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Taxation in the Digital Age: Innovations and Challenges

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Abstrak

Ekonomi digital dengan karakteristik nir-fisik, lintas batas, dan berbasis data, secara fundamental menantang sistem perpajakan konvensional di Indonesia. Negara ini menghadapi tantangan signifikan terkait isu yurisdiksi dan Bentuk Usaha Tetap (BUT), erosi basis pajak dan perpindahan keuntungan (BEPS), kompleksitas model bisnis baru, serta kendala kepatuhan dan pengumpulan data. Menanggapi hal ini, Direktorat Jenderal Pajak (DJP) telah proaktif mengimplementasikan berbagai inovasi, termasuk regulasi progresif (seperti PMK PPN PMSE dan pajak kripto), digitalisasi layanan (e-filing, Core Tax System), pemanfaatan *big data* dan AI, serta edukasi pajak. Meskipun demikian, pelaksanaan inovasi ini masih terkendala oleh rendahnya literasi fiskal digital masyarakat, keterbatasan sumber daya manusia dan infrastruktur DJP, penolakan industri, serta ketidakharmonisan kebijakan internasional. Oleh karena itu, keberhasilan perpajakan di era digital Indonesia sangat bergantung pada adaptasi regulasi yang dinamis, penguatan teknologi, peningkatan kapasitas SDM, dan kerja sama lintas batas untuk mencapai sistem pajak yang adil dan berkelanjutan.

Kata kunci: Ekonomi Digital; Perpajakan; Tantangan; Inovasi

Abstract

The digital economy, with its non-physical, cross-border and data-driven characteristics, fundamentally challenges Indonesia's conventional taxation system. The country faces significant challenges related to jurisdiction and Permanent Establishment (PE) issues, tax base erosion and profit shifting (BEPS), the complexity of new business models, and compliance and data collection constraints. In response, the Directorate General of Taxes (DGT) has proactively implemented various innovations, including progressive regulations (such as PMK PPN PMSE and crypto tax), service digitalisation (e-filing, Core Tax System), utilisation of big data and AI, and tax education. However, the implementation of these innovations is still hampered by low digital fiscal literacy among the public, limited human resources and infrastructure at the DJP, industry resistance, and international policy disharmony. Therefore, the success of taxation in Indonesia's digital era is highly dependent on dynamic regulatory adaptation, technological strengthening, increased human resource capacity, and cross-border cooperation to achieve a fair and sustainable tax system.

Keywords: Digital Economy; Taxation; Challenges; Innovation

A. Pendahuluan

Taxation is one of the main pillars of the state financial system and plays a strategic role in supporting the implementation of government functions. Tax obligations are not only seen as a legal responsibility, but also as a manifestation of citizens' moral commitment to supporting the sustainability of national development (Brenda Ernsky Palar et al., 2024). Every individual as a taxpayer is expected to have a high awareness of the importance of compliance with tax regulations. This compliance reflects integrity, a sense of social responsibility, and an intrinsic drive to contribute to collective welfare. From a public ethics perspective, paying taxes is a tangible form of active community participation in the provision of public goods and services that are a shared right. A strong tax base is not only determined by the government's capacity to collect revenue, but also depends heavily on the level of willingness and awareness of the community to voluntarily and obediently fulfill their tax obligations.

The higher the level of tax compliance, the greater the state's fiscal capacity to fund various development programs and public services, such as education, health, infrastructure, and social subsidies. Thus, taxes function not only as a fiscal instrument but also as a tool for economic equality and sustainable development. On the other hand, the increasingly complex development of public services requires tax management that is more transparent, accountable, and service-oriented. Good public services can strengthen the legitimacy of the state and increase public trust in the taxation system. Therefore, the government is required not only to improve the effectiveness of tax collection but also to ensure that the funds collected are used optimally for the public interest. Taxes must be felt directly by the community, so that a reciprocal relationship between the state and its citizens is created within the framework of a modern social contract. In this context, education and socialization regarding taxes are also important, especially among the younger generation and the academic community. Internalizing tax values from an early age will shape the character of citizens who are aware of their rights and obligations. Therefore, strengthening tax literacy among students and the general public is a strategic step to foster a sustainable culture of tax compliance.

