

# MICRO-CREDENTIALS AS AN INSTITUTIONAL RESPONSE TO LABOUR MARKET TRANSFORMATION: UNIVERSITIES AND THE SHIFT TOWARD FLEXIBLE LEARNING

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**Abstract:** Skills are losing economic value faster than the multi-year university degree can renew them. Employers expect 39% of core skills to change by 2030, and the pressure is heaviest in economies that cannot replenish their workforce demographically. Both the European Union and, more recently, the Republic of Moldova have promoted micro-credentials as the institutional response to this pressure. Whether universities can actually function in that role, however, depends on conditions that the literature has not yet examined in detail, particularly for a small EU-candidate economy. The present paper builds a conceptual framework that combines human-capital theory, signalling theory and institutional isomorphism, and applies it through a comparative documentary analysis of European policy instruments, the legislation of Ireland and Estonia, and the Moldovan legal architecture. We argue that micro-credentials act on human capital through three functions (replacement, unbundling and augmentation), and that each of them depends on the same enabling condition: a trusted institutional guarantor, dedicated public funding for the start-up phase, and full integration into the qualifications framework. Ireland and Estonia satisfied this condition by different legal routes and their universities reached scale. Moldova has built an equivalent legal framework but channels provision through adult education without placing universities at the centre, and take-up has remained low. The binding constraint is institutional rather than legal, and the paper draws concrete policy implications from this finding for the Moldovan higher-education system.

**Keywords:** micro-credentials; institutional agility; human capital; signalling; higher education; Republic of Moldova; European Qualifications Framework.

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## 1. Introduction

Employers surveyed across 55 economies expect 39% of workers' core skills to change by 2030, and 63% of them now identify skills gaps as the single largest barrier to transforming their businesses (World Economic Forum [WEF], 2025). The multi-year university degree, the institution that has historically certified competence in modern economies, renews skills on a cycle measured in years, whereas the skills themselves are increasingly turning over within a five-year horizon. As the same report observes, labour markets are evolving faster than education and training systems can adapt (WEF, 2025). The gap between the rate at which skills lose value and the rate at which the dominant qualification can renew them is the starting point of this paper.

That gap is sharpest where an economy cannot replenish its workforce demographically. The Republic of Moldova is such a case. Nearly 30% of its people now live abroad, its working-age population has been shrinking since 2008, and the country's overall population could be nearly one-third smaller by 2050; emigration is depleting the working-age population both in the national labour market and in the countryside, and skills mismatches persist (European Training Foundation [ETF], 2025). An economy losing labour at this rate cannot wait for new cohorts of graduates to refresh its skill base. It must reactivate the competences of the

workers it still has, which is the task for which short, flexible, modular provision is designed. In the Moldovan context, the abstract policy debate over micro-credentials thus acquires a concrete and pressing economic stake.

Micro-credentials have been promoted as the institutional answer to this pressure. The European Union adopted a common approach in its 2022 Council Recommendation on micro-credentials for lifelong learning and employability (Council of the European Union, 2022), and Moldova has since embedded micro-credentials, under the local term of partial qualifications, in its own legal framework, through the National Qualifications Framework and the methodology governing adult education (Buimestru et al., 2025). Putting an instrument into law, however, is not yet the same as putting it to use. Whether universities are able to take on the role of the institution that genuinely responds, or whether micro-credentials end up as a peripheral catalogue of courses (or, worse, as a force that fragments the degree from which they are drawn), remains an open question. The conditions under which a micro-credential genuinely becomes an institutional response to labour-market change have not been examined in detail in the literature, and the gap in the literature is particularly wide for a small candidate economy aligning its system with the EU.

This paper examines those conditions. It asks under what circumstances micro-credentials function as a genuine institutional response by universities to labour-market transformation, and what the European policy framework implies for their adoption in Moldova as an EU-candidate state. Two subsidiary questions follow: how the transformation of the labour market defines the response expected of universities, and why the institutional environment – funding, quality assurance, and integration into the qualifications framework – governs whether that response can be realised.

