The Need for Artificial Intelligence Regulation in Colleges of Health Sciences and Technology in Edo State

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ABSTRACT

Artificial Intelligence (AI) is increasingly influencing healthcare education, research, and administrative decision-making, including within tertiary health institutions in developing contexts. In Edo State College of Health Sciences and Technology, AI-driven tools have the potential to enhance medical training, diagnostics, health data management, and institutional efficiency. However, the adoption of AI within health sciences education and practice also introduces ethical, legal, and professional risks, such as data privacy violations, algorithmic bias in clinical decision support, lack of transparency, and challenges to accountability. This article argues that institution-specific and context-aware AI regulation is essential for Edo State College of Health Sciences and Technology to ensure that AI use aligns with professional healthcare standards, patient safety, and public trust. Drawing on academic literature on AI governance, healthcare ethics, and regulatory theory, the article demonstrates that tailored, risk-based regulatory frameworks can support innovation while safeguarding ethical practice. The article contributes to institutional policy discussions by providing a scholarly justification for AI regulation within health sciences and technology education.

Keywords: Artificial Intelligence, AI Regulation, Institutional Governance, Ethics, Edo State College of Health Sciences and Technology

INTRODUCTION

Artificial Intelligence increasingly mediates decisions that were once the exclusive domain of human judgment, including decisions related to employment, creditworthiness, healthcare diagnosis, and law enforcement. Unlike earlier digital technologies, AI systems can learn from data, adapt their behavior over time, and operate at scale with limited direct human control. These features intensify both the benefits and the potential harms of AI deployment. Recent controversies surrounding biased algorithms, intrusive surveillance, and automated misinformation have amplified concerns about the societal consequences of unregulated AI. This paper contends that regulatory intervention is not merely reactive but a necessary precondition for the ethical and sustainable integration of AI into society.

Risks Associated With Unregulated Artificial Intelligence

Ethical and social harms

AI systems trained on historical or unrepresentative data may reproduce and amplify existing social inequalities. Empirical studies have documented discriminatory outcomes in automated hiring tools, facial recognition systems, and predictive policing applications. The lack of transparency characteristic of many machine-learning models further complicates accountability, as individuals affected by automated decisions may be unable to obtain explanations or challenge outcomes. Such dynamics undermine principles of fairness, autonomy, and respect for human dignity.

Privacy and Data Governance Challenges

The performance of contemporary AI systems depends heavily on large-scale data collection, frequently involving personal and sensitive information. In the absence of robust regulatory constraints, data practices may

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exceed what is proportionate or socially acceptable. AI-enabled surveillance technologies, including biometric identification and behavioral profiling, raise acute concerns for privacy and civil liberties. Weak governance structures heighten the risk of data misuse, function creep, and loss of public confidence.

Safety, Security, and Information Integrity

When deployed in high-stakes contexts such as healthcare, transportation, or financial markets, AI system failures can have severe consequences. Unintended behavior, adversarial manipulation, or design flaws may result in physical, financial, or psychological harm. Moreover, advances in generative AI have facilitated the large-scale production of deep fakes and automated misinformation, posing significant threats to democratic discourse and social stability.

Economic and Labor Market Effects

AI-driven automation is transforming labor markets by altering skill demands and displacing certain categories of work. While productivity gains may be substantial, the distribution of benefits is uneven. Without complementary regulatory and social policies, AI adoption risks exacerbating economic inequality and marginalizing vulnerable workers. These concerns underscore the need for governance approaches that integrate technological regulation with broader social policy objectives.

Shortcomings Of Existing Legal Frameworks

Most contemporary legal systems were developed with human decision-makers and relatively predictable technologies in mind. As a result, traditional liability regimes struggle to allocate responsibility when harm arises from AI systems involving multiple actors, including developers, data suppliers, and deployers. Similarly, general data protection laws do not fully address issues such as algorithmic explainability, systemic bias, or ongoing model adaptation. These gaps suggest that reliance on existing legal instruments alone is insufficient for effective AI governance.

Justifications For Artificial Intelligence Regulation

Protection of Fundamental Rights

Targeted AI regulation can reinforce the protection of fundamental rights, including privacy, equality before the law, and freedom from discrimination. Requirements related to transparency, explainability, and human oversight help ensure that AI systems operate within ethically and legally acceptable boundaries.

Trust, Legitimacy, and Institutional Confidence

The legitimacy of AI-driven systems depends on public confidence in their fairness and reliability. Regulatory frameworks contribute to trust by establishing enforceable standards and oversight mechanisms. In this sense, regulation functions as a trust-building infrastructure that supports the long- term adoption of AI technologies.

Enabling Responsible Innovation

Well-calibrated regulation need not inhibit technological progress. On the contrary, clear legal expectations can reduce uncertainty for developers and encourage investment in robust, ethically aligned AI systems. By setting minimum standards, regulation can channel innovation toward socially beneficial outcomes.

