

Digital economy between special taxation or adaptation of rules, the case of Algeria

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Abstract:

This paper investigates the complex landscape of digital taxation in Algeria, providing a descriptive and analytical examination of how the country taxes its digital economy. Despite efforts by international organizations such as the OECD and the European Union to establish digital taxation frameworks. Different approaches persist around the world, with Asian and Latin American countries frequently taking unilateral positions.

Algeria with its unique tax system that responds to several factors, serves as a case study for determining whether special taxes are levied on the digital economy or existing taxation rules are changed.

The finding show that digital taxation in Algeria is unclear due to the lack of data transparency. Revenues from digital activities, the number of digital businesses and the actual amount of their profits limit the taxation process based on tax base and purpose.

Keywords: Digital economy; unilateral taxation; multilateral taxation; Digital taxation challenges, Digital taxation in Algeria.

JEL Classification Codes: H25, H32, L81, L86, O33.

1. INTRODUCTION

The digital economy is defined in several dimensions, including process, information and communication technology (ICT), economic output, system, and big data. According to (Hack, Devcic, & Budic, 2021) “the digital economy is the result of a transformative process brought by information and communication technology (ICT)” (OECD, 2014, p. 11). (Huang, Qiu, & Wang, 2021, p. 2) define the digital economy as follows: “an economic system that uses big data to identify, select, screen, store, and use to quickly optimize resource allocation and produce high-quality economic development.”

These definitions of the digital economy show how new information and communication technologies have influenced the economy. However, according to ITU analysis, digital technologies are changing. The ICT index measures the access, use, and impact of ICT. There is a distinction between this measure and universal connectivity, which influences the future evolution of connectivity and its impact on many other new digital technologies. According to the BEA, the digital economy’s real value added (its inflation-adjusted contribution to US GDP) increased on average by 6.5% per year from 2005 to 2019, compared to the overall economy’s growth of 1.8 percent. In 2019, real value added in the digital sector increased by 5.2%, compared to 2.2% growth in the overall economy, indicating a continuation of this trend (Bureau of economic Analysis, 2021). The term “digital economy” now refers to platforms, the Internet of Things (IoT), big data, AI, 5G, and a variety of other digitalized components that have an impact on the entire market rather than just connectivity and mobile technology.

Revenues from digital services and the digital economy are increasing, and the economy is becoming more digitalized. However, the economy and taxation are still based on the traditional economy of mortar and bricks. The paradox is determining what we tax: digital activities, which gave rise to the term “digital tax,” or all objects and people who benefit from digital transformation. Many efforts by the OECD and the European Union define methods of digital taxation. Many European, Asian and Latin American countries use the unilateral view. Algeria’s tax system includes numerous

taxes, and the changes in these taxes are the result of economic, social, or political factors. The study of digital taxation in Algeria reveals whether special taxes are levied on the digital economy or taxation rules are adapted to it with problematic:

How to tax digital economy in Algeria?

The hypotheses from this problematic:

Algeria apply special taxes to digital economy;

Algeria's taxation adapt its rules to digital economy.

This paper discusses digital taxation in Algeria, specifically how to tax the digital economy there. The study's goal is to define the digital economy and propose taxation strategies for it both globally and in Algeria. The digital economy presents taxation challenges, both direct and indirect, especially on a global scale. A variety of multilateral and unilateral taxation techniques for digital technologies are discussed, as well as what is used in Algerian taxation. This study is both descriptive and analytical; we will illustrate the situation in Algeria. Following the discussion of Algerian taxation and the digital economy in Algeria, we will examine digital taxation, including its definition, challenges, and techniques. The last section presents our conclusions.

2. Overview of the digital economy in Algeria

Digital economy is widely used in the United States of America and China. The other countries have made exceptional progress in digitalization and its effects. However, there is a divide between developed and developing countries. As a result, digital technologies from developed countries are not universally adopted in developing countries. The digitalized economy may demonstrate how new technologies and the Internet are transforming the economy through ICT and Internet-related components. (Bureau of economic Analysis, 2021) defines digital technologies as (1) the digital-enabling infrastructure required for a computer network to exist and function, (2) the digital transactions that take place using that system ("e-commerce"), and (3) the material that users of the digital economy generate and access ("digital media").

