

UNIVERSITY OF LJUBLJANA  
SCHOOL OF ECONOMICS AND BUSINESS

MASTER'S THESIS

**A BIBLIOMETRIC ANALYSIS OF THE EVOLUTION TRENDS IN  
INTERNET ECONOMICS**

Ljubljana, December 2022

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## TABLE OF CONTENTS

<b>INTRODUCTION</b> .....	<b>1</b>
<b>1 THE NEXUS BETWEEN THE INTERNET AND ECONOMY</b> .....	<b>3</b>
<b>1.1 Internet economy</b> .....	<b>5</b>
<b>1.2 Internet economics</b> .....	<b>15</b>
<b>1.3 Benefits and risks of economic agents in the internet economy</b> .....	<b>18</b>
<b>2 TRANSACTION COST ECONOMICS IN INTERNET ECONOMY</b> .....	<b>24</b>
<b>2.1 Transaction cost theory</b> .....	<b>24</b>
<b>2.2 Transaction cost approach to understanding the economic impacts of the internet</b> .....	<b>27</b>
2.2.1 Positive economic impacts of the internet .....	29
2.2.2 Negative economic impacts of the internet .....	34
<b>3 BIBLIOMETRIC ANALYSIS OF THE INTERNET ECONOMICS FIELD</b> .....	<b>39</b>
<b>3.1 Data and methodology</b> .....	<b>40</b>
<b>3.2. Sample description</b> .....	<b>42</b>
<b>3.3 Performance analysis</b> .....	<b>43</b>
3.3.1 Leading sources of publications .....	43
3.3.2 Leading authors .....	48
<b>3.4 Science mapping</b> .....	<b>50</b>
3.4.1. Citation analysis .....	50
3.4.2 Co-authorship analysis .....	53
3.4.3 Co-word analysis .....	55
<b>CONCLUSION</b> .....	<b>62</b>
<b>REFERENCE LIST</b> .....	<b>65</b>
<b>APPENDICES</b> .....	<b>73</b>

## LIST OF FIGURES

Figure 1: Timeline of the introduction of the relevant terminology .....	6
Figure 2: Timeline of relevant terminology according to peak publication years.....	6
Figure 3: The number of internet economy related publications, key research areas, peak publication years and leading countries.....	7

Figure 4: The number of digital economy related publications, key research areas, peak publication years and leading countries .....	8
Figure 5: The number of web economy related publications, key research areas, peak publication years and leading countries .....	9
Figure 6: The number of new economy related publications, key research areas, peak publication years and leading countries .....	10
Figure 7: The number of platform economy related publications, key research areas, peak publication years and leading countries .....	11
Figure 8: Timeline of the introduction of the relevant terminology .....	15
Figure 9: Timeline of relevant terminology according to peak publication years .....	16
Figure 10: The number of internet economics related publications, key research areas, peak publication years and leading countries .....	17
Figure 11: The number of digital economics related publications, key research areas, peak publication years and leading countries .....	17
Figure 12: The number of platform economics related publications, key research areas, peak publication years and leading countries .....	18
Figure 13: Three main categories of transaction costs .....	25
Figure 14: The trade-off between internal and external transactions .....	26
Figure 15: Main channels through which the internet supports economic development ....	28
Figure 16: Inclusion, efficiency and innovation.....	29
Figure 17: Positive economic impacts of inclusion, efficiency and innovation for businesses, people and governments .....	34
Figure 18: Main search queries for internet, digital and platform economics analysis .....	41
Figure 19: Annual scientific production of internet, digital and platform economics .....	44
Figure 20: Average citations per year of internet, digital and platform economics .....	45
Figure 21: Most relevant sources covering the topic of internet, digital and platform economics.....	46
Figure 22: The most local cited sources covering the topic of internet, digital and platform economics.....	47
Figure 23: Source local impact by H-index of journals covering the topic of internet, digital and platform economics .....	48
Figure 24: The most relevant authors covering the topic of internet, digital and platform economics.....	49
Figure 25: Authors local impact by H-index covering the topic of internet, digital and platform economics .....	49
Figure 26: Corresponding author's country in the internet, digital and platform economics field.....	50
Figure 27: Most global cited documents in the internet, digital and platform economics field.....	51
Figure 28: Most cited countries in the internet, digital and platform economics field .....	52
Figure 29: Most relevant affiliations in the internet, digital and platform economics field	53
Figure 30: Collaboration network for countries in the internet, digital and platform economics field .....	54
Figure 31: Most frequent words in the internet, digital and platform economics field.....	55

Figure 32: Word cloud in the internet, digital and platform economics field .....	56
Figure 33: Word dynamics in the internet, digital and platform economics field .....	57
Figure 34: Thematic map representation of internet, digital and platform economics-related keywords.....	58

## LIST OF TABLES

Table 1: The comparison between traditional and internet economy .....	14
Table 2: Benefits and challenges of internet economy .....	21
Table 3: Main information about internet, digital and platform economics data .....	43

## LIST OF APPENDICES

Appendix 1: Summary in Slovene .....	1
Appendix 2: The most representative years and the number of publications in that years for each term used .....	4
Appendix 3: 10 most cited documents in the field .....	4
Appendix 4: Web of Science results for the overview of the main field.....	8
Appendix 5: Web of science results for the overview of the supporting field .....	9
Appendix 6: The most representative years and the number of publications in that years for each term used .....	9
Appendix 7: Bradford's law of scattering .....	10
Appendix 8: Most local cited sources covering the topic of internet, digital and platform economics .....	11
Appendix 9: The most relevant authors covering the topic of internet, digital and platform economics .....	12
Appendix 10: Most global cited documents in the internet, digital and platform economics field.....	13
Appendix 11: Most cited countries in the internet, digital and platform economics field ..	15
Appendix 12: Most relevant affiliations in the internet, digital and platform economics field.....	16
Appendix 13: Collaboration network for countries in internet, digital and platform economics .....	17
Appendix 14: Most frequent words in the internet, digital and platform economics field..	19
Appendix 15: Tree map in the internet, digital and platform economics field.....	20

## LIST OF ABBREVIATIONS

sl. – Slovene

**AB** – (sl. povzetek); abstract

**ACM** – (sl. Združenje računalniških strojev); Association for Computing Machinery

**ESG** – (sl. okoljevarstvo, sociala in upravljanje); Environmental, Social, and Governance

**ICT** – (sl. informacijsko-komunikacijska tehnologija); information communications technology

**MCP** – (sl. objava v več državah); multi-country publication

**MIT** – (sl. Tehnološki inštitut Massachusetts); Massachusetts Institute of Technology

**OECD** – (sl. Organizacija za gospodarsko sodelovanje in razvoj); Organization for Economic Cooperation and Development

**P2P** – (sl. vrstnik-vrstniku); peer-to-peer

**R&D** – (sl. raziskava in razvoj); Research and Development

**SCP** – (sl. objava v eni državi); single-country publication

**TCT** – (sl. teorija transakcijskih stroškov); Transaction Cost Theory

**TI** – (sl. naslov); title

**USA** – (sl. Združene države Amerike ); United States of America

**WoS** – (sl. mreža znanosti ); Web of Science

## INTRODUCTION

The creative and efficient use of information and communications technology is becoming increasingly important to compete and advance in the 21st century. Recent technological breakthroughs have revolutionised business models in ways that have changed the way economic actors interact with business processes. It is crucial to understand the direction in which this new trend is evolving and whether it represents something more substantial than just a deviation from the current economic system. The scope of economic activity on the internet is rapidly increasing and all economic sectors have embraced information communications technology (hereinafter ICT) to increase productivity, expand market reach and reduce costs. In addition, technology promotes economic inclusion, effectiveness and innovation by breaking down information barriers, expanding access and increasing the skill levels required to participate in economy (Ungureanu, 2021; Brynjolfsson & Kahin, 2002).

Companies in all industries are now able to design and build business models around technological capabilities to expand their coverage in global markets. This makes it cheaper for people, businesses and governments to do business by dramatically reducing transaction costs. As a result, resources used to create things, such as labour and equipment, become more efficient and productive, making markets and governments faster, cheaper and more convenient. This increased efficiency represents a significant share of benefits from the internet, brings new people to the market and facilitates the creation of economies that might have been previously unimaginable (Nagle, Seamans & Tadelis, 2020; Shumakova, 2020; The World Bank, 2016a). New sectors emerge daily, bringing a host of exciting new research challenges and exploiting these brings endless economic opportunities. While some businesses thrive, others struggle to adapt. For those unable to benefit from newly arisen economic opportunities due to various technological or financial obstacles, these changes mean disruption and displacement. However, for those that want to fully benefit from the robust internet-driven changes tomorrow, they must act now to eliminate the risk of losing competitive advantage (Anderson & Wladawsky-Berger, 2016; Ghosh & Goel, 2016; Paglieri, 2022). Although there is extensive literature on the role of ICT in economy, much of it is inconclusive. The field is not well defined in terms of economic theory, so many of the theoretical assumptions and historical observations on which economics is based need to be re-examined, and there is a great deal of work to be done in this area (Bauer & Latzer, 2016).

The purpose of this Master's thesis is to systemize the effects of the internet for economy and its economic agents and to identify theoretical consequences and research fields that have emerged in economics due to the internet. Accordingly, the Master thesis will show whether the literature adequately addresses all the relevant issues or are there any potential research gaps.

In examining the field of internet economics, this Master's thesis will address the following two research questions:

- How has the terminology relevant to the field of internet economics evolved over time?

– Which research topics are addressed within the internet economics field?

The aims of this Master's thesis are to (1) investigate the terminology used and provide an overview of relevant definitions of internet economy and economics by conducting a comprehensive literature review of a high number of publications covering this booming field, (2) link the field to relevant economic theories, such as transaction cost theory, (3) propose a typology of key economic impacts and (4) conduct a bibliometric analysis of the internet economics field. The purpose of the latter is to highlight its growth and development over time, thereby revealing terminology in terms of synonyms, generic and subordinate terms used and to examine the current research areas.

The described analyses will be based on the selected relevant literature, consisting research monographs, research articles and other academic documents. This will help define distinct features of observed phenomena, give systematisation and undertake an analytical evaluation of the issue at hand. Synthesising past research findings is one of the most important tasks for advancing a particular line of research.

This Master's thesis consists of three main chapters, each with corresponding subchapters. The first - theoretical - chapter will provide an overview of the internet's role in light of recent developments and innovations in the significant area of economic activity. In addition, the first part will point out the internet's general functionalities, accounting for its role in economy and specific characteristics that account for its vital role and massive presence in economic theory. Since the internet is a universal medium connecting all economic actors, it was naturally used for many economic activities, giving rise to the phenomenon of "internet economy" and the related "internet economics". Thus, the Master's thesis will discuss this new dimension of the economy. Based on Web of Science (hereinafter WoS) database of literature (Clarivate, 2022), revealing terminology in terms of synonyms, generic and subordinate terms will also be further discussed in this chapter to fully understand the dynamics and diversity of this research field. In order to analyse the difference in the terminology used and the comprehensive similarities, this chapter will, in detail, present the timeline of the introduction of relevant terminology and the timeline according to peak publication years. The number of related publications, key research areas, peak publication years and leading countries will be analysed and presented for each new term used. In this respect, this new economic normal will be compared to the characteristics of traditional economies. Changes brought about by the internet to our economies also impact the economic science and the issue it addresses. This is why a similar analysis will be provided also for the field of internet economics, following the same methodological approach to make the comparison between the two even more straightforward and convenient. The first chapter of this Master's thesis will provide a comprehensive review of the benefits and challenges for all economic agents impacted by the fast-developing internet economy.

The second chapter connects the consequences of the internet to transaction cost theory and defines three fields within economics where these consequences can be analysed, i.e. inclusion, efficiency and innovation. The last part of this chapter is devoted to discussing the



internet-related market failures and internet induced market power, calling for regulation of the field.

The third chapter of the Master's thesis will entirely be dedicated to the bibliometric analysis of the economics literature, related to the internet and its consequences. Bibliometric analysis is a popular and rigorous method for exploring and analysing large volumes of scientific data (Aria & Cuccurullo, 2017), which will complement the theoretical part of the thesis by utilizing the information collected from Clarivates' Web of Science database, using the StudioR (Clarivate, 2022). In this chapter, I first explain the methodology of bibliometric analysis, then the sample of the relevant literature, different types of analyses and, finally, the results.

## **1 THE NEXUS BETWEEN THE INTERNET AND ECONOMY**

Before the internet, the world was substantially different from what it is now, but with its emergence and growth at the end of the 20th century, the unwritten rules of the economy and life were upended. Modern society is being significantly shaped by its developments, since it promotes connectedness between people and information and significantly affects the economy, society and culture. The internet was once a crucial tool for enhancing communication, but it has evolved into a pervasive technology serving all economic sectors. It has changed the way traditional activities are carried out. It has also introduced new rules, which brought new products and services, as well as enabled streamlining of existing ways of doing business (Brousseau & Curien, 2007; Brynjolfsson & Kahin, 2002). "There is broad consensus that computers and the internet are producing rapid changes in how goods and services are produced, the nature of the goods and services being offered, and the means by which goods and services are brought to the market." (Brynjolfsson & Kahin, 2002, p. 13). Therefore, it is clear that modern technology has spread through computerization, standardization, and digitalization to a wide range of areas of people's daily lives and the workings of the economy. Much like electricity, water, and transportation networks, the internet is now commonly regarded as a critical infrastructure in OECD countries (OECD, 2013). Without a doubt, we have entered a time of fast change and, most likely, the most significant area of economic activity in the near future. Thus, these developments are an objective and inevitable movement forward (Magomedov, Murzaev & Bagov, 2020).

The internet is a catalyst of economic practices and theories, and its social, political, organizational, and technical impact has been the subject of growing interest for decades now (Anderson & Wladawsky-Berger, 2016). According to Brousseau, & Curien (2007), there are three general functionalities of the internet accounting for that:

- Plasticity, a term reflecting its ability to create or close information spaces, bring new players to the network, and input a wide range of content of all kinds. Unlike what was conceivable with network technology before the internet, all of these actions are achievable with outstanding dynamic flexibility;

- Transversality, i.e. the ability to interact "seamlessly" across economic, geographic, political, or social boundaries. As a result, the internet is simultaneously transnational, trans-industrial, and trans-user, connecting large enterprises, small professionals, and the general public through its open, low-cost standard;
- Selectivity, a phrase describing the ability to subtly modify the exchange of information according to the characteristics of the senders, recipients, and dissemination channels. For economic agents, this selectivity improves access to pertinent information about their strategic activities and facilitates the selection of the best partners and goods for mutual trade.

Moreover, Brousseau, & Curien (2007) also talk about three specific characteristics that account for the internet's vital role and massive presence in the economic theory. The first one is the technical capability of the internet, particularly its capacity to serve as a medium for extremely diverse information management modalities, and to encourage an increasing "digitization" of activities. Thus, economic actors are encouraged to raise the informative intensity of their offerings and multiply their informational exchanges by accessing these flexible, linked networks. Secondly, it is a modular and decentralized but global network. It acts as a platform for the delivery of services built on information and innovation and deployed in a global space. The logic of this modular and decentralized network makes it an archetype of modern economies: where competitiveness is strongly correlated with the capacity for innovation, where products and services are experiencing an increase in informational intensity, and where the economic space is increasingly transnational. Thirdly, the internet enables easy exchange of information. The whole economy is gradually absorbing the organizational changes brought about by the digital networks federated by the internet. It gives economic agents the power to precisely manage the information they exchange in line with specific preferences of the issuing and receiving parties. The latter is one of the internet's key characteristics. This feature establishes the uniqueness of the internet as a network and the nature of the economy it supports.

Thanks to the three above-mentioned characteristics as well as the internet's plasticity, transversality, and selectivity in information management, the definition and coordination of informational - and more broadly economic and social - activities were freed from various restrictions. As a result, economists and other decision-makers rather than just network economics experts should also pay attention to the internet (Brousseau & Curien, 2007).

As the internet became a universal medium connecting all economic sectors, it was naturally used for many economic activities, giving rise to the phenomenon of "internet economy" and the related "internet economics" (Brousseau & Curien, 2007). The term internet economy captures the changes that internet has caused in the economy, while the resulting effects and consequences are addressed by a subdiscipline of economics, i.e. internet economics (Kenton, 2022; Surbhi, 2019; Tyagi, 2022).

## 1.1 Internet economy

For several years, digital has been an appendage of "business as usual." In recent years, however, characterized by the advancement of information, computers, and communications, digital has tilted and become "business as usual", turning the tail into a dog (Anderson & Wladawsky-Berger, 2016). The growth of the internet has created a new dimension of the economy, one that knows no borders between countries and no predefined working hours. It represents a new challenge for businesses, yet a new market potential. In essence, it is based on the real economy, works with it, complements it in some areas, and partially replaces it (Brynjolfsson & Kahin, 2002). However, with the introduction of ever more popularized digital technologies throughout the economy recently, it is becoming more and more the economy itself, making it impossible to separate it from the rest of the economy (Ungureanu, 2021).

Given the massive changes brought about by the internet to our economies, an evolution in the terminology describing the changed landscape can also be observed in literature. The review of literature undertaken for the purpose of this Master's thesis reveals five terms, used to describe how interactions between economic agents and markets altered due to the internet, ranging from internet economy to digital economy, web economy, new economy and more recently also to platform economy (Chen, 2020). Figure 1 shows how the mentioned terms were introduced by scientific literature, where the year indicates the first mention of a particular term in the literature. The timeline shown in Figure 1 was developed by using publication data available on 17th October in Clarivate's Web of Science database. Beginning with the term "internet economy", a total of 294 documents were found, with the retrieval period including the years until October 2022. However, in order to ensure the validity of the data, I first filtered the results by searching for the "internet economy" keyword in the abstract or title only. This gave 267 relevant results. Secondly, I filtered the documents, including articles, early access, review articles, books and book chapters, and finally, 138 valid results were obtained. The process was repeated with all other keywords, applying the same filters to ensure validity. "Digital economy", the keyword with the largest number of results, resulted in 7604 publications. However, the number dropped substantially, to 3610, after looking for the keyword in the abstract or title only and even more, to 2228, after limiting the document type. Moreover, with only 14 results initially, "web economy" showed no difference after the first filter. However, after the second, four documents were eliminated due to not matching the desired document types. Concerning the "new economy", I again analyzed the period until October 2022, as with all the other keywords. I obtained 2731 results without filter, 2157 after the first filter, and 1320 after the second. Finally, through the retrieval of the "platform economy" keyword, 592 results were obtained, with 405 remaining after choosing an abstract or title and 342 after filtering the document type.

*Figure 1: Timeline of the introduction of the relevant terminology*

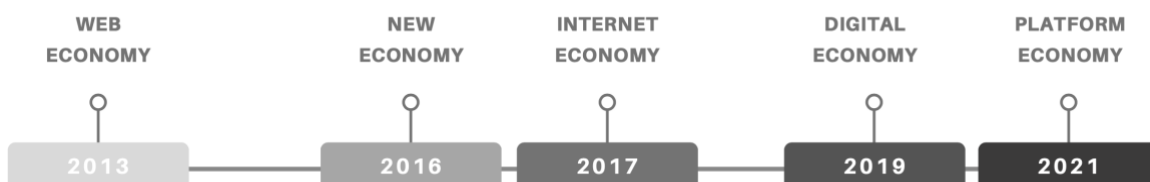


*Adapted from Clarivate (2022).*

According to the Web of Science database (Clarivate, 2022), in 1999, internet economy, digital economy, and web economy started being addressed by literature. The development of different terms reflects the diversity of impacts generated by the use of internet for different economic agents and segments of economies. With the growth of the internet and its transformative power, other concepts also began to emerge, such as new economy in 2000 and, after a longtime gap, platform economy in 2016.

However, these different expressions do not only differ in the years they emerged; there are also significant differences between the years in which they were "popularized" and achieved their "peak" in literature. Figure 2 portrays the years with the highest number of publications related to a particular concept. The exact number of publications per peak year for an individual term can be seen in Appendix 2.

*Figure 2: Timeline of relevant terminology according to peak publication years*



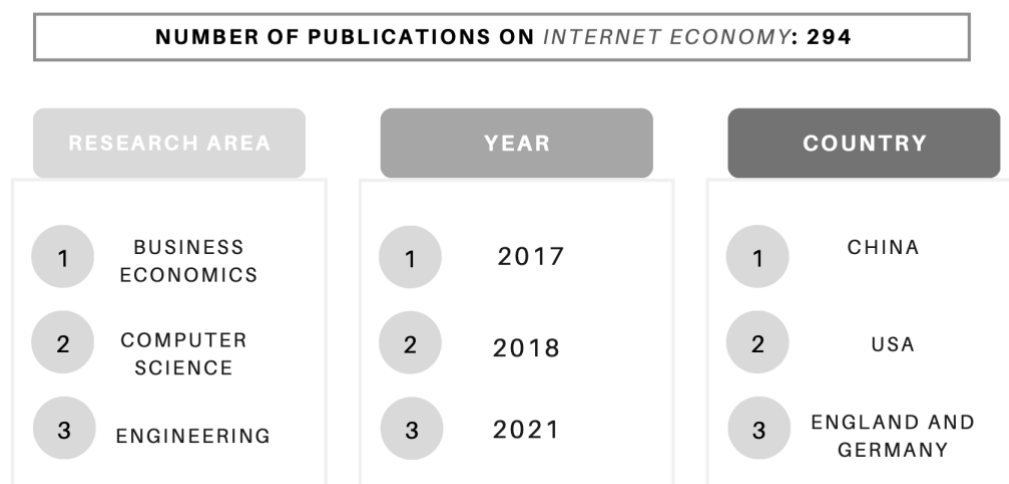
*Adapted from Clarivate (2022).*

To start with, web economy was popularized in 2013, when the largest number of academic documents addressing this concept were published. However, this does not mean that other concepts were not present at that time or that they were not popular. In fact, some were even more popular that year. However, the phrase "web economy" peaked in 2013. New economy peaked next in 2016, followed by internet economy in 2017. The latter was increasingly on the rise in 2018 as well, with 35 documents, only two less than in 2017. 2019 was the peak year for digital economy, whereas platform economy emerged and was popularized last in 2021. Its late popularity is due to the recent topic of monopoly power of platforms, which has been on the rise in recent years.

