EUTOPIAFLECSLAB
Flexible LEarning Communities Supporting Lifelong Learning Across Borders

FLECSLAB: Lifelong Learning Business model

- Identifying barriers and enablers for maintaining LLL capacity

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1. Introduction

The EUTOPIA Alliance was in 2021 awarded a project under the Erasmus+ programme (KA220-HED - Cooperation partnerships in higher education) entitled "Flexible LEarning Communities Supporting Lifelong Learning Across Borders" (FLECSLAB). The project is structured into two work packages: (1) Lifelong Learning Toolbox and, (2) Lifelong Learning Business model. The report is part of the ongoing work in Work Package: Lifelong Learning Business model (WP2) and is an analysis focused on identifying barriers and enablers for maintaining Lifelong Learning (LLL) capacity in European higher education.

1.1. Context and Objectives

One of the building blocks of the EUTOPIA Alliance is the Connected Learning Communities (CLCs). An important aim of FLECSLAB is to actively involve stakeholders operating in the social context of the learning communities who are interested in cooperating with higher education institutions to respond to the lifelong learning needs of citizens and professionals. WP1 previously explored the potential of the CLCs for LLL where 12 CLCs (in total) served as testbeds. This report continues the previous efforts by focusing on some of the conditions for maintaining LLL capacity at European universities imposed by policies, regulations, and legislation. These potential barriers and enablers will be important determinants in how higher education institutions can collaborate with external stakeholders and to what extent flexible approaches to learning could be opened for non-modal learners and how the development of flexible mechanisms that recognize short-term learning efforts might be navigated. This will be vital to facilitate a transition from higher education institutions addressing mainly full-time degree-seeking students to integrating future flexible personalized approaches for adult learning.

1.2. Conceptual definitions and characterizing barriers and enablers

The report complements existing perspectives from the European Commission (2020) on the barriers and enablers to university-industry collaboration in education. Conceptually, the report has considered a broad definition of what that type of collaboration could entail, in line with previous studies:

> "Universities-industry collaboration (UIC) refers to the interaction between any parts of the higher educational system and industry aiming mainly to encourage knowledge and technology exchange" (Ankrah & Omar, 2015, p. 387).

The report hereafter uses the terminology 'university-industry- collaboration' as it is the most common term in the literature but recognizes that collaboration can be seen widely as involving non-profit organisations, social enterprises as well as citizens as active actors/ collaborators. Some of the barriers and enablers discussed in the report will relate specifically to university-industry collaboration but many of them are important factors to consider in all types of collaborations between universities and others. As test-beds for different forms of university-industry collaboration, the CLCs have the potential as short learning programmes that can serve as the foundation for co-designing more flexible approaches to learning in the future. Short learning programmes are difficult to define since they are administered by many different education and training institutions, both public and private, and are often delivered using a range of modalities (e.g., digitally and non-digitally). However, they are generally characterized as formative programmes geared toward professionals in a specific knowledge area (Casadesus et al., 2023). Learning outcomes from these programmes are often acknowledged by the awarding of a micro-credential. A report by UNESCO (2022) states:

> "A micro-credential: is a record of focused learning achievement verifying what the learner knows, understands or can do; includes assessment based on clearly defined standards and is awarded by a trusted provider; has standalone value and may also contribute to or complement other micro-credentials or macro-credentials, including through recognition of prior learning; meets the standards required by relevant quality assurance" (p. 6).

Here, macro-credentials refer to "degrees, diplomas, certificates and licenses" (UNESCO, 2022, p. 5). European Commission (2021) defines micro-credentials in a European context accordingly:

> "A micro-credential is the record of the learning outcomes that a learner has acquired following a small volume of learning. These learning outcomes have been assessed again transparent and clearly defined standards. Courses leading to micro-credentials are designed to provide the learning with specific knowledge, skills and competences that respond to societal, personal, cultural or labour market needs. Micro-credentials are owned by the learner, can be shared and are portable. They may be standalone or combined into larger credentials. They are underpinned by quality assurance following agreed standards in the relevant sector or area of activity." (p. 2).

In literature, many terms are used synonymously with "micro-credential," including alternative credential and digital badge. This is unsurprising given that short learning programmes and micro-credentials are relatively new in higher education. They were preceded by Massive Open Online Courses (MOOCS), which largely failed in their mission to expand higher education access to the global margins of society. Most who participated in MOOCs were from affluent regions and had higher education backgrounds, and attrition rates were high. Consequently, many MOOCs have

shifted from offering educational content open access to promoting low-cost, fully online master's programmes for professionals (Reich & Ruipérez-Valiente, 2019). One thing that can be learned from the bursting of the MOOC bubble is that for new educational approaches to be successful, like university-industry collaborations in lifelong learning initiatives, there needs to be political initiative to "change the focus, funding, and purpose of higher education" (Reich & Ruipérez-Valiente, 2019, p. 131).

