

COMPARATIVE STUDY OF DIGITAL TAX SYSTEMS IN DEVELOPING AND DEVELOPED COUNTRIES

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Abstrak

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Digital transformation has fundamentally changed the global economic landscape, creating new challenges in traditional tax systems. This study examines the comparative implementation of digital tax systems between developing and developed countries, focusing on the regulatory framework, collection mechanisms, and implementation effectiveness. Using a qualitative comparative approach, the study analyzes digital tax practices in several representative countries from both categories, including Indonesia, India, and Brazil as developing countries, and the United Kingdom, France, and Australia as developed countries. The results show that developed countries tend to have more mature digital infrastructure and integrated tax administration systems, enabling more efficient digital tax implementation. In contrast, developing countries face structural challenges such as the digital divide, limited administrative capacity, and resistance from the still-dominant informal sector. However, some developing countries are demonstrating interesting adaptive innovations, such as the use of mobile payment technology and a phased approach to digitizing tax systems. This study concludes that the success of digital tax implementation depends not only on technology adoption, but also on the readiness of the digital economy ecosystem, institutional capacity, and contextual policy design.

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INTRODUCTION

The digital era has brought about a paradigmatic shift in the global economic structure. The rise of tech giants, digital platforms, and internet-based business models has created significant economic value, often transcending traditional tax jurisdictions. According to an OECD report, the digital economy is expected to be worth over US\$11.5 trillion by 2024, or approximately 15.5% of global GDP, and continues to



grow at a faster rate than the traditional economy (Fatah & Ngamal, 2025).

The tax system developed in the 20th century was based on the principle of physical presence as the basis for taxation. However, the borderless, intangible, and data-driven characteristics of the digital economy have made this principle irrelevant. Digital companies can generate substantial revenue from a country without having a significant physical presence, creating serious challenges for tax authorities in collecting fair taxes.

Responses to these challenges vary significantly between developed and developing countries. Developed countries, with mature digital infrastructure and strong administrative capacity, have developed various digital tax schemes, ranging from the Digital Services Tax (DST) to multilateral approaches through the OECD (Aprilia et al., 2025). Meanwhile, developing countries face a dual dilemma: on the one hand, they want to capture the potential revenues from their country's rapidly growing digital economy; on the other, they are limited in technological infrastructure, administrative capacity, and adequate legal frameworks.

Indonesia, as a developing country with a rapidly growing digital economy in Southeast Asia, has implemented Value Added Tax (VAT) for digital products and services since 2020. India introduces Equalization Levy for certain digital services. Brazil is developing a dedicated tax system for e-commerce transactions (Az'mi, 2018). Meanwhile, the UK has been leading the way with its Digital Services Tax since 2020, France has implemented a similar tax despite international pressure, and Australia is developing a comprehensive approach by expanding the definition of permanent establishment (Wibowo, 2024).

The gap in digital tax implementation between developed and developing countries reflects not only differences in technical and administrative capacity, but also fundamental differences in economic structure, level of digitalization, and policy priorities. Understanding this comparison is important not only for academic purposes, but also for formulating more effective and contextual policies.

This research aims to: (1) identify the characteristics of digital tax systems in developing and developed countries; (2) analyze fundamental differences in approach, implementation, and challenges faced; (3) evaluate the effectiveness of various digital tax models in different contexts; and (4) explore applicable cross-country lessons learned.

LITERATURE REVIEW

The Concept of Digital Economy and Tax Challenges

The OECD defines the digital economy as an economy based on digital technologies, including digital networks, data infrastructure, online services, and platform-based business models. (Brynjolfsson & McAfee, 2014) argue that the digital economy has unique characteristics: strong network effects, near-zero marginal costs, and the ability to operate without geographical boundaries. These characteristics create fundamental challenges for traditional tax systems that rely on concepts of territory and physical presence.

(Hongler & Pistone, 2015) identified three main challenges to digital taxation: (1) jurisdictional nexus, where digital companies can generate revenue without a physical presence; (2) data and user contribution, where value is created through user participation that is difficult to assess; and (3) revenue characterization, where it is

difficult to distinguish between royalties, service fees, or other types of revenue.

The Evolution of Global Digital Tax Policy

The international response to the challenges of digital taxation began with the BEPS (Base Erosion and Profit Shifting) Action Plan by the OECD/G20 in 2013-2015. BEPS Action 1 specifically identifies the challenges of taxing the digital economy. However, global consensus is difficult to achieve, prompting many countries to take unilateral action (Rootsma, 2021).

