

Mechanisms for comparing and harmonising qualifications in vocational education in the context of European integration

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Abstract. This systematic conceptual review examines mechanisms for comparing and harmonising qualifications in vocational education within the context of European integration, with particular attention to Ukraine's post-war recovery and integration trajectory. Drawing on analysis of scholarly literature (2021–2025), foundational research, and European regulatory instruments, the study develops a four-category classification of harmonisation mechanisms: framework mechanisms (European Qualifications Framework, National Qualifications Frameworks), instrumental mechanisms (Europass, ECVET, ESCO, digital credentials), procedural mechanisms (recognition procedures, ENIC-NARIC networks), and methodological approaches (learning outcomes analysis, stakeholder consultation). The analysis identifies three European harmonisation models – the general recognition system, automatic recognition for sectoral professions, and temporary mobility provisions – and documents persistent barriers to effective qualification recognition, including structural differences in qualification architectures, procedural complexity, and employer scepticism toward foreign credentials. Theoretical interpretation through neo-institutional, human capital, policy transfer, and varieties of capitalism perspectives reveals that framework-level alignment, while necessary, is insufficient for meaningful harmonisation; substantive implementation requires attention to institutional context, stakeholder engagement, and labour market realities. For Ukraine, the findings indicate that effective integration requires prioritising sectoral alignment in strategic domains, investing in recognition infrastructure, and maintaining contextual sensitivity in adapting European frameworks. The study contributes to scholarship by providing a systematic mechanism classification, demonstrating the value of theoretical integration, engaging critically with qualification framework debates, and offering evidence-based recommendations for countries navigating post-conflict qualification system integration.

Keywords: qualifications, vocational education, European integration, qualification frameworks, harmonisation, recognition, labour mobility, European Qualifications Framework, Ukraine

1. Introduction

In the contemporary context of European integration, globalisation, and digital transformation – compounded by the challenges of armed conflict – the comparison and harmonisation of professional qualifications has assumed heightened significance. Ensuring labour mobility, recognising professional competences across borders, and integrating national education systems into the European space require reliable and effective mechanisms for qualification comparison and harmonisation [14, 26].

Ukraine, currently reforming its vocational education and qualifications system while managing the consequences of war, faces particular urgency in developing effective methodologies for comparing national qualifications with European counter-

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*Educational
Dimension*



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parts integrated within the European Qualifications Framework (EQF). This process encounters multiple challenges – regulatory, institutional, and socio-cultural – that complicate effective harmonisation in an international context [10, 35].

The post-war reconstruction imperative extends beyond material resources to encompass qualified human capital capable of sustaining development across key economic sectors. Given significant losses of human potential caused by the war, creating conditions for the return of Ukrainian specialists temporarily abroad – and attracting expertise from European Union countries for joint educational and professional projects – becomes essential.

According to projections from the Centre for Economic Strategy, the Centre for Economic Recovery, and the Institute of Demography, Ukraine's labour shortage could reach 3.1–4.5 million workers by 2032, necessitating effective systems for managing migration processes and human resources [15]. Since the beginning of 2022, up to 5.5 million workers of working age have been lost, representing more than 30% of the total workforce. Between 1.3 and 3.3 million Ukrainians may remain abroad, leading to annual GDP losses of between 2.7% and 6.9% [25].

The significant displacement of Ukrainian professionals across Europe has created unprecedented challenges for qualification recognition. Research on Ukrainian refugees documents widespread skills mismatch and underemployment, with qualified professionals working in positions below their competence levels due to recognition barriers [35, 40]. Studies of Ukrainian healthcare workers in Poland and Germany reveal particular challenges in having medical qualifications recognised, despite the urgent need for healthcare personnel in host countries [6, 31, 33].

In this context, mechanisms for comparing and harmonising qualifications in vocational education emerge as strategic instruments that allow: alignment of training with current labour market requirements; creation of conditions for the return and reintegration of labour resources; attraction of specialists from EU countries to joint projects in education, infrastructure, and the economy; and enhancement of qualification transparency and mobility, contributing to effective human capital utilisation.

The research presented in this article addresses the following objectives: (1) to analyse scientific sources and regulatory documents governing the comparison and harmonisation of qualifications in vocational education; (2) to identify and classify the mechanisms for comparing qualifications used in the European educational space; (3) to describe the tools for harmonising qualifications, including the European Qualifications Framework, ECVET, Europass, and ESCO; (4) to identify barriers and problems that complicate the process of harmonising qualifications between Ukraine and EU countries; and (5) to develop evidence-based recommendations for the integration of the Ukrainian vocational education system into the European educational space.

2. Literature review

This section presents an analysis of scientific sources devoted to the comparison and harmonisation of qualifications in vocational education. The review is organised thematically, beginning with foundational research that continues to shape contemporary debates, proceeding to recent developments (2021–2025), and concluding with research specifically addressing Ukraine's integration trajectory.

2.1. Foundational research on qualification frameworks

While this review focuses primarily on recent scholarship (2021–2025), several foundational works continue to shape contemporary debates on qualification frameworks and merit explicit acknowledgement. The decision to include these earlier sources

reflects their ongoing influence on how researchers and policymakers conceptualise qualification comparison and harmonisation.