The argument is theoretical and comparative. The conceptual framework combines human-capital theory (Becker, 1964), signalling theory (Spence, 1973) and institutional isomorphism (DiMaggio & Powell, 1983), and is applied through a structured documentary analysis of European policy instruments, the legislation of two front-runner systems (Ireland and Estonia), and the Moldovan legal architecture. The reasoning is interpretive: the paper aims to identify the institutional conditions under which the response can succeed, rather than to estimate a statistical relationship between variables. Its contribution is to bring out a condition that the current debate has left implicit. Three functions through which micro-credentials act on a worker's human capital are distinguished – replacement, unbundling and augmentation – and we argue that each of them requires the same institutional support: a trusted guarantor of the credential, public funding for the early phase, and integration into the qualifications framework. Reading the Moldovan case against the systems that have satisfied this requirement makes it possible to locate the country's specific constraint.

## 2. Literature Review

### *2.1. The economic rationale and its unresolved core*

The point of departure of the literature is an economic one. The recent expansion of micro-credentials is commonly traced to two simultaneous pressures: a rising demand for upskilling and reskilling, as skills become obsolete faster, and a sharp fall in the unit cost of provision made possible by digitalisation (Kato, Galán-Muros, & Weko, 2020). This places the phenomenon within human-capital theory (Becker, 1964), where education is treated as an

investment in a depreciating stock of productive capacity, and within signalling theory (Spence, 1973), where the value of a credential lies in the information it transmits to employers. The OECD synthesis captures both functions, describing alternative credentials as instruments that help learners acquire new skills, update existing ones and signal competences they already hold (Kato et al., 2020). What the literature has not yet settled is whether short credentials genuinely build durable human capital or whether they perform mainly a signalling role. The empirical evidence on returns is still thin, and the same OECD work acknowledges that, despite rapid growth, considerable uncertainty remains about how learners, employers and governments actually value these credentials. As things stand, the economic case for micro-credentials rests more on the strength of the assertion than on the available evidence.

## ***2.2. Definition, standardisation and the recognition problem***

A second strand of the literature concerns what a micro-credential actually is. Reviews repeatedly note a proliferation of competing definitions, which converge only on the minimal idea that the volume of learning is small and that delivery is comparatively flexible (OECD, 2021). The European response has been to construct a common reference: the Council Recommendation of June 2022 fixes a definition and a set of common descriptive elements, and recommends that member states build a micro-credential ecosystem supported by the existing recognition infrastructure of the European Qualifications Framework, Europass and ESCO (Council of the European Union, 2022). Comparative policy work has found that providers themselves prefer to operate under nationally agreed recognition frameworks rather than in isolation (OECD, 2023), which suggests that standardisation should be understood as a precondition for use rather than as a bureaucratic afterthought. Recognition and portability across providers and borders are, even so, only partially resolved, and the literature treats trust as something to be engineered rather than as a given. The literature has therefore identified the problem with reasonable clarity, but it has rarely asked which institution should bear the responsibility of resolving it.

## ***2.3. Genuine transformation or the unbundling of the degree?***

The most consequential debate in the literature is institutional, and it is sharply polarised. An early and broadly optimistic strand framed micro-credentials and digital badges as an opportunity to widen access, recognise discrete achievement and make higher education more responsive (Gibson et al., 2015; Oliver, 2019). Against this stands a forceful critique. Wheelahan and Moodie (2021) argue that micro-credentials extend the way in which human-capital theory disciplines the higher-education curriculum, and that they rest on a behaviourist, competency-based logic in which qualifications are disaggregated into components and then reassembled as though the parts summed to the whole. On this account, the model shifts the cost of training onto the individual learner and requires the learner to second-guess employer requirements; a wrong guess becomes a bad investment. The fragmentation of learning into small units, in addition, threatens the sequenced and cumulative knowledge that degrees are designed to build (Wheelahan & Moodie, 2022). The disagreement runs along a clear fault line: the same modularity that proponents read as flexibility, critics read as the unbundling of the degree and the erosion of its coherence. Neither side, however, has specified the institutional arrangements that would separate the two outcomes, that is, the conditions under which modular provision strengthens, rather than dismantles, the qualification from which the modules are drawn.