(Devereux & Vella, 2018) categorize unilateral approaches into three: (1) DST or a tax on gross revenues from certain digital services; (2) expanding the concept of permanent establishment to include significant economic presence; and (3) a withholding tax on digital payments. Each approach has advantages and disadvantages in the context of implementation.

The Two-Pillar Solution, proposed by the OECD in 2021 and updated in 2023, offers a multilateral framework. Pillar One allocates some taxing rights to market jurisdictions, while Pillar Two establishes a global minimum tax of 15%. However, implementation faces political and technical challenges, particularly regarding thresholds and coverage.

Comparative Study of Developed and Developing Countries

Comparative literature shows significant differences in implementation capacity. (Bunn et al., 2020) found that developed countries have more digitalized tax administration systems, with higher compliance rates and lower administrative costs. In contrast, (Bird & Zolt, 2008) showed that developing countries face structural constraints, including large informal sectors, limited administrative capacity, and uneven digital infrastructure.

Specifically for developing countries, (Mascagni et al., 2021) found that tax digitalization can improve compliance and transparency, but requires substantial upfront investment and changes in taxpayer behavior. Several studies have shown that a gradual and adaptive approach is more effective than the sudden adoption of advanced technologies.

Gap in Literature

Although the literature on digital tax is growing rapidly, there are still significant gaps in systematic comparative understanding. First, most studies focus on the technical or legal aspects of taxation, with limited attention to the political-economic and institutional contexts that shape implementation. Second, comparative studies tend to analyze countries within the same group, with little cross-sectional analysis across developed and developing countries. Third, evaluations of the effectiveness of various digital tax models are still limited, particularly in developing countries where data is scarce.

This research seeks to fill this gap with a systematic comparative approach, considering not only the technical-regulatory aspects but also the economic, institutional and practical implementation contexts.

RESEARCH METHODS

This research uses a qualitative comparative approach with a multiple case study

design. This method was chosen because it allows for in-depth analysis of the complexities of digital tax implementation in different contexts, while facilitating systematic comparisons between cases.

Case Selection: The study selected six countries as representative cases: three developed countries (UK, France, Australia) and three developing countries (Indonesia, India, Brazil). The selection was based on the following criteria: (1) having implemented digital tax policies; (2) having a significant digital economy; (3) representing geographical variation and policy approaches.

Data Collection: Data were collected from secondary sources, including: (1) tax policy and regulatory documents; (2) official reports from national tax authorities; (3) publications from the OECD, IMF, and other international organizations; (4) academic literature and research reports; (5) statistical data on the digital economy and tax revenue. The analysis period covers 2018-2024 to capture the latest developments.

Data Analysis: The analysis was conducted in three stages: (1) descriptive analysis to understand the characteristics of the digital tax system in each country; (2) comparative analysis to identify patterns, differences, and similarities between countries; (3) thematic analysis to extract cross-case learning. The analysis framework includes the following dimensions: regulatory framework, collection mechanisms, technological infrastructure, administrative capacity, compliance level, and policy effectiveness.

Limitations: The study has several limitations: (1) quantitative data on digital tax revenues are often unavailable or not published separately; (2) digital tax implementation is still relatively new in many countries, so long-term evaluation is not yet possible; (3) the analysis relies on secondary data without field verification.

RESULTS AND DISCUSSION

Characteristics of Digital Tax Systems in Developed Countries

The developed countries studied show a relatively mature pattern of digital tax implementation, characterized by a comprehensive regulatory framework and integrated administrative infrastructure.

The UK introduced a Digital Services Tax (DST) in April 2020, levying a 2% rate on revenue from certain services (search engines, social media platforms, online marketplaces) generated by UK users. The DST applies only to groups with global revenues above £500 million and UK revenues above £25 million, with the aim of targeting large digital companies. The UK's digitized administration system facilitates relatively smooth implementation, with self-assessment and quarterly reporting (Suwardi et al., 2020).

France introduced a digital tax earlier in January 2019, with a 3% rate on revenue from digital services, with a global threshold of €750 million and French revenue of €25 million. The French approach is broader, encompassing a wide range of digital services and online advertising. Despite facing international pressure, particularly from the US, France maintained this tax while participating in OECD multilateral negotiations.

