

TECHNOLOGY REGULATION IN NATIONAL AND INTERNATIONAL CONTEXTS: NORMATIVE FRAMEWORKS AND EMERGING TRENDS*

Abstract

Digital technology's explosive growth has changed social interactions, governance frameworks, and economic systems while also revealing normative ambiguities and regulatory gaps at the national and global levels. The regulatory frameworks controlling technology are critically examined in this paper, with an emphasis on the changing interactions between national legal systems and global governance mechanisms. It investigates how governments, regional organisations, and international organisations address issues brought about by cutting-edge technology like cybersecurity tools, digital platforms, artificial intelligence, big data analytics, and transnational data flows. The quantitative research methodology was adopted for this paper. Specifically, the paper used the doctrinal research design which focuses on the provisions of the law instead of its application. Data collected was analysed through the analytical approach. The study examined the degree to which current normative frameworks are sufficient to protect fundamental rights, guarantee accountability, foster innovation, and uphold global equity in the digital ecosystem, and policy review. Additionally, this study discovered that the regulation of technology plays a crucial role in enhancing responsible innovation, safeguarding the interests of the people and ensuring sustainable growth in an increasingly digitalised and globalised world. The paper concluded that there is an increasingly interconnected digital world, consistent, harmonised, and forward-looking regulatory regimes which is crucial for bridging the gap between technical innovation and normative protection.

Keywords: Artificial intelligence, Digital technology, Technology regulation, Data privacy, Cybersecurity

1. Introduction

The twenty-first century has been characterised by technological innovation, which has changed how societies connect, communicate, do business, and provide public services. Artificial intelligence, cloud computing, algorithmic decision-making systems, surveillance infrastructures, and international digital platforms are examples of digital technologies that have opened up new avenues for growth, productivity, and involvement. Simultaneously, they have created significant regulatory challenges pertaining to human rights, competitiveness, privacy, security, accountability, and the fair distribution of technical advantages. These advancements force academics, legislators, and legal organisations to consider how, by whom, and under what normative principles technology should be regulated. In the past, national legal frameworks that represent institutional capabilities, sociopolitical realities, and domestic goals have primarily shaped technological regulation. But because many modern technologies are intrinsically transnational, especially those involving cross-border data flows, multinational digital platforms, and globally interconnected systems, international cooperation and the creation of common regulatory standards have become more and more important. This has resulted in a complicated regulatory environment where international soft law instruments, regional initiatives, national laws, and global governance mechanisms interact, overlap, or occasionally clash.

This paper places technology regulation in the context of this dynamic international regulatory environment. It looks at the normative underpinnings of national and international approaches to technology governance, assesses the effectiveness and coherence of current regulatory responses, and spots new trends influencing future regulatory paths. The paper aims to advance knowledge of how law and governance can effectively respond to technological transformation while protecting the public interest, encouraging accountability, and sustaining innovation by interacting with comparative legal frameworks, international policy developments, and developing scholarly debates.

2. The Global Overview of Regulation of Technology

The regulation of technology is a multidimensional and shifting environment that is influenced by domestic and international interests.¹ With the continued redefinition of societies and economies by emerging technologies like artificial intelligence (AI), big data analytics, biotechnology, and digital platforms, the necessity to have effective, adaptive, and inclusive regulatory systems has become more pressing. The United States, the European Union, and China are leading in the creation of a robust structure to regulate technological innovation; however, the diverse political systems, economic goals, and cultural beliefs have led to the disjointed regulatory landscape. The

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¹ Jonathan B Wiener, 'The Regulation of Technology, and the Technology of Regulation' (2004) 26 Technology in Society 483 <https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1960&context=faculty_scholarship>.

latter indicates a need to promote coherence and flexibility in the design of policies across the globe, so that technological advancements can be geared towards promoting moral values, economic development, and human well-being. This paper looks at the major elements of technology regulation with special emphasis on the divergent national responses, the necessity of a global response, and the challenges of governance that are posed by a globalised digital environment.