The European higher education system represents vast regulatory and organisational variation at multiple levels, despite previous efforts aimed at bringing convergence and cohesion to higher education policies (e.g., Klemenčič, 2019; Karvounaraki et al., 2018). Characterizing barriers and enablers to maintaining LLL capacity at European universities is thus a complex task. National statutes and local regulations can be impactful barriers depending on the social and economic context of the labour market of each country and the needs, presence, and structure of different industries as well as the demand and needs of different types of non-traditional adult learners. The character and pervasiveness of different barriers and enablers will therefore depend on their contextual nature, and effects can be different among groups. What is a barrier in some cases can be considered an enabler in other cases. This "dual" character of barriers and enablers points to a classification where some effects will be context specific and/or share a reciprocal relation whereas others will be considered generic categories (e.g., Beerkens et al., 2016; Azmat, 2013, see also Fjellman, 2022). The amenability to intervention for factors enabling university-industry collaboration will also vary between the short-term, medium-term and long-term (Sjöö & Hellström, 2019). While these factors can be theoretically separated, in practice, they are interlinked, and the identified barriers and enablers are therefore discussed in an integrative manner in the following sections of the report.

1.3. Modus Operandi

The report contains a secondary analysis of previously collected materials, namely, data from semi-structured interviews with CLC leaders (from the WP1 FLECSLAB report), data from interviews with key staff members from EUTOPIA partner universities (see Fjellman, 2022) and a literature review of international studies and reports from national stakeholders, as well as relevant public agencies.

2. Barriers and enablers for maintaining LLL capacity

Barriers and enablers to university collaboration in lifelong learning initiatives with external stakeholders (e.g., industry, public entities, and non-governmental agencies) is an emerging area of research. Existing literature has primarily focused on university-industry joint research endeavours and collaborations related to the third mission (i.e., knowledge transfer that benefits communities and addresses societal challenges) (Wang et al., 2016). University-industry collaboration that relates to the teaching mission has typically received little attention (Berbegal-Mirabent et al., 2020), and university collaboration in teaching with other external actors (e.g., non-governmental organizations) has been even less prevalent in the literature. As short learning programmes and micro-credentials are a recent phenomenon, research in that area is also still sparse (Selvaratnam & Sankey, 2021, see also Ankrah & Omar, 2015). The following sections describe barriers and enablers to university-industry collaboration in teaching that were identified in current research and that particularly address collaboration in the format of short learning programmes. These are described from a multi-level perspective consisting of supranational factors, national factors, and institutional factors.

2.1. Supranational factors

Supranational factors involve barriers and enablers recognized across countries. Two main sub-themes of supranational factors are quality assurance and accreditation and digital collaboration platforms and accessibility.

2.1.1.Quality Assurance and Accreditation

An important barrier to university-industry collaboration in education relates to how the comparative worth of the education is validated. For example, there are no established quality assurance guidelines for micro-credentials or short learning programmes organised jointly by universities and industries in Europe. The European Standards and Guidelines (ESG, 2015) have not been adapted to account for such programmes, nor do the programmes meet established supranational requirements like the European (or national) qualifications frameworks (Casadesus et al., 2023). Consequently, university-industry initiatives like micro-credentials or short learning programmes are not accredited or quality assured by external agencies (Casadesus et al., 2023; Ralston, 2021). Without reliable ways to make comparisons, businesses that are looking to hire individuals with these credentials may instead turn to university rankings or the reputation of collaborating businesses to make judgements about the quality of the education (Ralston, 2021).

A challenge with existing quality assurance processes is that they are often conducted at the programme level. Considering that the number of short learning programmes organised by

universities and industries is expected to rise in the future, a more systematic approach or model is needed at the supranational level because it is not feasible to evaluate each individual short programme. The process of accrediting individual programmes is also known to be highly bureaucratic, which can be a deterrent to industries. In other words, a scalable accreditation process is needed (Casadesus et al., 2023).

In the literature, several suggestions can be identified on how to approach this barrier. For example, the MicroHE (n.d.) project, which is about micro-credentialing in higher education, supports the need to investigate how well existing European level recognition instruments work for micro-credentials. These instruments include the European Credit Transfer System (ECTS), university diploma supplements, and qualifications frameworks. The project proposes creating a "credit supplement" for micro-credentials that explains how compatible the micro-credential is with these instruments. Similarly, the European Commission (2020) recommends aligning micro-credentials with European (and national) qualifications frameworks. Another suggestion mentioned in the literature is to make micro-credentials stackable (Casadesus et al., 2023; European Consortium of Innovative Universities, 2021). For example, by connecting micro-credentials with ECTS, they could be combined to create a larger credential or be part of a university degree programme. It can also be advantageous to connect micro-credentials to typical characteristics of university degrees. For example, micro-credentials could be used to assess the expected learning outcomes of a short learning program.

Casadesus et al. (2023) published a study about the first experiences of a short learning programme being accredited by an external quality assurance agency and putting the short programme in relation to the European Qualifications Framework and European Standards and Guidelines. They found that the involved university-industry partners appreciated being able to accredit their programme through an agency registered with the European Quality Assurance Register (EQAR). In doing so, the programme gained visibility and ensured quality. From this experience, they recommend implementing a clear quality assurance methodology. They identified eight dimensions that university-industry providers should provide information about when attempting to get their programmes recognised: 1) programme description, 2) justification, 3) aim and learning outcomes, 4) student access, admission, and student support, 5) planning, 6) teaching and support staff, 7) material resources and services, and 8) internal quality assurance system.

