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IMPACT OF THE DIGITAL COMPETITIVENESS ON ECONOMIC GROWTH: EVIDENCE FROM GLOBAL ECONOMY

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Abstract:

Digital technologies are crucial components of the coming industrial revolution and have an influence on all socioeconomic endeavors in both developed and developing nations. In order to define, conceptualize, and analyze this phenomena, this study will evaluate the relevant literature on digital competition. Similar to the industrial revolution of the 19th century, which saw the development of steam power, the internal combustion engine, and the digital economy, the digital economy revolution is having a significant influence on society.Without a question, only those nations that can create a conducive atmosphere for the growth of the digital economy will be able to lead the global market.This paper proposes an analytical framework that can be used by researchers for analyzing same cases. Two main approaches are used within research, these are known as deductive and inductive approaches, and the relevant data derived from the European Commission, UNCTAD, OECD, APEC, World Bank Group and European Investment Bank were among the data providers in the latter category.

Keywords: Global economy, Digitalization, Competitiveness, Digital economy

1. INTRODUCTION

Recently, the conversation has changed once again, this time emphasizing how digital technology, services, goods, processes, and skills are spreading across economies. Digitalization, which is commonly used to describe this process and is described as the transfer of enterprises using digital technology, goods, and services (UNCTAD,2019). For instance, Tapscott (1996) claimed that the digital economy included two eras of economic activity. The first was informative and consisted of fundamental duties like uploading static content to websites, while the second was communication-related and reflected the more interactive activities made possible by the Internet.New end-user devices (mobile devices, smartphones, tablets, netbooks, laptops, and 3D printers) as well as new digital models (cloud computing, digital platforms, and digital services) are all part of the digital economy. Big data, data analytics, algorithmic decision-making, and novel automation and AI technologies are all contributing factors to the growing intensity of data usage (OECD 2015). Digital transformation is a significant force behind social inclusion, a fundamental weapon in the battle against climate change, and a major force behind economic growth.The following four major themes all help to increase the potential and prospects for digital technologies: Increased use of Big Data and AI technology; Growing Internet of Things and Machine-to-Machine use cases; Growing Digital and Connected Population; Improving Global Connection Quality (B20 ITAL, 2021). The creation of information technology hardware, software, info services, services of IT consulting, and the sale of ICT goods make up the basis of the digital industry (Chinoracky & Corejova, 2021). A large portion of the British economy is made up of the digital industry.During the period of October 2019 to September 2020, it recruited 1.66 million individuals, or 4.9% of all employment. The industry provided £148 billion (constant prices) or 7.6% of the UK's total Gross Value Added (GVA) to the economy in 2019. (Department for DCMS,2021). As nations like the United States and Japan advocate a long-term ban, the problems with digital trading are related to market concentration and the function of large internet companies. Today, the US and China jointly control 90% of the market value of the top 70 digital platforms in the globe, with Africa and Latin America accounting for the remaining 1% (Cepik,2021).In 2018, the Russian digital economy had a value of USD 61 billion, up 11% over the previous year. In 2018, around 3.8% of Russia's GRP was relevant. The Russian government has developed a 5-year national policy for the growth of the digital economy, and they want to spend roughly USD 1.8 billion annually until 2025 on that goal (Mentsiev, et al. 2020).Our contribution in this paper, we propose a framework that can be used by researchers for analyzing same cases. This paper aims to carry out a literature review concerning the digital competitiveness

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to comprehend definition, conceptualisation and analysis of this phenomenon.The remaining part of the paper is organized as follows. Section 2 shows the digital economy scope. Section 3 explains the data and methodology. Section 4 presents the results, and lastly is the conclusion.