3. Variations in Policies on National Strategies

Technology regulation policies vary radically across key international participants, indicating the existence of different priorities and approaches to governance. The US has a propensity towards being market-oriented, focusing on innovation as the priority, and less intervention to foster entrepreneurship and competition. This has facilitated fast development of technology, but in many cases at the expense of lack of control in aspects like data privacy, false information and monopoly.² Conversely, the European Union focuses on a rights-oriented regulatory approach that focuses on consumer protection, data privacy, and ethical aspects, as the examples of the General Data Protection Regulation (GDPR) and the AI Act demonstrate. Such actions make the EU a world leader in creating accountability and transparency in technology governance. The Chinese strategy is unique because it combines technological governance with its centralised political framework, where the focus is on the state control, digital sovereignty, and strategic application of technology to develop the country.³ The state-led model is concerned with the exploitation of the emerging technologies to promote economic modernization and social stability though it brings about questions of surveillance and human rights. Several emerging economies in the world are shifting towards blended or pragmatic regulatory systems that are meant to draw in foreign investment as well as encourage innovation and tackle ethical and social consequences.⁴ But the pacing problem, in which technological innovation is outpacing the ability of regulatory systems to keep up with it, is a significant issue. Social impacts of the fast-changing technologies are not easy to foresee and control by policymakers, and this phenomenon results in regulatory voids or strict policies that suppress innovation.

4. International Standard and Co-ordination

The international harmonization of technical standards and regulatory principles has become essential in a world characterised by the cross-border data flows and digital interdependence. Interoperable standards are necessary, not only to allow fair competition and consumer choice but also to have trust and security in digital systems.⁵ The international organizations, including the International Telecommunication Union (ITU), the Organisation Economic Co-operation and Development (OECD), and the World Trade Organization (WTO) have moved towards harmonization of regulatory practices, and adoption of common values including transparency, accountability and fairness. Although this has been done, there are still major challenges. The existence of national variations in data protection regimes, antitrust policies, and intellectual property laws still hinders smooth international collaboration. In addition, there are geopolitical tensions, especially among the dominant forces of technology, which make it difficult to agree on digital governance. However, collaboration has great potential, especially in the creation of minimum standards of AI safety, cybersecurity, and cross-border data exchange. The global community can use inclusive discussions and supportive policymaking to make sure that technology is used as an instrument of fair development as opposed to a globalization divide.⁶

5. The Significance of Technology Regulation

Regulation of technology plays a crucial role in enhancing responsible innovation, safeguarding the interests of the people and ensuring sustainable growth in an increasingly digitalised and globalised world. With the current growth in technological change in the economies, societies and the forms of governance, there is the risk of serious ethical, economic and environmental impacts of such changes without effective regulation. Regulation, thus, serves as a guiding principle that would lead the direction of technological advancement in a manner that would benefit the society in the most possible way and reduce the risks that come with them. It creates a culture where innovation succeeds on the basis of responsibility, transparency and justice. In the sections that follow, the key reasons why technology regulation is necessary in the modern age are expounded.

² Lijun Zhao, *Artificial Intelligence and Law: Emerging Divergent National Regulatory Approaches in a Changing Landscape of Fast-Evolving AI Technologies* [2023] Edward Elgar Publishing eBooks 369.

³ *ibid.*

⁴ Ana Beatriz Marques and others, 'Relatório de Pesquisa - Regulação Da Inteligência Artificial Ao Redor Do Mundo (Research Report - Regulation of Artificial Intelligence around the World)' [2024] *SSRN Electronic Journal*.

⁵ Claude Lopez and Benjamin Smith, 'Share the Data: Overcoming Trade-Offs in Tech Regulation' [2021] *SSRN Electronic Journal*.

⁶ *ibid.*

Promoting responsible Practices: One of the major functions of technology regulation is to promote responsible and ethical technology development.⁷ In a world where technological advancements often surpass ethical and legal principles, regulatory frameworks provide the form of protection that ensures that innovation is in tandem with society and short-term sustainability expectations. Laws can facilitate the green technological innovation, data security, and equal access to innovation.⁸ Besides, explicit and properly designed regulations increase confidence among governments, businesses and customers. Investors and innovators tend to invest in technological ecosystems when regulations on how to use technology are clear and predictable. Such stability creates a culture of responsibility by the tech companies, which encourages them to create products and services that are user-safe, private as well as user-ethically responsible.⁹ The regulation is also important to establish industry standards that can avoid unethical actions like data exploitation, misinformation, and environmental degradation. Through the focus on corporate social responsibility in the technology industry, governments can make sure that the advancement in technology is not only beneficial to the economy but also the interests of the humankind and the planet as a whole.

