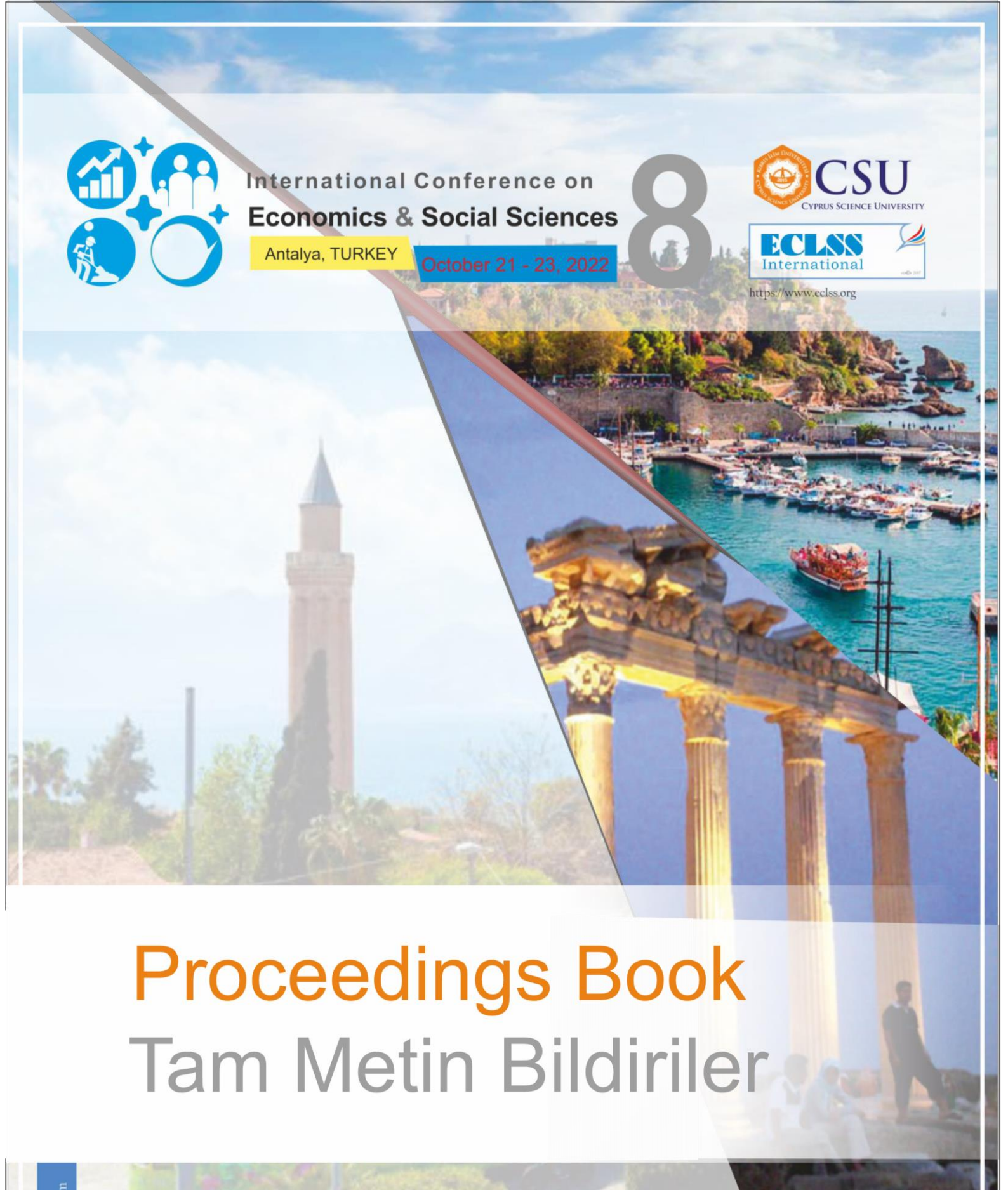

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8
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STATISTICS ABOUT THE CONFERENCE, E&SS2022

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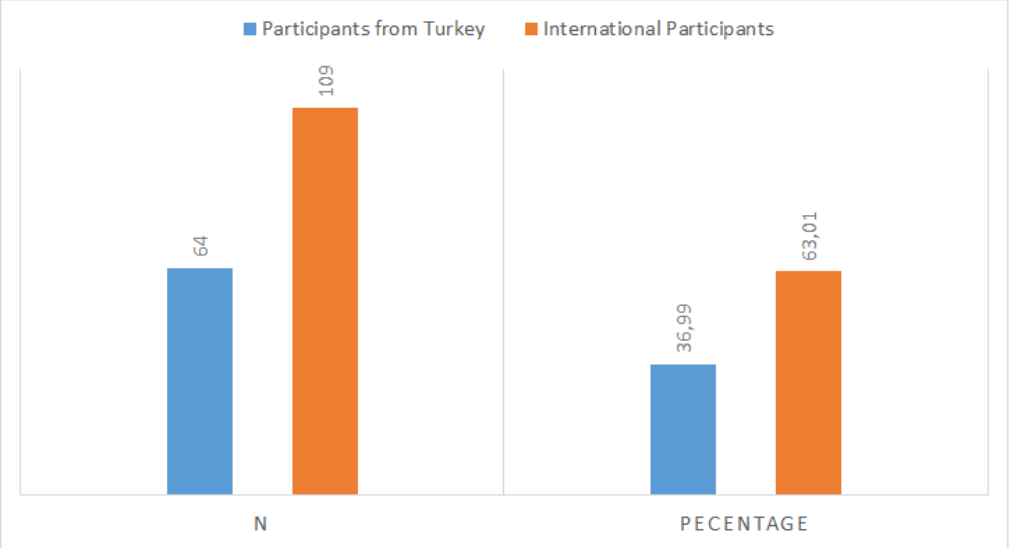
COUNTRIES & NUMBERS