#### ***2.4. Why institutions adopt, and the role of the state***

A fourth strand of the literature explains adoption rather than evaluating it. The near-simultaneous appearance of broadly similar designs across very different systems is consistent with the theory of institutional isomorphism (DiMaggio & Powell, 1983): coercive pressure from supranational recommendations, normative pressure through shared quality standards, and mimetic imitation of early movers under conditions of uncertainty. Policy analysis adds the state as an active agent, documenting the public-funding instruments used to seed provision, from individual learning accounts to dedicated short-course trials in higher education (OECD, 2023). This work is informative about the mechanics of diffusion, but it tends to stop at the moment of adoption. It documents that institutions take micro-credentials up and which policy instruments accompany the process, without examining when adoption translates into an effective response to labour-market change and when it remains a symbolic or revenue-driven addition.

#### ***2.5. An evidence base skewed toward advanced systems***

Finally, the empirical literature is geographically uneven. The richest evidence comes from advanced systems – Ireland, Australia, and OECD case studies of member states such as Finland, Slovenia, Spain and the Slovak Republic (OECD, 2023). Studies of small, transition, or EU-candidate economies are scarce, even though it is precisely there that the labour-market pressure is most acute and institutional capacity thinnest. For Moldova, the principal national reference is a practitioner implementation guide produced with international support (Buimestru et al., 2025) rather than analytical research, leaving the country's experience largely outside the scholarly conversation.

#### ***2.6. The gap this paper addresses***

Taken together, these strands of the literature leave a specific opening. The economic rationale has been laid out, but its signalling condition (the question of who guarantees the credential) has been under-theorised. The central debate between transformation and unbundling has been conducted in the abstract, or within advanced systems, without specifying the institutional condition that determines which of the two outcomes occurs. The diffusion literature explains adoption but not effectiveness. The empirical base, finally, passes over the small EU-candidate economies where the stakes are highest. The present paper addresses this opening on two fronts. At the conceptual level, it links the three functions of micro-credentials in human-capital terms (replacement, unbundling and augmentation) to a single enabling institutional condition, and so brings out the guarantor-funding-framework nexus that the existing debate has left implicit. At the empirical level, the framework is applied to the Moldovan case within its European context, where the distance between an acute need for flexible reskilling and the institutional agility of universities is, as the following analysis shows, at its widest.

### **3. Methodology**

The study is theoretical and qualitative. Its unit of analysis is the university as an institutional actor, and its object is the set of conditions under which micro-credentials function as an institutional response by universities to the transformation of the labour market, in the form of a shift toward flexible and modular learning. The study does not test a hypothesis against a dataset. It develops and applies a conceptual framework to a

policy phenomenon that is still acquiring its institutional shape, reasoning interpretively toward analytical generalisations about institutional conditions, rather than toward estimates of population parameters.

The analytical frame combines three established bodies of theory. Human-capital theory (Becker, 1964) supplies the economic rationale, treating micro-credentials as targeted, divisible investments in skills whose returns depend on their relevance to current production. Signalling theory (Spence, 1973) qualifies that rationale: a short credential conveys productivity information to employers only if its meaning is legible and trusted, which reframes the European emphasis on building trust as a signalling problem rather than a merely administrative one. Institutional isomorphism (DiMaggio & Powell, 1983) explains why universities adopt micro-credentials in broadly similar ways across very different systems, distinguishing coercive pressures, such as EU recommendations and accession conditionality, from mimetic imitation under uncertainty and the normative diffusion of shared standards through quality-assurance bodies and professional networks. Read together, the three lenses separate what micro-credentials are intended to do for the labour market from why institutions take them up, and on what condition the first depends.

