ARTIFICIAL INTELLIGENT (AI) DRIVEN TOOLS, MECHANISMS BEHIND FAST GROWTH IN DIGITAL ECONMY: TAXATION CHALLENGES IN NIGERIA

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ABSTRACT

The advancement in technology and its adaptation brought about fundamental changes in the face of the digital economy and financial market. This includes the speed of execution of financial transactions, and opportunities for attracting new customers. The growth of digital economy revealed the flaws in traditional market. Due to convenience, most people prefer to engage in digital market rather than traditional market system. However, the growing role of digital assets exposed a lot of issues that have arisen and there became need for its regulation, following the rules of the open free market on the one hand, and protecting both entire financial systems and individual users from possible risks arising from the development of new financial technologies.[2] The inability of Nigerian government to come up with precise law that would regulate the digital economy posed as a big challenge as it exposed the nation to loss of revenue and tax avoidance. This paper examined the challenges or inability to have a concise legal framework on digital economy. The methodology adopted in this work is doctrinal wherein primary and secondary sources of material were utilized. Upon findings that there is now an improved law on taxation in Nigeria which shelters some digital services, however, the study revealed that the improvement made though encouraging was not sufficient to cover the existing and already identified challenges. It therefore recommended adoption of blockchain model and Application Programming Interface (API)-based data exchange mechanism which would aid the tax authorities to obtain actual information about transaction values, service types, and user identities. This will enable the tax authorities have the data of all the transactions made whether the information was supplied to them by the online-vendors or not.

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[2] Makurin et al,' Fintech, techfin and crypto currency: ruled game or free surf' EBSCO https://openurl.ebsco.com/EPDB%3Agcd%3A5%3A13491429/detailv2?sid=ebsco%3Aplink%3Ascholar&id=ebsco%3Agcd%3A180708609&crl=c&link_origin=scholar.google.com>accessed on 29th Oct., 2025

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1.0.INTRODUCTION

The emergence of AI technologies and adaptability of its modus of operation has revolutionized the digital market land space and affected traditional marketing system. The AI chatbot and real time acceptability as a recognized means of digital marketing have encouraged cross border transactions. AI can be used in the form of tax chatbots to help taxpayers understand their obligations automatically, automate tax reporting, and provide early warnings if there are discrepancies between transactions and taxation rules. AI can also be used to build predictive systems capable of estimating potential tax revenue from the fintech sector within a certain period, enabling the government to formulate more responsive fiscal policies[3].

This has transformed customer service by providing uninterrupted support and enhanced users experience. Machine learning algorithms allow for predictive analytics as it helps marketers to anticipate consumer behavior and optimize campaigns. Thus, AI-driven content generation enables businesses to produce personalized, engaging content at scale. Digital marketing has evolved from traditional advertising to data-driven AI-powered strategies that maximize ROI.[4]

Platforms like social media, fluterwave etc have leveraged on AI ads to market their products. This has rapidly brought increase in visibility, conversions and transactions. Brands with relevant influencers connect with AI -powered marketing influencers to amplify their reach and credibility. With the advancement in AI technologies, businesses that adopt digital market strategies would remain competitive in the ever evolving marketing space. The integration of AI into marketing space gave rise to digital market. Digital services though has been in existence in nineties but became more digitally transformed recently through cloud computing, big data and social media platforms.

Nigeria is not left out in this marketing transformation. In 2001, Nigeria's first internet service provider (ISP) was established.[5] In 2010, e-commerce platforms like Jumia and Konga

[3] Saruju & Hamid,'Assessing the Challenges Of digitalizing tax administration' (2024)
[4] M H Huang, & T R Rust ,'Artificial Intelligence in Service Marketing' *Journal of Service Research* (2018) 21(2), (2018):155-167.
[5] J Ondrus. 'Mobile Payments: A Review of the Literature' *Journal of Payments Strategy & Systems* 3(2), (2009), p.12

emerged[6]. In 2015, gigital payments increased with mobile money services.[7] While in 2020, Nigeria's digital economy contributed 13% to GDP.[8] Though Nigeria has adapted and adopted the e-commerce, however poor taxation and lack of effective regulatory law have posed as serious challenges. The identified challenges gave rise to conducting of this research. In this study, the focus is to proffer a solution towards difficulties in taxing transactions in Nigeria.