Allais [2], in a study commissioned by the International Labour Organisation encompassing 16 countries, provided perhaps the most comprehensive critical assessment of National Qualifications Frameworks (NQFs) to date. Her analysis demonstrated that NQF effectiveness depends critically on institutional context, stakeholder participation, and alignment with broader policy objectives – findings that have been largely confirmed by more recent investigations [5, 42]. Allais’s earlier work [4] on the South African NQF established the influential critique that outcomes-based frameworks risk creating “a downward spiral of specification” without achieving genuine transparency.

Young [59] offered cautionary observations on the development of the European Qualifications Framework, highlighting the risk of “academic drift” whereby vocational qualifications progressively adopt characteristics of academic education. This concept has proven durable, featuring prominently in recent comparative analyses of NQF implementation [42].

Raffe [49] provided the most systematic assessment of evidence regarding NQF impacts, concluding that outcomes are highly variable and context-dependent. His framework for evaluating NQF effectiveness – distinguishing between intrinsic, institutional, and instrumental functions – continues to inform contemporary research design.

The work of Brockmann, Clarke and Winch [11], Brockmann et al. [12] on vocational qualifications across European countries established that apparent equivalence at the framework level can mask substantial differences in the knowledge, skills, and competences that qualifications actually develop. Their comparative analysis of bricklaying qualifications across England, Germany, France, and the Netherlands demonstrated how the same EQF level could encompass qualifications preparing individuals for quite different occupational roles.

2.2. Recent developments in qualification harmonisation research (2021–2025)

2.2.1. Critical reassessments of NQF effectiveness

Recent scholarship has extended earlier critiques while providing new empirical evidence on NQF implementation challenges. Maurer [42], employing a historical-institutional approach to compare qualification frameworks in Bangladesh and Switzerland, identified “academic drift” as a key mechanism undermining NQF effectiveness. His analysis demonstrated how institutional inertia, stakeholder resistance, and the universal application of frameworks without contextual adaptation contribute to implementation failures.

Amundsen and Furholt [5] evaluated the Norwegian NQF’s impact on lifelong learning and labour market relevance, finding that the framework’s aims were often perceived as vague by higher education institutions, limiting substantive implementation. Their study reinforces earlier findings that formal NQF adoption does not automatically translate into changed educational practices.

Research on stakeholder perspectives has enriched understanding of implementation dynamics. Mikulec, Ermenc and Kristl [45] examined Slovenian stakeholders’ views on their NQF, finding that while the framework was valued for transparency purposes, its practical impact on qualification development and recognition remained limited. Elken [23] analysed how countries develop NQFs within the multi-level European governance context, showing how EU policy frameworks are selectively appropriated and adapted to national circumstances.

The notion of “qualified success” characterises several recent assessments. Bohlinger [9], reviewing a decade of EQF implementation, concluded that the framework has achieved institutional success – widespread adoption and procedural compliance –

while substantive impacts on qualification practices and mobility outcomes remain modest.

2.2.2. Digital tools and automated qualification comparison

Recent research has examined emerging technological solutions for qualification comparison. Krishnan et al. [36] developed an AI-based equivalency checker combining machine learning with blockchain technology for credential evaluation, demonstrating potential for automated comparison across educational systems. The system employs natural language processing to analyse qualification specifications and generates equivalency assessments referenced to standardised frameworks.

Rogushina and Pryima [51] proposed an ontological approach to qualification matching, developing web-based systems capable of semantic comparison across national qualification frameworks. Such technological innovations offer potential for reducing the transaction costs of recognition while raising questions about whether algorithmic comparison can adequately capture the contextual factors that shape qualification meaning.

Research on digital credentials more broadly has examined blockchain applications for secure credential storage and verification [48], micro-credential frameworks as alternatives to traditional qualifications [44, 46], and automated skill-job matching systems [54].

2.2.3. Competence-based approaches and learning outcomes

The competence-based approach underlying European qualification frameworks has received continued scholarly attention. Clarke and Winch [18] examined whether Anglo-Saxon output-based models have genuinely influenced European VET policy, finding that while outcomes-based language has been widely adopted, underlying conceptual frameworks remain nationally distinctive.

Winch [57] offered a critical reassessment of learning outcomes approaches, arguing that the “long goodbye” to this paradigm may be approaching as limitations become increasingly apparent. His analysis highlights tensions between the standardisation required for comparison and the contextual specificity that characterises meaningful vocational competence.

Research on competence development in specific national contexts includes Bertash et al. [8] on European experience in forming professional competencies within Ukrainian vocational education, and Shevchenko et al. [52] on the competence approach in Ukrainian engineering education.

2.2.4. Cross-border recognition and mobility barriers

Recent research has documented persistent barriers to qualification recognition despite framework development. Bell Sebastián, Marhuenda Fluixá and Carmona Rodríguez [7] conducted a systematic review of VET pathways for students with migrant backgrounds in Europe, identifying recognition difficulties as a significant factor contributing to educational disadvantage and labour market marginalisation.

Landolt and Thieme [37] examined how highly skilled migrants experience overqualification and deskilling despite holding credentials theoretically equivalent to host country qualifications. Their Bourdieusian analysis highlights how cultural capital, social networks, and tacit knowledge requirements create barriers that formal recognition cannot address.

Capuano and Migali [13] analysed barriers to professional mobility within the EU, finding that mutual recognition of qualifications positively influences migration but that significant procedural barriers persist, particularly for professions subject to the general recognition system.