The documentary corpus is organised on two levels. At the European level, the analysis examines the Council Recommendation on a European approach to micro-credentials (Council of the European Union, 2022), the European Skills Agenda, and the instruments that carry recognition across borders – the European Qualifications Framework, Europass and ESCO. At the national level, it analyses the Moldovan legal architecture governing partial qualifications: the Education Code (no. 152/2014), the National Qualifications Framework (Government Decision no. 330/2023), the Regulation on adult education (Government Decision no. 222/2024), the methodology that sets the five-to-sixty-credit envelope for micro-credentials (Order of the Ministry of Education and Research no. 785/2024), and the external quality-assurance methodology operated by the National Agency for Quality Assurance in Education and Research, ANACEC (Government Decision no. 616/2016). Each document is read for four attributes: how it defines a micro-credential, how it positions the credential relative to the qualifications framework, what stackability toward a full qualification it permits, and what quality-assurance route it imposes.

The comparative component examines a small number of European systems chosen on theoretical rather than representative grounds. Ireland and Estonia form the core, for two reasons: both are early movers whose national approaches are frequently cited as reference models, and both were the systems presented to Moldovan policymakers at the 2024 workshop convened in Chişinău by the International Labour Organization, which makes them the most policy-relevant comparators for this case. Germany and France enter as secondary references that illustrate university-led and consortium-led routes at an earlier stage of consolidation. The comparison is structured along six dimensions: the role assigned to the university relative to vocational, private and platform providers; placement against the national framework and ECTS; the accreditation and quality-assurance route; the rules governing stackability; the presence of public start-up funding; and the mechanisms that generate recognition and trust among employers. Moldova is then read against this matrix as the focal case.

Two limitations of the design should be stated at the outset. First, the study relies on public documents and on secondary evidence. It does not include a primary survey of employers, learners or university managers, and the statements made about take-up and demand are therefore inferred from policy texts and from reported practice rather than measured directly.

Second, the Moldovan legal framework is recent, with several of the key instruments adopted after 2023. The analysis consequently describes a system that is still in transition, and its conclusions about effectiveness depend on an implementation process that, at the time of writing, has only just begun.

## 4. Results and Discussion

### *4.1. Labour-market transformation and the response expected of universities*

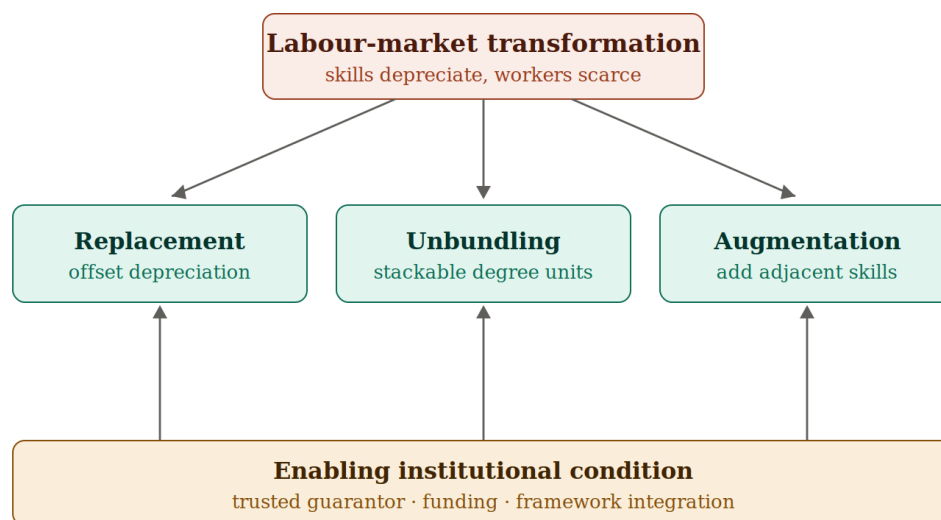
The argument advanced here rests on a mismatch between two rates of change. The first is the rate at which the skills embodied in the workforce lose economic value. The second is the speed at which the multi-year university degree, still the dominant instrument of formal qualification, can renew them. As long as the two rates were similar, a degree obtained in early adulthood remained serviceable for much of a career, and the role of the university could plausibly end at graduation. That assumption no longer holds. Surveying more than a thousand employers across 55 economies, the World Economic Forum estimates that 39% of workers' core skills will change by 2030 (down from 44% in 2023, but still close to two skills in five). The same survey reports that some 22% of jobs will be reshaped by 2030, that 63% of employers regard skills gaps as the principal barrier to business transformation, and that 59 of every 100 workers are expected to need reskilling or upskilling (World Economic Forum [WEF], 2025). The empirical premise from which the present analysis proceeds is the Forum's own conclusion: labour markets are evolving faster than education and training systems can adapt (WEF, 2025).

