



IMPROVING THE METHODOLOGY FOR SUSTAINABLE MANAGEMENT OF JOINT EDUCATIONAL PROGRAMMES IN THE CONTEXT OF THE DIGITAL TRANSFORMATION OF HIGHER EDUCATION

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ABSTRACT	KEY WORDS
This article substantiates the need to shift from the administrative support of joint educational programmes to the sustainable management of their entire life cycle. Sustainability is clarified in relation to programmes delivered jointly by two or more universities. It encompasses academic viability, legal recognition, organisational and financial sustainability, digital interoperability, equitable access for participants, and the capacity to adapt to change without compromising educational quality. The methodological framework of the study comprises an analytical review of scholarly publications, a comparative analysis of international quality assurance requirements, an examination of the strategic documents of the Republic of Uzbekistan, and process modelling. The study identifies the main limitations of existing management approaches, including unclear allocation of responsibilities among partner institutions, fragmented data, duplicated procedures, inconsistencies in academic calendars and assessment systems, excessive dependence on individual programme coordinators, insufficient formalisation of risks, and the absence of early warning mechanisms. An integrated sustainable management model is proposed, comprising six interrelated domains: institutional, academic, digital, human resources and communication, resource management, and risk and adaptation. Management objectives, digital mechanisms, and monitoring indicators are defined for each domain. The findings demonstrate that digitalisation contributes to the sustainability of joint educational programmes only when it is supported by common data governance rules, clearly distributed responsibilities, and a regular cycle of monitoring and continuous improvement.	Joint educational programmes, sustainable management, digital transformation, higher education, transnational education, quality assurance, data governance, academic mobility, digital ecosystem.

Introduction

Joint educational programmes occupy a special place in the internationalisation of higher education. Their value lies not only in the opportunity to obtain a joint, double, or multiple degree, but also in pooling the academic resources of partner institutions, promoting mobility, ensuring mutual recognition of learning outcomes, and developing intercultural competencies. At the same time, the joint nature of such programmes creates a particular management challenge: decisions are made across different legal, organisational, and digital environments, while the quality of the final educational outcome depends on the coordination of all participants.

The European Approach for Quality Assurance of Joint Programmes defines a joint programme as an integrated curriculum jointly coordinated and offered by several higher education institutions. It requires partner agreements to address governance and financial arrangements, admission, mobility, assessment, credit recognition, and the awarding of qualifications [1]. Consequently, the sustainability of such a programme cannot be ensured by a single department or international office. It is formed at the intersection of strategic management, academic quality, legal support, financial planning, information systems, and student support.

Digital transformation expands the possibilities for inter-university cooperation, but it does not automatically eliminate institutional contradictions. A systematic review by L. M. C. Benavides et al. shows that the digital transformation of higher education encompasses not only teaching and learning, but also infrastructure, governance, information systems, human resources, and organisational processes [2]. The OECD emphasises the need for a systemic approach that ensures alignment among technologies, stakeholders, and data governance rules [3]. Therefore, introducing separate platforms without changing regulations and responsibilities is more likely to transfer existing fragmentation into the digital environment than to resolve it.

For Uzbekistan, the issues considered in this study are of practical importance. The Concept for the Development of the Higher Education System of the Republic of Uzbekistan until 2030 is aimed at improving the quality of training and developing international cooperation, research, and innovation [4]. The Digital Uzbekistan 2030 Strategy establishes digital transformation as a cross-sectoral priority and links it to performance indicators, research, and the practical application of new technologies [5]. The expansion of international partnerships requires a methodology that connects these two agendas and makes it possible to assess not the number of agreements, but the sustainability and effectiveness of programmes that are actually operating.

The aim of the study is to develop methodological provisions and an applied model for the sustainable management of joint educational programmes in the context of the digital transformation of higher education. To achieve this aim, the following objectives are addressed: to clarify the meaning of sustainable management; to systematise key management contradictions; to determine the role of digital integration; to propose an architecture for managing the full programme life cycle; and to develop a system of indicators for monitoring and improvement.

Materials and Methods

The study is theoretical and methodological in nature. It uses an analytical review of regulatory documents and peer-reviewed publications in three interrelated areas: the management of joint and transnational programmes, quality assurance, and the digital transformation of higher education. The evidence base includes the European Approach for Quality Assurance of Joint Programmes, UNESCO

and OECD documents, national strategic documents of the Republic of Uzbekistan, and studies addressing the organisational, academic, digital, and intercultural dimensions of partnerships [1-10]. The methods employed include comparative analysis, problem-structural grouping, decomposition of the management cycle, and process modelling. At the first stage, recurring problems described in regulatory and empirical sources were identified. At the second stage, they were grouped by levels of responsibility. At the third stage, an integrated model was constructed linking a management task, a digital mechanism, a status indicator, and a corrective action. The proposed model is a conceptual outcome of analytical synthesis and requires subsequent empirical validation using data from specific joint programmes.