The development of the digital economy has become a global phenomenon in recent years. The use of digital technology in various sectors of life has driven changes in the way people think, act, and interact with each other and with institutions. These changes have not only brought about various positive impacts and new challenges, but also created enormous opportunities for economic growth and innovation in the business world. However, in order to optimize this potential, active involvement from the government, educational institutions, and the community is needed to improve digital literacy and skills. Digital technology has revolutionized various dimensions of life, including the relationship between the state and taxpayers.

In Indonesia, massive digitalization, rapid growth in online transactions, and the expansion of the digital economy sector have created new challenges in the national taxation

system, while also opening up space for innovation. However, a significant increase in digital activity does not automatically have a direct impact on increased tax revenue. This is due to the weakness of regulatory instruments that are capable of addressing the complexity of digital economic activities that are cross-jurisdictional, intangible, and rapidly changing (BEBA). These activities include online trading, digital advertising, and Over-The-Top (OTT) services. The Indonesian government, through the Directorate General of Taxes (DGT), has responded to these challenges by implementing various policies and system reforms. One of these is the issuance of Minister of Finance Regulation (PMK) No. 60/PMK.03/2022, which regulates the collection of Value Added Tax (VAT) on Electronic Trading System (PMSE) activities carried out by foreign entities. In addition, steps to modernize the tax administration system through digital platforms such as *the Core Tax Administration System* and *e-Filing* services have also been implemented to strengthen compliance and efficiency in tax services.

Despite various breakthroughs, the implementation of digital taxation policies in Indonesia has not been fully effective. Obstacles such as low levels of digital fiscal literacy among the public, limited human resources and technological infrastructure within the DGT, and resistance from digital industry players remain significant challenges (Tambun & Resti, 2022). In addition, the DGT also faces limitations in terms of human resources capable of analyzing complex digital data and technological infrastructure that still needs to be improved to keep pace with the speed of digital innovation. On the industry side, resistance or objections from some digital industry players, both domestic and foreign, regarding the application of digital taxes also pose challenges in the implementation process. Moreover, the lack of harmony in international policies related to digital taxes globally still makes it difficult for developing countries such as Indonesia to implement a fair, proportional, and effective taxation scheme amid the relentless flow of digital globalization.

Considering these structural and operational issues, it is important to thoroughly examine how digital taxation policies in Indonesia are designed and implemented. In addition, it is also crucial to evaluate the extent to which the innovations introduced by the government can effectively respond to evolving structural and global challenges. This article aims to examine the obstacles and opportunities in digital taxation in Indonesia, as well as evaluate the effectiveness of government policies in responding to the rapidly evolving dynamics of the digital economy.

The taxation potential of Indonesia's digital economy sector is indeed enormous. Based on a report by the Company for Company (2023) Indonesia's digital economy is projected to reach US$130 billion by 2025, making it the largest in the Southeast Asian region. The rapid expansion of e-commerce, digital financial services, and cross-sector digital platforms has created a new economic ecosystem that is a potential source of state revenue. In this context, the digital sector can make a significant contribution to the national tax base, both through VAT on digital transactions, income tax (PPh) from digital businesses, and other relevant levies such as duties on cross-border digital services. However, the reality on the ground shows that tax revenue optimization from this sector has not been maximized. The level of tax reporting compliance by domestic digital economic actors is still low, especially by digital MSMEs that are not yet fully integrated into the formal taxation system. On the other hand, foreign digital entities that earn income from Indonesia, such as video streaming platforms, global marketplaces, and cloud-based software providers, often do not have a permanent establishment (PE) in Indonesia, making conventional taxation difficult.