According to (UNCTAD, 2019), “digital infrastructure” includes ICT networks (the core digital infrastructure for connectivity), data infrastructure data centers, submarine cables and cloud infrastructure, digital platforms, and digital devices and applications. Each of these factors’ contributions to the US digital economy have shifted in recent years. Hardware and telecommunications service shares have fallen over time as prices for these products have fallen due to technological change and other digital economy components that rely on newer technology have expanded, according to BEA projections. Trends in software, e-commerce, and internet and data services all show increasing market share. Software accounted for 23.0% of the current dollar value added in 2019, compared to 17.7% in 2005.

In Algeria, we know that we have mobile devices, the Internet, and e-commerce, but other digital technologies, such as AI and IoT, are underused. In this section, we will try to study the situation of digitalization in Algeria in relation to the rest of the world using the IDI index, the GCI, and E-commerce.

2.1 ICT development index (IDI)

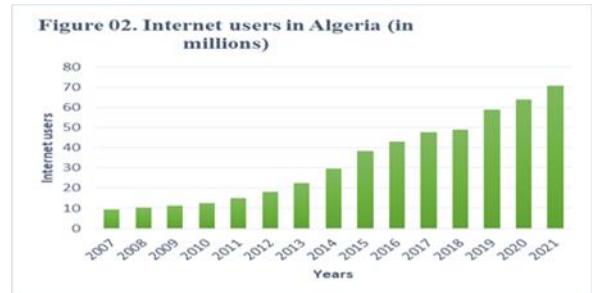
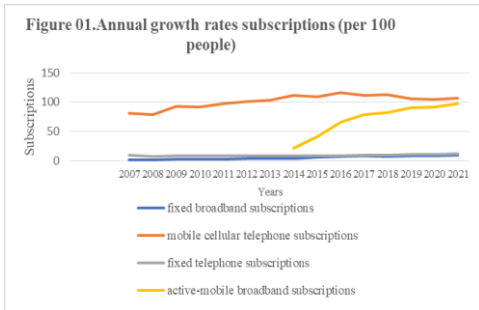
ICT cannot have a positive impact on national development unless it is accessible and used appropriately in the country. The International Telecommunication Union (ITU) creates this index. It is used to track and compare the development of information and communication technology (ICT) across countries and over time. IDI focuses on three areas: access to ICT, use of ICT, and impact of IT. Table 1 shows the transformation of Algeria’s ranking in the ITU index from 114 to 102, with the score increasing due to increased access to ICT from 3.64 to 5.14, particularly since 2015, and increased ICT use from 0.55 to 3.38. The lower prices of smart mobile phones, as well as the introduction of 3G and 4G in 2013, encourage the use and access of ICT.

Table 01. ICT development index of Algeria from 2010 to 2019

Year	2010	2012	2013	2015	2016	2017	2018 and 2019	and
Ranking	114	114	114	113	106	102	No information	
Score	2.99	3.30	3.42	3.71	4.32	4.67		

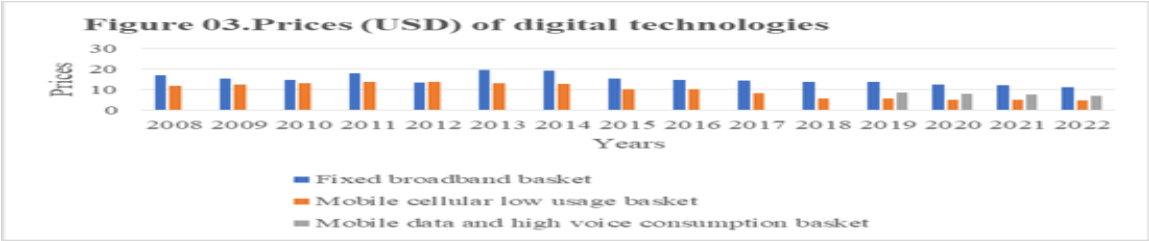
Source: (Ministry of Post and Telecommunications, Algeria, 2022)