Accountability and Responsibility

AI regulation plays a critical role in clarifying accountability when automated systems cause harm. Clearly articulated obligations for relevant actors help prevent responsibility from being obscured by technical complexity. Accountability mechanisms are essential for both remediation and deterrence.

Case Studies And Regulatory Developments

Algorithmic Bias I n Employment Technologies

Documented cases of biased automated recruitment systems illustrate the risks of deploying AI without adequate evaluation and oversight. These examples highlight the importance of regulatory requirements for bias testing, documentation, and impact assessments prior to deployment.

Facial Recognition and Public-Sector Use

The use of facial recognition technologies by public authorities has generated significant legal and ethical debate. Evidence of misidentification and disproportionate impacts on marginalized groups supports arguments for strict regulatory controls or prohibitions on certain high-risk applications.

Risk-Based Approaches to AI Governance

Recent regulatory proposals increasingly adopt risk-based models that impose stricter obligations on AI systems with higher potential for harm. Such approaches aim to balance innovation with robust protection for individuals and society by tailoring regulatory intensity to contextual risk.

Ai Use In Health Sciences Education In Nigeria

Artificial Intelligence is increasingly integrated into health sciences education through applications such as virtual laboratories, clinical decision-support tools, diagnostic training systems, and simulation-based learning environments. In laboratory education, AI-powered image analysis tools assist students in interpreting medical images, histology slides, and laboratory results, thereby strengthening practical competencies. Simulation technologies supported by AI enable realistic clinical scenarios in which students can practice diagnostic reasoning, patient interaction, and emergency response without risk to patients.

In diagnostic training, AI systems expose students to data-driven approaches in radiology, pathology, epidemiology, and public health surveillance. While these tools offer significant pedagogical benefits, they also raise ethical and professional concerns. Overreliance on algorithmic outputs may weaken clinical judgment if not balanced with critical reasoning and human oversight. Furthermore, the use of patient- related data—real or synthetic—for educational purposes necessitates robust data governance frameworks.

Within the Nigerian context, institutions such as Edo State College of Health Sciences and Technology must ensure that AI adoption aligns with ethical standards promoted by the National Health Research Ethics Committee (NHREC), professional health councils, and national data protection principles. NHREC guidelines emphasize respect for persons, beneficence, and justice in health research and training, principles that are equally applicable to AI-enabled educational technologies. Additionally, Nigeria's data protection norms underscore the importance of confidentiality, lawful data processing, and institutional accountability. Although AI-specific regulations remain emergent, these existing ethical and data governance frameworks provide a strong normative basis for responsible AI use in health sciences education.

Alignment with these national standards supports patient safety, professional integrity, and public trust, while enabling innovation within healthcare training institutions. Aligning AI use in education with these principles supports responsible innovation while maintaining public trust in healthcare training institutions.

Ongoing Challenges In Ai Regulation

Despite growing consensus on the need for AI governance, significant challenges remain. These include the rapid pace of technological change, difficulties in maintaining regulatory relevance, enforcement across jurisdictions, and the risk of fragmented or inconsistent standards. Addressing these challenges requires adaptive regulatory design and sustained international cooperation.

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Infrastructure Challenges Affecting Ai Regulation Enforcement In Developing Contexts (Nigeria).

Despite increasing AI adoption, **structural infrastructural limitations** significantly affect regulatory enforcement in Nigerian institutions.

Power Supply Instability

Erratic electricity undermines:

- Continuous access to AI monitoring systems
- Digital assessment integrity
- Real-time logging of AI usage

Institutions relying on generators or solar power face inconsistent enforcement capacity, making policy compliance uneven.

Internet Connectivity and Cost

- Unequal bandwidth access creates **digital inequity**
- Students may rely on offline or unregulated AI tools
- Monitoring platforms (e.g., plagiarism or AI-detection systems) may be inaccessible during outages

This weakens centralized oversight and encourages informal AI usage outside institutional control.

Technical Capacity and Digital Literacy

Many lecturers lack formal training in:

- AI capability assessment
- Algorithmic bias detection
- AI-assisted academic misconduct identification

As a result, enforcement often becomes reactive rather than preventive.

Policy–Practice Gap

While national AI strategies exist, institutional translation is limited due to:

- Funding constraints
- Absence of enforcement frameworks
- Weak inter-agency coordination

Draft Of Institutional Ai Regulation: Code Of Conduct For Responsible Use Of Ai In Teaching, Learning, And Clinical Training.

Purpose and Scope

This Code of Conduct establishes principles and operational rules governing the use of Artificial Intelligence (AI) systems by students, lecturers, researchers, and administrators. It applies to AI tools used in teaching, assessment, clinical simulations, research, administrative decision-making, and student support services.

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Guiding Principles

AI use within the institution shall adhere to the following principles:

1. **Human Oversight and Accountability**

AI shall support—not replace—human judgment, especially in clinical and professional training.

2. **Academic Integrity**

AI-generated content must not be submitted as original student work without proper disclosure and authorization.

3. **Patient and Data Safety**

AI tools must not compromise patient confidentiality, ethical standards, or clinical safety.