This condition is exacerbated by the lack of comprehensive and real-time data related to cross-platform digital transactions, which causes overlapping information and data gaps between tax authorities and digital business actors. The limited synergy between ministries/agencies, such as the Ministry of Communication and Information Technology (Kominfo), Bank Indonesia, the Financial Services Authority (OJK), and the Directorate General of Taxes, also hinders efforts to consolidate data to support comprehensive and targeted digital taxation enforcement. In addition, Indonesia's digital taxation regulations still face challenges in harmonizing with the international regime. Although Indonesia has been part of global discussions through the Inclusive Framework on BEPS (Base Erosion and Profit Shifting) initiated by the OECD, the implementation of taxation policies on multinational digital companies still requires strong legal and technical support, including in terms of reporting, transaction tracking, and cross-border collection mechanisms.

Considering these various challenges and obstacles, it is important for Indonesia to not only focus on the technical aspects of collection, but also to strengthen the system through

improving digital fiscal literacy, integrating data between agencies, improving regulations, and international fiscal diplomacy. These strategic steps are expected to create an adaptive, fair, and sustainable digital taxation system. Therefore, this article aims to examine the obstacles and opportunities of digital taxation in Indonesia, while evaluating the effectiveness of government policies in responding to the rapidly growing dynamics of the digital economy. This evaluation is not only normative but also empirical, highlighting the gap between das Sollen (what should be) and das Sein (what is), so as to provide policy recommendations ( ) that are more contextual, applicable, and prospective for the future of digital taxation in Indonesia.

B. Methodology

This research uses a qualitative research method with descriptive analysis as its basis. According to Menurut Creswell (2013), qualitative research focuses on how individuals or groups interpret the meaning behind social or humanitarian issues. The data sources in this study were obtained through a literature study method, which involved a systematic review of relevant books, journals, and mass media. Documents, news, and literature from various sources will be collected, analyzed, and interpreted to reveal the complexity and meaning behind the phenomenon being studied. In this case, data validity is determined by the extent to which the findings can be trusted, considered accurate, consistent, and relevant to be applied in similar contexts. Therefore, this study needs to apply certain strategies to ensure data validity, such as applying the principle of reflectivity, ensuring credibility, and guaranteeing the transferability of findings. According to Sundler et al. (2019), the process of maintaining data validity involves several interrelated stages that support the integrity of the research results.

C. Result and Discussion
Digital Tax Revenue in Indonesia

Table 1 Digital Tax Revenue in Indonesia

Tax Component	Revenue Volume	Period/Trend Direction	Notes
VAT on Digital Services (VAT from foreign entities)	IDR 731.4 billion (2020) → IDR 8.44 trillion (2024) → IDR 26.12 trillion (Jan 2025)	Sharp increase since 2020	211 entities designated by Jan 2025, 181 active
Crypto Tax	IDR 246.45 billion (2022) → IDR 620.4 billion (2024) → IDR 1.19 trillion (Jan 2025)	Significant upward trend since 2022	Includes Income Tax Article 22 and VAT on crypto purchases
Fintech Tax (P2P lending)	IDR 446.39 billion (2022) → IDR 1.48 trillion (2024) → IDR 3.17 trillion (Jan 2025)	Contribution surge in 2024–2025	Includes Income Tax Articles 23, 26, and VAT on domestic interest on loans
SIPP Tax (government procurement transactions)	Rp 402.38 billion (2022) → Rp 1.33 trillion (2024) → Rp 2.90 trillion (Jan 2025)	Steady annual increase	Includes Income Tax and VAT on electronic procurement
Total Digital Economy Tax	IDR 22.18 trillion (Feb 2024) → IDR 28.91 trillion (Sep 2024) → IDR 33.39 trillion (Jan 2025)	Rapid growth throughout 2024 and early 2025	Official report from the Directorate General of Taxes/Ministry of Finance

In recent years, the contribution of the digital economy sector to state revenue has shown a very significant increase. One of the main indicators is revenue from VAT on Electronic Trading Systems (PMSE) imposed on foreign digital businesses such as Google and Netflix. Since its implementation in 2020, revenue from VAT on PMSE has skyrocketed from IDR 731.4 billion to IDR 8.44 trillion in 2024, and has increased dramatically again to IDR 26.12 trillion in January 2025 alone. This increase is inseparable from the government's

efforts to designate 211 digital entities, 181 of which are actively collecting and remitting taxes.