Securing Public Interests: The other important role of technology regulation is to protect the welfare of the people. The fast development of technologies like AI, robotics, and big-data analytics has brought opportunities and threats. In the absence of proper regulation, such technologies may be abused to distort the truth, violate privacy, or even deepen social disparities.¹⁰ Regulatory frameworks have been used to deal with these challenges, by making sure that the technological development is based on principles of justice, equity, and human rights. As an illustration, opaque algorithms used in credit scoring or loan approvals in financial technologies (FinTech) can be constructed with unintentional discrimination or bias. Efficient regulation makes firms establish algorithmic transparency and fairness so that people and groups are not unfairly treated.¹¹ Likewise, in the case of the healthcare industry, surveillance, and online communication, a well-developed regulatory framework is required to reduce the potential of abusing personal information and to preserve the confidence of the populace.¹² Regulations may enforce data-security measures, informed consent to the use of data, and remedy to those who have suffered the loss of right. This way, tech regulation serves as an obstacle to corporate ill practices and technological misuse, and as such, it maintains the sanctity of a democratic system of governance and welfare.

Embracing Digital Transformation: Technology regulation needs to be dynamic and flexible as global economies, workplaces, and social structures are being transformed by digital transformation. Technological innovation is often too fast to be controlled by conventional regulatory mechanisms and it poses regulatory gaps. Policymakers should therefore formulate dynamic and progressive policies that adapt to new technologies like blockchain, quantum computing, and the Internet of Things (IoT).¹³ International cooperation is essential in adaptation. Due to the cross-border nature of technology, national laws cannot be used to regulate digital ecosystems across the world. A globalised regulation strategy has the potential to harmonise standards in different jurisdictions, allowing cross-border data flows, digital trade, and collaborative enforcement.¹⁴ The United Nations, the World Trade Organization, and the International Telecommunication Union are international organisations that are important in achieving consistency, fairness, and inclusivity in global tech governance. Nevertheless, the adaptation of regulations should be balanced. Excessive or restrictive regulatory frameworks may inhibit innovation, retard the process of technological diffusion, and deter imaginative experimentation. Other researchers suggest that too much regulation poses a danger of introducing bureaucracy that hinders technological advancements.¹⁵ In this respect, policymakers are advised to adopt a balanced position, i.e. use the technology to promote innovation, and make sure that the technological development is responsible, fair and beneficial to society.

⁷ Marcus Smith and Seumas Miller, 'Technology, Institutions and Regulation: Towards a Normative Theory' [2023] *AI & Society*.

⁸ Sabae Gueldi and Mohammed Chakib Himmich, 'La Réglementation Des Avancées Technologiques Au Maroc : Un Pivot Du Développement' (2024) 7 *International Journal of Advanced Research in Innovation, Management & Social Sciences*.

⁹ *ibid*.

¹⁰ Francisca Romana Nanik Alfiani, 'The Important Role of Artificial Intelligence Technology Regulation in Protecting the Public Interest' (2024) 3 *Journal of Social Research*.

¹¹ Anastasia Konina, 'Regulating Regtech: The Benefits of a Globalized Approach' [2020] *SSRN Electronic Journal*.

¹² Metty Paul and others, 'Digitization of Healthcare Sector: A Study on Privacy and Security Concerns' (2023) 9 *ICT Express* 571.

¹³ David S Evans, 'Tech Reg: Rules for the Digital Economy' [2021] *SSRN Electronic Journal*.

¹⁴ Anastasia Konina, 'Regulating Regtech: The Benefits of a Globalized Approach' [2020] *SSRN Electronic Journal*.

¹⁵ Kathy Bowrey, 'Why Global Regulation of Information and Communication Technologies Needs to Be Taken More Seriously' (2010) 1 *Transnational Legal Theory* 459.

6. Regional Regulatory Framework

Technological regulation in Africa involves a complicated set of interrelationships between regional laws, institutional and policy efforts that tackle major issues like data privacy, telecommunication and cybersecurity. These control mechanisms are not only meant to harmonise the legal standards in the continent, but also to address the varying socio-economic realities, development priorities and governance structures of the African states. With the rapid pace of digital transformation, regional organisations and institutions in continents are becoming more aware of the necessity of coherent, inclusive, and future-oriented legal frameworks. The sections below describe key areas of concern in African regional technology legislations, and the current endeavours to establish a safe, fair, and innovative digital space.

