredentials (Davis et al. 2023; Laundon et al. 2023; Selvaratnam, Sankey 2021; Stoten 2022; Trienekens et al. 2022). This inconsistency reflects differences in national qualification systems and institutional trust, which significantly influence how microcredentials are perceived, compared and valued across countries (European Centre for the Development of Vocational Training 2023 a; 2023 b).

The comprehensive examination of selected articles proposes a set of recommendations to address the existing limitations of microcredentials, including:

1. Facilitating collaboration and alignment among providers, businesses and users (employees).

2. Enhancing the selection of microcredential topics and refining their structure, encompassing an exploration of their impacts to bolster the credibility of microcredentials.

3. Elevating awareness among educational institutions, employers and employees and embedding microcredentials into the formal education system.

4. Encouraging companies and adults to supplement traditional learning pathways with more flexible microcredential options which are enabled by new technologies, enhancing the digital competencies of individuals, even in the context of online learning.

These recommendations reflect a broader need to strengthen the institutional and social embedding of microcredentials, particularly in terms of quality assurance, transparency, and alignment with labour-market expectations (European Centre for the Development of Vocational Training 2022).

While this systematic review's limitations of this paper include using only two databases and focusing solely on business/management articles that currently lack a strong empirical evidence, the topic is clearly relevant and opens several future research directions. Specifically, more accessible English-language articles are needed, particularly concerning employee development and the impact of microcredentials on business/management. Future comparative research should also address social equity and the issues of inconsistent recognition across different sectors and demographic groups to validate their role in labour market mobility.

Overall, the findings suggest that microcredentials should not be understood merely as flexible learning tools, but as socially embedded mechanisms whose value depends on recognition, institutional trust, and their position within broader systems of stratification.

Future research should therefore focus more explicitly on the sociological dimensions of microcredentials, including issues of inequality, access, and the differential ability of individuals to convert microcredentials into meaningful labour-market outcomes (Yıldırım et al. 2025).

CONCLUSIONS

Microcredentials are a key phenomenon in the digital society, reflecting a shift in how skills and employability are valued. This systematic review of WoS/Scopus 2020–2024 articles analyses their impact on education, the labour market and society. They offer flexibility and lifelong learning but raise crucial questions about recognition, quality, and social equity. Sociologically, they are reconfiguring education systems for the digital age. This transformation reflects a broader shift from traditional, stable qualifications towards more flexible, modular, and continuously updated forms of learning that respond to the rapid technological and economic change (European Centre for the Development of Vocational Training 2022).

Current research predominantly reflects the sociological dynamics of microcredentials, mainly focusing on providers like universities and their role in lifelong learning, but also addressing the social impacts on employees and employers. As Aouissi (2024) demonstrated in his study on e-learning, successful digital learning ecosystems require not only technology but also institutional support, motivation, and an inclusive culture that encourages participation. Similarly, for microcredentials to fulfil their potential, both employers and universities must cooperate in building systems that ensure transparency, recognition and trust. Evidence suggests that trust, quality assurance, and the clear communication of learning outcomes are key factors influencing whether microcredentials are accepted and valued by employers and learners (European Centre for the Development of Vocational Training 2023 b).

At the same time, Xie (2025) reminds us that every technological innovation carries ambivalence, it opens new opportunities but also introduces risks and inequalities. In the context of microcredentials, this means that while digital certification can democratise access to education, it can also reinforce divisions between those who have the resources and digital literacy to participate and those who do not. This duality highlights the risk that microcredentials may unintentionally reproduce existing inequalities if access, recognition, and support mechanisms are unevenly distributed (Varadarajan et al. 2023).

Microcredentials thus represent both a technological and social innovation. They promote flexibility, inclusivity and responsiveness to labour market needs, yet they also challenge traditional systems of educational recognition. The sociological significance of this trend lies in how it redefines learning as a continuous social process, shaped by digitalisation, employability pressures, and institutional adaptation.

Therefore, the transformation brought by microcredentials should not be seen only as an educational or managerial trend but as a reflection of deeper changes in the digital society. Ensuring that these changes support equity, transparency, and human development will require continued cooperation between policymakers, educational institutions, and the business sector.

Despite the limitations of this study, such as the focus on two scientific databases and the concentration on English-language articles, it provides a new sociological perspective on the growing role of microcredentials in reshaping education, work, and lifelong learning. The main contribution of this article lies in linking business and management perspectives with sociological concepts such as trust, recognition and inequality, thereby offering a more comprehensive understanding of microcredentials in the digital society (Ahsan et al. 2023; Varadarajan et al. 2023; Yıldırım et al. 2025).

Authors argue that the rise of microcredentials is not merely a technological or pedagogical shift but a critical moment in defining who gets access to certified knowledge and how the digital society institutionalises new forms of social stratification and professional exclusion. In lasts months, micro-credentials strengthen their role in the educational environment. They are no longer a sub-sector of education, they play a key role in the connectivity of the labour market and academia. The 2025 data suggests that while the 'sociological phenomenon' of microcredentials promotes equity and flexibility, it also challenges the traditional social contract of 'study once for a lifetime career'. Data in the paper confirm that the success of micro-credentials depends on the tripartite trust between the employee (who invests time), the provider (who guarantees quality) and the employer (who provides the value). The paper highlights the importance of understanding technological transformation not only as a functional change but also as a cultural and social evolution influencing human behaviour, institutions and values.

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HANA TRÁVNÍČKOVÁ, KATEŘINA MARŠÍKOVÁ

Mikrokredencialai kaip sociologinis fenomenas: mokymosi visą gyvenimą transformacija skaitmeninėje visuomenėje

Santrauka

Mikrokredencialai vis dažniau analizuojami kaip naujas skaitmeninės visuomenės fenomenas, atspindintis esminius žinių, įgūdžių ir įsidarbinimo gebėjimų pripažinimo bei vertinimo pokyčius. Šiame straipsnyje jų vaidmuo nagrinėjamas remiantis sistemine „Web of Science" ir „Scopus" duomenų bazėse indeksuojamų mokslinių straipsnių apžvalga, atlikta taikant PRISMA metodologiją. Tyrime dėmesys sutelkiamas į mikrokredencialų konceptualizaciją akademiniame diskurse ir jų sąsajas su šiuolaikinėmis švietimo sistemų, darbo rinkos ir mokymosi visą gyvenimą transformacijomis. Atlikta suinteresuotųjų šalių analizė ir teminis kodavimas, orientuojantis į pripažinimo, institucinio pasitikėjimo, atitikties darbo rinkai bei socialinės nelygybės aspektus. Tyrimo rezultatai atskleidžia, kad mikrokredencialai sudaro lanksčias galimybes persikvalifikuoti bei kelti kvalifikaciją ir skatina modulinio, į paklausą orientuoto mokymosi plėtrą. Sociologiniu požiūriu mikrokredencialai suprantami kaip mechanizmas, padedantis švietimo sistemoms prisitaikyti prie skaitmeninės transformacijos ir darbo rinkos keliamų iššūkių. Straipsnis prisideda prie mokslinių diskusijų, atskleisdamas, kaip skaitmenizacija keičia mokymosi visą gyvenimą sampratą ir institucines struktūras, reglamentuojančias prieigą prie pripažįstamų kompetencijų.

Reikšminiai žodžiai: mikrokredencialai, skaitmeninė visuomenė, mokymasis visą gyvenimą, darbo rinka, įsidarbinimo galimybės, socialinė nelygybė