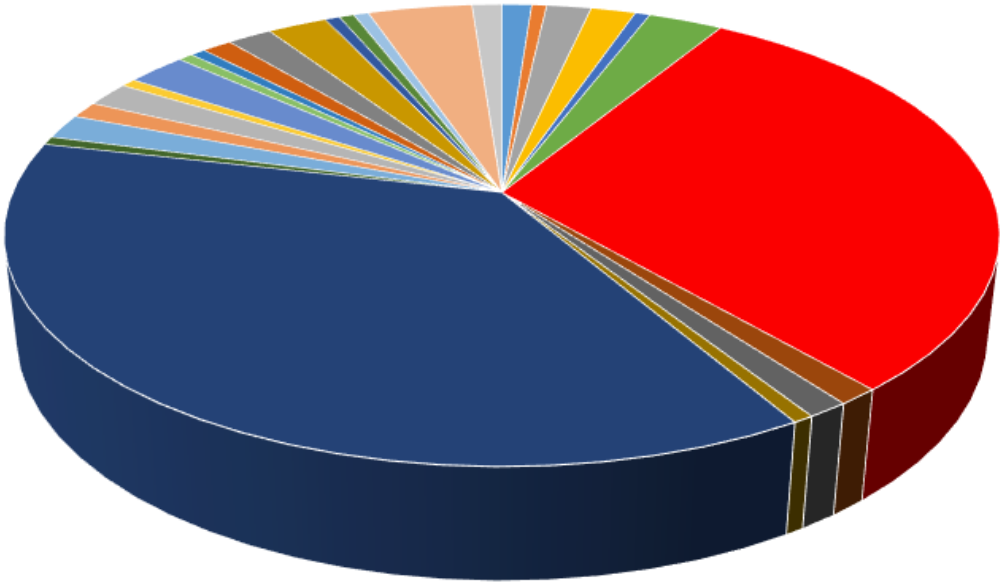
1	Albania	2	15	Malaysia	2
2	Azerbaijan	3	16	Montenegro	1
3	Belarus	1	17	Northern Cyprus (TRNC)	3
4	Bulgaria	4	18	North Macedonia	3
5	Estonia	1	19	Oman	1
6	Germany	1	20	Pakistan	5
7	Hungary	2	21	Poland	52
8	India	3	22	Portugal	2
9	Indonesia	4	23	Romania	2
10	Iraq	1	24	Spain	1
11	Italy	1	25	Turkey	64
12	Kazakhstan	2	26	United Arab Emirates	1
13	Kosovo	7	27	UK	3
14	Lithuania	2			

Total : **174 papers**

from 27 countries



	N	Pecentage
Participants from Turkey	**64**	**36,99**
International Participants	**109**	**63,01**
Total	**173**	**100,00**



The 8th edition of **International Conference on Economics and Social Sciences (E&SS2022),** hosted by Cyprus Science University, October 21 - 23, 2022, was a great, fruitful and exciting experience with all our distinguished guests, participants and listeners. There were 139 papers presented during the plenary sessions (64 from Turkey, 109 from International participants; **36,99 % Turkish, 63,01% International participants**).

We had participants from 27 countries, displayed in the graph above.

Hope to meet you again in our upcoming conferences!

Thank you for your support and collaboration.

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The Big Tech versus the Nation-States: Clash of Economic Interests and Struggle to Compete on a Global Scale

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Abstract

The growth of the internet and technology has been nothing short of exponential. Latest developments in computer and telecommunication technologies, as well as emergencies such as COVID-19, are hastening the adoption of such technologies into every part of our lives. Currently, internet technologies are an essential part of daily life, which are expected to remain open and free for everyone to connect and exchange information freely and fairly on a global scale. Since its beginnings, the internet has been designed as an open platform that is not governed by a single entity, resulting in numerous parties and a wide range of interests among those parties. This landscape, however, is not the same as it was three or two decades ago. Currently, Big Tech companies play increasingly dominant roles in the development and evolution of internet technologies, making them influential on the rules of the game on a global scale. By definition, big, powerful private corporations are expected to pursue their interests, which may differ significantly from those of other parties. Governments, on the other hand, may have divergent interests in areas such as finance, taxation, market competitiveness, use of personal data, data protection, information security, intellectual property, cybersecurity, state espionage, copyright, free speech, censorship, and many others. Nevertheless, the current market power of Google, Facebook, Amazon, Microsoft, and Apple is greater than the annual GDP of some small or medium-sized countries, particularly underdeveloped or developing countries. From a theoretical perspective, this global transcendence of influence and economic power is putting great pressure on the state and its self-centric viewpoint conveyed through the realism theory. There are also great powers with strong cyber capacities whose legacy reigns supreme in the information technology sector. As a result, in globally open cyberspace, there are clear power disparities between various involved parties. This study will investigate the friction points caused by the disparate parties' differing interests and determine whether some of these disparities can ever be reconciled or reduced. One of the main goals of the study is to determine the viability of developing potential solutions to those problems. Qualitative research and case studies will be utilized in the conduct of this study.

Keywords: Big Tech, market monopoly, tech platforms, Google, Facebook, Apple

1. INTRODUCTION

Although the internet now reaches every corner of the globe, it had rather a humble beginning. The journey of the internet began with its development as a network among three universities. What became the internet was founded on the principles of a research project known as ARPANET, which stood for Advanced Research Projects Agency Network in the 1960s. The project was initiated by the United States Department of Defense's Advanced Research Projects Agency (ARPA). It was the first wide-area packet-switching network with distributed control, which was also one of the first networks to implement the TCP/IP protocol suite (Coffman & Odlyzco, 2002). On October 29, 1969, the Stanford Research Institute (SRI) and the University of California Los Angeles (UCLA) established the first successful host-to-host connection on the ARPANET (Savio, 2011). The initial command "login" was successfully transmitted over the ARPANET, although the receiving point misperceived it as "lo" due to a system crash (McMillan, 2019). The ability to send two letters out of a five-letter word back then resulted in a platform where ultra-high definition videos are shared and viewed by millions at the same time. As more academic institutions and research facilities joined the network and broadened its scope and potential uses, the Internet gradually evolved into what it is today. As a result of these first tentative steps, one of the biggest leaps of the twenty-first century was made.

We can see that today's trend of internet use and technological advancement is nothing more than pure exponential growth if we take a closer look. The development of these technologies and their use in diverse fields are fueled by market forces and processes of globalization. In addition to the growth factor already in place, the recent global pandemic COVID-19 forced millions of people to study, learn, work, and interact from their homes over the internet. It consequently accelerated digitalization and our embrace of such technologies in every facet of our lives. It should come as no surprise that internet technologies are becoming a significant and necessary component of daily life. In order for individuals to benefit from the use as well as the exchange of information freely and fairly, networks must be kept open, free, fair, and safe.

As the importance of the internet and technologies has grown year after year, their true market potential to influence, dominate, and yield profit has become clear to numerous businesses. The "internet," as the name implies, is the interconnected network of devices that creates this platform. Furthermore, no single entity, organization, institution, or state owns the internet as a whole. As a result of this factor, the internet has been built and developed as an open platform that is not governed by a single entity since its early days, resulting in numerous parties with diverse interests. The apparent market potential and value of internet technologies have long altered the previously established landscape. The internet is no longer what it was three or two decades ago, with billions of users generating billions of dollars through their laptops, tablets, or smartphones in their pockets.

The world's largest corporations today are those that produce and sell information and communication technology products and services. As cyberspace has evolved into a wealth-generating platform, the potential clash of interests has become more visible. This is how large technology companies and their interests can go up against nation-states. Even though there are numerous points of contention between technology companies and governments, this paper will primarily focus on the clash of economic interests and the struggle to compete on a global scale.