The level of practical development for micro-credentials is very different across the European Higher Education Area (EHEA) and only a few quality assurance organisations within countries have started discussions on how to proceed with micro-credentials while a large group of countries are seemingly waiting for guidelines and recommendations at the European or national level (ENQA, 2023, 25). Specific challenges for the external quality assurance of micro-credentials in European countries are related to the need to develop specific national requirements and international agreements together with a transparent understanding of how to define and understand micro-credentials (ENQA, 2023, p. 24).

Less formal approaches to building bridges with higher education exist, for example, within professional qualifications or other initiatives originating from industry or similar sectors, where credentials or certifications can be obtained by individuals to demonstrate their knowledge and competence in a specific field of industry. These qualifications represent an alternative for individuals seeking additional learning and training outside of traditional university approaches, but they do represent a distinct pathway in terms of financial aspects, breadth and specialisations, flexibility, duration, industry relevance, and regulation compared to university degrees.

2.1.2.Digital collaboration platforms and accessibility

A barrier to collaboration is a lack of digital collaboration platforms. A platform is needed to establish initial connections between students and teaching staff at universities with relevant industries. Berbegal-Mirabent et al. (2020) emphasize that such platforms must be comprehensive in the services that they offer. In other words, platforms need to be able to follow all stages of a collaborative educational project, from announcing an interest in establishing a new project and collaboration to when that project is completed and evaluated. A related barrier is that existing platforms tend to be used solely by businesses. There are also questions about how to ensure the sustainability of platforms over time (Berbegal-Mirabent et al., 2020). This is a supranational issue because a platform is needed that can be used internationally, by European Union university and industry actors, for example, to establish cross-border educational initiatives. Educational crowdsourcing platforms is one example of a space for industry actors to connect with universities.

Even after connections or collaborations are established between industry and teaching staff and students, accessing the web-based learning management systems at universities can potentially act as a barrier at the supranational level. First, digital solutions are needed for inter-platform communications, as different learning management systems are used among higher education institutions across Europe. Inter-university digital accessibility strategies will need to be set in place for both students and staff, and without them, collaborations and educational initiatives will be restricted to local networks, require special administrative time-consuming solutions, or rest on ambitious individuals. Second, gaining a login for individuals from industry in open collaborations can be made difficult through local regulations, often stipulating that individuals must be either employed or enrolled at the university before being granted access. Promoting longevity in collaborations between industry, staff, and students at universities will rest on developing new innovative digital solutions at both European and national levels (see also Fjellman, 2022, for an extended discussion on federated and global accessibility across learning platforms).

2.2. National factors

National factors relate to policies and the labour market context within countries. Four sub-themes of national factors were identified: academic year, legal restrictions and government regulations, market uncertainties, and geographical proximity.

2.2.1.Academic Year

The impact of the academic year can be an important barrier in establishing and maintaining collaborations between industry and European higher education institutions (Wu, 2017). The academic year is structured differently in terms of the placement of the school semester, how holidays and breaks are integrated and examination periods among European universities (European Commission, 2023). This structure will condition the scope of collaborations with industry that might not fit the timetable or the needs of industries in a fast-paced and uncertain labour market and could potentially make it difficult to identify and meet the needs of non-traditional adult learners. Furthermore, this can limit university staff participation in industry collaborations that do not follow their yearly labour cycle of obligations and administrative assignments.

2.2.2.Legal Restrictions and Government Regulations

Unclear legal restrictions and stringent government regulations can be hindrances to university-industry collaboration in educational initiatives (Rybnicek & Königsgruber, 2019). Such barriers may reduce the incentive to collaborate, both on the part of industries and universities. Tax benefits and allocating some public funding may be one way to incentivize industries to collaborate with universities (Rybnicek & Königsgruber, 2019). In contrast, limiting government funding to public universities may create incentives for universities to partner with businesses as they explore alternative revenue sources to support their core activities (Ralston, 2021).

2.2.3.Market Uncertainties

Market uncertainties that may lead to business instability, or changes in the labour market of a region, can disincentivize industries from engaging with universities in educational initiatives (Rybnicek & Königsgruber, 2019). Rybnicek and Königsgruber (2019) advise that it is important for industries to monitor the environment in which the collaboration will take place in order to catch new developments or changes and identify how to proceed with educational collaboration. They also suggest that actors who want to support such collaborations should emphasize the market potential of the collaboration and its outcomes, even in waning market situations like a recession.

2.2.4.Geographical proximity

Another barrier to university-industry collaboration relates to geographical distance. According to a systematic literature review, research shows that geographical proximity is important to successful university-industry collaborations because this enables shared human resources and physical facilities (Rybnicek & Königsgruber, 2019). However, there is some research to the contrary. For example, Petruzzelli (2011) found that collaborations with geographically distant partners had more favourable outcomes. When geographical distance is considered a barrier, educational crowdsourcing platforms may be a way forward (Berbegal-Mirabent et al., 2020). These platforms could enable collaboration across long distances within a country or between countries. Using platforms such as these to establish collaborations is relevant for university internationalisation initiatives and university and industry initiatives to lower their carbon footprint. Developing these types of platforms and collaborations can also be an important investment in securing socially sustainable educational approaches for the future.

