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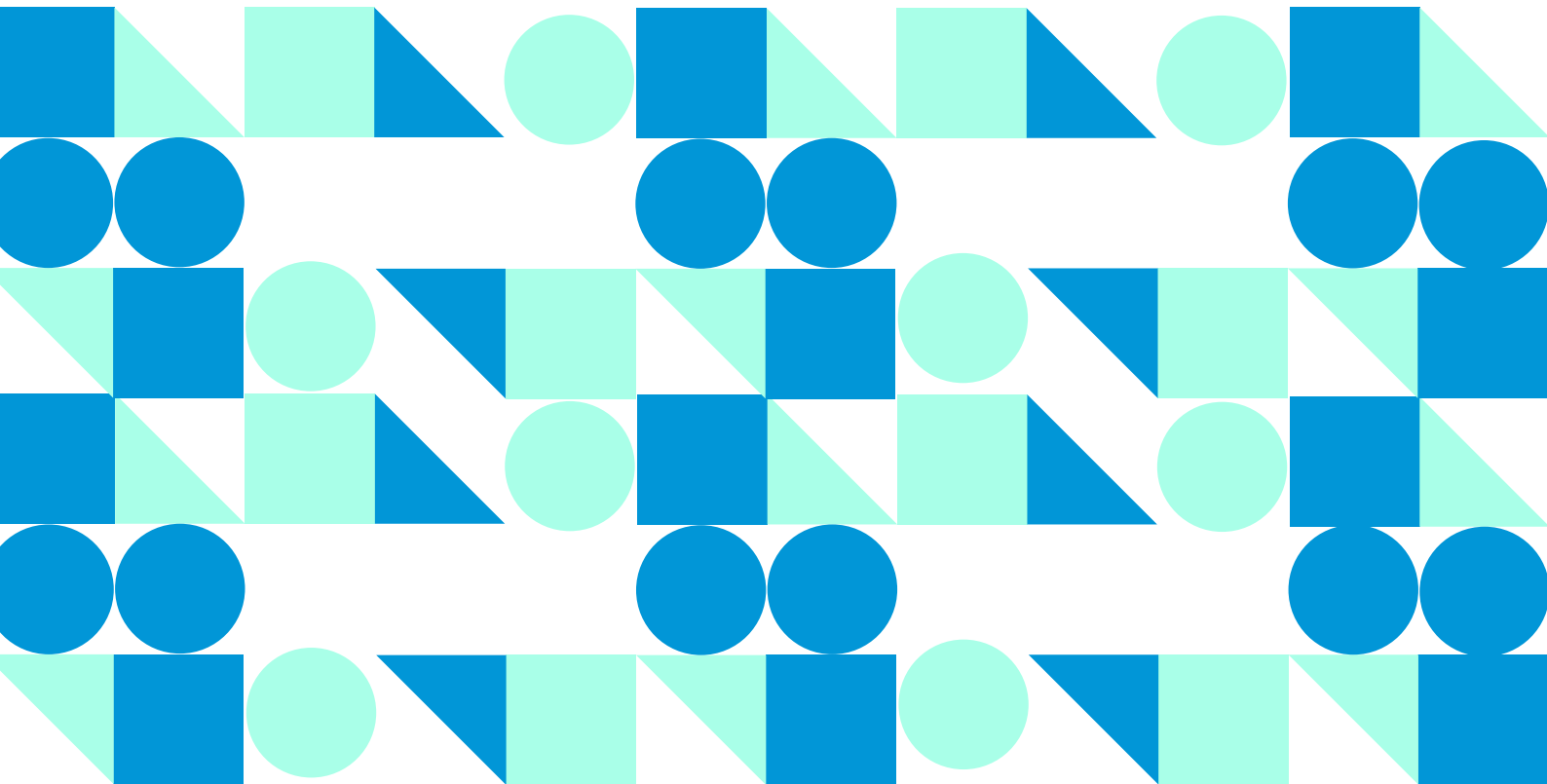
Research paper

Microcredentials for labour market education and training

The added value for end users



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Foreword

This publication was prepared as part of the Cedefop project *The role of microcredentials in facilitating learning for employment*. The purpose of this research is to gain a first understanding of the characteristics and added value of microcredentials, and their limitations, in supporting the learning careers of individuals in the 27 Member States of the EU as well as Iceland, Norway and the United Kingdom.

The research is divided into three separate but interlinked themes:

(a) mapping the current use of microcredentials for labour market oriented vocational and professional education and training;
(b) positioning the phenomenon of microcredentials in relation to the longer-term evolution of certification and qualifications systems;
(c) analysing the potential of microcredentials for end users, notably individual learners and employees.

This report examines the question of whether microcredentials can be sufficiently trusted by those acquiring them to become building blocks for lifelong learning, employment, improvement of their professional status, and promote inclusiveness in education and training. It also focuses on the added value of microcredentials from the perspective of employees, unemployed, individual learners, employers as well as education and training providers and their role in supporting age neutral systems for VET.

Results of the research confirm that the perceived exchange value and trust in microcredentials within the labour market is underpinned by socioeconomic factors and an individual's learning-work trajectory. European VET systems are configured and governed in a different manner: extensive debate continues about the measures needed to support different groups of microcredential end users in varying labour market contexts. As a perceived new skills currency for many users, the transparency of microcredentials is essential in establishing their comparability and exchange value.

The report builds on a variety of research instruments, such as an extensive interview programme and online survey carried out among employees, students and adult learners and individuals who are unemployed, as well as feedback collected by Cedefop's ReferNet network. It offers an updated insight into the value of microcredentials for end users and the way forward in building trust in them.

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Executive summary

This is the third and final report about the role of microcredentials in supporting labour-market-related age-neutral training and learning. It provides evidence on three interrelated research questions from the perspective of employees, the unemployed, individual learners, and employers:

(a) what are the preconditions if users are to trust microcredentials?
(b) what forms of support can facilitate users engaging in and benefitting from microcredentials?
(c) how can microcredentials come to play a targeted role in supporting age-neutral training and further learning?

While the term microcredentials is still unfamiliar for many users, they are not a new phenomenon. Microcredentials have, in some Member States ([1]), become a feature of the evolving CVET (continuing vocational education and training) systems, while they have the potential to support lifelong and life-wide learning, notably by improving the interaction between initial education and training and upskilling and reskilling policies and practices. Many learners see microcredentials primarily as a way of acquiring new labour market relevant skills on top of a qualification, which can be of use in job and career promotion, and in cases of unemployment. Learners also associate microcredentials with personal development and some refer to microcredentials as opportunities to access further learning.

Employers see microcredentials as a way to tailor their training to their business strategies. They also have a role in career development and retainment of employees. Employers find that microcredentials can contribute to increased employee productivity, which can, in turn, impact enterprise competitiveness. Employers also value microcredentials as a tool that can enrich job development and career opportunities for employees; some associate the added value of microcredentials with strategies to retain skilled labour.

For VET providers, microcredentials can increase their outreach to new learners. An important quality dimension is that employers or professional organisations are involved in their design: this can occur in different ways, from providing input into the initial phase to involvement throughout the design and piloting phase. Building partnerships with employers and other economic actors can strengthen the role of VET providers in regional economic development. In

([1]) For example, Denmark, Spain, France, Ireland, Netherlands, Portugal, Spain and Sweden.

turn, these relations can be of value to IVET learners. There are trends, which show that closer partnerships with employers and regional economic actors also have an effect on full VET qualifications, for example in relation to apprenticeship training.

A more detailed overview of how the added value of microcredentials is conceptualised is provided in the table below derived from survey data, interviews, case studies and desk research.

Table 1. **Value of microcredentials for different end users**

Learners and employees	Employers	Traditional VET providers
Standing out in a recruitment situation.	More responsive training offer that matches emerging skills needs of companies.	Expanding the outreach of VET providers.
Labour market mobility through vertical and horizontal skills pathways.	Faster and more efficient upskilling and reskilling of the workforce.	Consolidated strategies for VET excellence.
Improved labour market outcomes in the form of income and career development.	Improved employee retention through improved job and career pathways in the company.	Allowing for new services and engagements with new targets groups.
Career shifts.	Expanding the recruitment base (hidden workforce)	Involvement in local, regional and sectoral skills ecosystems building skills intelligence that can enhance quality and relevance of provision.
Access to continuing and further learning on a flexible basis.	Reducing induction costs of new employees by providing more individualised and affordable training opportunities.	Building institutional capacity to innovate, e.g. by joint design of new forms of provision to reach underprivileged target groups.
Recognition of prior learning.	Renewed competitiveness and innovation performance through concurrent strategies for upskilling and reskilling.	Improving quality of provision overall by engaging actively with stakeholders in local labour markets.

Source: Cedefop, based on desk research, case studies, surveys, and interviews.

The development and implementation of microcredentials comprises a range of different approaches and partnerships. In many cases, ambitious targets have been set in terms of users to be reached, but how the scaling will occur is uncertain. Several online portals have been established providing links to skills anticipation studies and a growing number of microcredentials pathways. While these portals may serve a purpose in marketing the offer, they do not constitute an effective outreach strategy if wider user groups are to benefit. The study shows that even when microcredential development rests on solid skills anticipation methods, it is not enough to overcome the limitations of supply-side approaches if the wider supportive user environment is not considered in the different stages of engagement.

Microcredentials are a potential tool. Their added value hinges on a thorough assessment of user needs, where factors such as learner support demand careful consideration. Interviews with providers suggest that a user journey mapping can systematically explore how different user groups may be supported throughout the learning process.

The provision of microcredentials is largely associated with their flexibility and their focus on labour market relevant skills. The study offers some examples where providers engage in partnerships with labour market actors to take on mediating roles to end users. This includes matching the long-term unemployed with job openings in growing sectors such as renewable energy or assisting companies in identifying skills needs for their workforce. Through such efforts, providers of microcredentials may increase their engagement with employers and other labour market actors while also becoming a central node in the evolution of skills ecosystems.

There are different entry points and ways of supporting learners and companies in engaging with microcredentials. The study indicates, however, that tools and processes to support learners tend to be immature. The limited supporting tools and enabling structures contribute to users operating in a fragmented environment.

Cedefop's research on the *Future of VET* provides a rich, scenario-based framework that can be used by stakeholders to reflect on the evolving microcredentials landscape and their role in it. The value of such an approach would be that it can bring together actors across traditional VET system boundaries to articulate their visions of what the value-added of connected microcredentials would entail through the lens of the different users they aim to reach. It can also assist in prioritising resources.

Conditions for building trust in microcredentials

In the evolving microcredentials landscape, certifications play an increasing role in fields such as Industry 4.0 ([2]), e-commerce, and cyber security. Multinational providers of technology infrastructure and software services have come to play a growing role, as training providers with certifications offered in a range of technology-related fields. The certifications do not only serve training purposes internal to these companies: some multi-national technological companies have

([2]) Industry 4.0 also referred to as the fourth industrial revolution is characterised by increasing automation, the use of digital technologies and advanced analytics in manufacturing and industrial processes.

established training subsidiaries and services. Due to the global uptake of digital technologies and software solutions, these technology providers have managed to position themselves in global training markets as providers of certifications supporting efficient implementation and maintenance of the information and communication technology (ICT) infrastructures and tools. Interviews conducted in the study suggest that the global approaches to certification, using associated skills-based performance standards, are more trusted as they are closely linked to industry.

Both for learners and employers, accreditation or certification seems to be the most important mechanism that is conducive to trust, as it is shaped by formal quality assurance mechanisms. The added value of microcredentials is primarily labour market related, although access to further learning is also a perceived value. As a skills currency, trust is an effect of its exchange value regarding labour market opportunities or access to further learning: many learners and employers claim they have experienced that microcredentials provided a positive labour market return. This could explain why learners generally associate microcredentials with labour market and education opportunities despite constraints regarding their quality and transparency. Trust in microcredentials and the reputation of providers are thus situated between formal aspects of quality assurance and the experienced exchange value accrued for specific users.

The numerous ways microcredentials are referred to – including micro degrees, certificates, nanodegrees – and uncertainty about quality assurance in many cases leave users uncertain about how to assess the value of microcredentials and the reputation of providers; this has had an impact on uptake and trust. But trust in microcredentials is also shaped by an individual's work life trajectory and personal life circumstances. Trust is also shaped by user expectations regarding the exchange value of microcredentials for an individual's specific purposes.

If the workplace has a rich learning culture, the individual is more likely to be actively encouraged and supported to engage in learning and is more likely to believe there is a return on learning in terms of job development, salary increase, and work wellbeing. This in turn affects users' trust in microcredentials.

In contrast, individuals who are affected by structural unemployment, and who may have participated in numerous training events while remaining unemployed, may be more hesitant to engage in further training and have limited trust that microcredentials can offer a pathway to employment.

Transparency of microcredentials

As a perceived new skills currency for many users, the transparency of microcredentials is essential in establishing their comparability and exchange value.

Learners and employers often refer to the same features, which add value to training that is based on the provision of microcredentials. Apart from the quality assurance mechanism, users point to value-adding features such as information elements that make it possible to compare microcredentials, as well as assessment formats (whether they allow learners to demonstrate achieved skills). Information elements about microcredentials can contribute to transparency and can form the backbone of connected microcredentials when they are in a digital format. The consistent use of these elements can enable comparison of microcredentials developed in educational and industrial contexts. This would include information such as purpose, access requirements, learning outcomes, performance standards, and assessment.

The provision of microcredentials and the purposes they serve are more diverse in CVET and in labour market and industry contexts than is the case in higher education. It may be more complex, therefore, to allow for comparability across the diverse provision and providers of microcredentials and the different contexts in which they function.

While the common building blocks proposed by the European Commission (2020) can be of value for Member States and for providers in national VET systems, an analysis of certificates and certifications in manufacturing and in retail (see also Cedefop, 2023a) indicates that the detail in the information provided about these credentials varies substantially. It may take time and require substantial resources for a wider range of providers to comply with the common building blocks, which need to be considered while also fully considering user needs. While these building blocks in many ways comply with needs expressed by users, the question of whether they fully contribute to transparency regarding the labour market added value of microcredentials remains open. It can be argued that the added value of microcredentials as a skills currency is ultimately measured in their exchange value in labour markets for learners and for employers. For learners this can entail a salary increase and easier transition to labour markets, while the exchange value for employers can be measured in terms of productivity gains or labour force retainment. A robust monitoring framework can provide added value for users if comparable data about labour market and wider social outcomes are part of the supportive environment for microcredentials. The argument would be that the quality of user information can support user choice and increase the added value of guidance and counselling.

Guidance and counselling about microcredentials is very important due to the uncertainty around microcredentials and current lack of data for comparability. In many cases, microcredentials are offered through web portals which tend to provide limited information as to how specific credentials are linked to occupational fields. In addition, it is not always clear whether microcredentials are a pathway to a qualification at a higher level. Even though guidance and counselling can assist learners in the pre-engagement phase, the study indicates that learners only to a limited extent associate guidance and counselling services with the added value of microcredentials. This is likely because the term microcredentials is not yet an established concept among learners and guidance and counselling professionals, (as the term may not have been used by these professionals). However, the limited reference to guidance and counselling may also be an effect of the fragmentation of provision and support structures.

Examples emerging from France, Sweden and Finland indicate that the public employment services are making use of labour market data in novel ways using artificial intelligence. This allows for a granular skills-based view of which type of skills are in growing demand in specific occupations and which are in decline. In this context, public employment services or trade unions could provide guidance related to microcredentials that would likely increase employment opportunities. International efforts are under way to define skills taxonomies and metrics to survey better any labour-market-related outcomes of microcredentials such as transition to jobs that pay above minimum wage for the long-term unemployed, and transition from jobs in decline to occupations with better prospects.

Quality assurance of microcredentials

The study shows that formal aspects of quality assurance, in the form of accreditation or certification of providers, play a substantial role in shaping user trust. End users are looking for some form of quality label that can guide their choice, and there are examples of how partnerships of providers have invested in developing a quality label to create a common framework to ensure consistency in the design of microcredentials. However, even if quality labels are intended to help users assess the quality of provision, different approaches to quality standards among different providers can have the unintended effect of increasing confusion and a sense of fragmentation. The study findings indicate a trend towards developing overarching quality label approaches; this is the case for the multiple providers that are part of the different knowledge and innovation communities in the European Institute of Technology (EIT, 2023). In the development of European

sectoral solutions, common quality labels also play an important role in standard-setting and certification in examples as diverse as sports and welding.

Other proposals brought forward in the survey and through interviews relate to the establishment of a quality registry for microcredentials. However, this could come at substantial expense due to updating requirements that would be needed. Unless a quality registry builds on quality principles that would accommodate the diversity in credential offerings, it may not serve user interests.

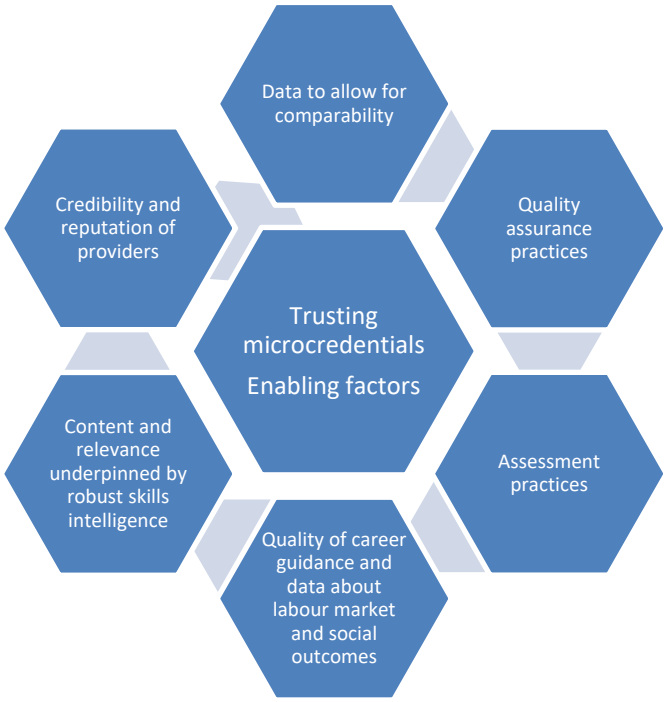
The mapping of retail and manufacturing certifications and certificates undertaken for this study illustrates that, even if assessment is central to trust and a feature that users strongly associate with the added value of microcredentials, information about assessment formats varies substantially. In cases where information about assessment is available, multi-choice tests seem to be favoured. Although well-constructed multi-choice tests may serve their purpose when testing specific skills, they are less well-suited to allowing for users to demonstrate their acquired skills, a valued feature by employers.

The involvement of industry in defining skills needs is an additional key priority for all user groups, though there could be a latent tension are microcredentials are designed to specific employer needs yet might also to contribute to wider labour market mobility and employability interests. For employers, another quality dimension referred to is the teacher and trainer insights. Even if a VET teacher or trainer has taught in manufacturing for several years, they may not have updated their know-how and insights in Industry 4.0 concepts at a level that stakeholders from industry would expect, so their experiences need to be considered.

Overall, quality assurance remains a key concern for many but it is noticeable that end users associate different dimensions with quality, especially in cases where microcredential quality assurance processes have evolved within CVET on the one hand, and in industrial settings on the other. This raises questions as to whether these different approaches need to be calibrated and, if so, how, in a context where the real challenge to transparency could be the proliferation of certificates and badges offered by a diversity of global online providers.

The conditions for building trust in microcredentials are summarised in Figure 1.

Figure 1. **Conditions for building trust in microcredentials**



Source: Cedefop, based on desk research, case studies, surveys, and interviews.

Support measures for end users

Comprehensive information and user-centred guidance about microcredentials is necessary to enable learners to make well-informed decisions independently. It also ensures that their learning needs are met, the learning experience is worthy of their potential financial investments and time spent in a learning experience.

EU counties play an important role in funding continuing training through various European measures; the ESF, the Erasmus programme, and recently the Individual Learning Accounts (ILAs) Scheme as an element of the European Skills Agenda. The ILAs have been proposed as a supporting measure to spur opportunities to participate in continuing training. This participation varies substantially between and within Member States and sectors of the economy, with the low-qualified tending to benefit the least from employer investments (European Commission, 2022b). The funding available for individuals for training purposes also varies in terms of enterprise investments, public funding schemes, or funding through collective agreement. How the ILAs will be implemented and aligned with national reform policies and evolving skills strategies could ultimately impact the uptake of microcredentials.

Microcredentials are considered a way to combat unemployment and retain qualified labour as indicated in the study. Good practice examples from Member

States that are revisiting their skills policies could be considered. For instance, Ireland launched in 2022 a national roadmap for microcredentials while is preparing a renewed skills strategy supported by the OECD. Sweden implemented an ambitious 2022 reform of labour legislation in response to what was perceived as structural skills mismatches. This has led to a significant change in retraining funds, laying the foundation for adults to have better opportunities to engage in microcredentials regardless of the acquisition of former qualifications.

Conclusions

Microcredentials are, in one respect, situated in a narrative of lifelong learning; providing individuals more diverse opportunities to engage in lifelong learning with labour market and wider social benefits to be accrued. At the same time, they are underpinned by an economic narrative that investments in upskilling and reskilling are a matter of urgency.

The mapping and analysis of microcredentials in retail and in manufacturing undertaken for this study underlines that there are a range of certificates and certifications, technical in nature and, at times, very specialised. Some are entry-level certificates and certifications, while others are stacked and can support progression in the labour market from entry-level jobs to technician and engineering level job roles. Their technical nature suggests that they can function as top-ups to qualifications with added value for both learners and employers, while they may not be recognised in further learning. While some of these industry-related credentials provide reference to the European Qualifications Framework (EQF) and formats of assessment, the information about the specific credentials varies substantially, and this contributes to fragmentation. It is uncertain what role these certifications and certificates can play for low-qualified users as pathways to the labour market, particularly in a context where transversal skills play a bigger role. There is also a massive increase in certificates and badges offered in online formats in a range of skills areas, with many free of charge. It is unclear what role they play in European labour markets and how they are valued by learners and employers.

At the same time, as microcredentials are being offered by individual VET providers, a range of partnerships based on common business interests can be observed. These partnerships tend to cross traditional boundaries including university colleges or academies, local economic actors, and sector bodies. In other cases, they may involve public employment services and both public and private training providers. Some grow out of shared technologies and training needs in relation to Industry 4.0, or cluster strategies. While many have set

ambitious targets as to users that they intend to reach, it is currently unclear how they will engage with wider groups of learners and small and medium-sized enterprises (SMEs).

Currently, the range of initiatives contributes to a sense of fragmentation, but their diversity can serve as a backdrop to national skills strategies providing opportunities to engage a wider range of stakeholders in consolidated approaches to microcredentials. Microcredentials are often perceived as building blocks in comprehensive skills strategies due to their alignment with business targets However, lessons from European VET system reforms show that they often fall short due to path dependency shaped by existing institutional structures and historical legacies.

While users associate microcredentials with a range of benefits, a substantial number of learners question whether they will increase employment and job promotion opportunities for themselves and for the labour force as whole. Users reflect that the labour market and wider social value of microcredentials is not yet well understood, especially for the low-qualified, for the long-term unemployed, or for the elderly with outdated skills. The added value for groups which are considered at risk will ultimately depend on how skills are conceptualised in the design of microcredentials and the nature of existing or future supporting structures.

Microcredentials exist an area between the public and the private spheres, between providing targeted skills in demand and laying the foundation for employment in labour markets marked by artificial intelligence and advanced digital technologies. This underlines why a European or national blueprint for microcredentials skills ecosystems could be premature, given that a multitude of models and approaches to microcredentials are still at an early stage of development, and the benefits to be accrued for different users are not fully understood. A consolidated research strategy on microcredentials will allow for an iterative approach to developing and mainstreaming microcredential design and provision, while also recognising that comprehensive supporting structures are needed for more learners and SMEs to engage in, and benefit from, microcredentials.