This mismatch is, fundamentally, a problem in the economics of human capital. In the framing proposed by Becker (1964), productive capacity is a stock that depreciates as the surrounding technologies and tasks change. When the rate of depreciation rises, the efficient response moves away from a single front-loaded investment and toward a sequence of smaller, recurrent investments timed to demand. The classical degree fits poorly with a high-depreciation regime. It bundles competences into a long and indivisible package, sets a relatively high entry threshold, and delivers its return only years after enrolment, at a point when the half-life of technical skills is already contracting. The micro-credential exhibits the opposite profile: it is small, divisible, current and quick to pay back. From a purely human-capital perspective, therefore, micro-credentials should be seen less as a pedagogical fashion than as a way of bringing the investment schedule into line with the new depreciation schedule.

Human-capital logic establishes the demand side of the case, but it does not, on its own, make a short credential economically valuable. The missing element comes from the signalling argument developed by Spence (1973). A credential raises the holder's earnings only to the extent that an employer is able to read it, that is, only if it conveys in a reliable way what its holder can actually do. The classical degree carries that information thanks to a century of accumulated convention. A three-week certificate, by contrast, does not, unless a trusted institution vouches for it. The European emphasis on trust and quality assurance should be read in this light. It is not so much administrative caution as a recognition of the central economic problem of the field: in the absence of a credible guarantor, micro-credentials are investments whose signal remains too noisy to be priced by the market. The question of who stands behind the credential is, for this reason, not secondary to the labour-market case. It is the question on which the realisation of that case depends, and it is the

reason why the institution from which a response is expected is the university, rather than any short-course provider.

Once the university is taken to be the institution from which a response is expected, the content of that response can be set out in concrete terms. Three functions can be distinguished, through which micro-credentials act on a worker's stock of human capital. Each of them addresses a distinct feature of the transformation described above, and the three are summarised in Figure 1. The first function is replacement: short, up-to-date units that substitute for competences which have become obsolete, and so offset the depreciation captured by the 39% skills-change figure. The second is unbundling: the division of a long qualification into stackable units distributed across a working life, so that a person already in employment can accumulate the full qualification in stages, without leaving the labour market. The underlying economic rationale is a reduction in opportunity cost (learning while earning), and this is the function with the greatest potential reach into Moldova's emigration-thinned and time-constrained adult workforce. The third function is augmentation: the addition of adjacent, in-demand competences to a qualification already held. This is the response to a labour market that increasingly rewards combinations of skills, for example a domain specialist who acquires competences in data analytics.