2.3. Institutional factors

Institutional factors relate to both relationships and ways of working between higher education and industrial institutions, as well as the individuals involved in specific partnerships. Three sub-themes of national factors were identified: cultural differences in collaboration, communication between partners, contractual rights, educational scope and cross-disciplinary collaboration, teaching approaches, and organizational resources and incentives.

2.3.1.Cultural Differences in Collaboration

One potential cultural barrier to collaboration is a different understanding of time. Industries tend to have a short-term orientation and a sense of urgency, and they can have unrealistic expectations about what can be achieved with universities in a given time (Rybnicek & Königsgruber, 2019). For example, universities are often constrained to working within their academic calendars while industries may expect regular availability (Wu, 2017).

Another barrier relates to the organisational structure of universities compared to industries. Universities are generally perceived as having complex structures, high bureaucracy, and being inflexible compared to industry's more flat hierarchy (Schofield, 2013). Some perceive this as contributing to inefficient administrative processes in universities, related to registering students for courses, scheduling courses, and processing requests for transcripts, for example (Ralston, 2021). Proposed ways to overcome inefficient university administration include conducting performance studies (e.g., 'Key Performance Indicators' or KPIs), encouraging universities to adopt technologies that streamline administrative processes (e.g., Blockchain), and modeling university administration after private businesses (Ralston, 2021). Emerging collaborations between higher education, industry, and society can also be premised on a networked work-integrated framework where 'the network as a concept' embraces a hybrid organizational structure that builds on the needs of all parties (Jaldemark et al., 2024; Jaldemark, 2021).

Lastly, a negative perception of university-industry collaboration is another important barrier pointed out by literature (Berbegal-Mirabent et al., 2020; Ralston, 2021; Wheelen & Moodie, 2022). For example, Berbegal-Mirabent et al. (2020) indicate that there is a concern that university-industry collaborations could lead to bad educational practices such as curricular aims that favour business interests. An example of this is focusing short learning programmes solely on technical skills that are applicable to professional tasks. However, Ralston (2021) suggested that a way around this could be to offer programmes that cultivate both technical and soft skills. A further concern was shared by Wheelen and Moodie (2022) when they pointed out that micro-credentials could contribute to increased privatization in the higher education sector by blurring the lines between public and private provision of education. From an industry perspective, such criticisms and attitudes towards collaboration can be disincentivizing and suggest low commitment from some university partners. The commitment of top management in both the university and industry is important because

project partners and their leaders are unlikely to share resources if they are not committed. A potential consequence is that industries may turn to alternative education providers for collaboration in educational initiatives instead of turning to universities in the first instance.

2.3.2.Communication Between Partners

As there are differences in culture, including different organisation-specific language, terminology, and meeting cultures, it is important to establish a common language and way of working in a partnership to reduce the communication barrier (Canhoto et al., 2016; Rybnicek & Königsgruber, 2019). Project managers are needed to navigate organisational differences between universities and industry partners. They can aid in clarifying roles and responsibilities from the beginning of a collaboration and can facilitate coordination and communication by using mutual terminology between both partners (Rybnicek & Königsgruber, 2019). Wu (2017) also supports the need for regular communication at both the management level and the operational level. For example, this could include regular interaction, continuous feedback, mutual exchange of information, and updating partners about new activities (Rybnicek & Königsgruber, 2019). Using several different communication methods has also been shown to be important. Some examples include emailing and meeting regularly or having face-to-face communication (Clauss & Kesting, 2017). Regardless of the mode of collaboration, partners that are open to listening and can adapt to different working cultures and circumstances will likely be more successful (Rybnicek & Königsgruber, 2019).

Another barrier relates to not having enough time to learn about each partner and the best way to collaborate (Canhoto et al., 2016). To support communication and well-working collaboration, Rybnicek & Königsgruber (2019) suggest that a partner selection process be arranged, where the requirements of all partners are shared openly. Similarly, Nic Giolla Mhichil et al. (2020) recommend an awareness-building and collaboration stage where national and international definitions, frameworks, and standards related to the educational initiative can be discussed.

Trust is another important aspect (Canhoto et al., 2016). There needs to be sufficient time to build trust within the partnership, and there are several ways that trust can be built at the beginning of a partnership. One example is to work on smaller projects before a larger commitment (Rybnicek & Königsgruber, 2019). According to Canhoto et al. (2016), there are different opinions on the type of communication needed to build trust. In their interview study, they found that some partners viewed face-to-face communication as essential while others did not find that necessary to build trust. Other factors that have been found to promote trust include having a good reputation and contracts that safeguard commitments (Hemmert et al., 2014).

2.3.3.Contractual Rights

Unclear contracts or a lack of them between universities and industries can be problematic, especially if regulations are lacking at a national or supranational level (e.g., regulations stipulated by the European Union). Research has pointed to specific aspects that particularly need regulation, such as intellectual property rights (Berbegal-Mirabent et al., 2020; Rybnicek & Königsgruber, 2019) and shared spaces or resources (Rybnicek & Königsgruber, 2019). For example, sharing human resources or spaces such as libraries, technical equipment, classrooms, or lab space are viewed as important for collaboration (Rybnicek & Königsgruber, 2019). Berbegal-Mirabent et al. (2020) note that an important issue is to set out a model that is fair to the involved universities and industries.