CHAPTER 1.
Introduction

1.1. Scope of the study

This study aims to investigate whether microcredentials can be sufficiently trusted by those acquiring them to become building blocks (‘currencies’) for lifelong and life-wide learning. Considering that the currency and the exchange value of microcredentials largely depend on their visibility and perceived value to others, this report analyses their role for end users, specifically individual learners, by building on previous research conducted as part of this project (Cedefop, 2022c and 2023a). The key purpose of this study is to produce evidence on:

(a) the added value of microcredentials to end users within the labour market and lifelong learning contexts;
(b) trust in microcredentials among end users through identification of conditions and practices needed to increase the trust in microcredentials;
(c) support measures to facilitate the utilisation of microcredentials among end users;
(d) microcredentials’ role in supporting age neutral systems for VET.

Since microcredentials are part of a broader system of qualifications and credentials, which involve multiple stakeholders and learning contexts, an in-depth analysis of the value-added of microcredentials to end users is crucial in understanding whether they can achieve their aspiration to become the currency for lifelong learning, employment, improvement in professional status and inclusiveness in education and training. Identification of the conditions needed to trust microcredentials will allow evaluation of their relevance to different end users in varying contexts, which affects their value and exchangeability. Considering the debates about the need to improve the interaction between initial education and training, upskilling and reskilling policies and practices across Europe, possible support measures are suggested for paving the way towards the promotion of microcredentials’ role in supporting age neutral systems for VET. Such age neutral VET systems play down the distinction between initial and continuing VET and use existing resources to support individuals according to their unique potential and needs (Cedefop, 2023b).

1.2. Research background

Globalisation, climate change, digitalisation, and demographic changes are impacting labour markets. These trends have resulted in incremental changes to occupations and skills. They have impacted the configuration of VET systems such that VET provision does not stop after an individual has acquired a formal qualification or prior to entry in the labour market. Automation and digitalisation increasingly demand more complex cognitive and relational skills, and driving transformation of business models and tasks in the workplace. At the same time, the green transition has become more urgent (Schneider and Le Mouillour, 2022). To ensure broad participation in working life, in a context where the so-called half-life knowledge has decreased, upskilling and reskilling have become features in national policies, impacting the configuration of VET systems to different degrees (Cedefop, 2023b).

The need to acquire new and different skills following the completion of a formal VET qualification and throughout adult life is paramount. It has been viewed as the response to adapting to a fast changing and multifaceted social and professional context in national skills strategies and in EU policies (European Commission et al., 2020). Whereas lifelong education originally has a broad foundation, and entails learning in different personal spheres, the concept has increasingly been promoted as a response to rapid technological development and progress with an emphasis on individuals' having the necessary skills to participate and contribute to economic development (James et al., 2022). The narrative of lifelong learning is positioned as a precondition to ensuring employability, adaptability and mobility in the EU. Microcredentials are one of the tools to support lifelong learning by increasing its diversity, supporting individual learning pathways and widening access.

Recent years have seen an increasing quantity of microcredentials in education and training setting. They are also widely discussed among policy-makers, education and training providers, social partners and other stakeholders. Despite the growing offer of, and interest in, microcredentials, there are still varying interpretations of what they are and what they entail (Council of the European Union, 2022b). Since the European Commission proposed their definition and approach to microcredentials, Member States have started to familiarise themselves with the term and launched or became involved in discussions. Even though many Member States are still at the early stage in these policy discussions, others have already advanced or even explicitly referenced microcredentials in concrete legislation. For example, Spain defined and regulated microcredentials in both VET and higher education sectors, while Ireland is set to be the first country in Europe to create a national framework for microcredentials. Despite the lack of

agreement and understanding of microcredentials, a wide range of certified and uncertified short learning experiences in different national contexts fits the definition proposed by the European Commission. Different types of credentials, including professional and academic certificates, digital badges and credentials, partial qualifications and modules certificates are being issued by VET providers and labour market actors across European countries. This has brought further discussions of whether existing qualifications and programmes within qualifications frameworks may be considered microcredentials. The previous research (Cedefop, 2023a) shows that existing modules and partials in some countries share the same characteristics as microcredentials, as defined by the European Commission; modularisation is seen as one way to pave the way for their incorporation into national qualifications systems and even national qualifications frameworks. However, some stakeholders are unsure whether module certificates and partial qualifications should be considered microcredentials, despite sharing the same characteristics. Yet some countries ([3]) are also opening their qualification frameworks to qualifications from outside the formal system and some of these qualifications can be considered microcredentials.

Against these developments of proliferation on microcredentials and the growing discussions around them, it is important to understand their relevance and added value to end users. To be relevant to end users, microcredentials must signal and carry value, which eventually would allow their holders to exchange them into further learning, gainful employment, career progression and other labour market relevant benefits. However, to be relevant and allow such exchanges to happen, they also must be trusted among learners and employees, employers, and education and training institutions.

1.3. Analytical and methodological approach

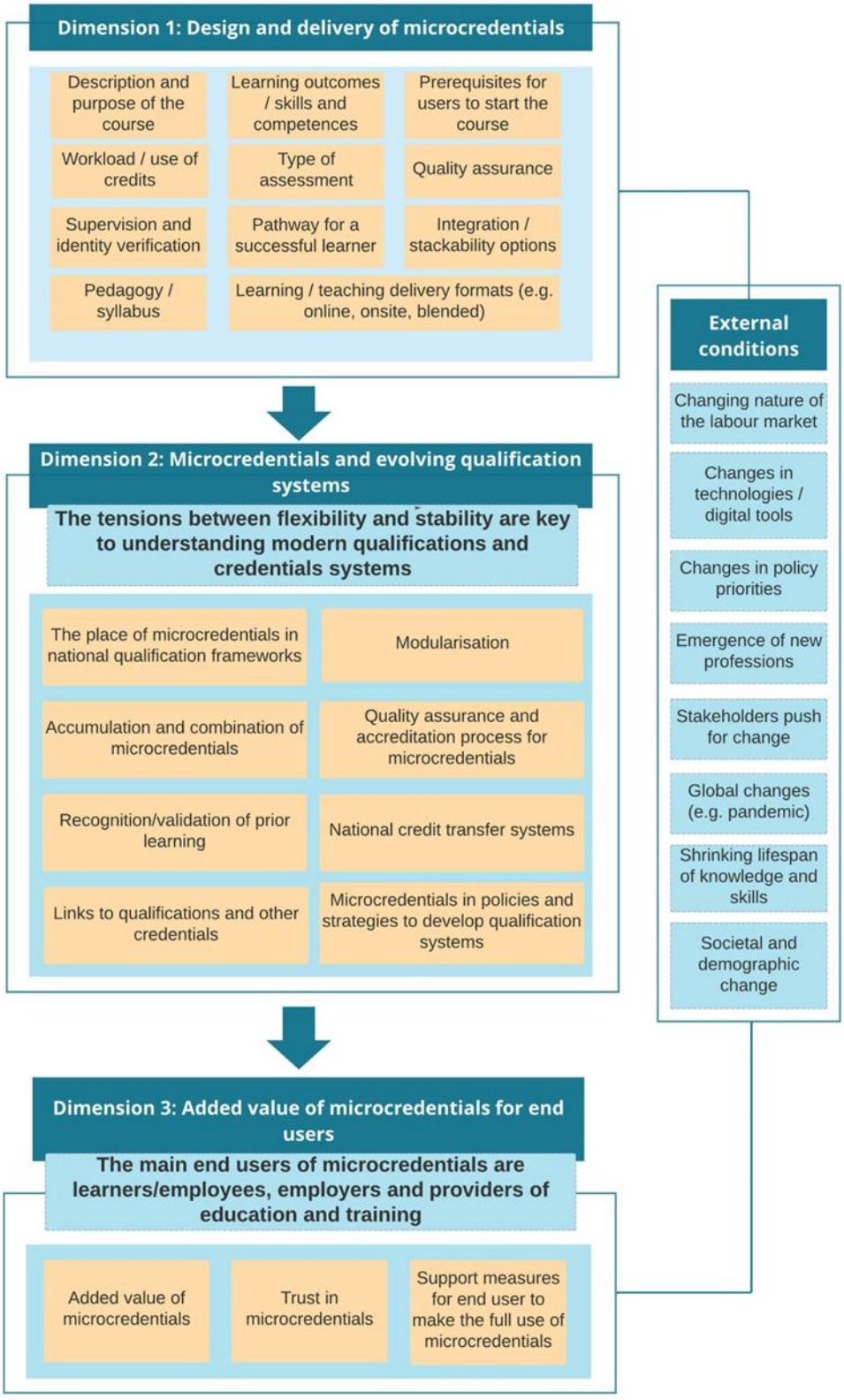
The study was based on a model designed for the analysis of microcredentials in labour market-related education, training and learning. This model identifies three interconnected dimensions, as well as external conditions that affect these dimensions (Figure 2). This research primarily concentrates on the third dimension of the analytical model and covers the other two dimensions only briefly. The first dimension was covered in a previous study, mapping microcredentials (Cedefop, 2022c), while the second dimension was covered in greater detail in Cedefop's (2023a) publication on microcredentials and evolving qualifications

([3]) For example, Austria, Denmark, France, Netherlands, Poland, Slovenia, Sweden and the UK (Scotland) (Cedefop 2023a).

systems. The third dimension of the model is related to the uptake, perceived relevance and value added of microcredentials for end users, including learners, employees, employers, and education institutions.

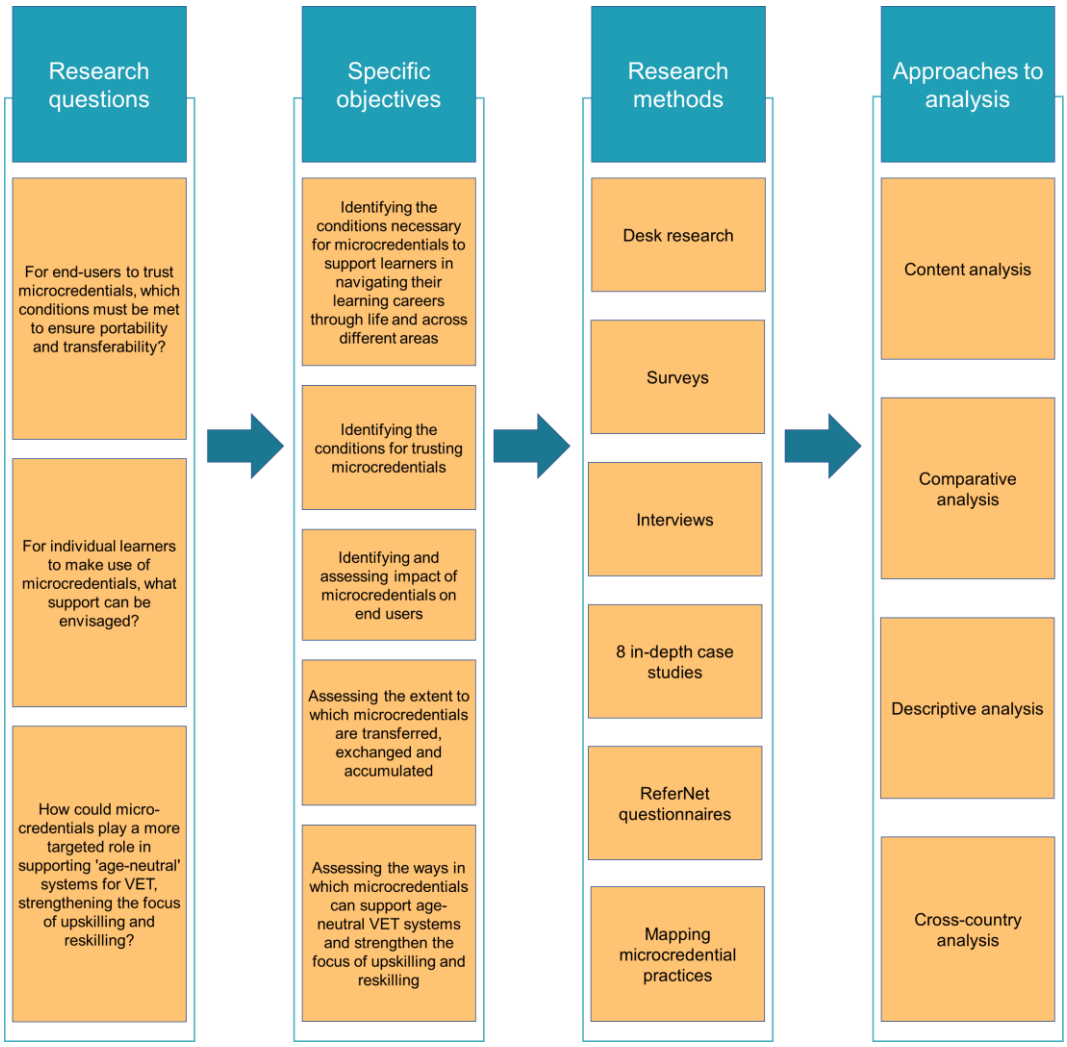
The methodological approach of this study was designed on the basis of the analytical model (Figure 3). The research topics are covered by employing multiple research methods and approaches to analysis. The data collected through these mixed methods were subject to qualitative analysis. Content analysis was used to examine the collected data, to identify the added value of microcredentials for end users, the conditions for end users to trust microcredentials and support measures necessary for end users to make the full use of microcredentials.

Figure 2. **Analytical model**



Source: Cedefop.

Figure 3. **Methodological approach for implementing this study**



Source: Cedefop.

Evidence collected in the study comes from the following data collection methods:

(a) an interview programme comprising 45 interviews conducted with learners, VET providers, employer and employee organisations and public employment services as well as the interview programme implemented as part of previous two publications of this study, comprising an additional 143 interviews;

(b) four surveys implemented across Europe in 2022 and 2023. The surveys addressed four different stakeholder groups of end users: employees,

students and adult learners, individuals who are unemployed, and employers ([4]);

(c) four surveys implemented across Europe in 2021. The surveys addressed four stakeholder groups: national authorities, education and training providers, employers, employer and employee organisations ([5]).

(d) list of examples of microcredentials and related practices in manufacturing and retail sector; this exercise sought to identify the main characteristics of microcredentials and cover some of the most important dimensions such as quality assurance mechanisms, stackability options, type of assessment and standards ([6]).

(e) eight case studies providing an in-depth analysis of the selected countries' use of microcredentials;

ReferNet questionnaires (Cedefop, 2021). The ReferNet network prepared country reports that provided contextual information on microcredentials in different national contexts ([7]).

([4]) The employer survey ran from 5 December 2022 to 22 January 2023. The other three surveys ran from 22 November 2022 to 22 January 2023. All four surveys were translated into eight languages (German, English, French, Spanish, Dutch, Polish, Slovenian and Finnish) and made accessible through the in-house survey tool Alchemer. The link was disseminated via individual email campaign as well as other channels, including social media, Cedefop and PPMI websites, the ePlatform for Adult Learning in Europe (EPALE), Skillnet Network, ReferNet Network, CareersNet (CNet) Expert Network. Statistics for responses to the surveys are as follows: employers – 83 complete and 124 partial responses in 21 countries; employees – 370 complete and 322 partial responses in 28 countries; students and adult learners – 550 complete and 382 partial responses in 25 countries; individuals who are not employed – 261 complete and 294 partial responses in 16 countries.

([5]) The surveys ran between 7 June and 12 July 2021. They were conducted using the in-house survey tool Alchemer. The link was also disseminated through the ePlatform for Adult Learning in Europe (EPALE) and various stakeholder organisations, including the European Vocational Training Association (EVTA) and the European University Continuing Education Network (EUCEN). Statistics for responses to the surveys are: national authorities – 74 responses in 22 countries; VET providers – 187 responses in 26 countries; employer organisations – 37 responses in 22 countries; employee organisations – 66 responses in 27 countries.

([6]) Occupational, educational and/or qualification standards as well as national and/or international.

([7]) These reports were based on a questionnaire specifically drafted for the purpose of supporting this study. The questions mainly targeted topics for the previous two studies but provided some contextual information for the study on added value. 26 country reports were produced by the ReferNet network: Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

CHAPTER 2.

Setting the scene

2.1. Introduction

During recent decades the scope of national VET systems has evolved in heterogenous ways across Member States. New institutions and stakeholders and new forms of provision in the form of short credentials are part of these shifts in VET and are underpinned by measures to promote labour mobility and lifelong learning (Cedefop, 2023b). The occupational transformations associated with the digital and green transition have situated skills policies as central to a just and successful dual transition (European Commission, 2020b). In parallel, the concept of industrial ecosystems has emerged, recognising how the inter-dependencies of actors and the socioeconomic contexts in which they operate ultimately shape skills utilisation and skills development (European Commission, 2023a, 2023b and 2021; Spours, 2019; SITRA, 2022; Government of Ireland, 2022; Cedefop, 2019). In this shifting landscape, national qualifications frameworks (NQFs) are a means of ascribing value to qualifications and enabling comparability between them; over time more NQFs in Europe have opened up to shorter forms of training, considering the more dynamic ways credentials are recognised and ascribed value (Cedefop, 2023b and 2022c; Tchibozo, 2022; Psifidou and Ranieri, 2020). A plethora of short credentials in digital formats has emerged in more recent years outside NQFs, offered by a range of providers available online and for free (Ma et al., 2022).

Opportunities to learn more are widened when learners can navigate and assess the quality and value of numerous certificates and badges offered for free. For VET systems, a trend of convergence between IVET and CVET systems is observed, for example in the form of short programmes allowing the upgrade or acquisition of new skills in relation, for example, to the digital and the green transition. However, the points of departure are diverse, impacted by the relative role of CVET in national qualifications systems and the patterns of training participation in Member States and across different sectors of the economy (Cedefop, 2023b; 2022c; 2022b and 2019; Markowitsch and Bjørnavold, 2022). While the credentialing landscape has become more diverse – offering increased opportunities to access training and further learning – there continue to be major disparities along traditional socioeconomic divides in terms of adult learner participation in continuing education and training; this could be aggravated due to

low digital skills among many adults (Cedefop, 2023b; European Commission 2022b).

In narratives about the value of lifelong learning, low participation rates among the low-qualified are often framed as an issue of low motivation, but there is a range of demand-side factors which shape the perceived value and relevance of engagement in microcredentials: examples are companies' work organisation and skills utilisation practices and the nature of labour market policies and industrial relations. Statistics from the Joint Employment Report 2022 illustrate this (European Commission, 2022b).

Microcredentials may provide more flexible ways of participating in continuing training and having skills recognised. However, they should be considered as a tool giving visibility to skills and competences. If microcredentials are to benefit a more diverse group of learners, adult socioeconomic contexts must be factored in. The relevance and added value of microcredentials is therefore closely linked with and dependent on the quality of the supportive environment and complementary tools available for an individual, starting at a pre-engagement phase where a potential user is introduced to the concept (Rothes et al., 2017; Clochard and Westerman 2020; European Commission et al., 2020; Casano et al., 2021).

Shifts in occupational structures and practices linked to the 4th industrial revolution, the greening of the economy, and developments in artificial intelligence, have enabled increasingly granular mapping of changes in skills demands through task-based approaches (Spöttl and Windelband, 2021; Vona, 2021; Lightcast, 2022; Ciarli et al., 2021). This has a potential impact on labour market intelligence that can inform learner and employer reflections on training through microcredentials.

When up-to-date insights about occupational changes and skills in demand are used in guidance and counselling, they can indicate which additional skills can likely increase employment prospects for a potential learner. The use of visualised data by either public employment services or trade unions can be a first step in motivating an individual to engage in upskilling or reskilling when other personal constraints have been dealt with. For providers, the labour market can facilitate the design of microcredential pathways that mirror real job openings and growing demands in labour markets (ILO, 2020). However, the quality of labour market intelligence still varies. To overcome potential limitations in labour market insights, systematic collaboration with labour market actors can be a way of validating labour market skills intelligence as the basis for microcredential design. It can also function as an effective outreach mechanism.

Microcredentials may provide existing VET actors with opportunities to engage with local actors in new ways through more diverse provision of education

and training as part of evolving CVET systems. In parallel, new institutions and stakeholders and digital formats of provision can be part of these skills- based shifts. Although MOOCs have been accessible for decades, the provision of new forms of short credentials, such as certificates and badges, has hugely increased since the pandemic through platform-based models of provision; in many cases this provision is free of charge unless users want a certificate ([8]). Although these providers may be global in outreach, lack of supporting tools and structures may limit their outreach. The speed with which new providers emerge and the volume of the provision call for further analysis to understand better who the users are, the benefits they may accrue, and how these certificates fit in with developments in the credentialing landscape (European Commission et al., 2020; Ma et al., 2022).

Industry certifications have also come to play a more prominent role in the evolving credentialing landscape. They are offered as entry to the labour market as well as professional pathways that are highly valued in ICT and ICT-intensive sectors, such as advanced manufacturing and, increasingly, retail. While industry certifications can offer pathways for professionals, certifications are also offered as entry to the labour market, for example in cleaning (European Cleaning and Facility Services Industry (EFCI)) or in food industries. But the labour market value of entry certifications is not well understood, and whether they constitute a first upskilling step to further learning remains not clear.

Adults mainly learn in informal ways in labour markets and in civic life. In this respect, microcredentials could come to play a bridge-building role for adults, facilitating the transition to employment or further learning. If this scenario is to materialise, it will likely require that microcredentials are tools and outcomes of recognition processes, which are equally trusted and valued in labour market contexts and in further learning (RISE, 2021). This is especially the case as the provision of short credentials has increased and become more diverse. Yet it is uncertain whether the increased flexibility and diversity of formats signal a real shift towards more age-neutral forms of provision, although a range of initiatives are currently evolving with microcredentials at the core of a changing provision.

European policy measures such as the Sectoral cooperation on skills, Centres of vocational excellence, and the European Institute of Technology and their knowledge innovation communities have become policy levers that allow different partnership configurations to explore microcredentials in ways that can potentially contribute to comprehensive user-centred approaches to provision, aligned with European value systems. Some of these partnerships have developed to address skills needs and in response to innovation opportunities afforded by the green

([8]) For a global overview of developments in platform-based provision see: Massive List of MOOC Platforms Around the World in 2023

transition. This is, for example, the case of the DRIVES project for the European automotive value chain. The partnerships evolve in a context where national reform agendas on CVET have tended to focus on supply-related issues such as modularisation of the provision. Reform strategies have focused less on the factors which shape skills utilisation, likely due to limited coordination with innovation policies and regional specialisation efforts. These evolving partnerships represent approaches that have the potential to address both supply-side and demand-side factors at scale through coordinated approaches. While microcredentials may be a means to offer training in specific skills, they may also be a key component in skills-based industrial ecosystems. The Battery Academy, formed under the European Battery Alliance, is just one example of an approach to aligning upskilling and reskilling with innovation strategies (EBA, 2022a). The goal of the academy is to train 160,000 employees annually. The effort could represent a structural and proactive sectoral approach to the green transition (EBA, 2022b). A range of other partnerships have been formed, typically based on common views of future business prospects and the need to invest in their workforce for these opportunities to materialise. This includes Metis4skills in the electronics industry and PoveWater as a Centre of Vocational Excellence targeting the workforce in the water utility sector.