**Figure 1. Three functions of micro-credentials and their enabling institutional condition**

*Source: authors' elaboration.*

The three functions are not equally robust, and the second of them calls for a note of caution rather than celebration. Unbundling is at once the most powerful function and the most fragile, because it depends entirely on the guarantee that the individual pieces will stack toward a recognised qualification and that a part-finished stack will still signal something to employers. Once that guarantee is removed, unbundling degenerates into what the higher-education literature has labelled the unbundling threat: the degree is fragmented into saleable units, and its coherence, together with its signalling value, gradually erodes (Wheelahan & Moodie, 2022). This dependence is the analytical hinge of the framework. The function that responds most directly to labour-market pressure is also the one that depends most heavily on the enabling institutional condition shown beneath all three functions in Figure 1. Two further limits of the framework should be acknowledged. Because the framework is centred on the individual learner, it does not by itself address the equity risk that flexible provision will tend

to reach the already-qualified rather than the low-skilled (a live concern for Moldova's social-inclusion objectives), nor does it cover the separate question of recognising prior non-formal learning. What the framework asks of universities, in any case, is not the addition of a course catalogue, but a more substantial institutional reconfiguration: a shift from the certification of completed programmes to the certification of modular competence on a continuing basis, provided that the university retains its role as guarantor of the signal.

#### ***4.2. Evidence from European front-runners***

The systems most often cited as successful in the European debate, and the two systems presented to Moldovan policymakers at the 2024 ILO workshop in Chişinău, show what such a reconfiguration looks like once it has been realised. They also confirm that its success turns on the enabling condition, rather than on the particular choice of legal form. Ireland built the response as a coordinated, university-led project. MicroCreds, a €14.3 million initiative led by the Irish Universities Association and financed through the Human Capital Initiative, made Ireland the first European country to establish a coherent national framework for quality-assured, accredited micro-credentials, all of them credit-bearing and aligned to the National Framework of Qualifications at levels 6 to 9 (Irish Universities Association [IUA], 2026). By early 2026, the project reported more than 20,000 learners and over 600 accredited micro-credentials across eight universities (IUA, 2026). Two design features explain the take-up achieved. Employers were built into the design from the outset, through an enterprise advisory group, and learners were given a single legible entry point through a national platform that operates as a trusted shopfront for accredited short courses. Translated into the terms of the previous subsection, Ireland resolved the signalling problem by placing the university in the role of accredited guarantor of the credential and the state in the role of funder, and these are the two conditions on which unbundling depends.

Estonia reached a comparable outcome through legislation rather than through a project, and the way it did so is the more instructive comparison for Moldova. The Estonian approach was developed through deliberate institutional preparation rather than through ad hoc legal change. The Education Sector Development Plan 2021-2035 had already identified, as one of its first strategic priorities, the creation of flexible and individualised learning paths built from smaller modular units that learners could assemble according to need; and, before legislating, the Estonian Ministry of Education and Research commissioned a detailed comparative study of international practice in order to inform the institutional design choices that the new instrument would require (Kivistik, Veliste, Käger, & Derevski, 2021). On the basis of this preparatory work, the Adult Education Act was amended in 2025 to give micro-qualifications a clear legal basis within continuing education (Riigikogu, 2025). The state then placed funding and universities behind the channel: a state-commissioned programme offers more than 1,500 free courses to roughly 26,000 people in 2025–2026, delivered by 37 institutions including universities (European Commission, 2025). The Estonian lesson for the present argument is therefore twofold. Routing micro-credentials through adult-education law is not, in itself, a weakness, provided that universities remain central to provision and that the provision is publicly funded. And the legal step is most effective when it is preceded by deliberate institutional preparation, including a careful comparative reading of international practice. By contrast, the more fragmented German and French routes – where provision is shared between universities and private platforms and standardisation is still being negotiated through bodies such as the European Consortium of Innovative Universities, and where France is still developing a national framework for quality and

recognition (Buimestru et al., 2025) – show weaker and more uneven take-up. Where the university is not placed at the centre with public backing, the signal stays weak. Table 1 sets these determinants of agility against the focal case.