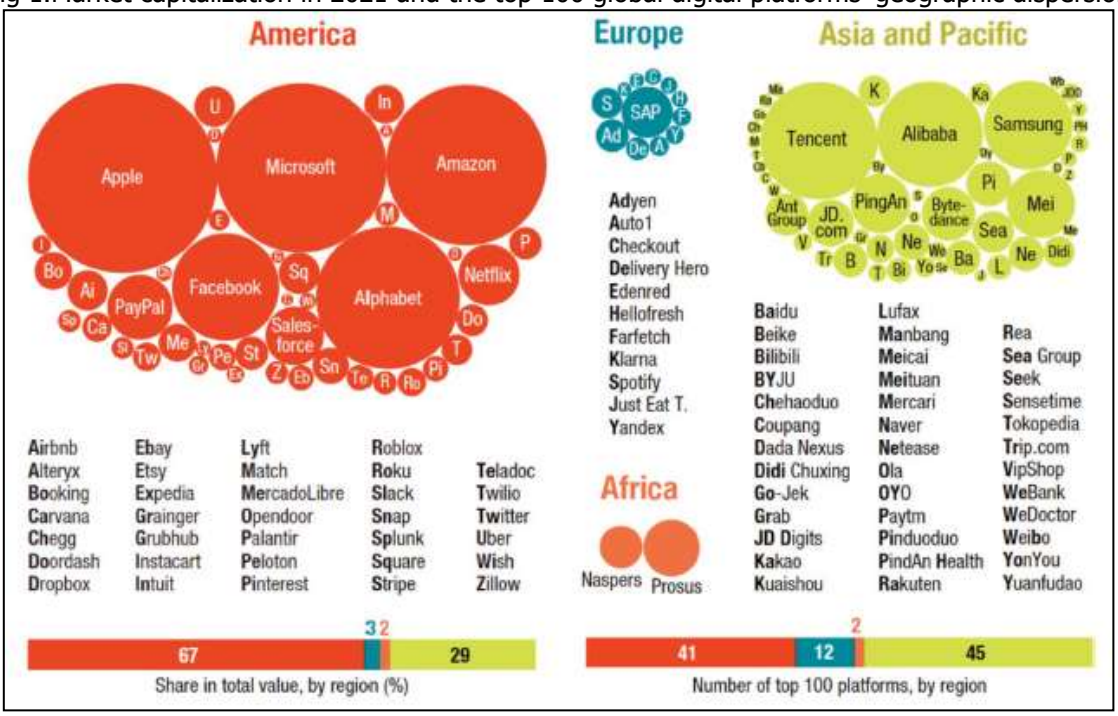
2.DIGITAL ECONOMY SCOPE

Life has been transformed by digital products and services in the last 30 years. Social media, messaging, streaming and thousands of other apps have proliferated. Innovation continues with huge investments in big data, artificial intelligence, robotics and the internet of things (IOT). Businesses everywhere are braced for disruption while 'Big Tech' now dominates the US stock market (Cliffe & Cocuzzo, 2019). According to Watanabe (2018), digitalization It draws attention to the 7 productivity gaps brought on by the improvement of the digital economy as follows: Peer-to-peer services in novel modes of intermediation, blurring of production lines that make consumers into producers, consumer durables and investment, free and heavily discounted goods, free home assets, hazy e-commerce transactions, and incorrect pricing of ICT are only a few examples.

It is vital to find a consensual solution to the direct tax issues since many economies are beginning to act independently. The OECD/G20 Inclusive Framework on BEPS, which unites 134 economies, was required by the G20 to provide a consensus-based solution to cope with the direct tax concerns of the digitization of the economy by 2020 (APEC, 2019). Similar to the steam engine and the Internet, which sparked earlier industrial revolutions, Blockchain is a state-of-the-art new technology that has the potential to upend established business and economic models. The digital economy is based on blockchain technology. An innovative replacement for current methods is blockchain's distributed ledger technology. It may offer a record of every transaction, including its location, data, quality, and price; which is immediately available to all parties; and it reduces the risk of record manipulation. (World Bank Group, 2019).

The Digital Economy Report 2021, published by UNCTAD in 2021, examines the growth and political ramifications of cross-border digital data flows, which are fundamental to all rapidly developing digital technologies, including data analytics, artificial intelligence (AI), blockchain, the Internet of Things (IoT), cloud computing, and other Internet-based services (Figure 1). The data-driven global economy has an influence on digital trade and the Goals ofSustainable Development, but it appears to be a novelfield of policy, and governments and agencies are unsure of the best course of action.

Fig 1.Market capitalization in 2021 and the top 100 global digital platforms' geographic dispersion