2. Literature Review

The increasing disparities in the IT sector among nations are a recent phenomenon. Consequently, this is a rapidly evolving field with so many components in a very high dynamic environment. To come in touch with the essence of the issues, the most recent data were analyzed in order to depict the changing situations. As a result, this research was supported by a range of sources, including financial lists, the latest developments, and academic articles.

PwC's analysis from May 2020 is used to highlight the market power of IT companies and provide insight into the current market condition. Their report is remarkable and also very helpful in demonstrating how information technology companies have benefited from the changes that have occurred. The title of their report is "The Top 100 Companies by Market Capitalization." which is published on their website. PwC publishes quarterly overview reports to track the changing status of the Global Top 100 companies. In their 2020 survey, they carefully selected the prospects of various industries and the overall behavior of the investors. Their analysis demonstrated that investors valued the higher stability of larger enterprises, particularly during the pandemic emergency. As a result, this indicator provides an outstanding summary of market possibilities during the early phases of the epidemic. To compare and contrast the data from the pre-covid condition, this study includes market insight from 2019 to show how businesses performed before the pandemic.

Another important index, published by Forbes, was also beneficial for further analysis. Forbes maintains a ranking of the world's largest enterprises called in their list called "Top 100 Digital Companies," and one remarkable outlook can suggest that American companies already had a strong and dominating position in the digital marketplace.

An early paper is included to highlight the initial period during the new millennium's early years. The Journal of Data Analysis and Information Processing published Coffman and Odlyzko's paper "Growth of the Internet" in 2002. According to their paper, the growing prevalence of online social networks has ignited a growth pattern in internet networks. According to their findings, the Internet appears to be growing at a rate of 100 % per year, compared to 15-20 % for private line networks and less than 10 % for voice networks. This early study thus predicted that with a 100 % annual growth rate, Internet technologies would eventually overtake voice traffic, forcing the market to find new ways of thinking about telecommunications.

In November 2019, the European Political Strategy Centre, which is affiliated with the European Commission, published a paper. The title of the paper is "Rethinking Strategic Autonomy in the Digital Age." According to their research, those who dominate innovative technology in the twenty-first century will have a greater ability to influence financial, cultural, and political outcomes. This article acknowledges that despite its numerous resources, the EU is in danger of falling behind in this competition. As a result, not only is the EU's long-term economic stability jeopardized, but it also exposes it to several other strategic vulnerabilities in the face of rising global tensions. While adhering to its long-standing commitments to transparency, competitiveness, and free and equal markets, the EU must also recognize and better consider the current dependencies and vulnerabilities that come with

technological advancement and global internet networks and ensure that adequate safeguards are in place to address them.

The "Questionnaire To The Commissioner-designate Thierry Breton" was made public by the European Commission on November 4, 2019. Numerous articles refer to this first document, and in the questionnaire, Thierry Briton discusses the issues that, in his opinion, are crucial for Europe's scientific advancement, inventiveness, worldwide compatibility, and economic strength. Janosch Decker's article, published in Politico in January 2020, also addresses Thierry's discussions. The article "Thierry Breton: European companies must profit from European data" describes the EU's struggles with data, privacy, and digital competitiveness. According to the article, Thierry, the top person in charge of the EU's digital strategy, the EU is drafting legislation to ensure that data generated within its borders is only used by European enterprises.

Frances Burwell and Kenneth Propp wrote an article titled "The European Union and the Quest for Digital Sovereignty: Building Fortress Europe or Preparing for a New World?" which was published in the Atlantic Council in June 2020. Their paper discusses how the new European Commission, led by President Ursula von der Leyen, was tasked with improving digital capability across the European Union when she took office. The article analyzes the notion that German Economy Minister Peter Altmaier expressed this desire in terms of sovereignty while Thierry Breton advocated for the creation of European technical hegemony in a first statement to the European Parliament as a candidate for Commissioner for the Internal Sector in response to the collecting of European data overseas by US cloud-services corporations without European sovereignty.

Fraunhofer Institute For Systems And Innovation Research ISI released a report titled "Technology Sovereignty From Demand to Principle" in July 2020. In their policy paper, they present one interpretation of technology sovereignty. In doing so, their objective was to contribute to the current discussion and enhance distinctions. As a result, the researchers devised guidelines and crucial methodological measures for determining the criticality of technology and the scale of technology sovereignty.

The Economist published an article titled "The EU Wants to Set the Rules for the World of Technology" on February 22, 2020. The article claims that, even though the European Economy holds massive potential in the field of Information Communication Technology, there are not many major digital companies in comparison with the United States. The article also mentions the EU's market capitalization share, which is 4% of the market capitalization of the world's top 70 companies. According to the authors, when the EU's overall market potential of over 500 million people is considered, this market share is remarkably small. Again, no tech business can afford to ignore the sheer size of the European market, which gives the EU's policy claims considerable weight. The article claims that about one-fifth of Facebook and Google's revenue comes from the EU.

Chris Meserole's short article from 27 April 2020 discusses the short-term repercussions of COVID-19 and the possible future directions for technology. In his article "COVID-19 and the future of ‘techlash’" Meserole claims that the pressure on big tech has been reduced in the face of a global pandemic. He also claims that the decade-long backlash against the technology industry is the result of a diverse range of contesting concerns, such as antitrust issues, data breaches, and online risks. He combines the

pandemic's potential intersection with those topics to determine how much the tech policy debate will shift. According to the paper, Big Tech is expected to grow much larger and more efficient than it did previously. Nonetheless, the pandemic prompted officials to reconsider how data can be regulated. Concerns that the European Union's data policy may prevent businesses from exchanging valuable public health data have prompted a rethinking.

The article "Europe Can't Win the Tech War It Just Started, The European Union is running in circles in pursuit of digital sovereignty." was written by Tyson Barker in January 2020. Europe's conservative and restrictive manners in digital sectors, according to Barker, are both understandable and misguided. He claims that Europe's current search for digital sovereignty is based on four erroneous assumptions. Two points are then highlighted: First, Europe assumes Silicon Valley, and to a lesser degree, China is gaining hold over its digital future. Second,

Europe seeks to counteract an untethered, belligerent, and unreliable United States, displayed during the Trump regime. The paper concludes that if the EU is to compete in the technology race, it must rely on its vast strategic capabilities while remaining true to its ideals.

3. Methodology

In this paper, both qualitative and quantitative data were used. The quantitative data were collected from the lists and reports from audit companies, consulting firms, or financial institutes such as PwC or Forbes in order to compare how Big Tech Companies were performing financially among other global firms. Their market capitalization values were also included in the assessment to showcase their global power. For the qualitative parts, various reports, articles, expert reports, and formal EU reports were utilized. Qualitative analysis has been incorporated into the areas concerning different approaches to regulation, data privacy, censorship, digital independence, economic protectionism, and freedom of expression matters.

In order to capture the current events in cyberspace and the tech market, various news reporters' articles from diverse newspaper sources were included. Those selected events were used as a showcase to demonstrate the causality of the events and what they might cause further. The basic definitions were taken from legal documents and academic sources, concerning economic monopoly, internet technologies, censorship, and regulatory mechanisms.