Australia has taken a different approach by broadening the definition of permanent establishment through the concept of "significant economic presence" and expanding the scope of GST (Goods and Services Tax) for imported digital products and services since 2017. Australia has also implemented the Multinational Anti-

Avoidance Law (MAAL) which targets tax avoidance by multinational companies, including digital companies.

Table 1 below summarizes the main characteristics of digital tax systems in developed countries:

Table 1. Comparison of Digital Tax Systems in Developed Countries			
Aspect	English	French	Australia
Types of Taxes	Digital Services Tax	Taxe sur les Services Numeriques	GST Extension + MAAL
Year of Implementation	2020	2019	2017
Rates	2%	3%	10% (GST)
Global Threshold	£500 million	€750 million	-
Domestic Threshold	£25 million	€25 million	AUD 75,000
Coverage	Search, social media, marketplace	Wider including digital advertising	All digital products/services
Taxation Base	Gross income	Gross income	Transaction value

Source: Processed from UK HMRC (2020), French Tax Authority (2019), ATO (2017-2024)

Analysis shows that developed countries have several competitive advantages: **First** , mature digital infrastructure allows for the integration of digital tax systems with existing administrative platforms. The UK and Australia have tax administration digitization rates above 90%, facilitating digital reporting and compliance. **Second** , adequate human resource capacity, with tax officers trained in digital technology and data analytics. **Third** , a relatively formal digital economic ecosystem, with higher levels of compliance and better transaction documentation.

However, developed countries also face challenges. International pressures, particularly regarding the risk of trade retaliation, influence policy design. The complexity of determining revenue allocation and avoiding double taxation is also an issue. Resistance from large digital companies threatening to relocate operations or raise prices for consumers is also a political consideration.

Characteristics of Digital Tax Systems in Developing Countries

Developing countries demonstrate more diverse and adaptive approaches, reflecting different economic and institutional contexts.

Indonesia implemented VAT on Foreign Digital Products (PMSE) in July 2020 at a rate of 11% (increased from 10% in April 2022). Indonesia's approach is pragmatic, designating foreign digital platform operators as VAT collectors. As of 2024, Indonesia has appointed more than 150 digital platforms as VAT collectors, including Google, Facebook, Netflix, and Spotify. The system is relatively simple to administer, with monthly reporting and payments via an online system (Wahyuni et al., 2024).

India introduced the Equalization Levy in 2016, initially at 6% for online advertising services, then expanded to 2% for e-commerce transactions with a lower threshold in 2020. India also implemented the Significant Economic Presence (SEP) in the Income Tax Act to broaden the digital tax base. India's approach tends to be more aggressive in capturing digital revenues, reflecting the large size of the domestic market and the rapid growth of the digital economy.



Brazil developed a complex tax system for e-commerce involving multiple levels of taxation (federal, state, municipal). ICMS (Imposto sobre Circulação de Mercadorias e Serviços) is expanded to cover digital transactions, with specific protocols for digital products. Brazil is also exploring a dedicated tax on streaming and digital services, though implementation faces coordination challenges across levels of government.

Table 2. Comparison of Digital Tax Systems in Developing Countries

Aspect	Indonesia	India	Brazil
Types of Taxes	VAT on PMSE	Equalization Levy	ICMS + PIS/COFINS
Year of Implementation	2020	2016 (expanded 2020)	2018-2020
Rates	11%	2-6%	17-25% (varies)
Threshold	-	INR 2 crore	Varies per state
Mechanism	Platform as a collector	Withholding tax	Multi-level taxation
Number of Registered Platforms	150+	100+	Not available
Revenue (2023 estimate)	USD 200 million	USD 500 million	USD 300 million

Source: Processed from the Indonesian Ministry of Finance (2024), Indian Tax Authority (2023), Brazilian Federal Receita (2023)

Developing countries face significant structural challenges. **First** , there is a wide digital divide, with internet penetration and digital literacy varying across regions and population segments. In Indonesia, for example, internet penetration reaches 78% in urban areas but only 50% in rural areas. **Second** , there is limited tax administration capacity, with a much lower ratio of tax officials to residents than in developed countries. India has about 1 tax officer per 5,000 population, compared to 1:1,000 in developed countries. **Third** , the dominance of the informal sector which is difficult to tax, with an estimated 40-60% of the digital economy in developing countries operating informally.