Figure 1 depicts the expansion of fixed broadband, mobile cellular telephone, fixed telephone, and active mobile broadband subscriptions (per 100 people). Figure 2 depicts the increase in information and communication technologies, as well as Internet subscription rates, particularly after 2014, when mobile broadband was installed, which was a known trend at the time. After 2014, there was a trend toward new digital technologies as their costs decreased. Algeria is ranked in the top 30 globally, with the “lowest cost of mobile internet consumption in Africa” at \$0.48 per GB (Kahlane, 2022). Figure 3 shows the prices of digital technologies. Algeria has made significant progress in this area. Investments have grown, and basic infrastructure, such as telecommunications networks and internet access, have improved (Kahlane, 2022).



Source: ITU, 2024

Source: ITU and World Bank (2023)



Source: (ITU, 2024) (World Bank, 2023)

2.2 Global connectivity index

The global behemoth Huawei publishes a report on the composite index known as the “Global Connectivity Index” (GCI) to track investments in ICT infrastructure and assess how nations are deploying broadband networks and key technologies to support digital transformation in business, cities, and public authorities. The 40 GCI indicators are scored between 1 (poor performance) and 10 (highest performance) and are evenly distributed across the four major pillars:

- Supply: ICT investments, ICT laws, AI investment, bandwidth
- Demand: e-commerce transactions, number of mobile broadband subscriptions, international intelligence demand
- Experience: experiences in data centers, big data and cloud
- Potential: R&D spending, ICT patents, IT workforce

Table 02 .GCI Algeria ranking

Year	2015	2016	2017	2018	2019	2020
Ranking	74/79	70/79	68/79	70/79	69/79	69/79
Score	22	25	27	29	31	32

Source : (Ministry of Post and Telecommunications, Algeria, 2022)

The GCI is sustained by four enablers: broadband, cloud, AI, and IoT. Algeria scored well in 2020, particularly in AI. The increase in GCI in Algeria is attributed to broadband development. Other enablers have seen an increase after 2020, particularly AI and IoT.

Table 03. GCI enablers growth in Algeria

	Broadband	Cloud	AI	IoT
2016	23	24	18	21
2017	30	24	18	21
2018	35	24	18	21
2019	41	24	18	21
2020	44	24	21	24

Source: (huawei.com/ministe/gci/en/country-profile-dz/html, s.d.)

2.3 B2C index

The UNCTAD B2C e-commerce index assesses an economy's readiness to support online shopping. The index's value is highly correlated with a wide range of national factors that are closely related to online commerce.

Table 4 . The growth of e-commerce index ranking

Year	2016	2017	2018	2019	2020
Ranking	95	97	111	109	80
Score	32.3	38	36.3	38.2	52.2

Source. (UNESCWA, 2023)

The score for e-commerce and online or mobile payments is improving, but it is still lower than many other countries in the same stage of development. In Algeria, there are still only a few electronic payment terminals (TPEs) and virtual payment terminals (TVPs) that online retailers can use remotely. Businesses that accept credit card payments are typically concentrated in larger cities such as Algiers, Oran, and Constantine, whereas small and medium-sized businesses are less likely to offer electronic payment options (Kahlane, 2022). It is worth noting that the number of registrations in mobile phone technologies, the Internet, and fixed-broadband technologies, as well as technology development indicators, have seen a significant increase, particularly since 2014. This is due to the development of Algeria's communications infrastructure and the introduction of 2G and 3G technologies, which allowed digital technology prices to fall. The digital connectivity index also demonstrates Algeria's progress in terms of investment in communications infrastructure, AI, and IoT, which has

increased since 2020 following the deployment and expansion of 4G technologies in 2016. In terms of electronic commerce, there was a delay caused by the regulatory framework and the failure to expand the use of payment systems across all states. Kahlane cites the Algerian government's recent e-commerce policies, which include tax breaks and funding for the development of e-commerce platforms under Law 15-05 of May 10, 2018 (Kahlane, 2022). Noteworthy in this regard is the fact that Algeria's Internet market will provide rich opportunities for the country's new economic structure, and that productivity gains at the national level will only be achievable during the deployment phase, during which new technologies and operational procedures will become commonplace (Gat & Boulouiz, 2023, p. 752).