To gain a deeper understanding of how well represented the five aforementioned terms are in the existing literature, this chapter continues by addressing them separately to highlight their main definitions and show not only the peak publication year, but also the total number of publications, the key research areas, the key publication countries and their representation in publications over time. The five terms are discussed below in the order in which they were introduced in the literature.

In 1999, internet economy emerged, which is defined in literature as covering "the full range of our economic, social and cultural activities supported by the internet and related information and communications technologies (ICT)." (OECD, 2013, p. 6). In fact, a basic understanding of internet economy makes implicit reference to the idea that the internet forms the core infrastructure of the economy. The internet is used for a significant share of all types of economic transactions, including production, sales, distribution, and consumption. According to this remark, the value of all economic operations carried out on or supported by the internet is the most expansive definition of internet economy and its broadest understanding (Qian, Lv & Li, 2021). As shown by Figure 3, most of the total 294 publications addressing internet economy are from the business economics field. However, computer science is catching up, with just a few documents less than business. Internet economy, surprisingly, is extensively covered by publications from the field of engineering as well. 2017, 2018, and 2021 are the key publications years for internet economy, with 2022 and 2020 next and almost equally important. China and the United states of America (hereinafter USA), as well as two European countries, England and Germany, are "leading" in terms of geographical representation of publications dealing with this term. When reviewing the literature on internet economy, there are a lot of environmental, social and corporate governance (hereinafter ESG) related documents, which corresponds to the research area covering this concept since a number of documents fall into the "environmental sciences ecology" category. Moreover, semantic web technologies also stand out, which can be seen in the ten most cited documents in the field, shown in Appendix 3.

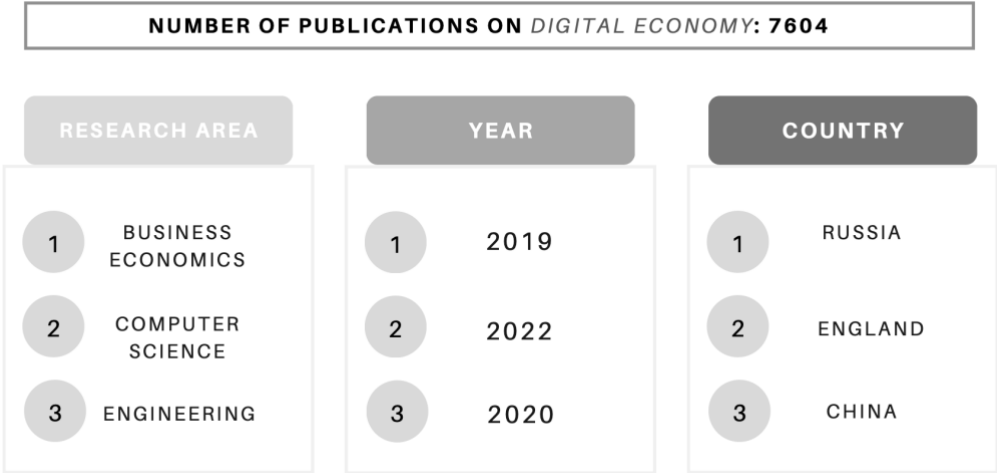
*Figure 3: The number of internet economy related publications, key research areas, peak publication years and leading countries*



*Adapted from Clarivate (2022).*

Digital economy is the most widely represented among all five terms used and definitely the most widely used expression in the context of the role of the internet and its developments in economic theory, according to the Web of Science database (Clarivate, 2022), that identifies 7604 publications addressing digital economy. It is defined as "the economy of the internet" (Gazieva, Magomaev & Magomaeva, 2020), p. 122), while in broader terms, it "includes the combined value of information and communications technologies (ICT) production and digital inputs to the rest of the economy" (Chen, 2020, p. 1). It is a way to develop an economy through electronic networking and earn money through numerous online enterprises. This is the economy of "the world of the web," which is fundamentally comparable to global economy but involves very different procedures and business models. Companies implement digital economy as they invest in new technology, use them to network with other organizations, and put new cross-boundary work patterns and processes in place (Orlikowski & Iacono, 2000). As shown by Figure 4, many similarities can be identified in terms of primary research areas, comparing digital economy to other terms used. In fact, the three main research areas are identical to research areas we have identified for internet economy. Digital economy did emerge in literature relatively early; however, it became widely used only in the last few years. This can be explained due to its connectivity to digital transformation since digital economy is often used to describe the digital technologies leading the nowadays trendy and intensively studied topic of digital transformation. What came as a surprise is identifying Russia as the leading country in terms of the number of publications.

Figure 4: The number of digital economy related publications, key research areas, peak publication years and leading countries

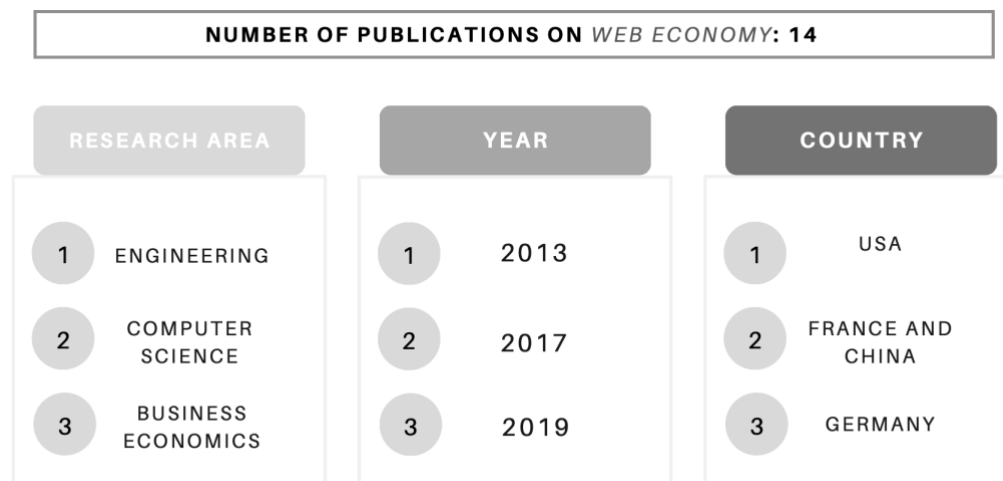


Adapted from Clarivate (2022).

While the above-mentioned digital economy is a prevalent and widely used term, the term web economy is right the opposite. With only 14 results in the Web of Science database (Clarivate, 2022) (see Figure 5 and Appendix 4), it is the least explored and popularized term out of the five. Web economy is a "field which investigates the economic motives and implications of the web." (Vafopoulos, 2012, p. 6). Even though it is now a widely discussed

term, it has significant contributions. To add to that, the research agenda of economics and business literature has been significantly impacted by the development of the internet and the web. Figure 5 shows that publications addressing web economy differ from publications clustered around other five terms in several aspects, yet the name web economy also shares some similarities with them. The first similarity being the leading country. As with many other terms, the USA is among the leading publication countries, only this time, another European country, France, follows it. China and Germany again appear among the top three countries. What is different is that publications from the research area of engineering are most represented in this case; however, publications from computer science are almost equally represented with only one less document. Finally, peak publication years include 2013, 2017, and 2019 indicating that the small number of publications is spread throughout the studied period.

*Figure 5: The number of web economy related publications, key research areas, peak publication years and leading countries*



*Adapted from Clarivate (2022).*

As shown by Figure 6, the total number of publications on new economy is 2731. There is hardly a single definition for new economy; in fact, the term itself is tied to a variety of scientific subjects. Nevertheless, one of the most noticeable aspects of the new economy has been its connection to information processing costs. On this basis, it can be classified as an information economy (Dolgin, 2012). By looking at the three main research areas (Figure 6), the diversity of publications dealing with new economy is evident since they range from the field of business economics on the one hand, to environmental sciences ecology on the other. In particular, there are publications from such fields as government law, sociology, and even geography to some extent. Compared with other terms used, most recent years do not appear among peak publication years. Documents addressing the new economy continue to appear in most recent years, but older documents are prevailing. The USA, China, Germany, and England are the countries where most documents on internet economics are published and the same conclusions hold for the term new economy as well. The high number of publications on new economy can be explained by the diversity of the field and

its spread throughout various categories. Documents covering the new economy phenomenon are in a large number, not connected to the internet in the economy, but rather to other issues, such as the housing crisis, ecosystem services, and other unrelated topics. What is more, the ten most cited documents in this field also show that new economy related publications do not cover only economic topics. Therefore, a large number of the results do not necessarily speak about its relevance for economic theory in comparison to others.

Figure 6: The number of new economy related publications, key research areas, peak publication years and leading countries



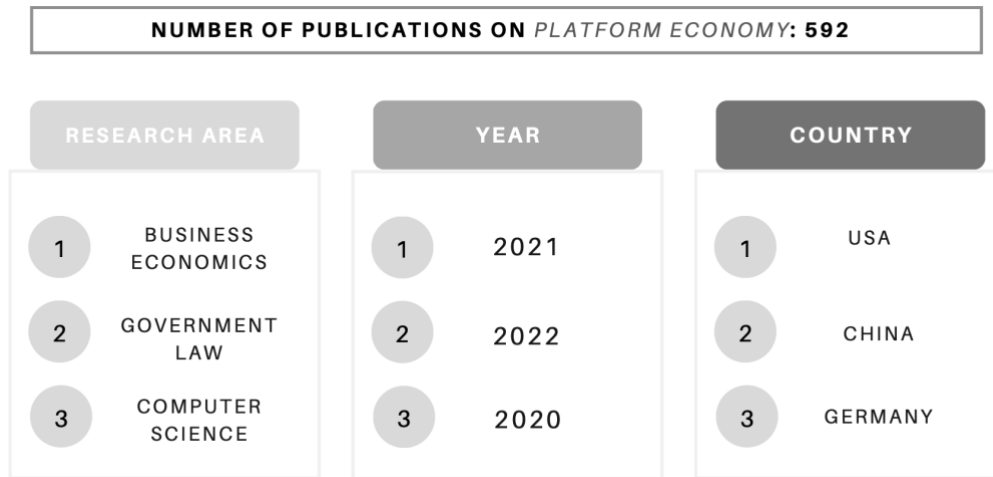
Adapted from Clarivate (2022).

The last among the five studied in this chapter is platform economy. Evans (2003, p. 331) defines it as "a study of the unique economic phenomena of specific two-sided markets in traditional market economics." The term describes a set of internet-driven digital technologies that aim to lower the transaction costs of organizational rules and services and achieve a new level of economic integration in which resources are closely woven into traditional industries. What is crucial to understand about this term is that a large number of platform enterprises are at the forefront of this movement, designing and implementing a full suite of platforms, consumers, and service providers and influencing upstream and downstream enterprises (Xue, Tian & Zhao, 2020). Occasionally, some even associate the term "platform economy" with individuals who create and publish a variety of content in different formats on a multitude of websites and hence refer to it as the economics of web creators (Humar, 2021). According to Figure 7, business economics is at the forefront of research areas, which is similar to publications on internet economy. Government law comes second and computer science only third. Since platforms gained their popularity in the recent year, the term platform economy follows that trend as well, with most publications in the 2020—2022 period. Furthermore, the USA, China, and Germany are again the leading countries for this term, which puts platform economy side by side with internet economy and web economy, as evident from their main characteristics described above. The number of results in the Clarivate's Web of Science search is a difference it possesses in comparison to internet economy, with 592 publications on platform economy, which is more than 294, respectively. Finally, what stood out about this concept can be already seen just by looking



at the title of the ten most cited documents in the field. The popularity of shared economy is significantly represented in this literature since studies on this topic can be easily found when reviewing it, with the two most representative cases being Uber and Airbnb.

*Figure 7: The number of platform economy related publications, key research areas, peak publication years and leading countries*



*Adapted from Clarivate (2022).*

A comprehensive overview of these five terms used, provided a great insight into the topic and provided a comparison between different concepts that emerged throughout the years. Literature greatly differs in the usage of those, but primarily internet economy, digital economy, web economy, new economy, and platform economy are all used to describe the economic activity brought about by the billions of daily connections made online between individuals, businesses, devices, data, and processes. As evident from above, internet economy appeared first, in the second half of the 1990s, and was used in a large number of documents covering the topic of interest. However, judging by the number of publications resulting from each term, digital economy, which also emerged at that time, is overarching. Nevertheless, this term is separated from the topic of internet economy since it is present in the publications, which primarily study more technical aspects of the internet and not so much the economic ones. The case is similar with new economy. Despite the fact that it dominates with 2731 results, it covers such an extensive number of fields, and it is in many aspects too broad a term to describe the precise role of the internet in economy. Therefore, no matter the higher number of publications resulting from digital, new, and even platform economy, internet economy is used in most publications that describe the internet's role in economic theory. The term prevailed already in the publications at the beginning, and its importance is only increasing throughout the analyzed period. Content-wise, it best describes all economic operations that use or benefit from digital data. Therefore, this Master's thesis will apply the "internet economy" term as a name for this evolving, vigorous and dynamic field.

The phenomenon of internet economy itself represents a new engine for economic growth and has an influence on the growth of several businesses and fields, while playing a

significant role in accelerating the emergence of the new economic normal. It refers specifically to the recent transformation of all economic sectors through the computer-enabled digitalization of information. Its characteristics sped up conventional economics' transition, modernization, and creative development by integrating the internet with the traditional industrial sector (McKnights & Bailey, 1997; Plaksin, Abdrakhmanova & Kovaleva, 2017; Qian, Lv & Li, 2021). According to researchers, the development of internet economy is influenced by supranational, national, and regional factors. Agarwal & Wu (2015) discuss the significance of supranational factors like the growth of free trade, companies' willingness to conduct business abroad, information and communication technologies that give businesses worldwide a competitive edge, and the creation of infrastructure for international trade and its security. Moreover, on the national level, groups of factors, the availability of the necessary technological, financial, and social infrastructure, as well as government support and encouragement of innovation and investments, the rule of law and other elements, are all taken into consideration. The researchers claim that the biggest obstacles to the development of internet economy are the technological divide between industrialized and developing nations. Finally, the study by Knight (2015) focuses on examining regional variables influencing internet economy development. He claims that primarily agricultural states need to catch up in this regard since they do not have access to broadband internet. Therefore, appropriate infrastructure is required to close the gap between the country's agricultural and other regions.

The fact that numerous studies were already devoted to internet economy speaks about its popularity and, all in all, its importance. Research conducted by the Organization for Economic Cooperation and Development (OECD) and by a number of consulting companies, such as McKinsey or BCG, are among the more well-known and reputable studies on this topic (Plaksin, Abdrakhmanova & Kovaleva, 2017). However, there has also been a large number of studies dedicated to the discrepancies between internet economy in comparison to the old, or rather traditional models.

Many of the theoretical assumptions and historical observations that underlie "old" or rather "traditional" economy need to be re-examined in the context of internet economy. By focusing on the decisions and actions of logical individual decision-makers in situations of scarcity, traditional economy has developed a very effective framework. In this highly simplified framework, resource scarcity, diminishing marginal utility, and rising incremental costs result in a negative feedback loop that drives economic processes toward an equilibrium state. A significant achievement of traditional economy has been the thorough study of these equilibria on micro and macro levels. The central idea of market equilibrium, which has proven to be such a powerful tool of economic analysis, becomes less important in internet economy. It is perhaps best viewed as a special case of a more general theory of an ever-changing economy. However, a lot of ideas that were fundamental in the "old" economy are now changing in a society where digital technology is the dominant force. Exceptional internet-based mechanisms are speeding up innovation, reducing the distance between business owners and customers, and modifying the management techniques of conventional business models. The strength of traditional economic models resided in the

capacity of established businesses to institutionalize innovation, leveraging their superior skills in mature product sectors to expand into emerging ones (Bauer & Latzer, 2016; Wu, Chen & Pan, 2019). The prominence, and often even dominance of new enterprises as innovators in the ICT industries, has been a defining element of internet economy. Research and development (hereinafter R&D) is vital in both; whereas traditional models rely on research investments to drive product innovation, new, internet economy relies far more on development spending. In internet economy, businesses concentrating on creating goods for niche new markets have an advantage that rewards narrowly focused new entrants over diverse established businesses (Paglieri, 2022). Finally, the nature of markets and goods, production methods, payment methods, the scale of capital needed to operate internationally, and the human capital requirements were also all transformed as a result of the changes brought by the digital age. In addition, the productivity was increased, new market access channels were opened, and businesses were exposed to novel concepts, technology, management, and business models. And all of this at relatively low costs (Arbache, 2018). The comparison between traditional and internet economy, based on their main characteristics, can be seen in Table 1.

There is still competition between traditional and internet economy in some fields. Many traditional economy businesses are adopting the practices of internet economy in recent years, and, as a result, the gap between the two phenomena is decreasing (Brousseau & Curien, 2007). With innovative approaches and newly applied techniques, internet economy shows no signs of slowing down any time soon (Paglieri, 2022). Organizations must adjust their organizational structures and cultures to better adapt to changing market environments and business models. With its prevailing hierarchic organization, the production-focused industrial economy of the 20th century will not work and deliver promising results and innovation in the fast-changing internet economy. In essence, the transformation path and the adoption of new internet economy practices are quite demanding, and businesses must recognize the obstacles that stand in the way of their success and take appropriate action. There is a need to adapt to very rapid changes in the environment and the conditions of intense competition in the market (Anderson & Wladawsky-Berger, 2016).

*Table 1: The comparison between traditional and internet economy*

	<b><i>Traditional economy</i></b>	<b><i>Internet economy</i></b>
Framework	The explanation of economy through the study of resource scarcity, diminishing marginal utility, and rising incremental, as well as through market equilibrium on micro and macro levels.	The explanation of economy through internet-based mechanisms that are speeding up innovation with digital technology as a dominant force.
Strength of the Model	The capacity of established businesses to institutionalize innovation.	Dominance of new enterprises as innovators in the ICT industries.
Research and Development	Relies on research investment to drive product innovation.	Relies far more on development spending.
Nature of goods	Physical products.	Physical and digital products.
Nature of market	Brick-and-mortar stores.	Online through e-commerce platforms.
Payment method	Cash, credit cards, debit cards, e-wallets, and mobile payments.	Credit cards, debit cards, e-wallets, and mobile payments.
Human capital requirements	High requirements.	Low requirements.
Key benefits	Increased safety, no disruption.	Increased productivity, new market access channels, novel concepts, all at relatively low costs.

*Adapted from Arbache (2018); Bauer & Latzer (2016); Wu, Chen & Pan (2019); Paglieri (2022).*

## 1.2 Internet economics

The terminology used to describe the changing landscape in the literature has evolved due to the significant changes the internet has made to our economies. However, with the advent of the internet, science is also witnessing new developments. Three terms, i. e. internet economics, digital economics, and platform economics, evolved as a result of further analysis of this fast-changing field and all three correspond to the terminology mentioned in the previous chapter of the thesis. While literature extensively utilizes the terms internet economy, digital economy, web economy, new economy, and platform economy to define the economic activity resulting from billions of connections made daily between people, businesses, devices, data, and processes online, terms such as internet economics, digital economics, and even platform economics analyze and explain the resulting effects and consequences. While those three terms are significantly represented in literature, "web economics" does not exist at all. Additionally, "new economics" does not fit in the scope of this research. While "new economy" explains the internet's role and contribution to the economy well, the term "new economics" does not study the effects of the internet in relation to the topic, but instead covers many different fields and is, therefore, not a part of this Master's thesis analysis.

Utilizing publication information retrieved on 25th November from Clarivate's Web of Science database, the complete overview of these three terms was developed, which can be seen in Appendix 5. Firstly, "internet economics" provided a total of 223 results. However, with the first filter applied, which limited the keyword "internet economics" to the title or abstract only, the results dropped to 43. After the second filter, similarly happened; choosing only articles, book chapters, and early access as a document type, half less results corresponded to that condition. The retrieval period included the years until November 2022. Secondly, after the retrieval of "digital economics", 110 results were obtained, with a massive drop after both filters: 35 results after the first and 17 after the second. Finally, "platform economics" provided the smallest number of results, i. e. 49 results. However, the drop after the filters was not that substantial. When requesting "platform economics" in the abstract or title, 30 publications still corresponded. When filtering by the document type, this number decreased only by four, resulting in 26 total end results.