4. **Equity and Accessibility**

AI deployment must consider infrastructural disparities such as power supply and internet access.

5. **Transparency and Explainability**

Users must understand AI system limitations, data sources, and decision logic where possible.

Acceptable Uses of AI

- Literature review support and grammar checking
- Clinical scenario simulations clearly labeled as AI-assisted
- Data analysis with methodological transparency
- Assistive technologies for students with disabilities

Prohibited Uses of AI

- Substituting AI output for clinical reasoning or diagnosis in assessments
- Undisclosed AI use in examinations, case reports, or practical logs
- Uploading sensitive patient or institutional data to unapproved AI platforms
- Automated grading or disciplinary decisions without human review

Disclosure Requirement

Students and staff must declare AI use in academic work using an AI Usage Disclosure Statement, specifying:

- Tool used
- Purpose
- Extent of reliance

Proposed Institutional Ai Governance Committee Structure

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Name

Artificial Intelligence Ethics and Governance Committee (AIEGC)

Composition

- Chairperson (Senior Academic / Provost nominee)
- Clinical Sciences Representative
- Computer Science / ICT Expert
- Legal / Compliance Officer
- Medical Ethics Specialist
- Student Representative
- ICT Infrastructure Officer

Functions

- Develop and update AI policies
- Approve AI tools for institutional use
- Investigate AI-related misconduct
- Conduct AI literacy workshops for staff and students
- Liaise with national regulators (e.g.,NBTE, NUC, MDCN, NHREC)

Reporting Line

Reports to the Academic Board / Senate annually or as required.

Practical Methods For Lecturers To Test Loss Of Clinical Judgment To Ai Dependence

Lecturers can assess whether a student is over-reliant on AI using pedagogically grounded, low-technology methods:

Oral Clinical Reasoning Defense

Ask students to:

- Verbally justify diagnoses step-by-step
- Explain alternative diagnoses and rule-outs
- Respond to unexpected scenario changes

AI-dependent students often struggle with **adaptive reasoning** when prompts change.

AI-Deprived Assessment Sessions

Conduct assessments where:

- Internet access is disabled

- Only handwritten notes are allowed

Compare performance with AI-assisted assignments to detect sharp reasoning discrepancies.

Explain-the-Algorithm Test

Ask students:

"Why would an AI recommend this treatment, and when would it be wrong?"

This tests **meta-cognition**, not recall.

Error-Injection Scenarios

Provide cases with deliberately flawed AI-generated recommendations and observe whether students:

- Detect inconsistencies
- Question authority bias
- Apply clinical judgment

Reflective Clinical Journals

Require students to document:

- Decisions they disagreed with AI on
- Ethical concerns encountered
- Situations where human judgment overrode AI output

CONCLUSION

AI technologies hold considerable promise for advancing social and economic well-being, yet their unregulated deployment presents serious ethical, legal, and societal risks. This paper has argued that comprehensive and adaptive AI regulation is a necessary foundation for responsible technological development. From a master's-level perspective, the analysis demonstrates that regulation should not be viewed as antithetical to innovation, but rather as a mechanism for aligning technological progress with fundamental rights and public values. As AI continues to evolve, proactive and coordinated governance efforts will be essential to ensuring that its benefits are realized without compromising social trust or democratic principles.

REFERENCES

1. Floridi, L., Cowls, J., Beltrametti, M., et al. (2018). AI4People—An ethical framework for a good AI society. *Minds and Machines, 28*(4), 689–707. https://doi.org/10.1007/s11023-018-9482-5
2. Jobin, A., Ienca, M., & Vayena, E. (2019). The global landscape of AI ethics guidelines. *Nature Machine Intelligence, 1*(9), 389–399. https://doi.org/10.1038/s42256-019-0088-2
3. Mittelstadt, B. D., Allo, P., Taddeo, M., Wachter, S., & Floridi, L. (2016). The ethics of algorithms: Mapping the debate. *Big Data & Society, 3*(2), 1–21. https://doi.org/10.1177/2053951716679679
4. OECD. (2019). *Artificial intelligence in society*. OECD Publishing. https://doi.org/10.1787/eedfee77-en
5. Stilgoe, J., Owen, R., & Macnaghten, P. (2013). Developing a framework for responsible innovation. *Research Policy, 42*(9), 1568–1580. https://doi.org/10.1016/j.respol.2013.05.008
6. Veale, M., & Borgesius, F. Z. (2021). Demystifying the draft EU Artificial Intelligence Act. *Computer Law Review International, 22*(4), 97–112. https://doi.org/10.9785/cri-2021-220402

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7. Topol, E. (2019). High-performance medicine: The convergence of human and artificial intelligence. *Nature Medicine, 25*(1), 44–56. https://doi.org/10.1038/s41591-018-0300-7
8. World Health Organization. (2021). *Ethics and governance of artificial intelligence for health*. WHO Press.
9. National Information Technology Development Agency (NITDA). (2023). *National Artificial Intelligence Strategy for Nigeria*. Abuja.