The partnerships tend to cross traditional boundaries of VET, including private training providers, local economic actors, sector bodies, and employment services. The networking effects and coordinated policy approaches to upskilling and reskilling may increase their outreach. These approaches differ from the growing provision of online certificates and badges in that they primarily focus on emerging job roles and occupations rather than specific skills. They may be more comprehensive and inclusive in terms of how skills are conceptualised than the range of online certificates and badges, which tend to target specific skills. In addition, joint skills anticipation approaches in combination with the use of ESCO (common European multilingual taxonomy on skills and competences and occupations) offer a common language of skills that facilitates collaboration on microcredentials (Morandini et al., 2023; Vona, 2021; Romanko and O'Mahony, 2022). It remains uncertain how these evolving partnerships will engage wider groups of learners and companies, particularly SMEs, and what supporting structures learners may be offered. Whereas portals may be a way to communicate progress made, they are likely not sufficient to engage wider groups.

In the post-pandemic environment microcredentials are a tool to respond to changing labour markets with hybridisation of occupations. The varied activities and measures presented above illustrate the embedded tensions in terms of how microcredentials are conceptualised: as a targeted response to a specific set of

skills or as part of comprehensive skills-based transformation and innovation strategies.

2.2. End user understanding of microcredentials

Microcredentials have been situated as a means of embracing inclusion while also enabling labour market transitions by providing richer opportunities to upskill and reskill throughout working life (Council of the European Union, 2022a; Council of the European Union, 2022b).

The concept of microcredentials is not understood equally well among users. Employees, the unemployed, and individual learners see microcredentials as a way of gaining new labour market relevant skills on top of a qualification, while some also associate them with opportunities to access further learning. From an employer perspective, microcredentials are seen as a way of improving competitiveness while also offering their workforce better job development opportunities (Cedefop, 2022c).

For most end users, microcredentials are perceived as a form of skills currency which will be of value in career promotion or can help them stand out in job search situations. For employers, microcredentials are perceived as an effective path to meeting company-specific skills needs in ways that can contribute to increased employee productivity and competitiveness. An Irish employer survey suggests that the real value of microcredentials is that they function as signals of an individual's ability and willingness to learn, and in a context where the business environment is changing more rapidly (Nic Giolla Mhichíl et al., 2021; Skillnet and UCC, 2019); they are situated in the tension between skills-based strategies to improve competitiveness and employee retention on one hand, and a potential selection mechanism in recruitment on the other.

User understanding of the added value of microcredentials and their relevance are also shaped by social, political, and economic contexts in which skills are used and put to play (Cedefop, 2023a). Many Member State employers have reported growing challenges in meeting their recruitment needs. Microcredentials are in that context a way of providing job and career opportunities aligned to business strategies, as reported in the study. However, in congested labour markets microcredentials may have little value for learners or employers in terms of immediate labour market outcomes. Another factor to consider is individuals on non-standard contracts. The increased provision of short courses, which in many instances are free of charge, could be of value for individuals on non-standard contracts. However, microcredentials can have adverse effects on those independent workers who do not have the skills to navigate and make use

of the evolving online world of short credentials. Non-standard labour contracts could also increase risks that individuals are expected to carry the full costs of being employable. The ILAs are intended to help individuals overcome financial barriers to participation in continuing training. While previous research has indicated that personal learning accounts tend to have limited effects on participation of the low-qualified, it is still to be seen how the combination of personal learning accounts and the more flexible provision of microcredentials may impact user participation in continuing training (European Commission, 2022a).

2.3. Microcredentials in evolving qualifications frameworks

The scope of CVET systems in Europe continues to evolve in diverse ways, with most Member States being at an early stage when it comes to reflecting on the potential role of microcredentials (Cedefop 2023b).

Several factors contribute to this: providers increasingly offer both IVET and CVET; formal VET programmes are increasingly modularised and broken down into smaller units that can also be taken independently with certificates being issued; models of provision integrate non-formal learning approaches; and use of validation processes in Microcredentials in VET can be seen as a continuation of these developments (Cedefop, 2023b).

Microcredentials are currently an evolving field situated within and outside national qualifications frameworks in Member States (Cedefop, 2022b and 2023b). Where offered as industry certifications or certificates they come to play a growing role in professional upskilling and reskilling. The National Commission on Vocational qualifications in France (*Commission Nationale de la Certification Professionnelle)* lists, for example, 'Microsoft office specialist' as an approved programme in their registry of qualifications, making it eligible for State funding. This programme is recognised by the Irish National Qualifications Authority (Quality and Qualifications Ireland, QQI) and approved as corresponding to the NQF Level 5 (Cedefop, 2023b). Similarly, a Danish podiatrist certification offered by a private provider became (in 2020) the first private provider in the country to have their training offer referenced to the national qualifications framework at level 5. A range of certificates and certifications have evolved parallel to the evolution in the provision of courses in national qualifications frameworks. They typically serve economic and industry purposes in relation to compliance and standard setting, for example for technicians operating as energy auditors with standards and assessment defined by a professional body (Association of Engineers, 2022). In ICT, the big multinational technology providers are increasingly situated as full-

service providers delivering technology, consultancy, and training for their own employees and in the external global market. These trends may be considered not recent, as a range of multinational IT companies such as Microsoft, Cisco, and Novell began to offer certifications in the 1990s.

However, with deeper digital integration of technologies in other sectors, be they large retail chains or advanced manufacturing, the question arising is what role these global technology certifications will play soon. The level of demand for digital skills at different levels and the ways assessment and certification can occur from a laptop make the global technology industry certifications highly scalable (Cedefop, 2023b). Unlike traditional IT certifications, which were vendor-specific, current ones are less focused on specific technologies and instead comprise broadly applicable digital and technical skills sets for different job roles such as IT support, cloud computing, and digital marketing.

But it is not only in ICT that industry certifications are evolving and play a growing role in the VET credentialing landscape. Festo Didactic was established decades ago as a separate business unit from the German mother company FESTO, a leading supplier of automation technology. Festo Didactic is positioned in Europe both in IVET and in professional training through its training applications for advanced manufacturing and their learning laboratories.

Siemens Healthineers is a newer venture, which was spun out in 2018. It has invested substantial resources in infrastructures and in pedagogical development for the growing health services training market (Siemens Healthineers, 2019). There are also new tech start-ups which position themselves in global niche markets as certification providers. This includes, Lablabee, which has developed an immersive lab learning environment for companies looking to upskill and reskill their employees in new telco and cloud technologies.

In contrast to public VET providers, private technology certification providers usually have the capital systematically to pilot, scale, and mainstream their services and position their brand in a fragmented market for continuing and further training. Previous reports in this study have provided insights into the role of different microcredential providers in European labour markets (Cedefop, 2022c; Cedefop 2023c). A deeper level systematic mapping of different types of credentials and the purposes they serve could be a first step in more connected credentials, as experiences from the USA suggest (Van Noy and Michael, 2022; Gallagher and Zanville, 2021). At the same time, multinational companies and large chains are establishing their own certification programmes, for example the large retail chain OBI in Germany.

There are several examples of how microcredentials can be an enabling tool in cluster strategies. While the term ‘microcredential’ is perhaps not explicitly used,

there are examples of skills strategies based on a form of provision that, in terms of functionality, is similar to microcredentials. This is the case for the cluster body Dimecc, which has acted as a skills broker in the development of the training concept The machine learning academy (Shapiro, 2022; SITRA, 2022). CIV WATER, The Centre for Innovative Water Craftsmanship, is another example of how skills strategies and innovation efforts are converging. CIW water has a dual focus on short modular courses for the water workforce while also offering full vocational qualifications to VET as part of a talent pipeline strategy (Water Alliance, 2023).

In a context where microcredentials are not equally well understood by learners, guidance and counselling can play an enabling role which can help an adult to understand better how microcredentials in their specific case can add value in labour market transitions or after a spell of unemployment. This is illustrated by the joint large-scale project *Kompetenspasset.* It is a national practice-based research project between Swedish Labour Market Authorities, The National Authorities for Advanced Vocational Education, and the Swedish Research Institute, RISE. They are exploring in 2023 how microcredentials can be used in recognition processes in ways that can facilitate labour market matching processes. While microcredentials may play an increasing role in recognition processes, there are indications that they are not fully recognised in recruitment processes. A new international study indicates that the digital tools and infrastructures companies use in the management of human resources, including in processing job applications, are often designed so they can only register full qualifications (Gallagher et al., 2023). These findings illustrate that the value setting of microcredentials depends upon a range of other factors, and that they are still in many ways in an early stage of development (Nic Giolla Mhichíl et al., 2021; SHRM, 2022).

2.4. Looking ahead

The provision of microcredentials is at present fragmented and leaves potential users with limited supporting tools to navigate and benefit from more diverse provision. Making sense of this rapidly growing offer and assessing the quality and trustworthiness of providers remains a real challenge for many users. The lack of transparency in provision has pushed an agenda promoting common approaches to quality assurance. While protection of users through increased microcredential transparency is critical to trust and added value, quality assurance efforts have to be carefully calibrated with the potential benefits to be accrued from more speedy and flexible provision of training.

Transversal skills are not tied to a specific context; they encompass skills such as self-management, critical thinking, problem-solving, communication, and collaboration. Even though such skills are associated with highly positive labour market returns, there is a latent risk that efforts to tailor microcredentials to labour market needs might result in microcredentials that are narrow in scope; they may correspond to skills of today, but their transferability could be limited. For example, the occupational changes associated with the green and the digital transition are not only a matter of technical skills but are underpinned by an increase in demands for transversal skills (Hart et al., 2021; Morandini et al., 2023; HBS Economics and Hanne Shapiro Futures, 2023).

There might be a challenge to balance company skills demands articulated by specific employers with those that have a broader foundation and which are conducive to labour mobility and employability. The diversity of microcredentials could potentially contribute to overcoming these challenges if more clearly connected in diverse pathways.

An analysis of certificates and certifications in manufacturing and retail undertaken as part of this study (Cedefop, 2022c and 2023a) suggests that certifications and certificates offered by private providers could potentially play a complementary role to the provision emerging in different partnership configurations. Aims to meet acute and specific skills demand should be carefully calibrated with wider labour market and societal interests to manage occupational changes in ways that are inclusive, while also laying the skills base for tomorrow's innovations. Age-neutral strategies for microcredentials are situated in this duality. From a learner perspective, connected credentials could be a matter of whether learners can combine different credential formats in seamless pathways and have their learning recognised regardless of the provider.

Current provision and support structures are fragmented. Microcredentials are situated as a vector of change which could materialise in distinctly different scenarios, shaped by the path dependencies of national VET systems within national skills formation systems (Council of the European Union, 2022b; Cedefop, 2022b; Markowitsch and Bjørnavold, 2022).

There are trends that point in different directions and underline why a comprehensive research agenda which involves different stakeholder configurations across traditional boundaries, and which enables experimentation, is the next step in an age-neutral strategic framework for microcredentials.

CHAPTER 3.

Trust in microcredentials

3.1. Initial perceptions of the level of trust

Key findings

- Trust in microcredentials varies amongst different end users depending on the characteristics of both the microcredential and its provider.
- Sectoral and professional skills certificates, which are quality-assured and industry-recognised certificates, can be conceptualised as a subcategory of microcredentials that enjoys higher visibility, recognition and trust.
- microcredentials are trusted to play an important role in both workforce development and recruitment.

Trust in microcredentials is contextual and tends to vary amongst different groups of stakeholders, individuals, and social spaces. The variation in trust between stakeholders is not surprising since employers, for example, tend to be generally more sceptical, especially since microcredentials are a relatively new and unfamiliar concept to them. Trust is subject to other factors such as specific characteristics of the microcredential, reputation/credibility of the issuing body, and the status of formal recognition of the microcredential by the relevant authorities. Trust is also related to brand reputation; when microcredentials are issued by providers that are not very well-known and not formally recognised by national authorities or based on industry-set standards, trust tends to be low.

It can also be understood as representing the end users' expectations and belief that microcredentials will deliver the added value(s) they promise. The stakeholder group survey ([9]) of the study included questions regarding individuals' beliefs as to whether microcredentials can enhance employability, boost their careers, and help them get into further studies. Most respondents who have not yet engaged with microcredentials think that microcredentials can support them in

([9]) Survey of stakeholders representing employees, students and adult learners and individuals who are currently unemployed.

getting a job (73%) ([10]), a promotion (53%) ([11]) and entrance to further studies (63%) ([12]).

Employers believe microcredentials can help in hiring decisions: according to the survey data ([13]), microcredentials often represent a genuine reflection of the applicants' claimed knowledge and competences. They could be seen by employers as a skills signal and/or an indication that the applicant is motivated to learn and will invest in learning, as suggested by the Irish employer survey (Brown et al., 2020). However, their results indicate that there is room for improvement. For one, sufficient data descriptors can help employers to understand better what a specific microcredential holder learned, what kind of knowledge, skills and competences they gained and how these were assessed. Credentials can be issued in digital formats, so they represent a unique identity and cannot be forged, yet they can easily be shared. Experiences from TechConnect, Amsterdam suggest that when microcredentials are based on assessment procedures that follow recognised industry standards, and meet well-defined needs, employers can be encouraged to recruit more broadly from the 'hidden talent pool' ([14]).

For students and adult learners, 53% agreed, to a large extent, that microcredentials will help increase their employment and job promotion opportunities over the next few years (N=573). The shares were lower for employees (N=384) and the unemployed at 39% (N=285). These relatively lower levels of trust (compared with the previously discussed findings) highlight the

([10]) Survey of stakeholders representing employees, students and adult learners and individuals who are currently unemployed (N=730). Both complete and partial responses were considered in the analysis, which resulted in number of answers varying between different questions.

([11]) Survey of stakeholders representing employees, students and adult learners and individuals who are currently unemployed (N=456). Both complete and partial responses were considered in the analysis, which resulted in number of answers varying between different questions.

([12]) Survey of stakeholders representing employees, students and adult learners and individuals who are currently unemployed (N=681). Both complete and partial responses were considered in the analysis, which resulted in number of answers varying between different questions.

([13]) 44% of employers surveyed confirmed that microcredentials play a (very) important role in their recruitment processes by helping them differentiate applicants, while 30% indicated a somewhat important role. Survey of stakeholders representing employers (N=100).

([14]) Hidden talent pool refers to workers who are often overlooked such as the unemployed, individuals with disabilities, individuals who have skills and competences but do not necessarily have conventional education and work experience, mature workers. When talking about hidden talent pool, it is important also to consider the future potential of individuals even if they do not necessarily meet all requirements but could potentially be easily trained to fit the required criteria.

labour market uncertainty perceived by the surveyed individuals. Whereas apprenticeship is underpinned by robust data regarding transition time to labour markets, as is the number of skilled VET graduates that continue to tertiary education, this is not the case for microcredentials. Navigating changing and evolving labour markets, and what are perceived as 'hot skills' listed on social media, has become increasingly complex due to the diversity in microcredentials.

In some VET systems, the VET qualification is valued as a clear labour market signal. In others, or in newer sectors, it is less the case. For microcredentials to play a genuine role in the labour market and be trusted, it is necessary to take into account the characteristics of national skills formation systems, and then to collect robust data about labour market outcomes for different groups.

3.2. Conditions for trust in microcredentials

Key findings

- Credibility and reputation of the microcredential provider, compliance with national regulatory frameworks, transparency and labour-market relevance are among the overarching conditions for trusting microcredentials.
- Microcredentials offered by industry leaders, certification bodies, and accredited VET centres are widely trusted by learners and employers.
- Designing and offering microcredentials that deliver labour market relevant skills is essential to signalling trust and increasing their value.
- Considering the wide range of terminologies and quality assurance practices, end users face difficulties verifying the quality of a wide array of microcredentials offered.

Trust plays an important role in promoting the use of microcredentials. Trust can be enhanced through formal quality measures making them comparable, but trust is also connected to perceived and promised/claimed added value(s) as discussed above.

The survey programme identified several features/characteristics as determining end users' trust in microcredentials. The most prominent conditions for raising trust were the credibility of microcredentials (by being part of formal education and training) and of providers, along with labour market relevance (Table 2 and Table 3).

Table 2. **Which features do you believe are the most important to further trust in microcredentials? Please select up to three options.**

Feature	Students and adult learners	Employees	Unemployed
Providers are accredited and/or certified	41%	62%	39%
A microcredential is recognised as part of the national formal offer of education and training and quality assured in a similar way	42%	48%	40%
Skills needs are defined in collaboration with the relevant industry	36%	42%	44%
Microcredentials are offered in skills areas that are important to employers (e.g. green and digital)	29%	29%	33%
It is easy to compare microcredentials across a number of criteria such as purpose, skills acquired, assessment	26%	24%	22%
It is clear how microcredentials can be combined to match labour market needs	22%	21%	23%
Assessment demonstrates skills obtained	26%	25%	18%
Users have access to data about outcomes (e.g. job and career mobility, job openings, salary levels)	19%	11%	21%
Guidance and support services are available to users	12%	9%	17%
Other – write in (required)	3%	1%	3%

Source: Survey of stakeholders representing employees, students and adult learners and individuals who are currently unemployed.

Table 3. **Which features do you believe are the most important to further trust in microcredentials? Please select up to three options.**

Feature	Percentage
Skills needs are defined in collaboration with the relevant industry	55%
Microcredentials are offered in new skills areas that are important to employers (e.g. green and digital)	50%
Providers are formally recognised and are part of the national education system	44%
Providers are accredited and / or certified by an industry body or similar	43%
Assessment is practice-based and demonstrates skills obtained	27%
It is easy to compare microcredentials across a number of criteria such as purpose, skills acquired, assessment	25%
It is clear how microcredentials can be combined to match labour market needs	22%
Users have access to data about outcomes (so that it is easy to understand the relevance of training for a specific occupation or job function)	4%
Other – write in (required)	2%

Source: Survey of stakeholders representing employers (N=101).

Analysis of the data from the survey and interviews points to various overarching conditions for furthering trust in microcredentials which are examined in detail below.

3.2.1. Credibility of microcredentials and of microcredential providers

According to the students and adult learners surveyed (N=571), the most important feature ensuring trust in microcredentials is to be recognised and quality assured as part of formal education and training (e.g. VET modules) (42%). Such microcredentials are expected to be subject to quality standards similar to those applied to degree qualifications. A feature that received similar attention from learners is the credibility of the education and training provider (41%), which also represents a quality indicator (Table 2).

Employees surveyed (N=384) had a stronger preference for microcredentials offered by accredited providers (62%) and to the ones being offered as part of the national formal offer of education and training (48%). A possible explanation is that the needs of employees, who, unlike students, have already achieved employment, are skewed towards acquiring more specialised/specific skills and competences that are relevant to their current jobs and career progressions. It is important that they are potentially aligned with certain industrial/professional standards. It might also mirror that public provider engagement in professional CVET ([15]) varies substantially across Member States (Table 2).

The accreditation/certification of microcredential providers (43%), and the recognition of the microcredential provider by formal education and training authorities (44%) were highlighted by employers as the second most relevant group of factors ensuring trust in microcredentials (Table 3). Employers represent a specific stakeholder group, whose trust in a certain education and training provider not only impacts their decisions (hiring, reskilling, and upskilling) but also impacts the level of trust of other end users (e.g. learners and employees).

The survey programme also highlighted which aspects employers consider when choosing a microcredential provider. The accreditation of the provider by a trusted industry-relevant body came at the top of the list (56%), followed by the accreditation by public bodies (45%). Employers also underlined that they choose providers that tailor training to the company needs (36%) and use the services of trainers who are widely knowledgeable about their specific industries. The latter indicates that pedagogical models that support work-embedded learning are

([15]) CVET done within the context of someone who is employed and seeking CVET that would add value to their employment and job-related skills and could also be organised/sponsored by the employer (as opposed to, for example, an unemployed person who engages in CVET to improve employment chances).

perceived as having a greater value, posing additional requirements for the trainers.

Table 4. **From your perspective, which aspects are the most important when choosing a provider of microcredentials? Please select up to three options.**

Aspect	Percentage
Provider is accredited by a trusted body relevant to the industry	56%
Provider is accredited by public bodies	45%
Trainers know the industry well so that the training is relevant and microcredentials demonstrate skills in practice	36%
Provider tailors the training offer to the company's needs	36%
Provider is specialised and capable of offering microcredentials in a new area relevant to our company and not covered by existing VET qualifications	32%
Provider is recommended by other companies	28%
Provider is certified to offer in-demand global industry certifications such as Microsoft, Google	18%
Provider offers a competitive price	16%
Provider provides access to information about a microcredential (so that it is easy to understand the relevance of training for a specific occupation or job function)	6%
Other – Write In (Required)	2%

Source: Survey of stakeholders representing employers (N=101).

The interviews (also confirmed by survey data ([16])) reveal that microcredentials issued by credible education and training providers are more likely to be trusted by different end users (see Tables 2, 3 and 4).

The reputation of the microcredential provider, regardless of whether it is formally accredited or not, is a major source of trust. This is consistent with Cedefop research (2022c; 2023a), which showed that microcredentials offered by industry leaders and certification bodies tend to be widely trusted by learners and employers. They are considered accepted in their respective industries since they were issued by providers, including companies, which are recognised as in the forefront of their respective fields and technologies. This could promote a situation where the labour market actors create a form of self-regulation that results in placing certain microcredentials at the top of the trust ladder without the need for a formal quality label awarded by official authorities. A similar situation applies to microcredentials issued by reputable and prestigious universities, which were found to be regarded as more trustworthy compared to microcredentials issued by

([16]) As expressed by the interviewed stakeholders representing employees (Estonia, Lithuania, Portugal, and Slovenia), education and training providers (global, Cyprus, France, Germany, Greece, Ireland, Italy, Malta, Spain, Sweden), employers (France), and learners (France, Greece, Italy, Lithuania and Romania).

less-regarded providers. Another type of credible education and training provider is VET centres that have been certified/accredited by national authorities, which signals trust in the quality assurance and assessment practices carried out under the oversight of national authorities. The credibility of the microcredentials' provider is connected to the discussion on quality assurance, assessment, and also to whether they represent leading industry practices and standards, which may entail compliance with national frameworks as seen below.

3.2.2. Labour market related content of microcredentials

Content (topics selected, and information delivered), is another factor shaping trust in microcredentials and differentiating them from qualifications. Microcredentials must send very clear signals to users regarding their content (what knowledge and competences users will acquire) and their market relevance. If such signals are blurred or absent, it becomes difficult for end users to trust these microcredentials.

Employers that participated in the survey (N=101), associate the relevance of microcredentials to business needs as the major source of trust (Table 3). The definition of skills needs in collaboration with the relevant industry (55%), and the fact that these skills are in areas that are important to employers (50%) came at the top of the list of what makes a microcredential trustworthy. This shows that, for employers, the firms' relevance, to the market, industry or business/firm, is what matters the most. They will be able to observe whether their employees waste their time getting trained for skills that are obsolete, or not as current to their business needs. It can be beneficial if employers, including industry experts as independent trainers and/or assessors, take part in the design, delivery, and/or assessment of microcredentials.

Some microcredentials in the global technology sector, although not part of formal education and training, enjoy very high levels of trust from end users, including both learners and employers, as they are typically defined through rigorous standard-setting processes by leading technology providers at the forefront of global technology development: an advanced certificate in automation from FESTO Didactic or an entry-level certification as SAP professional are examples. These microcredentials tend to be highly technical but, over time, they have become broader in their foundations in new technology areas such as cloud solutions and cybersecurity.

Another example is the nanodegrees offered by the Association of Danish Law Firms and the Trade Union of Commerce (Box 1). Without proper labour market relevance, it becomes more difficult to attribute a higher added value to microcredentials compared with other forms of credentials. Yet, there is an inherent

risk that microcredentials become supply-driven if they primarily aim to further modularise existing qualifications.

Box 1. **Nanodegrees offered in Danish legal practice**

In recent years, not enough apprentices have graduated as legal secretaries in Denmark, and the shortages will likely increase in the coming years due to demographic factors. The Association of Danish Law Firms and the trade union for Commerce and Trade have, therefore, jointly developed what they have called 'nanodegrees' targeting, for example, the unemployed with relevant prior qualifications in finance.