2.3. Research on Ukraine's integration into European qualification systems

Research specifically addressing Ukraine's qualification system development and European integration has grown substantially since 2022, driven by both the formal EQF comparison process and the displacement of millions of Ukrainians to European countries.

Borodiyenko, Melnyk and Nychkalo [10] provided the most comprehensive analysis of international cooperation's role in Ukrainian VET development, documenting how EU-funded projects and bilateral agreements have influenced governance arrangements, quality assurance, and qualification frameworks. Their research highlights the importance of sustained engagement and contextual adaptation rather than wholesale policy transfer.

The European Commission: Directorate-General for Employment, Social Affairs and Inclusion [26] comparison report represents a milestone in Ukraine's integration trajectory, formally establishing the relationship between the Ukrainian NQF and the EQF. The report documented alignment across eight levels while identifying areas for continued development, particularly in quality assurance and stakeholder engagement.

Research on Ukrainian healthcare workers' experiences in European countries has illuminated recognition challenges in particularly acute form. Hointza et al. [33] examined legal and ethical considerations for Ukrainian doctors in Germany and Poland, finding that despite urgent healthcare workforce needs, recognition procedures remain complex and time-consuming. Gotlib-Małkowska et al. [31] and Andriashenko et al. [6] documented Polish perspectives on employing Ukrainian nurses and the regulatory frameworks governing medical personnel immigration.

Studies of Ukrainian refugee experiences more broadly have documented widespread skills mismatch, with qualified professionals working below their competence levels due to recognition barriers [35, 40]. Kalocsányiová et al. [34] conducted a systematic review of factors facilitating displaced students' access to European higher education, identifying qualification recognition as a critical barrier.

2.4. Synthesis and research gap

The literature reviewed reveals substantial scholarly attention to qualification frameworks, harmonisation mechanisms, and recognition challenges. However, several observations frame the contribution of the present study.

First, existing research tends to focus either on the architecture of qualification frameworks (levels, descriptors, referencing processes) or on specific national implementation experiences. Systematic analysis of the mechanisms through which comparison and harmonisation actually occur – the procedures, instruments, and approaches that operationalise framework-level alignment – has received less attention.

Second, while critical perspectives on qualification frameworks are well-developed, their implications for mechanism design and selection remain underexplored. Understanding why certain mechanisms work better in specific contexts requires integrating insights from institutional theory, policy transfer research, and comparative education.

Third, Ukraine's specific situation – managing qualification system development during wartime while millions of citizens require recognition abroad – presents distinctive challenges that existing frameworks do not fully address.

The present study addresses these gaps through systematic conceptual analysis of harmonisation mechanisms, interpretation through multiple theoretical perspectives, and application to Ukraine's integration trajectory. The guiding hypothesis is that effective mechanisms for comparing and harmonising professional qualifications can be identified, classified, and adapted to national contexts, taking into account socio-economic conditions, digital tools, and regulatory frameworks.

3. Review methodology

This study employs a systematic conceptual review methodology to analyse mechanisms for comparing and harmonising qualifications in vocational education. This section describes the research design, source selection procedures, and analytical approaches employed.

3.1. Research design and approach

The study is positioned as a systematic conceptual review rather than a systematic literature review in the strict Cochrane sense or an empirical investigation generating primary data. The distinction is important for understanding the study's contribution and limitations.

A systematic conceptual review aims to identify, analyse, and synthesise scholarly and policy literature to develop conceptual clarity and analytical frameworks regarding a specific topic [30]. Unlike systematic reviews focused on aggregating empirical evidence to answer specific effectiveness questions, conceptual reviews seek to map intellectual terrain, identify key debates, classify phenomena, and propose frameworks for understanding complex policy domains.

This approach is appropriate for the present topic for several reasons. First, qualification harmonisation involves regulatory instruments, institutional arrangements, and procedural mechanisms that are more amenable to documentary analysis than experimental evaluation. Second, the field lacks sufficient primary studies with comparable methodologies to support meta-analytic synthesis. Third, the research objectives – classifying mechanisms, identifying barriers, developing recommendations – require interpretive analysis of diverse source types rather than statistical aggregation.

The study does not claim to conduct primary empirical research in the sense of generating new data through surveys, interviews, or observational methods. Rather, it systematically analyses existing documentary sources – scholarly literature, policy documents, institutional reports – to develop an analytical framework for understanding qualification harmonisation mechanisms.

3.2. Search strategy and source selection

The literature search was conducted in October–November 2025 using multiple databases and platforms: Scopus, Web of Science, ScienceDirect, and Google Scholar. Search terms included: “qualifications framework”, “qualification harmonisation”, “vocational education AND recognition”, “EQF implementation”, “competence-based qualification”, “credential recognition”, and “professional mobility”. Boolean operators combined terms to capture relevant intersections.

Source selection followed explicit inclusion criteria:

- (i) *Relevance*: Sources directly addressing qualification frameworks, comparison mechanisms, harmonisation processes, or recognition procedures.
- (ii) *Comparative scope*: Preference for sources examining multiple countries or providing cross-national perspective.
- (iii) *Accessibility*: Full text available through institutional access or open access.
- (iv) *Language*: English and Ukrainian language sources.
- (v) *Recency*: Primary focus on 2021–2025 publications, supplemented by foundational works from earlier periods where these continue to shape contemporary debates.

