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E-commerce Taxation Amidst the Covid-19 Pandemic and Beyond

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Abstract The Covid-19 pandemic has boosted e-commerce operations around the world because e-commerce has proven to be one of the most efficient and effective ways of enhancing business transactions between buyers and sellers amid the pandemic. The convenience stemming from e-commerce through limiting human interaction during the pandemic is the reason for the surge in people turning to the internet to transact business, as this tends to reduce the risk of contracting the virus. It is generally expected that the increase in e-commerce activities should have a positive relationship with tax revenues accruing to various countries but this is not the case. In the face of Covid-19, e-commerce operations have increased appreciably but governments worldwide are still losing a lot of money to e-commerce operations in terms of generated tax revenue. This is due to the anachronistic tax regime used for e-commerce taxation. This has compelled policymakers to question existing tax regulations, leaving them with no choice but to devise new methods of taxing e-commerce operations. As a result, this paper offers rarefied literature on critical e-commerce and Covid-19 issues, delves into e-commerce taxation and advocates for formulary income apportionment, tax compliance software development, and cross-border electronic invoicing as appropriate measures to improve e-commerce taxation in the face of the Covid-19 pandemic and beyond.

Keywords: *e-commerce, taxation, tax revenue, Covid-19*

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1. Introduction

The COVID-19 emergence has caused people around the world to significantly limit physical interactions with each other as this will help reduce the spread of the virus. This in effect has hampered trade operations that need close physical contact. Self-imposed social distancing to avoid contagion, together with the strict confinement measures implemented in many countries, have put a large share of traditional brick-and-mortar retail virtually on hold, at least temporarily [1]. "Reference [2] shows that 52% of consumers are avoiding brick and mortar shopping and 36% avoiding brick and mortar shopping until they get the coronavirus vaccine." Considering these, E-commerce which is defined generally as the sale of goods or services via the internet – is emerging as a major pillar amidst the COVID-19 pandemic. Organization for Economic Cooperation and Development (OECD), defines e-commerce as 'the sale or purchase of goods or services, conducted over computer networks by methods specifically designed to receive or place orders'. Reference [3]," which examined how the pandemic has changed the way consumers use e-commerce and digital solutions, shows that consumers in emerging economies have made the greatest shift to online shopping. The World Trade Organization indicated that it is the right time for e-commerce to save the world economy and that, it is to intervene with vigor and vitality and prove e-commerce of its importance and effectiveness in the field of trade and online shopping because the pandemic has highlighted the glaring need to bridge the digital divide, both within and across countries, given the central role the digital economy has played during the crisis. Many traditional obstacles have accentuated and have continued to hamper greater participation in e-commerce activities by small producers, sellers, and consumers in developing countries, particularly in least-developed countries. This has underscored the need for efficient and affordable information and communications technology (ICT) services, such as telecommunication, computer and other IT services, and emerging technologies [4]. Before COVID-19, e-Marketer estimated that worldwide retail would expand by 4.4 percent, to US$ 26,460 trillion during 2020, with e-commerce growing by 18.4 percent to US$ 4,105, 15.5 percent of the total retail value. In light of the pandemic, it has decreased these estimates of retail growth by ten and two percent respectively, with e-commerce thereby taking a greater share in total retail. Also, with online retail sales estimated to reach an eye-watering $6.5 trillion by 2023, the e-commerce sector was already booming. But since the outbreak, online shopping has been catapulted into complete overdrive.

Even the largest retailers on the planet are struggling to keep up with the unprecedented consumer demand [5].

The pandemic has accelerated the changeover to a more digital environment, causing positive shifts in online buying habits that are sure to prevail even after the pandemic. However, considering the surge of e-commerce operations amidst the pandemic, the issue of how governments can efficiently and effectively tax e-commerce to generate enough revenue from their operations without distorting the technological choices is an issue that needs immediate attention. Numerous countries all over the world are struggling in coping with issues of taxing e-commerce, this is because of lack of comprehensive understanding, communication technologies, complex nature and modus operandi of the business [6]. Also, the reigning tax jurisdictions were laid down to favor the traditional brick–and–mortar business model, and most of these countries too are not abreast with certain technologies used in facilitating e-commerce operations. Additionally, the discrepancies in tax laws between various countries also make e-commerce taxation more byzantine. Developing economies, in particular, are also ill-equipped to raise taxes from non-resident e-commerce firms, leaving them with less domestic capital for growth and development [7]. Obstacles facing e-commerce taxation arises often as the exponential growth of electronic commerce defies national tax regimes, it is important to harmonize the global taxation structure and also enact tax policies to curb the most of tax evasion and bring the e-commerce industry within the dominion of tax systems to ensure that revenue generated through e-commerce taxation is tapped efficiently and effectively. As a result, this paper aims to delve into e-commerce taxation by reviewing existing literature in this area and suggest effective solutions to strengthen and improve tax collection and administration mechanisms in the area of e-commerce and provide a clearer understanding of e-commerce taxation.