7. Data Privacy and Protection

Harmonisation Efforts: The development of harmonisation of data privacy and protection in Africa has been enhanced with states trying to guarantee cross-border data flows, safeguard digital rights, and develop trust in the digital economy. Economic Community of West African States (ECOWAS), the Southern African Development Community (SADC), the Economic Community of Central African States (ECCAS), the Economic and Monetary Community of Central Africa (CEMAC) and the East African Community (EAC) are all examples of sub-regional organizations that have been leading the protection of shared data. These are complemented by the African Union Convention on Cybersecurity and Personal Data Protection (the Malabo Convention) which offers a continent-wide model on the protection of personal information.¹⁶ Even though not every member state is a signatory to the Convention, it is a very important point of reference when it comes to developing national and regional strategies of data governance.

Model Laws: African regional laws regulating technology, including AI, are fragmented with varying enforcement levels.¹⁷ To promote uniformity and curb regulatory fragmentation, several Regional Economic Communities (RECs) have come up with model data protection laws which member countries can tailor to their national environments especially in the aspect of electronic transactions and electronic commerce. ECOWAS has an Act on Electronic Transactions 2010, aimed at establishing a harmonised framework for the regulation of electronic transactions within the region. While SADC has a Model Law on Electronic Transactions and Electronic Commerce,¹⁸ ECOWAS is also discussing the development of a model law for artificial intelligence regulation.¹⁹ The following are some of the major principles presented by these model laws; transparency, accountability, consent, and data subject rights. They provide effective advice that will motivate states that have weak or emerging data governance frameworks to align their models with continental and international ones.²⁰ These model laws have also enabled mutual recognition of data protection regimes, which is necessary to intra-African trade, digital commerce and regional integration.

8. Telecommunications Regulation

Liberalisation Impact: Liberalisation of telecommunication in Africa has contributed significantly to the socio-economic growth. The shift in state monopolies to competitive markets has increased access to mobile and internet services, which lead to financial inclusion, digital entrepreneurship, and better access to information. It has been demonstrated that the liberalisation policies have been particularly transformative to rural and other underserved communities where the ICTs provide new economic opportunities and other essential services to the people.²¹ The connectivity through mobile, especially, has facilitated innovative resolutions in the health, agriculture, and education sectors, thus, supporting national and regional development goals.

¹⁶ Graham Greenleaf and Marie Georges, 'African Regional Privacy Instruments: Their Effects on Harmonization' [2014] Ssrn.com <<https://www.ssrn.com/abstract=2566724>> accessed 25 December 2025.

¹⁷ Opeyemi Nurudeen Mubarak and others, 'Comparative Legal Frameworks for Regulating Artificial Intelligence: A Model for Harmonizing AI Laws in Latin America and Africa' (2024) 2 *Global journal of research in multidisciplinary studies*.

¹⁸ Diplo, 'Digital Economy in Africa: Regional Policies - Diplo Resource' (*Diplo*, 19 January 2023) <<https://www.diplomacy.edu/resource/report-stronger-digital-voices-from-africa/digital-economy-africa-continental-regional-policies/>> accessed 25 December 2025.

¹⁹ Radio, 'ECOWAS Parliament Eyes Model Law to Guide Artificial Intelligence in West Africa - Radio Kogi' (*Radio Kogi - Kogi State Government*, 24 September 2025) <<https://radiokogi.ng/ecowas-parliament-eyes-model-law-to-guide-artificial-intelligence-in-west-africa/>> accessed 25 December 2025.

²⁰ Greenleaf and Georges (n 16).

²¹ Z Ntozintle Jobodwana, 'Telecommunications Liberalisation in Africa: Proposed Regulatory Model for the SADC Region' (2009) 4 *Journal of Digital Forensics, Security and Law*.

Regulatory Challenges: Although there has been an improvement, there are still some challenges that pose a threat to the efficiency of telecommunications regulation in the region. The cost of high services, poor broadband penetration, and poor infrastructure remain barriers to the fair access to communication technologies. Spectrum management, transparency in licensing and regulatory independence remain a thorn in the flesh of many countries. Enhancing the independent regulatory bodies is thus critical in providing a fair competition, enhancing the quality of the services and supervising the adherence to the regional telecommunication standards.²² Unless there is strong oversight, the gains of liberalisation are likely to be skewed.