An important potential enabler that might aid the co-creation of educational materials, online content, and utilization of previous materials in collaborations between universities and industry is the recent attempt to modernize EU copyright rules through the adaptation: the Directive on Copyright and Related Rights in the Digital Single Market (EUR-lex, 2024). The scope of the initiative will depend on how member states implement it into national legislation and how that will be enacted locally—and recent evaluations of national implementation already suggest high local variability among countries (e.g., Ågren, 2022). However, the initiative has also garnered both industry and public opposition and protests in relation to the technical obligations that might need to be set in place and the consequences of this 'censorship' on the freedom of speech (e.g., Ferri, 2021; EDRI, 2019). This alludes to important policy and technical problems at the intersection of copyright rights and the creation of online material and educational activities that can be impactful to both universities and industries in future collaborations.

Research shows that contracts that include details about objectives, project ownership, roles, responsibilities, shared resources/infrastructure, and royalty payments are important (Rybnicek & Königsgruber, 2019). Having such contractual models set out contributes to developing mutual expectations, access to space/resources, and trust. One way to facilitate sharing resources is through shared-use arrangements (Bychkova, 2016). Berbegal-Mirabent et al. (2020) also acknowledge that while terms should be clearly stipulated, a degree of flexibility is also necessary to allow space for changing demands and new developments. Similarly, Hemmert et al. (2014) mention that putting too many contractual safeguards in place can also be a hindrance to collaboration, especially if there are already strong ties between the partners. Doing so would call trust between the partners into question.

2.3.4.Educational Scope and Cross-Disciplinary Collaboration

The composition. governance and educational structure of universities, as well as their status and ranking, can impact the prevalence and likelihood of industry collaborations (i.e., Sjöö & Hellström, 2019) making educational scope a relevant enablement (or potential barrier). Educational programs geared towards professional degrees, such as medicine, law, education, and engineering can generate more interest in university- industry collaborations (Bergebal-Mirabent et al., 2013) which can produce more opportunities to enable lifelong learning initiatives compared to other

programmes. Polytechnical universities have been found to generate higher earnings from research and development (R&D)-contracts and having a medical school at a university increases the likelihood of receiving more R&D-contracts (Caldera & Debande, 2010).

The research domination of university careers and career performance systems valuing mainly scientific publications will also play into the likelihood of collaboration and motivations of individuals within higher education seeking out industry collaborations. Research also finds that firms that interact institutionally with universities (as opposed to a mode of governance relying on contractual relationships) are more likely to be larger and have a greater absorptive capacity (when compared to firms not interacting) (Freitas, Geuna and Rossi, 2013) – suggesting that not only university composition, disciplinary and institutional characteristics but also the size of industries and external stakeholder organizations can act as an enabler to collaboration under certain circumstances. Recognizing and evening out these differences in conditions at both university and industry levels is an important way forward to promote collaborations at multiple levels.

2.3.5.Teaching Approaches

According to the literature, some argue that traditional approaches to teaching within universities have not prepared graduates to meet the needs of employers (Berbegal-Mirabent et al., 2020). However, a report by the European Commission (2017) has pointed out that there has been a shift in university models toward more pro-active, co-creative, and inquiry-based models. Nevertheless, there is still evidence that academic structures, such as limited time and incentive to develop and adopt new teaching methods, are barriers to the approaches welcomed by industry (Berbegal-Mirabent et al., 2020).

To overcome challenges related to traditional university teaching approaches, a possible way forward is to involve industry representatives in designing and delivering the curriculum. This way the curriculum is more closely aligned with the needs of industry because students are given the possibility to work on real business problems or to do tasks that businesses have yet to complete. A further enabling factor is to include industry representatives in assessing student work. While university lecturers would focus on assessing learning, the industry representative could assess whether the project and proposed solution are feasible and aligned with the vision of the business. Involving industry in this way adds further incentive to collaborate with universities as they would have the possibility to vet potential future employees by working closely with students. A further enablement would be for universities to create space and incentive for teaching staff to develop their approaches jointly with industries (Berbegal-Mirabent et al., 2020).

2.3.6.Organizational Resources and Incentives

An important enabler for collaboration is the provision of resources or internal incentives for pursuing collaboration and developing educational initiatives together with industry (Sjöö & Hellström, 2019; Franco & Haase, 2015). Highly motivated individuals tend to be the backbone of international collaborations or act as important drivers of local initiatives benefiting smaller student groups through formal or informal networks. Researchers' motivation toward university-industry collaboration and their perception of the collaborations as professionally 'fulfilling' and developing are generally positively related to a willingness to cooperate with industry. However, this willingness is still dependent on actual incentive policies providing financial resources to cover investments of time and dedication or reducing teaching hours for academics cooperating the most (e.g., Franco & Haase, 2015). Recognizing participation in university-industry collaboration in staff career performance can potentially promote wider collaboration with external actors in the future.

Furthermore, the individual characteristics of researchers (e.g., sex, age, centrality in the academic system) are observed to matter more for industry engagement compared to academic merits such as publishing records or formal degrees (e.g., Mascarenhas et al., 2022; Giuliani et al., 2010), suggesting that engagement and involvement can be shaped by institutional specificities such as who is given the opportunity to collaborate. Similarly, stakeholders' previous experience of working with universities is tied to the success of joint projects (e.g., Barbolla & Corredera, 2009; see also Martínez-Ardila et al., 2023). Both points highlight the importance of retaining emerging and current collaborations to promote longevity in future ones, together with enabling a wide range of collaboration opportunities at the institutional level to safeguard diversity in collaborators among academic and professional staff.