In addition, the crypto asset sector began to contribute significantly to revenue since the implementation of taxation policies on crypto transactions in 2022. Revenue from this sector increased from IDR 246.45 billion (2022) to IDR 1.19 trillion in early 2025, which includes the imposition of Income Tax Article 22 and VAT on crypto purchase transactions. This shows that digital investment activities are increasingly widespread in society, while also indicating the effectiveness of fiscal policy on the new digital economy. The financial technology (fintech) sector, particularly *peer-to-peer lending* services, also experienced a significant surge in revenue. From IDR 446.39 billion in 2022, revenue from increased to IDR 3.17 trillion in early 2025. This tax covers Income Tax Article 23, Income Tax Article 26, and domestic VAT on loan interest, reflecting the increased use of digital lending services by both small businesses and individuals.

Furthermore, tax revenue from digital government procurement transactions of goods and services through the SIPP system also showed a positive growth trend. Revenue increased from IDR 402.38 billion (2022) to IDR 2.90 trillion in January 2025, in line with the massive digitization of public procurement processes that supports fiscal transparency and accountability. Cumulatively, state revenue from various components of the digital economy tax reached IDR 33.39 trillion in January 2025, a significant increase compared to February 2024 (IDR 22.18 trillion) and September 2024 (IDR 28.91 trillion). This achievement demonstrates the government's success in encouraging digital tax compliance, expanding the tax base, and optimizing the use of electronic taxation systems such as e-Faktur and digital transaction data integration.

The digital era has brought fundamental changes to the global and national economic structure, presenting a series of challenges and significant opportunities for the taxation system in Indonesia. This transformation has not only changed the way businesses operate, but also how value is created, distributed, and consumed. As a result, the traditional tax base has become blurred, while new economic activities have emerged in forms that are difficult to reach by the existing taxation framework. These dynamics require proactive and innovative adaptation from fiscal authorities to ensure the sustainability of state revenue, maintain fairness in tax imposition, and create a conducive investment climate amid rapid digitalization.

One of the main challenges is the emergence of platform economies and digital businesses without a significant physical presence. These companies often operate across jurisdictions, generating profits from a broad customer base in various countries without having to establish branch offices or factories. This creates complexity in determining the location of business activities (nexus) and the allocation of profits for taxation purposes. The Directorate General of Taxes (DGT) continues to strive to adapt to this phenomenon, one of which is by appointing foreign Electronic Trading System (PMSE) operators as Value Added Tax (VAT) collectors on digital products and services consumed in Indonesia (Pajak, 2020). In addition, the transactional nature of many digital services, such as *streaming,* cloud computing, and online advertising, makes it difficult to track and collect VAT or sales tax. The rise of cryptocurrency and decentralized finance (DeFi) transactions also adds another layer of complexity, given the anonymity and decentralized nature inherent in *blockchain* technology. The government has begun collecting crypto taxes and *fintech* taxes *(*P2P lending) as part of its efforts to expand the digital tax base (Direktorat Jenderal Pajak, 2024).