2.0.LEGAL FRAMEWORK OF TAX OBLIGATION TO DIGITAL AND FINETECH COMPANIES

The Bank & Other Financial Institutions Act 2020: This law makes provision for regulation of financial institution inclusive of finetech. Section 130 of the Act defines fintech companies as Other Financial Institutions (OFI) and holds them to the strictest compliance. It provides thus:

> 'any individual, body, association or group of persons; whether corporate or unincorporated other than the banks licensed under this Act, which carry on the business of a discount house, bureau de change, finance company, money brokerage, authorised buying of foreign exchange, International Money Transfer Services, mortgage refinance company, mortgage guarantee company, financial holding company or payment service providers regardless of whether such businesses are conducted digitally, virtually or electronically only and companies whose objects includes factoring, project financing, equipment leasing, debt administration, fund management, private ledger services, investment management, local purchases order financing and such other businesses as the bank may from time to time, designate regardless of whether such businesses are conducted digitally, virtually or electronically only.

Nigerian Data Protection Act 2023 (NDPA): This law provides for protection of data processing across multiple sectors. The Act establishes the legal framework for the regulation of personal data in Nigeria and replaces the Nigerian Data Protection Regulations (NDPR) 2019 and the NDPR Implementation Framework 2019 issued under the National Information Technology Development Agency (NITDA) Act. Section 40 of the Act provides for obligation

[6] O Adeniyi, E-commerce in Nigeria: Challenges and Prospects' *Journal of Management and Sustainability* 5(2), (2015), p.20
[7] CBN ' Mobile Money Guidelines: Central Bank of Nigeria' (2015),p.10
[8] NBS 'Nigerian Gross Domestic Product Report' *National Bureau of Statistics* (2020),p.25 11 G O Oyedok

regarding personal data breaches and this finds shelter in section 37 of the Constitution[9] which guarantees citizens right of privacy.

Nigeria Tax Act 2025: Section 151 (2) of the Act is a key provision that explicitly requires non-resident suppliers of digital services to register for VAT, collect it from Nigerian customers, and remit it to the Nigeria Revenue Service (NRS). This brings e-commerce, streaming services, cloud computing, online advertising, and software subscriptions within the VAT net. More so, Section 158 of the Act mandates taxable persons to use electronic fiscal tools (like e-invoicing systems) for recording and reporting transactions, supporting the digital enforcement of taxes. Furthermore, Section 34 of the Act widens the scope of "chargeable assets" for Capital Gains Tax (CGT) purposes to include digital and virtual assets (such as cryptocurrencies, NFTs, intellectual property rights, and similar intangibles). Gains from the disposal of these assets are now taxable. In addition, Section 17(2) of the Act extended Nigeria's taxing rights to non-resident persons (NRPs) who derive profits from digital or intangible activities within Nigeria, even without a physical presence, by formalizing the Significant Economic Presence (SEP) rule.

Nigeria Tax Administration Act 2025: Sections 22 and 23 of the Act mandates the use of certified electronic fiscal systems (EFS) for real-time transaction reporting and data transmission to tax authorities.

Section 25 provides for Virtual Asset Service Providers (VASPs). The Act mandates VASPs (e.g., crypto exchanges) to file tax returns and report significant transactions, with penalties for non-compliance.

This law to a reasonable extent covered the digital economy and or market such as e-commerce, finetech and digital service but however, not satisfactory as it failed to provide for how to catch those that are not in compliance with the tax obligations and monitoring of compliance through automated machine will only be for those that presented their records and or data. In the absence of this, there will always be loss of revenue from e-commerce.