The nanodegrees are offered in three distinct practice-based fields: trade in property, debt collection, and basic bankruptcy law. Prior to admission, participants take a skills-based entry test to assess prior experiences and job roles relevant to the field of legal practice. In developing the short courses the team has drawn on insights from the analysis of job-adds. Assessments are skills based and have been tested through a pilot phase, which was recently completed.

The success of the pilot builds on the courses being developed by the relevant social partners; the person who teaches the course and assesses the learners will be highly recognised among professionals in the field. The Association of Danish Law Firms and the Trade Union of Commerce will jointly take decisions in terms of the business model for the provision of the nanodegrees.

Even though the Danish labour market training courses AMU function as microcredentials within the national qualifications framework, the partners behind the course believe this will not be the way forward, as AMU has no brand value among professionals in legal practice.

Source: Trade Union Representative (HK) in Demark.

Learners also consider the labour market-relevance of microcredentials as a crucial feature bringing trust. It results from offering skills that are relevant to employers, and from the joint definition of training content (i.e. knowledge, skills and competences) and how it is identified and embedded in the design of microcredentials. Other features such as comparability, stackability, and assessment practices were also highlighted by respondents as contributing to trust in microcredentials (Table 2).

For currently unemployed respondents, the alignment of skill needs with the needs and standards of a relevant industry was the factor that contributed the most to building trust in microcredentials. This indicates that for the unemployed, the relevance of microcredentials, in terms of matching skills needs and demands in the labour market, is the major contributor to a trustworthy microcredential (Table 2).

Several interviewees ([17]) stressed that designing and offering microcredentials that deliver labour-market-relevant skills is essential. Relevance also entails being up to date with the content delivered to match the technologies and industry standards currently in use by employers. For example, while being proficient in Microsoft Excel is a market-relevant skill, getting a certification in Excel 97/98 is not as relevant and beneficial to the learners' employment prospects as getting certified in Excel 365. Microcredentials should be designed around content that responds to real and current labour market needs.

Internationally there has been a lot of discussion on whether microcredentials risk leading to unbundling of qualifications. However, most interview respondents (Cedefop, 2023a) ([18]) believe microcredentials have an advantage in that they signal individuals' skills and competences to a higher degree than qualifications and can be complementary to full qualifications (as top-ups throughout working life). There is, however, the risk that occupational skills, knowledge, and competences become fragmented, since labour market mobility is typically associated with transversal and broader occupational skills, while microcredentials focus on a more limited skillset. These skills tend to have a short shelf-time in terms of labour market value and relevance (Schneider and Le Mouillour, 2022). The mapping of microcredentials in manufacturing and retail sectors shows that the majority of those mapped either concentrate on specific skills or both specific and transversal skills, but never exclusively on transversal skills. The type of skills that microcredentials are expected to provide to their learners are summarised in the table below.

([17]) As expressed by stakeholders interviewed representing employees (Bulgaria and Ireland), education and training providers (global, Cyprus, Denmark and France), employers (France), and learners (Greece and Lithuania).

([18]) The interview programme included representatives of employers' organisations, employee organisations, VET providers and national authorities. The interviews analysed covered the following countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Slovenia, Sweden.

Table 5. **Type of skills that microcredentials in retail and manufacturing sectors offer**

Sector	Title of microcredential	Country	Skills	Examples
Manufacturing	Safety procedures in medical processes	France	Specific	Application of regulatory requirements throughout the life cycle of a product
Manufacturing	Quality management system and welding coordination	Denmark	Specific	Knowledge and application of relevant legislative standards in terms of CE marking of welded items
Manufacturing	GMP and GDP certification	Germany/Europe	Both	Management of validation, quality assurance, biotech
Manufacturing	International welding engineer (IWE)	International (41 countries)	Both	Knowledge and understanding of welding technology application
Manufacturing	International welding practitioner (IWP)	International (41 countries)	Both	Knowledge and understanding of welding technology application
Manufacturing	Qualification in additive manufacturing	Germany, France, Italy, Spain, UK, Portugal, and Turkey	Both	Functional and cross-cutting competences in additive manufacturing
Manufacturing	Machine training courses	Germany	Both	On-site and remote machine maintenance
Manufacturing	CNC Specialist Certificate	Austria	Both	CNC milling, turning, programming, etc.
Manufacturing	VET award in process manufacturing	Malta	Both	Mathematical calculations, communication
Manufacturing	3D printer operator for industrial applications	Czechia	Specific	Quality control of 3D printing
Manufacturing	Industrial health and safety advisor	United Kingdom	Both	Mentoring, first aid for mental health
Manufacturing	Operator of CNC machines	North Macedonia	Both	Operation of CNC machines
Manufacturing	International welding consultant	Finland	Specific	Knowledge of materials and their behaviour in welding
Manufacturing	Robotic process automation fundamentals masterclass	Ireland	Specific	Knowledge and understanding of robotic process automation
Manufacturing	Working on an ammonia (NH3) installation safely	France	Specific	Knowledge and understanding of ammonia
Manufacturing	MAG welding with an electrode wire	Poland	Both	Knowledge and understanding of regulations, guidelines and standards for welding
Manufacturing	Introduction to foundry technology	Sweden	Specific	Construction of cast components

Sector	Title of microcredential	Country	Skills	Examples
Manufacturing	Manufacturing operations for medical device/pharma industry (life sciences manufacturing operations)	Ireland	Both	Knowledge and understanding of quality standards in manufacturing practices
Manufacturing	Supply chain manager – operational level	Greece	Specific	Knowledge and understanding of storage principles
Manufacturing	Festo's mechatronics certification programme	United Kingdom and worldwide	Specific	Analysis of functional relationships in mechatronic systems
Manufacturing	Level 1 certificate in introductory welding skills	United Kingdom and worldwide	Specific	Production of flat plate or folded components and cylindrical or jointed fabrications
Manufacturing	Lightweight professional	Worldwide	Specific	Knowledge and understanding of lightweight product development
Manufacturing	Junior expert in circular economy	Italy	Specific	Evaluation of product life cycle
Retail	Common food hygiene	Denmark	Specific	Knowledge and understanding of risk analysis principles
Retail	Award in retail	Malta	Both	Application of safety and hygiene practices in retail
Retail	Sales for store employees	Norway	Both	Knowledge and understanding of phases of sales work
Retail	Profitability of marketing and sales organisation in the luxury goods sector	France	Specific	Application of financial monitoring indicators in commercial performance analysis
Retail	Award in retail Operations	Malta	Both	Communication with clients
Retail	Drugstore employee (DM druggist)	Slovenia	Specific	Knowledge and understanding of processes that take place in a drugstore
Retail	Fashion retail transformation	France, Global	Specific	Analysis of the digital future of the retail experience
Retail	International e-commerce	Sweden	Specific	Knowledge and understanding of export process
Retail	Diploma course in retail management	Global	Both	Knowledge and understanding of principles of merchandising

Sector	Title of microcredential	Country	Skills	Examples
Retail	Customer relationship management using the CRM system	Poland	Specific	Personal data processing
Retail	Award in credit for retail banking	Malta	Both	Knowledge of international trade finance
Retail	IKI training programme	Lithuania	Specific	Knowledge of cashier-specific skills
Retail	MAXIMA training programme	Lithuania	Specific	Knowledge of butcher-specific skills
Retail	Certified e-commerce & social media expert	Austria	Specific	Knowledge of e-commerce and social media
Retail	Merchant unit manager (MUM) title	France	Both	Insurance of commercial presentation of product in store
Retail	Understanding retail operations	United Kingdom	Specific	Knowledge and understanding of the five steps of the selling model
Retail	Specialist in retail sales	Germany	Both	Knowledge and understanding of sales management and marketing
Retail	Practical sales / merchandise knowledge	Germany	Both	Clever presentation of products
Retail	Digital marketing	Global	Specific	Analysis of a digital communication strategy
Retail	Non-formal vocational training programme in electronic cash registers and cash register systems management	Lithuania	Specific	Knowledge and understanding of the legal acts regulating the safety and health of employees
Retail	Marketing and sales techniques	Greece/global	Specific	Knowledge and understanding of marketing techniques

Source: Prepared by Cedefop based on the desk research and ReferNet questionnaires.

While job-related skills and competences delivered by microcredentials are valued by employers, having a broader occupational profile can be realised, for example, through a full VET qualification. Trade unions have voiced their concerns, during the consultation process on microcredentials, about the latent risks of unbundling qualifications, and were concerned that upskilling and reskilling becomes the responsibility of the individual (Cedefop, 2023a). They insist that microcredentials should correspond to a standard size of training that is not 'too small' (ETUC and ETUCE, 2020; ETUC, 2021).

3.2.3. Quality assurance practices

Several interview respondents ([19]) highlighted the importance of having adequate quality assurance mechanisms in place. Common quality standards, which represent the minimum level of quality all microcredentials should enjoy, was perceived as essential. This creates trust, not only in a single microcredential but in the process that involves designing and delivering different microcredentials by a certain VET provider.

While quality assurance is regulated by the law in formal education and training systems, outside the formal system the way quality standards are set will vary substantially and at times limited information is available. Uncertainty about the quality assurance mechanisms in place can be a major factor contributing to distrusting microcredentials (Cedefop, 2022c). This is most relevant when considering the plethora of options end users need to choose from, and the difficulty that end users face when trying to track and assess the credibility/quality of both the microcredential and its provider. Cedefop research (2022c) found that quality assurance practices differ between those operating within and outside formal education and training.

Quality assurance is central to discussions on the regulation of microcredentials, including which type of quality mechanisms would be fit for purpose for microcredentials (Cedefop, 2023a). A regulatory framework for microcredentials based on specific quality standards can be crucial to instilling trust and ensuring transparency. Similar regulatory frameworks exist in countries where microcredentials are often considered as modules of full qualifications and are subject to certain quality standards that apply to the full qualifications/degrees they are part of (Cedefop, 2022c).

Employers tend to have greater trust in accredited microcredentials. However, they can also accept some non-accredited variants (e.g. those available on the rapidly expanding online platforms) when they signal specific knowledge and competences (Cedefop, 2022c). There are also cases when international certifications enjoy greater trust compared with those from accredited public institutions. An example was identified in Demark where international certificates in project management (Microsoft and Google certificates in particular) were widely recognised in the Danish labour market (Cedefop, 2022c). This highlights the role standards setting plays in quality assurance (and assessment practices) in terms of promoting trust in microcredentials; whenever employers and education and training providers perceive the issued microcredentials as true representations of outcomes, they are willing to recognise them.

([19]) As expressed by stakeholders interviewed representing employees (Hungary, Ireland, and Portugal) and education and training providers (Denmark, Spain and France).

The impact of quality assurance on the level of trust matters not only to employers and education and training providers, but also to individual learners. Evidence from the European Students' Union (ESU) ([20]), shows that students are interested in microcredentials conforming to quality standards similar to those applied to degree programmes. However, questions on quality assurance processes for microcredentials that are critical to trust must be counterbalanced with the labour market purposes microcredentials are intended to serve: complementarity to full qualifications. The focus on microcredentials has partly emerged to provide the means to respond to emerging skills in a more agile way. Quality assurance processes applied to vocational education qualifications could challenge this ability, those applied to a new qualification will naturally entail a substantial delay from skills and learning outcomes being identified to the qualification is offered.

3.2.4. Assessment practices

Assessment is a key factor shaping the level of trust in microcredentials. One of the main characteristic features of microcredentials, within qualifications frameworks, is that they are being referenced to a specific set of learning outcomes that determine what kind of knowledge and competences the learner should acquire. Having adequate assessment practices in place was highlighted by several interviewees ([21]) as crucial to instilling trust in microcredentials. They called proper assessment of the intended learning outcomes prior to awarding the microcredential.

In its simplest form, assessment can be formative and embedded in the training activity, with a final appraisal that learners must pass to obtain their certificates. Digital technologies and the deployment of AI offer options to rethink assessment models. Ideally, and when relevant, employers can take part in the process. Assessment models in vocationally oriented microcredentials are an evolving field. The use of portfolios, for example, allows learners to apply their skills and competences in an authentic context. They also encourage learners to reflect on their learning process, document their growth and showcase what they have achieved. Simulations, in relation to Industry 4.0, are another way of assessing higher order cognitive skills such as complex problem solving. The assessment process can be an in-house process or done by a third party (independent assessors). It can include a single assessment procedure or a combination of

([20]) During the conference on microcredentials organised by Cedefop.

([21]) As expressed by stakeholders interviewed representing employees (North Macedonia), education and training providers (Global and Spain), stakeholders interviewed representing employers (France), and learners (Romania).

different assessment methods. In some cases, the microcredential can be awarded based on attendance (more common in offerings from labour market actors). However, this is not considered as sufficient evidence of achievement to ensure proper trust in the microcredentials issued (Cedefop, 2022c).

Whereas microcredentials offered by traditional VET providers within national qualifications are based on learning outcomes, industry certification assessments are designed to demonstrate compliance with performance standards. This type of assessment sends a genuine signal of performance in working life while learning outcomes represent a proxy for future performance. This is potentially one of the reasons industry certifications play a big role in continuing professional training, both as pathways to employment and later in life for job and career development purposes (Crawford et al., 2022).

Microcredentials also vary in the mode of provision, content, duration, and assessment formats. However, across different formats, the learner should be able to demonstrate a certain level of competence to obtain a microcredential. For employers and education and training providers, it is crucial to understand the nature of assessment underpinning a particular microcredential. Looking ahead, one of the challenges is to design assessments that are:

(a) robust and trustworthy, showing that assessments are done in a way that guarantees the achievement of learning outcomes;
(b) scalable, so they can be implemented by most or all providers of microcredentials;
(c) financially feasible, so that assessment methods are not expensive to implement and increase the costs for end users.

3.2.5. Transparency of microcredentials

Several interviewees indicated that having access to information about microcredentials boosts trust and transparency ([22]). Such information should ideally include:

(a) the name of the issuing body;
(b) accreditation;
(c) link to NQF/EQF, if relevant;
(d) learning outcomes or performance standards;
(e) detailed content/syllabus;
(f) workload and duration;
(g) mode of delivery;

([22]) As expressed by stakeholders interviewed representing employees (Hungary, Ireland, and Slovenia), education and training providers (Global, Germany, Malta, Portugal and Sweden), and learners (Greece, Italy and Lithuania).

(h) type of assessment.

The availability of such data helps end users better understand what a specific microcredential offers. They should be easy to access, and preferably digitally stored and accessed. For example, the Maltese Further and Higher Education Authority (MFHEA) has its own database of awards, accessible online, and the learners can share with employers a weblink with all the relevant information on an award obtained.

Transparency is most relevant in a context where there is already a certain level of confusion on what microcredentials entail in practice. Better understanding of the nature of microcredentials can eventually build greater trust in them. Information is also needed for learners and employers to be able to decide whether a certain microcredential is relevant to them.

3.2.6. Raising awareness of microcredentials

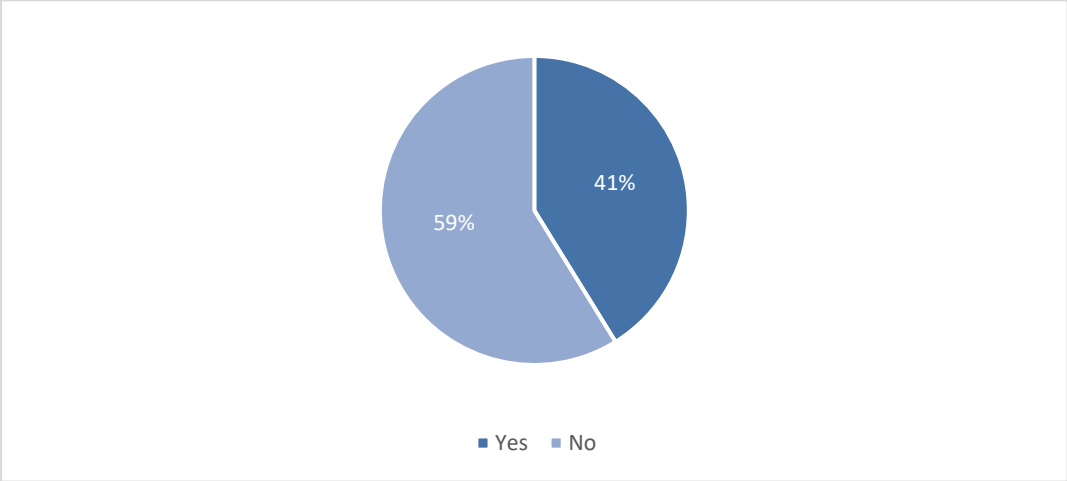
The mapping and analysis of microcredentials used in labour market education and training (Cedefop, 2022c) shows considerable variation in how countries define and interpret microcredentials. At the national level, the term is not commonly used, and only a few countries have official definitions. The wide range of terminologies used represent a source of confusion to many employers as well, adversely affecting their trust in microcredentials. This mainly comes from the difficulty of verifying the authenticity and validity of the content and learning outcomes communicated by a particular microcredential, especially when there is a broad range of offerings, differing in characteristics, but often marketed under different names. There are varied efforts under way to develop and include rich metadata for digital credentials to improve comparability and transparency. This is critical to trust, particularly in a VET context where microcredentials are used across different social spaces and for different purposes (Ehrenreich and Trepulė, 2022)

This comes in alignment with the findings from the survey programme undertaken in this study. When asked about their awareness of the concept of microcredentials, a higher share of respondents indicated that they have not heard of it (59%) (), while 41% of respondents were aware. When looking into the main stakeholder groups separately, the highest percentage of awareness of the concept of microcredentials is found among employers (67%), while the least aware group of stakeholders (31%) are individuals who are currently unemployed. This shows that they do not necessarily correspond to their expected impact on being inclusive of a more diverse learner population, including more disadvantaged people. It also demonstrates that microcredentials are receiving considerable attention from employers, which is consistent with the notion that they, as a specific

group of credentials, are designed and offered with business/industry needs in mind.

However, these results illustrate the need to improve communication and raise awareness about microcredentials, regarding how they are situated within different skills formation systems (be it at the national, sectoral, or inter-sectoral level). Further, there is a strong need to raise awareness about microcredentials and their potential value for employment. This requires systematic monitoring with robust indicators on labour market outcomes.

Figure 4. **Have you heard of concept of 'microcredentials'?**



Source: Survey of stakeholders representing employers, employees, students and adult learners and individuals who are currently unemployed (N=1685).

3.2.7. Compliance with regulatory and qualification frameworks

Across different end users interviewed ([23]), most respondents agreed that one of the main conditions for trusting microcredentials is their compliance with a national-level regulatory framework. This was seen as representing a quality label indicating that a certain microcredential has been subject to the same quality standards applied to full qualifications in formal education and training. Such standards can cover regulating the content of teaching, learning outcomes, learning environment, and qualification of teaching staff. National qualifications frameworks and the European Qualifications Framework (EQF) ([24]) were also mentioned as

([23]) As expressed by the stakeholders interviewed representing employees (Estonia and Ireland), education and training providers (Germany, Greece, Italy, Cyprus, Malta, Sweden), and learners (Germany, Italy, Romania, France and Italy).

([24]) For more information, please refer to Cedefop's webpage on European Qualifications Framework (EQF).

representing quality assurance frameworks, which microcredentials should comply with.

The need of end users for microcredentials to have some form of a quality label indicates that they are challenged in terms of verifying the quality of a wide array of microcredentials available to them. From MOOCs to university-level courses, and from industrial certificates to VET modules, end users may need ways to assess and choose high-quality educational offerings that match their needs. Having a quality label in place (e.g. knowing that a certain microcredential is NQF-levelled or backed by an industry leader) aids trust.

Compliance with national regulatory frameworks or accreditation by national authorities could also signal trust to VET providers, leading them to recognise microcredentials issued by other VET providers as long as they are accredited. This would enhance the role of microcredentials in facilitating the recognition of prior learning and increase the potential for accumulation into a larger qualification.

Compliance with industrial standards is yet another feature signalling trust, as it ensures that the microcredentials offered are relevant to labour market and industry needs. Through the mapping of microcredentials in the manufacturing and retail sectors, several are offered in compliance with industry-set standards that are widely recognised in their respective occupational fields (Cedefop, 2023a).

Compliance with regulatory frameworks is imposed not only at the level of the microcredentials, but also at the level of the education and training providers that need to adhere to similar quality standards as those applied in formal education and training. However, the call for ensuring compliance with regulatory frameworks brings the discussion on whether subjecting microcredentials to such frameworks of regulation and quality assurance (leading to a certain degree of standardisation) would affect the flexibility that makes them advantageous over traditional qualifications (Cedefop, 2023a). Therefore, there is a need to approach this issue carefully, to strike the right balance between regulation (which necessarily brings a certain degree of rigidity) and flexibility of microcredentials. An example of standards-setting efforts by skills alliances comes from the Sector Skills Alliance for Fitness and Physical Activity, launched by EuropeActive, which has successfully accredited over 140 training providers across Europe (Box 2).

Box 2. **Sector Skills Alliance for Fitness and Physical Activity**

In 2021, EuropeActive launched the Sector Skills Alliance for Fitness and Physical Activity, estimating that the sector employs more than 750 000 people. EuropeActive has a professional standards committee, which is an independent standards-setting body; the standards have been informally referenced to the EQF. EuropeActive has also developed a system of independent quality assurance that has successfully accredited over 140 training providers across Europe (including both vocational training providers and higher education institutes). Accredited training providers hold that status for 2 years, after which they need to reapply for accreditation.

Though some programmes are integrated in national qualifications frameworks, EuropeActive has concluded that the mutual recognition of qualifications requires a comprehensive external or third-party quality assurance process.

In 2021, EuropeActive launched, in cooperation with the Netherlands National Standards Organisation (NEN), a new club certification scheme known as FITcert.eu. The five-stage scheme is the culmination of technical experts working under the direction of the European Standards Organisation (CEN) to develop standards for fitness clubs covering operations, management, customer service, supervision and fitness trainer qualifications.

Source: EuropeActive (2021).

3.2.7.1. Examples of microcredentials from manufacturing and retail sectors

Compliance of microcredentials with regulations/quality standards was identified through the mapping exercise in manufacturing and retail sectors. Publicly accessible information about these microcredentials did not include information about quality assurance mechanisms despite it being one of the key topics in discussions on microcredentials and often identified as crucial in generating trust. The exercise shows that microcredentials can be mainly standalone but also stackable as well. When it comes to assessment, the majority of microcredentials go through an assessment process and only a few lead to a certification awarded for attendance. As highlighted, assessment serves as a proof that intended learning outcomes were achieved. Table 6 shows that types of assessments are varied. They can be both theoretical and practical, both oral and written, or completed onsite and online.