4. Theoretical Framework

The information age has turned the world into a more interconnected place, where various countries are no longer necessarily isolated from one another as they once were. With the advent of the internet and other forms of IT technology, information now flows freely between different countries in various geographies. Information is a powerful tool. Homo sapiens, as its name suggests, is a powerful species because of its capacity to understand and retain knowledge through language and to process it in abstract ways. Having said that, the volume of information flow at this time is unmatched by any other period in history. Since the IT revolution has only recently begun, global society has already undergone an incredible transformation. Provided there is a reliable internet connection, you can now manage your business from a remote village anyplace in the world. Countries are no longer as isolated from one

another as they previously were thanks to this connectedness, which has made the world more integrated. This has had a variety of repercussions for the global economy. For example, it has made trade more convenient and efficient by utilizing technological processes to optimize production, warehousing, and logistics. It has also resulted in increased information and know-how sharing among countries. In other words, the economies of different countries are now more intertwined than they were previously. As a result, the global economy has become more interdependent, reducing the isolation of nation-states by tying their economic and social well-being to that of others. According to this viewpoint, the spread of information technology contributes to the process of economic globalization, which may be captured by the globalization theory (Kofman & Youngs, 2008). From the technology and economic perspective, the biggest winners of this whole process are the tech companies as they pioneer new pathways to help navigate uncharted territories.

In contrast to globalization theory, the realism concept in international relations holds that the state is the primary unit of analysis and that states act in their own self-interest (Keohane, 1986). This theory arose at a time when the world was much more divided than it is now, with different countries isolated from one another. However, in today's globalized world, realism theory is highly contested and no longer holds as much weight. However, the conflict between powerful states and large global technology companies may be encaptured in the contrasts between globalization theory and state realism. Despite the fact that realism theory may not be able to fully explain all of the intricacies of the modern world, it can be a useful tool for analyzing the problems brought on by globalization and how governments behave within borderless cyberspace, along with the new economic realities resulting from the high dynamics of computer technologies.

Because of the enormous value of the output produced by modern technology, economic prosperity is now closely linked to it. While technology reigns supreme in the global economy, the richest countries have benefited from it more than the poorest. Industrialized countries have reaped greater benefits than emerging nations due to their ability to capitalize on the opportunities created by globalization. They have been able to participate more fully in the global economy due to their more developed infrastructure and institutions. As a result, they are growing faster and creating more wealth than developing countries. However, developing countries are now catching up. In recent years, there has been growing evidence that the benefits of globalization are beginning to be shared more evenly between developed and developing countries. The theory predicts that developed countries will continue to benefit from globalization while developing countries will catch up over time by improving their infrastructure and institutions. Additionally, developing countries are also benefiting from the increased flow of knowledge and information that is a result of the globalization of the world economy.

While it is true that globalization has led to increased inequality between developed and developing countries, this is not necessarily a bad thing in itself. In fact, some economists argue that the increased inequality is actually a necessary byproduct of globalization and rather a result of society’s choices (Stiglitz, 2013). In some cases, this byproduct of globalization is deemed as an incentivizing factor for developing countries to catch up with developed countries (Prasad, et. al., 2005). Yet, states also have an intrinsic reaction towards getting behind big global players when the global big technology companies harness a greater economic exclusive zone in the areas where traditional state institutions cannot help get ahead. Such intrinsic reactions are often demonstrated as a backlash against big tech in

the hands of the policymakers as some new regulatory measures. Therefore, realism theory can explain the resistance of states towards globalization while globalization can be used to contrast the position of the big tech companies with their high economic potential, global reach, and influence.

5. The Rise of Big Tech, the Challenges They Bring, and Various Counter Acts

Currently, Big Tech companies dominate and influence many areas of cyberspace. They are the innovative force behind this huge leap forward and they determine the rules of how this game is played at the global level. Surely, it is no wonder that Big Tech companies make it into the top ten companies regarding their market capitalization power. In "Global Top 100 companies - June 2020 update" a report published by PwC, Apple Inc received second place, right after the Saudi Arabian Oil Company or ARAMCO (PwC, 2020, p.11). In fact, if we look further down the list, we can see that technology and data are extremely powerful and have the potential to make you wealthy globally. In the list, Microsoft Corp followed Apple Inc. in third place, which is followed by Amazon.com Inc in fourth, and Google Alphabet Inc in fifth (PwC, 2020, p.11). Notwithstanding, on July 31, Apple passed the state oil giant Saudi Aramco and became the world's most valuable company with 2 Trillion US Dollars in market capitalization value among the other publicly-traded companies (Bursztynsky, 2020). This number alone is quite remarkable and if we think about the combined market power of Google, Facebook, Amazon, Microsoft, and Apple at their sheer size, we can realize that they are more than the annual Gross Domestic Product of many countries. Furthermore, when the market forces of these Big Tech Companies are combined, it is multiple times greater than the GDP of many underdeveloped or developing countries.

Another factor to consider is the corporate headquarters of those enterprises. In fact, the majority of major technology companies are based in the United States. Not every country is equally prominent in terms of technological infrastructure and innovation. This means that market influence can be mostly unidirectional, favoring the interests of a few, while those who cannot keep up with these trends are forced to follow those who do. Despite this, there are new actors in cyberspace with the ability to push back. The US is facing competition in cyberspace from nations like China and Russia. The American response to the market expansion of technology companies, particularly those from China, validates the policymakers' concerns about the potential loss of market dominance. The Huawei, 5G and US trade wars between the US and China might point in this direction.

Technology dominance and cyber capabilities are now significant sources of wealth and strategic advantage. Given the world's history of conflicts and wars over oil and energy sources, such new sources of power and influence may not be received or handed over peacefully. Apple's success over Saudi Aramco may reveal information about technology and why data has become the new oil. If there have been wars to protect the energy monopoly in the past, should we expect interest clashes in cyberspace over the use and ownership of these technologies, whether the contest is passive or becomes more agitated? Recent developments in the technology sector demonstrate that its influence and reach can no longer be contained within the sphere of influence of private actors. A major cyber attack happened in 2020 where the attackers penetrated the systems belonging to thousands of organizations globally, including multiple parts of the United States federal government. This event has led to a series of data breaches by a group, sponsored by foreign governments, leaving the sensitive data from the high-profile targets in the hands of the attackers for a duration of eight to nine months to which the hackers had

access. This cyberattack and data breach was announced to be among the worst cyber-espionage events that the US ever encountered (Sanger, Perlroth, Schmitt, 2020). Clearly, the increased importance of the internet will not be overlooked by those with vested interests in it, whether they are states, big tech, or others.