3.0.BASIC CONCEPTS AND EXPLANATIONS OF THE DIGITAL ECONOMY

Through integration of digital technologies and its adoption, the digital economy becomes

[9] 1999 Constitution of the Federal Republic of Nigeria As amended

transformative force that fundamentally changes economic activity.[10] World Bank has revealed that Nigeria has made some progress in its digital transformation, but strategic investments and innovations are still needed to reach its full potential.[11]The concept of digital economy includes E-commerce, finetech, cloud computing, big data and analytics, blockchain technology and Artificial intelligence.[12] The emergence of some key sectors in Nigeria's dynamic digital economy has been as a result of technological progress and entrepreneurial spirit.[13] With the aid of these sectors, the country's economic development was sharpened.[14] Despite that there is advancement in technology, yet the taxation framework is still unclear as there is push or proposal towards Digital Service Tax (DST).[15] This tax would aid in ensuring that countries increased their taxation rights over the profits of tech-based MNEs that sell in their local markets[16]. Recently, under the new Nigeria Tax Act 2025, there is a provision for minimum effective tax which is similar to OECD's Pillar 2 which is international best standard. Some of the basic sectors include:

Telecommunications: telecommunication companies like MTN, Airtel, and Glo provide platform for digital connectivity. Services rendered through them such as voice calls and SMS, often fall under existing regulations rather than the scope of the DST frameworks. DSTs focus on revenue generated from digital transactions, including online advertising and digital platforms[17].

E-commerce: Platforms like Jumia and Konga facilitate online shopping, contributing to the virtual marketplace. E-commerce undertakings which involves customers interaction and user's participation may be part of the Pillar One framework under the OECD guidelines unfortunately

[10] Luo Shiyue et al, 'Digitalization and Sustainable Development: How Could Digital Economy Development Improve Green Innovation in China' 32(4) BSE 1847-1871 (2023)
[11] The World Bank, 'Nigeria Digital Economy Diagnostic: A Plan for Building Nigeria's Inclusive Digital Future': Nigeria Digital Economy Diagnostic: A Plan for Building Nigeria's Inclusive Digital Future (worldbank.org) (Retrieved November 30,2023)
[12] Kelechi Madu,' Digital Economy & Taxation: Challenges and Opportunities in Nigeria' *SSRN* https://download.ssrn.com/2024/8/27/4938375.pdf?response-content-disposition=inline&X-Amz-Security-Token=>accessed on 29th Oct., 2025
[13] Okorie N N et al. Technopreneurship: An Urgent Need in the Material World for Sustainability in Nigeria 10 Eur. Sci. J, Oct 2014, 1857, 1857-59 (2014)
[14]T O Oladinrin et al, 'Role of Construction Sector in Economic Growth: Empirical evidence from Nigeria' 7(1) J. Environ. 50-60 (2012)
[15] Kelechi madu, ibid
[16] William Moris & Pat Brown, 'Digital Service Taxes: Are They Here to Stay' *PwC* (June 12, 2024), https://www.pwc.com/us/en/services/tax/library/digital-service-taxes.html.
[17] Noonan Chris & Victoria Plekhanova, 'Taxation of Digital Services under Trade Agreements' *Journal of International Economic Law* 23, no. 4 (2020): 1015-1039.

Nigeria is not a member. Depending on Nigeria's adoption and acceptability of DST regulations, e-commerce platforms may have to be included in the scheme[18].

Fintech: Companies like Interswitch, Flutterwave, Paypal, and Paystack, amongst others drive financial inclusion through innovative digital payment solutions. In particular, if their revenue is associated with substantial user participation, the Fintech sector could be included in Pillar One. [19] In line with the view under e-commerce, Nigeria is not a member of OECD so wouldn't be mandated to adopt this guideline even though it is international standard. If Nigeria's DST framework covers their services, financial technology companies could be subject to it.

Digital Content and Entertainment: The digital content industry which offers streaming services and online entertainment include Platforms like Iroko TV, Amazon Prime, ESPN Plus, and Netflix, amongst others. Digital content and entertainment platforms might have been subject to a DST if they were covered by Nigeria's regulations.[20]

According to Madu, he was of the view that if revenue from sectors like telecoms infrastructure development and digital entertainment are not captured Nigeria could see a reduction in tax revenues. He added that if Nigeria implements DST,, it would boost government revenue by taxing digital transactions, online advertising, and services offered by multinational tech giants operating in the country. Such a policy shift would necessitate creating robust legal structures to define which digital services are taxable, set appropriate tax rates, and ensure adherence to the new regulations.