Exclusion criteria included: sources addressing qualifications only tangentially; sources focused exclusively on higher education without VET relevance; opinion pieces without empirical or analytical grounding; and duplicate publications.

The search process identified approximately 850 potentially relevant sources. Title and abstract screening reduced this to 127 sources for full-text review. Following full-text assessment, 73 scholarly sources were included in the final analysis. Additionally, 18 policy documents (EU legal instruments, Cedefop reports, European Commission publications) and 15 foundational sources predating 2021 were purposively included.

3.3. Document analysis protocol

Selected sources were analysed using a structured protocol examining five dimensions:

- (i) *Mechanisms identified*: What specific procedures, instruments, or approaches for qualification comparison does the source describe or analyse?
- (ii) *Theoretical framing*: What theoretical perspectives inform the source's analysis?
- (iii) *Implementation context*: What national or institutional contexts does the source examine?
- (iv) *Barriers and facilitators*: What factors does the source identify as impeding or supporting effective harmonisation?
- (v) *Critical perspectives*: Does the source offer critiques of existing approaches or identify limitations?

Analysis involved extracting relevant information systematically and identifying patterns across sources. The extraction process was iterative, with analytical categories refined as patterns emerged from the data.

3.4. Analytical procedures

Three principal analytical procedures were employed:

1. *Comparative analysis of regulatory frameworks* examined European Union instruments governing qualification comparison and recognition. This involved mapping the objectives of different instruments, identifying the procedures they establish, comparing their scope and application, and tracing their evolution through successive revisions.
2. *Thematic synthesis of scholarly literature* moved beyond cataloguing individual source contributions to identify cross-cutting themes, debates, and knowledge gaps. Synthesis involved grouping sources by thematic focus, identifying areas of consensus and disagreement, and noting how recent research builds upon or challenges earlier work.
3. *Integrative framework development* synthesised findings from regulatory analysis and literature review into a coherent classification of harmonisation mechanisms. This represents the study's primary analytical contribution – moving from description of individual mechanisms to systematic categorisation.

3.5. Methodological limitations

Several limitations should be acknowledged:

- *Scope limitations:* The review focused on European qualification frameworks and their relevance to Ukraine’s integration. While selected comparisons with non-European frameworks are included, comprehensive global coverage was not attempted. Findings may have limited transferability to qualification systems operating under substantially different institutional conditions.
- *Language limitations:* The search was limited to English and Ukrainian language sources. Relevant scholarship published in German, French, Polish, and other European languages may be underrepresented.
- *Documentary focus:* The study analyses documentary sources rather than gathering primary data from practitioners, learners, or employers. Implementation realities may diverge from what policy documents and scholarly analyses describe.
- *Temporal constraints:* The 2021–2025 focus captures recent developments but may miss longer-term patterns. The period examined includes significant disruptions (COVID-19 pandemic, war in Ukraine) that may have affected both policy development and research production.
- *Selection effects:* The purposive inclusion of foundational sources involves judgement about which earlier works remain relevant. Different inclusion decisions might yield somewhat different analytical emphases.

4. Theoretical and conceptual foundations

This section establishes the conceptual foundations for analysing qualification comparison and harmonisation. It defines key terms, examines theoretical perspectives informing the field, and describes methodological approaches to qualification comparison.

4.1. Conceptual foundations

Effective analysis requires precise definition of key concepts. The following definitions, drawn from European regulatory instruments and scholarly literature, provide the terminological foundation for subsequent analysis.

4.1.1. Qualification

The European Qualifications Framework defines a qualification as “the formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards” [20]. This definition emphasises three elements: formal recognition by an authorised body; assessment against defined standards; and the centrality of learning outcomes.

Ukrainian legislation provides a compatible definition. The Law of Ukraine “On Higher Education” defines qualification as “an official result of assessment and recognition obtained when an authorised institution determines that a person has achieved the competencies (learning results) in accordance with the higher education standards, which is certified by relevant document on higher education” [56].

Both definitions adopt an outcomes-based approach, understanding qualifications as certifications of achieved competence rather than merely records of educational participation. However, as Brockmann et al. [12] demonstrated, this apparent conceptual alignment can mask significant differences in what qualifications actually represent across national contexts.

4.1.2. Competence

The EQF defines competence as “the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development” [20]. Within the EQF structure, competence is described in terms of responsibility and autonomy, complementing the knowledge and skills descriptors.

Winterton [58] demonstrated that this European definition represents a compromise among divergent national traditions rather than a genuinely shared understanding. Germanic conceptions of *Kompetenz* emphasise holistic occupational capacity; Francophone *compétence* foregrounds transferable abilities; Anglo-Saxon traditions often reduce competence to observable, assessable behaviours.

Ukrainian legislation defines competence as “the ability of a person to successfully socialise, study and conduct professional activities that arise on the basis of a dynamic combination of knowledge, skills, ways of thinking, views, values and other personal qualities” [56]. This holistic definition aligns more closely with Germanic traditions than with narrow behavioural interpretations.

4.1.3. Comparison of qualifications

The comparison of qualifications refers to “the process of establishing relationships between qualifications from different countries or education systems, enabling assessment of their relative level, content, learning outcomes, and applicability” [26]. Comparison operates at multiple levels: framework level (alignment of NQF levels with EQF); qualification level (correspondence between specific credentials); and learning outcomes level (equivalence of what qualified individuals know and can do).