Big, strong, private firms are expected to act in accordance with their own interests, which might vary greatly depending on who is allowed to reap the rewards of the internet and the data produced along the process. Several regulatory developments have occurred in the European Union as a result of this aspect. The General Data Protection Regulation, or GDPR, of the European Union is one of the important policy examples. It establishes regulations for the processing of personal data and for the transmission of that data outside the European Union and the European Economic Area that are aimed at protecting the privacy of its residents (Art. 1 GDPR).

The use of personal data, data protection, intellectual property measures, cybersecurity, state espionage, copyright, freedom of speech, and censorship are just a few examples of sectors where governments may have competing interests. The degrees of authority held by the stakeholders participating in the information and communication technology sector are therefore obviously diverse. Today, the internet and cyberspace are more like a puzzle with various uneven pieces, some as big as a table plate and others as small as a grain of salt. The idea of assembling a complete picture from these conflicting parts actually seems rather difficult. One point to consider is whether some of these disparities can ever be reconciled or reduced. The friction points created by these disparate parties' various interests, as well as potential remedies, will be investigated further in the following sections.

In recent years, technology that was introduced by early pioneers has reached new heights of rapid growth. However, it appears that this development began to disrupt the market balance by establishing new monopolies. Companies like Apple, Google, Microsoft, and Facebook are like the Himalayas that are difficult to scale in the technology sector. Consider a startup that seeks to outshine Google technologies in order to establish a presence in the market besides Google. What powers, means, mechanisms, or opportunities does the small business actually have? At best, if the small business becomes successful, Google may be able to acquire it for thousands, or even millions of dollars. From this aspect, big tech companies are the major suppliers in their sector, whose patents and copyrights are protected by their host country’s laws, in this case, the US jurisdiction which is currently the world's strongest country in terms of economy and military. Given that cyberspace has no borders and has global implications, state actors seem highly enthusiastic about involving in this new strategic area.

This contrast created by the control of a few players within the industry to influence the purchase of goods and services through the use of new data-driven methods adds a whole new dimension to this imbalance. These factors contribute to monopolies in the digital sectors, which are distinguished by a lack of economic competition in the development of similar platforms, goods, and services at a high monopoly price (Blinder, et. al., 2001). As a result, big technology companies decide the price of the goods and services supplied in the market, determine the features of those digital products, and alter user agreements single-handedly. Since there is a high barrier to entry, other competitors are unable to enter the market easily to break the monopoly. This factor leaves the user with no choice but to keep using the goods and services provided by the big technology companies. In such circumstances, some countries become highly protectionist such as the People's Republic of China which chooses to have an

iron fist on their public internet with strict firewalls that isolate the internet within their territories. The increased state power and control over the internet also gives the government the ability to monitor dissidents and impose censorship. Can this kind of balkanization be viewed as a potential remedy?

Many jurisdictions have anti-monopoly laws in place because of state concerns about the potential negative effects of monopolization in the market. In most cases, being the leader of a sector is not illegal on its own. Nonetheless, they activate some precautionary mechanisms designed to maintain market checks and balances. As a result, there may be a variety of legal consequences if a company becomes too sharp and punctures the market in its direction. However, if regulatory acts such as the Digital Market Act or the GDPR are a legal counteract from the EU side, the copyrights, trademarks, and patents granted to big tech in the US can be an opposing factor in the absence of active cooperation between the US and the EU. This may be visualized if we think of the technology sector as a truck, with big tech pushing the gas pedal with all the horsepower they have, and local or regional regulatory agencies just pushing the brakes to keep from speeding up. The key takeaway is that a mere breaking power will not generate significant market power, competitiveness, or potential without a regional ability to pedal up the truck. Indeed, the European Union's IT regulations are established in many ways without a comparable innovative power. As a result, such an attitude is defensive, whereas the US has the ability to monitor the outcomes of its IT market and then take regulatory action in response to those outcomes, whereas the EU is constantly adjusting its steps in response to market conditions led by Silicon Valley while remaining dependent on the products and services provided by them.

Another point to consider is that by agreeing to Google and Facebook's terms, users from all over the world give those companies a portion of their data and the right to use it. Technology companies will have data centers in the host country and will be able to host data as long as the users "agree" to their service agreements. However, how many users read all of the terms of service or have many other options? After all, what can states do in such a situation to pursue their citizens' data? From this viewpoint, there is a divergence, or perhaps a clash, of interests among various states and sectors. Data cannot be nationalized in borderless cyberspace, as it can in the physical world when it is written on paper. In reality, the public internet can be the most congested street, and who is to blame if you leave something valuable in the middle of the street and it is lost?

6. Position of the European Union

The United States and the People’s Republic of China are leading the way in digital technology and innovation on a global scale. The EU has innovative potential with a tech market of its own but the EU tech scene is often dominated by the US big tech and others. When a European technology product, software, or company grows and seems financially promising, it is often bought by big tech firms such as Google, Microsoft, or Facebook. No doubt that the European Union is investing billions of euros into what it believes are fundamental and core technologies as part of an effort to boost its tech sovereignty and reduce its dependency on the U.S. and China. However, without an appropriate tech environment, it is losing its power to the other tech giants. One of the causes of the EU's inability to become globally more competitive is attributed to its slowness to adapt digitalization in its manufacturing industries which leads to gaps in innovation according to the article published by Burwell and Propp (Burwell & Propp, 2020, p. 5). According to the Forbes 2019 list of the top one hundred digital companies, only one European company, Deutsche Telekom made it to the top twenty, while American giants proclaimed

places in the top twelve. Of the Asian powers, Japan and China seized two spots each while South Korea, Hong Kong, and Taiwan each took one spot from the list (Forbes, 2019). When we analyze the world's largest market capitalizations, we can realize that the European share is less than four percent of the market capitalization (Bradford, 2020).

We can examine several remarkable examples where European companies were acquired by others during the previous decade. In 2014, Google bought London-based AI lab DeepMind for around 500 million US dollars (Shead, 2016). In recent years, DeepMind's AI has demonstrated its AI ability by beating humans in several board games. After the acquisition, Google began to employ the DeepMind AI system to regulate its enormous and complex air-conditioning systems in its data centers. For Google to manage the countless billions of gigabytes of data added and requested through Google Search, Google Drive, Google Cloud, Youtube, Gmail, and other services, it needs to have high-capacity data centers. Due to this sheer volume and capacity requirements, Google servers consume so much power which could light up entire cities. Such power generates heat in the process as a byproduct. The AI system helps to regulate the temperature by forecasting how much air conditioning will be required with its predictive capability that estimates the changes in demand during the day (Shead, 2016).