2. History and Development of E-Commerce

E-commerce is believed to have emanated from the United States of America and its evolution has been impacted by the development of information technology. The development of e-commerce follows the stages of evolution of the digital environment – an evolution which must be understood and guaranteed through the aspects that must be taken into consideration when using the e-Commerce – aiming to assure the use of its contributions [8]. Other scholars and stakeholders in the field of commerce have also researched the history and evolution of e-commerce. “Reference [9] shows that e-commerce had its first phase in the 1970s when it was restricted to operations among large corporations which established among themselves private communication networks and, employing electronic fund transfer systems, which electronically made financial transactions and document exchanges.”

Albertin [10] gave a piece of detailed information on the development of e-commerce as he divided its evolution into four different phases. The first phase was about organizations using the Internet's features to disseminate knowledge about their products and services and that was the cause for the initial trigger for e-commerce growth. The second phase involved receiving orders and submitting reports and guidance about how to use their goods and services. During this process, logistics started to affect businesses. The third stage focused on the distribution of products and services by using Information Technology (IT). In this phase, some products began to be commercialized digitally as, e.g., music and software. The final stage of the evolution transformed e-commerce by establishing interactions and contacts between sellers and buyers and eliminated the initial stages which focused solely on data transmission and product delivery. Given the possibilities of e-commerce, such interaction allowed the basic internet user to become a future customer as technology progressed and widespread usage of the Internet expanded. The medium ushered in a genuine revolution in how goods, services, and details are marketed, offering greater simplicity and a broader range of offerings and choices for both buyers and sellers.

E-commerce was made possible by the development of electronic data interchange (EDI) in the 1960s for the exchange of business documents from one computer to another in a standard format [11]. During the ’70s and the ’80s, the main subject of transactions was information exchange and banking transfers. The development of the World Wide Web and other significant graphical user interface such as the HTML which proved pulsating in the development of the internet ushered e-commerce into a new era. Eventually, numerous rudimentary websites were developed by businesses in the United States and other Western European countries between 1998 and 2000 from where e-commerce activities began to crystallize. In the dot-com era, e-commerce came to include activities more specifically referred to as “Web commerce” thus the purchase of goods and services over the World Wide Web, usually with secured connections with e-shopping carts and with electronic payment services such as credit card payment authorization [12]. Initially, the transactions on the internet were non-salable in nature but in 1991, the National Science Foundation removed the prohibition on commercial-type activities on the internet and this decision prompted the major evolution of e-commerce between 1995 and 1999. After this, major e-commerce brands emerged. Some of which include the establishment of Amazon in 1994, eBay and Yahoo (in 1995), as well as GeoCities (an early model for the virtual community, established in 1994). These brands set the pace and have motivated other companies to enter online marketing. Since then e-commerce has been growing appreciably. The growth rate and the results have been outstanding. For example, in 1996, the United States recorded total revenues of 707 million dollars, 2.6 billion the next year, following the record of 5.8 billion dollars in 1998. Again, Amazon distinguished itself by increasing the turnover from 16 million in 1996 to 1.6 billion dollars in 1999 [13].

The total value of global e-commerce transactions, both domestic and cross-border, was US$ 25 trillion in 2015, up 56 percent from US$ 16 trillion in 2013 [14]. Current estimates indicate that global e-commerce sales grew 13% in 2017, totaling around 29 trillion dollars. The number of online shoppers has registered a similar increase with the

share of those buying from abroad rising from 15% in 2015 to 21% in 2017 [15].

The graph below illustrates Global retail e-commerce sales from 2014 to 2024

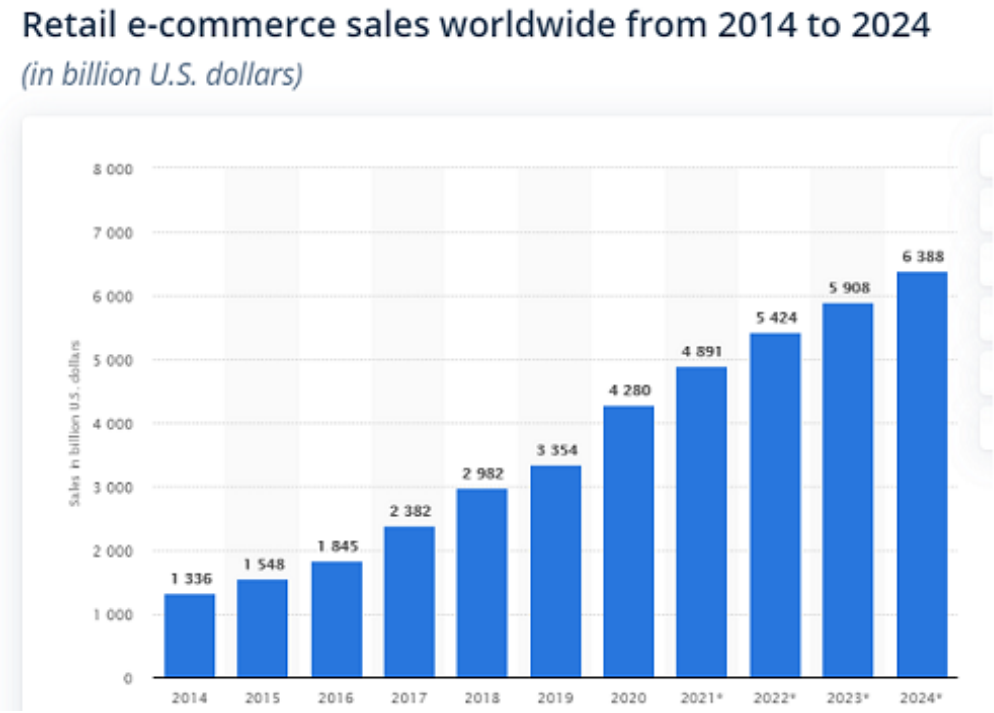

Figure 1. Trends of Global Retail E-commerce Sales from 2014 to 2024 Source: Tugba Sabanoglu, Statista.com 2021