9. Cybersecurity Frameworks

Draft Convention: The African Union has realised the emergence of cyber threats in the continent, therefore, the Draft Convention on Cybersecurity and Personal Data Protection is a broad legal document created to help all member states in dealing with cybercrime, securing online infrastructures, and safeguarding personal information.²³ The Draft Convention aims at aligning laws on cybersecurity, ensuring co-operation between states, and offering legal instruments to address new menaces like internet fraud, identity theft, and cyber espionage. Its coverage demonstrates the growing significance of cybersecurity to the national security, economic stability, and confidence in the digital systems.

Critiques and Improvements: Irrespective of its ambitious nature, the Draft Convention has suffered a lot of criticism among academics and policymakers. Issues include the lack of proper enforcement mechanisms, lack of clarity regarding state requirements and consultations in the process of its drafting. Critics call on the Convention to be enhanced to incorporate the emerging risks in cyber affairs, protection of human rights, and implement more realistic and context-specific approaches to the implementation.²⁴ Improvement calls focus on the necessity of capacity building, better infrastructure security, and more effective collaboration of the region in relation to cyber incident response. Although technology laws and frameworks in Africa regions are geared towards facilitating the digital innovation and safeguarding the basic rights, there are still major hurdles in creating equitable access and avoiding the further expansion of the socio-economic chasms. The lack of harmonization of laws, infrastructural shortages, and the slowness of the treaty ratification procedure remain to be the bottlenecks. Nevertheless, the continual progress and evolution of these laws demonstrate a strong desire of African institutions to ensure that technological advancement does not dominate over social justice, accountability of the populace, and human rights.²⁵ With the changing digital environment in Africa, the success of these structures will be determined by the long-term political determination, regional collaboration and investments that focus on inclusive growth.

10. Regulatory Environment and the Digital Economy of Nigeria

Regulatory environment in Nigeria is a central aspect that defines the future of the digital economy in Nigeria, as it affects innovation, investment, and general market confidence. Connection between regulation and digital growth is dynamic, strong and progressive regulations can trigger growth whereas excessive regulation or lack of clarity in the policies can pose a challenge to growth.²⁶ The digital transformation process in Nigeria has been described as both a promising and a challenging experience, particularly in the areas of financial technology (FinTech), data governance, and digital assets. Even though the country has been rather hesitant in adopting new technologies, including cryptocurrencies and electronic banking, the past years have seen a slow but steady change towards more organised and balanced systems. These changing regulations are progressively being accepted as a key to enhancing stakeholder trust, consumer security, and market stability.²⁷

Influence of Regulatory Frameworks: This section discusses the different ways in which a regulatory framework can impact the Nigerian landscape.

Innovation should be encouraged: Regulation has played a key role in catalysing innovation in the FinTech ecosystem in Nigeria, which is one of the rapidly expanding ecosystems in Africa. The active interventions of the

²² *ibid.*

²³ Flora Alohan Onomrerhinor, 'Eliminating Safe Havens for Transnational Cybercrimes in the African Continental Free Trade Area' (2022) 2 *Journal of Intellectual Property and Information Technology Law* (JIPIT) 49.

²⁴ Uchenna Jerome Orji, 'The Defects of the Draft African Union Convention on the Establishment of a Credible Legal Framework for Cybersecurity', 2012 Third Worldwide Cybersecurity Summit (WCS) (2012).

²⁵ Caroline B Ncube and Thabiso R Phiri, 'Afro-Centric Law and Technology Discourse' in Bartosz Brożek, Oliwia Kanevskaia and Przemysław Pałka (eds), *Research handbook on law and technology* (Edward Elgar Publishing 2023).

²⁶ OS Aladejubelo, SA Ishola and SO Bamişaye, 'Assessing the Impact of Regulatory Approaches on Financial Technology (FinTech) Solutions in Nigeria' (2024) 5 *Journal of Global Social Sciences* 65.

²⁷ Esther Oloworaran Uchechukwu, 'An Examination of the Regulatory Framework for Digital Assets in Nigeria' (2023) 5 *Kampala International University Law Journal* 79.

Central Bank of Nigeria (CBN) and the Securities and Exchange Commission (SEC) have offered a platform on which start-ups can create solutions that will encourage financial inclusion, digital payments, and credit accessibility. Such initiatives have not only increased access to finance among unbanked and underbanked groups but have also brought foreign investment to Nigeria, which has improved the image of Nigeria as an innovation hub in the region.²⁸ In addition, regulatory sandboxes and innovation offices have been presented as a means of allowing new technology companies to pilot new products under controlled conditions. This method will help the regulators understand the use of technology and come up with rule regulations after understanding them, thereby minimising uncertainty and promoting responsible innovation. Such policies demonstrate the possible existence of adaptive regulation in parallel with technological advancement, where an environment in which innovation can coexist with compliance develops.

