

IMPROVING HIGHER EDUCATION QUALITY MANAGEMENT THROUGH ARTIFICIAL INTELLIGENCE

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Abstract: The development of artificial intelligence (AI) is creating new opportunities for improving quality management in higher education. Universities collect large amounts of information about student satisfaction, learning outcomes, educational processes, and institutional performance. However, this information is not always used to support timely and well-grounded management decisions. This article examines how AI can support quality management through data analysis, the identification of recurring problems, and the monitoring of improvement activities. Based on an analysis of international guidance and quality management principles, the article proposes a conceptual five-stage model that combines AI-assisted analysis with human validation and institutional responsibility. Particular attention is paid to data protection, reliability, transparency, and the risks of excessive reliance on automated recommendations. The article argues that AI should support decision-making rather than replace professional judgement. The proposed model can serve as a starting point for pilot initiatives in higher education quality management.

Keywords: artificial intelligence, higher education, quality management, data analysis, decision-making, continuous improvement.

Аннотация: Развитие искусственного интеллекта создаёт новые возможности для совершенствования управления качеством высшего образования. Университеты собирают значительные объёмы информации об удовлетворённости студентов, результатах обучения, образовательных процессах и деятельности образовательной организации. Однако эти данные не всегда используются для своевременного принятия обоснованных управленческих решений. В статье рассматриваются возможности применения искусственного интеллекта для анализа данных, выявления повторяющихся проблем и мониторинга мероприятий по улучшению качества. На основе анализа международных рекомендаций и принципов управления качеством предлагается концептуальная модель из пяти этапов, объединяющая анализ с помощью ИИ, проверку результатов человеком и ответственность образовательной организации. Особое внимание уделяется защите данных, достоверности результатов, прозрачности и рискам чрезмерной зависимости от автоматизированных рекомендаций. Обосновывается необходимость рассматривать искусственный интеллект как инструмент поддержки принятия решений, а не замену профессионального суждения преподавателей и руководителей. Предложенная модель может служить основой для разработки и последующей проверки пилотных инициатив в области управления качеством высшего образования.

Ключевые слова: искусственный интеллект, высшее образование, управление качеством, анализ данных, принятие решений, непрерывное совершенствование.

Annotatsiya: *Sun’iy intellektning rivojlanishi oliy ta’lim sifatini boshqarishni takomillashtirish uchun yangi imkoniyatlar yaratmoqda. Universitetlarda talabalar qoniqishi, ta’lim natijalari, ta’lim jarayonlari va ta’lim tashkiloti faoliyatiga oid katta hajmdagi ma’lumotlar to’planadi. Biroq ushbu ma’lumotlar har doim ham o’z vaqtida va asoslangan boshqaruv qarorlarini qabul qilishda samarali foydalanilmaydi. Maqolada sun’iy intellektdan ma’lumotlarni tahlil qilish, takrorlanuvchi muammolarni aniqlash va sifatni yaxshilashga qaratilgan chora-tadbirlarni monitoring qilishda foydalanish imkoniyatlari ko’rib chiqiladi. Xalqaro tavsiyalar va sifat menejmenti tamoyillari tahlili asosida sun’iy intellekt yordamida tahlil qilish, natijalarni inson tomonidan tekshirish va ta’lim tashkilotining mas’uliyatini birlashtiruvchi besh bosqichli konseptual model taklif etiladi. Maqolada ma’lumotlarni himoya qilish, natijalarning ishonchliligi, shaffoflik va avtomatlashtirilgan tavsiyalarga haddan tashqari tayanish xavflariga alohida e’tibor qaratiladi. Sun’iy intellekt o’qituvchilar va rahbarlarning kasbiy mulohazalarini almashtiruvchi vosita emas, balki qaror qabul qilishni qo’llab-quvvatlovchi vosita sifatida qo’llanilishi lozimligi ta’kidlanadi. Taklif etilgan model oliy ta’lim sifatini boshqarish bo’yicha tajriba loyihalarini ishlab chiqish va keyinchalik amaliyotda sinovdan o’tkazish uchun asos bo’lib xizmat qilishi mumkin.*

Kalit so’zlar: *sun’iy intellekt, oliy ta’lim, sifat menejmenti, ma’lumotlarni tahlil qilish, qaror qabul qilish, uzluksiz takomillashtirish.*

1. INTRODUCTION

Quality management helps higher education institutions maintain academic standards, evaluate performance, and improve educational processes. Universities collect information through student surveys, course evaluations, administrative records, and academic reports. Analysing these sources separately can make it difficult to identify recurring problems and prioritise improvements.