3. Discussion

This report presented an overview of some of the conditions for maintaining LLL capacity at European universities imposed by policies, regulations, and legislation aimed at clarifying enablers and barriers in university- industry collaboration and other external actors, specifically for short-term learning programmes that were identified in current research, reports and previously collected materials. These were described from a multi-level perspective consisting of supranational factors, national factors, and institutional factors:

Supranational factors	▪ Quality Assurance and accreditation ▪ Digital collaboration platforms and accessibility
National factors	▪ Academic year ▪ Legal restrictions and government regulations ▪ Market uncertainties ▪ Geographical proximity
Institutional factors	▪ Cultural differences in collaboration ▪ Communication between partners ▪ Contractual rights ▪ Educational scope and cross-disciplinary collaboration ▪ Teaching approaches ▪ Organizational resources and incentives

The complexities surrounding university-industry collaboration in higher education are multifaceted, involving regulatory, legal, digital, contextual, cultural, structural, practical, and operational barriers that must be addressed to foster successful partnerships and collaborations with a heterogeneous group of industry and external actors in society. The barriers identified in the report highlight critical areas for improvement in university-industry collaborations together with important enablements in future areas of potential development. Addressing quality assurance and accreditation is essential to establish credibility for new educational pathways, particularly in the context of evolving labor market demands. The practical development of micro-credentials varies widely across Europe, with many countries awaiting guidance on how to proceed. The differences in national regulations and the need for a cohesive understanding of micro-credentials present significant challenges that need to be overcome.

Enhancing digital infrastructure is essential for promoting effective communication and collaboration among various educational institutions. Additionally, concerns regarding the interoperability of different learning management systems (LMS) utilized by European universities have been identified, complicating efforts for effective communication and collaboration. The

absence of standardized access protocols may limit participation in cross-border educational initiatives and impede ongoing collaborative efforts. To address these challenges, it is imperative to develop comprehensive and sustainable digital platforms that facilitate seamless communication and project management. The demand for innovative digital solutions underscores the necessity for both European and national strategies aimed at improving accessibility and fostering long-term partnerships between industry and academia.

At the national level, the barriers impact the ability of universities and industries to engage in fruitful educational partnerships, particularly in the context of fast-paced labor markets, differing academic calendars and diverse geographical and regulatory landscapes. As the global labor market becomes increasingly uncertain and industries require more adaptive training solutions, universities may need to reconsider traditional academic structures or explore hybrid learning models that better accommodate industry timelines, thus promoting more flexible collaborations in the future. Legal barriers also pose a significant obstacle to university-industry collaborations. Stringent government regulations and unclear legal frameworks can create disincentives for both universities and businesses to engage in collaborative educational initiatives. For example, overly restrictive policies around funding, intellectual property rights, or labor laws can complicate partnerships and limit the scope of possible collaborations. However, there are suggestions that certain legal and financial incentives could help overcome these barriers. Tax breaks or public funding allocated to collaborative initiatives could encourage industry participation, while universities may be incentivized to seek business partnerships to diversify their funding sources—especially when traditional government funding is limited or restricted. Moreover, potential future entablements such as more flexible academic schedules, streamlined legal frameworks, proactive engagement despite market uncertainty, and digital solutions for overcoming geographical distance can be critical in fostering more effective partnerships between universities and industry. By overcoming these barriers, both sectors can better respond to the demands of the labour market, create more relevant educational offerings and meet the needs of future lifelong learners in society.

At the institutional level, the report highlights how differing perceptions of time and organizational structure can create challenges in university-industry collaborations. Universities and industry operate on different timelines, where industries often operate on a short-term basis, expecting quick results, while universities are often bound by academic calendars and strict bureaucratic processes. This mismatch can lead to frustrations and unrealistic expectations among collaborators from both sectors. Effective communication and clear contractual agreements will be vital in overcoming cultural differences and preempting complications surrounding intellectual property, infrastructure, and resource sharing among collaborators. Moreover, the governance of universities and the scope of educational programs can impact collaboration potential between universities and industries, where certain fields in higher education attract more partnerships due to their practical application and professional demand.

Lastly, the provision of resources and incentives within universities is critical for fostering collaboration. Motivated individuals can act as catalysts for partnerships, driving initiatives that benefit both students and industry stakeholders. Recognizing the value of industry collaboration when evaluating the career performance of academic and professional staff at institutions can incentivize involvement in university-industry collaboration and promote longevity in participation by a diverse group of individuals. Providing organizational resources emphasizes the importance of internal incentives to encourage collaboration. Motivation at the individual level is critical; however, it must be supported by institutional policies that recognize and reward collaboration for academic and professional staff. This underscores the necessity of creating a supportive environment for diverse collaboration opportunities.