It can be inferred from the graph that right from 2014 there has been approximately a 12% annual increase in e-commerce sales which is an indication that e-commerce sales have been growing appreciably. In 2021, global e-commerce sales are expected to reach 4.891 trillion US dollars. This is a mark of 14.3 percent from the previous year as the global market continues to grow year after year and is projected to grow to reach 6.3 trillion US dollars by 2024.

e-Marketer [16] shows that China is the current largest contributor to growing global e-commerce. Contributing about 52.1 percent amounting to about 2.7 trillion US dollars. The US e-commerce market is the second-largest global contributor with a forecast of 843.15 US billion dollars which is less than a third of that of China. This is quite a remarkable feature for China, considering that it only surpasses the United States as the world's largest e-commerce market less than a decade ago. After China and the US, the country with the third-largest e-commerce market size is the United Kingdom. Total e-commerce sales in the UK are expected to fall by 6.3 percent from $180.39 billion in 2020 to $169.02 billion in 2021. Japan and South Korea come fourth and fifth respectively as the largest e-commerce markets: Japan is expected to grow 2.0 percent and bring in $144.08 billion in e-commerce sales, while South Korea is forecast to grow 9.0 percent to $120.56 billion [16].

2.1. Nature of E-Commerce

E-commerce and online shopping are often used interchangeably but at its core e-commerce is much broader than this – it embodies a concept for doing business online, incorporating a multitude of different services e.g. making online payments, booking flights e.t.c. [17]. According to European Commission, “E-Commerce encompasses more than the purchase of goods online. It includes a disparate set of loosely defined behaviors such as shopping, browsing the internet for goods, gathering information about items to purchase, and completing the transaction like any other sustained business activity. It also means conducting consumer satisfaction surveys, capturing information about consumers and maintaining consumer databases for marketing promotion and other related activities”. Electronic commerce is classified as business to business (B2B), business to consumer (B2C), business to government (B2G), consumer to business (C2G), consumer to consumer (C2C), consumer to government (C2G), government to government (G2G), government to business (G2B) and government to consumer (G2C) [18]. B2B (Business to Business) e-commerce comprises the online sale of products and services between companies whilst B2C (Business to Consumer), deals in the online business transacted between a business and individual customers. Prices are generally fixed in B2C in contrast to B2B transactions where prices are highly variable. In the C2B model, instead of business, customers now demanded service for a price that they're happy to pay and waited for a business to fill the gap. C2C (Consumer to consumer), is the business model that enables commerce between private individuals. Prudent examples of C2C include eBay, an online auction site, and Amazon, which acts as both a B2C and a C2C marketplace. In some governments, transactions of B2G have come up with a beginning to rearrange the public procurement system over the internet. Technology is being used by the government, for usage, receipt, and transmission of information can be an example of G2C and G2B transactions. C2G transactions have become widespread with the beginning of

technology used to make payment systems and tax compliance easier and to reduce their costs by government B2B and B2C are the most used and improved transactions so far [18]. Additionally, we have newer forms incorporated in the definition of e-commerce such as mobile commerce (m-commerce) and social commerce (s-commerce). We can additionally distinguish between three types of e-commerce: e-commerce intangible products, e-commerce in intangible products, and e-commerce in services [15].

European Parliament [19] explains that the categories of e-commerce might be classified along two dimensions, i.e. the nature of the item traded and the character of the agents involved. Concerning the nature of the item traded, the standard definition is separated into two main categories: distance selling and digital content services or direct electronic commerce. Distance selling refers to the electronic selling of tangible goods, which still must be physically delivered using traditional channels (i.e. postal services). Meanwhile, digital content services or direct electronic commerce concerns the online ordering, payment, and delivery of intangible goods.