Theoretical Foundations of Sustainable Management of Joint Programmes

In this study, sustainable management of a joint educational programme is understood as the capacity of partner universities, throughout the programme life cycle, to maintain agreed academic standards, legal recognition of outcomes, organisational continuity, financial viability, accessibility of digital services, and stakeholder trust while adapting to changes in the external and internal environment. This understanding goes beyond financial sustainability. A programme may have stable enrolment yet remain unsustainable if course recognition depends on manual approval, data are stored in disconnected systems, and the departure of a single coordinator leads to a loss of organisational memory.

Research on transnational partnerships shows that the perspectives of managers at home and host universities may differ significantly. N. Healey identified a gap between the perceptions of risks and priorities among managers based at the home campus and those directly managing the programme in the country of delivery [6]. This confirms the need not only for a formal allocation of functions but also for a permanent mechanism for aligning interests, sharing knowledge, and making joint decisions. Quality assurance should likewise be collaborative rather than based on a model of unilateral control. A study of the tropEd network identified four persistent areas of concern: comparability of quality systems, genuine partnership, the role of accreditation bodies, and transparency [7]. K. Smith shows that quality assurance in transnational education inevitably balances collaboration and control [8]. This leads to a methodological principle: common minimum standards should be combined with transparent adaptation to national and institutional contexts.

Sustainability also has a temporal dimension. At the design stage, the key issues are legal permissibility, alignment of learning outcomes, and resource calculation. At the launch stage, the readiness of teaching staff, digital systems, and support services becomes critical. During implementation, the focus shifts to teaching quality, student retention, the speed of resolving requests, and the reliability of data exchange. At the review stage, graduate employment, achievement of learning outcomes, financial viability, and the partners' willingness to continue the programme become important. Therefore, a single final assessment cannot replace continuous monitoring.

Management Challenges in the Context of Digital Transformation

Digital tools make it possible to synchronise curricula, maintain a unified student register, support blended learning, track mobility, and create analytical dashboards. At the same time, a new class of risks emerges: incompatibility of information systems, inconsistent reference data and identifiers, unclear access rights, cross-border transfers of personal data, dependence on platform providers, cyber threats, and algorithmic opacity. The OECD treats technical, semantic, organisational, and legal compatibility as distinct but interdependent dimensions of interoperability [3].

A bibliometric study of sustainable digital transformation in higher education in developing countries records growing interest in infrastructure, innovation, sustainability, and technology-enabled learning environments while also highlighting the need to account for socio-economic and cultural contexts [9]. For joint programmes, this is particularly important: a technological solution that is convenient for one partner may be legally unacceptable, economically inaccessible, or organisationally unsuitable for another.

Table 1. Key Management Gaps in a Joint Programme

Problem area	Typical manifestation	Management consequence	Required response
Responsibility	Functions are described in general terms; decisions depend on personal arrangements	Delays, conflicts, and dependence on individual staff members	Authority matrix, role deputies, and escalation procedures
Academic comparability	Academic calendars, credits, grading scales, and resit rules differ	Recognition errors and unequal student workloads	Unified learning outcomes map and equivalence tables
Data	The same information is entered repeatedly into multiple systems	Registry inconsistencies and delayed reporting	Common reference data, APIs, or controlled data exchange
Quality	Each partner conducts its own quality control without a shared cycle	Duplication of checks and lack of joint improvement	Unified monitoring plan and a joint quality committee
Resources	Partner costs and contributions are assessed incompletely	Hidden subsidies and disputes over revenue allocation	Full-cost model and annual review of financial terms
Student experience	Support is distributed across different units	Students do not know where to seek assistance	Single support point and defined response-time standards
Risks	Problems are recorded only after deadlines have been missed	Reactive management	Risk register and early-warning indicators

Integrated Model of Sustainable Management

The proposed model is organised not around a single information system but around a coordinated management cycle. Its core is a unified programme profile containing the objectives, legal basis, learning outcomes, curriculum, partner roles, financial model, data map, risks, and indicators. The profile does not replace the agreement or internal regulations; rather, it links them into a manageable structure accessible to authorised participants.