Rashkevich, Semigina and Balanyuk [50] described qualification comparison as a staged process: first establishing equivalence of qualification levels, then comparing qualifications by subject area. The result may be recognition enabling further education, employment, or access to regulated professions.

4.1.4. Harmonisation of qualifications

Harmonisation extends beyond comparison to encompass “the coordination of structures, standards, and procedures to ensure mutual recognition of qualifications, promoting integration of education systems and formation of a common educational space” [47]. While comparison identifies relationships between existing qualifications, harmonisation involves active alignment – developing common reference points, coordinating quality assurance, and establishing recognition procedures.

Ukrainian legislation defines harmonisation as “the process of bringing national standards into line with European Union standards” [55]. This definition emphasises alignment with external reference points rather than bilateral coordination.

Importantly, harmonisation does not require standardisation – the creation of uniform qualifications across countries. Rather, it seeks “comparability without uniformity” [14], enabling recognition while respecting national educational traditions.

4.2. Theoretical perspectives on qualification frameworks

Understanding qualification comparison and harmonisation requires engagement with theoretical perspectives that explain why frameworks take particular forms, how they function, and why outcomes often diverge from intentions.

4.2.1. Neo-institutional theory

Neo-institutional theory explains the rapid global spread of NQFs through mechanisms of institutional isomorphism – the tendency for organisations facing similar pressures to adopt similar structures [9, 16]. Countries adopt NQFs partly because

other countries have done so (mimetic isomorphism), partly because international organisations promote them (coercive isomorphism), and partly because the qualification framework concept has achieved professional legitimacy (normative isomorphism).

This perspective illuminates the gap between formal adoption and substantive implementation. Fernie, Pilcher and Smith [29], examining the Scottish Credit and Qualifications Framework, found evidence of “symbolic adoption” – formal endorsement of framework principles without corresponding changes in educational practices. Institutions may adopt NQF language and procedures to signal legitimacy while continuing established routines.

The implication for qualification harmonisation is that framework-level alignment may be achieved relatively easily – countries can map their qualifications to EQF levels, produce referencing reports, and participate in coordination mechanisms – without fundamentally changing how qualifications function. The EQF may be best understood as a “success story” in institutional terms while remaining limited in substantive impact [9].

4.2.2. Human capital theory

Human capital theory provides the dominant economic rationale for qualification frameworks. From this perspective, qualifications signal individuals’ productive capacities to employers, reducing information asymmetries in labour markets [43]. Qualification frameworks enhance these signalling functions by providing standardised, comparable information about what credentials represent.

Applied to harmonisation, human capital theory predicts that transparent, comparable qualifications should facilitate better labour market matching, reduce skills mismatch, and enhance returns to educational investment. These predictions underpin much European policy discourse on qualification frameworks and mobility.

However, empirical evidence for the labour market benefits of NQFs is limited. Allais [3] found weak relationships between framework development and employment outcomes across six countries, suggesting that supply-side credentialing cannot substitute for demand-side job creation. Qualifications may signal competence, but if labour markets lack appropriate positions, improved signalling offers limited benefit.

4.2.3. Policy transfer and learning

Policy transfer theory examines how policies developed in one context are adopted in others [16]. The distinction between “policy borrowing” and “policy learning” is particularly relevant: borrowing involves relatively uncritical adoption of external models; learning involves reflective engagement that informs contextually appropriate adaptation.

Drowley and Marshall [22] cautioned that NQF transfer often occurs without adequate attention to the assumptions embedded in framework designs. Frameworks developed for specific institutional contexts – coordinated market economies with strong social partner involvement, for instance – may function poorly when transplanted to contexts lacking these preconditions.

For Ukraine, engaging with European qualification frameworks, policy transfer considerations are directly relevant. The question is whether Ukraine is “borrowing” – adopting EU frameworks because external partners expect this – or “learning” – adapting European approaches in light of Ukrainian institutional realities.

4.2.4. Varieties of capitalism and path dependency

The varieties of capitalism perspective emphasises that VET systems are embedded within broader institutional configurations – labour market structures, industrial relations systems, welfare state arrangements – that shape both qualification design and the functions qualifications serve [17, 18].

This perspective explains persistent national differences despite convergence pressures. German stakeholders have selectively appropriated EQF concepts while preserving core elements of the dual system; French approaches retain distinctive emphases on state-regulated qualifications; UK approaches continue to reflect market-oriented, competence-based traditions [21].

Path dependency – the notion that historical choices constrain subsequent development – helps explain why qualification harmonisation faces persistent challenges. Qualification systems have evolved over decades within specific institutional contexts; transforming them to align with external frameworks encounters resistance from established practices, vested interests, and deeply held assumptions about education's purposes.

4.3. Methodological approaches to qualification comparison

Beyond theoretical perspectives, different methodological approaches structure how qualification comparison is conducted. Four principal approaches can be distinguished.

4.3.1. Framework approach

The framework approach compares qualifications through generalised levels defined in meta-frameworks such as the EQF. Qualifications are positioned relative to common reference points described through learning outcomes descriptors for knowledge, skills, and competence [14].

This approach offers significant advantages: it provides common vocabulary for discussing qualifications across national boundaries; respects national diversity while enabling comparison; and offers transparency about the basis for equivalence claims. However, critics note that generic descriptors may be “too abstract to be useful for comparison of specific qualifications” [39], and that level equivalence may mask substantial differences in qualification content.