Table 6. **Characteristics of microcredentials affecting trust**

Sector	Title of microcredential	Country	Type of assessment	Stackability options	Standards
Manufacturing	Safety procedures in medical processes	France	Case study	Standalone	Compliance with EU Regulation 2017/745 (DM) & 2017/746 (DM)
Manufacturing	Quality management system and welding coordination	Denmark	Written test	Standalone	Compliance with DS / EN ISO 14731.
Manufacturing	GMP and GDP certification	Germany/Europe	No assessment	Accumulating three certificates of participation or attending three courses can result in GMP and GDP Certification	NS
Manufacturing	International welding engineer (IWE)	International (41 countries)	Written and oral examination	Modules of this qualification are inter-dependent and all need to be completed to receive a qualification	NS
Manufacturing	International welding practitioner (IWP)	International (41 countries)	Intermediary examination and final examination	Modules of this qualification are inter-dependent and all need to be completed to receive a qualification	NS
Manufacturing	Qualification in additive manufacturing	Germany, France, Italy, Spain, UK, Portugal, and Turkey	Multiple-choice test	Can be both standalone and lead to a qualification	NS
Manufacturing	Machine training courses	Germany	No assessment	NS	Specific to machinery used
Manufacturing	CNC specialist certificate	Austria	Oral and written theoretical assignment and practical assignment	Standalone	Requirements of EN ISO/ IEC 17024
Manufacturing	VET award in process manufacturing	Malta	Oral, written or practical exercises	Standalone	NS

Sector	Title of microcredential	Country	Type of assessment	Stackability options	Standards
Manufacturing	3D printer operator for industrial applications	Czechia	Practical demonstration and oral verification	Validation of prior learning	Yes
Manufacturing	Industrial health and safety advisor	United Kingdom	NS	Stacked into a larger qualification if completed with other modules	NS
Manufacturing	Operator of CNC machines	North Macedonia	Final exam	Standalone	Based on the real standards of the profession that are achieved through professional theoretical content and practical
Manufacturing	International welding consultant	Finland	NS	Standalone	Set by Finnish Civil Protection Agency (SPEK)
Manufacturing	Robotic process automation fundamentals masterclass	Ireland	Online assignment	Standalone	NS
Manufacturing	Working on an ammonia (NH3) installation safely	France	NS	Standalone	Requirements of new environmental regulations (article 54 of the decree of 16.07.1997)
Manufacturing	MAG welding with an electrode wire	Poland	NS	Standalone	NS
Manufacturing	Introduction to foundry technology	Sweden	NS	Standalone	NS
Manufacturing	Manufacturing operations for medical device/pharma industry (life sciences manufacturing operations)	Ireland	Onsite but the type is NS	Standalone	NS

Sector	Title of microcredential	Country	Type of assessment	Stackability options	Standards
Manufacturing	Supply chain manager – operational level	Greece	Certification exam	Standalone	European qualification standards for logistics professionals
Manufacturing	Festo's mechatronics certification programme	United Kingdom and worldwide	Certification exam	Can be both standalone and lead to a certificate (if all modules are completed)	NS
Manufacturing	Level 1 certificate in introductory welding skills	United Kingdom and worldwide	Portfolio, practical assignment and knowledge tests	Standalone or progression into other qualifications	NS
Manufacturing	Lightweight professional	Worldwide	Online exam	Standalone modules and certification after three completed modules	NS
Manufacturing	Junior expert in circular economy	Italy	NS	Four blocks that build on top of each other	NS
Retail	Common food hygiene	Denmark	Written test	Standalone	NS
Retail	Award in retail	Malta	NS	Stacking smaller units leads to this qualification	NS
Retail	Sales for store employees	Norway	NS	Standalone	NS
Retail	Profitability of marketing and sales organisation in the luxury goods sector	France	Professional project and case study	One of four certificates that can lead to a full qualification is stacked	Yes
Retail	Award in retail operations	Malta	Multiple-choice test	Standalone	NS
Retail	Drugstore employee (DM druggist)	Slovenia	Written and oral assignments	Standalone supplementary qualification	NS
Retail	Fashion retail transformation	France, Global	Online quizzes and project plan	Combined into a larger qualification	NS
Retail	International e-commerce	Sweden	No assessment	Standalone	NS
Retail	Diploma course in retail management	Global	Assignments	NS	NS

Sector	Title of microcredential	Country	Type of assessment	Stackability options	Standards
Retail	Customer relationship management using the CRM system	Poland	Theoretical test, observation in simulated conditions and a structured interview	Partial qualification, which can be combined into a larger qualification	NS
Retail	Award in credit for retail banking	Malta	NS	Can be combined into a larger qualification	NS
Retail	IKI training programme	Lithuania	Knowledge test	Standalone	NS
Retail	MAXIMA training programme	Lithuania	Practical assignments	Standalone	NS
Retail	Certified e-commerce & social media expert	Austria	Certification exam	Recognition of prior learning	NS
Retail	Merchant unit manager (MUM) title	France	Practical assignments, written assignment and oral test	Standalone	NS
Retail	Understanding retail Operations	United Kingdom	Portfolio	Progression to higher level is possible	NS
Retail	Specialist in retail sales	Germany	Written and oral examination	Progression to higher level is possible	Yes
Retail	Practical sales / merchandise knowledge	Germany	NS	Standalone	NS
Retail	Digital marketing	Global	Quizzes	Standalone	NS
Retail	Non-formal vocational training programme in electronic cash registers and cash register systems management	Lithuania	Participants in non-formal adult education have the right to receive an assessment of knowledge acquired in the system of non-formal adult education and a State-recognised document of completion of education or a certain part (module) of the regulated programme	No but possible if a learner receives assessment of knowledge acquired in the system of non-formal adult education	NS
Retail	Marketing and sales techniques	Greece/global	Evaluation tests	Standalone	NS

NB: YES means that a specific microcredential fulfils the condition; NS means that this information was not specified and cannot be verified.

Source: Prepared by Cedefop based on the desk research and ReferNet questionnaires.

3.2.8. Stackability of microcredentials

Options to stack microcredentials into a larger credential/degree within formal education and training systems, already possible in several EU Member States (Cedefop, 2022c) ([25]), can lead to increased use of microcredentials (while trust, in return, contributes to more options for stacking). Interviewed stakeholders representing learners in Greece, and employees in Estonia and Ireland, have affirmed the importance of stackability of microcredentials. Knowing that a certain microcredential can be recognised as part of a larger qualification is an incentive for learners and assures them that its value goes beyond the knowledge and skills acquired.

Such stackability of microcredentials is visible in Member States where VET programmes have become modularised and module certificates are being seen as equivalent to microcredentials. However, even within VET systems there are concerns that stackability could lead to more narrow conceptualisations of an occupation (Schneider and Le Mouillour, 2022).

With stackability outside of formal education and training, accumulation may be underpinned by different practices in assessment, recognition, and quality standards. More important, the stacked credentials could build on diverse views of what constitutes skilled/professional working practice in a particular field (Cedefop, 2023a). Cedefop research (2022c) showed that if microcredentials are not accredited, it will likely be not plausible to combine them into a larger qualification. Nevertheless, across IT occupational fields, as well as within manufacturing, there is a range of microcredentials in the form of industry certifications. They are based on industry standards combined with professional advancement frameworks and are highly trusted in labour markets. For example, the European Skills Alliance for the Software Industry (ESSA) has developed a certification framework that allows for stackability of microcredentials creating different upskilling and reskilling pathways (Box 3).

([25]) Of 30 countries analysed, accumulating microcredentials from other education and training providers is possible in eight countries and only in formal education and training (except for Denmark) (Cedefop, 2023a).

Box 3. **Certification framework for software professionals**

Software professionals are in high demand across sectors of the economy. ESSA, the European Skills Alliance for the Software Industry, has identified five software occupational roles – Developer, DevOps expert, Solution designer, Test specialist, and Technical (software) specialist – representing profiles and skills that are in demand in the labour market.

The profiles translate the employers' skills needs into educational terms. The competences, skills, and knowledge required to succeed in a software professional role are integrated into a full set of measurable learning outcomes.

To allow for different upskilling and reskilling pathways, they have elaborated a certification framework for microcredentials to enable stackability, underpinned by a common quality assurance scheme focusing on quality assurance of providers and their internal quality assurance processes in alignment with the European approach to microcredentials. The certification framework foresees badges as means of issuing digital credentials and covering several levels from vocational education to higher professional levels.

Source: The European Skills Alliance for the Software Industry (2022).

The configuration of national VET systems and the actors involved in quality assurance ultimately impact how quality assurance and stackability are approached. From a learner perspective, the design of a mosaic of non-degree credentials is not necessarily a matter of whether they stack up to a full qualification within a national qualifications framework, but whether they, in various combinations, can lead to new occupational opportunities.

3.3. Building trust in microcredentials

Key findings

- Building trust in microcredentials comes down to ensuring that the learning outcomes and competences reflect what the learner has achieved and are evaluated through rigorous assessment.
- Building a microcredentials ecosystem requires dialogue and collaboration between the relevant stakeholders and end users.

Microcredentials are a skills currency that is not entirely well-understood. However, trust and value are concepts that are deeply interconnected. Building trust in microcredentials comes down to ensuring that the intended learning outcomes and competences reflect what the learner/professional has achieved, so one dimension of trust is a question of content, quality assurance, and assessment practices. The

other dimension of trust is that the outcomes of upskilling, reskilling, and further learning correspond to the investments made.

The learning process and/or the competence-based assessment leading to the awarding of a microcredential must be quality-assured to build trust. One way to do that is to accredit the organisations that award microcredentials, instead of quality-assuring individual microcredentials which can turn out to be a complex and a time-consuming process (Cedefop, 2023a); adequate training and accreditation/certification of assessors is critical to ensuring that the assessment is effective and non-discriminatory. The alternative approach is being considered in the Netherlands where they are moving towards a system that accredits the relevant institutions, allowing them to issue microcredentials (Cedefop, 2023a). Nevertheless, it is important to achieve a balance between the microcredential quality requirements and the administrative burden that would result from working to fulfil those criteria. Employers issuing microcredentials would be reluctant to deal with additional bureaucracy. Having quality criteria and standards in place is not sufficient on its own: time and close monitoring are needed to ensure the issuing institutions abide by those standards.

Another possible way is to adopt some form of a *laissez faire* approach to the issuance of microcredentials; providers would not have to receive some sort of accreditation for their products, nor do they have to be accredited to issue them. Instead, the labour market (i.e. employers) will filter out non-trustworthy microcredentials; those proven to be of the highest quality (reflecting real possession of competences) will continue to gain better reputation, and hence claim higher labour market value. This is the case with some of the existing market qualifications that, despite not being linked/referenced to specific qualifications frameworks or being formally recognised by national authorities, are trusted by most employers. For example, some international certifications by Microsoft, CISCO, and Google became de facto standards in their respective fields and are on an equal footing to, or even surpassing, other certificates that are nationally/formally recognised by public authorities. However, and as highlighted in the French case study (Cedefop, 2023a), a similar approach would be associated with deregulation, meaning that microcredentials would be perceived as representing a loss of power in the governance of qualifications.

Dialogue and collaboration between the relevant stakeholders and end users (e.g. national authorities, education and training providers, employers, and learners) are crucial to building a system in which microcredentials are recognised and trusted. As pointed out by Brauer (2020), close collaboration between different stakeholders across learning pathways can result in a situation where the value of the assessed competences (in the form of microcredentials) is recognised both in

formal education and the labour market. Linking the learning outcomes addressed by the microcredentials to those described in the relevant occupational profiles also contributes to trusting their validity and relevance. One way to do that is through the joint design with industry/employers' representatives.

Referencing microcredentials to existing qualifications frameworks is also a strong tool for building trust. When the employer organisations surveyed (Cedefop, 2023a) were asked how important it was that microcredentials are referenced to the national qualifications framework (N=29), 31% said it is very important, and 24% described it as somehow important, while only 14% considered it not important. For employee organisations (N=66), there was a similar interest in linking to NQFs, where 29% described it as very important, and 33% as somewhat important. However, the inclusion of microcredentials in NQFs can be a very resource- and time-consuming process, with only a small number of such microcredentials already included in NQFs (Cededop, 2023a). One of the potential risks, as highlighted by the German national authorities (Cedefop, 2023a), can be that, with the excessive widening of the qualifications framework to include short learning experiences alongside formal qualifications, credibility and trust in the framework might be undermined.

Building trust in digital microcredentials requires additional interventions. An example of digital microcredentials is 'open badges', which is a specific form of microcredentials that provides two main challenges in relation to trust. First, the authenticity of open badges can be challenged, though technological solutions, such as blockchain technology, mean authenticity can be verified with a high degree of confidence. New forms of peer-based models to trust are also evolving, driven by social media communities as a factor. Second, the evidence proving the achievement of the described competences needs to be offered and detailed. The badge metadata should contain all the relevant evidence (e.g. microcredential(s) obtained) and detailed record of the competences acquired (Brauer et al., 2018). Badge owners should also be able to attach the relevant evidence (e.g. work sample) to the issued badge (Cedefop, 2023a). Attaching badges/microcredentials to existing well-trusted frameworks can also contribute to building trust in the microcredentials issued. Digitalisation of the process of issuing, storing, and sharing microcredentials, through means of modern technology (such as blockchain or the Europass digital credentials infrastructure ([26])), is one potential

([26]) The Commission is currently working on a technical infrastructure that organisations can use to issue digital credentials across the EU. This technical infrastructure could be used by the Member States and various stakeholders when issuing Europass Digital Credentials to learners. IT systems of awarding bodies, for example, could implement this infrastructure to create diplomas and certificates for students. The

solution to building trust in the authenticity and validity of the certificate issued. In Finland, for example, badge constellations are linked to the requirements of existing frameworks such as DigComp (The European Digital Competence Framework) or the national qualifications framework, which classifies qualifications into levels according to the achieved learning outcomes (Cedefop, 2023a).

A European-level database of trustworthy and quality-assured microcredentials has been one of the proposals brought forward in higher education as a means of increasing trust in microcredentials. However, given the multiple purposes microcredentials serve in education and training, business processes, and regulatory/compliance functions in trade, it becomes difficult to decide what kind would be eligible for inclusion in that database, who would be the legitimate gatekeepers, and what would it take to ensure that a European database for microcredentials is up to date. The endeavour would likely be extremely complex and costly to set up and maintain. A better way forward is encouraging the developments in enhancing metadata availability and compliance with functionality and quality criteria, which would make microcredentials comparable whether they are situated within or outside national qualifications frameworks.

Europass Digital Credentials Infrastructure provides a secure, trustworthy and fraud-resistant system that ensures data privacy and data protection.

CHAPTER 4.

Added value and currency of microcredentials

Microcredentials, like other qualifications and credentials, are expected to have currency. This currency relates to their value, functions, and purposes, and to their educational and labour market outcomes for learners. As previously found by Cedefop (2020) a qualification and/or credential as a currency can be 'exchanged' in three, partly interlinked, contexts (Cedefop, 2020):

(a) as a means of accessing and progressing in the labour market;
(b) as a gateway to further learning;
(c) in the form of social value, which might come from improved status or social mobility conferred by a qualification and/or credential.

These three are closely related to the main areas of added value that microcredentials can offer to users: employability, lifelong learning through the means of flexibility, social mobility, and inclusiveness.

First, microcredentials can provide entry to or advancement in the labour market, or they may provide access to a specific occupation (e.g. a regulated occupation or profession) and enable progression within the occupational hierarchy, determining wage levels (Cedefop, 2020). Microcredential holders can experience improved employment prospects, career advancements and job mobility. Second, microcredentials may open possibilities for further learning. School dropouts and working adults can potentially use them in combination with validation and recognition of prior learning, by engaging in small chunks of learning and gradually obtaining a larger qualification and/or degree (similarities with a trend towards modularisation of VET qualifications are observed in this case). However, concerns have been raised related to stackability of microcredentials which could hamper the broader conceptualisation of what it entails to be skilled (Schneider and Le Mouillour, 2022). Third, microcredentials may contribute to social inclusion and social mobility; the qualification or credential influences individuals' social status and the kind of societal opportunities they access (Skillnet and UCC, 2019; Cedefop, 2020). Microcredentials in VET are primarily situated to fulfil the first two purposes, as they direct labour market entry and/or provide access to further learning, although there are expectations that they may be used as a tool to make education and training more inclusive to different types of learners (Lambert, 2020; Cirlan and Loukkola, 2020).

Further, there is an increasing number of learners for whom the traditional, full-time, and linear approach to education does not work. They want and need shorter, flexible, and portable learning pathways that connect them to economic opportunities and allow them to learn while in the workplace. Microcredentials serve this increasing need and demand for flexible learning pathways that is learner centred and responsive to the changing needs of the economy.

All these elements relate to the potential benefits that microcredentials can bring to end users. A brief overview of what different stakeholders perceive as the added value of microcredentials is provided in Table 7.

Table 7. **Value of microcredentials for different end users**

Learners and employees	Employers	Traditional VET providers
Standing out in a recruitment situation.	More responsive training offer that matches emerging skills to the needs of companies.	Expanding the outreach of VET providers.
Labour market mobility through vertical and horizontal skills pathways.	Faster and more efficient upskilling and reskilling of the workforce.	Consolidating strategies for VET excellence.
Improved labour market outcomes in the form of income and career development.	Improve employee retention through improved job and career pathways in the company.	Allowing for new services and engagements with new targets groups.
Career shifts.	Expanding the recruitment base (hidden workforce)	Involvement in local, regional and sectoral skills ecosystems building skills intelligence that can enhance quality and relevance of provision.
Access to continuing and further learning on a flexible basis.	Reducing induction costs of new employees by providing more individualised and affordable training opportunities.	Building institutional capacity to innovate, by shared design of new forms of provision to reach underprivileged target groups.
Recognition of prior learning.	Renewed competitiveness and innovation performance through concurrent strategies for upskilling and reskilling.	Improving quality of provision overall by engaging actively with stakeholders in local labour markets.

Source: Cedefop, based on desk research, case studies, surveys, and interviews.

Even though microcredentials cannot be seen as a catalyst for solving complex issues such as labour shortages, reaching targets for lifelong learning and fully mitigating the impact of events such as COVID-19 on unemployment rates, they are perceived as a tool that can potentially tackle some of these challenges.

In conclusion, there are still important questions on how microcredentials should be designed; these need to be further explored, especially if they are to offer equitable skills lattices to improve labour market opportunities. The issue of which complementary policies can improve outcomes, considering the variations

in particular governance of VET systems and labour relations across Member States, remains a focal point.

4.1. Microcredential added value for learners and employees

Key findings

- The primary added value of microcredentials is their impact on employability, skills acquisition and career mobility. They help learners and employees to stand out when applying for a job or to get a promotion.
- Microcredentials emerge as more diverse training opportunities, helping individuals to continue into further learning. Flexibility of microcredentials fosters lifelong learning.
- Although microcredentials are perceived by most respondents as a tool to bridge the gap between education and training and the labour market, few have experienced this in practice.

There is an increasing acceptance of multiple post-secondary and adult education pathways for learners, outside formal education and training. This is especially true for employees and the unemployed, who may not have the time or resources to pursue a qualification, or who need to reskill and upskill quickly in order to move vertically and/or horizontally in the labour market. For such learners microcredentials are expected to provide access to gainful employment, long-term job, income security and labour market mobility. For individuals in employment, microcredentials can be the most effective way to upskill, reskill and advance in their chosen field. For the unemployed and underemployed, they offer access to the labour market and opportunity to transition to better paid jobs.

As education and training systems are becoming increasingly nonlinear, microcredentials provide flexible learning modules for lifelong learning. This flexibility makes it easier for adults to engage in lifelong learning opportunities and work around their personal and professional responsibilities. Potential learners are looking for additional learning opportunities that are easy and convenient to access, reasonably priced and short (Orr et al., 2020).

In Europe, given the currency and value of traditional qualifications, microcredentials are seen as complementary to qualification programmes by most interview respondents from national authorities, education and training providers and employee organisations. The European Students Union (ESU)

emphasised ([27]) that microcredentials should not replace but complement current learning opportunities and serve as a lifelong learning opportunity for individuals throughout their lives. According to the ESU, microcredentials should remove all obstacles to access, facilitate progress and completion, implement a student-centred approach to learning and teaching, develop recognition procedures, and assess students fairly ([28]). Thus, they can become a way to progress into further learning at a time when individuals choose to do so.

4.1.1. Added value in the labour market

One major added value of microcredentials for learners and employees is their outcomes in the labour market. When narrowing down the main elements of added value in relation to the labour market, three main topics emerge:

(a) employment;
(b) skills acquisition (upskilling and reskilling) and skills signalling;
(c) career mobility and orienteering.

The substantial link between microcredential scope and functions and the labour market realm can be seen in the survey data. Employees, the unemployed, students and adult learners considered employment to be one of the main purposes of microcredentials, though not exclusively. All these groups have indicated job and career promotion to be among the three main purposes for which they would make use of microcredentials (Table 8).

Table 8. **Three main purposes of microcredentials according to employees, the unemployed, and students and adult learners**

Employees	% of total responses
As a top-up to a qualification to demonstrate specific skills	52%
Personal development	44%
For job and career promotion	42%
Students and adult learners	**% of total responses**
As a top-up to a qualification to demonstrate specific skills	38%
For job and career promotion	34%
To get into further studies	30%
Individuals who are unemployed	**% of total responses**
As a top-up to a qualification to demonstrate specific skills	38%

([27]) Based on the ESU presentation from the Cedefop conference on microcredentials, 26 November 2021.

([28]) Ibid.

As an alternative to a full qualification	33%
For job and career promotion	32%

NB: respondents were given multiple choice options.

Source: Surveys of stakeholders representing employees, students and adult learners, and individuals who are unemployed.

Unemployed individuals surveyed generally believe that microcredentials positively affect their employability. Most respondents (65%) believe that microcredentials could help them stand out when applying for a job, as presented in Table 9. Results are slightly different when participants are asked about concrete experience in finding a job through attainment of microcredentials: more respondents indicated that they did not help. A notable share of respondents – 25.5% and 30% for the respective questions – claimed that they do not know whether microcredentials have impact on their employability. These replies confirm that the value added of microcredentials in labour markets as a skill currency is still uncertain for many users.

Table 9. **Unemployed individuals who think that microcredentials could help them stand out when applying for a job or who experienced that microcredentials helped them stand out when applying for a job**

Have you experienced in practice that microcredentials helped you stand out when you applied for a job? ([29])		Do you think microcredentials could help you stand out when you apply for a job? ([30])	
Yes	36%	Yes	65%
No	38.5%	No	5%
Do not know/Cannot answer	25.5%	Do not know/Cannot answer	30%

Source: Surveys of stakeholders representing individuals who are unemployed.

The potential for employability is particularly important for unemployed individuals who try to return to the labour market after a period of unemployment. However, the findings show that almost half of those responding to the survey, did not have opportunities to participate in any form of short training opportunities that lead to microcredentials while unemployed (Table 10). Only 3% of the unemployed had extensive opportunities to participate in training. The accessibility of short training opportunities that lead to microcredentials might still be hampering their

([29]) This question was answered by survey respondents who had not in practice engaged with microcredentials and were asked to evaluate the potential of microcredentials helping them stand out when applying for a job.

([30]) This question was answered by survey respondents who had in practice engaged with microcredentials and were asked to evaluate how microcredentials helped them stand out when applying for a job.

potential value for employability. There is no significant correlation between the education level or professional seniority of the respondents and their opportunities to participate in training.

Table 10. **Individuals who had opportunities to participate in any form of short labour market training course leading to a microcredential while unemployed**

Opportunities to participate in training	% of total responses
No opportunities	47%
Limited opportunities	29%
Good opportunities	21%
Extensive opportunities	3%

Source: Surveys of stakeholders representing individuals who are unemployed.

The actual value of microcredentials as a tool in active labour market policies is difficult to evaluate due to the small sample of unemployed individuals who had opportunities to participate in relevant training. However, those who had the opportunity indicated that it helped them stand out when applying for a job. While microcredentials are positively seen by a group of unemployed individuals, data do not provide further insights into the value added for the low-qualified, elderly and the young who may have dropped out of VET. To reach a wider range of disadvantaged groups, it is important to develop targeted training opportunities.

Upskilling and reskilling is another crucial area of added value. Upskilling and reskilling opportunities are seen as central to a more flexible and mobile career landscape (Cedefop, 2022c) in the context of the current dual transition. Microcredentials can potentially support employers in recruitment, by widening the skills talent pool. They can also be a means of upskilling and reskilling for existing employees, offering them attractive job and career pathways; and they can facilitate the visibility of the so-called 'hidden workforce', especially when used by public employment services as part of active labour market policies. This is, for example, the purpose of the Dutch TechGround initiative ([31]), which is now being scaled to other cities in the Netherlands.