However, behind these challenges, the digital era also opens up great opportunities for the modernization of the taxation system. The use of information and communication technology (ICT) enables tax authorities to improve administrative efficiency, expand tax coverage, and combat tax evasion more effectively. The implementation of e-invoicing, e-filing, and e-billing systems are concrete examples of the use of technology to facilitate taxpayer compliance and accelerate the tax reporting and payment process (Abdul Rosyid et al., 2024). The DGT also continues to develop digital services for taxpayers (Pajak, 2025). *Big data* analysis and artificial intelligence (AI) can be used to identify patterns of tax avoidance, detect non-compliance, and even predict future tax revenue trends (Nugrahanto et al., 2025). The implementation of *big data analytics* at the DGT, although still at a moderate level of maturity, has great potential to improve the efficiency of tax administration. Digitalization also paves the way for new taxation schemes that are more suited to the characteristics of the digital economy, such as digital services tax (DST) or adjustments

to *transfer pricing* rules to address *profit shifting* by multinational companies.

Overall, Indonesia's response to the digital era in the context of taxation must be comprehensive, covering legislative, administrative, and technological aspects. An adaptive legal framework, strong digital infrastructure, and competent human resources are needed to manage challenges and take advantage of existing opportunities. Without proper adaptation, the potential for state revenue from the digital economy could be lost, while tax fairness would be threatened(Kurniawan & Damayanti, 2025).

Tax Challenges in the Digital Age

The digital economy has revolutionized the global economic landscape, presenting unique characteristics that fundamentally shake the foundations of conventional taxation principles. Its intangible, borderless, and data-driven nature creates significant challenges for taxation systems that have long relied heavily on the concept of physical presence or clear geographical location. Traditional business models, rooted in an industrial economy with factories, offices, and physical supply chains, allowed for relatively simple determination of taxation jurisdiction. However, the paradigm shift to the digital economy has created a wide gap between dynamic modern business models and traditional tax frameworks that tend to be static. Indonesia, as a country with a rapidly growing digital economy and a massive internet user population, is at the forefront of facing this series of complex challenges. Taxing this rapidly growing sector fairly and effectively is crucial to ensuring the sustainability of state revenue and creating a level playing field for all businesses, both conventional and digital. The challenges faced include:

a). Jurisdiction Issues and Determination of Physical Presence (Permanent Establishment/PE)

One of the biggest challenges is how to determine the taxation jurisdiction and tax subject status for global digital companies. Digital business models often do not require a significant physical presence such as offices, factories, or a substantial number of permanent employees in a country, even though they derive significant profits from a consumer base in that country. The traditional concept of a Permanent Establishment (PE), which forms the basis for determining corporate income tax (PPh) obligations for foreign entities, is often irrelevant or difficult to apply to digital companies (OECD, 2015). For example, cloud computing services, video streaming, or online marketplaces can operate and earn revenue in Indonesia with only servers and an internet connection, without meeting the PE threshold set in the Double Taxation Avoidance Agreement (DTAA). This creates the potential for tax base erosion because profits derived from the Indonesian market cannot be effectively taxed domestically.

b). Base Erosion and Profit Shifting (BEPS).

The characteristics of assets in the digital economy, such as data, intellectual property (IP), and algorithms, which are intangible and easily transferable between jurisdictions, exacerbate the BEPS problem. Multinational companies can transfer IP ownership to countries with low tax rates, then charge high licensing or royalty fees to affiliated entities in Indonesia. This practice artificially reduces taxable profits in Indonesia, even though the actual economic value is created from consumer activity here. The valuation and allocation of value from these intangible assets is highly complex and often triggers transfer pricing disputes between countries. A United Nations (UN) report on digital economy taxation also highlights how the mobility of digital profits enables increasingly sophisticated BEPS practices (OECD, 2021).

c). Complex and Diverse New Business Models

The emergence of various new business models such as the sharing economy, including online transportation and accommodation services such as Gojek, Grab, Airbnb, digital streaming services such as Netflix and Spotify, the gig economy, influencer marketing on social media such as TikTok, Instagram, YouTube, online games, and even crypto assets and Non-Fungible Tokens (NFTs), has created complexity in determining income categories and applicable tax rates. The line between consumer and business transactions is often blurred, and these transactions frequently occur on a micro scale but in very large volumes, making tracking and tax collection difficult. Identifying diverse tax subjects, ranging from platforms to individuals who earn income through these platforms, also poses a significant challenge.