In conclusion, the report presents an overview of the multifaceted barriers and enablers in university-industry collaborations. Collectively, challenging and improving these barriers could lead to more meaningful partnerships that benefit both lifelong learners and industries, thus enabling educational programs to align more closely with real-world needs and enhance university-industry collaborations, as well as collaborations with other external actors in society. As the landscape of higher education continues to evolve, proactive measures to tackle these barriers will be vital for future collaborations and innovations in higher education. However, an important conclusion is that, in line with the previous EUTOPIA report and previous studies (see Fjellman, 2022 and for example Karvounaraki et al., 2018), alleviating many of the effects of barriers at the supranational and national levels would require EU harmonization by policy reform instituting common EU-wide standards. However, alternative flexible pathways and initiatives can potentially circumvent and challenge some of these regulatory obstacles in the meantime, where both sectors can work together more effectively to create educational opportunities that are responsive to the needs of lifelong learners and the evolving needs of the labor market.

4. References

Ankrah, S., & Omar, A. T. (2015). Universities–industry collaboration: A systematic review. *Scandinavian Journal of Management, 31*(3), 387-408.

Azmat, F. (2013). Opportunities or obstacles*?. International Journal of Gender and Entrepreneurship, 5*(2). https://doi.org/10.1108/17566261311328855

Barbolla, A. M. B., & Corredera, J. R. C. (2009). Critical factors for success in university–industry research projects. *Technology Analysis & Strategic Management, 21*(5), 599-616.

Beerkens, M. (2018). Evidence-based policy and higher education quality assurance: Progress, pitfalls and promise. *European Journal of Higher Education, 8*(3), 272-287. https://doi.org/10.1080/21568235.2018.1475248

Berbegal-Mirabent, J., Gil-Doménech, D., & Ribeiro-Soriano, D.E. (2020). Fostering university-industry collaborations through university teaching. *Knowledge Management Research & Practice, 18*(3), 263-275). https://doi.org/10.1080/14778238.2019.1638738

Berbegal-Mirabent, J., Lafuente, E., & Solé, F. (2013). The pursuit of knowledge transfer activities: An efficiency analysis of Spanish universities. *Journal of Business Research, 66*(10), 2051-2059.

Bychkova, O. (2016). Innovation by coercion: Emerging institutionalization of university– industry collaborations in Russia. *Social Studies of Science, 46*(4), 511-535. https://doi.org/10.1177/0306312716654768

Caldera, A., & Debande, O. (2010). Performance of Spanish universities in technology transfer: An empirical analysis. *Research policy, 39*(9), 1160-1173.

Canhoto, A. I., Quinton, S., Jackson, P., & Dibb, S. (2016). The co-production of value in digital, university–industry R&D collaborative projects. *Industrial Marketing Management, 56*, 86-96. https://doi.org/10.1016/j.indmarman.2016.03.010

Casadesus, M., Huertas, E., & Edo, C. (2023). A European perspective on accrediting short learning programs: *First experiences are out. Industry and Higher Education, 37*(3), 433-442. https://doi.org/10.1177/09504222221132129

Clauss, T. & Kesting, T. (2017). How businesses should govern knowledge-intensive collaborations with universities: An empirical investigation of university professors. *Industrial Marketing Management, 62*, 185-198. https://doi.org/10.1016/j.indmarman.2016.09.00

EDRI (2019) Censorship machine takes over EU's internet. Accessed: https://edri.org/our-work/censorship-machine-takes-over-eu-internet/

EUR-Lex (2024). Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC. Accessed: https://eur-lex.europa.eu/eli/dir/2019/790/oj

ENQA (2023) Quality assurance of micro-credentials. Expectations within the Context of Standards and Guidelines for Quality Assurance in the European Higher Education Area. https://www.enqa.eu/wp-content/uploads/ENQA-micro-credentials-report.pdf

European Commission (2017). Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the committee of the regions. A renewed EU Agenda for higher education. COM(2017) 247 final. Brussels, Belgium. Accessed: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52017DC0247

European Commission (2020). Towards a European approach to micro-credentials: A study of practices and commonalities in offering micro-credentials in European higher education: analytical report. Luxembourg: Publications Office of the European Union. Accessed: https://data.europa.eu/doi/10.2766/7338

European Commission (2021). A European approach to micro-credentials. Accessed: https://education.ec.europa.eu/sites/default/files/2022-01/micro-credentials%20brochure%20updated.pdf

European Commission, European Education and Culture Executive Agency, Crosier, D., Birch, P., De Lel, G. (2023). The organisation of the academic year in Europe 2023/2024, (P.Birch,editor) Publications Office of the European Union.Accesed: https://data.europa.eu/doi/10.2797/28279

European Consortium of Innovative Universities (2021). Paving the Road for the Micro-Credentials Movement. ECIU White Paper on micro-credentials. Accessed 5 January 2024 at https://www.eciu.eu/news/paving-the-road-for-the-micro-credentials-movement

ESG (2015). Standards and Guidelines for Quality Assurance in the European Higher Education Area. Brussels, Belgium. Accessed 5 January 2024 from https://www.enqa.eu/esg-standards-and-guidelines-for-quality-assurance-in-the-european-higher-education-area

Ferri, F. (2021). The dark side (s) of the EU Directive on copyright and related rights in the Digital Single Market. *China-EU Law Journal, 7*(1-4), 21-38.