**Table 1. Determinants of university agility in micro-credential provision, selected systems**

Determinant	Ireland	Estonia	Moldova
University role	Accredited guarantor; sector-led	Central provider	One provider among VET/private
Public start-up funding	€14.3m national project	State-commissioned courses	None dedicated
Quality-assurance signal	University-accredited, national framework	EKKA agency; EHIS registry	ANACEC external evaluation
Framework integration	NFQ levels 6–9, credit- bearing	EstQF; modular ECTS units	CNC; 5–60 credits
Employer linkage	Enterprise advisory group	Company–HEI training credit	Sectoral committees (nascent)
Observed take-up	20,000+ learners	High, university- central	Low

*Source: authors' compilation based on IUA (2026), Riigikogu (2025), Kivistik et al. (2021), ETF (2025), and Buimestru et al. (2025).*

What the two front-runners share is not a particular legal form but a common institutional posture. In both cases, the university is the accredited guarantor of the credential, the state finances early provision in order to overcome the cold-start problem, and a standing quality-assurance body ensures that the credential is legible to employers. Flexible learning came to operate as a genuine institutional response only in those settings in which universities had been placed in a position to lead it.

#### **4.3. The regulatory environment: from the European framework to Moldova**

The regulatory framework is best understood not as the subject of the response but as the environment that conditions how agile universities can be. At the European level, the Union has actively engineered that environment. The Commission signalled the intent in its 2020 communication on a European Education Area, and the Council Recommendation adopted in June 2022 defines a micro-credential as the record of the learning outcomes acquired following a small volume of learning and attaches common European descriptive elements to it (Council of the European Union, 2022). Read through institutional isomorphism (DiMaggio & Powell, 1983), the framework operates on universities coercively, through the Recommendation and, for a candidate state, accession-aligned expectations; normatively, as the European Qualifications Framework, Europass and ESCO carry shared standards into national quality bodies; and mimetically, through imitation of front-runners under uncertainty. The framework explains the convergence of designs; it does not, by itself, generate agility.

National legal choices then shape the channel. Romania legislated a university route directly, introducing short-cycle university studies of roughly 120 ECTS at qualifications-framework level 5 within its 2023 Higher Education Law (Parliament of Romania, 2023). Moldova has

assembled its architecture rapidly but through a different channel. The system rests on the Education Code (no. 152/2014), the National Qualifications Framework (Government Decision no. 330/2023) and the Regulation on adult education (Government Decision no. 222/2024), with the operative rules set by the methodology approved by Order no. 785/2024, which places micro-credentials between 5 and 60 study credits according to level and complexity, and external assurance run by ANACEC (Buimestru et al., 2025). The national definition aligns with the European one: a micro-credential is a set of learning outcomes from a short module, certified against unified standards for a given framework level, issued with a microcertificate, and combinable toward a full qualification (Buimestru et al., 2025). Measured against the three conditions of section 4.1 - framework integration, stackability and quality assurance – the Moldovan instruments are, on paper, broadly in place.

The binding constraint is, in consequence, institutional rather than legal, and it falls exactly where the agility argument would predict. Moldova channels micro-credentials predominantly through adult education and continuing professional training, where universities figure as one provider alongside vocational and private bodies, rather than through a distinct university-led route. The consequence is visible in the data. The European Training Foundation finds that adult participation in continuing education in Moldova remains low, in part because the available provision is limited and concentrated in cities, and that the coordination of adult-learning provision across the country's two main policy frameworks – Education 2030 and the National Employment Programme 2022-2026 - remains weak (ETF, 2025). This is not the Estonian pattern, in which the same legal channel works because universities are central to it and are publicly funded. It is the same channel, but without the two conditions that allow it to function. University engagement in Moldova is still nascent and largely voluntary. On the signalling logic developed above, the predictable result is a set of credentials that employers cannot yet read; and this in the one economy of the comparison that can least afford a slow response, given that nearly 30% of its people now live abroad, its working-age population has been shrinking since 2008, and the country's overall population could be nearly one-third smaller by 2050 (ETF, 2025).