2.2. E-commerce Amidst COVID-19

E-commerce has thrived appreciably amidst the COVID-19 pandemic. Despite the restrictions accompanying the pandemic, consumers are still able to purchase a diverse range of goods from the comfort and security of their homes, as e-commerce enables continuous operation of business transactions in the face of touch limits and other restraint measures. Additionally, despite persisting cross-country discrepancies, the COVID-19 crisis has boosted dynamism in the e-commerce environment across countries and broadened the threshold of commerce, through new companies, customer groups (e.g., the elderly), and product categories (e.g. groceries). E-commerce sales in many countries have shifted away from opulent products and services and toward necessities that are crucial to a large number of people. In the United States, for example, demand for items related to personal safety (e.g., disposable gloves), home events, groceries, or ICT equipment increased, while demand for items related to travel, sports, or formal clothing dropped significantly (e.g. suitcases, bridal clothing, gym bags, etc.). Several countries have experienced a shift toward e-commerce, particularly along the food supply chain, with farmers using digital technologies to sell their produce directly to consumers or restaurants that have switched to providing food or grocery delivery services. It can also be said of Korea, where significant increases in food services (66.3 percent), household products (48 percent), and food and drink (46.7 percent) were found, while online purchases involving culture and recreation services or travel agreements and transportation services decreased dramatically, by 67.8 percent and 51.6 percent, respectively. In addition, food products became the single biggest winner in Chinese e-commerce, with a 36% increase in acquired revenue from January to April 2020 compared to the previous year. Total online transactions, on the other hand, managed to remain nearly constant from January to April 2020 in comparison to the same period in 2019 (+1.7 percent), despite increasing markedly in 2018-19. (17.8 percent). Since experiencing dramatic growth from 2018 to 2019, accumulated sales of apparel items decreased by 16% in 2019. In Germany Online purchases of drugs and groceries increased considerably, although these have traditionally been laggard industries in terms of e-commerce, while total online sales decreased by about 18 percent in March 2020 compared to the previous year [20].

The resulting shifts from brick-and-mortar retail to e-commerce are obvious among countries. For example, between the first quarter of 2018 and the first quarter of 2020, the share of e-commerce in overall retail in the United States rose steadily (from 9.6 percent to 11.8 percent), then spiked to 16.1 percent between the first and second quarters of 2020. The trend in the United Kingdom is similar: between the first quarter of 2018 and the first quarter of 2020, the share of e-commerce in retail increased from 17.3 percent to 20.3 percent, before increasing dramatically to 31.3 percent between the first and second quarters of 2020. Similar trends can be seen in other countries, such as the People's Republic of China, where the share of online retail sales in overall cumulative retail sales increased to 24.6 percent between January and August 2020, up from 19.4 percent in August 2019 and 17.3 percent in August 2018. OECD [1] posits that, given the risk of new waves of the epidemic, the ease of new buying patterns, learning costs, and the opportunity for businesses to capitalize on investments in new distribution platforms, some of these shifts in the e-commerce environment would almost certainly be long-term. Around February and April 2020, retail and foodservice revenues in the United States fell 7.7% relative to the same time in 2019. However, sales improved for e-commerce providers by 16% and 14.8% respectively. Also, statistics provided by the European Union show that In April 2020, retail sales through mail-order houses or the Internet increased by 30% compared to April 2019, while overall retail sales decreased by 17.9%. It is quite obvious that some of the shifts brought by Covid-19 will impose a prolonged change in e-commerce. While some market changes may be transient, others are anticipated to have long-term implications for e-commerce. For example, during the pandemic, elderly consumers who began participating in e-commerce to increase physical distance may continue to follow their newly acquired routines. According to the credit card use of about 10 million credit cardholders in Japan, the rise in the share of internet payments of credit card transactions was greatest for consumers in their 60s (from 15.4 percent in January to 21.9 percent in March 2020) and those in their 70s (from 15.4 percent in January to 21.9 percent in March 2020). There is a surge in the number of new users who have never engaged in online shopping before, and it is forecasted that these consumers will inculcate these shopping habits as they move into the future. In Brazil, approximately 54 percent of Internet users had purchased food or food items via the Internet in 2020, up from just 22 percent in 2018. Cosmetics, toiletries, and medications all had significant price spikes. Since convenience has always been a major motivator for e-commerce participation, many of the current customers may continue to buy at least some products online in the future [20]. Others may opt to buy digitally out of fear of the effects of a pandemic, or because retailers have been

able to retain customers through reward programs or subscription models. On the supply side, many brick-and-mortar store owners who have been forced to close their physical locations see e-commerce as a potentially critical complementary or replacement distribution channel. Because the transition to online shopping necessitates an investment, many of the companies that increased their presence in e-commerce during the COVID-19 crisis will be able to capitalize on their gained infrastructure or skills in the long run. This is still true for a slew of other players, many of whom are only now laying the groundwork for an online sales infrastructure in response to the relaxation of restraint measures. This includes shops, bars, libraries, and public swimming pools, which have been forced to implement an online booking system in some countries to monitor the number of people on their premises at any given time.

2.3. Leveraging E-commerce Amidst COVID-19

It is prudent to probe into how e-commerce can be leveraged to its maximum best amidst the pandemic and beyond to ensure economic activities take place anywhere, anytime, and any day at the comfort of consumers.