The need to gain new skills on the job and continue training – even in employment – emerges quite clearly from survey data, though with some nuances. 72% of employees who responded to the survey declared that they experienced moderate to extensive changes in their jobs that required the acquisition of new skills. Of 72% of respondents who have experienced changes in their jobs, 23%

([31]) Candid conversation with Saskia Verstege of Techgrounds in the Netherlands.

experienced extensive changes. Among those, most have gained tertiary education, with the remaining ones holding other but still highly technical qualifications ([32]). This signals that upskilling and reskilling has become a necessity for highly educated and skilled individuals as well.

Younger respondents (aged 44 or below) were slightly more likely to observe minor or no changes that would require upskilling or reskilling. The reason for this might be that they have entered the labour market more recently and have better digital skills that became essential for employees, considering also that many workplaces had working from home transition (Cedefop, 2022c). This latter observation might suggest that microcredentials have different value in the labour market (in relation to different age groups). It might also imply that younger and less experienced workers might find more benefits in the use of microcredentials as a tool for career mobility and advancement, rather than just upskilling and reskilling within the current workplace.

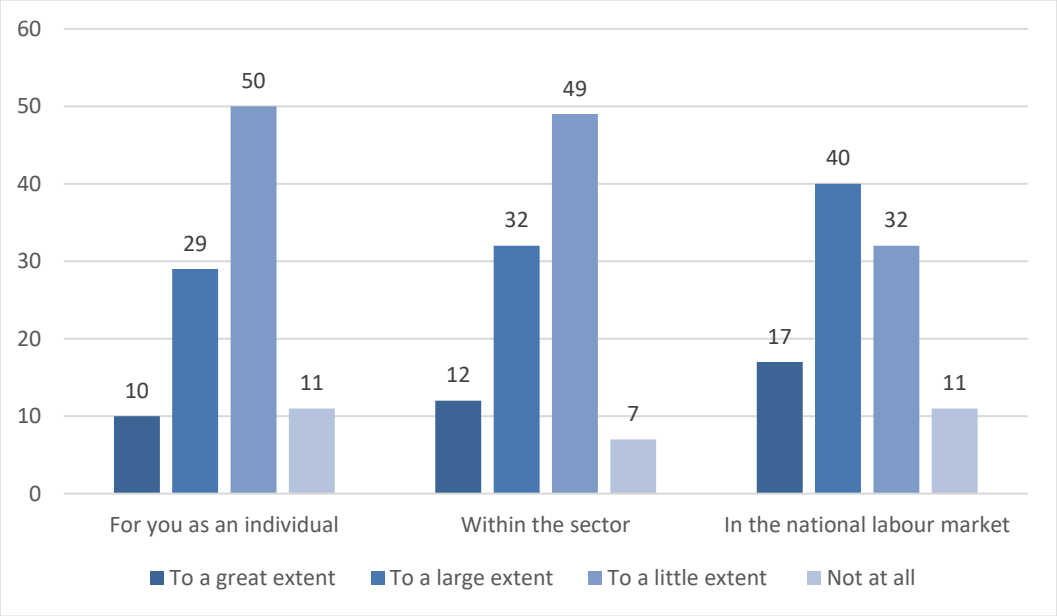
The findings indicate that upskilling and reskilling is perceived as a necessity among the high-skilled, and this need is highly contextual. The returns from acquiring microcredentials will be accrued by those who already have advantages in terms of distinguishing themselves in the competition for quality jobs and promotion. According to international research (Albert and Crawford, 2021) this is a concern, and it is also relevant in a European context. Young people neither in employment nor education remain a challenge in many Member States, and structural unemployment still affects some groups even if the economies have picked up in Europe (European Commission, 2022b). It is important to understand the extent to which microcredentials can be an alternative pathway for individuals who have dropped out of VET or for adults who many years ago may have entered the labour market following compulsory education, and who in the later part of their working life no longer have the abilities to undertake physically demanding work.

Microcredentials can offer various opportunities for career mobility and progression; they support employees when aiming for promotion, or a change of occupation and career path; for students and adult learners they can be a useful instrument to explore different professional directions, as well as increase their employability. Survey results could point to a scenario in which microcredentials become a means to improve employment opportunities both in terms of vertical and horizontal mobility if used by those that already have obtained a full qualification at some point.

([32]) Technician qualification, short cycle professional education, vocational qualification, general upper secondary, general youth education.

Exploring the survey data further, most adult learners and students ([33]) seem to trust microcredential to improve their employment pathways in their sector. In contrast, most employees believes that microcredentials will play a lesser role in increasing employment and job promotion opportunities. This might be related to the fact that, once in employment, other factors such as understanding what employers want and need, adding specific value to an employer and having consistent track record, play a major role in getting a promotion. The two figures below present these findings.

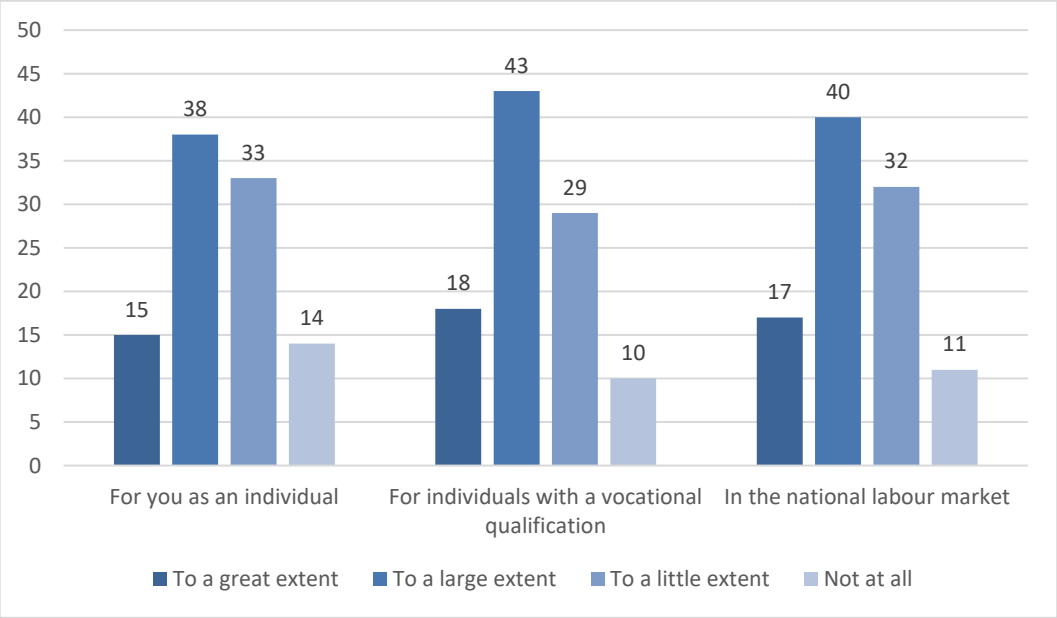
Figure 5. **Employees who think that microcredentials will help to increase employment and promotion opportunities in the next few years in %**



Source: surveys of stakeholders representing employees.

([33]) Respondents in this category are 44 years old or younger (85%) and unemployed (71%).

Figure 6. **Students and adult learners who think that microcredentials will help to increase employment and job promotion opportunities in the next few years in %**



Source: Surveys of stakeholders representing students and adult learners.

Respondents in the younger age group tend to associate microcredentials with career mobility. A specific characteristic of such mobility could be relevant to younger groups: interviewees underlined how microcredentials can be provided as a supplementary option to smooth the passage between studies and career choice, or the gap between different career paths. Representatives of a VET provider emphasised that 'many people have decided to change their careers after attending a microcredential course'. Representatives from European universities highlighted that to support students in selecting a suitable and likable job path for themselves, 'it's important to propose them more options to build personalised paths of learning'.

This observation is confirmed by literature (Tamoliune et al., 2023), even if comprehensive studies on the topic of microcredentials as a tool for better orienteering are currently scarce. However, digital badging systems were examined as cultural tools for planning and wayfinding in supporting personalised professional development (Gamrat and Zimmerman 2021). The suggestions proposed above might be a good starting point to evaluate such an option, especially in counties with limited or unimpactful orienteering initiatives organised by universities or other public bodies, and with higher skills mismatch levels.

Important questions on how microcredentials should be designed need to be further explored, especially if they are to offer equitable skills lattices to improve labour market opportunities. In particular, the issue of which complementary

policies can improve outcomes, considering the variations in governance of VET systems and labour relations across Member States, remain a focal point.

4.1.2. Added value in lifelong learning

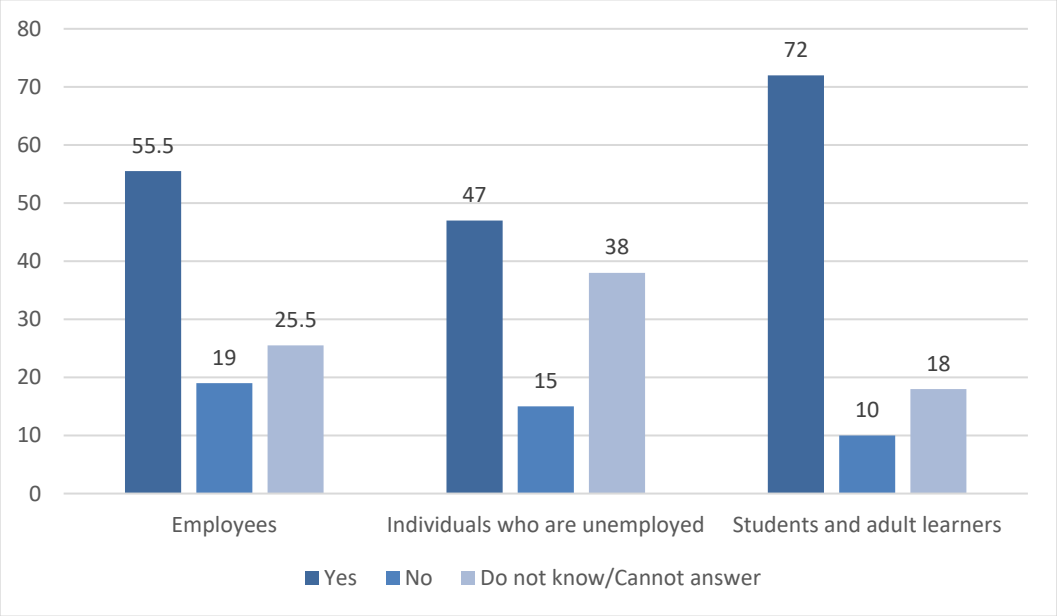
The development of microcredentials should be seen in the context of evolving qualifications systems, including the relative role of CVET in national VET systems. (Cedefop, 2023a). Although microcredentials mirror developments in VET systems (in terms of modularisation and inclusion of partial qualifications), there are concerns related to demands for broader occupational profiles and the importance of transferable skills in labour markets (Schneider and Le Mouillour, 2022).

While many VET systems have become more flexible and more learner-centred, microcredentials are more diverse training opportunities where flexibility is a typical feature (Bideau and Kearns, 2022). In many cases microcredentials are delivered in online or a blended mode. Distance-based, self-paced and often bite-sized, their design allows different kinds of learners to approach non-formal learning, supporting an individual schedule based around family and work obligations. Whether individuals have a stipulated right to training, and funding underpinning such a right, is central to participation. Global evidence suggests that low-qualified individuals tend to benefit less from such opportunities (TUAC, 2020; ETUC and ETUCE, 2020). While microcredentials may reduce organisational constraints to participation associated with traditional forms of continuing education and training (Karolin, 2022), an increase in supply will likely not widen participation unless complemented by other measures (see Chapter 5 for more information).

Flexible and learner-based approaches to microcredentials can offer a valuable path to fostering lifelong learning. Findings from the survey also stress the link between microcredentials and their function for further learning. Learning-related objectives are among the main reasons to make use of microcredentials according to employees, the unemployed and learner respondents. Personal development has been indicated by employees (40% of respondents) as the second most relevant reason for acquiring microcredentials; getting into further studies is the third most relevant reason among students and adult learner survey participants (30%); 33% of unemployed respondents view microcredentials as an alternative to a full qualification, making it the second most common reason for attaining them. This data might suggest that respondents associate microcredentials with learning-related objectives that do not refer exclusively to the workplace but also relate to the acquisition of further knowledge for personal achievement and development. As highlighted by the survey, findings suggest that microcredentials can function as a gateway for additional learning, potentially

heading to a direction that is in line with lifelong learning principles. Results vary depending on the category considered, as presented in the figures below.

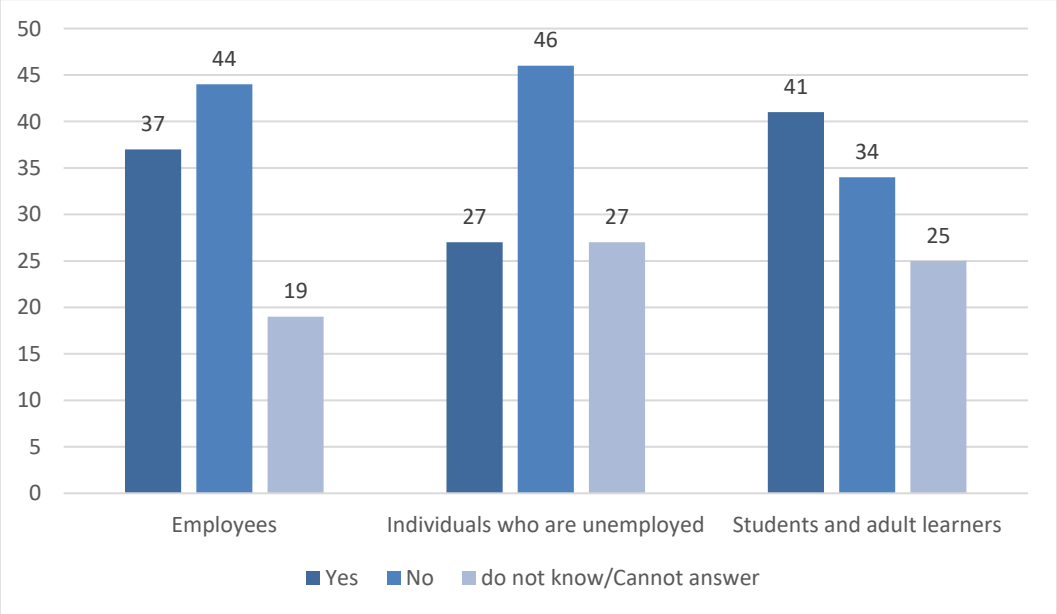
Figure 7. **Do respondents think that microcredentials could help them get into further studies?**



NB: This question was answered by survey respondents who had not in practice engaged with microcredentials and were asked to evaluate their potential benefits.

Source: Surveys of stakeholders representing employees, students and adult learners, and individuals who are unemployed.

Figure 8. **Have microcredentials helped respondents to get into further studies?**



NB: This question was answered by survey respondents who had engaged with microcredentials and evaluated their experience in terms of how microcredentials benefitted them.

Source: Surveys of stakeholders representing employees, students and adult learners, and individuals who are unemployed.

Students and adult learners, more than other categories of respondents, have indicated that microcredentials helped them to get into further studies ([34]). Among those who engaged in further learning (upon completion of a microcredential), their educational background ranges from those not having completed compulsory education to those who hold a doctoral degree. Similarly equilibrated educational levels can be found within the unemployed respondents who confirmed that microcredentials helped them in accessing further studies.

Among employees, the educational level of those who engaged in further studies after attaining a microcredential is univocally higher, and includes a majority of bachelor, master and doctoral title holders, with just four people holding a different qualification (vocational qualification, post-secondary non tertiary qualification, general upper secondary qualification). Even though most surveyed employees hold a tertiary education qualification ([35]), this observation remains significant. Of 65 survey respondents holding a non-tertiary qualification, only five were encouraged to get into further studies after attaining a microcredential. This consideration confirms a tendency underlined by literature, for which MOOC participants and adults who report engaging in non-formal education tend to be well-educated, and within the core working age group (25-54) (Kato et al., 2020). Also, PIAAC data show that organised learning in adulthood is most often undertaken by those who have completed higher education: 'among 25- to 26-year-olds, adults with higher education are 31% more likely to participate in non-formal education and training than those without higher education' (Kato et al., 2020).

When referring to non-work-related added value of microcredentials, students, adult learners and employees offered benefits such as personal satisfaction, recognition, acquisition of general knowledge and further learning. To illustrate this last point, one learner reported: 'I thought of it as an opportunity to refresh some of my favourite subjects during my studies. So, I would say personal satisfaction is the main added value in my case' ([36]). Engaging with microcredentials allows learners to continue with their professional and personal development in a lifelong learning perspective.

([34]) Most of the respondents who engaged with microcredentials that helped them to get into further studies (73%) were 24 years old or younger and were enrolled in different types of education and training.

([35]) 23% bachelor, 57% master level, 7% doctoral or equivalent level.

([36]) Interview note from Greece within the learners' interview programme.

4.2. Added value of microcredentials to employers

Key findings

- Microcredentials are useful tools to respond to changing labour market needs.
- Companies undergo changes that require them to upskill and reskill their employees, which in turn contributes positively to their competitiveness.
- Microcredentials support employers in terms of retaining and motivating their employees and addressing skills mismatches.

As automation and technological advances transform the economy, employers, along with educators and learners, recognise the value of microcredentials in helping them meet the demand for new skills. For employers, the added value of microcredentials can be understood in terms of flexibility and quick responsiveness to constantly changing labour market needs. Microcredentials help employers improve productivity and staff retention, and access responsive and affordable training for their talent pipeline. Employers find skills acquired through microcredentials more useful, given that they tend to be more focused on concrete skills for an occupation than longer mainstream courses (Cedefop, 2022c).

Employers are also entering the microcredentials market to gain benefits such as upskilling and reskilling their workforce, reducing costs of new employees who are not adequately skilled by providing them with more individualised training opportunities. Larger companies have long been offering internal training programmes, which lead, in some cases, to the acquisition of microcredentials (Cedefop, 2022c). This includes larger technology providers and consultancy companies such as Microsoft, Festo Didactics, Sap, IBM, PWC, which may provide microcredentials for their own staff, while they target external markets with training services. There are some companies that use microcredentials specifically to upskill and reskill their workforce, such as Airbnb. In such cases, there are risks that the training becomes so firm-specific that it hampers labour mobility (EIB et al., 2020), not adding up significantly to lifelong learning principles. VET systems that offer diverse opportunities of training participation, often embedded in labour relations and contractual agreements, can make a central feature of wider and cross-sectoral learning opportunities. Training offered should include transversal skills such as problem solving, critical thinking, ability to cooperate and creativity; these are nowadays believed to be essential not only for employability but also for achieving full social and democratic participation (Council of the European Union, 2018). However, specific skills are important for companies to ensure that employees can are successful in their company roles. The mapping exercise in

manufacturing and retail sectors has shown that microcredentials often concentrate on specific knowledge, skills and competences that can be directly applied in jobs.

Skill mismatch and inadequate skill signalling are a continuing problem for employers. The European working condition survey (Eurofound, 2021) found that many workers are employed in jobs that do not support the development of their skills and almost half reported that they did not have sufficient opportunities to use their skills and knowledge in their work. The findings suggest that labour market related microcredentials should be conceived as part of a wider set of policies that could lead to better skills utilisation and development. Microcredentials are often included in debates on different interpretations of skills mismatch, along with work wellbeing and the phenomenon of 'quiet quitting' ([37]) that followed the pandemic (Eurofound, 2022; Bérubé et al, 2022; EIB et al., 2023).

When asked if microcredentials will motivate companies to invest more in workforce development, 63% of employers responded positively (N=100). This indicates that microcredentials hold the potential for serving as a workforce development tool for companies. However, preconditions are that developers/providers have access to, and are capable of, deploying sound skills intelligence. The Blueprint for sectoral cooperation on skills (European Commission, 2018) provides a framework for how sector skills alliances can approach skills anticipation. Several European skills alliances have adopted comprehensive approaches, situated in wider innovation and competitiveness strategies, linked to the digital and green transitions: they include the European Battery Alliance (EBA) and the Automotive Regions Alliance.

Upskilling and reskilling are also crucial for employers. Most respondents (76%) confirmed that their company had undergone changes that required upskilling or reskilling of employees. The need to upskill and reskill was also perceived as important for the company's competitiveness by most respondents (81%). The acquisition of new work-related abilities is viewed as a right for all employees, regardless of their qualification or education level. Both the added value and purpose of microcredentials are associated to some level of skills gain, as shown in Table 11.

([37]) Quiet quitting refers to completing one's minimum work requirements without going above and beyond or bringing work home after hours.

Table 11. **Main added value of microcredentials according to employers**

Added value of microcredentials	% of total responses
To improve competitiveness of our company	61%
To improve productivity of our employees	56%
To upskill and reskill employees due to technological or non-technological changes	53%
To train employees in specific skills areas (e.g. IT, sustainability)	52%
To retain employees by offering them training options	46%

NB: respondents were given multiple choice options.

Source: surveys of stakeholders representing employees, students and adult learners, and individuals who are unemployed.

Microcredentials can potentially improve skill signalling, since they provide a useful and quite accessible tool to make people's skills more recognisable and visible (Orr, 2018). Representatives of employers' associations, labour confederations, and VET agencies from several EU countries ([38]) shared very relevant inputs on skills signalling, as well as on upskilling and reskilling. Interviewees from the VET sector and from employers' organisations agreed on the role of microcredentials in fostering workers' acquisition of new technologies and skills, which keep up with the technical evolution of different sectors, and in improving skills signalling for recruitment. As representatives of an Italian VET centre stated, 'there is a need for upskilling to keep them [the workers] in the labour market. Microcredentials can help also to make this knowledge or skills more visible, transparent, valuable and recognisable for other actors of the labour market'. A similar opinion was voiced by representatives of a research centre from Cyprus, who emphasised the need for a properly skilled, upskilled and continuously reskilled workforce, and added: 'this is actually the reason we need microcredentials: to bridge the gap between new knowledge and the market'.

Nevertheless, confused signalling can also apply to microcredentials, since digital badges and certificates do not have solid standards on delivery modes, duration and assessment processes (McGreal et al., 2022). Microcredentials are also negatively impacted by confused signalling because of the lack of overarching frameworks to enable their comparability (Brown et al., 2021). In many instances it is difficult for employers to say what these credentials signal about applicants' skills, even though other forms of microcredentials, such as industry certifications, are generally well understood. However, until alternative credentials can offer reliable and trustworthy information about relevant skills, including proper

([38]) Cyprus, Denmark, France, Greece, Iceland, Italy, Malta, Poland, Portugal, Spain, Sweden.

assessment modalities, employers will still use information such as previous professional experience and educational titles to select new personnel, while being influenced by the overall economic context and the relative supply and demand for qualified labour.

Interesting observations also arise when analysing if and how companies provide their employees with appropriate training, in the face of the evident exigence of upskilling and reskilling the workforce. The employers' survey shows that most employers who answered the question on the presence of a right to training in employee contracts affirmed that this was the case (53%), while 30% replied negatively, and the remaining 17% do not know or cannot answer.

The survey takes into consideration micro, small, medium-sized, large and very large companies; the literature indicates that larger companies tend to offer more training opportunities (Kato et al., 2020). However, survey results suggest that the practice of including training opportunities in employee contracts is not necessarily an effect of size and that the national configuration of labour markets and labour relations should be considered. A recent empirical Danish study about SMEs found that investments in training are a means to expand recruiting options. While microcredentials are often situated in a narrative about talent scarcity, the Danish study highlighted how microcredentials in many instances have become a tool to recruit from different occupational contexts. Upskilling or reskilling for a specific job and training remains part of comprehensive flexibilisation strategies and aims to improve worker wellbeing (Oxford Research and Hanne Shapiro Futures, 2022).