3. Literature review on digital economy taxation

3.1 Determinants of Digital Taxation in European Union (Hack, Devcic, & Budic, 2021)

This paper discusses digital taxation in EU member states. The authors aimed to define digital activities and introduce difficult digital taxation methods. They highlight the type and level of digital activities, and they conclude the article by compiling research on the impact of implementing digital taxation on individual European Union contacts. The authors concluded that European states have decided to implement a digital tax on their own.

3.2 Digitalization as Determinants of Tax Revenues in OECD Countries: Astatic and Dynamic Panel Data Analysis (Hanrahan, 2021)

The purpose of this study is to investigate the relationship between digitalization and tax revenue. The author uses panel data from OECD countries from 1995 to 2018. He attempted to investigate the impact of digitalization on tax revenue using static and dynamic panel data analysis techniques. The findings indicate that digitalization in the countries studied

may have a negative impact on a country's ability to generate higher tax returns (Hanrahan, 2021).

3.3 Taxation, Digitalization of the Economy and Digital Economy (Diaz & Demiguez, 2018)

This paper provides a synthetic approach to digital taxation, with a focus on its growth, administration, and application. The authors investigated the elements of digitalization in various states around the world, as well as the challenges associated with its taxation. The impact of this taxation, as well as how to adapt it to the digital environment. Finally, the authors state that the countries have implemented numerous measures that will not improve tax administration efficiency. There are numerous challenges in digital taxation, such as difficulties drafting legislation due to a lack of concept standardization, confusion between different business models in determining the classic problem of taxation and international tax competition, and new challenges arising solely from digitalization.

3.4 Taxing Developing Asia's Digital Economy (Mullins, 2022)

The paper focuses on taxing the digital economy in developing Asian countries. It investigates the challenges of taxing digital activities, particularly international transactions. The authors investigated 46 countries in Asia and the Pacific that are heavily influenced by the digital economy. These countries responded to digital taxation challenges with a variety of initiatives, including income taxation, discrete digital taxes, and value-added tax. In conclusion, the measures implemented by Asian developing countries are mixed, but their revenue impact will be minor. The paper proposes implementing tax reform strategies in developing Asia.

3.5 Taxation Challenges in a Digital Economy-The Case of the People's Republic of China (Terada Hagivara, Gonzales, & Wang, 2019)

China is a leader in the digital economy, which presents numerous challenges, such as tax base erosion and profit shifting. This paper focuses

on tax challenges in China's digital economy. The PRC has implemented many tax reforms related to digitalization, including a value-added tax on e-commerce transactions. Despite these measures, the PRC remains relevant to both cross-border and domestic e-commerce transactions. The proposal of the paper to the PRC is to continue participating in the international taxation forum. The significance of the tax registration system.

In addition to these literature reviews, there have been many studies on digital taxation conducted by international organizations such as the Tax Foundation around the world. Many new activities and services that were not recognized ten years ago, such as platforms, cloud computing, and the IoT, have emerged in the digital economy, necessitating the application of different rules to all laws, including tax law, to manage and benefit from their growth. In recent years, the digitalization of the economy has been a major tax-related topic. Politicians have talked about how to tax physical and virtual corporate operations differently. These discussions have covered several rules of tax law, including corporation and consumption tax laws.