Based on the above-described analysis and utilizing information from the Web of Science database (Clarivate, 2022), the timeline in Figure 8 was created. The timeline illustrates when a particular term was first introduced in literature.

*Figure 8: Timeline of the introduction of the relevant terminology*

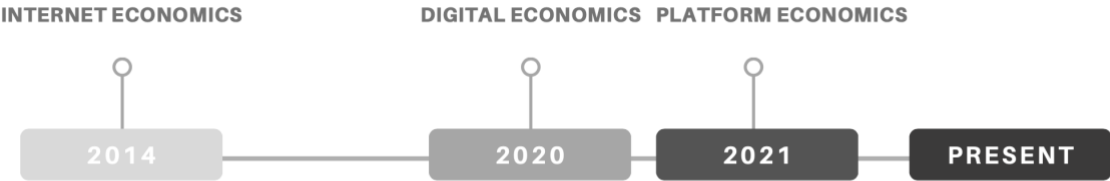


*Adapted from Clarivate (2022).*

Internet economics was first introduced in literature in 1997, which is relatively early compared to the other two terms. Digital economics did emerge in 2001, which was only a few years after internet economics. However, that year, only one related document was published, and one in 2005, while no other scientific documents covering digital economics was introduced until 2013. This pattern can be observed when studying platform economics as well. After a long time gap, the term platform economics appeared in 2014 due to a recent popularity of platforms, since they had been on the rise in recent years and no earlier than that. The late appearance of digital economics and platform economics corresponds to the findings discovered above, where both digital economy and platform economy were popularized last, years after other terms.

Figure 9 shows the popularity of the terminology according to the peak publication year, where the terms follow the same sequence. The number of publications per peak year is presented in Appendix 6. Internet economics peaked with 54 documents in 2014, digital economics in 2020 with 59 documents, and platform economics in 2021 with only 13 documents. The time gap between internet economics on the one hand and digital and platform economics on the other again shows the same pattern as in Figure 8.

*Figure 9: Timeline of relevant terminology according to peak publication years*

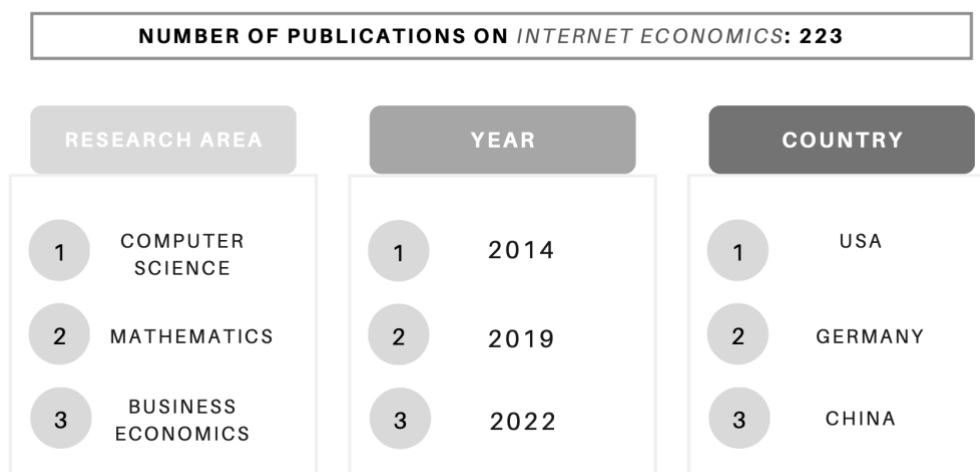


*Adapted from Clarivate (2022).*

Below I highlight the most important characteristics of the three terms presented in Figure 9. This helps understand how well-represented each of the three terms is in the existing literature.

The term internet economics was first used in 1997 in our sample of surveyed literature. Since then, it has become a widely used expression. McKnight & Bailey (1997, p. 4) have characterized it as "a growing field that encompasses the technology, economics, and policy surrounding the internet." Figure 10 summarizes the characteristics of 223 publications identified through our extraction of publications from the Web of Science database (Clarivate, 2022). Key internet economics publications are primarily computer science, mathematics, and business economics related, where mathematics and business economics are relatively equally represented research areas. Moreover, most documents addressing internet economics were published in 2014, 2019, and 2022, while the related literature is predominantly published in the USA, followed by Germany and China.

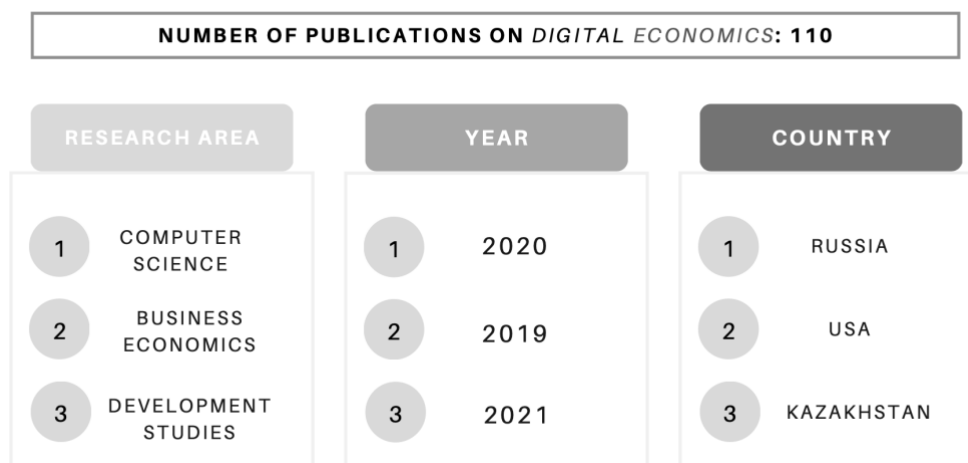
Figure 10: The number of internet economics related publications, key research areas, peak publication years and leading countries



Adapted from Clarivate (2022).

While internet economics is a prevalent and widely used term, digital economics is also extensively represented in literature, with 110 results. Research on digital economics explores "whether and how digital technology changes economic activity" (Goldfarb & Tucker, 2019, p. 3). Main characteristics of digital economy can be seen in Figure 11.

Figure 11: The number of digital economics related publications, key research areas, peak publication years and leading countries



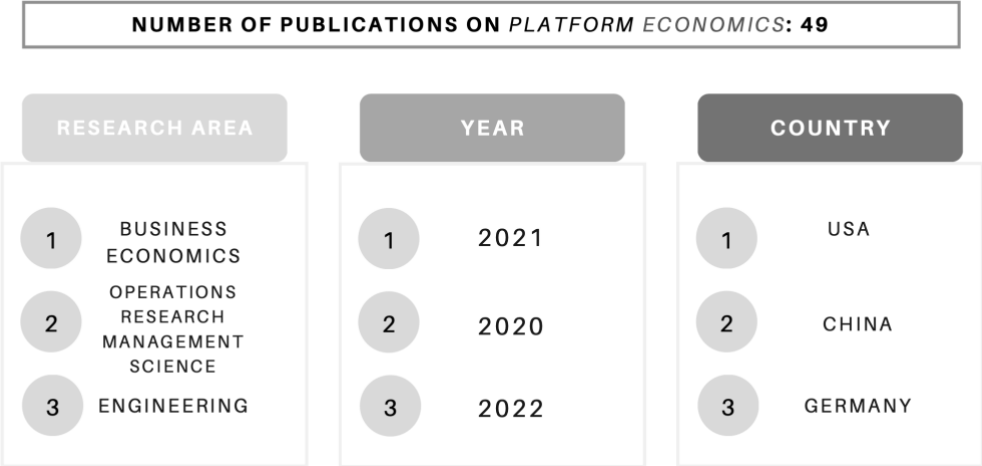
Adapted from Clarivate (2022).

Digital economics investigates how conventional economic models alter as some expenses significantly decline and possibly reach zero. It covers many different domains and classifications and is, therefore, regarded as a way of thinking that affects many areas of economics. In terms of digital economics research areas computer science is the first. It is not very surprising since the term "digital" is closely linked to the emergence of new digital technologies, which the IT practitioners primarily study. Business economics and development studies also significantly contribute to the analysis of this field. 2020 was the

peak year for digital economics. However, 2019 and 2021 were also important for its development. Finally, countries where this terminology prevails are Russia, the USA, and Kazakhstan, with Russia being the dominant one, which is not surprising since the same holds true for digital economy.

As the last of the three analyzed terms, platform economics analyses the significant contribution of multisided platforms, which are striking the 21st century development to the economy and its developments (Mansell & Steinmueller, 2020). Platform economics provided 49 results, less than the previous two terms. The small number of results is due to the early stages of the research, since the topic of internet platforms is still relatively new. Reflecting on the Web of Science analysis (Clarivate, 2022), business economics is at the top of platform economics research areas, with management science and engineering right behind. In terms of the prevailing publication years, the last three years, 2020, 2021, and 2022 prevail, corresponding to the increasing popularity and importance of digital platforms, which are the subject of interest of many researchers and practitioners in economic theory. Finally, the USA, China, and Germany are the countries where platform economics is the most extensively represented.

Figure 12: The number of platform economics related publications, key research areas, peak publication years and leading countries



Adapted from Clarivate (2022).

**1.3 Benefits and risks of economic agents in the internet economy**

To survive and optimize key performance metrics in the continuously developing internet economy, modern business conditions provide and encourage economic agents to transition to a digital operating format (Anderson & Wladawsky-Berger, 2016). There are three groups of economic agents that greatly benefit from the fast-growing role of the internet in the economy: (1) Businesses, (2) People, and (3) Governments. The incredible benefits for each group are presented in the following chapter and summarized in Table 2.

Businesses substantially improved their performance through the utilization of the internet. Increased productivity, resulting from improved business processes and substantial time



optimization, is one of the most significant benefits for this group of economic agents. This greater productivity comes from greater access to digital goods and services. Additionally, internet economy provides the ability to capture and store data digitally while enhancing faster and more effective processes. Consequently, this enables new and improved competitive advantages through innovation, and boosts competitiveness with access to digital products and services that help with the process and production efficiency. One of the main advantages of internet economy is the reduction in the cost of business processes implementation, meaning internet economy primarily lowers transaction and process costs. As a result, it provides countless new business opportunities by expanding access to new business avenues, opening new business areas and increasing the role in crucial field. It also contributes to the emergence of new markets and increases the size of marketplaces (Anderson & Wladawsky-Berger, 2016; Barmuta et al., 2020; Brynjolfsson & Kahin, 2002; Chen, 2020). In line with the long-term trend toward market liberalization and lowering trade barriers, the emerging internet economy is making business less local, more interstate, and, most importantly, more global. In ways previously only practical for large, well-established businesses from advanced countries, the internet economy now also enables smaller businesses to participate in global value chains and directly contact clients in international marketplaces (Arbache, 2018). Thus, it plays an increasingly important role in growth, capital investment, and other aspects of the economy (Brynjolfsson & Kahin, 2000). The internet helps develop new and improved products since the ability to capture and store data digitally has given businesses a tremendous advantage in identifying customer preferences and using that information to drive their daily operations. Through product suggestions or targeted advertising, personalized information can also help companies offer customers items that better match their preferences or reduce the cost of consumer searches (Chen, 2020). In this regard, digital transformation, one of the most significant phenomena in the scientific and economic environments that reflects changes in society and the economy brought about by the development of digital technology (Pagani & Pardo, 2017; Vendrell-Herrero et al., 2017), plays an increasingly important role, since it increases the ease of identifying customer preferences through digital data capture and storage, enhances the utilization of customer data to drive daily operations, as well as provides the customer data needed for facilitating transactions. Finally, it is reasonable to say that companies that succeed in the digital environment receive higher profits. According to Massachusetts Institute of Technology (hereinafter MIT) Sloan research, those adapting to a digital world are 26 % more lucrative than their industry peers (Anderson & Berger, 2016).

Apart from businesses, people also greatly benefit from the recent internet economy developments. Thanks to the recent developments in e-commerce, consumers may purchase items from anywhere in the world and access the cutting-edge services. Thus, it provides access to a wider selection of goods and services at reasonable rates. What is more, this decreases consumer search costs and saves time. When making purchases, time is a crucial consideration for a user, and this is one of the causes why this type of economy has developed so swiftly (Arbache, 2018). However, the most significant advantage of the internet for people is the most evident: it makes information easily, conveniently, and affordably available. Consequently, it improves customer choice and satisfaction in a number of ways

(Silva, 2021). As a result of that, the internet has increased market transparency. Since customers have become more aware and knowledgeable, retailers can no longer leverage consumers' ignorance about the quality and availability of products to boost their profit margins. Therefore, the internet contributes to consumers' increased purchasing power and greater satisfaction (Bédard, 2016). Greater personalization is another benefit arising from the emergence of internet economy. As explained above, the internet increased the ease of identifying customer preferences, which results in businesses possessing significant advantage in identifying customer preferences and delivering personalized products or services to them (Chen, 2020). The internet also presents new chances for business and employment generation in economy, since it enables greater flexibility in work. Many of the obstacles that previously limited how work activities are carried out are eliminated by internet economy. Due to many advantages it combines working from home has become one of the most popular alternatives to traditional office jobs as a result of technological advancements (Marcus, Petropoulos, & Aloisi, 2022).

The third economic agent benefiting from internet economy are governments. Governments gain access to tools that enable them to provide more and better public services, enhance governance, assess policies, and produce more effective outcomes overall (Barmuta et al., 2020; Chen, 2020). Governments have an excellent potential for providing citizens with information more affordably and precisely. Online tax filing and license and permit applications, for instance, reduce costs for the government and the taxpayer. Moreover, internet economy supports the elimination of the so-called black economy. When transactions are performed digitally, they are easily tracked. Any payment made by a customer to a business is documented. In this manner, there is not a single method for illegal transactions to take place (Pagani & Pardo, 2017). One of internet economy's most evident and frequent advantages is an increase in revenues. Monitoring sales and taxes is more accessible when the transactions are digital. Since every transaction is documented, customers will receive a receipt for their purchase, and businesses must submit the required sales tax payments to the government. This, in turn, boosts the government's revenue, which elevates the nation's total financial status (Marcus, Petropoulos, & Aloisi, 2022). However, the benefits are especially substantial for developing nations. This is due to the potential for considerable competitiveness and productivity gains connected to access to digital goods and services that aid in the process and production optimization, lower transaction costs, and supply chain transformation. As the cost of information and communication technology (ICT) declines, rising economies are encouraged to engage in and adopt digital technologies, giving their businesses access to cutting-edge services at competitive rates (Arbache, 2018).

Table 2: Benefits and challenges of internet economy

	<b>BENEFITS</b>	<b>CHALLENGES</b>
<i>Businesses</i>	<ul style="list-style-type: none"> <li>• Increased business productivity through the greater access to digital goods and services</li> <li>• Increased ability to capture and store data digitally</li> <li>• Faster and more effective business processes</li> <li>• Improved competitive advantages through innovation</li> <li>• Greater process and production efficiency</li> <li>• Reduced costs of business process implementation, lower transaction and process costs</li> <li>• Countless new business opportunities</li> <li>• Expanded access to new business avenues</li> <li>• Increased role in crucial business fields</li> <li>• Emergence of new markets and increased size of marketplaces</li> <li>• Increased presence in international markets, less local and more global business</li> <li>• New opportunities for businesses to participate in global value chains and directly contact international clients</li> <li>• Development of new and improved products</li> <li>• Increased ease of identifying customer preferences and enhanced utilization of customer data</li> <li>• Higher profits for companies succeeding in the digital environment</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate IT infrastructure</li> <li>• Unprogressive internal and external communications and information system</li> <li>• Lack of experience and expertise among top management</li> <li>• Shortage of highly skilled and qualified workers</li> <li>• Absence of a well-established and effective partnership framework</li> <li>• Lack of financial funding and necessary resources</li> <li>• Insufficient competitiveness of applied digital technologies</li> <li>• Inability to recognize risks as threatening, underestimation of potential threats</li> </ul>

(To be continued)

Table 2: Benefits and challenges of internet economy (continued)

	<b>BENEFITS</b>	<b>CHALLENGES</b>
<b>People</b>	<ul style="list-style-type: none"> <li>• Increased access to a wider selection of goods and services at reasonable rates</li> <li>• Ability to purchase items from anywhere in the world and great time savings</li> <li>• Increased access to cutting-edge services</li> <li>• Decreased consumer search cost</li> <li>• Easily, conveniently and affordably available information</li> <li>• Improved customer choice and satisfaction</li> <li>• Increased market transparency</li> <li>• Increased purchasing power</li> <li>• Greater product personalization</li> <li>• New chances for business and employment generation</li> <li>• Greater work flexibility and the rise of "working from home" phenomenon</li> </ul>	<ul style="list-style-type: none"> <li>• Collection of consumer data and related data protection concerns</li> <li>• Increased likelihood for price discrimination</li> <li>• Violation of certain customers' inherent privacy preferences</li> <li>• Common data breaches</li> <li>• Insufficiently developed systems for data protection and cybersecurity</li> <li>• Increased presence of low-quality firms on the market</li> <li>• Decrease in average firm quality</li> <li>• Constraints in accessing the high-quality products</li> <li>• Greater inequality</li> </ul>
<b>Governments</b>	<ul style="list-style-type: none"> <li>• Greater access to tools that enable governments to provide more and better public services and other benefits for the people and the country</li> <li>• Increased ability to provide information to citizens more affordably and precisely</li> <li>• Better support to help governments eliminate "black economy"</li> <li>• Increased revenues due to the ability to monitor sales and taxes through digital transactions</li> <li>• Competitiveness and productivity gains</li> <li>• Great benefits for developing nations</li> </ul>	<ul style="list-style-type: none"> <li>• Conflicts between national security and advantages of free flow of data, knowledge and technology around the world</li> <li>• Tensions between individual rights and community interests</li> <li>• The need to impose restrictions on the free flow of information</li> <li>• Great struggles of less-developed nations</li> </ul>

Adapted from Anderson & Wladawsky-Berger (2016), Arbache (2018), Barmuta et al. (2020), Brynjolfsson & Kahin (2002), Chen (2020).

The excitement around the benefits of internet economy is accompanied by fears and concerns about how its components should be designed to deliver optimal benefits (Brousseau & Curien, 2007). In Table 2, I also present some of the challenges that prohibit businesses from succeeding in internet economy, as well as some downsides for people and governments.

For businesses, inadequate IT infrastructure and unprogressive internal and external communications and information system already present a great constraint. The lack of experience and expertise among companies' top management to implement the necessary changes as well as the shortage of highly skilled and qualified workers present significant challenges as well. An effective framework for collaborating with suppliers, transportation providers, financial institutions, insurance companies, and other partners is essential for a business to succeed in this fast-paced internet economy. Therefore, the lack of such framework is undoubtedly a challenge (Anderson & Wladawsky-Berger, 2016; Barmuta et al., 2020; Brynjolfsson & Kahin, 2002; Chen, 2020). The obstacles that prevent businesses from effectively operating in this highly technological environment are also the lack of financial funding and necessary resources, insufficient competitiveness of the applied digital technologies, and the inability to recognize risks as threatening due to the enormous benefits internet economy brings to the overall environment (Barmuta et al., 2020).

As already explained, companies have a variety of methods at their disposal to determine their customers' preferences, such as collecting data on a customer's personal characteristics and their previous purchases. However, the collection of consumer data by companies can be harmful to people. Firstly, companies can discriminate in pricing based on customers' purchase history. Secondly, companies' data collection practices may violate certain customers' inherent privacy preferences. Thirdly, increasingly common data breaches can seriously harm consumers due to insufficiently developed systems for data protection, cybersecurity and even corporate environment protection (Chen, 2020). Moreover, the presence of low-quality firms on the market, since entry becomes profitable also for them, consequently reduced the average firm quality, meaning it again constraints customers in accessing high-quality products. In addition, internet economy can cause serious harm, causing greater inequality when helping automate jobs since workers are then forced to take lower-skilled and lower-paying jobs (Paglieri, 2022).

Finally, internet economy challenges governments as well. Governments must address the possible conflicts between national security and the significant advantages of the free flow of data, knowledge, and technology around the world, in addition to the tensions between individual rights and community interests. Policymakers must make a difficult decision about information and data flows. On the one hand, governments aim to promote the flow of information across national boundaries to encourage further business, education, technology, and science. On the other hand, to achieve crucial policy goals like eliminating spam, piracy, hacking, safeguarding privacy, public morals, and important economic and financial infrastructure, government officials must impose restrictions on the free flow of information (Spence, 2021). Those challenges are especially concerning for less developed

nations. Internet economy provides enormous benefits for well-established businesses from advanced countries, but less developed nations struggle greatly (Brynjolfsson & Kahin, 2002; Chen, 2020).

The benefits of the internet are clearly several, but so are the risks. To ensure that the benefits of the internet outweigh the risks, expanding access to technology is essential in the first place. Nevertheless, longstanding development challenges must be overcome to achieve faster growth, more jobs, and better services. Firms need an environment where they can thrive, individuals need access to effective education and training systems, and governments need to be more responsive to citizens. The stakes are high, but so are the rewards (The World Bank, 2016a).