To sum up, the advancement in technology and its embracement in Nigeria has brought about positive impact but if adequate measures are not put in place it would work against Nigeria. This is because it will continue to rob her of huge revenue.

4.0.DIGITAL ECONOMY IN NIGERIA

Digital economy in Nigeria has tremendously grown due to increased internet penetration, innovative business models and smartphone adoption.[21] The convenience and time saving

[18] Kelechi Madu, Op Cit
[19] Arner et al 'Sustainability, FinTech and Financial Inclusion' *European Business Organization Law Review* (2020) 21 PP 7-35.
[20] Kelechi madu, Op Cit
[21] M O Afolabi, 'Nigeria's Digital Economy: Opportunities and Challenges' *Journal of Business and Economic Studies,* (2020) 10 (2) p.12: M.N. Umenweke,' Taxation of Digital Goods and Services in the Nigeria Legal System: Challenges and Opportunities' Journal of Refugee Law and International Criminal Justice (2024) Volume

nature of the digital economy made Nigerians to quickly embrace it and e-commerce became a popular choice.[22]One of the significant factors that improved e-commerce is technological advancement by way of improved internet services and widespread of smartphone adoption. Improved connectivity of internet and affordable smartphones led to a substantial rise in the number of potential online shoppers[23]. Statics has revealed that mobile commerce dominance which was one of the driving forces for e-commerce growth led to over 70% of online transactions happening on mobile devices[24].

However, the Nigerian government introduced policies to improve digital infrastructure, enhance cyber security, and promote a more inclusive and accessible digital economy[25]. Part of the policies made for the growth of e-commerce includes the National Digital Economy Policy (NDEPS)[26]. The policy aims to increase digital literacy, improve digital infrastructure, and promote innovation.[27] The growth of digital economy in Nigeria brought about creation of new job opportunities with the sector employing over 100,000 people[28].

Embracement of digital economy in Nigeria has not existed without challenges. It includes infrastructure deficits, cyber security concerns, and regulatory frameworks[29]. To address these challenges, it has been recommended by stakeholders the need to invest in digital infrastructure, enhancing cyber security measures, and developing effective regulatory frameworks.[30] Nigeria's digital economy is expected to continue growing, driven by innovative business models and increasing internet penetration[31]. Digital goods and services, including e-commerce, digital payments, and streaming services, have transformed the way Nigerians consume and interact with goods and services. The digital economy contributes significantly to its GDP, with: (i.) E-commerce growing at 20% annually.[32](ii.) Digital payments increasing

3 No.1 Pp 70 https://journals.ezenwaohaetorc.org/index.php/JORLAWICJ/article/view/3053/3183>accessed on 27th Oct., 2025
[22] Adeniiyi Op cit(n6).
[23] GSMA. Mobile Economy West Africa. GSMA (2020), p.20
[24] CBN Op Cit
[25] FMoC.D. National Digital Economy Policy. Federal Ministry of Communications and Digital Economy, (2019), p.10
[26] Ibid.
[27] Umenweke, Op Cit
[28] NITDA, National Information Technology Development Agency Annual Report. (2020), p.12
[29] Umenweke op cit pg 72
[30] Ibid
[31] V Kumar, AI for Marketing and Sales: A Framework for Business Growth. (Sage Publications, 2020) p. 145
[32] Umenweke Ibid, pg 72 : Statista, E-commerce Revenue in Nigeria.(2022),p.5

by 50% in 2020.(iii) Nigeria's fintech sector attracting $400 million in investments[33]

5.0.CHALLENGES OF DIGITAL ECONOMY

Due to the fact that there is no significant footprint made while digital business models operate globally makes it difficult to ascertain where economic activity takes place, unlike traditional models that rely on physical presence to assess taxes[34]. The identified challenges and or problems are as follow:

- **Lack of unclear tax laws and regulation:**

The government has taken proactive steps to improve on the tax laws in Nigeria by consolidating all the tax laws. The Act introduced fiscalisation of supplies for VAT by electronic device [35] and introduction of minimum effective tax rate on multinational group that has subsidiary in Nigeria[36] which is similar to OECD regulation standard. However, the Act was unable to provide a clear means upon which online customers and transactions done would be captured. It only mandates non -resident persons to register for tax and include VAT in the invoice[37]. The Act failed to provide means upon which online vendors and online customers would be captured in the event of the lack of willful and involuntary compliance. In addition, the inability to provide clear guidelines on issues such as tax jurisdiction, cross-border, taxable base, and tax rates for digital transactions hinders the country's ability to capture revenue from the growing digital economy[38].

- **Difficulty in identifying taxable transactions**: it is tasking for tax authorities to identify and track taxable transactions especially where it involves cross-border sales, digital market places, and peer- to peer transactions due to its intangible and borderless nature. More so, the lack of standardized reporting requirements and inconsistent documentation from digital service providers further complicates the identification of taxable transactions, leading to

[33] CBN. Payment System Vision 2025. Central Bank of Nigeria, (2020), p.10
[34] Mpofu Favourate Y, Taxation of the Digital Economy and Direct Digital Service Taxes: Opportunities, Challenges and Implications for African Countries, 10 MDPI, 219 (2022).
[35] Section 158 of Nigerian Tax Act 2025
[36] Section 6 (3) Ibid
[37] Section 151 Ibid
[38] G O Oyedokun. "Taxation of Digital Economy in Nigeria: Issues and Challenges". Journal of Law and Economic Development, 4(1), (2019),p.15

potential revenue losses and tax evasion[39].

- **Identification of Taxpayers**: Difficulty in identifying digital service providers, particularly those operating from abroad, makes tax compliance and enforcement challenging.[40]

- **Jurisdictional Issues**: Determining taxing rights and jurisdiction over digital transactions involving multiple countries is complex.[41]

- **Lack of digital facilities**: Inability to have facilities, infrastructures, instruments and insufficient technical expertise to monitor all transactions done on line hinders government from having increase in revenue. This as well enables online vendors' to avoid tax payment.[42] Technological innovations in taxation, such as the integration of big data, block chain, and artificial intelligence, have become one of the strategies being implemented in various countries to address the challenges of the digital economy. Through big data analysis, for example, tax officials can identify suspicious transaction patterns or detect tax evasion that was previously difficult to detect. Blockchain can create transparency and accountability in the tax payment process, while artificial intelligence can be used for automated reporting and digital notifications for taxpayers. The use of this technology is expected to strengthen supervision and increase taxpayer compliance in the fintech sector[43]. Nigeria is advised to adopt this strategy to strengthen her tax system.

- **Lack of harmonized law:** There is yet to be a concise law that would shelter both digital technology and financial sector.

- **Protection of data security**: Users identity is very sensitive as such it is paramount that adequate protection is accorded so as to not to lose public trust. Leakage of such personal data would be hazardous. For instance, in Nigeria, there was a time hackers broke into National Identity Management commission site to steal people's data and used same to commit crime[44].

[39] Umenweke, Op Cit pg 74
[40] Ibid
[41] Ibid
[42] Emphasis mine
[43] F M Sijabat,' Technological Innovation in Fintech Sector Taxation: Strategy, Implementation, and Challenges' *International Journal of Society Reviews (INJOSER*) Vol. 2 No. 11,September 2025, pages: 2197~2207
[44]G George,' Identity for sale: How hackers breach security, steal data of vulnerable Nigerians' Punch news paper https://punchng.com/identity-for-sale-how-hackers-breach-security-steal-data-of-vulnerable-nigerians/>dated 22nd Dec., 2024>accessed on 30th Oct., 2025

6.0.WAY FORWARD TO IMPLEMENTATION OF TECHNOLOGICAL INNOVATION IN FINTECH SECTOR AND DIGITAL SERVICES TAXATION

According to Ayu, One fundamental strategy that can be implemented is data integration between fintech service providers and the Directorate General of Taxes (DGT) system. With an Application Programming Interface (API)-based data exchange mechanism, the DGT can obtain actual information about transaction values, service types, and user identities. This integration will minimize tax avoidance practices because the data obtained is not based solely on voluntary reporting, but is directly recorded through digital technology channels that are difficult to manipulate[45]. Increase in digital transactions which Finetech is inclusive has made usage of manual approach to monitor transactions to be inefficient. Strengthening the use of big data analytics in taxation would aid in fast processing of large volumes transaction, detect trends, patterns, or anomalies that indicate tax evasion or low compliance. This analytics is also useful in segmenting fintech taxpayers based on their risk profiles, making it easier for the DGT to implement more targeted fiscal policies[46].