Source: Peters, 2022

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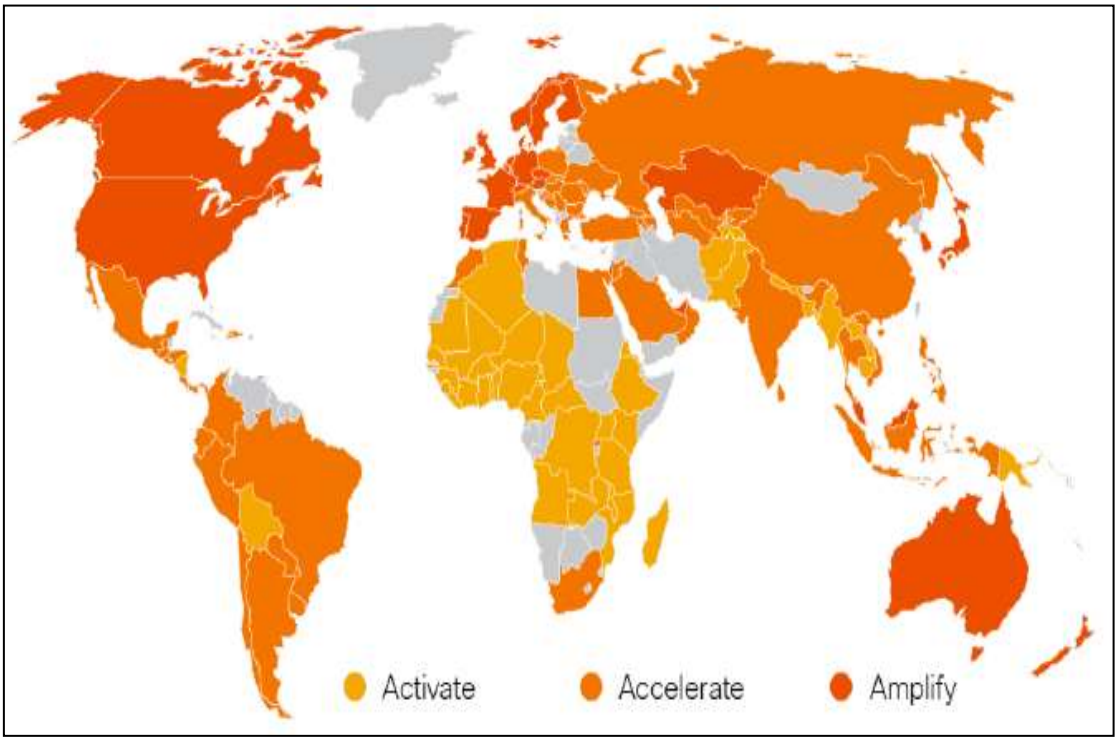
Apple has a $2.22 trillion market capitalisation, compared to $88.7 billion for Mercado Libre, $80.2 billion for Baidu, and $59.7 billion for Spotify (Peters, 2022). Three levels of digital preparedness resulted from our analysis using a data-driven methodology: activate the lowest stage, accelerate nations in the intermediate stage, and amplify those in the highest stage. Many African nations, as well as others from the Middle East and Asia, are among those at the Activate stage of their digital transformation (Figure 2).

Fig 2. Stages of readiness for digital competitiveness around the world



Source: Yoo et al. 2018

The average digital readiness score for the nations at the highest level (Amplify) was 16.83. The average for individuals in the medium level of digital preparedness (Accelerate) was 12.49, while the average for those in the lowest stage (Activate) was 8.1 (Yoo et al., 2018). It is evident that China and the US, which account for the majority of AI researchers and over 90% of all AI start-ups, are the main players. The largest digital platforms, the Big Three in China (Tencent-We-Chat, Baiduand, Alibaba), as well as the Big Five in the US (Apple, Microsoft, Facebook, Alphabet, andAmazon), are investing significantly in the data value chains, such as submarine transmission, cloud storage, and AI analysis and processing via data gathering to data intelligence. (Peters, 2022). from Asia, Eastern Europe, and Latin America. Some people are almost ready to advance to the highest level of digital readiness. Hungary, Poland, Uruguay, and China are a few examples. The US, numerous nations in Western Europe, and certain nations in Asia, including Singapore, Japan, and Australia, are among the nations with the greatest levels of digital readiness. In Australia and the United States, not all of the states and territories have reached the greatest level of digital readiness, according to later study assessments.

3. METHODOLOGY

The inductive approach and the deductive approach were the two main research methodologies. Deductive research shifts focus from broad to narrow topics. Additionally, a theoretical and conceptual framework is taken into account as the research's foundation in the deductive method. The deductive approach and the inductive approach, in contrast, diverge from one another. The inductive approach shifts focus from the particular to the general and is usually always applied in interpretivism. It presents the inductive logic while drawing new conclusions from

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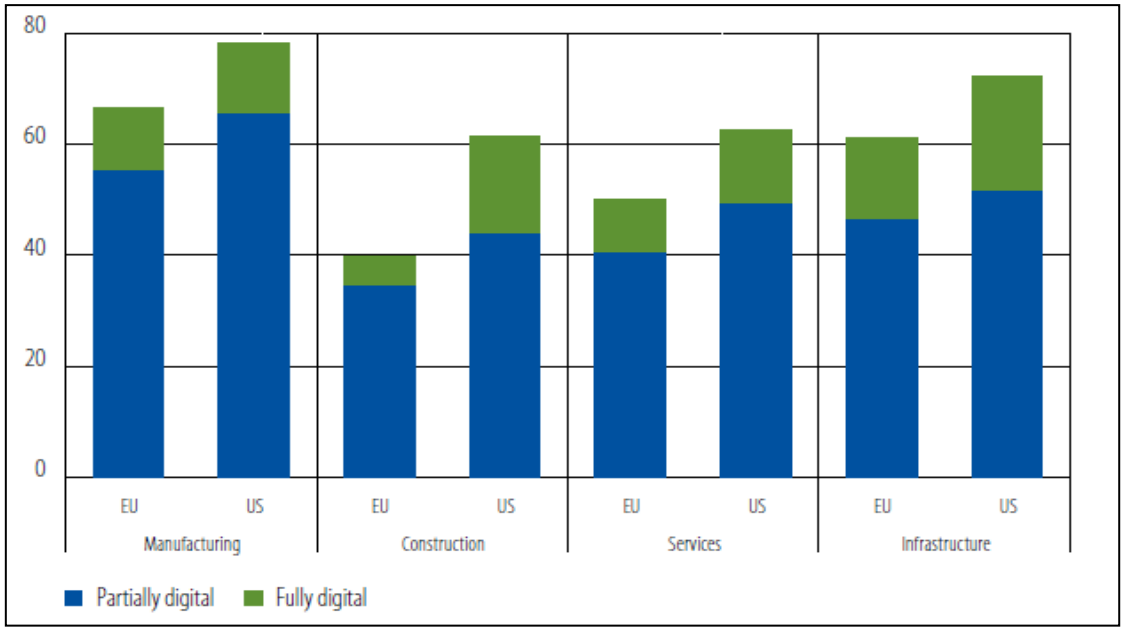
established ideas. Quantitative extrapolation forms the foundation of the qualitative analysis.The data gathered was utilized to develop inferences and respond to the study questions. Examining the potential effect of digital competitiveness on the global economy is the main objective of the study. The initiative relies on facts from international organizations on the association between digital competitiveness performance. Among the latter group's data sources were the European Commission, UNCTAD, OECD, APEC, World Bank Group, and European Investment Bank. The analysis and discussion of the research's conclusions are the main goals of the last stage.