## **2 TRANSACTION COST ECONOMICS IN INTERNET ECONOMY**

Over the past few decades, technological advancement has produced exponential performance gains and have dramatically decreased information processing unit costs. It is evident that several transactions that were expensive in the physical world are now frequently delivered for free or almost free in the digital world. In fact, the main advantage of internet economy that has been recognized in the theory and in practice is its effect on transaction costs (Bauer & Latzer, 2016; Brynjolfsson & Kahin, 2000; Nagle, Seamans & Tadelis, 2020). When customers purchase something, they invest time and resources looking for it, evaluating it against competing goods, negotiating a price, and ensuring they get what they paid for - this is referred to as "transaction costs." The internet significantly lowers these costs, making it cheaper for people, businesses, and governments to conduct business (The World Bank, 2016a). The transaction cost theory is thus relevant for explaining the effects of the internet on the economy.

### **2.1 Transaction cost theory**

Transaction cost theory (hereinafter TCT) is one of the earliest attempts to create a complete theory that views the firm's structure as a source of explanation for outcomes, as opposed to considering the firm a "black box" that has no role in explaining such events (Cordella, 2006). The theory offers more chances to gauge how vital transaction costs are to economic performance (Vasiliauskienė, 2011) and argues that the nature of transactions has ramifications for structuring economic activity and the firm's boundary (Shumakova, 2020).

Ronald Coase, a Nobel laureate, proposed the transaction cost concept in 1937 to explain the existence of firms, but the internet era reaffirmed their significance (Naughton, 2013). Coase was intrigued by the fact that, although economic theory held that the market offered the most effective means of coordinating economic activity, no sizable corporation appeared to employ the pricing mechanism to coordinate its internal activities. However, it was understood that employing the price mechanism had costs: negotiations must be conducted, contracts must be written, inspections must be performed, arrangements must be made to resolve disputes, and so forth. These costs, in fact, have come to be known as transaction costs (Naughton, 2013). Transaction costs are "the costs which appear when goods or

services are exchanged, but they are not the costs related to the creation of a good or service." (Gatautis, 2002. p. 55). Williamson (1998, p. 29) defined transaction costs broadly as "the costs of running the economic system of firms." He has claimed that these expenses should be differentiated from production costs and, by contrasting transaction costs with internal production costs, a decision-maker can decide whether to use a firm structure or a source from the market (Chowdhury & Vaidya, 2022; Young, 2013).

The theory holds that every firm incurs costs due to market transactions and, as a result, there are three main categories of transaction costs: (1) search costs, (2) negotiation costs and (3) enforcement costs (Chowdhury & Vaidya, 2022). All three categories are explained in Figure 13.

*Figure 13: Three main categories of transaction costs*

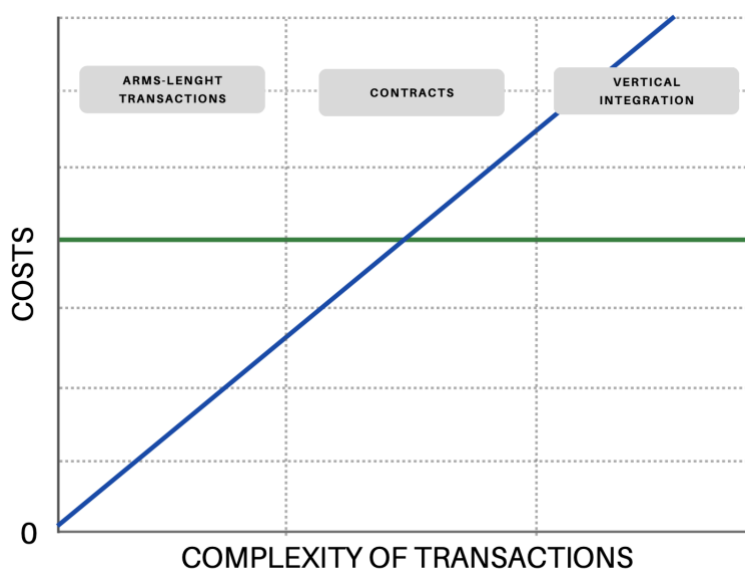


*Adapted from Chowdhury & Vaidya (2022).*

Businesses continuously strive to reduce these costs (Chowdhury & Vaidya, 2022). In addition, Coase's (1937) insight was that the decision between trading on spot markets, signing long-term contracts, or internalizing transactions within the firm, should be made based on which is the most likely to minimize the transaction costs involved (Dobbs, 2000). Understanding when it is more efficient for a transaction between two parties to take place within the market or within an organization has been a key contribution of the theory itself (Chowdhury & Vaidya, 2022).

Figure 14 portrays this trade-off between internal and external transactions. The rising blue line represents the growing transaction costs as the transactions get more complex. Arms-length transactions are effortless. Low-cost transactions are already more complete transactions that require preparation before, during, and after a straightforward transaction. Vertical integration are particularly complex transactions, frequently utilized when it is necessary to synchronize with upstream and downstream activities. The horizontal green line shows the cost of doing any internal business transaction. Since it is effectively a fixed overhead cost, all internal business transaction costs are equal (Patrick, 2016). Theory predicts that where the green line is below the blue line, the firm will wish to complete all the work internally because it is less expensive. The firm will typically internalize the more complicated transactions as it is to be expected. If the expenses are minimal, businesses would prefer to outsource the task. It is because using a third party to complete the task would be less expensive (Dobbs, 2000; Nagle, Seamans & Tadelis, 2020; Patrick, 2016).

Figure 14: The trade-off between internal and external transactions



Adapted from Patrick (2015).

As explained, firms internalize transactions to decrease costs of transactions. Namely, market transactions may be more expensive in certain situations, compared to transactions within the firm due to the cognitive ability and the self-interestedness of human actor, which can be observed through (1) Bounded rationality, (2) Asymmetric information, and (3) Opportunistic behavior of market partners (Williamson, 1998).

Bounded rationality is a behavior that is intended to be rational but is only partially so. It is a core behavioral assumption of transaction cost economics. It causes selective information perception, the use of heuristics, and memory reconstruction, which result in systematic biases (Weber, Mayer & Hall, 2010). The theory assumes that actors are boundedly rational and advocates that the crucial significance of bounded rationality for the economic organization lies in the fact that all complex contracts are unavoidably incomplete, which causes serious contracting problems in the face of opportunism. Contract incompleteness is caused by two mental boundaries: cognitive and verbal limitations. Cognitive limitations restrict actors from coming up with all possible contingencies included in the contract. At the same time, verbal limitations weaken the contract's substance because a concept cannot be included if it cannot be articulated in words. In addition, processing constraints are also a significant limitation because they restrict the person's options at the decision point. In the absence of processing limitations, actors would be able to know every result of a decision and would be able to optimize based on the full range of considerations. Nevertheless, as evidenced by psychological and neuroscience studies, human brains cannot process massive amounts of data (Weber, Mayer & Hall, 2010; Williamson, 1998).

In addition to bounded rationality, asymmetric information represents another self-interestedness of human actors. Asymmetric information, commonly referred to as "information failure," is when one party of an economic transaction has more in-depth knowledge of the relevant subject matter than the other party (Cuypers, Hennart, Silverman



& Ertug, 2021). The asymmetric information often occurs when the seller of a good or service has more expertise than the buyer, but the dynamic can also work in reverse. It causes issues like moral hazard and adverse selection. As the party with more information can exploit the party with less information, asymmetric information reduces the efficiency of the markets, both financial and otherwise. Resources are not used for the most valuable purposes when information asymmetry is significant, and it is feasible to generate excessive profits by defrauding others (Miththrananda & Priyanath, 2020).

The final component underlying the TCT is opportunistic behavior, which Williamson (1998, p. 31) defined as "self-interest seeking with guile." In other words, during economic exchanges, players do not always communicate all the available information, offer unbiased appraisals of anticipated outcomes, or act collaboratively. Like bounded rationality, opportunism is consistent with the idea of self-interested behavior held by many economists, in which individuals act in a way that will maximize their payoffs (Cordella, 2009; Cuypers, Hennart, Silverman & Ertug, 2021).

Businesses take caution when making judgments if they lack sufficient data and they spend money on information search, information assessment, and legal guidance before making a crucial decision on a transaction. In the absence of bounded rationality, asymmetric information, and opportunistic behavior, transactions between partners are efficiently organized. However, these three restrictions limit the effective organization of transactions and, due to the uncertainty of decision-making, generate transaction costs (Hobbs, 1996; Williamson, 1989). Therefore, the three perspectives mentioned above have an inverse relationship with business performance, and organizations can improve their performance only if they reduce those imperfections (Miththrananda & Priyanath, 2020).

## **2.2 Transaction cost approach to understanding the economic impacts of the internet**

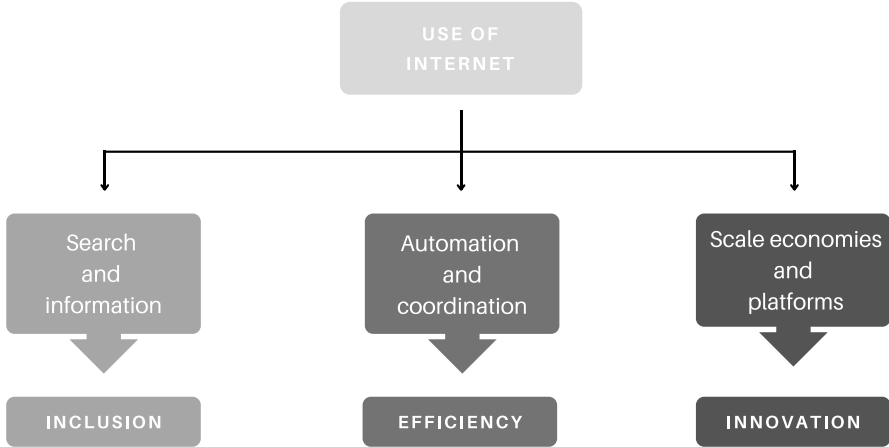
When TCT was first developed, digital transactions were not even a thought. However, they have increased in popularity over the past ten years and form the foundation of a wide range of new business models organizations utilize (Nagle, Seamans & Tadelis, 2020).

As a growing number of transactions are conducted through digital means every day, TCT is becoming widely applicable and a subject of many researchers' interests. The need for a better understanding of how new technologies affect organizational structures, such as markets and hierarchies, has made this theory even more popular in internet economy. The theory itself has, in fact, frequently supported the assumption that those technologies help lessen economic system imperfections (Cordella, 2006). In today's highly competitive business environment, lowering transaction costs has become increasingly necessary for competitive success (Costa, 2017). However, there are still many new challenges regarding the work and application of TCT in internet economics as more and more transactions are mediated by digital means. Therefore, it is essential to consider how this fast-changing business environment contributes to the exploration of TCT in internet economy, how it can illuminate the nature of transactions, how the characteristics of digitally mediated transactions can contribute to the study of TCT to comprehend its significance fully and how

TCT can still serve as a valuable lens for academics and practitioners despite all the changes brought on by digital technologies (Nagle, Seamans & Tadelis, 2020).

There are a lot of convincing examples of how the internet and related technologies have helped businesses, individuals, and governments. They primarily achieve this by drastically lowering the costs associated with conducting economic and social transactions, namely the costs associated with gathering and analyzing information, negotiating favorable terms, and enforcing agreements. However, the internet and related technologies really do produce actual and meaningful advantages (The World Bank, 2016b), presented in Figure 15.

Figure 15: Main channels through which the internet supports economic development



Adapted from The World Bank (2016b).

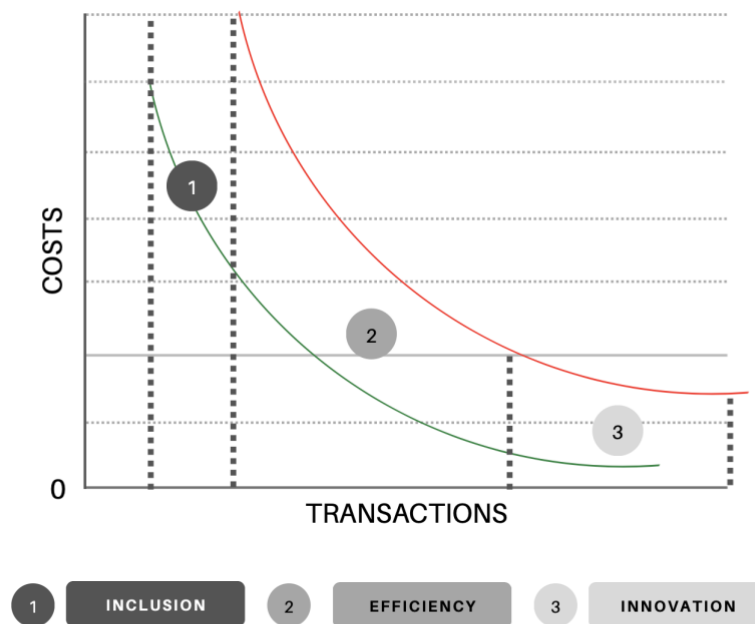
The internet and related technologies (The World Bank, 2016b):

- Enlarge the informational base. For example, due to the ability of lenders to assess creditworthiness using cell phone records, many people in poverty now have access to financial services. Moreover, remote online traders have access to international markets. Additionally, more people can access public services thanks to digital identity. Therefore, the most significant advantage is increased inclusion.
- Reduce the information cost. As transaction costs decrease, activities become more affordable, fast and convenient. Governments can offer services at a reduced cost, workers can become more productive, and businesses can more readily coordinate production. Businesses, people and governments benefit from greater efficiency.
- Create information goods. As with internet platforms, something remarkable happens when processes and even production are fully automated and marginal transaction costs go almost to zero. Services that rely on near-zero transaction costs to offer information or matchmaking are connected to internet economy, encouraging greater innovation.

### 2.2.1 Positive economic impacts of the internet

The internet significantly decreases transaction costs and, by that, produces meaningful advantages for people, businesses, and governments. The graph in Figure 16 helps explain how this happens, assuming that all economic transactions are ranked according to their costs, with the most expensive on the left and the least expensive on the right. The red curve depicts transactions before the emergence of the internet in economy, while the green curve portrays post-internet transactions. As evident from the graph, after the internet, many costs drop, leading to three outcomes: (1) Inclusion, (2) Efficiency, and (3) Innovation (The World Bank (2016b)). This chapter discusses each of the three fields separately to show how the internet and related technologies have affected them all. This clarifies how significantly each of the three areas was impacted due to the emergence of the internet in economy.

Figure 16: Inclusion, efficiency and innovation



Adapted from The World Bank (2016b).

Individuals and businesses execute a variety of jobs in the digital world every day and utilize the internet and new technologies for a variety of tasks. Indeed, the shift to a digital environment has given them a wealth of innovative and exciting opportunities. However, these opportunities were not always wholly accessible to some people and businesses. Before the emergence of the internet in economy, some transaction costs were so high that there was no market, but the recent internet developments are changing that (European Commission, 2022). The internet makes these transactions possible, expands the market by introducing new players, and consequently encourages the inclusion of businesses in the global economy by enabling more businesses to trade new products to new markets (The World Bank, 2016a). The area 1 in Figure 16 represents those transactions. There are two different groups of those transactions (The World Bank, 2016b):

- Unawareness: This is when two parties to a potentially advantageous transaction were simply unaware of one another and were forced to incur astronomically expensive search and information expenses.
- Information asymmetries: This is when one side had far more information than the other. This presents an issue since many transactions between buyers and sellers do not occur without trust and openness.

Digital technologies lessen unawareness and information asymmetries by lowering the cost of information acquisition and increasing the amount of information that is transparently available. There are several examples that speak of that, like a struggling farmer who is denied a loan because the lender lacks the tools to evaluate the borrower's creditworthiness. Another example is a small company that cannot communicate with their potential customer in another country and is unsure whether to put their trust in a new business partner. The last example is a resident that wants to rent out a spare room to guests from the neighbourhood (The World Bank, 2016b). These informational barriers are broken down by the use of mobile phone records, business-to-business e-commerce, sharing economy, online reputation systems and digital identification systems. Although they increase market efficiency, the main advantage is their influence on establishing new markets, which includes increasing trade, creating jobs and increasing access to public services, all of which encourages inclusion (European Commission, 2022). Moreover, online marketplaces have the potential to lessen information asymmetries between buyers and sellers, hence facilitating international trade for more businesses in developing nations (Donner, 2015). They give businesses a structured setting to promote their goods and locate customers in international marketplaces. By enabling businesses to forge direct ties with customers or take part in costly trade fairs to promote their goods, they lower the costs of trade. Rating systems are another feature of online marketplaces that let buyers and sellers evaluate one another's performance. Everyone can see the ratings and specific remarks, which promote more responsible behaviour and increase trust for upcoming transactions (Bradshaw, 2011). Based on that, it can be seen that inclusion has a wide range of applications across several industries. It is not just seen as access versus no access but rather as the extent that enhances the well-being of individuals, businesses, and society as a whole as well as grants access to new markets and business opportunities. Its recent "popularity" means that its crucial issue within the information society has been firmly placed on both the academic and the legislative agenda (Bradshaw, 2011; Ragnedda, Ruiu & Addeo, 2022).

Apart from greater inclusion, internet and related technologies increase efficiency as already existing activities and services become more affordable, quicker, and more convenient. In the internet age, markets all over the world are becoming more efficient because of the accelerated rate of information spread and transaction processing (Garcia-Escribano, 2020). The most significant contribution to growth derives from the internet's ability to reduce costs and, as a result, increase productivity across nearly all economic sectors. Digital technologies enable businesses to reduce costs while making better use of both labour and capital by automatically integrating data-intensive manufacturing processes with business models that have been reorganized. The cost of pre-internet transactions—those that took place even

before the internet was invented—decreases, as it is shown in area 2 in the graph in Figure 16. This improves the efficiency of a wide range of activities. A click or a tap can now be used to do tasks that formerly required a trip to a store or office, such as making a purchase, carrying out a bank transaction, looking for a place to live or a job, or paying taxes. Similarly, using the internet to connect and bargain with customers or suppliers, locate employees via job-matching services, and keep track of contract compliance or worker performance has resulted in lower expenses for enterprises. The same advantages apply to governments as well (Manyika & Roxburgh, 2011; The World Bank, 2016b).

Due to the sharp drop in the cost of digital technologies, businesses and governments have begun replacing labour and non-ICT capital with ICT capital as well as automating some of their processes. Several real-life examples can confirm that. For instance, to fill planes, airlines employ online reservation systems; to replace cashiers supermarkets install automated checkout counters; to manage the supply chain and real-time inventory manufacturers use systems. In addition, digital technologies complement the elements that cannot be replaced and increase their productivity. In order to increase the returns on their human capital, they assist managers in better managing their workforce, legislators in keeping an eye on service providers, and employees in using the potential of technology (The World Bank, 2016b). By connecting equipment, suppliers, and customers, the internet expands prospects for cost savings and enables businesses to better manage their supply chains and inventory in real time. The amount to which businesses use digital technologies to increase labour productivity varies, but there are several instances from various nations and economic sectors (Cordella, 2006; Garcia-Escribano, 2020). Incumbent companies in conventional sectors invest in digital technologies to cut costs by streamlining their production and management processes, which is less obvious but more crucial for growth. While firms in fast-growing industries with a high proportion of new technology adopters show distinctive firm dynamics and neck-and-neck competition market structures, encouraging firms to improve their efficiency by investing in more productive technologies (Manyika & Roxburgh, 2011).

Digital technologies do not only improve inclusion and increase efficiency. By creating information goods, they also foster innovation when transaction costs approach zero. The great majority of companies are mere users of digital commodities, but a significantly smaller percentage are the developers, distributors and managers of such technology (Xie, Wu, Ma & Lui, 2019). The individuals who fall into this latter category are responsible for creating the rules and frameworks that govern how digital goods and international commerce are used and conducted (Arbache, 2018). Literature refers to them as "internet platforms". Internet platforms are companies that operate online and help two or more parties in the same market—often buyers and sellers of a certain commodity or service—enable economic agreements (Xue, Tian & Zhao, 2020). Every marketplace is a kind of analogue transaction platform where supply and demand meet; however, internet platforms are created with novelty and innovation in the knowledge society. They enable the internet to be used and integrated in the best possible way, for social resource allocation, the growth of digital trends

and the exploitation of novel opportunities presented by advanced internet economy (Brugger, 2022; Chen, 2020; Lin, Feng, Wu, Ji & Li, 2022).

Platforms can be classified into two categories. The first category positions the transaction intermediary at its core. The primary purpose of this type of platform is to promote the exchange of products and services. Consumers often incur costs when searching for product and price information. For many years, intermediaries have been used to reduce these costs and speed up transactions. Now, customers may obtain goods at lower search costs as transactions are increasingly mediated by digital technologies and the internet. The need for intermediaries has diminished as consumer search costs on the internet have fallen (Economides, 2005; Lin, Feng, Wu, Ji & Li, 2022). However, the market has also been substantially enlarged by digitization and the internet, allowing consumers to choose from a wider range of suppliers. In internet economy, intermediaries are increasingly beneficial for facilitating transactions between sellers and goods due to the market size effect that seems to be the dominant driving force. As a result, platform companies have achieved tremendous commercial success. The second category of internet platforms allows users to access and share vast amounts of data and information via search engines or social media. Thus, some authors have addressed the idea that the platform may be biased in directing consumer search, perhaps because it is (partially) vertically integrated and wants to steer customers away from competitors' products and toward its own (Chen, 2020; Lin, Feng, Wu, Ji & Li, 2022). Despite these concerns, more and more operators are focusing on their development in order to gain an advantage through data control, the seizure of user resources, and the occupation of market share in the wave of internet economy due to the internet's significant scale effect, network effect and influence on information production (Lin, Feng, Wu, Ji & Li, 2022).