COVID 19 became a global pandemic that wedged people's lives all over the world. For the first time, e-commerce provided a substitute channel for managing business operations, social networks, and consumption where stringent protective steps such as lockdowns were in place. Considering the numerous relief e-commerce has brought for economic activities which include: the further lessening of the risk of new infections because most supermarkets have helped customers avoid in-store visits. by offering online grocery delivery and also the availability of online payments has removed the requirement for in-person cash transactions. Secondly, during the crises, e-commerce aided in the preservation of certain employment, for instance, while many restaurants are unable to handle in-venue dining, many have resorted to selling online take-out services to retain a simple income stream that will help them stay alive through the crisis. Also, e-commerce helped upsurge the approval of prolonged physical distancing measures among the population. The continuous availability of online transactions and online services, including video chats, movie streaming, and online classes, makes it much more bearable to live and work while limiting physical interaction with others. Government hereby has the responsibility to put in place various strategies to facilitate e-commerce's role of containing the virus. Some of these strategies as proposed by [21] can be categorized into three (3). The first group of measures aims to help more businesses and households to connect to the digital economy during the crisis. Concerning this, the government has the role to develop dedicated information websites to support businesses that want to serve their customers online during the crisis. Secondly, the government has the role of providing a sound regulatory framework where regulations on e-commerce, including digital signatures and documents, online consumer protection, and data privacy are already in place. Thirdly, the government has to clarify (and, where appropriate, relax) the legal framework surrounding online delivery of professional services, particularly medical and other health services. Not all countries are equipped with a legal framework surrounding the online delivery of professional services, and when existent, it may not be clear enough. Legal frameworks need to be examined profession by profession. Additionally, the government must work with the private sector to secure access to the digital economy through the provision of special low-cost mobile and fixed-line internet access for all, including for disadvantaged population groups.

The second group of measures aims to ensure that e-commerce can continue to serve public safety, even during the COVID-19 lockdown. The following measures are relevant Firstly, it will be prudent for the government to create a COVID-19 code of ethics for internet trading of products to guarantee the welfare of consumers and staff during the crisis and also help establish clear health and safety standards. Secondly, throughout the crisis, the government must keep a close eye on e-commerce firms and impose strict protection and efficiency guidelines. Significantly, the government should educate the general public, especially families and micro, small, and medium-sized businesses, on how to shop safely online, including simple cybersecurity initiatives. Consumers should be educated on a potential online scam and know how to detect and redress any online anomaly. Government can support businesses in adopting electronic payment options during the crisis as this will ensure absolute contactless online transactions which will eliminate the need for in-person cash exchange. Government can also help maintain the functioning of the logistics system, including the national postal service.

The third group of measures aims to ensure that the government's e-commerce strategy during the crisis is communicated, implemented, and coordinated with other policy measures. Such strategies include but are not limited to: Firstly, the government should design COVID-19 fiscal policy measures that support the development of online sales channels. And ensure that the tax mechanisms should take into account the role of various players in the digital economy, such as marketplaces that provide intermediation platforms and online retailers of products and services, providing a straightforward and administratively clear solution for the e-commerce industry to comply with tax obligations. Secondly, the government should propose forming a multi-sector working group of members from both the public and private sectors and they should meet regularly to discuss progress on an e-commerce action plan, review other e-commerce trends, and, if appropriate, update the action plan. Additionally, the government should increase public consciousness of the role of e-commerce in combating COVID-19, including the government's efforts to boost the sector and increase confidence in the digital economy. Awareness can be created via key channels like TV and print interviews, social media, and government websites.

2.4. The E-commerce Taxation Framework

Failure to tax online transactions adequately would potentially result in major revenue reductions for federal governments, perhaps preventing them from funding

essential public utilities like colleges, highways, and hospitals. In many nations, taxation is a significant source of revenue and constitutes a key part of the state and nation-building [22].

At the Organization for Economic Co-operation and Development (OECD) Ministerial Conference on E-Commerce in Ottawa in October 1998, [23] two relevant studies were approved. According to the Joint Declaration of Business and Government Representatives: "The taxation framework for electronic commerce should be guided by the same taxation principles that guide governments about conventional commerce." But the setback here is that e-commerce has outlived the conventional rule of taxation which involves the rule of territorial jurisdiction and the rule of permanent establishment. The rule of territorial jurisdiction posits that the nation in which a company derives its income has the exclusive right to tax the earnings of that company whilst the rule of permanent establishment posits that a firm that is permanently located or established in a particular country has primary tax obligations to the country in question.

To rectify these e-commerce tax setbacks, the OECD spearheaded the establishment of the guiding principles and tax rules to govern the tax treatment of international e-commerce transactions [24]. Eventually, in 2001, OECD [25] developed the Ottawa Taxation Framework which enumerated various principles that should be applied to the taxation of e-commerce businesses. The Ottawa Taxation Framework Conditions provide the principles which should guide governments in their approach to e-commerce. It also states that e-commerce should be treated in a similar way to traditional commerce and emphasizes the need to avoid any discriminatory treatment. The principles are as follows: First is the principle of neutrality - posits that taxation should seek to be neutral and equitable between forms of electronic commerce and between conventional and electronic forms of commerce. Business decisions should be motivated by economic rather than tax considerations. Taxpayers in similar situations carrying out similar transactions should be subject to similar levels of taxation. Secondly, the principle of efficiency has to do with compliance costs for taxpayers and administrative costs for the tax authorities should be minimized as far as possible. Additionally, the principle of certainty and simplicity elaborates that the tax rules should be clear and simple to understand so that taxpayers can anticipate the tax consequences in advance of a transaction, including knowing when, where, and how the tax is to be accounted for. The fourth Principle relates to effectiveness and fairness and it states that taxation should produce the right amount of tax at the right time. The potential for tax evasion and avoidance should be minimized while keeping counter-acting measures proportionate to the risks involved. The last but not the least principle has to do with flexibility and this principle postulates that the systems for the taxation should be flexible and dynamic to ensure that they keep pace with technological and commercial developments.