d). Compliance, Enforcement, and Data Collection Challenges

Ensuring the compliance of digital taxpayers, both from the perspective of service providers (especially those based overseas) and from the perspective of individuals or domestic entities that earn income from digital activities, is a major challenge. The lack of nationally integrated transaction data, a certain degree of anonymity in crypto transactions, and the massive scale of transactions make it difficult for tax authorities to monitor and enforce the law. The Directorate General of Taxes (DJP) requires broader and real-time access to data from digital platforms, payment gateways, and internet service providers to build accurate taxpayer profiles and identify potential untapped tax bases (Tim redaksi, 2022).

Taxation Innovation in Indonesia

The Indonesian government, through the Directorate General of Taxes (DJP), has shown a very strong and proactive commitment to adapting to the challenges of taxation in this rapidly evolving digital era. Recognizing that the conventional taxation system is no longer adequate to capture the massive potential of the digital economy, the DJP has launched and implemented various strategic innovations. These innovations are not only reactive to change, but also anticipatory, covering three crucial aspects: adaptive regulation, efficient administration, and maximum utilization of information technology. The goal is clear: to ensure the sustainability of state revenue, maintain fairness in tax imposition amid a changing business landscape, and create an investment climate conducive to digital economic growth in Indonesia.

In terms of regulation, the DGT has moved quickly to close loopholes and expand the tax base in the digital sector. The most significant step was the issuance of Minister of Finance Regulation (PMK) Number 60/PMK.03/2022, which is an update to the previous PMK, regarding Value Added Tax (VAT) on the Utilization of Intangible Taxable Goods and/or Taxable Services from Outside the Customs Area within the Customs Area through Electronic Trading Systems (PMSE). This regulation effectively requires foreign PMSE businesses, such as *streaming* platforms*, e-commerce,* and other global digital service providers, to collect, deposit, and report VAT on the products and services they sell to consumers in Indonesia. This is a fundamental breakthrough that allows Indonesia to tax global technology giants, overcoming jurisdictional issues that were previously an obstacle. Additionally, responding to the growing popularity of crypto assets, the government also issued PMK No. 68/PMK.03/2022, which regulates VAT and income tax on crypto asset trading transactions, demonstrating its seriousness in reaching the tax base of new and complex digital assets. At the global level, Indonesia is also actively involved in the *Inclusive Framework on BEPS* initiated by the OECD, particularly in the discussion of Pillar 1 and Pillar 2, to find consensual solutions regarding the allocation of taxation rights and global minimum tax for digital multinational companies.

On the administrative side, the DGT continues to carry out comprehensive modernization to improve efficiency and ease of taxpayer compliance. Services such as *e-filing* and *e-forms* have been refined since the early 2000s, allowing taxpayers to report annual or periodic tax returns (SPT) *online*, which significantly reduces the administrative burden. The integrated DJP Online portal has become a comprehensive digital service center, providing features such as *online* Taxpayer Identification Number (NPWP) registration*,* tax payment through *e-billing,* and tax return reporting, in line with the demands for transparent and accountable public services in the digital era. The culmination of these administrative modernization efforts is the implementation of the Core Tax System (CTAS), or the Tax Administration Core System Upgrade (PSIAP). This system is designed to integrate all DGT business processes—from registration, supervision, and service to law enforcement—into a single modern and integrated platform. With CTAS, the DGT hopes to improve data accuracy, operational efficiency, and data analysis capabilities for better supervision, including in the context of a complex digital economy.