4. RESULT AND DISCUSSION

The European Union has lower rates of digital adoption than the US. In both the European Union and the United States, the use of digital technology in business is growing quickly. Compared to 78% in the United States, 66% of industrial enterprises in the European Union report having implemented at least one digital technology (Figure 3). The disparity is most noticeable in the construction industry, where there are 40% digital enterprises in the European Union and 61% in the US. In the services sector, there is a 13 percentage point gap between EU and US enterprises' adoption rates, while there is an 11 percentage point disparity in the infrastructure sector (European Investment Bank,2019).

Fig 3. Digital competitiveness adoption in the EU and the US economies (in %)



Source: European Investment Bank,2019

Figure 4 displays the modifications in China's interprovincial digital economic index of development and its three sub-indices between 2015 and 2019. The total degree of growth of the Chinese digital economy increased year over year over the study period. The growth trend was very consistent, increasing by 36.69% and averaging 8.13% per year from 43.39 points in 2015 to 59.31 points in 2019. The digital economy has come a long way in terms of growth.The digital economic infrastructure sub-index, which has an average yearly growth ratio of 12.45%, increased from 40.84 in 2015 to 65.29 in 2019, a rise of 59.87%. The sub-index measuring industrial development in the digital economy increased from 46.72 in 2015 to 50.39 in 2019, representing a gain of 7.87% and a mere 1.91% average annual growth rate. Overall, China's development of its digital economy was not considerably aided by the digital sector (Zhang,2021).

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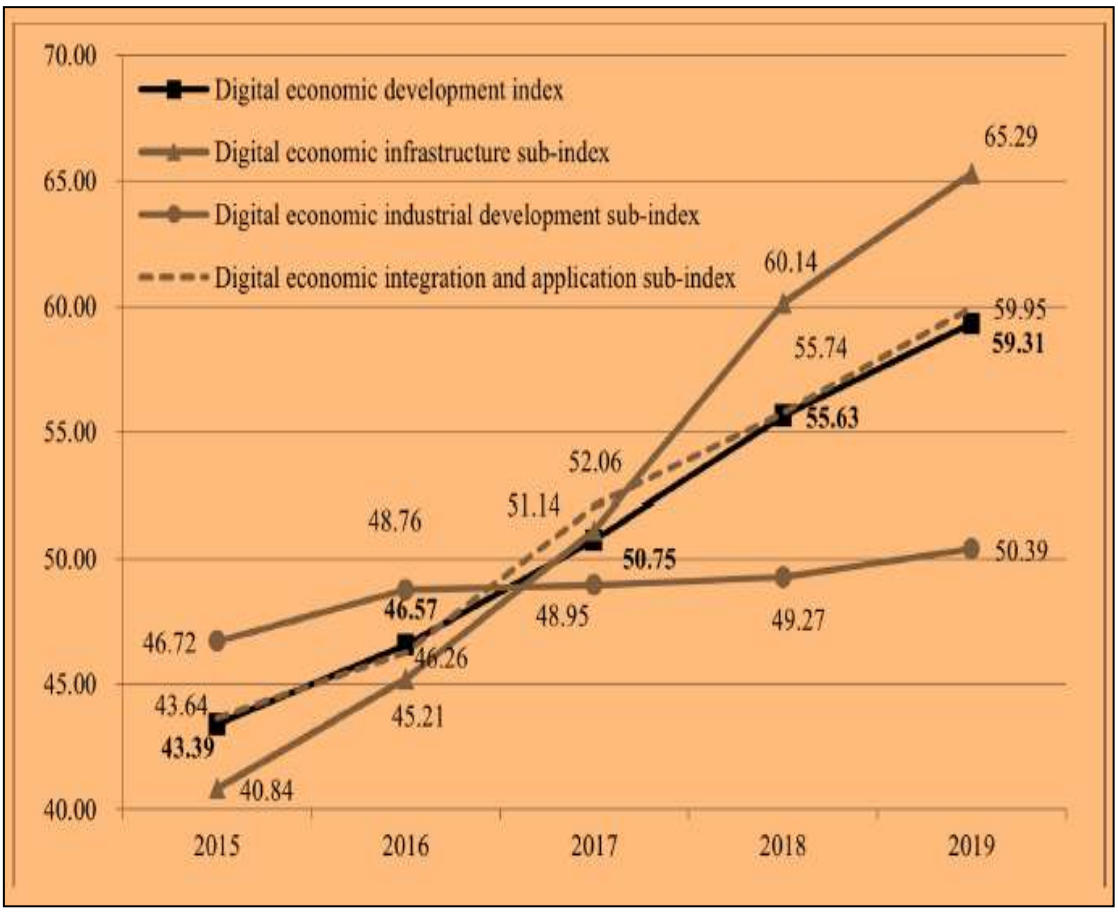
Fig 4. Changes in China's interprovincial digital competitivenessindex ofdevelopment and in its three sub-indices from 2015 to 2019.