Platforms work because they create value in the market for a large number of actors along the chain. They add value in one of five different ways (Kennedy, 2020):

- By increasing the use of resources like cars, rental properties, and labour.
- By increasing competition by attracting more buyers and sellers to the market.
- By cutting down on transaction costs associated with identifying a counterparty, drafting a contract, and enforcing compliance.
- By reducing information asymmetry between consumers and sellers by giving them ratings.
- By extending the boundaries of regulation to present novel business models and value-adding sources.

Moreover, the platform ensures an efficient exchange of goods, offering participants access to the value that would be difficult and significantly less efficient to achieve on their own. Other features of the platforms are low barriers to participation, low or almost zero marginal costs, and a higher level of innovation due to the platform's open nature (Brugger, 2022). Based on all the platform characteristics listed above, it can generally be agreed that platforms provide users with enormous advantages, primarily by lowering the transaction

costs associated with interacting with others (Kennedy, 2020). Although the fixed cost of creating the platform may be high, the marginal cost of adding another transaction or user is relatively low, once an online platform is established. This results in rising returns to scale, encouraging new business models and providing online businesses a significant competitive advantage over their physical rivals (The World Bank, 2016a). Due to these enormous benefits, seven of the world's 12 largest corporations operate on the platform model, bringing together more users than some countries have inhabitants (Brugger, 2022).

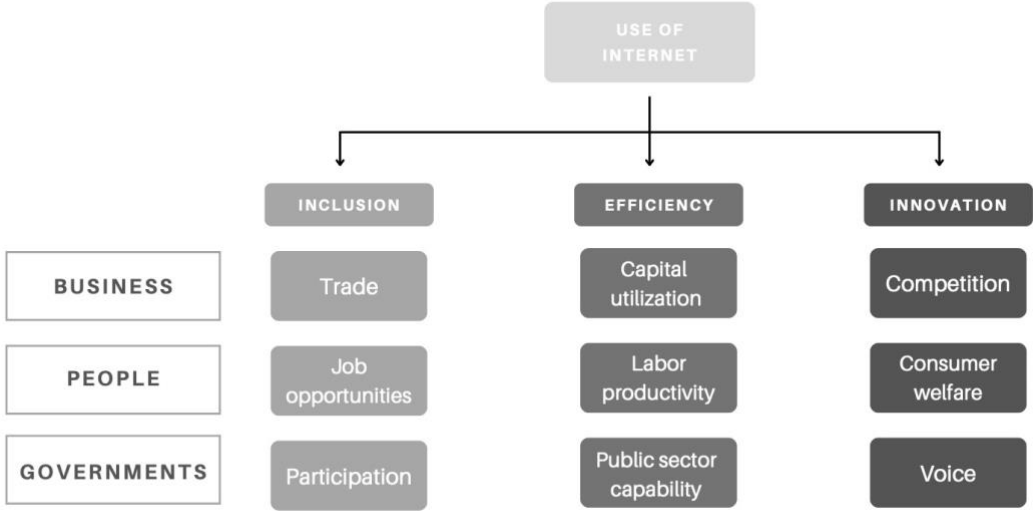
All this discussion around internet economy firms has given rise to a phenomenon that is not new but was incredibly popularized by internet platforms, namely the sharing economy (Basselier, Langenus & Walravens, 2018). However, while it has been around for a long time, internet platforms and other sophisticated mediating technologies have not. In fact, the technologically backed firms and communities that have had financial success recently are a large part of the excitement surrounding this phenomenon (Sutherland & Jarrahi, 2018). Today, the sharing economy, arguably best described as a method of sweating underutilized assets by creating communities around them and converting customers into producers, has the ability to revitalize firms across most economic sectors (Silver, 2013). Access to commodities, services, information, locations and other assets can be shared rather than owned under this new business paradigm. As a result, individuals are increasingly sharing instead of owning the things they consume. Moreover, the importance of digital technology and internet platforms lies at the core of the emerging notion of sharing economy. A coordinating internet platform, which pairs individuals across a broad network based on a set of criteria, makes large-scale sharing or collaborative networks viable (Basselier, Langenus & Walravens, 2018). According to Sutherland and Jarrahi (2018), these digital platforms are significant in producing flexibility, connecting suppliers and consumers of products and services, expanding reach, handling transactions, fostering collectivity and developing trust. The inclusion of such technology distinguishes the enterprises and groups referred to as part of the "sharing economy" from more conventional sharing contexts (Cheng, Mou & Yan, 2021).

Notable sharing economy companies include car sharing (like Didi, BlaBlaCar and Uber), accommodation sharing (like Airbnb), knowledge or skills sharing (like ZBJ.com) and meal sharing (like Panda Selected) (Cheng, Mou & Yan, 2021). To start with, the rapidly expanding peer-to-peer (hereinafter P2P) market for vacation rentals, which primarily features the Airbnb company, the most prominent success story of sharing economy to date, is disrupting the industry. Its success is eroding the profit margins of the established hotel sector and even beginning to affect real estate values (Penn & Wihbey, 2016). Moreover, if Airbnb is the new economy's American poster child, BlaBlaCar, the Paris-based ride-sharing business, is quickly emerging as Europe's counterpunch. The macroeconomic forces in our immediate environment are the reason it is exploding right now. Factoring in petrol, insurance, depreciation, tax and other costs, the cost of owning a car has increased significantly across Europe at a time when disposable income has not. Finally, Uber is another successful company among the most well-known applications of the sharing

economy paradigm. Uber turns private vehicles into shared resources and allows travellers with compatible destinations to book a ride (Cheng, Mou & Yan, 2021).

To conclude, the benefits of all three areas, inclusion, efficiency and innovation are summarized in Figure 17.

*Figure 17: Positive economic impacts of inclusion, efficiency and innovation for businesses, people and governments*



*Adapted from The World Bank (2016a).*

By promoting inclusion, digital technologies encourage positive effects on every economic sector. The internet helps enterprises become part of a global economy by facilitating trade, provides chances for households by generating jobs and enables citizens to access public services (The World Bank, 2016b). Moreover, the internet raises the productivity and efficiency of capital. This benefits businesses, helps households by leveraging human capital and strengthens government capability. Governments can, therefore, offer services at a reduced cost, workers can become more productive and businesses can more readily coordinate production. Finally, internet intensifies competition in the marketplace, which in turn indicates innovation. For households, it produces consumer surplus. And for the greater society, it serves as a platform to address issues requiring a collective action (Cordella, 2006).

2.2.2 Negative economic impacts of the internet

Despite all the outstanding benefits of digital technologies and their contribution towards reducing transaction costs, some activists, academics, and political figures are still concerned about how the quick expansion of the internet may affect the economy (Dasgupta & Williams, 2020). I have shown that the internet and related technologies have significantly improved people's personal and economic achievements. However, the internet also brings



some negative economic impacts, shown in lower allocative and/or production efficiency of the economy due to internet-related market failures.

To start with, there should be no doubt that technologies with such potential can significantly alter the nature of competition. A highly asymmetric "winner-takes-all" paradigm is being established via network and platform effects. When successful internet companies grow rapidly and dominate their markets, they can become monopolies (The World Bank, 2016a), or rather "digital monopolies" (Loertscher & Marx, 2020). In fact, one of the critical attractions of such innovative activity is the possibility of a monopoly position resulting from successful innovation and strengthening market dominance. Innovation is destruction and always leads to temporary monopolies and their increased market power (Swann, 2009). When those companies have market power, inefficiency results. In monopoly market structures, price increases do not lead to the alignment of supply and demand due to absence of competition resulting in the persistence of monopoly profits and undersupply of goods. They choose the output quantity at which marginal revenue is equal to marginal cost and sell less at a higher price than in a market with competition (Pindyck & Rubinfeld, 2013). Without competition, monopolists are also not forced to utilize technological advancement to raise quality or decrease production costs. This hinders competition.

In contrast, it has been asserted over the years that the usage of the internet in internet economy would contribute to the creation of perfect competition with lower search costs and increased number of sellers. Although the internet decreases search costs of consumers, it brings an enormous variety of goods, services and prices in numerous markets at the same time. In consequence, regardless of low search costs and numerous sellers, the latter still detain their role as price-makers, who are even able to conduct price discrimination (Overdiek & Petersen, 2020). The effect of the internet on market competition and economic efficiency is thus a complex issue with still unclear outcomes regarding economic efficiency.

Additionally, platforms engage in unfair competition by selecting whether to create and market competing products based on third-party merchants' sales data. Consequently, this hurts innovation and consumer welfare whereas this position becomes self-sustaining because the platforms' data collection gives businesses an edge over their competitors (Dasgupta & Williams, 2020; Kennedy, 2020). Thus, network and platform effects as well as winner-takes-all dynamics significantly influence the level of market competition in the economy by introducing markets with imperfect competitive characteristics or by decreasing the level of competition in the existing markets. As a result, large platform creators can seize a sizeable and increasing portion of the private advantages of digital commodities. The concept that the internet will make the economy like perfect competition more must be called into question in light of all this (Arbache, 2018; Swann, 2009).

In addition to the market power of internet platforms and unfair competition, internet platforms create a market failure by persuading people to give their data away for free since their most outstanding value comes from virtually free data from users (Arbache, 2018). Access to the increased amount of data opens new privacy concerns. Many internet platforms do not demand payment in monetary terms for the service they provide. However, users pay

when they submit their data to many such platforms. Platforms use this information in their business models, built around user data gathering, analysis, and exploitation. Consumers are unaware of the value businesses place on their personal information. There is a chance that customers will give their data for less than it is worth, boosting online internet platforms' revenues in the process (Overdiek & Petersen, 2020). This leads to allocative inefficiency, as platform's marginal costs of the data are lower than the price they pay. Due to advancements in information technology, businesses now have access to more precise digital data on their past and potential clients, opening up new opportunities for price discrimination and/or targeted sales. For example, businesses can leverage data about past consumer purchasing habits to provide different pricing or products to customers with varying purchase histories. This type of price discrimination is common in many marketplaces, and as market transactions become more digital, they might become more significant (Fudenberg & Villas-Boas, 2012). This benefits the platforms since as privacy is compromised, the digital monopoly's profit and social surplus always rise. Without privacy, the match value is excellent but entirely extracted by the digital monopoly. In contrast, match values and social surplus go to zero as privacy increases indefinitely (Loertscher & Marx, 2020).

Although the internet and related technologies have the potential to boost market transparency, they also run the risk of creating imperfect information and new information asymmetries. For instance, providers can employ methodical big data research to learn more about potential consumers' maximum willingness to pay. Similarly, platforms might use their greater financial power to monitor competitors' business strategies and develop profitable concepts. Price reductions over the short term are likely, as a result, driving competitors from the market. However, consumers may endure higher pricing and a decrease in product diversity and innovation in the medium- to long term once competitors have been driven out of the market (Overdiek & Petersen, 2020). Moreover, consumers who lack the necessary technical knowledge or pertinent information while selecting products may not make the optimal decision. This might happen if consumers base their decisions on incomplete information or information asymmetries between consumers and sellers (Economides & Lianos, 2021; OFCOM, 2019). In addition, when it is too expensive or too challenging for consumers to access all the information pertinent to their decisions, they may also have incomplete knowledge. This could be a problem if users of internet services do not have the necessary knowledge to comprehend how their data might be utilized, and there may not be complete transparency in how businesses curate information (Martens, 2021). Similarly, a variety of behavioural traits, referred to as biases, can also have an impact on consumer decision-making. This is especially true online, where algorithms are employed to monitor and evaluate user behaviour and target them to keep them interested. This could then make it easier to exploit behavioural biases to influence consumers' decisions in a way that serves the providers' interests (Sanjuan, 2021).

Digital platforms serve as economic intermediaries that pair two separate user groups, one on either side of the platform. This results in externalities. Externalities can take place on the consumer or on the producer's side. On the consumer side, negative consumption externalities occur during consumption and result in the consumption's social cost exceeding

the private benefit, or more precisely, when social marginal costs are higher than marginal social benefits. On the producer side, negative production externalities appear when the negative effects on independent third parties result from the production process. In such cases, producers might not always consider how their actions would affect society (Pindyck & Rubinfeld, 2013). Analysing externalities for a digital platform is difficult since the existing user base is impacted by each new user who joins the platform, and there can be varying implications for users on each side of the platform. Those implications can be both positive and negative. In the scope of internet economy, we could link a number of negative externalities to it (Marterns, 2021; Verveer, 2019). Negative externalities appear when a good or service has a harmful effect on a third party independent of the transaction. In areas where it is challenging to hold people accountable, negative externalities frequently harm public resources. One of the most typical examples of negative consumption externalities, arising in internet economy, is internet traffic congestion. Congestion occurs when the number of users exceeds the network's transmission capacity. Individual users must pay for the delay in email transmission or document retrieval (Marterns, 2021; Verveer, 2019).

Moreover, the dominating position of internet platforms also contributes to greater inequality, both within societies and between countries. On the one hand, as the internet and related technologies have changed markets, the world of business and the nature of work, income and wealth inequalities have increased within economies. The gap between workers and enterprises has grown wider. Income has transferred from labour to capital, and both capital and labour income distributions have become more unequal (Qureshi, 2019). Higher prices of products and services convert the disposable income of the many into capital gains, dividends and executive pay for the few. Monopolization also means that the owners of firms can afford to pay their employees less because there are fewer markets for their labour. Additionally, like most types of concentrated power, monopoly is frequently used against the least advantaged in a society where there is inequality (Kurz, 2017). On the other hand, between countries, the internet and related technologies enhance the growing gap in the global economy between those who utilize digital technologies and those who create, manage and establish standards. The first category is mainly made up of emerging and developing nations and even some high-income economies. The second one is comprised chiefly of developed nations like China, Germany, Japan, Sweden, and the US (Fudenberg & Villas-Boas, 2012; Qureshi, 2019). The best chances of gaining from internet economy—better possibilities for long-term growth, job and wealth creation, and long-lasting beneficial impacts on productivity and competitiveness—have those with enterprises functioning as creators of platforms and managers of digital technology. Their businesses and inhabitants often gain the most from the side effects of living in a more advanced, liberal, and creative environment (Kennedy, 2020).

Governments and regulatory bodies significantly impact the promotion of digital innovation and the incentives for advancing these technologies for society's benefit. However, a number of economic risks offset the fundamentally good effects of the internet and related technologies. To maximize benefits for businesses, consumers, and governments, adequate regulations must be used to prevent overly strong monopolization tendencies, the negative

effects of individualized prices, unfair competition, privacy concerns, information asymmetries, and inequality (Kennedy, 2020). By establishing broad guidelines that consider social values and preferences, regulatory bodies can promote the general public's and consumers' interests and avoid any potential unforeseen negative effects (OECD, 2019).

Due to the distinct laws that govern price creation in the internet economy, the economic characteristics of digital businesses challenge traditional regulatory approaches. The primary concern of traditional regulations is the ability of monopolists to control and regulate prices. However, it may be difficult to argue that the issue still applies or that the dominant provider is abusing its position of dominance if the provider is not charging anything for the service. Such is the case with Google search, which is for free, for example (Moore, 2016; Øverby & Audestad, 2021). Consequently, regulators are faced with difficulty as traditional regulations are questioned due to the rapid internet development and related technologies. Regulatory frameworks, nonetheless, frequently lack the adaptability needed to keep up with the rapid speed of technological advancement since technological change fundamentally undermines current regulation and frequently advances faster than the laws or social structures that control them (Moore, 2016; OECD, 2002). This is due to several factors, including their global scope, the rapid pace of development, the complexity of online business models and the size and scope of existing goods and services. Therefore, regulators must employ new tools to comprehend the complexity of online business models and consumer decisions. They must consider the differences between digital giants and traditional corporations with monopoly power when responding to them. This will require recognizing when the tools they currently have, most notably the laws and regulations, are insufficient or inappropriate (OECD, 2019).

The rivalry on the internet platform has drawn the attention of many in the field of competition law due to growing concerns about the increasing influence of the biggest internet platforms (Ma & Misra, 2020). Platforms like Amazon, Google and Facebook are often referred to as "our huge new monopolies", asserting that they have the authority to affect entire economies. These same businesses are often named "our digital overlords" in many academic documents as well. What is more, press reports have been supported by authors who harbour strong concerns about major internet corporations. Consequently, those platforms are now being examined more closely due to these activities (Kennedy, 2020). There are many challenges stemming mainly from the nature of the platform, which requires a tailored or specific legal framework. Platforms currently have a poor fit with the existing legal frameworks, which are country-specific and rather rigid. This has led to a lot of friction between the political space and platform companies, as politicians accuse platforms of arrogance, not respecting the law and thinking that the law does not apply to them (Ma & Misra, 2020; Øverby & Audestad, 2021). In order to maintain the benefits for many actors, it is wise to proactively design the framework within which platforms can operate and create transparent and predictable rules for platforms and platform work. Given the close relationship between the internet and competition, it is crucial to regulate the concept of internet platforms on a national and international level to prevent the abuse of internet operators' market dominance that would otherwise manipulate the development of the same

industry in the digital era (Lin, Feng, Wu, Ji & Li, 2022). Establishing an anti-monopoly sound system for internet platforms, improving the anti-monopoly law's applicability in the internet era, managing market chaos and promoting healthy competition are crucial for the growth of internet economy (Fudenberg & Villas-Boas, 2012).

So far we have discussed the need for regulation due to quickly evolving technology, which affects market structures and results in the monopoly power of online platforms. However, as I have shown above, other market imperfections like increased privacy concerns, information asymmetries, greater inequality and negative externalities, also lead to market inefficiency and addressing the regulation of those issues is just as crucial (Brugger, 2022). Firstly, with more innovative and responsive policies, inclusive outcomes are undoubtedly feasible and inequality can significantly be reduced. Harnessing the potential of the internet and digital technologies to provide more robust and inclusive economic growth is a fundamental issue for governments. To produce results that are more inclusive, policies need to be more responsive to the changing dynamics of internet economy. New thinking and policy changes are required in sectors like competition policies, innovation systems, knowledge diffusion, infrastructure, upskilling and reskilling employees, social protection regimes, and tax policies. Moreover, international reforms are required to deal with the inequality between countries to ensure that the norms of interaction between nations in trade and other sectors are fair. The next stage of globalization, driven by digital flows, requires the development of new disciplines and cooperation arrangements (Kurz, 2017; Qureshi, 2019). Secondly, to address externalities imposing taxes is one way to address harmful externalities and influence people's behavior. By taxing commodities when their production results in spillover costs, the government can contribute to the reduction of negative externalities. As it incorporates the spillover costs, an effective tax will be equal to the externality's cost and more accurately represent the actual cost of production (Marterns, 2021). Therefore, this type of taxation aims to make the producer pay the entire cost of production. "Internalizing the externalities" is what this type of tax is referred to and it is imposed to discourage actions that have such negative impacts. Additionally, privacy concerns and new information asymmetries can both be reduced through the effective regulation of platforms, since they both result from the great amount of meaningful consumer data, platforms manage to extract from the users (Brugger, 2022).

All these interventions need to be adapted to deal with services and marketplaces that are rapidly expanding. Regulators must be aware of any links between internet failures and collaborate closely with one another since possible links between various market failures can cause overlaps and conflicts between the goals of different policies (Kennedy, 2020; Øverby & Audestad, 2021).

### **3 BIBLIOMETRIC ANALYSIS OF THE INTERNET ECONOMICS FIELD**

The amount of scientific research has substantially expanded in recent years and it is becoming increasingly challenging for researchers to stay on top of relevant literature in

their discipline. This reality necessitates the application of quantitative bibliometric methods, which can handle this large amount of data, identify a field's underlying structure and identify the essential works by assessing their impact (Župić & Čater, 2015).

Bibliometric analysis is a popular and rigorous technique for exploring, analysing, and interpreting vast amounts of scientific data (Aria & Cuccurullo, 2017). In recent years, it has become extremely popular in business research. It identifies key authors or research pieces and their relationships by analysing all the publications associated with a particular topic or field and allows us to explore the nuances of a particular field's evolutionary history while illuminating its frontiers. Researchers utilize bibliometric analysis for a number of purposes, including identifying new trends in the performance of documents and journals, patterns of collaboration and research elements, and investigating the intellectual framework of a particular area within the existing literature. By making sense of vast amounts of unstructured data in rigorous ways, bibliometric analysis is valuable for unravelling and mapping the cumulative scientific knowledge and evolutionary nuances of established disciplines (Batistič & Van der Laken, 2019; Donthu, Kumar, Mukherjee, Pandey & Lim 2021).

According to Donthu, Kumar, Mukherjee, Pandey & Lim (2021), the techniques for bibliometric analysis manifest across two groups, i.e. main and enrichment techniques. The main techniques are then further divided into performance analysis and science mapping. Performance analysis essentially considers the contributions of research constituents (e.g. authors, institutions, countries and journals), whereas science mapping focuses on the connections between these research constituents. In addition, three network analysis-based enrichment paths—network metrics, clustering and visualization—are proposed. All three were developed to enrich the results of the primary analysis techniques used in bibliometric research.