In 2016, Arm, a chip producer company from the United Kingdom, was bought by SoftBank from Japan. Moreover, the U.S. chip giant Nvidia is in the negotiation process for acquiring Arm from SoftBank for a reported 40 billion US Dollars. According to the CEO of Nvidia, Nvidia chips remain core to various disruptive technologies and the company makes sure that they increase and retain their place in the market (Stankiewicz, 2021). Acquiring Arm can further strengthen the market position of Nvidia, exclusively for mobile devices since Arm designs chip architecture is used in smartphones all around the globe. In 2018, a part of Dialog Semiconductors, a German company was bought by Apple for around 600 million US Dollars (Nellis & Busvine, 2018). Other chip producers in Europe have battled to regulate their relationship with Apple due to its sheer scale. For instance, after losing Apple as a client, United Kingdom's Imagination Technologies was acquired by a Chinese fund (Nellis & Busvine, 2018). To the north, the Swedish iZettle was sold to PayPal for 2.2 billion US dollars. Stockholm-based iZettle was one of Europe's best-known fintech companies. iZettle was serving nine countries both within Europe and beyond such as Brazil, and Mexico. The company provided financial products for small businesses, like mobile payments (Bosilkovski, 2018).

This situation is also remarkable when it comes to social media platforms and other tech services. According to the financial data, the EU does not perform well when compared with tech firms from other countries, especially the USA and China. The EU, a wealthy continent with some 500 million people, is not able to offer its own businesses the same kind of market that the US can. For instance, Europe has 387 million Facebook users, while at home in the USA, it has only 190 million users(Aslam, 2021). Yet, no European Tech can rival such gigantic American social platforms.

European deficiencies can stem in part from market segmentation and local regulations, such as national restrictions. Consequently, these factors can keep hindering the EU from reaching its true potential. However, given the difficulties of European integration and the current obstacles to the formation of a true single market, the issue is also political in this sense. Baker outlines the underlying issues quite well as he mentioned: " While European policymakers can easily find statistics to justify the need for digital sovereignty, they have a much harder time defining that term." (Barker, 2020) in his article on Foreign

Policy. Diverse national laws and jurisdictions combined with varying capital markets, and national regulations concerning data, AI, Cybersecurity, Robotics, and numerous other issues cut the big European market into various smaller national markets. It is clear that in order to make the EU market more competitive with Tech Giants, the whole scale and potential of the market are needed (Burwell & Propp, 2020, p. 5).

6. Europe's Attempts for Digital Sovereignty

Propelled by recent geopolitical tensions, trade wars, the US tech dominance, cyber-attacks, and the COVID-19 pandemic, the European Union prepares itself to attain digital sovereignty to respond to some of those challenges. One think tank in connection with the European Commission, the European Political Strategy Centre investigated the impact of digitalization on the European Union's strategic independence. In their comprehensive report, they concluded that in order for the EU to play a major role in the global digital marketplace, they have to work on the faultlines in its critical infrastructure as well as its industrial and technological approaches (EPSC, 2019). According to a September 11 2020 European Commission announcement, the bloc has been caught in the "technological war" between the United States and China, which forces Europe to lay the foundations of its sovereignty in technology for the next twenty years. It is further mentioned that the empowerment of Europe's digital sovereignty is a key element of the EU's digital strategy. It is commented that "Our digital sovereignty rests on 3 inseparable pillars: computing power, control over our data and secure connectivity" (European Commission, 2020).

The concept of digital sovereignty is a much broader concept that can also overlap with the notion of long-standing European anxieties regarding privacy, personal data, as well as financial questions such as taxation of digital products, and public procurement. Therefore, there is no one size fits all kind of approach that is possible in this complex network of issues. While the EU seeks to enhance its digital sovereignty, a key question arises if these undertakings are fundamentally protectionist measures in nature. We can reflect on the comment of Commissioner-designate Breton asserted, "This is not a protectionist concept, it is simply about having European technological alternatives in vital areas where we are currently dependent."(Breton, 2019). Nevertheless, it may not be wise to accept this proposition steadfastly as he also mentioned " European data will be used for European companies in priority, for us to create value in Europe."(Delcker, 2020). From the latter point of view, it is questionable how data can be European in a global network and how such an internet would work. If Europe can produce value, why should it only depend on European Data? Let us imagine if the same philosophy was attained by Google early in its development. It would be highly improbable that Google would ever grow this big. From this aspect, Europe struggles to swim against the countercurrent of the natural stream of cyberspace where the fast ones are already going forward by taking the current right behind them.

The fundamental question is whether the newly established rules or the future ones will treat European companies more favorably than non-EU firms, in a fashion that is protectionist and discriminative by nature. This question is a relevant one as there are various opinions including pushing heavier penalties for violations. Nevertheless, according to a Reuter news report by Foo Yun Chee, some opinions advocate a heavier course of action, such as tearing up large non-EU tech companies or forbidding them from certain markets (Chee, 2019).

According to the Fraunhofer Institute, a German research agency Technology sovereignty is the capacity of a country to acquire the technologies it considers crucial for its well-being, competitiveness, and its ability to develop these technologies or source them from other economic regions without one-sided or an uneven dependency (Edler et. al, 2020). Europe is currently highly dependent on technologies that are exported from other countries but mounting geopolitical contests and global trade battles are putting the established trade relationships into question. For some, the current crisis and geopolitical tensions are the calls for adopting a technology sovereignty strategy. According to the paper published at Fraunhofer Institute, such developments are especially triggering debates in Germany regarding how independent a state or a federation of states should be with respect to critical technologies. According to the report, Germany's position as an export nation, and European Union's structure as an economic area demands considering technology sovereignty carefully and in a differentiated manner (Edler et. al, 2020, p.4).

According to the paper, investments in research and development are the primary requirement for establishing sovereignty for current and future critical technologies. Existing research and competency development can be cut from low priority to be mobilized towards the sectors that face a dependency on third parties in order to avoid the vulnerability of supply-chain or reduce it. Moreover, international research cooperation and technology partnerships are powerful apparatuses for mobilizing complementary capabilities and obtaining technology interdependence with other selected states. This will increase capacity and knowledge interdependencies with multiple parties while diminishing one-sided dependency on a single supplier. Besides these measures, enhancing cooperation with international organizations such as the World Trade Organization can assure compliance with agreed multilateral regulations since free world trade with its effective competition incentives stands as a solid frontier to assure fair trade which can be an important platform for technology sovereignty.

Another point made was promoting European technologies, patents, open-source software, and hardware in international markets to avoid monopolization by creating structural dependencies. Creating regulatory framework conditions in critical technology fields can help to foster innovation and production in those fields. It was also promoting innovation-oriented procurement that provides European businesses with the necessary incentives to invest in critical technologies.

7. Chinese Digital Sovereignty and the Great Firewall of China

European concerns about digital sovereignty are both reasonable and moderate in nature. When it comes to digital technologies, government regulation and interference can easily surpass the necessary and moderate proportions. The People's Republic of China should be our first point of focus when it comes to online censorship and blocking of open internet access. Today, China implements measures to limit internet freedoms under the name of the Great Firewall of China. It is the combination of legislative actions and technologies enforced by the People's Republic of China to regulate the internet domestically. This includes blocking access to selected foreign websites such as Google, Facebook, Twitter, and Wikipedia or slowing down the internet for overseas traffic (Mazur, 2015). Over the years, this system evolved and has proved successful to censor the internet at the domestic level. While the Chinese single-party can eliminate unwanted information, they are also able to punish the authors if the data comes within the Chinese territories. When the data is hosted outside of China, the authorities can simply block it to varying degrees or filter its contents out if possible (Anderson, 2012).