Respondents who confirmed the presence of an internal accreditation system for microcredentials within the company appear to reflect companies that foresee right to training or are larger; such larger companies seem more open to the recognition of microcredentials and informal training. Nevertheless, they do not necessarily provide upskilling and reskilling learning modules.

This employer survey data touches on counterpoints to a wider use of microcredentials in the workplace reflected in literature. Although microcredentials can be a useful tool for employers, allowing them to upskill their staff or to hire candidates that have up-to-date skills, supplementary work-related training can result in an additional burden for the learner, employee or jobseeker, especially if not adequately supported by employers, providers, public employment services and other relevant organisations. Concerns have also been voiced about the fact that microcredentialling is an expression of a neoliberal model that places the responsibility for paying the cost of the training on the individual. Microcredentials could be a part of a trend in which employers will mostly invest in specific skills, tailored to immediate demand to fill short-term gaps. This then reduces investment

in more comprehensive approaches from which all firms ultimately benefit in the form of high employability levels and a high overall labour market mobility. There are arguments that microcredentials may add benefit to employers and employees in terms of meeting specific technical skills related to specific tools and tasks, but that such skills are typically short-lived with limited transferability across contexts, roles or tasks (EIB et al., 2022). While some company investments in, for example, digital technologies may occur as a renewed source of competitiveness to increase customer value, other firms' investments are operational in nature and with the primary aim of cutting costs. If policy support during the pandemic has provided a lifeline to many hard-hit firms, there is a risk that workers employed in companies that, at best, invest in specific training for their needs have reduced employment opportunities. As the economy has recovered and rising job vacancies emerge, the ability of Member States to improve job opportunities for the low-qualified and for those that are affected by long term unemployment vary substantially (Causa et al., 2021). This aspect might deserve both distinctive attention from policy-makers and further analysis in research.

Some additional criticism can be addressed to the importance of skills signalling for employers, with particular reference to skill mismatches. A difference in the level of skills within an occupation is not sufficient to suggest that a skills mismatch exists. Skills mismatches are increasingly interpreted as the result of a disparity between the supply and demand of labour: the quantifying of skills-mismatch must therefore be based on the mechanisms involved in this disparity (Brun-Schammé and Rey, 2021).

4.3. Added value of microcredentials for education and training providers

Key findings

- Microcredentials make education and training providers more responsive to the needs of a wider variety of learners by expanding their offer.
- Different education and training providers in Europe offer microcredentials, to increase the institution's visibility and reputation, experiment with new pedagogies and technologies and, in some cases, generate additional income.

From a VET provider perspective, it is believed that microcredentials play an important role in the development of an individual's career path, especially through flexible and individualised learning pathways. Microcredentials can help education and training providers to maintain a responsive and agile VET system, keep it

relevant for the economy, and make people sufficiently capable and resilient to tackle current and future challenges in their working and private lives. They can also increase access to education and enable VET institutions to serve underserved communities (Box 4).

Box 4. **Micro-pathways to reach underserved communities**

Microcredentials can help VET institutions to justify the public's trust in education by reaching those who have been underserved. For example, Pima Community College in Arizona has used USD 1 million in grant money and established employment agreements with the city of Tucson to train the region's homeless population using the micro-pathways model.

The programme attracted 4 000 adult learners in the eight pathways. These were people the college never would have reached with traditional programmes.

Source: The Charles Koch Foundation.

The report on new qualifications and competences (NQCs) for future-oriented technical vocational education and training (TVET) underlines the importance of keeping TVET responsive to economic and societal changes, with the agility to address new challenges promptly (Keevy and Shiohira, 2018). There are three main ways to remain relevant:

(a) provisions for identifying relevant NQCs in a timely and accurate manner given evolution in the private sector, society and economy;
(b) procedures for integrating NQCs into flexible and agile curricula, creating flexible learning pathways, allowing for greater convergence to the general education and providing intermediary exits to the labour market;
(c) ways for implementing NQCs in classrooms and workshops with the adoption of innovative teaching and learning practices, proper teacher and trainer training, and adequate pedagogical environments.

In 2020, the European Commission encouraged higher education and VET systems to strengthen their role in supporting lifelong learning and in reaching out to a more diverse student body (European Commission et al., 2020) ([39]). More flexible and inclusive learning pathways are necessary to address a more diverse student population that includes individuals with disabilities, socioeconomic

([39]) Presented in their vision for the creation of the European Education Area by 2025. This is also included. It is amended in the first principle of the European Pillar of Social Rights and in the European Skills Agenda that access to education, training and lifelong learning must be guaranteed for everybody and everywhere (European Commission et al., 2020).

difficulties, migrants, the long-term unemployed and adult learners ([40]). Learners from disadvantaged backgrounds are overrepresented among low-qualified individuals, while the COVID-19 pandemic has possibly worsened disparities. Microcredentials are in this context perceived as a means to allow those who have left early to return to education, and accommodate those who wish to access VET and higher education systems to acquire or update skills (European Commission, 2020a). Education and training providers can be seen as having responsibility to expand their offer to reflect this social aspect and be more inclusive to a wider variety of learners.

Different education and training providers in Europe are already offering microcredentials, as was indicated in the previous stages of this research (Cedefop, 2022c). The reasons for this include increasing the institution's visibility and reputation, experimenting with new pedagogies and technologies, and, in some cases, generating additional income (McGreal et al., 2022). In 2014, The European Association of Distance Teaching Universities (EDATU) conducted a survey of European universities. Results showed that visibility of institutions was a primary objective of offering MOOCs (that are sometimes considered to be a branch of microcredentials), together with reaching new students, providing flexible learning opportunities and exploring innovative pedagogy. Less than 1% of survey respondents chose generating income as their primary objective (Jansen and Schuwer, 2015; McGreal et al., 2022).

Among VET providers surveyed ([41]) 38% offered microcredentials. The top two reasons to provide microcredentials are to respond to the needs of learners for specific education and training opportunities and the needs of employers for specific education and training to their current or future employees (Table 12).

([40]) Inclusiveness is described as a funding principle of the European Education Area and is one of the six dimensions on which the ambitious transnational educative scheme for 2025 is built.

([41]) VET providers were surveyed in 2021, in the previous stage of this research that concentrated on the mapping of microcredentials in European in European labour-market-related education, training and learning (Cedefop, 2022c).

Table 12. **Main reasons to offer microcredentials**

Reasons to offer microcredentials	% of total responses
To respond to the needs of learners for specific education and training opportunities	69%
To respond to the needs of employers for specific education and training for their current or future employees	67%
To facilitate cooperation with labour market actors such as employers, business associations or chambers of commerce	39%
To stay apace with educational innovations	35%
To increase the speed with which various education and training needs are being met	31%
To increase awareness about our services among learners and employers / branding opportunity	28%
To respond to the recommendations by national authorities to offer microcredentials	23%
To facilitate cooperation with other education and training providers	14%
To secure additional funding	12%
Do not know / Cannot answer	6%
Other	4%

NB: Respondents were given multiple-choice options.
Source: Survey of organisations representing VET providers (n=71).

The top reason for an organisation not to offer any microcredentials, as presented in Table 13, is related to the fact that only full qualifications may be offered or that employers do not recognise / understand the value of the acquired competences that microcredentials signal. These findings can indicate that learners and employers do not yet consider that microcredentials have significant exchange value. However, these findings come from the first iteration of surveys when the European Commission had just announced their definition and discussions about microcredentials had just started. The second iteration of surveys showed that learners and employers have more positive opinions about microcredentials and have more knowledge about them.

Table 13. **Main reasons not to offer microcredentials**

Reasons not to offer microcredentials	% of total responses	Count
Our organisation offers only full qualifications	41%	11
Employers do not recognise / understand the value of the acquired competences that microcredentials signal	26%	7
Learners are not interested in / do not value short learning activities that can be completed with microcredentials	22%	6
Microcredentials are not accredited by responsible agencies / bodies	19%	5
Do not know / Cannot answer	19%	5
Microcredentials are not on the national policy agenda	15%	4
Microcredentials are not compatible with the national qualifications framework	11%	3
Other education and training providers do not recognise microcredentials	11%	3
Microcredentials are not funded like other qualifications and credentials	7%	2
Other ([42])	7%	2

NB: Respondents were given multiple-choice options.
Source: Survey of organisations representing VET providers (n=27).

When asked if the need for microcredentials will grow in the future, 27% of VET providers strongly agreed and 44% agreed with this. According to the survey respondents, this is mainly related to the growing need to tailor education and training to individual needs and to make it more learner-centred (Table 14).

Table 14. **Most important reasons for the growing need of microcredentials**

Reasons for the growing need of microcredentials	% of total responses	Count
To tailor education and training to individual needs and to make it more learner-centred	55%	74
To upskill and reskill the workforce	54%	73
To encourage lifelong learning behaviour among individuals	52%	69
To provide access to education and training to a greater diversity of learners	49%	65
To respond better to the changing labour market needs	48%	64

([42]) Two respondents indicated that they either want to engage with microcredentials or are currently experimenting and interested in them but are awaiting broader acceptance of them in the labour market.

To increase the speed with which emerging lifelong learning opportunities are being met	35%	47
To provide more affordable education and training opportunities to learners	32%	43
To assist transition to labour market for new graduates	23%	31
To address skills needs in emerging sectors of the economy where qualifications are not yet formalised	18%	24
To facilitate digital transformation	16%	22
To facilitate greening of the economy	10%	14
To address structural unemployment	9%	13
To sustain labour market reforms	5%	6
Do not know / Cannot answer	2%	3
Other	1%	1

NB: Respondents were given multiple-choice options.
Source: Survey of organisations representing VET providers (n=134).

When asked about the integration of microcredentials into a broader education and training system, interviewees highlighted both the associated risks and advantages. Respondents generally perceive the integration of microcredentials into the wider education and training system as a positive rather than a negative addition. The dominant views are that formal education and training providers should maintain their function as providers of fundamental knowledge (for formal and higher education) and of full qualifications (for VET providers). The main concern among some learners and employers is that an excessive and unregulated proliferation of microcredentials in formal education and training might devalue the intensity and importance of formal qualifications, needed for a well-educated society and in the labour market ([43]).

([43]) On this topic, an employer in research and technology in Cyprus commented: 'A university education is a currency with a certain value and microcredentials are here and will be here in the future to support the deployment of the new knowledge to the market. But, of course, we will always need university degrees and postgraduate studies. The objective of this level of education is different'.

CHAPTER 5.

Support measures for end users of microcredentials

5.1. Social and political context

Various studies indicate that the low-qualified participate the least in structured training offers (Council of the European Union, 2022b). The most frequently mentioned constraints are time and lack of financial means, with variations across the Member States ([44]). Other reasons, particularly prevalent among the low-qualified, include not meeting prerequisites of the training, not having access to the internet or computers, and having a negative previous learning experience ([45]). However, the most crucial barrier among the low-qualified is that they do not see the need for training ([46]). Over time, a range of policy measures has focused on motivational aspects of continuing education and training and at underlying causes of non-participation. In contrast, fewer policy measures take the point of departure in the broader socioeconomic environment of low-qualified non-participants, particularly the working environment that could hamper their participation in learning (Güner and Nurski, 2023).

Issues such as time and financial constraints are, in policy terms, still perceived as the key barriers to training. The time, place, and content flexibility of microcredentials, and, more recently, the implementation of ILAs, illustrate how policy measures prioritise frequently heard claims about causes of non-participation. This is perhaps because the deeper socioeconomic factors are less understood and harder to tackle. A Danish study found that company strategies significantly impact the characteristics of the learning environment in ways that shape individuals' perceptions of opportunities (Oxford Research and Hanne Shapiro Futures, 2022). In conjunction with automation processes, employers may

([44]) Malta has the highest number referring to lack of time as a barrier (68.8%), while Greece has the highest number referring to costs as a barrier to training participation (46.9%).

([45]) In Bulgaria and Germany, more than 50% of the low-qualified survey participants referred to these reasons (respectively 54% and 52%). In Belgium, Greece, Spain, France, Hungary, Austria, Romania, Finland and Sweden, other reasons were stated by more than 30%

([46]) 91.7% of the low-qualified identified this barrier in Bulgaria and 82.7% in Lithuania. Lack of need for training was least commonly referred to in Ireland, Luxemburg, and Cyprus at respectively 37.3%, 35.9%, and 34.1%.

pursue different modes of organising work. Whereas some companies reorganise work primarily to gain efficiencies, jobs at the shop floor will typically become routinised and narrow in terms of tasks and task variation, followed by lay-offs. The introduction of new technology will typically be presented in the form of a half-day hands-on training by the vendor. Employers interviewed typically bring forward arguments including that training is not needed due to pressures from production orders. It is generally thought that shop floor workers will perceive training as a waste of their efforts because they will return to the same jobs and tasks. Workers might believe that their mobility is limited because the routinised jobs over time have reduced 'their labour market value' (Oxford Research and Hanne Shapiro Futures, 2019). Supply-side policies such as microcredentials are shaped by broader socioeconomic factors and are likely not to create a broader outreach unless demand-side factors are considered (Anderson and Cort, 2016; Clochard and Westerman, 2020).

5.2. User-centred guidance and counselling

Key findings

- Comprehensive information and guidance about microcredentials is necessary to enable learners to make well-informed decisions.
- Information tools, like registers or catalogues of credentials, would support the wider uptake of microcredentials and would help learners find trustworthy providers quicker.
- Skills intelligence is critical to ensuring the provision of microcredentials is responsive to emerging needs.

Many obstacles to learner participation in IVET and CVET are associated with information-based barriers. These may be related to support and guidance provided before, during, and after the learning experience, information provided about the microcredentials, and their content. Comprehensive information about microcredentials is necessary to enable learners to make well-informed decisions about their learning engagements and aptly fulfil their learning needs. There are many different types of learners within the labour market context, and each of the learner groups has different needs; information-based measures should be tailored to fit the needs of all learners and learning contexts.

As in any learning experience, learner support is needed to help the learners meet their learning needs and attain learning outcomes (Xie et al., 2019). According to the European Commission's Council Recommendation on a

European approach to microcredentials for lifelong learning and employability, Member States should ensure that information on identifying and selecting microcredentials is incorporated within lifelong learning guidance services provided by stakeholders ([47]) to learners, including disadvantaged groups (European Commission, 2021). As confirmed by interview programme VET provider respondents ([48]), support activities could be offered from the time learners inquire about possible learning and training courses through teaching and tutorial activities to post-completion. Support for learners may include counselling and guidance, assistance with application and registration, infrastructure, and human resources for delivery of services, remedial activities, and a range of other services (depending on the learning or training provider). It has been indicated that learner support is being provided by nearly all VET providers interviewed ([49]), yet support activities vary depending on the type of the organisation (public employment agency, workforce development agency), learners (employed/unemployed), and available resources (facilities, workforce). It is, however, unclear if existing learner support is being monitored, which limits insights into its practical quality and value-added to the end users.

Literature suggests that quality learner support tailored to fit learners' needs can help to support learners' choices, facilitate their learning, accelerate their transition to employment/further learning (Cedefop, 2019), and increase student retention and completion rates (Aluko and Hendrikz, 2012; Lee et al., 2011). Public employment services have an important role to play because they not only directly connect jobseekers to employers but also analyse labour market needs, provide career guidance and assist jobseekers with finding training opportunities. It is crucial that public employment services cooperate with different labour market actors in jointly creating training opportunities, as well as identifying potential participants for such training and providing personalised support.

([47]) Such as university career centres, public employment services (PES), private employment services, social services, and other guidance services (employment, career, education and training, coaching).

([48]) The stakeholders representing VET providers were from Denmark, Greece, Ireland, Italy, Malta, Northern Macedonia, Portugal, Spain, Sweden.

([49]) The only stakeholder representing VET provider which disclosed that no learner support or guidance was available at their organisation was from Portugal.

Box 5. **Microcredentials developed by the Danish employer organisation TEKNIQ in cooperation with the public employment services**

The Danish employer organisation TEKNIQ has, in partnership with the Trade Union for Electricians and the Trade Union of Plumbers and Allied Workers and in cooperation with the public employment services to identify potential participants for microcredentials. They have developed two microcredentials to upskill long-term unemployed and low-qualified workers to become cable and pipe fitters.

The demand for these skills has increased with the green transition. A new authorisation act was implemented a few years ago, which permits that individuals without a full VET qualification can lay pipes and pull cables provided they have completed the courses and passed the tests, which has been certified by the Danish Safety Agency. The courses are offered through the Danish labour market training system AMU. Experiences so far show that the majority who are trained as cable and pipe fitters get a job with good prospects.

Source: Tekniq, 2020.

The diversity in the offer has the potential to target specific user groups better, but also increases the complexity of identifying which training is relevant for users. At present, a range of providers, other than traditional VET providers, offer microcredentials. Standards that would allow comparability regardless of the type of provider could improve the quality of guidance and counselling services. Standardisation would benefit those users who traditionally face substantial barriers in taking advantage of continuing training offers, including the low-qualified, elderly workers, those with a non-standard employment contract, and the unemployed. They often experience difficulties in their work-based learning life trajectory, yet the ability to compare microcredentials and their value, regardless of who the providers are, is currently limited (Council of the European Union, 2022b).

Comprehensive information on the intended learning outcomes of microcredentials is necessary to enable learners to make well-informed decisions independently, ensuring that their learning needs are met, that the learning experience is worthy of their potential financial investments and time spent engaging in a learning experience. Microcredentials usually display the title and date of issue, the identity of the holder and provider, as well as the learning outcomes achieved (Cedefop, 2022c). The elements that are least often included by VET providers, employer and employee organisations are prerequisites needed for enrolment, duration, relationship to existing qualifications, and standardisation (Ibid.). The study indicates that there are currently sizable gaps in information provided to learners, at least in the context of VET. This creates a major obstacle for the learners to compare microcredentials and to make an informed decision when addressing their upskilling and reskilling needs, as it limits the understanding

of the enrolment requirements, the process of the learning opportunity, and the potential learning outcomes. Oliver (2019) suggests that microcredentials should also contain information such as learning outcomes or competences, learning or teaching delivery formats, use of credits or workload, standards or assessment, and format.

Career guidance and counselling services that are based on informed insights about labour markets and tailored to individual needs are vital to ensuring that more adults can benefit from continuing training and further learning. Real-time labour market data can support insight into labour market dynamics and opportunities, which is an essential feature of the supportive environment. The data deepen the understanding of specific labour markets and how they evolve in real-time as the point of departure for building micro pathways to improved employment opportunities (Burning Glass Institute, 2022). Real-time labour market data enabled by AI complement human labour market guidance and expertise.

There are several dimensions which labour market data could cover to improve providers' services and, as an extension, enable learners to make well-informed decisions when choosing a learning engagement. Since microcredentials function as a skills currency within the labour market context and they are situated within European policy, labour market data could benefit different groups of end users in various labour market contexts. First, from the perspective of microcredential providers, it is important to monitor what industry specialists and skills have a high demand in the labour market. As described by an interview respondent which represented PES provider from Spain, such labour market data can help tailor training to correspond to labour market needs. In addition, it can help microcredential providers to give more detailed information about their offers to learners. As indicated by the survey results, such information might be essential for the unemployed. Receiving guidance on microcredentials, with a fact-based indication of which learning outcomes might increase learners' employability in the labour market, would ensure that learners can make well-informed decisions about their educational choices.

Skills intelligence is critical to ensuring the provision of microcredentials that are responsive to emerging needs. However, even if there are countries with advanced skills anticipation mechanisms, there is evidence that skills forecasting is only used in a patchy way to inform the design of continuing training and further learning (Shapiro, 2022). One current challenge could be that existing survey tools do not allow for registration and monitoring of outcomes of non-degree credentials.

Employment services in Sweden and Denmark, and one of the Danish trade unions, use AI in their outreach and personalised guidance. This task- and skills-based approach demonstrates the links between an individual's current skills

profile and new and improved job opportunities that are within reach, provided very specific additional skills are obtained. Staff from a Danish trade union underline the importance of showing how realistic this is for an individual. In France, measures such as Jobflix show promising results. There is also an emerging awareness that such measures should be complemented by a robust and impartial monitoring and evaluation framework to understand labour market outcomes over time (Mrvcic and O'Dohert, 2022; AI Sweden, 2020).

Informational tools, like information registers would support acceptance and recognition of microcredentials, helping learners to compare accredited microcredentials and find trustworthy VET providers quicker (MICROBOL, 2022). Even though such practices are not currently prevalent within the EU, some third countries have already started registers of microcredentials (Box 6). The most similar practice implemented at EU national level is the register/catalogue of regulated qualifications. Same or similar systems could be used to register recognised microcredentials in national contexts. In this case, Member States could support the European National Information Centre (ENIC-NARIC) network to develop recognition procedures for microcredentials issued by different types of providers, including through exploring the possibility of automatic recognition of microcredentials (European Commission, 2021).

Box 6. **Register of microcredentials approved by New Zealand's Qualifications Authority (NZQA)**

The register of NZQA-approved microcredentials is a website that displays all microcredentials approved by the agency. The register includes information about the title, level, credits, developer of the microcredentials, their approval and review dates.

Additional information is also available about the aims, outcomes, and education institutions that provide the approved microcredentials.

This allows the users to compare microcredentials that are approved by a government institution and quickly find available providers.

Source: NZQA website.

5.3. Financial support measures

Key findings

- Companies can overcome skills shortages and skills mismatches by investment in training. However, investment in continuing training by companies and the average training investment per employee substantially differ within and between Member States.
- There is large variation in terms of costs of microcredentials. High costs can present significant barriers to engage with microcredentials, especially for individuals who are more disadvantaged or unemployed.
- Support measures (such as State subsidies or discounts for specific groups) can cover the costs of microcredentials.

Transformation in European labour markets has rendered obsolete traditional funding models, where most public funding is allocated to full qualifications in the early part of an individual's life. Countries' skills strategies and concerns about structural skills mismatches are driving changes in funding options. Companies fund most continuing education and training in the EU, yet the nature of investments differs significantly. Some companies primarily invest in training in a very specific way relating to issues such as regulatory compliance requirements or focusing on equipment use and maintenance. Other companies have a much broader scope, seeing investments in their workforce and employee wellbeing as a critical parameter for productivity, innovation and customer-centricity (Andrews et al., 2016; Toner, 2011).

Companies can overcome skills shortages and mismatches by investment in training. However, there are substantial differences within and between Member States in terms of investment in continuing training by companies, while the average training investment per employee also varies substantially across European countries. Non-standard labour contracts negatively affect investment in continuing training (Eurostat, 2022; Brunello and Wruuck, 2020). Institutional framework conditions and the configuration of national VET systems, including CVET's relative role and evolution, also affect investment patterns (Brunello and Wruuck, 2020). In the current context, marked by increased automation and digitalisation, the extent to which companies prioritise training, whether for the workforce as a whole or selected groups, impacts individual mobility and job opportunities.

The European Investment Bank has analysed how enterprises' investment in advanced technologies impacts the inclination to invest in the training of their

employees ([50]). Despite the narratives about digital transformation and skills needs, the study finds that employers implementing advanced digital technologies reduced their investment in training per employee, especially in countries where employment protection legislation is less strict or where public training expenditure as a share of GDP is lower.