Within my research, the bibliometric analysis will enable me to identify literature streams on internet economics and, within these, to look at the relationships between different fields, specialties, disciplines and individual publications. By grouping the elements (documents, authors, journals and words) into different categories and using a quantitative technique for the description, evaluation and monitoring of published research, I will create a representation of the research area structure based on a systematic, transparent and reproducible review process.

### **3.1 Data and methodology**

The qualitative analyses of the literature presented in the thesis' previous chapters enables me to identify the terminology used when referred to the dealings of the internet related consequences in economics. I apply these findings from the narrative review of literature as relevant keywords used in the bibliometric analysis of the literature based on the Web of Science (WoS) database of literature (Clarivate, 2022).

The bibliometric search was performed on 29th November 2022 in Clarivate's Web of Science database, primarily under the keyword "internet economics." I proceeded with applying other related keywords, using logical operators "AND," "NOT," and "OR." First, one of the crucial decisions within quantitative literature analysis is to identify the items that constitute the relevant body of literature, i.e. the documents that should be included in the list of core documents. Firstly, "internet economics," "digital economics," and "platform economics" keywords were used for the analysis, whereas the analysis was limited by searching for the keyword only within the title (TI) or abstract (AB). Secondly, the identified documents were further filtered by selecting only the relevant publication types, i.e. article, review article, book chapter, book review, early access and book. After that, the bibliometric analysis proceeded using the statistical software RStudio. RStudio was initially used to install and load the Bibliometrix R package. Bibliometric data was then uploaded to the Biblioshiny program (Aria & Cuccurullo, 2017) to examine it.

The analysis in the Biblioshiny program was performed on two levels. The first level of the analysis studied each of the identified keywords, i.e. "internet economics," "digital economic" and "platform economics" separately to observe the patterns each of them individually shows. The second level analysis was based on all three keywords combined to study their interdependence. The details of each level can be found in Figure 18.

*Figure 18: Main search queries for internet, digital and platform economics analysis*

LEVEL 1			LEVEL 2
INTERNET ECONOMICS	DIGITAL ECONOMICS	PLATFORM ECONOMICS	COMBINED
TI=("Internet economics") OR AB=("Internet economics")	(TI=("Digital economics")) OR AB=("Digital economics")	(TI=("Platform economics")) OR AB=("Platform economics")	(((((TI=("Internet economics")) OR AB= ("Internet economics")) OR TI= ("Digital economics")) OR AB= ("Digital economics")) OR TI= ("Platform economics")) OR AB= ("Platform economics"))

*Source: Own work.*

The analysis of different research streams was performed at a particular time to represent a static image of the field at that point, whereas its methods were carefully chosen, each for a particular part of the analysis. I carefully selected the bibliometric techniques that best enabled me to respond to the research questions. For this Master's thesis, the order of analysis proposed by Donthu, Kumar, Mukherjee, Pandey & Lim (2021) was followed. Performance analysis has proven to be especially helpful, enriched by carefully selected science mapping methods, including co-word, co-authorship, citation, bibliographic coupling and co-citation. The most influential publications, authors and journals in a particular research stream were identified using citation analysis as a measure of significance, while bibliographical coupling

and co-citation analysis used citation standards to link documents, authors or journals. On the one hand, co-citation was applied to the cited documents and was used to identify the knowledge base of a research field and its intellectual structure. On the other, bibliographical coupling looked at the research frontier of a subject or research area by using reference lists for coupling (Župić & Čater, 2015). Moreover, co-author analysis was particularly beneficial for analysing research topics involving scientific collaborations. To create a social network of the invisible college that comprises the study field, this strategy examined the co-authorship tendencies of the contributing scientists. Lastly, co-word analysis created a semantic map of the area using the author-designated keywords (Donthu, Kumar, Mukherjee, Pandey & Lim, 2021). This approach was used to analyse the growth of the research field and identify connections between related topics.

### **3.2. Sample description**

The main bibliometric information on internet, digital, and platform economics obtained using the Biblioshiny program is shown in Table 3. When analysing the data on *internet economics*, the analysis included 30 documents retrieved from 21 sources, where 20 of them were original research articles, nine book reviews and one book chapter. The documents about internet economics were written by 45 authors who applied 36 keywords. In addition, 8.267 citations per document were made on average each year. Moreover, a total of 17 documents, retrieved from 16 sources, were used in the *digital economics* bibliometric analysis. Regarding the document type, 13 out of 17 papers were original research articles, two were book chapters and two were reviews. Those documents were written by 41 authors who applied 95 keywords. They were cited 13.24 times on average each year. The analysis of the *platform economics* field included 26 documents retrieved from 25 sources, where 20 of them were original research articles and others were book reviews and early access articles. 74 authors wrote the literature on platform economics and they applied 103 keywords. 13.38 citations per document were made on average each year. Finally, when the analysis was performed on all three fields *combined*, 73 documents were analysed coming from 61 sources. There were various document types; 53 were original research articles, two book chapters, one early access article, 13 book reviews, and four other document types. Those documents were written by 160 authors who applied 230 keywords. The analysis discovered that 11.25 citations per document were made on average each year.



Table 3: Main information about internet, digital and platform economics data

	<b>INTERNET ECONOMICS</b>	<b>DIGITAL ECONOMICS</b>	<b>PLATFORM ECONOMICS</b>	<b>COMBINED</b>
<i>Documents</i>	30	17	26	73
<i>Sources</i>	21	16	25	61
<i>Average citations per document</i>	8.267	13.24	13.38	11.25
<i>Authors</i>	45	41	74	160
<i>Author's keywords</i>	36	95	103	230
<i>Document types</i>	Article: 20 Book chapter: 1 Book review: 9	Article: 13 Book chapter: 1 Book review: 1 Editorial material; book chapter: 1 Review: 1	Article: 20 Article; Early access: 1 Book review: 3 Review: 1 Review; Early access: 1	Article: 53 Book chapter: 2 Article; Early access: 1 Book review: 13 Editorial material; book chapter: 1 Review: 2 Review; Early access: 1

Adapted from Clarivate (2022).

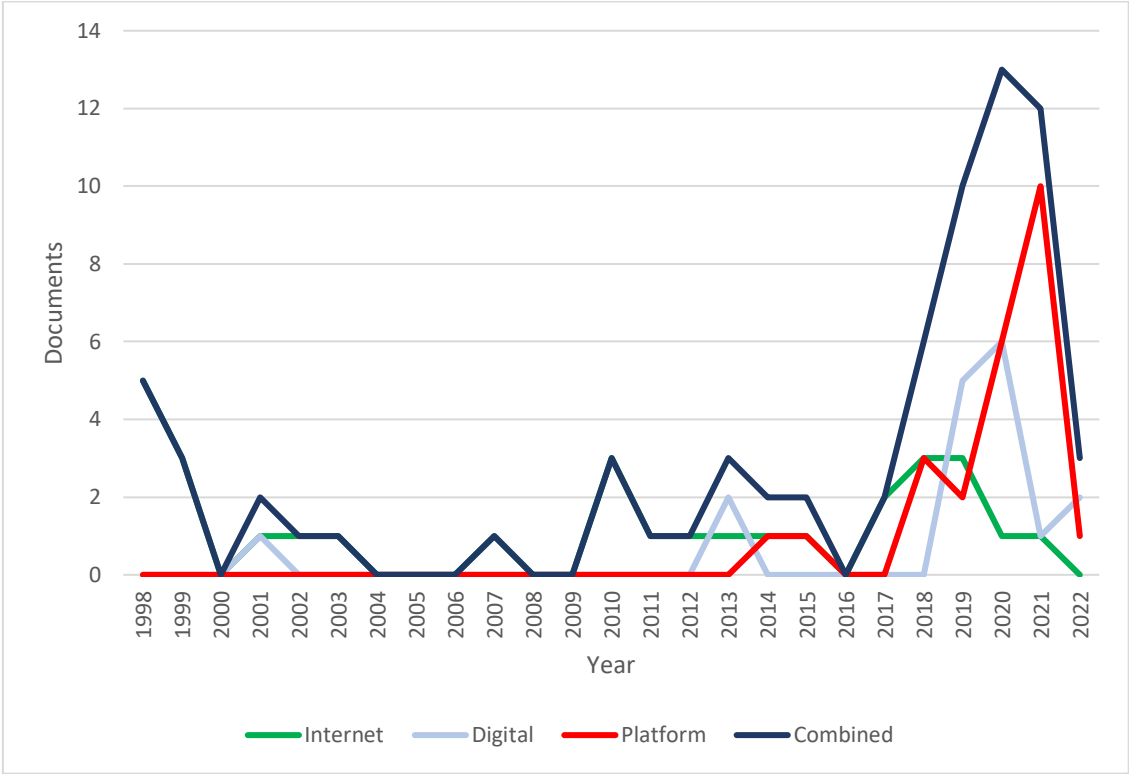
### 3.3 Performance analysis

#### 3.3.1 Leading sources of publications

This section presents the research results within the source scope for both levels of analysis, i.e. the analysis of the three keywords individually in comparison to the analysis of all three keywords combined. It starts with the findings of the annual scientific production, where the number of documents published per year is presented. It continues by presenting the yearly average number of citations. Moreover, the most relevant sources covering the topic of internet, digital and platform economics are portrayed with a corresponding number of documents published in each of these sources. Bradford's law is also presented, which looks at the distribution of literature on a specific topic in these sources. This section is concluded with the most local cited sources and their local impact by H-index.

Figure 19, which portrays the annual scientific production of internet, digital and platform economics for both levels of analysis, shows a dynamic movement that does not follow any particular pattern. Looking at the second level analysis, i.e. combined analysis, a significant increase in the number of documents can be observed from 2017 to 2021. In 2016, not a single document was published, but then the trend improved with two documents published in 2017, 6 documents in 2018 and 10 in 2019. The highest number of documents was published in 2020, namely 13 documents, followed by 2021 when 12 documents were published. All the other years were not that well represented, while 2000, 2004, 2005, 2006, 2008, 2009, and 2016 were not represented at all. Comparing this analysis, with the analysis on the first level, i. e. with all three keywords individually, no significant differences can be found with internet economics until 2018. After that year, the differences occur. However, digital economics portrays a very different movement throughout the whole observed period, whereas platform economics is not present in literature until 2014.

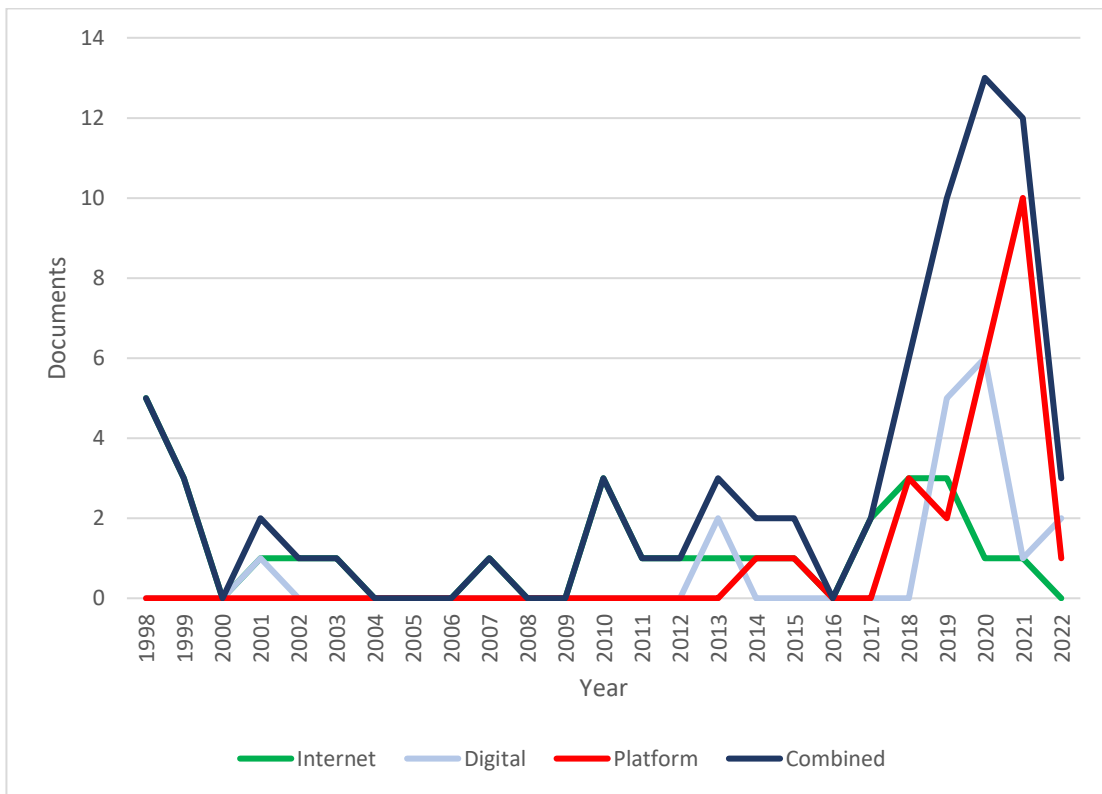
Figure 19: Annual scientific production of internet, digital and platform economics



Adapted from Clarivate (2022).

Apart from annual scientific production, the number of average yearly citations also speaks about the importance of a particular year in literature. Figure 20 shows this number for the analysis on both levels.

Figure 20: Average citations per year of internet, digital and platform economics



Adapted from Clarivate (2022).

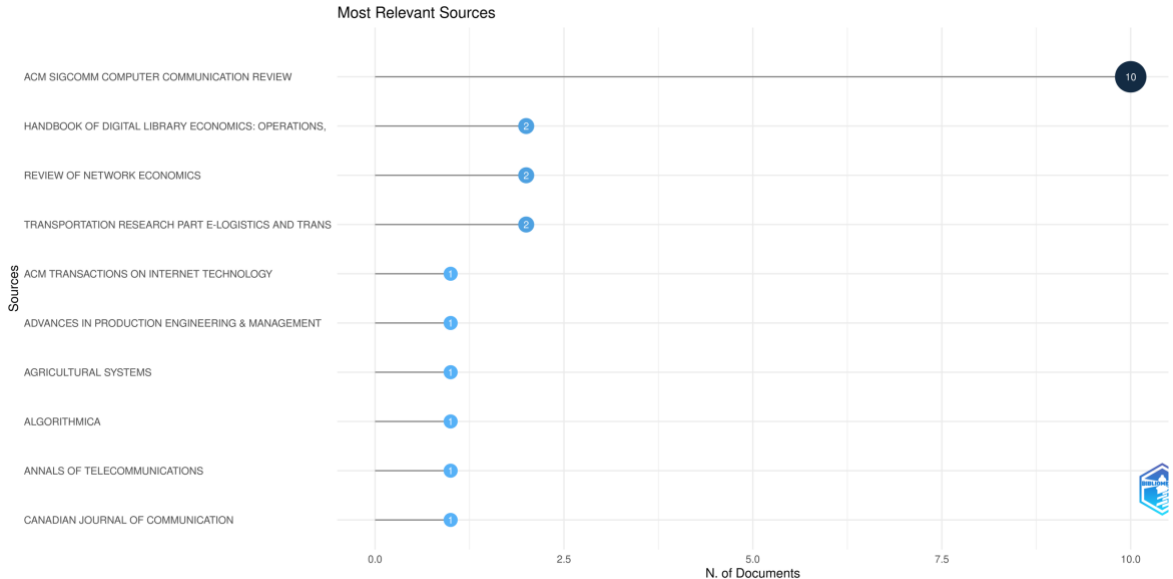
The year 2019 has a higher number of total citations when the mean total citations per year accounted for 8.83, closely followed by 2018 with the mean total citations per year of 8.25. The following years with relatively high means are 2017, 2020 and 2021. 2010 was also very close, as can be observed in the figure. In comparison to annual scientific production, a larger number of differences can be found here between the two levels of the analysis. For internet economics, 2017 was the one with the higher number of total citations. That year, the mean total citations per year accounted for 4.00. The following years with high means are also 2018, 2010 and 2019. For digital economics, the leading year was 2019, and for platform economics 2018 was the main year with the yearly mean total citations of 13.42. The high number of citations in the most recent years does not come as a surprise and it can be explained by the popularity of internet, digital and platform economics in scientific literature these years, as it is evident from the literature review already.

Figure 21 presents the ten most relevant sources that publish internet, digital and platform economics publications. Most documents addressing the topics of interest were primarily published in the ACM Sigcomm Computer communication review. This particular journal is highly represented because out of 73 10 documents are published in this particular journal, while all the other relevant journals publish only one or two documents each. For internet economics alone, the ACM Sigcomm Computer communication review was also the most representative source, covering 10 out of 30 documents, while all other journals published

only one documents each. For digital economics, Handbook of Digital Library Economics was the leading journal. At the same time, other important journals were also Computational Intelligence and Neuroscience, Financial and Credit Activity, Glass and Ceramics, Harvard Business Review and similar. Finally, documents addressing the topic of platform economics individually were most published in Transportation Research Part E. Other important journals covering this topic were Agricultural Systems, Canadian Journal of Communication, Decision Support Systems, Defence and Peace Economic, Energies, and others. These findings suggest that the documents are scattered throughout various sources and are not grouped into just a few specific journals. In fact, only four journals have more than one document published. Moreover, the nature of these journals speaks about the dynamics and diversity of the field since the journals cover various topics, ranging from business economics and finance to computer science.

To analyse the distribution of literature on a specific topic in journals, I looked at Bradford's law of scattering. Bradford's law describes a quantifiable relationship between journals and published papers (Viju & Ganesh, 2013). The journals are divided into three zones, each containing around one-third of the total number of documents. Bradford referred to the first zone as the nuclear zone, which is extremely productive; the second one as a zone with moderate productivity; and the third one as a zone with low productivity. Appendix 7 shows which journals belong to which zone and the corresponding number of documents for each journal (seen in column "Freq"). All the journals from Figure 21 are in the nuclear zone, which confirms the earlier findings that there is a large dispersion of documents through various sources.

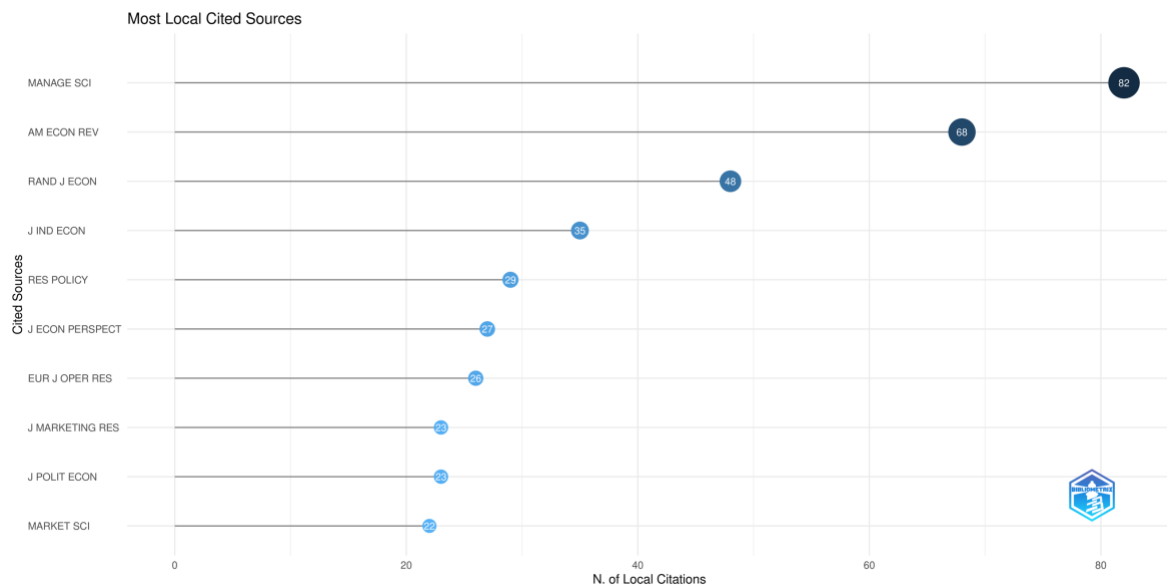
*Figure 21: Most relevant sources covering the topic of internet, digital and platform economics*



*Adapted from Clarivate (2022).*

Figure 22 shows the ten most local cited sources. Local citations signal the number of times other papers in the local collection cited the source. In contrast, the global citations represent the frequency of citations based on the total WoS count at the moment the data was retrieved (Mesquita, Klein, Xavier & Matos, 2017). In terms of local citations in the combined analysis, Management Science is the leading source with 84 citations, followed by American Economic Review with 68, the RAND Journal of Economics with 48, the Journal of Industrial Economics with 35 and Research Policy with 29. Other also relevant journals, but with a smaller number of citations can be seen in the figure. In internet economics and platform economics, Management Science is also leading with 15 and 29 citations, while in digital economics, American Economics Review is first with 47. Other significant journals for internet, digital and platform economics individually can be seen in Appendix 8.