Source: Zhang,2021

The Russian economy's ICT sector has not had any appreciable surpassing growth in recent years. The gross value added of the business is continually increasing (on average over the previous five years, the growth rate was 8%), but its proportion in GDP is essentially steady, according to an analysis of data that indicate the key trends in the advance of the industryof ICT. 1.7% of the workforce is working in the ICT sector, which is constant. (Table 1).

Table 1. Key indicators of the digital competitiveness sector (ICT) development in Russia economy

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018
Share of ICT in GDP, %	…	2.2	2.3	2.3	2.2	2.3	2.3	2.3	2.2
Share of people employed in the ICT industry, %	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6
Expenditures on information and communication technologies, billion rubles	515.6	603.0	842.7	1245.7	1174.9	1153.1	1249.2	1487.6	1676.2
Exports of ICT goods and services, $ million	3 658	4 570	5 134	6 360	8 458	6 739	5 494	6 859	7 366
Volume of imports of ICT goods and services, $ million	23 475	26 871	28 639	27 444	29 241	22 003	21 401	26 159	29 087

Source: Romanyuk et al.2021

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ICT-related products and services are still imported by Russia. Russia imports four times as much information technology as it exports in terms of overall value. China (30.7%) and Hong Kong (14.6%) are regarded as the two market leaders in the world for ICT. The markets for ICT-related services are now led by Ireland (16.1%) and India (10.4%). Only 1% of the world's market for ICT-related products and services is occupied by Russia (Romanyuk et al.2021). In general, our nation is reliant on the importation of information technology and products, particularly computers, communication devices, consumer electronics, and software. Additionally, there are several additional businesses and industries that serve as instances of "digital ecosystems" today. The figures on the proportion of the digital economy in the world's developed nations' WFP for the years 2015 to 2019 are shown in Figure 5. Whilst, the size of the digital industry accounts for an average of 6-7% of GDP in most industrialized nations. 5.7% in France, 6.3% in Germany, 7.1% in the UK, 7.4% in the USA, and 7.4% in Sweden.

Fig 5. Share of the digital competitiveness sector in GDP, % around the global economy

Source: Armashova-Telnik et al. 2021

The DESI (Digital Economy and Society Index) In the 22 "Recovery and Resilience" Plans that were already adopted by the Commission, national reports provide a synopsis of the digital investments and reforms. At least 20% of the national endowments from the Recovery and Resilience Plan must be spent by EU Member States on digital, and thus far, Member States are meeting or significantly exceeding this goal (European Commission,2021). Following the Netherlands, Spain, Sweden, and Finland in terms of improvement from the previous year are Ireland and Denmark. According to their performance in DESI 2021, these nations also outperform the EU DESI average. (Figure 6).