Studies conducted in 2015 found that nearly one-third of adults (aged 25-64) and companies in the EU refrained from engaging in education and training due to its high cost (Cedefop, 2019). This research, and the findings of the European Investment Bank, stress the importance of financial support to increase the uptake and facilitate the accessibility of microcredentials for learners and employees. Interview respondents representing employer and employee organisations ([51]) indicated that employer provision of short learning experiences for employees may vary, showing that there is no status quo when it comes to the responsibility of upskilling and reskilling of the employees. Some respondents indicated that the responsibility to upskill and reskill may fall to specific groups of employees, particularly under low-income groups. As described by an interview respondent representing a Slovenian employee organisation: 'when we go to the really low-skilled and the low-paid sectors, […] it falls under to employees to be motivated and to try to find the way and the responsibility to do the upskilling themselves. Unfortunately, those are still the low-skilled, low-paid jobs.'

Considering that individuals with low incomes have additional unique barriers to education, like limited or no access to learning materials, supportive technology, or places to study (Bamber and Tett, 2010), this indicates that the responsibility to upskill and reskill falls to groups of employees that have fewer opportunities to do so. The literature suggests similar tendencies among other learner groups. For example, research conducted by BIS (2013) found that one in six young people who are not in education or employment reported both the cost of courses and their financial situation as barriers to learning. More specifically, losing entitlement to benefits resulted in young people turning down learning opportunities (ibid.). This is consistent with the survey results: 38% of the unemployed surveyed indicated that 'Low or no cost of training for the learner' is among one of the most important features of microcredentials for the added value of the training (Table 15). Financial support measures are particularly important for employees, students and adult learners, and individuals who are unemployed.

([50]) The analysis used enterprise-level data from the 27 EU countries and, in addition, from the UK and the USA.

([51]) Stakeholders representing employer and employee organisations were from Belgium, Cyprus, France, Iceland, Slovenia.

Table 15. **Importance of 'Low or no cost of training for the learner' aspect for the added value of the training**

Learner group	% of total responses
Employees	28%
Students and adult learners	21%
Unemployed individuals	38%

Source: Surveys of stakeholders representing employees, students and adult learners, and unemployed individuals.

Even though most countries within the EU provide some type of financial support for the learners, training vouchers are still one of the most prevalent available financial support measures for learners in the Member States ([52]). Training vouchers provide individuals with direct subsidies for training purposes, yet they are limited: they are often jointly financed by the individual, and do not allow for any accumulation of rights or resources over time. This means that certain end users, particularly those who are most in need of the financial support for upskilling and reskilling (low-income groups and the unemployed) might experience obstacles in using training vouchers.

One of the ways to support learners financially, simultaneously promote lifelong learning and aid the uptake of microcredentials is individual learning accounts (ILAs). The ILA measure is intended to increase opportunities for the European workforce to participate in continuing training. More specifically, these accounts allow individuals to accumulate their training rights over time, in line with the national rules. Even though the design of ILAs might differ, they share some key features, including accumulation of learning and training rights, focus on the learner's choice to engage in the training they desire, and containment of funds dedicated for learning or training purposes. They are focused on an individual, not on an employer or a specific job, they promote personal responsibility of individuals to engage in lifelong learning and develop their careers, and they allow training providers to respond better to employee needs. For several years France has had a personal learning account measure in place, reformed over time as presented below.

([52]) EU countries that use training vouchers to support their learners include Germany, Spain, Estonia, Croatia, Italy, Luxemburg, Netherlands.

Box 7. **Personal Training Account in France**

The *Compte Personnel de Formation* (Personal training account) was introduced in France in 2015, funded by a compulsory contribution from businesses with more than 10 employees, and with self-employed workers paying a flat-rate contribution to their training fund. The scheme is open to all economically active persons, and is fully transferable throughout the individual's working life, from the time they enter the labour market until they retire.

Data available for the period 2015-18 show that, despite a rapid gain in momentum, utilisation of the CPF by the economically active has remained low and tends to replicate the unequal access to training seen under traditional training access schemes. In 2019, the existing social partner joint committees (CNEFOP, FPSPP and CNCP) were replaced by a new agency, dubbed France Compétences, which took over the responsibility for regulating the continuing vocational training system and validating the quality of the training provided. One of its tasks was also to draw up the list of certifications entered in the National directory of professional certifications (RNCP) and the Specific Register.

The legislation also confirmed the eligibility of measures that are not traditionally under the umbrella of 'training': skills assessments, measures to validate experience gained in the workplace, preparation for driving tests, and training to support and advise people to achieve their goal of starting or taking over a business. The implementation of France Compétences also led to a single, compulsory certification for all training providers as a precondition to being part of the funding scheme.

Source: (Perez & Vourc'h, 2020) ([53]).

Additional financial support measures might help VET providers to develop and maintain microcredentials. For example, the European Social Fund Plus, a programme at EU level, provides funding on a project-by-project basis which might be used for microcredentials. Even though such programmes allow providers and individuals to fund their educational endeavours, these may be one-time-only projects which do not promote continuing learning.

There are some financial support measures available that may be utilised by learners to support the use of microcredentials. National initiatives, such as *Post-18 Education and Funding* in the UK, provide funds for individuals specifically for education, yet they are limited and often focused on specific learner groups. For example, *Post-18 Education and Funding* is oriented towards higher education studies (Augar, 2019).

The National Commission on Vocational qualifications (*Commission Nationale de la Certification Professionnelle*) lists Microsoft office specialist as an approved programme in their registry of qualifications, making it eligible for State funding.

([53]) For an in-depth discussion of the French Individual learning account scheme, its implementation and changes over time, see: Coralie Perez C.; Vourc'h A. (2020) Individual training access schemes. Compte Personelle de Formation. OECD.

The same programme is recognised by the Irish national qualifications authority (Quality and Qualifications Ireland, QQI) and approved as corresponding to NFQ Level 5. In Germany, Festo Didactic offers certifications in automation based on part-time professional training in automation technology for skilled shop-floor workers, which is certified by a German chamber. Similarly in Denmark, the Financial Training Centre, which is owned by a range of Danish banks, had its course in management in financial services referenced to in the Danish qualifications framework at level 7; this corresponds to a master degree offered in continuing professional education by public providers and in a market that is highly competitive. A range of certificates and certifications also exist which, in terms of functionalities and characteristics, can be classified as microcredentials but have evolved, serving an industrial purpose in a different social space; examples are in relation to compliance or in emerging fields such as energy auditing with standards and assessment defined by a professional body.

Microcredentials are often more affordable for learners than a full qualification (McGreal et al., 2022), though their costs vary. Many are offered for free, especially in cases where an individual only attends the course without being issued a certificate, even though there has been a shift from free MOOCs modules to fee-paying offerings.

Interviews confirm that learners often perceive the costs of microcredentials as a significant barrier. Industry certifications, whether offered as entry pathways to the labour market or as further professional development, typically come as a cost. Nevertheless, some providers now offer a job and/or a salary increase as a guarantee return of payment, should the benefits not be accrued by a participant. The mapping of microcredentials in manufacturing and retails sectors showed that there is a large variation in terms of the costs of microcredentials (see Table 16). They can vary from several euros (especially if provided by large platforms) to several thousand (for specialist certificates). The mapping also showed that, in some cases, there are different support measures in place, such as State subsidies, or there are discounts for specific groups of learners.

Table 16. **Costs of microcredentials in manufacturing and retail sectors**

Sector	Title of microcredential	Country	Cost/Funding
Manufacturing	Safety procedures in medical processes	France	NS
Manufacturing	Quality management system and welding coordination	Denmark	DKK 384. State subsidies available
Manufacturing	GMP and GDP certification	Germany/Europe	EUR 1 500-1 800. Exact price depends on the specific course
Manufacturing	International welding engineer (IWE)	International (41 countries)	Available funds depend on each national organisation
Manufacturing	International welding practitioner (IWP)	International (41 countries)	Available funds depend on each national organisation
Manufacturing	Qualification in additive manufacturing	Germany, France, Italy, Spain, UK, Portugal, and Turkey	Cost varies depending on the country
Manufacturing	Machine training courses	Germany	NS
Manufacturing	CNC specialist certificate	Austria	EUR 4 368
Manufacturing	VET award in process manufacturing	Malta	NS
Manufacturing	3D printer operator for industrial applications	Czechia	NS
Manufacturing	Industrial health and safety advisor	United Kingdom	Free for applicants. Funded by the UK government ([54])
Manufacturing	Operator of CNC machines	North Macedonia	NS
Manufacturing	International welding consultant	Finland	EUR 4 900
Manufacturing	Robotic process automation fundamentals masterclass	Ireland	Partly funded by Skillnet Ireland. Cost with Skillnet grant is EUR 320
Manufacturing	Working on an ammonia (NH3) installation safely	France	EUR 1 100 ([55])
Manufacturing	MAG welding with an electrode wire	Poland	PLN 800
Manufacturing	Introduction to foundry technology	Sweden	SEK 200. Discounts available

([54]) The course is free if the trainees take the course by themselves and not through their employer.

([55]) Indicative price. Total or partial coverage is possible depending on the financing of companies or partners.

Sector	Title of microcredential	Country	Cost/Funding
Manufacturing	Manufacturing operations for medical device/pharma industry (life sciences manufacturing operations)	Ireland	NS
Manufacturing	Supply Chain Manager – Operational Level	Greece	EUR 600. Discounts available for selected categories (unemployed, youth, disabled people, large families) ([56])
Manufacturing	Festo's mechatronics certification programme	United Kingdom and worldwide	NS
Manufacturing	Level 1 certificate in Introductory welding skills	United Kingdom and worldwide	GBP 118
Manufacturing	Lightweight professional	Worldwide	EUR 984 plus EUR 235 examination fee ([57])
Manufacturing	Junior expert in circular economy	Italy	Financed by the Emilia-Romagna Region. Funding to applicants available through ESF or Erasmus+
Retail	Common food hygiene	Denmark	Up to DKK 7 140. State subsidies available. Learners with a higher education pay the full price
Retail	Award in retail	Malta	Free for Maltese and EU applicants. Extra-EU candidates pay a fee ([58])
Retail	Sales for store employees	Norway	Free for applicants employed (or formerly employed) in the retail industry. Financed through the retail industry programme
Retail	Profitability of marketing and sales organisation in the luxury goods sector	France	Funding depends on the status of learners, i.e., initial, job seeker, in employment
Retail	Award in retail operations	Malta	NS
Retail	Drugstore employee (DM druggist)	Slovenia	NS

([56]) Discount policy for the Unemployed (30%), European Youth Card Holders (30%), the disabled (25%), large families (20%), etc. A special 20% discount applies for the duration of the COVID-19 pandemic.

([57]) Cost for the introductory model.

([58]) Fees for international candidates depend on the selected course.

Sector	Title of microcredential	Country	Cost/Funding
Retail	Fashion retail transformation	France, Global	USD 39
Retail	International e-commerce	Sweden	SEK 3 900
Retail	Diploma course in retail management	Global	EUR 18.99
Retail	Customer relationship management using the CRM system	Poland	NS
Retail	Award in credit for retail banking	Malta	NS
Retail	IKI Training Programme	Lithuania	NS
Retail	MAXIMA training programme	Lithuania	Costs covered by the employer
Retail	Certified e-commerce & social media expert	Austria	EUR 595
Retail	Merchant unit manager (MUM) title	France	NS
Retail	Understanding retail operations	United Kingdom	GBP 299
Retail	Specialist in retail sales	Germany	EUR 5 400. Available funding covers up to 70% (funding available under the Advancement Training Promotion Act)
Retail	Practical sales / merchandise knowledge	Germany	EUR 149
Retail	Digital marketing	Global	Membership to the Business of Fashion Organisation grants access to courses and learning materials for free
Retail	Non-formal vocational training programme in electronic cash registers and cash register systems management	Lithuania	Free for graduates ([59]). EUR 18 for learners who apply through a non-State-funded option
Retail	Marketing and sales techniques	Greece/global	EUR 1 150. Discounts available for European Youth Card holders, people with disabilities, unemployed individuals, large families

Source: Prepared by Cedefop based on the desk research and ReferNet questionnaires.

([59]) Free for graduates of 10 and 12 classes of compulsory education and for graduates of a vocational or higher school.

5.4. Systemic and organisational support measures

Key findings

- Recognition and validation of prior learning make microcredential pathways more accessible, inclusive and can motivate the low-qualified.
- Skills-based approaches to assessment and recognition can potentially be a better way to consider how skills are acquired in working life.
- Collective agreements could be a means to approach validation and recognition systemically and support the efforts of trade unions, which, in many cases, play an active role in their members' guidance and career counselling.

Microcredentials, personal learning accounts, validation and recognition of prior learning have been positioned as policy levers in supprting a more inclusive dual transition (Council of the European Union, 2022b). The Irish example shows that recognition of prior learning can motivate the low-qualified when skills are made visible through, for example, a digital badge (Skillnet and UCC, 2019). Since adult learning occurs mainly in informal contexts through work and leisure time activities, using microcredentials in validation and recognition processes can be an important factor in making skills visible and portable, if they are issued in a digital format. Some Member States, such as France, have implemented comprehensive approaches to validation through *validation des acquis de l'expérience* (VAE), defined as an individual right that allows access to any qualification listed in the national directory of qualifications. Employers are obliged to inform their workers about the VAE in their regular employee interviews (*Entretien Professionnel*) (Villalba-Garcia and Chakroun 2019; TUAC, 2020). Similarly, the Swedish government has implemented a National validation strategy, which states that validation as a pathway to qualification should have the same level of legitimacy as formal education and training. It is available across the country, at all levels of the education system and for a broader range of qualifications in working life.

Skills-based approaches to assessment and recognition, taking as point of departure working life tasks-based skills and performance standards, can potentially be a way to consider better how skills are acquired in working life. This is increasingly relevant, considering that occupational profiles are less stable than previously as new business models emerge, rapid developments in digitalisation are taking place and jobs become more transitory. The Swedish Employment Agency and the research institute RISE are presently testing a new skills-based approach to validation and recognition. The pilot covers formal and non-formal learning at different levels and through validation and recognition of prior learning,

and the use of microcredentials to stimulate more effective skills utilisation and further development.

Recognition of prior learning is also connected to job development with new tasks and responsibilities; it increasingly features in collective agreement negotiations. Such agreements could potentially be a means to approach validation and recognition systemically by integrating the rights to recognition and validation in the collective agreements and in conjunction with stipulated rights to training, which has evolved over time in many Member States. It would support the efforts of trade unions, which in many cases play an active role in their members' guidance and career counselling (TUAC, 2020).

The Danish Trade Union in finance is currently considering options to introduce skills and performance-based standards rather than qualifications as the point of departure for recognition of prior learning. This could be the next step in comprehensive approaches to upskilling, reskilling and further learning in the collective agreements with the Financial Services Employer Organisation. It is seen as a means of strengthening job and career options for its members in a labour market at the forefront of digital transformation (Shapiro, 2023). However, validation and recognition processes in many Member States are cumbersome. The use of validation and recognition of prior learning remains limited. When validation and recognition take place with the point of departure being a formal qualification, a range of skills and competences may not be recognised, especially in the emerging skills areas not yet covered by qualifications.

CHAPTER 6.

Conclusions

Microcredentials have gained increasing policy attention and have been positioned as ways to create more responsive and accessible upskilling and reskilling offers. Many countries in Europe are piloting microcredential programmes and considering adapting national legislation but microcredentials themselves are not considered a standardised education or training offer, due to their varied nature and duration.

While learners and employers associate microcredentials with positive labour market returns, provision is currently fragmented. The massive increase in short credentials could potentially increase opportunities to participate in training, but realities are more complex. In a context where provision has been booming, learners and small companies are likely to have an increased need for supporting structures and tools to assess which microcredentials could be relevant in their specific context. However, regardless of their labour market status, most learners do not associate the added value of training through microcredentials with guidance and counselling. This could mirror that the term microcredentials is still new and may not be used in a guidance and counselling context. Nevertheless, the study findings underline that microcredentials are a potential tool. If microcredential provision is not underpinned by supporting structures and tools and sound labour market intelligence, their added value will often be limited and could even reinforce existing inequities.

Learners and employers voice a common concern regarding transparency in the provision and the reputation and trustworthiness of providers. If microcredentials are not included in national qualifications frameworks, potential users have limited means to assess and compare their quality aspects and providers. The Council Recommendation on Microcredentials provides an important contribution to a common framework that can increase comparability. However, as a perceived skills currency, the added value of microcredentials ultimately concerns labour market returns for end users such as promotion and transition to full employment after a spell of unemployment; for employers' retainment of labour and productivity effects are valued.

Concerns have been raised over whether microcredentials could lead to unbundling of qualifications. The study shows that most learners and employers see microcredentials as an opportunity to build skills on top of a qualification. This targeted provision may be of benefit for learners who have a solid foundation of knowledge, skills and competences previously acquired through qualifications. The

question that arises is how microcredentials should be designed if the low-qualified and learners at the edge of labour market are to benefit the most.

The study underlines that microcredentials are based on different conceptualisations of 'being skilled'. On the one hand the term is used to denote short courses that target occupation-specific, operational skills. In this respect they correspond to narrow tasks often with limited transferability in the labour market. On the other hand, microcredentials are considered as the outcome of sectoral, inter-sectoral or cluster-based partnering approaches to upskilling and reskilling. These approaches are typically based on mapping occupational changes in the labour market. The growing role of transversal skills and competences comes to the fore. In this context, microcredentials can become a pathway into improved employment opportunities and employability; it is a matter of how skills and the notion of being skilled are considered in the context of a changing economy. These partnerships, as well as the nature of provision, hold the potential to develop into skills ecosystems at the sectoral or regional level. While there are different definitions of skills ecosystems, they are based on the recognition that the relationships of actors and the socioeconomic contexts in which they operate have an impact on skills utilisation and opportunities for individuals to develop and thrive. In that scenario microcredentials could be part of an innovation and quality of jobs strategy.

At present, scenarios for microcredentials in European labour markets remain uncertain. Further experimentation and knowledge sharing across the many evolving initiatives is needed to support Member States in their efforts to explore the role of microcredentials in national skills formation systems.

A forward-looking research agenda

Systematic policy experimentation could be a feature in a comprehensive research agenda for microcredentials. It would allow for a user-centric approach to exploring inherent assumptions and systematically test factors critical to the design, engagement in and added value of microcredentials. In a context where approaches to microcredentials are evolving in parallel, a mixed-method research approach could enable that outreach and support strategies to engage more learners and small companies. This in turn could allow for deeper analysis of the evolving initiatives in their wider institutional environment, which could contribute to a deeper understanding of the role of public policy in diverse national, regional and sectoral contexts.

Research methods which combine data-gathering over time with qualitative approaches such as scenario processes could ensure a multi-user lens and rich

stakeholder interactions. This would allow for exploring and analysing central topics emerging from this study in ways that are not possible through specific pilot projects and initiatives.

A consolidated approach to policy experimentation should consider the diversity in national CVET systems and governance models in Member States. It could support the incremental nature of innovation that tends to characterise developments in VET systems. A range of questions emerge from this study.

(a) Microcredentials are perceived as a way to respond quickly to new labour market needs. Although there is a growing body of research literature on skills, a latent tension in how microcredentials and skills are conceptualised is observed. The extent to which employers value the skills as these are signalled by short-term learning and training is varied. Can microcredentials be considered a new labour market trend in this respect?

(b) At present, there is a range of partnerships evolving across the EU in different configurations and often at an early stage of development. How can outreach and supporting structures and tools be designed so that they form connected and transparent credentialing pathways for diverse users, and what are the implications on business models if provision is to be sustainable and relevant over time?

(c) Most adult learning occurs informally, which may imply that the real user value of microcredentials relates to trust and value as an outcome of recognition, be it in labour markets or in continuing training and further learning contexts. If microcredentials are to be a systemic feature in recognition processes, there could be a tension between recognition in labour markets, with its focus on performance standards, and in continuing training and further learning contexts, where assessments are based on qualifications and learning outcomes. If age-neutral approaches to microcredentials entail the rights to skills recognition at a certain age, how can inclusive solutions be designed and what could be the role of different actors within VET systems?

(d) users associate microcredentials with a range of labour market related added value, but the evidence is still sparse. How can an evaluation and monitoring framework be designed in ways that contribute to transparency of microcredentials, while becoming an operational tool for policy-makers? Are there benefits to be accrued from global collaboration on the measurement of outcomes and impact of microcredentials and what could be the limitations?

A comprehensive future research strategy can allow for an iterative and evidence-based approach to the development of microcredentials while being context-sensitive to the diversity of Member States qualification systems.

Acronyms

AES	adult education survey
AI	artificial intelligence
AMS	labour market services in Germany (*Arbeitsmarktservice*)
AMU	adult vocational training in Denmark (*Arbejdsmarkedsuddannelser*)
BMAS	German Federal Ministry of Labour and Social Affairs (*Bundesministerium für Arbeit und Soziales*)
Cedefop	European Centre for the Development of Vocational Training
CNCP	The National Commission for Vocational Certification in France (*Commission nationale de la certification professionnelle*)
CNEFOP	The National Council for Employment, Vocational Training and Career Guidance in France (*Conseil national de l'emploi, de la formation et de l'orientation professionnelles*)
CNet	CareersNet
CoVE	centres for vocational excellence
CPF	personal training accounts in France (*Compte Personnel de Formation*)
CV	curriculum vitae
CVET	continuing vocational education and training
DigComp	The European Digital Competence Framework
EASE	effective active support for employment
EC	European Commission
EDATU	European Association of Distance Teaching Universities
EPALE	ePlatform for Adult Learning in Europe
EQF	European qualifications framework
ESCO	European Skills, Competences, Qualifications and Occupations
ESF	European Social Fund
ESG	environmental, social and governance
ESU	European Students Union
ETUC	European Trade Union Confederation
EU	European Union
FPSPP	The Joint Fund for Rendering Career Paths Secure in France (*Fonds Paritaire de Sécurisation des Parcours Professionnels*)
GDP	gross domestic product
HEI	higher education institutions
IBM	International Business Machines Corporation
ICDE	International Council for Open and Distance Education
ICT	information and communications technology
ILA	individual learning account
ILO	International Labour Organization
IT	information technology
IVET	initial vocational education and training
LFS	labour force survey
MCs	microcredentials

MFHEA	Malta Further Education Authority
MOOCs	massive open online courses
NGO	non-governmental organisations
NQF	national qualifications framework
OECD	Organisation for Economic Co-operation and Development
PIAAC	Programme for the International Assessment of Adult Competencies
PISA	Programme for International Student Assessment
PPMI	Public Policy and Management Institute
QQI	Quality and Qualifications Ireland
ReferNet	Cedefop's network of institutions to provide information on national VET systems and policies in the EU Member States, Iceland and Norway
RISE	Research Institutes of Sweden
RNCP	national register of vocational and professional qualifications
R&D	research and development
SAP	systems applications and products
SEK	Swedish Krona
SITRA	Finnish Innovation Fund (*Suomen itsenäisyyden juhlarahasto*)
SME	small and medium-sized enterprise
TUAC	Trade Union Advisory Committee
UNESCO	United Nations Educational, Scientific and Cultural Organization
UK	United Kingdom
US	United States
VAE	Validation of prior experiential learning in France (*Validation des acquis de l'expérience*)
VET	vocational education and training

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Microcredentials for labour market education and training

The added value for end users

This study examines the added value of microcredentials for end users. Current knowledge gaps in the perceived exchange value of microcredentials within the labour market raise the question of whether they can be sufficiently trusted by those acquiring them to become building blocks for lifelong learning, employment, improving professional status, and inclusiveness in education and training.
Study results show that trust, which shapes potential engagement, is underpinned by socioeconomic factors and an individual's learning-work trajectory. Due to the different configurations of VET systems and how they are governed, extensive debate continues about the measures needed to support different groups of microcredential end users in varying labour market contexts.

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