Market Stability: The emergence of an adequate legal framework concerning digital resources, especially cryptocurrencies and blockchain-based financial services is crucial to fostering transparency and stability in the digital Nigerian markets. The regulatory control reduces the possibility of fraud, money laundering, and other financial crimes that have in the past plagued the digital asset industry.²⁹ Clarity of regulations also brings confidence to investors and protection to consumers, thus aiding integrity of the capital markets in Nigeria. As an example, the attempts of the SEC to categorise and regulate virtual assets, as well as the introduction of the central bank digital currency, the eNaira, by the CBN, are the important steps towards the inclusion of digital finance into the formal economy. These policies are designed to boost the validity of digital financial operations, discourage criminal use of technology, and encourage safer involvement of both individuals and corporations.

Difficulties of Overregulation: Although it is clear that regulatory frameworks have advantages, there are also disadvantages that are posed by over-regulation or regulations that are not designed in a proper manner. Excessive regulation especially where regulations are vague or conflicting, discourages investment and slows down the process of adopting technology. To illustrate, contradicting regulatory authority initiatives, including the initial CBN prohibition on cryptocurrency transactions produced some degree of uncertainty, which deterred local entrepreneurs and international investors.³⁰ Unreasonable bureaucracy may also slack the introduction of digital services, particularly to start-ups that do not have the economic and legal capacity to overcome complicated regulatory frameworks.³¹ As a result, there is a consensus that the regulatory environment in Nigeria has to be sensitive enough not to be too firm or too lenient. The final objective must be to establish an enabling framework that would guarantee market discipline and promote technological experimentation and growth.

11. Key Areas for Improvement

The following are suggested areas for the improvement of the regulation of technology in Nigeria.

Digital Infrastructure: The quality of the infrastructure provided in Nigeria is crucial to the strength of the digital economy. Broadband connectivity, data centres, and power supply are essential investments required to facilitate the digital platforms to operate smoothly.³² In spite of the remarkable improvement, the nation is still characterised by infrastructural lack, especially in the rural and underserved areas. Increasing the digital infrastructure would not only increase access but also draw more digital business people and international technology companies in search of stable business platforms in Africa.

Education and Skills Development: The other burning problem is workforce preparedness. The development of digital economy in Nigeria has resulted in a specialised expertise in the fields of data science, cybersecurity, artificial intelligence, and digital entrepreneurship. The modern education system however has not been able to cope with these emerging needs. The use of digital literacy and high-technical training in curricula is crucial to providing future job seekers with the skills needed to be employed sustainably in the digital environment.³³ Government agencies in collaboration with universities and private technology companies can be used to conduct

²⁸ OS Aladejubelo, SA Ishola and SO Bamisaye, 'Assessing the Impact of Regulatory Approaches on Financial Technology (FinTech) Solutions in Nigeria' (2024) 5 *Journal of Global Social Sciences* 65.

²⁹ Esther Oloworaran Uchechukwu, 'An Examination of the Regulatory Framework for Digital Assets in Nigeria' (2023) 5 *Kampala International University Law Journal* 79.

³⁰ OS Aladejubelo, SA Ishola and SO Bamisaye, 'Assessing the Impact of Regulatory Approaches on Financial Technology (FinTech) Solutions in Nigeria' (2024) 5 *Journal of Global Social Sciences* 65.

³¹ Bola Dauda and Toyin Falola, *Representative Bureaucracy, Meritocracy, and Nation Building in Nigeria* (Cambria Press 2015).

³² Lindsey Tan Lixi, 'Nigeria Digital Economy Diagnostic Report' (World Bank, 2025) <<https://documents.worldbank.org/curated/en/387871574812599817/>> accessed 2 November 2025.

³³ Popoola Olusegun Victor and others, 'Digital Economy and Job Sustainability in Nigeria: Challenges and Solutions' [2024] *International journal of innovative science and research technology* 3114.

focused training programmes that close the gap in skills and encourage young people to join the digital workforce. This is essential in the way that Nigeria is not only able to embrace new technologies but also comes up with local skills that can make innovations internally.