#### **4.4. *Synthesis***

The chain of reasoning that connects the labour market to the institution can now be drawn together. The accelerating depreciation of skills has pushed the renewal of human capital beyond what the degree cycle is able to carry. The micro-credential, being small and divisible, is the instrument that matches the new schedule, and it does so through the three functions of replacement, unbundling and augmentation. The instrument delivers, however, only where a trusted institution stands behind the signal that it transmits. That institution is the university, and the agility of its response is set by funding, by its placement within the qualifications framework, and by the body that guarantees quality. Ireland and Estonia supplied those conditions and their universities responded at scale. Moldova faces the sharpest version of the pressure and has built the legal environment, but it has not yet placed its universities in a position to occupy that environment. The shift toward flexible learning ultimately turns less on the design of courses than on the institutional equipping of those who are expected to certify them.

## 5. Conclusions

The paper has sought to identify the conditions under which micro-credentials function as a genuine institutional response by universities to the transformation of the labour market. The answer the analysis offers is reasonably clear. Because the rate at which skills lose economic value has come to exceed the renewal cycle of the degree, the small and divisible micro-credential is the instrument that matches the new investment schedule. It performs this role through three functions: the replacement of obsolete competences, the unbundling of long qualifications into stackable units, and the augmentation of qualifications already held with adjacent in-demand skills. None of the three, on its own, generates a labour-market return unless an institution makes the credential legible to employers. The decisive variable, in consequence, is not the particular legal form that a country adopts. It is whether the university is placed in the position of accredited guarantor of the signal, is financed to launch provision, and is fully embedded in the qualifications framework.

The comparison bears this out. Ireland and Estonia reached scale through different legal routes (a funded national project in the first case, an amendment to adult-education law in the second), but they converged on the same institutional arrangement: a university-centred system that is publicly funded and quality-assured. Moldova has assembled an equivalent legal architecture, but has not yet reproduced these enabling conditions. Micro-credentials in Moldova are channelled through adult education, with universities figuring as one provider among many and without dedicated funding or a guarantor role. The binding constraint on the Moldovan response is, therefore, the agility of its institutions rather than the content of its legislation.

Three policy implications follow for Moldova. The first is that universities should be placed at the centre of micro-credential provision in the capacity of accredited guarantors, since the certifying authority of the university is what can resolve the signalling problem that adult-education providers, on their own, are unable to resolve. The second is that the start-up phase requires dedicated public funding, whether in the form of a coordinated national initiative or in that of a state-commissioned scheme. Voluntary, unfunded engagement will not be sufficient to overcome the cold-start problem that is visible in the country's under-resourced provider network. The third is that, because the unbundling function is the most fragile of the three, policy should give priority to a guaranteed pathway through which stacked micro-credentials accumulate toward recognised qualifications, and should deliberately target learners outside the existing lifelong-learning population, so that flexible provision narrows skill inequalities rather than widening them.

The claims of the study are bounded by its design in three respects. The analysis is based on public documents and on secondary evidence, with no primary survey of Moldovan employers or learners, so its statements about effectiveness should be read as conditional inferences rather than as measured outcomes. The Moldovan framework is also recent, with several of the key instruments adopted in 2023 and 2024, and the analysis therefore describes a system that is still in transition; some of the conclusions may not capture implementation as it eventually unfolds. The comparison, finally, rests on two front-runner cases selected on theoretical rather than representative grounds, which supports analytical rather than statistical generalisation.

These limits point to two specific extensions of the research. A survey of Moldovan employers' recognition of micro-credentials, and of their willingness to reward holders of

such credentials in pay or in hiring, would put the signalling condition to a direct test and would convert an inferred mechanism into measured evidence. Once university provision has reached scale, a tracer study following learners through stacked micro-credentials would establish whether the unbundling function delivers the labour-market outcomes that the present analysis argues it can deliver. As the analysis also insists, however, this would be the case only under the institutional conditions specified here.

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