The model includes six domains. The institutional domain establishes authority and decision-making procedures. The academic domain ensures the comparability of learning outcomes, assessment, and qualifications. The digital domain defines the architecture of data and services. The human resources and communication domain develops competencies, knowledge exchange, and continuous interaction between teams. The resource domain ensures cost transparency and adequate infrastructure. The risk

and adaptation domain links monitoring, early warning, and corrective action. These domains operate simultaneously; failure in any one of them reduces the sustainability of the entire programme.

Table 2. Structure of the Integrated Sustainable Management Model

Domain	Primary task	Key mechanisms	Expected management outcome
Institutional	Align the goals, authority, and responsibilities of the partners	Joint programme council; RACI matrix; decision-making and escalation procedures	Predictable decision-making and reduced dependence on individuals
Academic	Maintain a common level of quality and recognition of outcomes	Learning outcomes map; assessment moderation; common review calendar	Comparable requirements and transparent recognition
Digital	Ensure data integrity, availability, and security	Systems architecture; common reference data; access roles; logging; backup	A single reliable version of data for decision-making
Human resources and communication	Maintain competencies and partnership interaction	Induction training; knowledge base; regular working meetings; feedback	Preservation of organisational memory and trust
Resource	Align academic commitments with available resources	Full costing; life-cycle budget; rules for cost and revenue allocation	Financial transparency and resource adequacy
Risk and adaptation	Identify deviations early and ensure continuous improvement	Risk register; threshold indicators; corrective action plans; annual review	Managed adaptation without compromising quality

Management Cycle and Digital Architecture

The programme life cycle is proposed to be organised into five stages: justification, joint design, launch, implementation, and review. At the justification stage, the strategic compatibility of the partners, demand, legal constraints, and the resource model are assessed. At the design stage, learning outcomes, the curriculum, the agreement, the responsibility matrix, the digital architecture, and the risk profile are developed. Launch is permitted after the readiness of staff, systems, learning materials, and support services has been verified. Implementation is accompanied by performance monitoring and incident management. The review stage concludes with a decision to continue, adjust, scale up, or terminate the programme.

The digital architecture should comprise four layers. The first layer is identification and master data: unified codes for students, courses, study periods, and partners. The second consists of operational systems: admissions, student records, the LMS, timetabling, assessment, electronic requests, and mobility management. The third is an integration layer that ensures controlled data exchange and records changes. The fourth is an analytical layer in which indicators are calculated, risks are displayed, and reports are generated. Access to data is granted on a role-based and minimum-necessary basis; rules for storage, correction, and deletion must be agreed before data exchange begins.

Artificial intelligence may be used to support, but not replace, academic and management decisions. Potential applications include routing requests, detecting data anomalies, predicting the risk of academic arrears, and translating standard information materials. However, any decision affecting a student's status, credit recognition, or final grade should remain explainable, verifiable, and subject to oversight by an authorised staff member. These requirements are consistent with the general principle of responsible and equitable use of digital technologies emphasised by the OECD [3].

Sustainability Indicator System

Indicators should reflect not only final outcomes but also the state of underlying processes. It is proposed to combine leading indicators, which make it possible to anticipate problems, with lagging indicators that record achieved results. For each indicator, the partners should approve a definition, data source, frequency, responsible person, acceptable range, and action to be taken when a threshold is exceeded. Without such an indicator profile, the same indicator name may conceal different calculation methods.

Table 3. Recommended Monitoring Indicators

Area	Indicator	Purpose	Frequency
Academic quality	Share of courses with agreed learning outcomes and assessment criteria	Monitor the completeness of academic alignment	Before launch and annually
Recognition	Share of learning outcomes recognised without additional manual approval	Assess the maturity of the recognition mechanism	Each semester
Student cohort	Student retention and reasons for withdrawal	Early identification of academic and organisational barriers	Monthly and at the end of each semester
Service	Median time required to resolve a student request	Assess the accessibility of support	Monthly
Data	Share of records with discrepancies between partner systems	Monitor data integrity	Weekly or monthly
Staffing	Share of key roles with a trained deputy	Reduce dependence on individual staff members	Quarterly
Finance	Deviation of actual costs from the full life-cycle budget	Monitor resource sustainability	Quarterly
Risks	Share of risks with overdue response measures	Assess risk-management discipline	Monthly
Improvements	Share of corrective actions completed within the established deadline	Monitor closure of the quality-improvement cycle	Quarterly

An integrated sustainability index should be used only after the reliability of the source data has been verified and the weights have been justified. At the initial stage, a profile dashboard in which each domain is assessed separately is preferable. This prevents a high student-enrolment figure from masking a critical risk related to qualification recognition or data protection. Once sufficient observations have accumulated, weights may be determined through expert assessment and tested for sensitivity; however, the final score should not replace analysis of the causes of deviations.