Finally, the use of information technology is the backbone of the DGT's innovation. The DGT continues to strengthen its capacity to integrate and analyze data from various sources. This includes data from *e-commerce* platforms, banks, financial service providers, and other government agencies. The use of *big data* analysis and artificial intelligence (AI) is being explored and implemented to conduct more accurate taxpayer *profiling* , detect suspicious transaction anomalies, and identify potential untapped tax bases from digital

economic activities. Close collaboration with Bank Indonesia (BI) and the Financial Services Authority (OJK) is also being strengthened to ensure more comprehensive access to financial transaction data. In addition, the DGT is actively conducting ongoing education and outreach to taxpayers regarding tax obligations in the digital era, including special campaigns for Micro, Small, and Medium Enterprises (MSMEs) venturing into *e-commerce,* as well as *influencers* and *content creators* on social media. These efforts are carried out through various channels such as webinars, social media, and digital publications, with the main objective of increasing taxpayer awareness and voluntary compliance.

Progressive Digital Economy Tax Regulations

Value Added Tax (VAT) on Foreign Digital Products: The most significant step is the issuance of Minister of Finance Regulation (PMK) Number 60/PMK.03/2022 (which is an update to the previous PMK, PMK 68/PMK.03/2020) concerning Value Added Tax on the Utilization of Intangible Taxable Goods and/or Taxable Services from Outside the Customs Area within the Customs Area through Electronic Trading Systems (PMSE). This regulation requires foreign PMSE businesses that meet certain transaction value or traffic volume criteria to collect, deposit, and report VAT on digital products they sell to consumers in Indonesia (Ministry of Finance, 2022). This is an important breakthrough that allows Indonesia to collect VAT from global technology giants such as Netflix, Google, Spotify, and others, overcoming jurisdiction issues for VAT. By the end of 2023, the DGT had appointed more than 150 PMSE businesses as VAT collectors (DGT, 2024). There are two points outlined in the progressive digital economy taxation regulations, including:

a). Income Tax (PPh) and VAT on Crypto Assets, in response to the popularity of crypto assets, the government issued PMK Number 68/PMK.03/2022 concerning VAT and Income Tax on Crypto Asset Trading Transactions. This regulation sets VAT at 0.11% and final income tax at 0.1% of the transaction value for each crypto asset trading transaction through physical crypto asset trading operators. This demonstrates the government's efforts to reach the tax base of new and complex digital assets and transactions (Directorate General of Taxes, 2022).

b). Income Tax Harmonization In accordance with the global framework, Indonesia is actively involved in *the Inclusive Framework on BEPS* initiated by the OECD. This framework aims to develop consensual solutions to the challenges of digital economy taxation through two pillars: Pillar 1 (Re-allocation of Taxing Rights), which seeks to allocate a portion of the taxing rights of multinational companies to market jurisdictions (consumer countries), and Pillar 2 (Global Minimum Tax), which aims to ensure that multinational companies pay a minimum effective tax rate of 15% (OECD, 2021). The Indonesian government continues to review the implementation of these pillars into domestic law, which will be a crucial step in fundamentally addressing the issue of digital economy income tax.

Comprehensive Digitalization of Tax Services and Administration

- E-Filing and E-Form. The DGT has developed and refined its *e-filing* and *e-form* services since the early 2000s, enabling taxpayers to report their annual or periodic tax returns *online*. This has significantly improved efficiency and reduced the administrative burden on both taxpayers and the DGT itself (OECD, 2021). Research Tambun & Resti (2022) shows that the digitization of these services is positively correlated with increased taxpayer compliance.

- DJP Online. This integrated portal provides a comprehensive range of taxation services, from *online* registration for Taxpayer Identification Numbers (NPWP), tax payments via *e-billing*, to tax return filing. DJP Online has become a digital service center that makes it easier for taxpayers to access information and fulfill their tax obligations, in line with the demands for transparent and accountable public services.

- *Core Tax System* (CTAS) / Tax Administration Core System Update (PSIAP). Currently, the DGT is in the process of implementing *the Core Tax System* (CTAS), also known as the Tax Administration Core System Update (PSIAP). This system is designed to integrate all DGT business processes, from registration, supervision, service, to law enforcement, into a single modern and integrated platform. With CTAS, the DGT hopes to improve data accuracy, operational efficiency, and data analysis capabilities for better supervision, including in the context of the digital economy (Keuangan, 2025).