However, developing countries are also showing interesting innovations. The use of mobile technology that goes beyond conventional infrastructure, such as mobile payments and digital wallets, creates a digital trail that can be used for taxation. A phased approach starting with large platforms before expanding to smaller players has proven more effective than a comprehensive, all-at-once implementation. Collaboration with digital platforms in tax collection reduces administrative burden and improves compliance.

Comparative Analysis: Fundamental Differences

Systematic comparison reveals fundamental differences in several dimensions:

1. Policy Philosophy

Developed countries tend to adopt a more targeted approach, focusing on large multinational digital companies. The UK and France's DSTs are designed with a high threshold to target "digital giants" without burdening domestic digital MSMEs. This philosophy reflects a balance between capturing revenue from the digital economy and encouraging innovation and growth in the domestic digital sector.

Developing countries tend to adopt a more inclusive approach with a lower or no threshold. Indonesia does not differentiate platform size in its PMSE VAT,



while India sets a relatively low threshold. This philosophy reflects the urgent need to increase tax revenue and create a level playing field between domestic and foreign players.

2. Technical Design

Developed countries more often use a low-rate gross revenue tax (2-3%), which is administratively simpler but controversial because it does not take profitability into account. This approach also has the potential to create double taxation if combined with corporate income tax.

Developing countries are likely to expand existing consumption taxes (VAT) to cover digital products and services. This approach is more consistent with applicable tax principles and is easier to integrate with existing systems. However, the administration of fees from foreign platforms requires an effective enforcement mechanism.

3. Implementation Capacity

The most striking difference lies in the implementation capacity. Developed countries have sophisticated tax IT systems, enabling real-time reporting, automatic cross-checking, and sophisticated data analytics. The UK uses AI to detect anomalies and non-compliance, while Australia integrates data from multiple sources (banking, customs, business registries) for verification.

Developing countries rely on simpler systems, often relying on self-reporting without in-depth verification. Enforcement is limited to major cases due to resource constraints. Indonesia uses a naming-and-shaming approach for platforms that fail to register, while India relies on administrative sanctions and access blocking as enforcement mechanisms.

4. Compliance and Effectiveness

Compliance rates vary significantly. In developed countries, compliance rates for digital taxes are estimated at 85-90%, supported by robust administrative systems, a strong culture of compliance, and effective enforcement. In developing countries, compliance rates vary more, estimated at between 60-75%, with challenges in monitoring small platforms and peer-to-peer transactions.

Revenue effectiveness also varies. The UK collects approximately £500 million annually from DST, although this is relatively small compared to total tax revenue. Indonesia collects an estimated USD 200 million from VAT on E-Commerce (PMSE) by 2023, a significant increase from previous years. India with a larger digital market garnered an estimated USD 500 million. In a relative perspective to GDP, the contribution of digital taxes is still marginal in both groups of countries, but shows a positive growth trend.

Cross-Border Learning

The comparative analysis yields several important lessons:

1. Context Matters

There is no one-size-fits-all solution to digital taxation. Approaches that work in developed countries cannot always be transplanted to developing countries due to differences in infrastructure, capacity, and economic structure. Developing countries need to adapt, not adopt, models from developed countries.

2. Phased Implementation

Successful developing countries use a phased approach, starting with large

platforms and select services before expanding. Indonesia began with 70 platforms in 2020, then gradually increased to 150+ by 2024. This approach allows for system learning and adjustment without overwhelming administrative capacity.

3. Leveraging Technology

Digital technology can be both a solution and an object of taxation. Mobile payments and e-wallets, popular in developing countries, create a digital trail that facilitates taxation. Indonesia is leveraging digital transaction data for tax intelligence, while India is integrating its GST Network system with its e-commerce platform.

4. Collaboration with Platforms

Appointing platforms as tax collectors reduces administrative burdens and improves compliance. This model has proven effective in Indonesia and several other developing countries. However, it requires proper negotiation and incentives for platforms to participate.

5. Multilateral Coordination

While unilateral action is necessary in the short term, multilateral coordination remains crucial to avoid fragmentation of the global tax system. Active participation by developing countries in the OECD/G20 Inclusive Framework is essential to ensure equitable solutions that take their interests into account.

6. Building Capacity

Investment in tax administration capacity, including IT systems, human resource training, and capacity building, is a prerequisite for effective digital tax implementation. Technical assistance and knowledge transfer from developed countries and international organizations can accelerate this process.