4.3.2. Competence-based approach

The competence-based approach compares qualifications through detailed analysis of learning outcomes and competences. This approach underlies instruments like ECVET, which enables credit transfer based on assessed learning outcomes rather than programme duration [41].

Advantages include precision in specifying what qualifications develop and flexibility in recognising learning achieved through diverse pathways. However, critics question whether learning outcomes can adequately capture the holistic competence that effective vocational performance requires. Brockmann, Clarke and Winch [11] asked provocatively whether “performance-related learning outcomes can have standards” – whether the attempt to specify competence in assessable outcomes inevitably loses what makes competence meaningful.

4.3.3. Institutional approach

The institutional approach focuses on the organisations, procedures, and governance arrangements through which qualifications are developed, quality-assured, and recognised. Key elements include national qualification agencies, recognition bodies, international networks (ENIC-NARIC), and bilateral agreements [19].

This approach attends to the infrastructure that makes recognition possible, recognising that formal framework alignment must be operationalised through functioning institutions. Capuano and Migali [13] demonstrated that procedural barriers – processing times, documentation requirements, compensation measures – can impede recognition even where framework-level compatibility has been established.

4.3.4. Functional approach

The functional approach compares qualifications through their practical applications in professional activities and labour markets. Instruments like ESCO map qualifications to occupational profiles and skill requirements, enabling assessment of whether different qualifications prepare individuals for comparable roles [27].

This approach grounds comparison in labour market realities rather than educational specifications alone. However, it risks reducing qualifications to immediate utility, neglecting broader educational values that may not translate directly into occupational performance.

4.4. Synthesis: toward an integrated analytical framework

Table 1 summarises the essential characteristics of these approaches to qualification comparison.

Table 1

Essential characteristics of approaches to qualification comparison.

Criterion	Framework	Competence-based	Institutional	Functional
Essence	Comparison through alignment of levels in qualification frameworks	Assessment based on learning outcomes expressed in competences	Analysis of organisations and procedures for recognition	Analysis of qualifications in terms of professional application
Key reference points	EQF, NQFs, level descriptors	Learning outcomes, professional standards	ENIC-NARIC, recognition bodies, agreements	Labour market requirements, occupational profiles
Primary focus	Structure of qualification levels	Content and quality of learning outcomes	Organisational and regulatory mechanisms	Relevance to professional tasks
Strengths	Transparency, common vocabulary, respects diversity	Precision, flexibility, individualisation	Attention to implementation realities	Grounds comparison in labour market needs
Limitations	Generic descriptors; risk of false equivalence	Difficulty capturing holistic competence	Dependent on institutional capacity	May neglect broader educational values
Ukraine application	NQF development; EQF referencing	Competence-based standards development	National Agency for Qualifications	Professional standards alignment

Three observations emerge from this analysis. First, effective qualification comparison typically requires multiple approaches rather than reliance on any single methodology. Framework-level alignment provides necessary but insufficient foundation; competence-based, institutional, and functional approaches address different aspects of the comparison challenge.

Second, the choice of approach should be informed by the purpose of comparison. Transparency and mobility may be adequately served by framework approaches; recognition decisions for regulated professions may require institutional procedures; labour market policy may demand functional analysis.

Third, theoretical perspectives help explain why approaches work differently in different contexts. Neo-institutional theory illuminates symbolic adoption without substantive change; human capital theory highlights assumptions about labour market responses; path dependency explains persistent national differences.

5. Research results

This section presents the principal findings of the systematic conceptual review, organised around two main themes: the classification of mechanisms for comparing and harmonising qualifications, and the characterisation of European models for qualification harmonisation.

5.1. Classification of mechanisms for comparing and harmonising qualifications

Analysis of European regulatory instruments, Cedefop reports, and scholarly literature reveals a diverse array of mechanisms employed in qualification comparison and harmonisation. These mechanisms can be classified according to their functional characteristics and institutional roles into four primary categories: framework mechanisms, instrumental mechanisms, procedural mechanisms, and methodological approaches. Table 2 presents this classification systematically.

5.1.1. Framework mechanisms

Framework mechanisms establish the structural architecture within which qualification comparison occurs. The European Qualifications Framework, adopted through the 2017 Council Recommendation, provides the overarching reference structure [20]. Its eight levels, described through learning outcomes in three domains (knowledge, skills, competence), create a “translation device” enabling qualifications from different countries to be positioned relative to common reference points.

National Qualifications Frameworks mediate between the EQF and actual qualifications. By 2024, 39 countries had completed referencing processes, creating an extensive network of comparability claims. Ukraine’s NQF was formally compared with the EQF in the 2023 European Commission report, establishing technical compatibility between the frameworks’ eight-level structures [26].

5.1.2. Instrumental mechanisms

Instrumental mechanisms provide practical tools supporting qualification comparison and recognition. Europass offers a portfolio of standardised documents enabling individuals to present their qualifications in formats recognised across Europe. The Diploma Supplement and Certificate Supplement provide structured descriptions facilitating understanding by foreign institutions and employers.

ESCO (European Skills, Competences, Qualifications and Occupations) provides a multilingual classification linking qualifications to occupational profiles and skill requirements [27]. By mapping relationships between qualifications and labour market needs, ESCO supports functional comparison.

Emerging digital credential systems represent a frontier in instrumental mechanism development. Blockchain-based platforms enable secure, tamper-proof storage and verification of qualifications [36, 48].