The affected users of this rather forceful censorship system are not all from China. On a larger scale, the Great Firewall of China does more than prevent the freedom of expression and the free flow of information. According to Tsinghua University's School professor Patrick Chovanec, China's censoring of Google, Facebook, and Twitter present business benefits to their Chinese competitors, therefore also functions as a tool of economic protectionism (Chovanec, 2011). This elaborate and adaptive exercise showcases what power means in the 21st-century information and internet age. China is endeavoring to secure itself a place within cyberspace with various methods. According to Shanthi Kalathil, Director of the International Forum for Democratic Studies, the Chinese state has concentrated essentially on three ways: First, pressuring international news reporting and influencing reporting in foreign media by promoting outward-facing news media. Second, through advocating digital sovereignty, supporting its most substantial internet industries, and engaging in cyberattacks, such as the employment of the Great Cannon to attack various web platforms. Third, by shaping a new global culture through Hollywood studios with co-productions. They use their market power to influence Hollywood content and reinforce their own industry capability. The promotion also includes festivals, sports events, cultural events, and language institutes (Kalathil & Boas, 2003)

The Great Firewall of China has been showcased as a model of how authoritarian regimes can successfully control the political outcome of information and communication technology (Kalathil & Boas, 2003). Therefore, China has become a raw model through its approach which can promote internet censorship under the veneer of digital sovereignty. Such unlimited and unbound control of the internet, limiting the interaction of citizens, manipulating their connection with the outside world, crushing opposition opinions, and having an iron fist on media and news are profitable devices to maintain power, influence, and authority. This trend of data localization once hailed by China set the bar for the followers.

8. The COVID-19 Effect

One thing that COVID-19 demonstrated is the importance of communication, digitalization, data collection, and data analysis. Therefore, as the pandemic raged wildly across the globe, tech companies became an essential tool in governments' inventory for tackling the crisis. It is no surprise that Big Tech has grown like a public utility. Government-forced curfew measures made e-schooling, home office, and e-meetings almost a mandatory practice for most of the developed world. This accelerated transit of everyday activities to the virtual world has buttressed concerns related to data privacy, data collection, data manipulation, tracking, and surveillance measures. From time to time, false information, conspiracy theories, and their capacity to spread wide and wild proved some challenges concerning the use of social platforms. Nevertheless, it was also those platforms that combated such a corrupt way of disseminating falsehood on the internet.

The pandemic and its subsequent lockdown measures have been a calamity for most economic sectors all around the globe. Nevertheless, due to the previously mentioned reasons, the tech sector has emerged victorious. Similar to the way we rely on established monopolies to supply us with daily essentials such as water, gas, and electricity, we have long begun to depend on Amazon, Google, Facebook, and other service providers for those everyday digital activities (Scott, 2020). This reality might alter the perception of tech giants in society as they are getting more and more powerful. With greater power comes great responsibility, yet should we solely rely on the goodwill of Big Tech whose profit concerns might have priority at times? The burden of operating for the Tech Giants will increase as a result of

increased regulations brought on by such concerns. The analysis of big data related to healthcare and patient records is essential for effective future disease mitigation strategies, pharmaceutical research, and efficient risk management strategies. In the proposed health-related data pool by the European Commission, these factors are underlined by suggesting the significance of data management and artificial intelligence implementation (Burwell & Propp, 2020, p. 4).

The pandemic has shown the importance of tracking the spread of disease both among the local populations and internationally. However, governments cannot establish an efficient contact tracing application on their own since they lack the requisite technology and equipment, as well as the capacity to produce them. On the other side, if we look at Apple and Google, we can see that their operating systems dominate the world, with Apple and Google OS powering 99 percent of smartphones. During the global COVID-19 pandemic, these digital titans collaborate to create a platform to inform those who might have contracted the virus due to their proximity to the people who tested positive (Nellis & Dave, 2020). Though they also keep an eye out for privacy issues and work to prevent governments from using the system to collect data on citizens and become oppressive, both of these companies only intend to let public health authorities use their technology (Nellis & Dave, 2020).

As the world continues to be affected by the virus, the potential of future pandemics may accelerate the development and deployment of these technologies. When the economy is struggling and people's lives are at stake, policymakers may be more willing to loosen privacy laws. But does this indicate that Big Tech may impose its own interests, with influence that extends beyond national borders? Prior to the pandemic, there were numerous concerns related to Big Tech's position and influence on data ownership, data privacy, sensitive data, and its commercialization. Faced with the plague, some of the pushback appears to have softened, as concerns and fears have been placed on the virus. As the governments struggled to get back to normal life some of the regulation attempts were put on hold while there also appeared different vulnerabilities in cyberspace. Furthermore, arguments regarding digital sovereignty before the COVID-19 pandemic were primarily focused on how American tech giants dominated European nations, but now more attention is being paid to growing Chinese influence. Combined with the tense geopolitical issues the pandemic affected the global trend toward cyberspace and AI regulations (Meserole, 2020).

9. Discussions

When we consider the issues about the free flow of information, borderless internet, data privacy, digital competition, digital intellectual property, cybersecurity, cyber espionage, data protection, digitalization of business, the rise of artificial intelligence, and ethical use of ICT, it is difficult to strike a balance in a global framework in which all countries can participate and benefit fairly from the fruits of technology. It is natural that in a digital environment with so many internationally powerful corporations offering services to the majority of the world, there will be several disputed grounds at various levels among state and non-state entities. The technology titans are currently seated in the United States, with China as a rival force. In important fields including the creation of chipsets, the application of artificial intelligence, and the creation of quantum computers, the U.S. IT industry is the biggest player. However, China is challenging this dominance on a number of fronts. There is no doubt that Russia has a key

position in terms of cyber offensive and defensive capabilities. In the face of this disparity, the European Union strives to avoid being in the collision zone among IT behemoths by establishing regional regulations, international cooperation, multilateral collaborations, and agreements. Nonetheless, with large IT corporations in cyberspace, the United States has been a veritable powerhouse of invention and economic output. The EU is attempting to develop and discover alternative technological platforms in order to achieve digital independence. Nonetheless, the EU is on a difficult path in the current situation. If the EU is confronted and contested by China, it does not have many alternative partners to pursue because practically all of the large Big Tech businesses are from the United States, and money flows in that direction. From this perspective, the present situation resembles a new cold war, with the key participants this time being the United States and China, who establish the great divide and new blocks where big economies such as the EU become customers and dependent on these non-EU service providers.