Along with the increasingly popular use of gross-based withholding taxes on digital services, novel policies such as equalization levies and digital services taxes have been developed (Bunn, 2021). This discussion revolves around how to tax digital activities, the challenges of digital taxation, and digital taxes. In this section, we will define digital taxes in light of the digital tax challenges. The OECD identified three board challenges to the current taxation system caused by digitalization: nexus, data, and characterization. Other challenges to digital taxation include reliance on intangibles and challenges with indirect taxes. In this section, we will discuss nexus, data, characterization, and reliance on intangibles.

The ever-increasing potential of digital technologies, combined with the decreasing need in many cases for extensive physical presence to conduct business, can raise concerns about whether the current rules for determining nexus with jurisdiction for tax purposes are appropriate (OECD, 2014). As a result, market countries in the highly digitalized economy lose tax revenue

that would have been available to them through traditional business models but are now unable to collect under traditional tax laws. According to the European Union, the value created by user participation is not considered when determining how much tax should be paid in each nation, even if a corporation has a permanent establishment in the jurisdiction where the users are located (EU).

Companies in the digital economy can now collect and use information across borders to an unprecedented extent, thanks to advances in information technology sophistication. This raises questions about how to classify a person's or entity's supply of data in a transaction for tax purposes, such as a free supply of a good, a barter transaction, or another way, as well as how to attribute value created from data generation through digital products and services, user engagement, and user data, which are related to the final difficulty identified by the OECD interim assessment. User involvement, network effects, and generated data are common features of digital business models (OECD, 2018). Through targeted marketing and advertising, they may also convert that value into money (UNCTAD, 2019).

Uncertainties arise regarding the proper characterization of payments made in the context of new business models, particularly cloud computing, as a result of the development of new digital products or methods of service delivery (OECD, 2014). To explain the source of revenues of digital activities (Azhar, 2017) use the example of "Google" and "Facebook" corporations' revenues. The best way to describe this income stream is as a two-stage procedure. First, the digital company builds a "network of users" to drive "traffic" to its website. In the second phase, the company figures out how to make money off of the traffic it has created by letting other people advertise to particular user groups (Azhar, 2017, p. 116). It is difficult to determine whether a company received funds while conducting business because no intermediary is involved. In some cases, the person who conducted the transaction may also be the payer (Hadzhieva, 2016, p. 17).

Reliance on intangibles makes it easier for businesses to structure their operations in a way that reduces their tax liabilities while also making it more difficult for tax authorities to determine how income from these assets should be identified, valued, and distributed among various segments of multinational corporations. Furthermore, because current regulations rarely address new delivery channels and business models, such as service-oriented models based on software or hardware, cloud computing, 3D printing, collaborative platforms, and blockchain, they create legal uncertainty for both taxpayers and governments. The sheer number of digital enterprises, as well as those that use multiple business lines, raise additional tax concerns that must be addressed by strong policies that can withstand the industry's rapid digital transformation (Hadhieva, 2019). These challenges have an impact on developing countries' taxation. Furthermore, because the personal income tax is still underdeveloped and there is already a strong reliance on trade taxes, developing countries will find it much more difficult to replace any reduction in CIT and VAT. The loss of tax revenue is more serious and significant in developing countries, which are net importers of digital goods and services (Rukundo, 2020, january, p. 8).

4. Digital taxation

The discussion about digital taxes began with the question of whether to apply traditional tax laws to digital businesses and activities or to create new tax laws specifically for digitalization. Countries that match economic activity and value production with taxation or the European Union base (to improve the effectiveness of European VATs) have laws based on the multilateral digital taxation system, such as the OECD G20 proposal or the EU's digital taxation policies. Other countries, particularly developing ones, have implemented digital taxation unilaterally. The Tax Foundation defines digital taxes as "policies that specifically target businesses that provide products or services through digital means using a special corporate tax rate or tax base" (Tax foundation, 2020). The OECD (2015) classified countries' unilateral direct taxation measures aimed at the digital sector into three categories: i) a new nexus in the form of a significant economic presence, ii)

a withholding tax on certain types of digital transactions, and iii) an equalization levy (Smail, 2020, p. 25). Other methods of taxing the digital economy are used, including the bit tax, digital services tax, VAT, and tax exemptions, which are discussed below.