Holistic Policy Approach: The multi-stakeholder strategy is indispensable to maintaining the digital transformation of Nigeria. There should be a co-ordination between the government, the private sector, academia and civil society to ensure that this is well regulated. Fiscal policy should also go beyond the regulation of finances to encompass matters of data protection, cybersecurity, intellectual property and digital trade.³⁴ Inclusion as well should be taken care of through a comprehensive policy framework to cover the digital divide and to facilitate equal access to the benefits of technology geographically and demographically. Nigeria can also create dynamic and future-oriented regulatory systems by being participatory (through the application of a participatory approach, which includes constant consultation and review).

The necessity of Adaptive Regulation: Nigeria has not been able to deal with the challenge of keeping up with the fast changing nature of technology. New technologies like decentralised finance (DeFi), artificial intelligence and blockchain applications must always be re-evaluated in terms of policy. Critics maintain that the current frameworks might not be sufficient to address the intricacies of these technologies and thus some gaps exist that could be used by malicious individuals. This highlights the need to learn and adapt in the regulatory institutions. Regulators should adopt data-driven and proactive regulation rules that are flexible and adapt with changes in technology. This flexibility does not just curb obsolescence, but also enhances Nigerian competitiveness in the digital arena across the world. Finally, the goal is to make the regulatory environment in Nigeria a catalyst to digital development, and not a constraint.

12. Governance Challenges

The problems of digital governance are complex, as they involve the problem of cybersecurity, privacy, accountability, and ethical use of emerging technologies.³⁵ Governments are faced with the twofold requirement of spurring innovation and protecting the interests and the basic rights of people. The handling of big data, in particular, presents complicated ownership, consent, and monitoring questions, especially when individual companies possess large quantities of personal and behavioural information.³⁶ Also, the growing automation of decision-making with the use of AI systems presents certain ethical and legal challenges in terms of bias, discrimination, and transparency.³⁷ The policymakers should therefore also make sure that the regulatory frameworks do not only avoid harm but also enhance technological inclusivity and trust among the populace. The increased role of the private technology companies in forming digital ecosystems also makes the governance more complex and requires the more powerful mechanisms of control and responsibility of the population. Although it is impossible to ignore the fact that the world is moving towards regulatory reform, it is a challenging task to create a consistent and globally accepted framework. The differences in how nations go about doing things are indicative of greater political and ideological rifts, which casts doubts on the viability of a global regime.³⁸ Finally, it is the struggle to find the right balance between technological innovation and its further promotion and the consideration of ethical, social, and environmental principles. The global policymakers need to thus adopt a regulatory flexibility, that is, frameworks that should be changing with the technology, in order to protect innovation and human dignity in the digital era.

13. Conclusion and Recommendations

Technological regulation has become an important factor that dictates how societies pursue digital transformation, enabling innovation and protecting the interests of the population. The global regulatory frameworks are also increasingly changing to reflect the challenges posed by artificial intelligence, digital assets, and international data flows. Although developed nations like the United States, European Union and China have established different systems of regulation that mirror their philosophies of political and economic systems, developing nations like Nigeria still struggle to match innovation efforts with available governance potential. Regulation of technology is the key to the safe, ethical, and sustainable digital future. Regulation offers the framework that technology needs to be progressive and principled by promoting responsible innovation, safeguarding the interests of the population, and maintaining flexibility in a digitalised world. Balancing innovation and oversight is the ultimate challenge of the policymakers in the global arena. The demands of technological change at a faster pace makes the coherence

³⁴ *ibid.*

³⁵ Dandan Jin, 'The Challenges and Opportunities of Public Governance in the Digital Era' (2024) 2 *International Journal of Social Sciences and Public Administration* 472.

³⁶ Michael Silverman, 'Regulation of Digital Government' [2016] *Springer eBooks* 63.

³⁷ Robert W Hahn, 'Reviving Regulatory Reform: A Global Perspective' [2000] *SSRN Electronic Journal*.

³⁸ Jan Fagerberg, Martin Srdolec and Mark Knell, 'The Competitiveness of Nations: Why Some Countries Prosper While Others Fall Behind' (2007) 35 *World Development* 1595.

of regulatory frameworks, transparent and globally coordinated more crucial in determining a future where technology is used to benefit humanity, and not to harm it. The value of technology regulation lies in its ability to promote responsible behaviour, defence of the rights of citizens, and sustainable development. Proper regulation does not only help to instil trust and responsibility among creators and users, but also helps in reducing the abuse of technology that might degrade privacy, equity or even market purity. On the other hand, lack of coherent regulation or excessive bureaucracy may suppress creativity, discourage investment and only increase digital disparities. In this regard, a moderate regulatory policy is necessary, which encourages innovation but does not ignore regulation and ethical standards.