It may appear to be the best option in this highly uncertain and unforeseeable environment to carve your own path, but this is a difficult task in cyberspace because there is a need for a human source, technical and technological capabilities that normally take companies years to build with strong research and development capabilities. Overall, a solid economic and political structure is essential to allow the IT sector to flourish. Having said that, there aren't many potential countries ready to challenge the status quo in cyberspace.

Several fundamental factors increase the unpredictability and uncertainty when it comes to the use of internet technologies and developments in cyberspace. Firstly, the speed of technological development is exponential. The technology that exists today was difficult to imagine 20 years ago, such as smartphones, 5G technology, and so on. It is quite difficult to foresee how this technology will evolve in the future, even for the next 10 years. Secondly, not all countries are capable of developing and using this technology. It seems like the technology monopoly and superiority are posed by a handful of countries, where the big tech reigns supreme and they are capable of acquiring any promising technology or digital products worldwide. The third point is partly connected to the second, as there are underdeveloped countries that do not hold enough capacity within cyberspace and technology. Nevertheless, it is uncertain what countries will be the new challengers and how their rise can change the current or future balance. For instance, the internet and technology use are under the world average in many parts of Africa. Should they increase their technical capacity, it is unpredictable what would happen also combined with their population projection that suggests constant growth. All those young people with the power of the internet would create new opportunities and challenges within the technology sector and cyberspace. Fourth, technology is a back door to a virtual global world where real-world politics and geopolitics can also enter and find their place. This is why real-world political, geopolitical, and military contests can easily find themselves a place in cyberspace. The global and virtual nature of cyberspace can be contested or distorted by the divided and rivaled real world.

Technology and the internet present a number of difficult issues. Expecting a fair system among different actors around the world is therefore implausible. In the end, those challenges may either uphold or contest the current status quo, even breaking it apart. The internet, which started off as a simple message tool, has gradually gained financial and strategic significance. If the current growth rate continues, it will attract more and more power as the scope of its application expands to include ever more critical

tasks that will rely on internet technology to function. As the data is the new treasure, the hunt for this treasure might turn fierce as well, if the game turns zero-sum. This might suggest that the world needs new tools and approaches to learning how to cooperate in cyberspace.

10. Conclusion

There is more to Big Tech dominance than what is apparent at first sight. As the paper outlined, there are various factors with varying influencing participants in the technology sector and cyberspace, which renders the development of events spontaneous and highly unpredictable. COVID-19 is one of those events that took place recently. As the pandemic raged wildly across the globe, tech companies have become an essential tool in governments' inventory for tackling the crisis. It is no surprise that Big Tech has grown like a public utility as the government forced curfew measures that made e-schooling, home office, and e-meetings almost a mandatory practice for most of the developed world. As such dependency increases year by year, so do the concerns and the need to regulate certain aspects of IT firms. Yet, this might mean some regulatory burdens for the Tech Giants in the future, which can divide the internet.

As a remedy, the concept of digital sovereignty has come to the surface with its uncontained applicability capacity. The long-standing European anxieties regarding privacy, personal data, as well as financial questions such as taxation of digital products, and public procurement seem to be triggered in the face of recent developments. While the EU aims to strengthen its digital sovereignty, several of its initiatives appear to be protectionist in nature. The primary issue appears to be the genuine strength of European integration. The existing European deficiencies may be the result of national barriers that impede the formation of a truly single market. Diverse national laws and jurisdictions, as well as different capital markets and national norms on data, AI, Cybersecurity, Robotics, and a variety of other challenges, divide the large European market into multiple smaller national markets. It is obvious that in order to make the EU market more competitive against Tech Giants, a truly united market scale and potential are required (Burwell & Propp, 2020, p. 5). There are concerns regarding the nature of newly developed laws that may favor European firms over non-EU firms in a protectionist manner. On the other hand, some believe that spending money on R&D is the main prerequisite for establishing sovereignty over the present and future key technology fields. Furthermore, international research collaboration and technology partnerships can be effective tools for mobilizing complementary capabilities and achieving technological interdependence with other selected states by increasing interdependence with multiple parties while decreasing one-sided reliance on a single supplier. Aside from these measures, strengthening cooperation with international organizations such as the World Trade Organization can ensure compliance with agreed-upon multilateral regulations, because free world trade, with its effective competition incentives, stands as a solid frontier to ensure fair trade, which can be an important platform for technology sovereignty.

Notwithstanding, if the measures are taken too far, we might see procedures like the People's Republic of China is currently rigorously enforcing. Under the guise of the Great Firewall of China, China uses techniques to restrict internet freedoms. These techniques consist of restricting access to particular foreign websites like Google, Facebook, Twitter, and Wikipedia or reducing internet traffic abroad

(Mazur, 2015). China's censorship might also present business benefits to their Chinese competitors, therefore also functions as a tool of economic protectionism (Chovanec, 2011). This elaborate and adaptive exercise showcases what power means in the 21st-century information and internet age. China is endeavoring to secure itself a place within cyberspace with various methods yet this sort of approach is against European ideals such as democracy, human rights, and freedom of speech. Therefore there are deep divides among the major IT regions.

The transnational feature of cyberspace, as well as the unequal power and aptitude of nations, offer diverse parties different opportunities. The United States and China are the major competitors in these disputed digital grounds, with the United States dominating the market through open and unrestricted internet access, while China restricts it through nationalized cyberspace with strong restrictions. The US Tech Giants gain footing in this environment, while China and Russia create diverse counter-cyber capabilities. It can be tough to choose a side at times, especially for the EU, which seeks to achieve some digital sovereignty of its own. The central issue is to avoid this game from becoming increasingly zero-sum, which necessitates a fresh perspective and discourse.

All of these issues will pose hurdles to a more connected world in the future. There will most certainly be large tech businesses and monopolies with such influence in the next years, albeit the actors may shift over time due to succession or competition. While these obstacles remain, new common ground and understanding may be established through new tools and dynamics such as cyber diplomacy, confidence-building processes, and encouraging responsible state activity in cyberspace. Besides, a more inclusive approach through education and training will encourage young people from developing countries to have their place in the game. This will make cyberspace more inclusive, therefore, more representative of the true globe. The increased capacity of more countries can soften the avarice and dominion of big tech companies through a wider user landscape and possible regional competitors. If we value the free market and democracy, we can also treat cyberspace from a similar viewpoint. Hence, it can be better to strike a balance in cyberspace through competition, cooperation, diplomacy, and capacity building rather than protectionism, digital hegemony, and militarization of cyberspace. As final remarks, such solutions cannot be developed or provided expressly. Contrary to this, these measures need to be followed diligently, with an open mind and patience. This can be a challenge in a world that changes rapidly with many things at stake. Yet, like the waters meet the sea somewhere, the world needs to develop coherence, harmony, and cooperation also in cyberspace one day.

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