Having all these principles at our disposal, the dilemma for revenue authorities is figuring out how to put the broad taxation concepts in place in a fast-changing world. It's quite unfortunate that countries are not having a common agreed-upon structure for e-commerce taxation. Each county's legal and taxation system for e-commerce is still distinct and autonomous. Although some nations, such as the European Union, now have a Goods and Services Tax scheme in place, others, such as India, have a Value Added Tax system in place, and even others, such as the United States, have a retail taxation system. As a result, e-commerce taxation is just a continuation of existing tax rules. It can be established that most of these principles enumerated can be incompatible, and governments and corporations may have opposing viewpoints on the balance and priority of their implementation in specific situations.

2.5. Setbacks of E-commerce Taxation

Most discussions concerning income taxes for e-commerce transactions to date have focused on three problems: How can we attribute income arising from the 'Internet' to a particular jurisdiction? How can we characterize such income? And, most importantly, how can it be taxed? Income tax treaties do not provide easy answers to these questions because they were developed in a non-digital era when transactions and commercial law dealt primarily with tangible property [26].

With a rapidly expanding and evolving marketplace, numerous setbacks are faced by e-commerce entities as well tax authorities worldwide. And this has made it very cumbersome in forecasting the future of online businesses and the unanticipated issues that may develop.

One of the most pressing set-back of e-commerce is related to the characterization of income made by e-commerce entities. Tax entities find it difficult to classify incomes of various types of e-commerce business be it an online marketplace, subscription-based web services, or online advertisement. With an online market, a website operator characteristically hosts electronic catalogs of multiple merchants on its computer servers making it possible for the users of the website to select preferential products to form these catalogs and place orders online. The website operator in this case has no contractual relationship with the shoppers but merely transmits their orders to the merchants who play the significant role of accepting and fulfilling orders. The merchants in return pay the website operators a fee on the orders placed through the site. This amount earned by the website operators has been debated over the years whether it is business income or fees for technical Services. Secondly, under subscription-based web services, the business provides subscribers digital content such as information, music, videos, games, and other activities. Subscribers pay a fixed periodical fee for access to the website. Another argument emerges as to whether the income earned is business income or 'royalty'. Also, online advertising where advertisers pay a fee to get their adverts circulated to users of a given website poses the issue of whether the income earned is like business income or fee for technical services.

Taxes on trading activities were collected with ease by using the traditional source and resident-based tax systems. The taxation based on the source principle posits that tax authorities determine the geographical source of income. Hence making it possible for non-residents of a country to

be taxed on their economic activities and capital gains within the country's territory even though they are non-residents of the country. While taxation based on the residency requires information about the identity and residency status of those engaged in income-producing activities. In pursuit of these methods, countries use the method of permanent establishment which is defined in Article 5 of the OECD Convention as “a fixed place of business through which the business of an enterprise is wholly or partly carried on. This definition may be dissected into its three constituent elements, namely: 'place of business,' 'fixed' and 'carrying on.' However, under most tax treaties, merely having a fixed place of business in any country may not be enough to create a taxable presence. Each one of these elements requires its test to be fulfilled before permanent establishment can be held to exist. These tests have been termed, respectively: the 'place-of-business test'– the existence of premises, machinery or equipment; the 'permanence test'– the location must be distinct and fixed with a certain degree of permanence; and the ‘business-activities test’– (usually) personnel conducting business in that place [26]. The worldwide nature of e-commerce transactions tangles the issue of 'jurisdiction' which is a principle tenet of taxation. Thus, e-commerce possesses a virtual contract that does not necessarily require the presence of the trader and the customer. “Reference [27] posits that the challenge e-commerce launches is that it cannot determine a fixed location because transactions are being carried out through websites hosted on servers in various locations (other than the business owners).” The technology being used to carry out interactions in e-commerce sometimes exist almost totally in cyberspace because the intangible nature of transactions in e-commerce counters the permanent establishment of blocks and bricks. Hence the orthodox test of determining the permanency of a firm for taxation is cumbersome under e-commerce due to its geographic location and ownership of web servers. In this context taxation of e-commerce on websites will be possible if the hosting company had a permanent establishment. But it's rather unfortunate that a website comprises databases and does not constitute a 'real property' therefore making it impossible to have a permanent edifice for itself in effect playing downright of a state to tax the profits on an enterprise of another state.

2.6. Effects of Taxation Setbacks on E-commerce Development

The effects of taxation setbacks are strong on the development of e-commerce. “Taxation barriers affect the distribution sector mostly and the finance sector at large” was the axiom of [28] after he discovered that taxation barriers have 16.5% of significance in e-commerce development, in a survey among 2139 businesses chosen from production, distribution, and finance sectors in ten countries. A study on Brazilian firms, [29] has determined the concerns about taxation among e-commerce barriers have 26,8% significance on its development which eventually have some impact on small and medium scale enterprises. Unbiased taxation policies for online transactions, refining telecommunications infrastructure, building a new e-commerce strategy, educations to increase in usage of e-commerce and incentives have become prominent as steps that are going to boost e-commerce to small and medium-sized enterprises in the Asia-Pacific Economic Cooperation area [30].