The regulatory environment in Nigeria has shown slow improvements, especially in areas where FinTech and digital assets are concerned. Previous modes of resistance to new technologies have taken a more organised, reactive structure that recognises the disruptive potential of digital innovation. The Central Bank of Nigeria (CBN), the Securities and Exchange Commission (SEC) and the National Information Technology Development Agency (NITDA) have taken proactive steps in boosting the transparency, consumer protection and stability of the market. However, there are still issues. Redundant regulatory requirements, inadequate digital infrastructure, and a shortage of sufficiently skilled labour force remain the main barrier to the complete implementation of the digital economy in Nigeria. Besides, the fast rate of technology development has revealed the weaknesses of the current regulatory frameworks, at the global and national levels. Cybersecurity, data security, and the responsibility of algorithms are all issues that require constant changes in the policy. To ensure that Nigeria becomes a digital leader in the African region, regulatory systems in the country need to be transformed to be more progressive, data-oriented, and fall in line with global harmonisation efforts. Finally, technology regulation should be dualistic: it should help to promote innovation that leads to economic and social development, and it should also make sure that the innovation is ethical and aligned with the objectives of sustainable development. The future of regulation at the global or national level will depend on the ability to be flexible, cooperate, and be inclusive.

In the light of the above, the following recommendations are necessary:

Create Adaptive and Coherent Regulatory Frameworks: Governments should come up with flexible, technology neutral regulations that are flexible and keep up with the new innovations. In Nigeria, harmonizing the CBN, SEC and NITDA mandates of the central coordinating body would help to minimise overlaps, promote efficiencies as well as investor confidence. At the international level, countries ought to seek interoperability of the digital laws in order to foster trade, trust, and common standards of innovation.

Encourage International/Regional Co-operation: The digital technology is transnational, which means that collaborative governance is required. Other developing nations like Nigeria ought to be keen on participating in international discussions on digital policy, data governance, and AI ethics. The collaboration with international organisations including the International Telecommunication Union, the Organisation Economic Co-operation and Development, and the World Trade Organization will allow aligning national standards with the international best practices and draw foreign investors.

Invest in Digital Infrastructure: A strong digital infrastructure, such as broadband, stable power supply, data centres, and cybersecurity systems, is the key to a successful digital economy. The Nigerian government is encouraged to take advantage of the public-private partnerships (PPP) in order to widen infrastructure, especially in the rural areas that are underserved, hence creating equal access and inclusion.

Empower Education and Digital Skills Building: It is difficult to imagine innovation and employment without the creation of a digitally skilled workforce. Educational reforms ought to incorporate STEM, coding, and digital literacy into school curricula and facilitate research in the new technologies like AI, blockchain, and data analytics. Combining efforts of universities, technology companies, and government bodies can resolve the digital skills divide and equip the citizens with an emerging labour market.

Make sure Ethical and Responsible Innovation: The policymakers should incorporate ethical aspects (e.g., protection of privacy, data security, and environmental sustainability) in the design of the regulations. Promoting corporate social responsibility (CSR) in the tech industry and making the process of algorithmic decision-making more transparent will contribute to trust and protection of human rights.

Promote Regulatory Sandboxes and Innovation Hubs: Creation of experimental regulatory spaces may enable innovators to experiment with new technologies under regulation which will offer regulators information before

rules are formally adopted. This strategy encourages innovation and alleviates systemic risks and adherence to changing standards.

Take the Holistic, Multi Stakeholder Policy Approach: The digital transformation will involve concerted effort on the part of government institutions, the business sector, academia, and civil society. Through dialogue and co-formulation of policies, Nigeria can make sure that the regulatory frameworks are inclusive, transparent, and sensitive to the needs of the different members of societies.

Review and Update regulations on a continuous basis: Technological development rate requires periodic revision of policies. The regulatory bodies of Nigeria ought to institutionalise systems of regular review and revision of the regulations that govern digital finance, cybersecurity and data protection. This practice will ensure that the practice remains relevant, bridging regulatory gaps, and stop taking advantage of the old provisions.