Blockchain technology is very important to adopt as it is an innovation in fintech sector taxation strategy. It brings about transparency, security, and permanent recording, which are very useful for monitoring digital financial transactions. Through adoption of a blockchain-based system, every fintech transaction will have a digital trail that is difficult to alter or falsify. In addition, it has the ability to strengthen public trust in the taxation process because the entire transaction recording process can be verified openly[47].

Having identified the suitable strategies to curb the tax evasion and loss of revenue, by way of implementation, there would be need for collaboration between tax regulators, financial sector authorities, and fintech industry players. The essence of this is that without cooperation, technological innovation will not function well. For example, integration of data needs technical agreements and trust from fintech providers towards the DGT. In line with this, Burhan while discussing the finetech situation in Indonesia stated that the implementation strategy must include the establishment of a regular communication and coordination forum that brings together the DGT, OJK, Bank Indonesia, and the Indonesian fintech association to

[45]S Ayu, 'Cryptocurrency: Tax Imposition and Sharia Finance In Indonesia' (2022)
[46] Nketekete & Vasenska (n.d.), ' Case Studies on VAT Treaties and Tax Regulatory Frameworks': Fittry Ibid, pg 2200.
[47] A Widjiastuti, ' Balancing Taxation in the Indonesian P2P Lending Landscape' (2024)

discuss taxation regulations and technology[48]. There would be need for Nigeria to adopt this procedure as it will bring about change in tax system. Most importantly, the lost revenue which emanated as a result of tax evasion and avoidance would become a history.

While the government needs to train the staff of tax authority to be technologically advanced and equipped, the government should also adopt registration technology (regtech) procedure. This would aid fintech companies and online vendors to automatically comply with tax obligations. Through the usage of regtech, every tax owed would automatically be calculated and deducted from every transaction.[49]

Beyond the change that was brought about through the introduction of the new tax Act known as Nigerian Tax Act 2025 which though quite improved the tax system but could not capture the areas identified herein as strategy, the implementation method to improve digital taxation, if Nigerian government could adopt and incorporate them into her tax system there would be great change and improvement. More so, there would be much increase in revenue as there will no longer be room for tax escape and or evasion.

7.0.CONCLUSION

While it is a welcome development that advanced technologies through AI enabled platform led to ease in participating in digital market world, yet the advancement and integration of technologies has been without challenges. Lack of concise regulatory framework has posed as a serious challenge. Another serious factor that hinders smooth administration of tax system is the borderless-ness and intangible nature of digital transactions. However, this paper advocated that if Nigerian government adopts blockchain model and an Application Programming Interface (API)-based data exchange mechanism, they would aid the tax authorities to obtain actual information about transaction values, service types, and user identities. Integration of this system will minimize tax avoidance practices because the data obtained is not based solely on voluntary reporting but is directly recorded through digital technology channels that are difficult to manipulate. This procedure will close room for tax evaders and would enable the tax authorities to regain confidence as tax collector. More so, this paper recommended that to eliminate tax evasion that emanates through cross-border, Nigerian government should enter

[48] AUA Burhan,' Tinjauan Pengenaan PPN atas Teknologi Finansial di *Indonesia' Journal of Tax Policy, Economics, and Accounting* (2023) 1(1): Fittry Megasari Sijabat, Op Cit pp2201
[49] H. Prihatwono,'Teknologi Finansial dan Inklusi Keuangan' (2020)

into treaty with other countries as this would aid in determining the jurisdiction where the transaction took place and the country liable to collect tax.