Scupola [31] studied e-commerce adaptation of small and medium scale enterprises in South Italy. He has contended that tax reduction, financial incentive, informing processes, rising rate of speaking English enable adaptation to e-commerce. “Reference [32] found out that the necessity of special payment methods and differences of tax regulations among countries have caused extra costs and administrative problems and those were barriers to e-commerce. This was established in his study which investigated the barriers and opportunities of e-commerce over outside countries of European Union. Çimat and Degirmenci [33] in their study where they examined fiscal liabilities in the telecommunication sector, also found out that the biggest problems that prevented the development of e-commerce are uncertainty in taxation and lack of other legal regulations.

3. Improving E-commerce Taxation

The first and foremost approach towards dealing with improving e-commerce tax compliance can be attributed to the Ottawa Conference on E-Commerce [23] organized upon the request of OECD [34]. The essence of the conference was to examine, discuss and generalize some important ways of dealing with e-commerce tax compliance. After a successful conference, the O.E.C.D released a discussion paper on how to apply the existing tax principle on profits accruing to an e-commerce business. Currently, most of these tax laws and regulations are currently out of step with technological advances since most of them were enacted without considering e-commerce businesses. There is no secret that many e-commerce firms, both old and new, due to the intrinsically non-territorial nature of their digital transactions have discovered different ways to escape being regulated, causing tax revenue in most countries to plummet. This issue of tax evasion and avoidance by e-commerce has since been linked to the use of conventional international tax regimes to tax e-commerce businesses. While this tax regime has benefits, the advent of e-commerce, which is the newly adopted method for business transactions in the middle of the covid-19 pandemic, has revealed loopholes in the international tax mechanism, causing many e-commerce businesses to avoid and evade tax. As previously said, the startling rise of e-commerce businesses in the middle of this pandemic should have a positive impact on tax revenue accruing to governments around the world. However, since the current tax regime is failing to meet this mandate, it would be prudent to suggest reasonable ways in which e-commerce businesses can be taxed efficiently and effectively. Corrective steps aimed at simplifying the international tax system must be implemented in close collaboration with governments and the business community around the world.

This study supports the adoption of a formulary apportionment of income method for e-commerce taxation and proposes other significant measures that can alternatively be adopted to improve e-commerce taxation.

3.1. Adopting Formulary Apportionment of Income

To effectively tax e-commerce businesses, it will be relatively wise to focus on effective and efficient ways that will make e-commerce taxation more feasible. It's quite obvious that the existing international jurisdictional rules guiding the operation of e-commerce in the OECD Model Convention are not effective as expected as it is still hindered by the shortcomings of origin taxation and destination taxation. However with formulae apportionment, the formulae can be apportioned based on broad economic data hence, income will no longer be attributed to the source or destination where it was earned.

In as much as the existing tax system is familiar with many countries and has experienced a fervent development over the years, it will be helpful if formulary apportionment is given more attention by various countries in the world as it is proving effective in taxing e-commerce operations by forging a workable balance between opposing fiscal interests of countries involved in international trade [26]. Under Formulary apportionment which was first propounded by Jinyan Li, the corporate group first combines (or consolidates) the income of each of its operatives into a single measure of taxable income. The group then uses a formula to apportion the income to the various locations where the group conducts its business [35]. This formula is generally the share-based of business activity in a location to the total business activity in all locations [36]. The apportionment formula takes into account each location's share of gross receipts and sales, as well as their combined totals for all locations. There are various benefits of formulae apportionment: First, it has the potential to make tax compliance easier for corporations, especially if each member state uses the same apportionment factors to distribute income among them. Second, the formulary taxation method better addresses the economic realities of e-commerce market conduct. Another significant advantage of formulae apportionment is that it is highly efficient, reducing unnecessary compliance and enforcement expenses while still mitigating tax evasion.

3.2. Developing Tax Compliance Software

Developing a tax collection software will go a long way to make sure that e-commerce businesses are unable to avoid taxation as this software will aid the calculation of the amount of consumption tax owed on each transaction. This software, which would be free 'shareware,' would be used by both e-commerce sellers and Internet Service Providers. This would reduce network delays before the consumer committing to a purchase, thereby improving the purchasing experience. When a consumer makes an online purchase, the software checks the tax rate in the area based on the jurisdiction information provided in the digital certificate. If the consumer did not use a digital certificate, the software would calculate the tax rate based on the IP address or credit card information, as applicable [37]. The implementation of this strategy will only be possible if there is better knowledge exchange between revenue authorities and taxpayers about the goods being offered, the purchaser's taxing authority, and the purchaser's registered status through electronic service delivery. This software will have to be used by both e-commerce vendors and Internet Service Providers to facilitate an easy audit of the taxation process and ensure organized services and improved operating performance. Some examples of software that are already in use in U.S.A include Avalara Tax Compliance Suite; An e-commerce sales tax software that helps companies in the United States handle the complex tax obligations levied by the states. The whole kit is made up of three modules. Avalara AvaTax, Avalara Returns, and Avalara Cert Capture are among them. The three, when integrated, offer comprehensive options for a wide range of transaction taxes. Another example is the Vertex Cloud Indirect Tax. This software is one of two Vertex e-commerce sales tax tech sets. This Vertex Cloud version combines tax estimates and returns into a single cloud-based solution. And it also features comprehensive tax calculations, remittance, and compliance. If these kinds of tax compliance software are developed and made available in many countries around the world, it will help improve e-commerce tax compliance.