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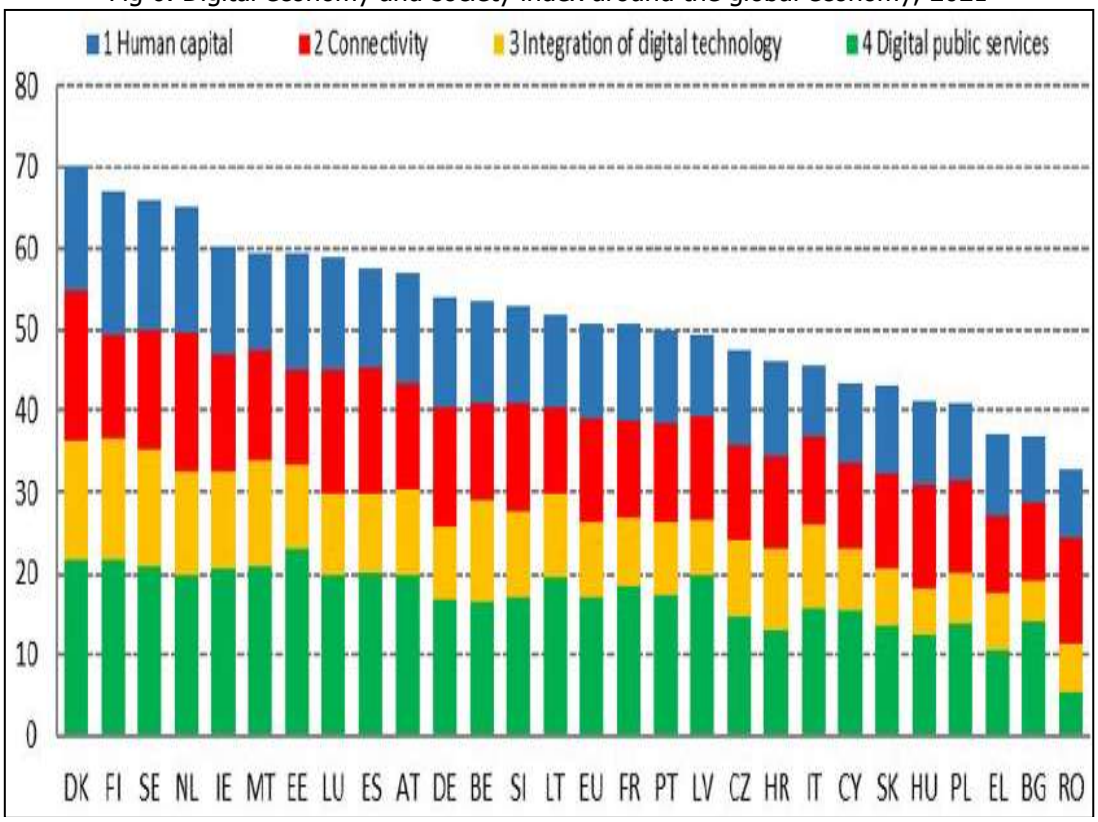
Fig 6. Digital economy and society index around the global economy, 2021



Source: European Commission,2021

In DESI 2018 Among the top three are South Korea, Norway, and Iceland. Russia is more expensive than China, Chile, Turkey, Brazil, and Mexico but behind South Korea by 27.7 points. In general, Russia is seen as a nation today with great potential for developing a digital economy (Table 2).

Table 2. index of digital economy and society around the global economy(2018,DESI)

Countries	Digital (I-DESI) Index	Communication level	Human capital	Internet using	Digital integration	Digital Government Services
South Korea	75,2	79,8	75,6	74,5	63,8	83,0
Norway	73,0	75,8	69,1	85,2	65,8	72,5
Iceland	72,7	72,4	80,2	75,9	75,7	53,7
Japan	68,5	72,5	69,7	73,9	53,0	75,0
Australia	67,8	56,8	80,5	57,8	57,3	88,9
Canada	67,0	59,6	67,3	66,2	65,4	81,5
USA	66,7	71,3	56,2	71,0	61,8	79,0
New Zealand	65,8	55,4	79,3	58,2	55,6	81,6
Israel	55,6	54,3	57,4	58,5	45,2	65,4
Russia	47,5	38,9	64,1	48,7	29,8	56,8
China	45,3	47,8	40,5	45,3	40,7	58,6
Chile	44,9	47,8	42,6	32,9	40,5	61,4
Turkey	41,5	43,3	53,1	35,9	27,7	43,2
Brazil	39,7	39,5	39,2	33,8	27,8	62,4
Mexico	43,1	45,5	41,6	30,0	33,7	67,2