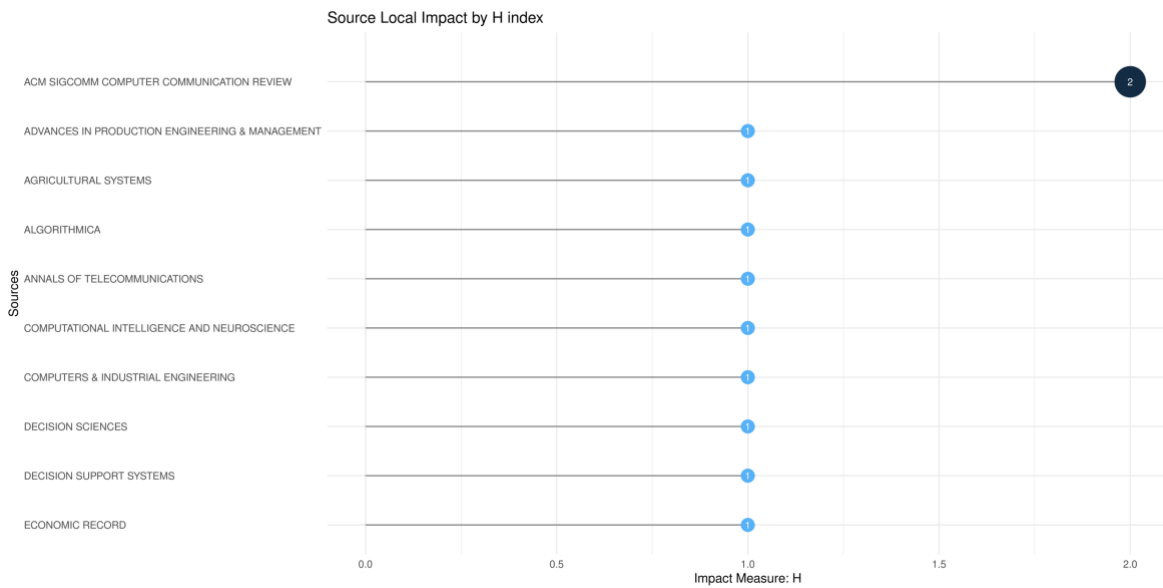
Figure 22: The most local cited sources covering the topic of internet, digital and platform economics



Adapted from Clarivate (2022).

To further rank the sources, I analysed them based on their H-index. According to the H-index, shown in figure 23, ACM Sigcomm Computer communication review is again ranked first with two documents. Following are Advances in Production Engineering & Management, Algorithmica, Annals of Telecommunications, Computational Intelligence and Neuroscience, Computers & Industrial Engineering, Decision Sciences, Decision Support Systems and Economic Record with only one document each. Moreover, the H-index for internet economics shows a similar pattern where ACM Sigcomm Computer communication review is the first. In contrast, for digital economics and platform economics, the H-index shows that all sources are equally ranked.

*Figure 23: Source local impact by H-index of journals covering the topic of internet, digital and platform economics*



*Adapted from Clarivate (2022).*

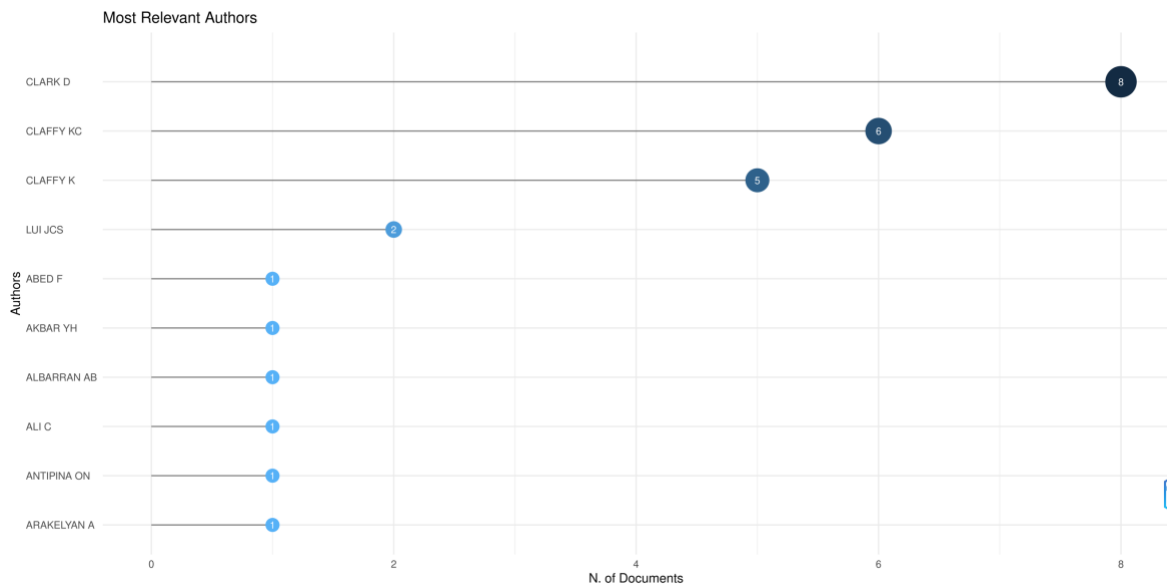
### 3.3.2 Leading authors

Apart from analysing the most relevant sources, the most influential authors were also studied. The analysis findings of the authors conducting research related to internet, digital and platform economics are explained in this section. It starts with the presentation of the most relevant authors covering the topic of interest. It continues by presenting the author's local impact by H-index with the corresponding number of published documents. The section concludes with the corresponding author's countries.

Figure 24 shows the number of the published documents for the ten most relevant authors in the field. David Clark is the author of eight documents and has published 11 % of all documents. Therefore, he is the most relevant and productive author covering the topic of internet, digital and platform economics. Other relevant authors are also Kiberly C. Claffy with six documents, and others shown in the figure. In terms of local cited authors, David Clark is the third most local cited author and not the first anymore since Yusaf H. Akbar is the leading author in this regard.

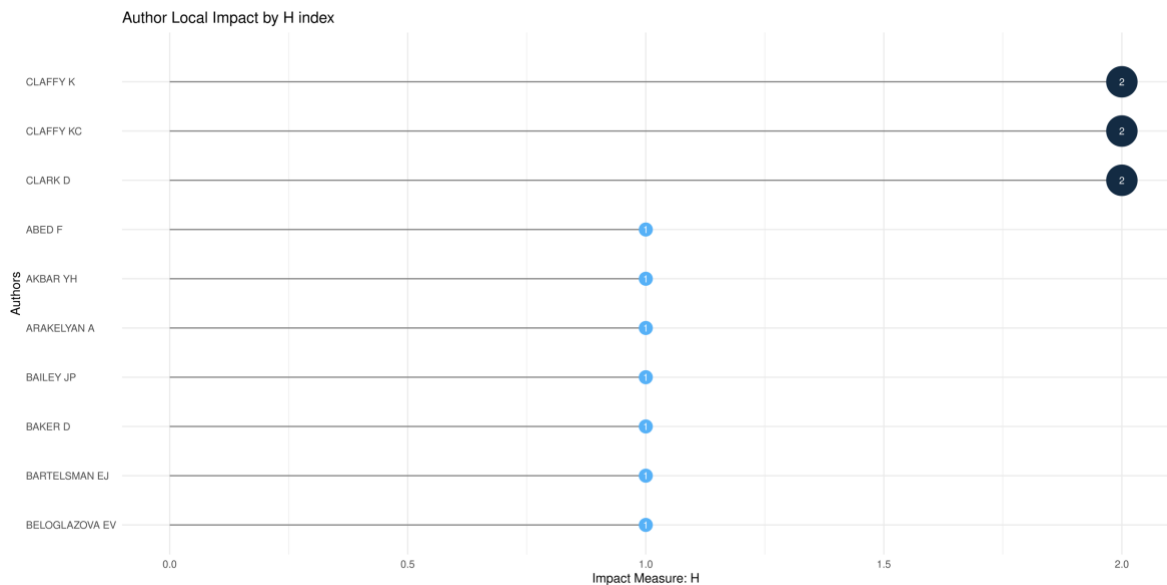
The author's production over time also determines the author's relevance. In this regard, David Clark published one document in 2013, one in 2014 and one in 2015 as well as one in each of the years from 2017 to 2021. However, according to H-index, David Clark is not the only author with the most impact. Along with him, there is also Kimberly C. Claffy, as shown in Figure 25.

Figure 24: The most relevant authors covering the topic of internet, digital and platform economics



Adapted from Clarivate (2022).

Figure 25: Authors local impact by H-index covering the topic of internet, digital and platform economics

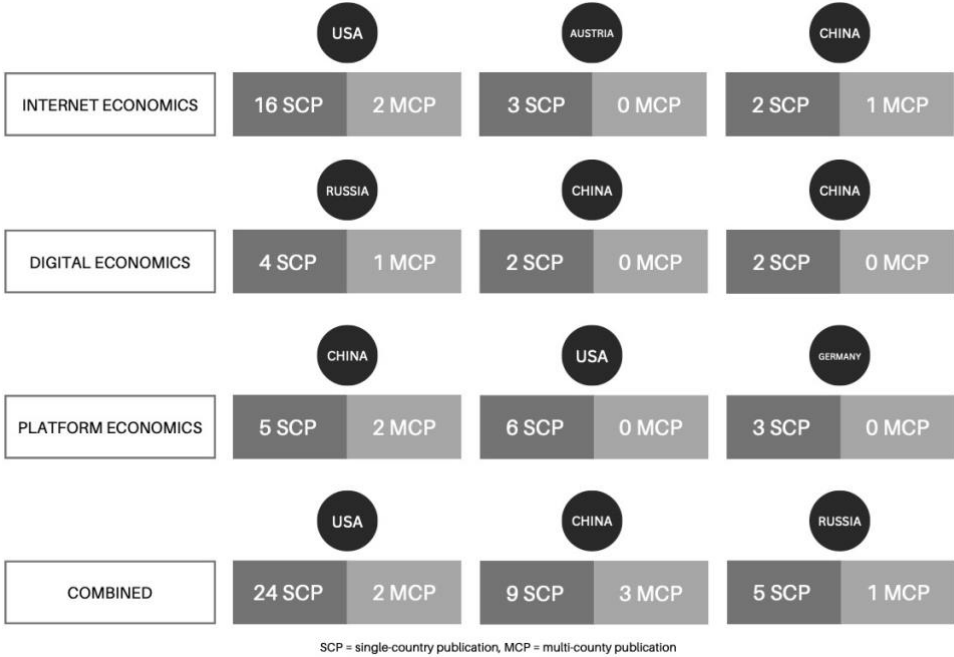


Adapted from Clarivate (2022).

Comparing the findings of the second level analysis, regarding the most relevant authors and their impact, with the first level analysis, internet economics does not portray any differences and David Clark and Kimberly C. Claffy again appear among the most influential authors. However, digital and platform economics analysis provides different results: all authors are equally influential according to H-index, but David Clark and Kimberly C. Claffy do not appear among the authors covering those topics. The most relevant authors covering the topic of internet, digital and platform economics individually, are shown in Appendix 9.

The author's analysis further looked into the publication output concerning corresponding author's countries and the active engagement in internet-based economics research to determine the most relevant countries. Figure 26 shows the 20 corresponding author's countries where the red bar represents the multi-country publication (hereinafter MCP) and the turquoise bar indicates the single-country publication (hereinafter SCP).

Figure 26: Corresponding author's country in the internet, digital and platform economics field



Adapted from Clarivate (2022).

The figure demonstrates that the USA ranked first with 24 single-country publications, two multi-country publications and the highest frequency (0.356). The USA is followed by China, with nine single-country publications and three multi-country publications and Russia with five single-country publications and one multi-country publication. Austria, Germany and Australia follow in the corresponding order. However, the number of documents authors wrote in the USA is significantly higher than in other countries. As can be seen from the figure, there were only 12 documents written by authors in Austria, which ranks second, while in the USA there were twice as many documents written. To obtain the comparison of the combined analysis with the analysis of each keyword individually, additional detailed information for internet, digital, and platform economics is provided in the figure below.

### 3.4 Science mapping

#### 3.4.1. Citation analysis

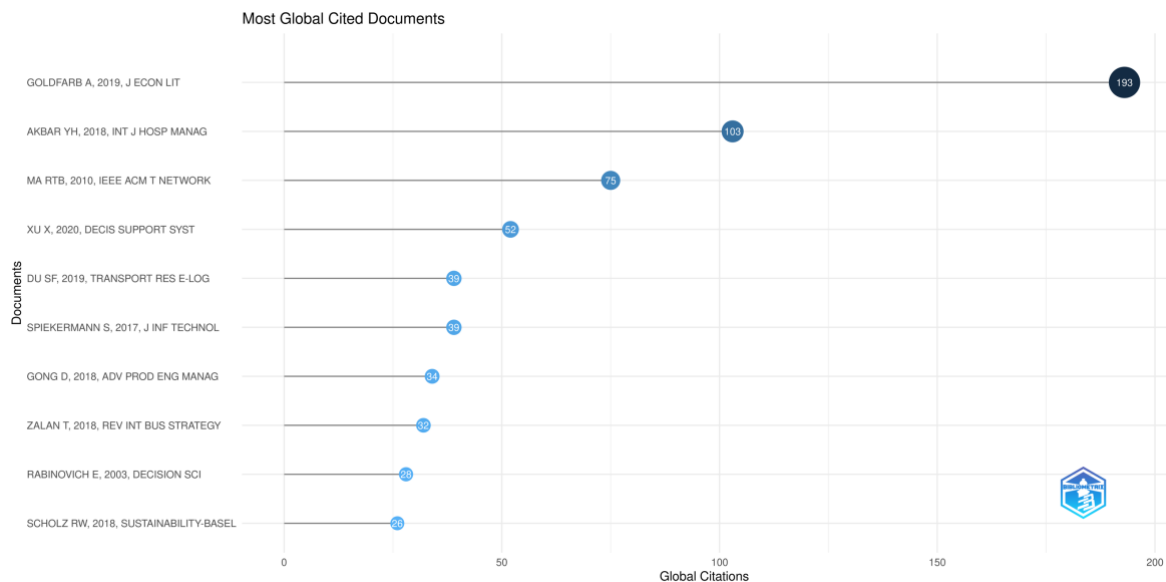
To enrich the findings of performance analysis, the chosen science mapping techniques, which focus on the connections between research constituents, were applied. Performance



analysis starts with citation analysis, the most popular analysis in bibliometrics, which determines the importance of a publication by the number of citations that it receives. The most influential documents and their characteristics in a particular research stream were identified using citation analysis as a measure of significance. Firstly, the most global cited documents were analysed to highlight which economic effects are covered in the literature discussed. Secondly, the most cited countries were studied to determine the role that particular countries play in development of the studied research streams.

The ten most global cited documents are shown in Figure 27. Global citations represent the frequency of citations based on the total WoS count at the moment the data was retrieved, whereas local citations signal the number of times other papers in the local collection cited the source (Mesquita, Klein, Xavier & Matos, 2017).

*Figure 27: Most global cited documents in the internet, digital and platform economics field*



*Adapted from Clarivate (2022).*

Comparing the ten most global cited documents with the ten most local cited ones, some observable differences and similarities exist. The ten most global cited documents deal with both positive and negative economic effects of the internet. They primarily deal with topics of digital economics and related digital technologies and their impact on economic activity. Those documents also discuss the costs associated with digital economic activity and the unintended side effects of the digital transition. They cover the topics of internet service providers, platforms and their market power as well as touch upon the topic of sharing economy. Such documents discuss digital innovation while highlighting the value of personal data and related privacy concerns. Therefore, the ten most global cited documents identified in the combined study of sources, addressing internet, digital and platform economics, highlight the economic effects discussed in the thesis' previous chapters.

The analysis of particular research streams further shows that most global cited documents covering the topic of internet economics additionally deal with topics, such as characteristics of internet economics, pricing mechanisms and related policies. In digital economics related documents, more focus is put on digital technologies and digitalization, while documents from platform economics cover the topics of sharing economy, platforms, their impacts and the corresponding regulations. The ten most global cited documents for each research stream individually can be seen in Appendix 10.

The ten most cited countries, measured by the number of total citations for both levels of analysis, are shown in Figure 28. The analysis shows that the USA is on the top of the countries present in literature covering internet, digital and platform economics topics with 204 total citations. Next is Canada with 193 citations, China with 115, Hungary with 103 and Austria with 85. Austria, the United Arab Emirates, Argentina, Germany, Australia and Russia follow in the corresponding order. However, they all have a substantially lower number of total citations. Information on citations by country for particular research streams, i. e. internet, digital and platform economics, is provided in the figure below.

*Figure 28: Most cited countries in the internet, digital and platform economics field*



*Adapted from Clarivate (2022).*

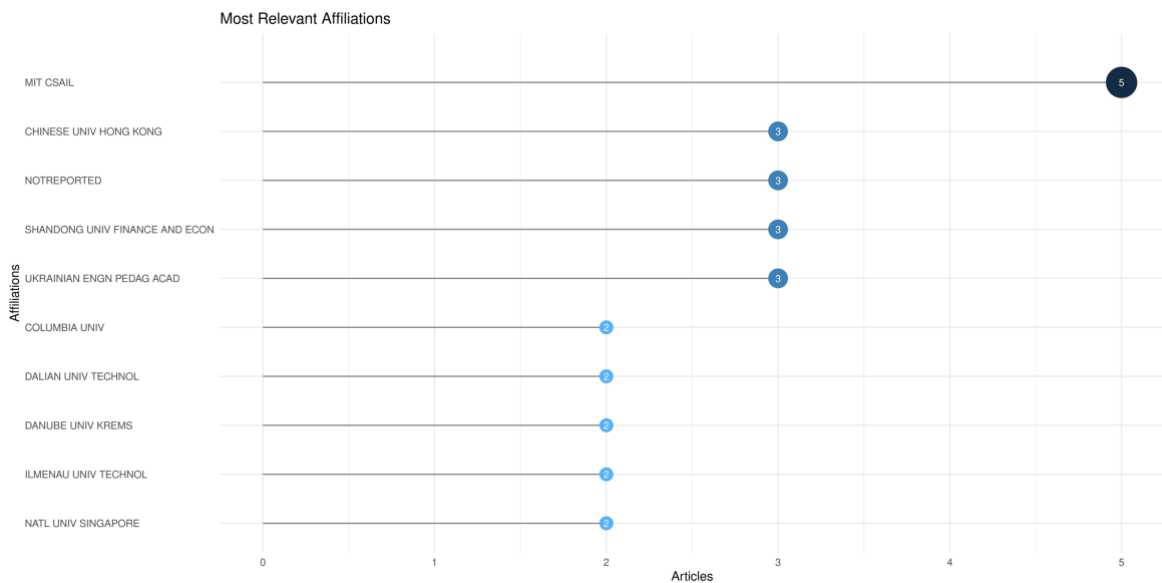
Comparing this data to the data on average document citations, seen in Appendix 11, the situation is different. Even though the USA has a higher number of total citations, it is only seventh, looking at average document citations, with only 7.85 citations. In this regard, Canada is number one with 193 citations, followed by Hungary with 103. After Hungary, the number of average document citations drops since the United Arab Emirates are third with only 32 citations.

### 3.4.2 Co-authorship analysis

Co-authorship analysis is particularly beneficial for analysing research topics involving scientific collaborations. This approach investigates the co-authorship tendencies of the contributing scientists. The networks and partnerships between the authors, their countries and their institutions are explained by this analysis.

To start with, Figure 29 shows the production output of the author's affiliations that contributed to the study of internet, digital and platform economics. The authors of the documents were primarily from MIT Computer Science and Artificial Intelligence Laboratory, The Chinese University of Hong Kong, Shandong University of Finance and Economics, the Ukrainian Engineering and Pedagogical Academy, Columbia University and other institutions. Similarly to the findings related to the source analysis of documents, a large dispersion can also be observed in the case of authors. As seen from Figure 28, only one institution has a larger number of authors. Other authors are scattered through various institutions, representing the field's dynamics. These results imply that the authors are dispersed throughout several institutions and are not only from one or a small number of these.

*Figure 29: Most relevant affiliations in the internet, digital and platform economics field*



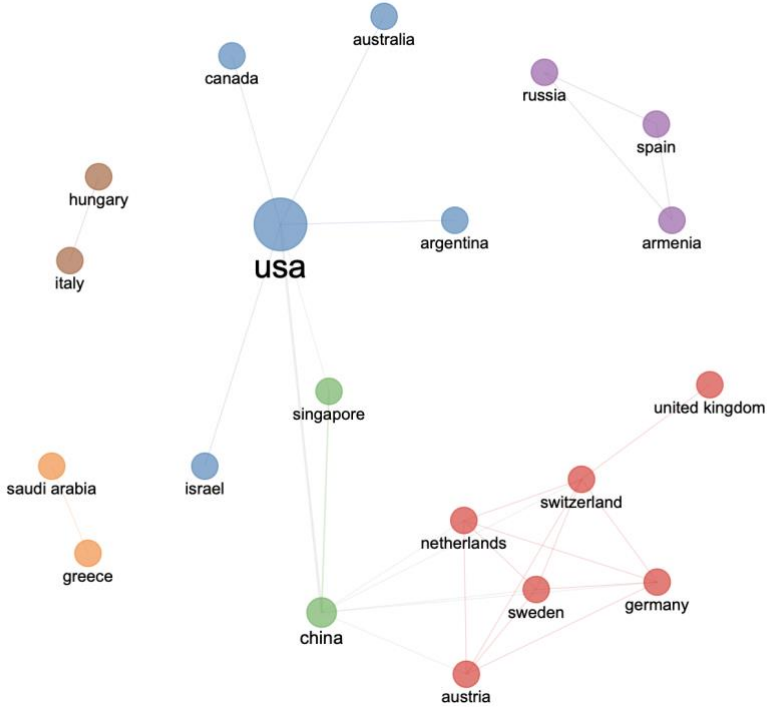
*Adapted from Clarivate (2022).*

If observed by particular research streams, authors of documents in the internet economics stream, were also primarily from MIT Computer Science and Artificial Intelligence Laboratory. Authors from the digital economics stream were mainly from Ukrainian Engineering and Pedagogical Academy and the University of Applied Sciences and Arts Northwestern Switzerland. Authors covering the topic of platform economics were mainly from the Shandong University of Finance and Economics. This finding for each research stream can be seen in Appendix 12. In addition, the dispersion of authors through many institutions can be observed. What can also be observed here is the nature of the institutions

where the authors of different keywords are predominant. For example, authors of documents in the internet and digital economics stream primarily come from more technical and information technology-specialized institutions, while those from platform economics are from more business-oriented universities. This can be explained by the fact that platform economics is predominantly concerned with microeconomics topics, such as market structures and similar, which are the subject of business schools. At the same time, digital economics covers topics, such as digital technology and digitalization, taught at computer science and informatics schools.