3.3. Adopting Cross-border Electronic Tax Invoicing

An electronic tax invoice is a digital version of a paper invoice that contains transaction details that are sent to consumers through companies. The invoice is simply issued electronically to the consumer and stored electronically by the issuer, along with details confirming the invoices' validity and authenticity. Price water house Coopers [38] presented mandatory electronic invoicing as one of the alternative tax collection methods to the European Commission indicating that under this model "tax authorities gain access to information on sales transactions at a very early stage, i.e. at the time the invoice is issued."

If a cross-border electronic invoicing method for e-commerce tax enforcement is well designed and implemented, it would improve tax compliance by causing major institutional and perceptual improvements in tax administration. Adopting cross-border electronic invoicing of e-commerce businesses has the potential to provide tax authorities with powerful tools capable of integrating tax information provided by e-commerce businesses while also reducing tax compliance costs with effective, transparent, and trustworthy services that ultimately improve tax ethics, reduce tax evasion, and promote equity in taxation. Electronic tax invoicing for e-commerce taxation not only launches a new reform but also enhances e-commerce service by facilitating e-commerce tax compliance. Electronic tax invoicing gives a tax authority instant access to transaction data just as an invoice is issued [38]. Generating a more powerful effect on tax compliance. Tax authorities' instant access to and processing of digital information would improve e-commerce vigilance on the risk of an investigation and, as a result, minimize non-compliance [39]. Various steps must be put in place to ensure the reliability and effectiveness of cross-border electronic tax invoicing across different countries. To begin, a legislative and regulatory process should be in place to ensure that

countries use uniform formats such as standardized formats using extensible markup language. This format should be capable of ensuring the invoice's accuracy and credibility, which can be accomplished by any business controls that allow "a reliable audit trail between an invoice and the supply of products or services." Second, cross-border electronic tax invoicing must be strictly controlled. Examples include (i) an electronic tax invoice should include the details of the customers, transacted goods and services, as well as identification numbers, dates of delivery, as well as URLs and dates of supply (ii) It must be released and transmitted using a "public validation scheme," a digital personal identification service that verifies the issuer's identity and attests to the invoice's non-alteration, through the knowledge and communication network. (iii) It must be released by electronic outlets designated by the country's tax authorities. (iv) It must be sent to the country's tax authority within a certain amount of time after it is issued. These initiatives would ensure that e-commerce, through its technological means of doing business, is taxed effectively and securely through an efficient technological medium - ensuring compliance.

4. Conclusion

The COVID-19 crisis is unprecedented in human history. It has impacted economics activities of many countries and has left leaders of countries, institutions, and businesses in a quandary and an unusual degree of uncertainty. Household behavior toward online businesses has rapidly changed as a result of the pandemic, resulting in an escalation in e-commerce activities, but the taxation policies of various countries which favor territory and jurisdiction have begun to fail after improving e-commerce operations. In the taxation process, concepts such as permanent establishment, sale points, product, and income classification have remained insufficient [40]. Owing to this, governments that rely profoundly on tax revenue to fund their expenditures are losing huge sums of money to e-commerce. Finding potential solutions and reaching an agreement on how to tax e-commerce operations effectively and efficiently has been a huge topic of discussion over the years. As e-commerce taxation is still a subject of contention and debate, this article has reviewed and deliberated disparagingly on issues related to e-commerce taxation and how to improve it so that the expected tax revenue can be generated from increasing e-commerce operations.

This review discovered that some pressing issues concerning e-commerce taxation include; Jurisdictional attribution of e-commerce income, how to characterize such incomes and how such incomes can be taxed effectively and efficiently. The available tax treaties have not provided solutions to these setbacks because these treaties were developed long before e-commerce began to emerge. Based on the aforementioned drawbacks, this study recommends the formulary apportionment adoption.This method will make use of broad economic data, so income will no longer be attributed to the source or destination where it was earned. And this solution will aid in resolving the issue of jurisdictional attribution of e-commerce-generated income. Secondly, this study recommends the use of e-commerce tax tracking and compliance software. This software would be a technologically neutral system that could be easily integrated into commercial websites running on any computing platform. When such software is developed, it will address the issue of how to tax e-commerce effectively and efficiently. Finally, this study recommends the use of Cross-Border Electronic Tax Invoicing which has the potential of providing tax authorities with powerful tools capable of integrating tax information provided by e-commerce businesses while also reducing tax compliance costs with effective, transparent, and trustworthy services that ultimately improve tax ethics, reduce tax evasion, and promote equity in taxation.

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