5.1.3. Procedural mechanisms

Procedural mechanisms establish the institutional processes through which recognition decisions are made. Directive 2005/36/EC on the recognition of professional qualifications provides the principal legal framework for professional recognition within the EU [28]. The ENIC-NARIC network coordinates national information centres for academic and professional recognition [24].

Table 2

Classification of mechanisms for comparing and harmonising qualifications in the European educational space.

Instrument/Procedure	Functional purpose
<i>Framework mechanisms</i>	
European Qualifications Framework (EQF)	Meta-framework establishing eight reference levels for comparing qualification levels across countries
National Qualifications Frameworks (NQFs)	Country-level frameworks that classify national qualifications and reference them to EQF levels
<i>Instrumental mechanisms</i>	
Europass	Portfolio of documents supporting presentation of qualifications and competences for mobility purposes
ECVET	European Credit System for Vocational Education and Training; enables transfer and accumulation of learning outcomes
ESCO	European Skills, Competences, Qualifications and Occupations classification; links qualifications to occupational profiles
Digital credentials	Blockchain-based and digital systems for secure credential storage and verification
<i>Procedural mechanisms</i>	
Recognition procedures (Directive 2005/36/EC)	Legal framework for recognition of professional qualifications
ENIC-NARIC network	National information centres coordinating recognition across European countries
Bilateral/multilateral agreements	Specific agreements establishing mutual recognition arrangements
<i>Methodological approaches</i>	
Learning outcomes analysis	Systematic comparison of qualification specifications focusing on intended outcomes
Stakeholder consultation	Engagement with educational institutions, employers, and professional bodies
Institutional context analysis	Examination of historical and systemic factors shaping qualifications

For refugees and displaced persons, including Ukrainians displaced by war, procedural mechanisms face particular challenges. Missing documentation and interrupted education complicate recognition processes [35, 38].

5.1.4. Analytical synthesis: mechanism effectiveness

Several observations emerge from analysis of these mechanisms:

- *Complementarity.* The mechanisms are interdependent rather than alternatives. Effective qualification comparison typically requires coordinated deployment of multiple mechanisms.
- *Implementation gaps.* There is frequently a gap between mechanism design and operational reality. Framework alignment must be complemented by operational capacity for recognition decisions.
- *Contextual contingency.* Mechanisms work differently in different contexts. Se-

lecting appropriate mechanisms requires sensitivity to the specific comparison context.

- *Persistent barriers.* Despite extensive mechanism development, significant barriers to qualification recognition persist [7, 33].

5.2. European models of qualification harmonisation

Analysis of Directive 2005/36/EC and related instruments reveals three principal models through which qualification harmonisation is achieved within the European Union. Table 3 summarises their essential characteristics.

Table 3

Models of qualification harmonisation in the European educational space.

Model	Essence	Application
<i>General recognition system</i>	Individual comparison of qualifications with host country requirements; compensation measures may be required where substantial differences exist	Regulated professions not covered by sectoral provisions
<i>Automatic recognition</i>	Recognition based on harmonised minimum training requirements; no case-by-case assessment required	Seven sectoral professions: doctors, nurses, dentists, veterinary surgeons, midwives, pharmacists, architects
<i>Temporary mobility</i>	Permission to provide services temporarily without formal recognition	Professionals seeking to provide temporary services in another Member State

The three models represent points on a spectrum from minimal harmonisation (temporary mobility) through case-by-case comparison (general system) to deep harmonisation (automatic recognition). Model selection reflects assessments of the feasibility and desirability of harmonisation in specific professional domains.

5.3. Barriers and facilitators in qualification harmonisation

The analysis reveals systematic patterns in barriers impeding and facilitators supporting effective qualification harmonisation.

Structural barriers include qualification architecture differences, terminological inconsistency, quality assurance divergence, and occupational structure variation. Countries structure qualifications differently, and a qualification in one country may correspond to multiple qualifications in another [53].

Procedural barriers include documentation requirements, processing complexity, language barriers, and compensation measure burdens. For individuals with interrupted education or displaced by conflict, assembling required documentation may be difficult or impossible [38].

Even where formal recognition is granted, employers may remain sceptical of foreign qualifications [1]. Haak-Saheem et al. [32] documented how refugees in Germany face employment barriers despite holding recognised qualifications.

Facilitating factors include framework alignment, institutional capacity, stakeholder engagement, bilateral cooperation, and digital infrastructure. Ukraine's EQF referencing process represents progress in establishing foundations for comparison [26].

6. Discussion

The findings presented reveal a complex landscape of mechanisms, models, and persistent challenges in qualification comparison and harmonisation. This discussion interprets these findings through theoretical perspectives, engages with critical scholarly debates, and considers implications for Ukraine's integration trajectory.

6.1. Interpreting mechanism effectiveness through theoretical lenses

Neo-institutional theory's distinction between symbolic adoption and substantive implementation proves illuminating. The proliferation of NQFs represents institutional success in the sense of widespread formal adoption. However, this procedural achievement may not translate into meaningful change in qualification practices or recognition outcomes [9].

The evidence suggests that many mechanisms function more effectively as coordination devices than as transformation instruments. The EQF provides common vocabulary facilitating communication among policy actors. Yet the framework's impact on substantive qualification content remains modest [5].