Freitas, I. M. B., Geuna, A., & Rossi, F. (2013). Finding the right partners: Institutional and personal modes of governance of university–industry interactions. *Research Policy, 42*(1), 50-62.

Giuliani, E., Morrison, A., Pietrobelli, C., & Rabellotti, R. (2010). Who are the researchers that are collaborating with industry? An analysis of the wine sectors in Chile, South Africa and Italy. *Research Policy, 39*(6), 748-761.

Hemmert, M., Bstieler, L., & Okamuro, H. (2014). Bridging the cultural divide: Trust formation in university–industry research collaborations in the US, Japan, and South Korea. *Technovation, 34*(10), 605-616. https://doi.org/10.1016/j.technovation.2014.04.006

Jaldemark, J., Lindqvist, M. H., Mozelius, P., & Öhman, P. (2024). Building hybrids between higher education and society: Applying a networked work-integrated learning framework in a business administration program. *In Networked Learning Conference* (Vol. 14).

Jaldemark, J. (2020*). Formal and informal paths of lifelong learning: Hybrid distance educational settings for the digital era.* In An introduction to distance education (pp. 25-42). Routledge.

Karvounaraki, A., Subramaniam, S., Hristov, H., Ojala, T., Jonkers, K., Huisman, J., & Goenaga, X. (2018) *Mapping of European transnational collaborative partnerships in higher education*, Publications Office of the European Union, Luxembourg.

Klemenčič, M. (2019). 20 Years of the Bologna Process in a Global Setting: The external dimension of the Bologna Process revisited. *European Journal of Higher Education, 9*(1), 2-6. https://doi.org/10.1080/21568235.2019.1570670

Martínez-Ardila, H., Castro-Rodriguez, Á., & Camacho-Pico, J. (2023). Examining the impact of university-industry collaborations on spin-off creation: Evidence from joint patents. *Heliyon, 9*(9).

Mascarenhas, C., Marques, C., Ferreira, J. J., & Galvao, A. (2022). University-Industry collaboration in a cross-border Iberian regions. *International Regional Science Review, 45*(4), 444-471.

MicroHE (n.d.). Support Future Learning Excellence through Micro-Credentialling in Higher Education. Accessed 5 January 2024 from https://microhe.microcredentials.eu/

Nic Giolla Mhichíl, M., Brown, M., Beirne, E., & Mac Lochlainn, C. (2020). A Micro-Credential Roadmap: Currency, Cohesion and Consistency. Dublin City University. Accessed 5 January 2024 from https://www.skillnetireland.ie/publication/a-micro-credential-roadmap-currency-cohesion-and-consistency/

Petruzzelli, A. M. (2011). The impact of technological relatedness, prior ties, and geographical distance on university–industry collaborations: A joint-patent analysis. *Technovation*, *31*(7), 309-319. https://doi.org/10.1016/j.technovation.2011.01.008

Ralston, S.J. (2021). Higher education's microcredentialing craze: a Postdigital-Deweyan critique. *Postdigital Science and Education, 3*, 83-101. https://doi.org/10.1007/s42438-020-00121-8

Reich, J. & Ruipérez-Valiente, J.A. (2019). The MOOC pivot. Science, 363,130-131. https://doi.org/10.1126/science.aav7958

Rybnicek, R. & Königsgruber, R. (2019). What makes industry-university collaboration succeed? A systematic review of the literature. Journal of Business Economics, 89, 221-250. https://doi.org/10.1007/s11573-018-0916-6

Schofield, T. (2013). Critical success factors for knowledge transfer collaborations between university and industry. *Journal of Research Administration, 44*(2), 38-56. https://eric.ed.gov/?id=EJ1156083

Selvaratnam, R. & Sankey, M. (2021). The state of micro-credentials implementation and practice in Australasian higher education. *Open Praxis, 13*(2), 228–238. https://doi.org/10.5944/openpraxis.13.2.130

Sjöö, K., & Hellström, T. (2019). University–industry collaboration: A literature review and synthesis. *Industry and higher education, 33*(4), 275-285.

UNESCO (2022). Towards a Common Definition of Micro-credentials. Accessed 10 January 2024 from https://unesdoc.unesco.org/ark:/48223/pf0000381668

Wang, Y., Hu, R., Li, W., & Pan, X. (2016). Does teaching benefit from university-industry collaboration? Investigating the role of academic commercialization and engagement. *Scientometrics, 106*(3), 1037-1055. https://doi.org/10.1007/s11192-015-1818-9

Wheelen, L. & Moodie, G. (2022). Gig qualifications for the gig economy: micro-credentials and the "hungry mile." *Higher Education, 83*, 1279-1295. https://doi.org/10.1007/s10734-021-00742-3

Wu, H. (2017). The essentiality of sustainability and variety for industry collaborations with university partners. *International Journal of Advanced Corporate Learning, 10*(2), 19-29. http://hdl.handle.net/11250/2503025

Ågren, J. (2022). Will article 17 of the Directive on Copyright in the Digital Single Market alter the fair balance between copyright and the freedom of expression and information? An investigation of how the increased copyright liability for Online Content Service providers in the EU affects relevant copyright stakeholders. Accessed: https://gupea.ub.gu.se/bitstream/handle/2077/74970/%c3%a5grenjesper_2023.65.pdf?sequence=1&isAllowed=y