4.1 Taxation from new nexus

Taxable presence refers to the relationship between a market jurisdiction and a person who has a physical presence there (permanent establishment). Alternatively, the relationship between a market jurisdiction and the income generated there is referred to as a taxable source. The Nexus regulations, which specify the minimum conditions for source nations to levy taxes on income received by foreign digital enterprises from operations in the market region, apply to both situations. OECD, This is accomplished through the implementation of a territorial taxation system. The taxable source approach aims to generate a new source of taxable income through value-creation activities in the market jurisdiction (Lucas-Mas & Jurquera-Varela, 2021, p. 62)

4.2 Introduction of bit tax

Such a tax would be based on the number of bytes used by the website, but to add some progressivity, different tax rates would be applied depending on the company's size or turnover. For administrative reasons, such a levy would only apply to businesses that consume more bandwidth annually than the required minimum. To maintain parity between digital and traditional businesses, the proposed bandwidth tax would be deductible from corporate income tax (OECD, 2014).

4.3 Gross-based withholding taxes on digital services

These regulations establish and/or implement (by way of collection) a source taxation right on payments made by residents to non-residents for digital services. Although the practicalities of withholding money for tax and

then remitting it to the tax administration make this mechanism better suited to payments made by businesses than consumers, withholding taxes, which are already widely used for royalty, interest, and dividend payments, can be especially effective for taxing non-residents who do not have a physical presence in a jurisdiction (OECD, 2014).

4.4 Equalization levy (also called Digital Service Tax - DST)

An equalization levy is considered a turnover tax on e-services if it is levied on the supply itself and only focuses on the payment's expenditure side (the nature and value of the supply); if it is not charged at a fixed rate and is not creditable or otherwise eligible for income tax relief for the same payment (Hadhieva, 2019). Prior to 2020, the levy only applied to advertising; however, it was later amended to cover an e-commerce operator's facilitation of the sale of goods, the supply of services, and/or the provision of those services (for example, via a platform) (OECD, 2014). It falls under consumption tax rather than income tax (SJ Quinney College of Law, 2020, p. 145).

4.5 Consumption taxes

Consumption taxes are value-added taxes (VAT) and other taxes on the sale of final goods or services. Countries are increasing their consumption taxes to cover digital goods and services (Tax foundation, 2023).

4.6 Tax preferences for digital businesses

Tax preferential policies, such as R&D credits and patent boxes, reduce the tax burden on digital businesses. Though most preferences apply to any business, some are particularly well-suited to digital business models (Tax foundation, 2023). These countries use unilateral policies to tax digital services, such as the Google tax in Spain, but we can see the same vision; the differences are in rates or revenue.

5. Digital taxation in Algeria

The Algerian tax system underwent several reforms, the most significant of which occurred at the beginning of the 1990s; however, important amendments to the Finance Law for 2022, 2023, and 2024 were made with the goal of expanding the tax base and increasing tax collection. Algeria's tax system currently includes the following taxes and fees: direct taxes such as the personal income tax, Special lump-sum tax regime, the corporate profit tax, and indirect taxes, such as the value-added tax and the internal consumption tax.

5.1 Challenges of digital taxation in Algeria

As a developing country, Algeria faces challenges in taxing the digital economy, particularly in terms of establishment and base erosion due to digital activities. Other challenges include determining who should pay taxes and calculating earnings from digital activities. To address these concerns, we will discuss the tax methods used in Algeria's digital economy in the following paragraphs.

5.1.1 Resident establishment

Algeria's direct taxation system consists of two primary components for taxing any individual or entity: If a person's or entity's tax residence is in Algeria, they must pay taxes on their entire income or benefit. Individuals or entities with a tax domicile outside of Algeria are subject to this tax on income or benefits derived from sources in Algeria. Without tax conventions with other countries, foreign entities may face double taxation or erosion of their tax bases. Algeria has no direct taxes levied against the digital industry, according to the Arab Monetary Fund (Arabic monetary fund, 2020). Algeria's tax system does, however, apply corporate tax profit, Personal income tax, and Special lump-sum tax regime to services, including digital services provided to citizens. The withholding was applied to non-residents (Arabic monetary fund, 2020, p. 23).