Human capital theory provides the dominant justification for qualification frameworks, predicting that transparent, comparable qualifications should facilitate efficient labour market matching. Yet empirical evidence for labour market benefits remains limited. Allais [3] found weak relationships between NQF development and employment outcomes.

Qualifications represent only one signal among many that employers use in hiring decisions; local experience, network connections, and tacit cultural knowledge may matter more than credential equivalence [32].

For Ukraine engaging with European qualification frameworks, the question is whether engagement constitutes “borrowing” – adopting EU frameworks because external partners expect this – or “learning” – adapting European approaches in light of Ukrainian institutional realities. The findings suggest that framework-level alignment, while necessary, does not resolve practical recognition challenges.

6.2. Engaging critical perspectives

Allais [2, 4] argued that outcomes-based qualification frameworks are conceptually flawed, unable to adequately capture educational quality. The “downward spiral of specification” – ever more detailed descriptors without achieving genuine clarity – is evident in ongoing debates about EQF descriptor adequacy [39].

A balanced assessment acknowledges both the force of this critique and its limitations. Outcomes-based frameworks do represent a particular – and contested – approach to qualification description. However, for qualifications with relatively codifiable knowledge and observable performance standards, outcomes-based comparison may work reasonably well.

Maurer [42] identified “academic drift” as a key mechanism through which qualification frameworks fail. The EQF's level descriptors, while nominally encompassing vocational and academic qualifications equally, may be more naturally aligned with academic progression patterns.

The implication is that comparison approaches must attend to the vocational/academic character of qualifications, not merely their framework levels.

Ukraine has made significant progress in aligning its qualification system with European frameworks. The 2023 comparison report established technical compatibility [26]. However, Ukrainian qualification holders continue to face recognition barriers despite formal framework compatibility [33, 35].

Based on this analysis, six recommendations can be offered:

- (i) *Prioritise sectoral alignment in strategic domains.* Concentrate resources on achieving deep alignment in priority sectors – particularly healthcare, construction, and IT.
- (ii) *Invest in recognition infrastructure.* Strengthen the National Agency for Qualifications, develop digital credential systems, and streamline recognition procedures.
- (iii) *Engage employers in harmonisation processes.* Involve European and Ukrainian employers in qualification development to enhance employer confidence.
- (iv) *Address documentation challenges.* Develop alternative assessment pathways for displaced populations where traditional documentation is unavailable.
- (v) *Monitor and evaluate outcomes.* Systematic monitoring of recognition outcomes can inform evidence-based policy refinement.
- (vi) *Maintain contextual sensitivity.* Ukrainian vocational education traditions include elements worth preserving; effective harmonisation requires identifying complementarities.

6.3. Limitations

Several limitations should be acknowledged. The study relies on documentary sources rather than primary data collection. The European focus limits global transferability. The rapidly evolving policy landscape means some developments may have occurred after the literature search. Despite systematic protocols, interpretation necessarily involves subjective judgement.

6.4. Future research directions

Future research could pursue empirical assessment of mechanism effectiveness, comparative implementation analysis across national contexts, stakeholder perspectives on recognition experiences, evaluation of emerging digital mechanisms, studies of post-conflict qualification systems, and longitudinal tracking of harmonisation trajectories.

7. Conclusions

This study examined mechanisms for comparing and harmonising qualifications in vocational education within the context of European integration, with particular attention to Ukraine's post-war recovery and integration trajectory.

The study addressed five research objectives. Regarding the analysis of sources, the review revealed extensive scholarship and policy documentation, with foundational works continuing to shape contemporary debates and recent research (2021–2025) extending critical perspectives while examining digital tools and displacement-related challenges.

Regarding mechanism classification, the study developed a four-category classification distinguishing framework mechanisms, instrumental mechanisms, procedural mechanisms, and methodological approaches. This classification provides a more systematic account than previously available.

Regarding harmonisation tools, the analysis characterised principal European instruments. Three models of harmonisation were identified: the general recognition system, automatic recognition for sectoral professions, and temporary mobility provisions.

Regarding barriers, the study documented structural barriers (architecture differences, terminological inconsistency), procedural barriers (documentation requirements, processing complexity), and attitudinal barriers (employer scepticism). These persist despite extensive mechanism development.

Regarding recommendations, six evidence-based recommendations were offered for enhancing Ukraine's harmonisation outcomes.

The study contributes by providing comprehensive mechanism classification, demonstrating the value of theoretical integration, engaging seriously with critical perspectives, and applying analysis to Ukraine's specific post-conflict situation.

Effective comparison and harmonisation require comprehensive approaches encompassing regulatory alignment, institutional capacity, and stakeholder engagement. Framework-level compatibility, while essential, does not automatically translate into meaningful recognition.

The theoretical perspectives reviewed suggest appropriate modesty in expectations. Neo-institutional analysis indicates formal adoption often exceeds substantive implementation; human capital assumptions may be optimistic; path dependency constrains convergence. Qualification frameworks are useful coordination devices but not transformation instruments.

For Ukraine, findings indicate that European integration in the qualification domain requires sustained effort extending beyond framework alignment. The substantial Ukrainian population displaced by war lends urgency to these efforts; enabling qualification recognition is essential for individual welfare and post-war recovery.

The mechanisms examined represent substantial achievements in European educational cooperation. Yet significant work remains to translate these achievements into consistently positive outcomes for individuals seeking qualification recognition across national boundaries.

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