- Data and Analytics Utilization (Big Data & AI): The DGT continues to strengthen its capacity to integrate and analyze data from various sources. This includes data from *e-commerce platforms*, banks, financial service providers, and other government agencies. The use of *big data analytics* and *artificial intelligence* is being explored for taxpayer *profiling*, detecting transaction anomalies, and identifying potential untapped tax bases from digital economic activities. Collaboration with Bank Indonesia and the Financial Services Authority (OJK) is also being carried out to gain more comprehensive access to financial transaction data (Pajak, 2024a).

Continuous Education and Socialization

The DGT actively educates and socializes taxpayers about their tax obligations in the digital era. This includes special campaigns for Micro, Small, and Medium Enterprises (MSMEs) that are new to e-commerce, as well as influencers and content creators on social media. Education is carried out through webinars, social media, talk shows, and digital publications to increase awareness and voluntary compliance (Direktorat Jenderal Pajak, 2024). Improving the digital fiscal literacy of the community is key to overcoming compliance barriers, as highlighted in the previous study above.

Barriers and Challenges in Implementing Innovation

1). Despite various breakthroughs, the implementation of digital taxation policies in Indonesia has not been fully effective and still faces a number of significant obstacles. 2). Low Level of Digital Fiscal Literacy Among the Public. Many digital businesses, especially MSMEs and *freelancers* who are new to the digital ecosystem, do not fully understand their tax obligations. This lack of understanding is often due to the complexity of regulations and limited access to easily digestible information. 3). Limited Human Resources and Technological Infrastructure within the DGT. The DGT still faces challenges in securing qualified human resources with expertise in digital data analysis, *cybersecurity,* and advanced information technology. In addition, existing technological infrastructure needs to be continuously improved to keep pace with the speed of digital innovation and massive data volumes. 4). Resistance from Digital Industry Players. Several digital industry players, both domestic and foreign, still show resistance or objections to the implementation of digital taxes. This may be due to concerns about additional compliance burdens, impacts on business models, or perceptions of unfairness compared to tax treatment in other jurisdictions. 5). Lack of International Policy Harmony. Despite global efforts through the OECD, the international digital taxation framework is still evolving and is not yet fully harmonized. Disagreements or differences in interpretation between countries can make it difficult for developing countries such as Indonesia to implement fair, proportional, and effective taxation schemes amid the relentless tide of digital globalization. The OECD's own study has identified these implementation challenges in various countries (Organisation for Economic Co-operation and Development, 2020).

D. Conclusion

Taxes are a fundamental pillar of state finances, essential for development and public services. Tax compliance reflects the responsibility of citizens. However, the digital economy, with its non-physical, cross-border, and data-based nature, fundamentally challenges Indonesia's conventional taxation framework. The country faces various issues, including jurisdiction and Permanent Establishment (PE) due to the absence of a physical presence of digital companies, which leads to tax base erosion and BEPS (Base Erosion and Profit Shifting) practices. The emergence of new digital business models also complicates tax classification. In addition, challenges in compliance, law enforcement, , and data collection remain significant due to a lack of data integration. In response, the Directorate General of Taxes (DGT) has been proactive with various innovations. These include progressive regulations such as PMK PPN PMSE and crypto taxes, service digitalization (*e-filing,* DJP Online, *Core Tax System)*, the use of big data analytics and AI, and ongoing tax education. However, the implementation of these innovations has not been fully effective. Obstacles such as low digital fiscal literacy, limitations in human resources and technological infrastructure at the DJP, resistance from industry players, and international policy disharmony remain major challenges. In conclusion, taxation in Indonesia's digital era is a complex interaction between evolving structural challenges and progressive

government innovation. Future success will depend heavily on dynamic regulatory adaptation, technological strengthening, human resource capacity building, and cross-border cooperation to create a fair and sustainable tax system that can capture the full potential of the digital economy for shared prosperity.

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