Artificial intelligence (AI) can support feedback analysis, report summarisation, and the identification of possible patterns. However, its usefulness depends on data quality, tool reliability, privacy safeguards, and human verification. UNESCO emphasises a human-centred approach to AI in education [1].

This article examines how AI can support higher education quality management and proposes a conceptual model for its responsible integration.

Research question: How can AI tools be integrated into higher education quality management while maintaining reliable analysis, human oversight, and institutional accountability?

2. THEORETICAL BACKGROUND AND METHODOLOGY

Quality management involves setting objectives, monitoring performance, evaluating results, and implementing improvements. ISO 21001 provides a management-system framework for educational organisations [2]. AI should therefore address a defined quality problem rather than be introduced as an objective in itself.

Potential applications include categorising student feedback, summarising institutional documents, and identifying recurring concerns. However, AI-generated outputs may contain

errors, omit context, or reflect incomplete data. The use of student information also requires appropriate privacy safeguards. UNESCO and the OECD highlight the importance of responsible implementation, reliability, and data protection [1; 3; 4].

This article uses a conceptual, document-based approach. International publications on quality management and responsible AI adoption were examined to identify potential applications, risks, and implementation principles. The findings were organised into a five-stage model. No original survey data, interviews, or empirical testing were conducted; therefore, the model requires practical evaluation.

3. PROPOSED FIVE-STAGE MODEL

The model connects quality objectives with AI-assisted analysis, human validation, and continuous improvement.

Figure 1. Five-stage conceptual model

1. Define quality objectives and indicators.
2. Collect relevant data with appropriate safeguards.
3. Conduct AI-assisted analysis.
4. Validate findings and make human-led decisions.
5. Implement improvements and evaluate results.

The model is an author-developed proposal, not an official ISO, UNESCO, or OECD framework.

First, the institution defines a quality problem and selects indicators to measure progress. For example, a university seeking to improve responses to student requests could monitor response time and recurring complaints.

Second, the institution collects relevant data, such as anonymised surveys, course evaluations, and administrative records, while applying appropriate privacy safeguards.

Third, AI tools assist with classifying feedback, summarising reports, and identifying recurring themes. These outputs help prioritise further investigation but should not be treated as verified explanations of underlying problems.

Fourth, responsible staff compare AI-generated outputs with original evidence, check interpretations, and make decisions. Final responsibility remains with authorised personnel and institutional governing bodies.

Finally, the institution implements selected improvements and evaluates changes using predefined indicators. Evaluation findings can inform revised objectives and further improvement actions. Observed changes do not automatically establish that a particular intervention caused them.

4. PRACTICAL APPLICATION AND EVALUATION

AI should complement existing quality management processes. Its value should be assessed through a limited pilot before wider implementation.

Table 1

Potential applications and evaluation indicators

Application	AI-assisted function	Evaluation indicator
Student feedback	Categorising comments into themes	Agreement with human classification

Report analysis	Summarising institutional documents	Time required for analysis
Problem identification	Highlighting recurring issues	Accuracy of identified patterns
Improvement monitoring	Summarising recorded progress	Completion of planned actions
Outcome evaluation	Comparing selected indicators	Change in the targeted quality measure

Universities should begin with a clearly defined problem, establish rules for data access and use, prepare staff, and verify AI-generated outputs before relying on them in management decisions. Evaluation criteria should be established before the pilot begins.

Assessment must distinguish operational efficiency from educational improvement. For example, faster feedback analysis does not necessarily mean that student problems have been resolved. Institutions should therefore monitor both process indicators and the original quality objective. If outputs are unreliable or risks outweigh benefits, the pilot should be revised or discontinued.

5. DISCUSSION AND LIMITATIONS

The proposed model provides a structured approach to integrating AI into quality management while retaining human oversight and institutional accountability. Its principles are consistent with international guidance on educational quality management and responsible AI adoption [1–4].

The model has not been tested in a university setting. Its feasibility may depend on institutional resources, staff competencies, data availability, and existing procedures. Further research could pilot the model within a university department or administrative service, assessing output accuracy, analysis time, and changes in selected quality indicators.

6. CONCLUSION

AI can support higher education quality management by organising information, analysing student feedback, identifying possible patterns, and monitoring improvement activities. Its usefulness depends on reliable data, appropriate tools, human verification, and clear institutional responsibility.

The proposed five-stage model links quality objectives, responsible data collection, AI-assisted analysis, human-led decisions, and evaluation. It offers a starting point for pilot initiatives but has not been empirically validated. Further research is needed to establish its feasibility and effectiveness in practice. AI should be adopted to address defined quality objectives, not simply to introduce new technology.

References

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