5.2 Application of taxes to digital activities in Algeria

5.2.1 Indirect taxes: VAT in Algeria

Changes to the 2020 Finance Law that were approved by the legislature acted as a catalyst for Algeria's tax reform. VAT applies to sales transactions conducted through an electronic channel. As a result, clients in Algeria who use digital services will have to pay 9% VAT (reduced rate) for books published and distributed digitally and 19% for material goods sales (Algerian tax authority, 2020, p. art23).

5.2.2 Corporate tax of benefits (IBS)

This tax is imposed on the benefits of corporate residents: there is no mention of digital activities, but the third rate of 26% is applied to other activities in Algeria; the digital economy can be defined as mobile operators and internet service providers such as Ooredoo and Algeria Telecom.

5.2.3 Special lump-sum tax regime: IFU

Natural persons, regardless of their income category, who participate in the distribution circuit of goods and services via digital platforms or use direct sales in the network are subject to a 5% retention at the source under the Special lump-sum tax regime (IFU). Applied to the amount of the invoice, including all taxes, to be operated, as the case may be, by the undertakings producing goods or services or by those acting in the purchase/return (Algerian finance ministry, 2023, p. art282). In the 2024 finance law reduce this tax to the rate of 0.05% for the new system including digital activities (Algeria finance ministry, 2024, p. art18).

5.2.4 Withholding tax applied to digital activities

According to Algerian tax law, certain digital activities are subject to withholding tax. For B2B, non-resident companies that provide services but

do not have a permanent location are subject to a 30% withholding rate on all taxes, including VAT, and are responsible for submitting and paying those taxes on behalf of the foreign supplier (Algerian finance ministry, 2023, p. art 150.156).

Table 5 summarizes the application of taxes on digital activities in Algeria. Because of their ease of use and the large number of taxpayers, digital activities are frequently taxed in Algeria through withholding of sources. Other taxes, such as personal income tax, could be levied on these activities, but they are difficult to implement because it is unclear what tax laws apply and how to calculate the income that should be taxed.

Table 5. Digital taxation in Algeria

Taxes	VAT	Corporate tax	Corporate tax	Special lump-sum
Rate	19% and 9% of e-commerce	26% to resident	30% to non resident	5% or 0.05%
Payment method	No withholding	No withholding	Withholding	Withholding
Subject of tax	Sale operations of electronic goods and services	Companies' activities in telecommunication and electronic services	Non resident companies whose activities in digital services	The distribution circuit of goods and services through digital platforms or using direct sales in network

Source: Author from presented above

6. Conclusions

Digital taxation presents numerous challenges due to the distinction between the resident establishment and the market, income classification, and data collection. Although the international organizations has made a multilateral proposal for digital taxation, many countries have implemented it unilaterally or through projects. There are no digital taxes in Algeria, but the VAT applies to all activities, including digital technologies, and withholding taxes are realized on the activities of foreign companies, as well as a Special lump-sum tax regime, not to mention the application of corporate taxes to companies with an Algerian residence. Algeria's digital taxation is unclear due to a lack of data transparency. The revenues from digital

activities, the number of digital companies, and the actual amount of their profits limit the taxation process based on the tax base and object. There are no special taxes on digital technologies in Algeria. However, Algeria is attempting to adapt its tax law to digital activities by focusing on taxes already in the Algerian tax system and applying them to digital activities such as IFU, VAT and corporate tax. Algeria is falling behind other countries with similar levels of digital technologies, making it difficult to limit its economic advantages. Though the digital economy does not recognize underdeveloped economies or their borders, it does provide mobility and data collection. For future research, the goal is to create a system for collecting information and data in digital activities. This will improve the efficiency of payment transactions, particularly in electronic activities.

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