Source: Ruzimamatovich,2020

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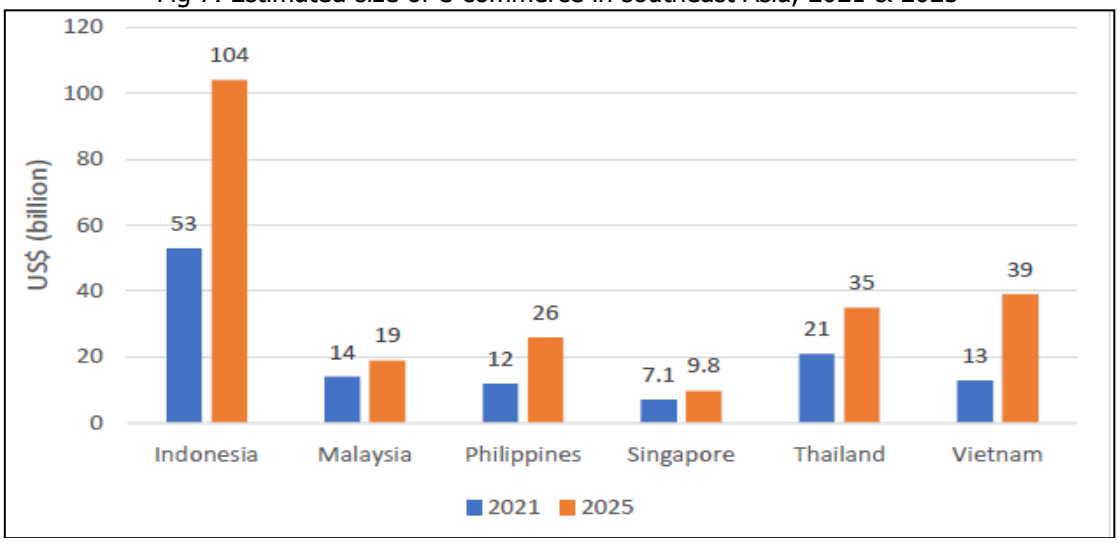
A portion of overall e-commerce involves digitally ordered trade (which comprises domestic and cross-border e-commerce). E-commerce growth will remain at a high level over the next five years, according to recent predictions of online retail sales for 2021 and 2026. (Figure 7). The largest e-commerce market in the area will continue to be Indonesia, while Vietnam and the Philippines will have the strongest growth rates over the next four years (CAGR 32%). (CAGR 21 percent).

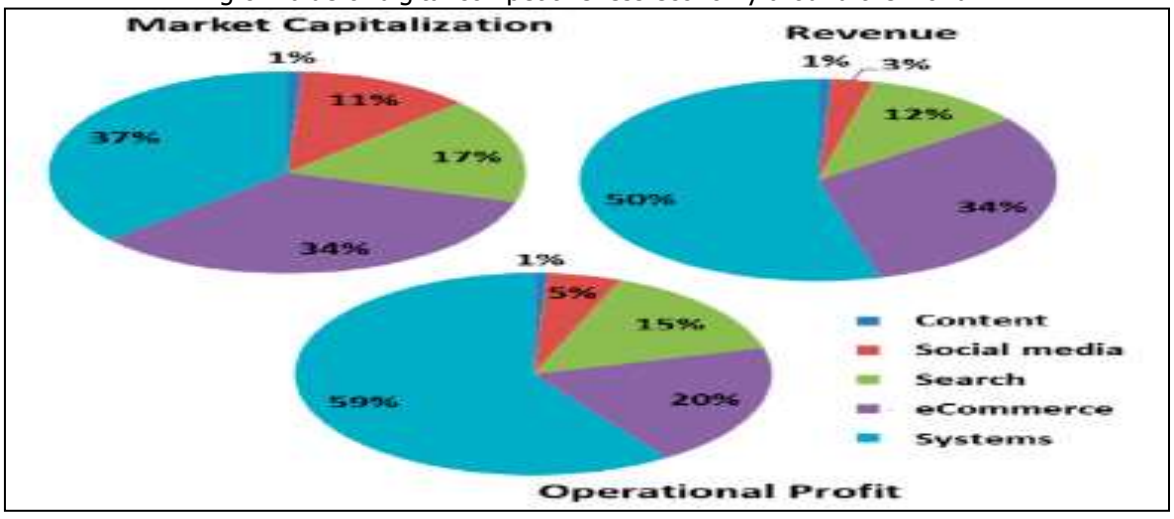
Fig 7. Estimated size of e-commerce in southeast Asia, 2021 & 2025



Source: Lee,2021

Today, the value of the digital economy is close to 3 trillion dollars. This amounts to nearly 30% of the S&P 500, six times the yearly trade deficit of the United States, or more than the GDP of the U.K., to put it in perspective. (Jun 16, 2016) (Gada,2019). However, the current state, as shown in Figure 8, illustrates the predominance of "digital" software and service production. As is found in "Device Systems and e-Commerce are 71% of the digital economy's value" and "they generate 80% of the profit", while "social media is 12% of the digital economy" and "generates 3% revenue and 5% profit". Alternatively, the "content over billion webpages makes up 1% of the digital economy's value, revenue, and profit"(Kryvinska& Bickel,2020).