Model Implementation Mechanism

Practical implementation should proceed in stages. The first stage is a diagnosis of the existing programme: mapping processes, documents, information systems, roles, points of repeated data entry, financial flows, and accumulated incidents. The second stage is agreement on the target state: refinement of the partnership agreement, learning outcomes, responsibility matrix, data standards, and list of indicators. The third stage is piloting digital exchange and an analytical dashboard for a limited set of processes, such as admissions, course registration, and recognition of learning outcomes. The fourth stage is scaling, staff training, and formalisation of procedures in internal regulations. The fifth stage is an independent annual review and adjustment of the model.

The organisational centre of the model is a joint programme council that includes representatives of academic management, quality assurance, finance, information technology, legal services, student support, and the student body. The council should not replace operational management. Its task is to approve key rules, review indicators and risks, resolve inter-institutional contradictions, and make decisions on programme development. The operational team is responsible for day-to-day implementation, while process owners are responsible for data reliability and the timely completion of corrective actions.

An important condition is the preservation of organisational memory. Regulations, decisions, versions of curricula, equivalence tables, moderation records, and the reasons for changes should be stored in a shared, managed knowledge base. This reduces the risk of losing informal agreements when staff members change. Jiayi Wang's empirical model, based on data from students, staff, managers, regulators, and parents, demonstrates the importance of interconnected capabilities for alignment, adaptation, and rapid response in ensuring the sustainability of transnational partnerships [10]. The proposed model develops this logic by applying it to the full programme management cycle.

Discussion of Results

The proposed approach differs from technology-oriented models in that it treats digitalisation as infrastructure for coordinated management relationships. A platform, register, or analytical dashboard produces results only when data owners, the grounds for data exchange, error-correction rules, and the consequences of deviations are clearly defined. Thus, the maturity of digital governance is measured not by the number of systems implemented, but by the quality of decisions made on the basis of reliable data.

The second distinction is the integration of quality and sustainability. Traditional programme evaluation often focuses on compliance with educational standards, the composition of teaching staff, and learning outcomes. These elements remain central; however, a joint programme must also assess the viability of the partnership model, including resource allocation, the resilience of key roles, process compatibility, the ability to support students across several institutional environments, and preparedness for disruptions. UNESCO views quality assurance as a continuous process of maintaining and improving acceptable academic standards [11]; therefore, it should be embedded in the management cycle rather than limited to periodic external review.

The third distinction is the rejection of a single overall score as the primary management tool. A joint programme is a system of interdependent domains, and aggregation may conceal critical weaknesses. An indicator profile may reveal, for example, that student satisfaction remains high while the number of manual corrections in registers is increasing or while key coordinators have no trained deputies.

Such a signal makes it possible to intervene before the problem affects academic outcomes and the recognition of qualifications.

A limitation of the study is the conceptual nature of the proposed model. It is based on a synthesis of regulatory requirements and published research, but it has not been tested on a dataset from a specific consortium. Further work should include expert validation of the composition of the domains and indicators, piloting in one or more joint programmes, analysis of data reliability, investigation of the relationship between leading indicators and final outcomes, and adaptation to national regulatory requirements and the terms of specific partnership agreements.

Conclusion

Sustainable management of joint educational programmes requires a transition from a set of fragmented administrative procedures to a unified life cycle in which strategy, academic quality, resources, data, risks, and stakeholder interests are considered together. Digital transformation provides tools for such a transition, but it is not an independent guarantee of sustainability. Without a shared architecture of responsibility and data governance, digitalisation reproduces existing fragmentation in a new form.

An integrated six-domain model combining institutional governance, academic quality, digital interoperability, human resources and communication, resource sustainability, and adaptive risk management can serve as the methodological basis for improving management. Its practical application involves a unified programme profile, a joint council, a responsibility matrix, data standards, an indicator profile, a risk register, and a regular cycle of corrective actions.

For universities in Uzbekistan, implementing such an approach can connect the objectives of international cooperation with national priorities for quality improvement and digital transformation. The next stage of the research should be empirical: testing the model in an operating joint programme using real data on student enrolment and retention, recognition of learning outcomes, student requests, resources, and management incidents. Only after such validation will it be possible to justify threshold values and indicator weights.

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