CONCLUSION

A comparative study of digital tax systems between developing and developed countries reveals fundamental differences in approaches, capacities, and implementation challenges. Developed countries with mature digital infrastructure, strong administrative capacity, and formal economic ecosystems have developed relatively sophisticated digital tax systems, although they still face challenges related to international pressure and the risk of double taxation. Developing countries have adopted a more pragmatic and adaptive approach, addressing structural challenges such as the digital divide, limited capacity, and the dominance of the informal sector, but have also demonstrated interesting innovations in leveraging mobile technology and a phased approach.

Differences in policy philosophies reflect differing priorities: developed countries focus on a targeted approach for large digital companies while protecting domestic innovation, while developing countries adopt an inclusive approach to maximize revenue and fairness. Technical designs also differ, with developed countries tending to use taxes on gross income and developing countries expanding existing consumption taxes.

The effectiveness of implementation depends heavily on the local context. Success is determined not only by the adoption of advanced technologies, but also by the readiness of the digital economy ecosystem, institutional capacity, and contextual policy design. A phased approach, collaboration with digital platforms, and investment in capacity building have proven critical for developing countries.

Although the contribution of digital taxes to total revenue remains relatively

small in both groups of countries, the positive growth trend indicates significant future potential. Cross-country lessons demonstrate the importance of a contextual approach, phased implementation, technology utilization, and multilateral coordination in developing effective tax systems for the digital economy.

BIBLIOGRAPHY

- Aprilia, W. E., H, T. S. S., H, R. D. S., Hukum, F., Semarang, U. N., Hukum, F., Semarang, U. N., Hukum, F., & Semarang, U. N. (2025). *Reformasi Hak Pemajakan Atas Ekonomi Digital Dengan Analisis Hukum Terhadap Penerapan Pilar 1 Oecd / G20 Dalam*. 6(1), 1–18.
- Az'mi, Y. U. (2018). Perpajakan Di Era Ekonomi Digital: Indonesia, India Dan Inggris. *Jurnal Ilmiah Akuntansi Fakultas Ekonomi*, 4(2), 215–230.
- Bird, R. M., & Zolt, E. M. (2008). Tax Policy in Emerging Countries. *Environment and Planning C: Government and Policy*, 26(1), 73–86. <https://doi.org/10.1068/cav3>
- Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. WW Norton & company.
- Bunn, D., Asen, E., & Enache, C. (2020). Digital taxation around the world. *Tax Foundation*, 20(1), 1–45.
- Devereux, M. P., & Vella, J. (2018). Taxing the digitalised economy: targeted or system-wide reform. *British Tax Review*, 4, 387–406.
- Fatah, M., & Ngamal, Y. (2025). Pengaruh Ekonomi Digital Terhadap Ekonomi Global. *Jurnal Manajemen & Bisnis*, 17(1).
- Hongler, P., & Pistone, P. (2015). Blueprints for a New PE Nexus to Tax Business Income in the Era of the Digital Economy. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2586196>
- Mascagni, G., Mengistu, A. T., & Woldeyes, F. B. (2021). Can ICTs increase tax compliance? Evidence on taxpayer responses to technological innovation in Ethiopia. *Journal of Economic Behavior & Organization*, 189, 172–193. <https://doi.org/10.1016/j.jebo.2021.06.007>
- Rootsma, E. (2021). *Adapting taxation of business profits to the digital economy: Assessment of the Pillar One and Pillar Two Proposal by the OECD/G20 Inclusive Framework on BEPS*.
- Suwardi, S. ., Budiandri, A., S., C., & A., G. N. (2020). MEMAJAKI TRANSAKSI EKONOMI DIGITAL: STUDI KASUS DI INDIA, PERANCIS, DAN AUSTRALIA. *Jurnal Pajak Dan Keuangan Negara (PKN)*, 2(1), 1–12. <https://doi.org/10.31092/jpkn.v2i1.971>
- Wahyuni, S. D., Anggraini, N., & Sahara, K. (2024). IMPLEMENTASI PERHITUNGAN PAJAK PENGHASILAN PERDAGANGAN MELALUI SISTEM ELEKTRONIK (PMSE) DAN PENGARUHNYA TERHADAP PENGHASILAN USAHA E-COMMERCE (STUDI KASUS PADA PERUSAHAAN DI KABUPATEN KEDIRI). *Prosiding Simposium Nasional Manajemen Dan Bisnis*, 3, 26–37.
- Wibowo, A. (2024). Perpajakan internasional. *Penerbit Yayasan Prima Agus Teknik*, 1–166.