Fig 8. Value of digital competitiveness economy around the world



Source: Kryvinska & Bickel,2020

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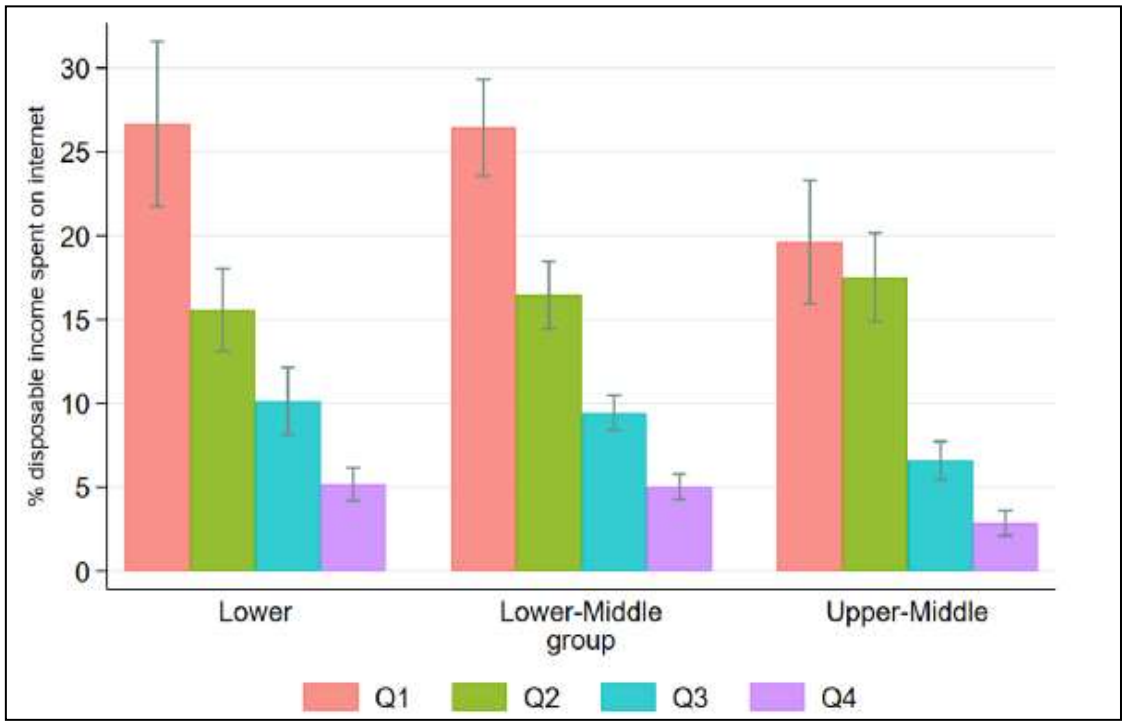
Figure 9 displays monthly internet spending as a percentage of personal disposable income for various income quartiles for nations in the After Access Survey divided into poor, lower-middle, and upper-middle income groups, conditional on the ownership of mobile phone devices. In all three economic levels, internet services are becoming necessities. The ITU bases the majority of its model for predicting nations' internet use on information on per capita income (Sharp,2022).Although there is a significant correlation between per capita income and internet access, more research is needed to fully understand this relationship, identify the situations in which per capita income is not a good predictor of internet use, and identify additional variables and data sources used in predictive models to increase their accuracy.

Fig 9.The monthly income of individual disposable spent on digital services (internet)



Source: Sharp,2022

5. CONCLUDING REMARKS

The result of using digital technology and subsequent company digital transformation, the digital economy could be one of the main drivers of economic development. Therefore, it is more important than ever to have accurate measures of the digital economy. A new kind of economic connections called the "digital economy" is already pervasive throughout all markets throughout the world and is rapidly growing. The digital economy may soon establish itself as a key sector, propelling the expansion and development of the many economic subsystems.The Digital Economy Scale Index measures the size of the digital economy, and a high score indicates that the percentage of the digital economy in a certain state is likely to increase. This may eventually result in the expansion of the state's whole economy. The influence of the digital economy on the state, on the other hand, diminishes if its scale is minimal. The digital economy could not support state economic growth if the state's economy expands. Different economies characterize the digital economy differently, with some acting more as a provider of value-added to the economy while others behave more as a user.All nations, especially those that have started down the road of catching-up development, have a chance of experiencing a quick uptick in productivity growth if they concentrate on the widespread informatization of society and the efficient application of ICT that are already available in the global marketplace. The near zero marginal costs of

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new digital technologies such as the cloud, AI, Big data, IOT point to the potential for exponential growth**.** That said, some techno-optimists have taken the argument too far. The pace of adoption may be constrained not just by the scale of investment and organisational restructuring required, but also by the social and political resistance that they entail. Digitalization dynamics bring about risks; perhaps the greatest of which is being left behind. The opportunity cost of inaction and neglect of digital trade will be associated with less diversification of economic activity and reduced resilience to shocks. The opportunities brought about by digital technologies can accelerate economic growth, help lead the world economies out of the pandemic-related economic crisis and create new jobs. Digitalization not only contributes to development but helps to build greater social resilience. With appropriate policy interventions, it may also enhance social inclusion and contribute to greening the economy.The opportunities brought about by digital technologies can accelerate economic growth, help lead the world economies out of the pandemic-related economic crisis and create new jobs. However, potential growth may be substantially higher; as a result, it is crucial to do further study to learn more about the challenges faced by and effects of the digital economy in developing nations.

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