The country collaboration network includes six country clusters and is presented in Figure 30. The first cluster includes Germany, Switzerland, Austria, Netherlands, the United Kingdom and Sweden. The second cluster comprises the USA, Australia, Argentina, Israel and Canada. The third is formed by only two countries, China and Singapore, while the fourth includes Russia, Armenia and Spain. The fifth and sixth clusters include only two countries: Greece and Saudi Arabia in the fifth, Hungary and Italy in the sixth.

*Figure 30: Collaboration network for countries in the internet, digital and platform economics field*



*Adapted from Clarivate (2022).*

For internet economics streams, only two clusters were formed. The first cluster includes four countries, such as the USA, Singapore, China and Australia, while Greece and Saudi Arabia represent the second one. For digital economics, three clusters were developed. The USA, Israel and Canada belong to the first cluster, Russia, Armenia, Spain to the second, Switzerland and the United Kingdom to the third. For platform economics, again, three clusters were composed, with China, Germany, Switzerland, Netherlands, Austria,

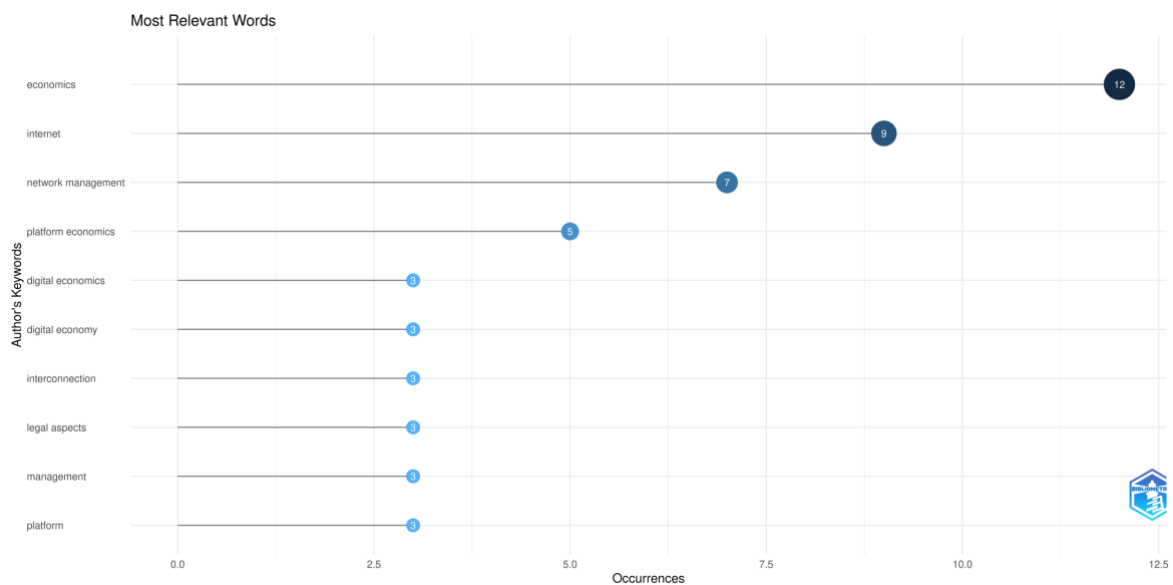
Singapore and Sweden in the first cluster, the USA and Argentina in the second, Hungary and Italy in the third. The clusters for each research stream can be seen in Appendix 13. Although there are not many documents in the sample, we have already seen that the documents are spread through various countries. In addition, these research streams also show that a significant number of different international research teams have been formed.

### 3.4.3 Co-word analysis

Co-word analysis was used to examine the conceptual structure of a research field utilizing the most significant keywords from documents. The previous methods connect documents indirectly through citations. This technique creates a similarity measure based on the actual content of the documents (Aria & Cuccurullo, 2017). By performing the co-word analysis, semantic maps of a field that aid in comprehending its cognitive structure were developed.

To fully understand which keywords authors utilized, I looked at the ten most relevant keywords based on the author's keywords, whereas the analysis was limited by searching for the keywords only within the title (TI) or abstract (AB). These keywords are presented in Figure 31. The authors used the keyword "economics", i.e. in 11% of occurrences, followed by the keyword internet with 8% of occurrences and network management in 6%. Other keywords, defined by documents' authors, were platform economics (5%), digital economics (3%), digital economy (3%), interconnection (3%), legal aspects (3%), management (3%) and platform (3%).

*Figure 31: Most frequent words in the internet, digital and platform economics field*



*Adapted from Clarivate (2022).*

Comparing these findings with the results of the analyses for each research stream, some similarities can be identified across these subgroups. These findings are presented in Appendix 14. For the stream “internet economics”, keyword “economics” was again used

by authors the most (17%), followed by internet in 13% of the documents and network management in 10% of the documents. However, some additional keywords, such as interconnection (4%), legal aspects (4%), management (4%), measurement (3%), quality of service (3%), security (3%) and application-driven pricing (1%) were also found. In digital economics, the digital economics keyword was used by authors the most with three occurrences (5%), followed by artificial intelligence (4%), digital economy (4%), digital environment (4%), digitization (4%) and ICT-competence with two occurrences each (4%). The other frequent keywords were also 0 technologies (2%), applied ethics (2%), artificial intellect (2%) and basic (2%). Finally, in the platform economics stream, the platform economics keyword was used by authors the most with five occurrences (8%), followed by platform with 3 (5%). Other keywords were multi-sided markets (3%), network externalities (3%), platform economy (3%), platform supply chain (3%), platforms (3%), pricing (3%), sharing economy (3%) and sustainable development (3%), each with two occurrences.

Keywords, identified for all three fields combined, and their relevance can also be seen in Figure 32 where the word cloud is shown. The larger the keyword the more occurrences it has and vice versa. Moreover, in Appendix 15, the tree map is presented and the corresponding percentages can be seen. Based on all three presented keyword analyses, we can again conclude that the analysed research field is very diverse and dynamic and it covers a variety of different topics as well as deals with several economic effects, both positive and negative. The field very proportionately covers all three main research streams, internet, digital and platform economics, and their significant impacts on overall economic activity.

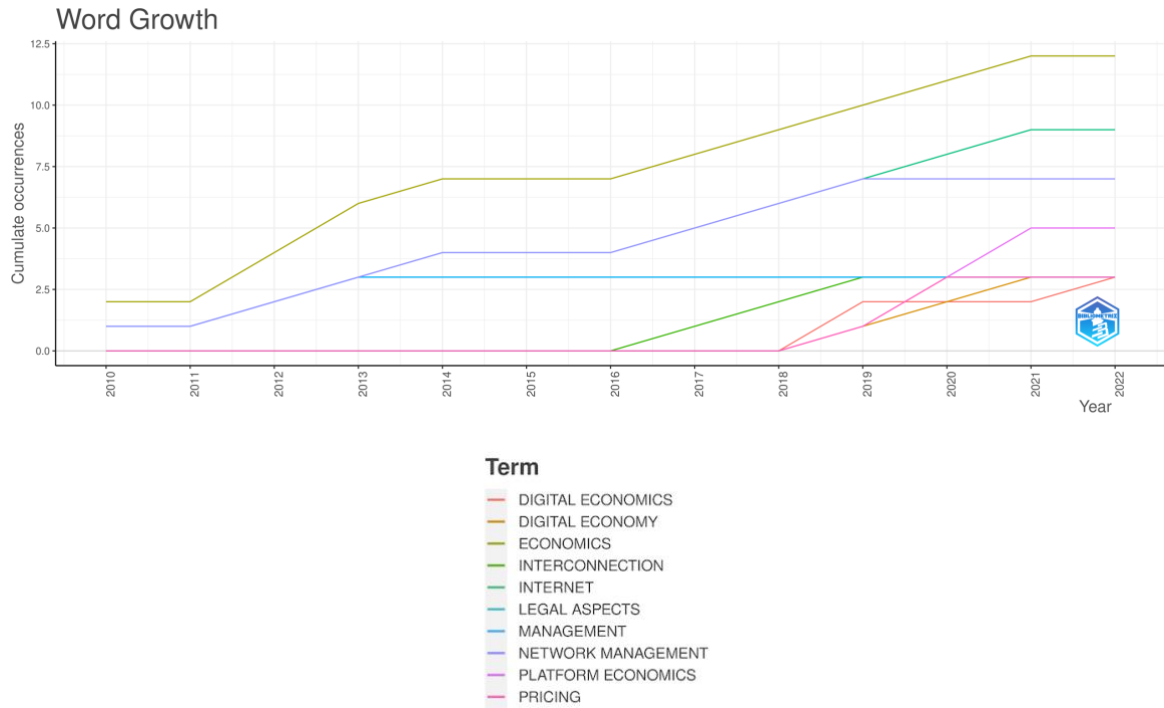
*Figure 32: Word cloud in the internet, digital and platform economics field*



I further analyse the word dynamics. Results are presented in Figure 33 and show the increasing trend for most of the analysed author's keywords, meaning the frequency of using

these words increases. This figure signals the dominance of “economics” in the analysed documents. At the same time, it clearly shows the increase in the usage of some keywords, for example pricing, interconnection and even network management.

*Figure 33: Word dynamics in the internet, digital and platform economics field*



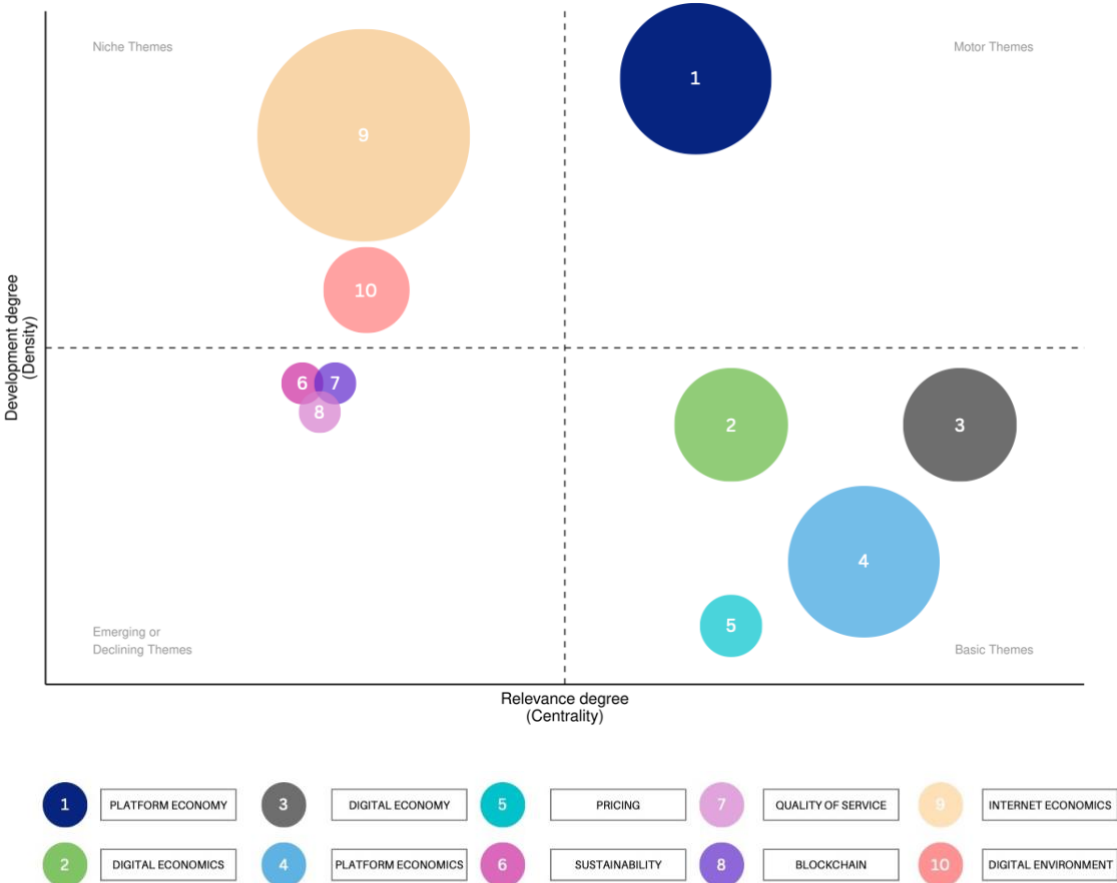
*Adapted from Clarivate (2022).*

Identifying essential topics or the so-called themes through the development of a thematic map was the final step of the analysis and one of its main goals. Themes are keyword clusters arranged into a single circle and mapped as a two-dimensional picture using their density and centrality. The degree of intensity with which a cluster is linked to other clusters is measured by centrality. The stronger and the more numerous these links are, the more the cluster accurately denotes a group of research issues recognized as significant by the scientific community. Thus, centrality indicates the degree of interaction of a cluster with other clusters. While density indicates the strength of the links that connect the keywords that make up the cluster, the stronger the links are, the more cohesive and integrated the research challenges corresponding to the cluster are. By that, density defines the internal strength of a cluster (Yu & Muñoz-Justicia, 2020).

By density and centrality, a study subject may be divided into four quadrants, as shown in the thematic map in Figure 34. Themes in the upper-right quadrant are significant for the way the study field is organized and are very well-developed. Since they exhibit significant centrality and high density, they are referred to as motor themes. Themes in the upper-left quadrant have strong internal connections but weak external connections, making them of minor significance for the field. These topics are highly specialized, niche and peripheral. The lower-left quadrant's themes are weak and poorly developed. The themes in this

quadrant mostly represent either emerging or vanishing concepts and have low density and low centrality. In the lower-right quadrant, there are general, basic themes. Although poorly developed, they are crucial for a research topic and can even be considered fundamental and universal (Sánchez-Núñez, Cobo, De Las Heras-Pedrosa, Peláez, & Herrera-Viedma, 2020).

Figure 34: Thematic map representation of internet, digital and platform economics-related keywords



Adapted from Clarivate (2022).

Clusters were developed based on 230 authors' keywords through the Louvain clustering algorithm, a hierarchical clustering algorithm that performs modularity clustering on condensed graphs and recursively integrates communities into a single node (Yu & Muñoz-Justicia, 2020). In total, ten clusters emerged. I further qualitatively analysed the documents' abstracts to identify the research focus of documents from a particular cluster in more detail.

Starting with the upper-right quadrant, where motor themes, the most significant themes for the organization of a research field, are gathered. Only one cluster, cluster 1, includes such themes. The keywords in this cluster are network externalities, platform economy, platform supply chain, platforms and sharing economy. While this cluster covers various topics, it primarily concerns the platforms and their market power. Therefore, it can be named platform economy. In addition, the results of the qualitative analysis of the documents' abstracts belonging to this cluster show that sharing economy is a theme with significant



relevance in all research streams. In this regard, documents in this cluster discuss platform-facilitated collaborative consumption, examine different sharing levels and evaluate how information search costs influence customer purchase behaviour (e.g. Akbar & Tracogna, 2018). While highlighting positive economic effects, the literature in this cluster also discusses the threat of peer-to-peer sharing platforms, making it the only cluster that includes documents that deal with positive and negative externalities. In addition, the authors of these documents use transaction cost theory to explain key features of sharing platforms (e.g. Xu, 2020). Moreover, as the platform economy gains popularity and firms move their activities from offline to online, the importance of newly built platform supply chains has also emerged. Authors from this cluster discuss the changes in the supply chains and the new nature of the markets (e.g. Shen et. al., 2022). Platforms have become a specific format of multi-sided markets. Therefore, the documents in this cluster provide a theoretical examination of pricing models that underlie the success of such markets and companies operating in this format (e.g. Antipina, 2020). These documents also touch upon platformization in the green energy sector and by that covers the topic of green platform economics (e.g. Menzel & Teubner, 2020). Finally, this cluster exhibits significant centrality and high density, meaning the themes in it are extremely interconnected and intensively connected with other clusters. It can be concluded that platform economy, sharing economy and other related themes are well-developed and very significant for the organization of the field, judging by their position in the thematic map.

Moving on to basic themes, four clusters can be found here, among which three are very similar in size. Cluster 2 covers digitization and digital economics. This cluster is positioned almost in the middle of the thematic map, which makes it moderate in both centrality and density, meaning it is neither very interconnected nor interacts with other clusters. Economic effects covered by the documents in these clusters are primarily connected with the changes in the business models due to the extensive digitization process. From the documents included here (e.g. Makarov & Khorosheva, 2019), it is evident how digitization affects the emergence of new business models and accelerates the transformation of existing ones. It covers the advantages that this process provides, including the improvement of planning and the automation and optimization of production and control operations. Additionally, these documents examine the fundamental mechanisms of value creation brought about by digital technologies (e.g. Yalcintas, 2020). Therefore, based on these findings from the qualitative analysis of the abstracts, this cluster can be labelled as digital economics since it covers the documents that discuss this dynamic process.

Cluster 3 is very similar to the second cluster. It also has two keywords: digital economy and artificial intelligence. In contrast with the previous one, this cluster deals more with newly emerged digital technologies and their role in the overall economic development and not so much with the whole digitization process. Therefore, this cluster can be referred to as a digital economy. What is more, one of the documents extensively covers the difference between the value of digital economy and that of traditional (e.g. Liu & Zheng, 2022). The latter is one of the most significant contributions to this field since a large part of the Master's thesis was dedicated to analysing these differences. Moreover, artificial intelligence is

greatly covered in these documents as well as related challenges (e.g. Fedorova, Babenko, Malykhina, Yarmosh & Malykhina, 2019). Documents in this cluster also touch upon the ethics and moral principles connected with the exploitation of digital technologies (e.g. Vorontsova, Adelaida, Martínez, Arakelyan & Yeremyan, 2021). Finally, this cluster shows a higher level of centrality than cluster 2 but the same level of density, meaning its degree of intensity with which it is linked to other clusters is very high.

Cluster 4, which still belongs within basic themes, is one of the most fundamental clusters. This cluster, which is high in centrality, includes documents covering the topics of platform economics, platforms and multi-sided markets. Documents that can be found here cover all aspects of platforms in economy. The documents start by addressing the data sharing platforms (e.g. Wysel, Baker & Billingsley, 2021), while answering the questions of how value is created from the data and elaborating on increasing privacy concerns of users (e.g. Budzinski & Lindstädt-Dreusicke, 2020). Moreover, they discuss the platform model in a socio-economic system where the role of society comes into play (e.g. Bhargava, Wang & Zhang, 2022). These documents also cover negative effects arising from the internet platforms and elaborate on how digital platforms have accrued enormous power and scale by engaging in unfair competition (e.g. Towse, 2020). In connection to that, they introduce the role of regulation, or more precisely, the antitrust policy (e.g. Budzinski & Lindstädt-Dreusicke, 2020). Based on all the topics discussed, the cluster is labelled platform economics. While similar to cluster 1, cluster 4 more primarily discusses the negative effects that arise from the enormous power internet platforms gain through the internet. In comparison, cluster 1 discusses some negative impacts as well, but primarily focuses on the positive consequence, in particular, the emergence of sharing economy phenomenon.

The final cluster of this quadrant is cluster 5. There are only a few documents in this cluster, which can already be observed by the cluster size. The majority of documents in this field address the multi-stage pricing problem (e.g. Jia, Chen & Li, 2019; Li, Li, Lu & Huang, 2020). Thus, this cluster is referred to as pricing. It is very low in density yet high in centrality. Therefore, it has strong links with other clusters, while internally it is not well connected.

The following three clusters, clusters 6, 7 and 8, all fall into emerging or declining themes, which is also evident from their representativeness. The topics they cover are not widespread and considered by many authors. This could be due to the fact that they are declining or that their popularity has not come yet. These topics are quality of service, sustainability, and blockchain. Moreover, documents in this cluster also extensively debate appropriate pricing mechanisms and various differentiated pricing schemes (e.g. Zalan, 2018; Reichl, 2010; Xie, Wu, Ma & Lui, 2019). However, not much can be concluded, especially not in terms of their centrality and density, yet all three are more on the low side of both. According to that, these themes are weak and poorly developed.

The final upper-left quadrant presents highly specialized and niche themes whose significance for the field is minor. Two clusters emerged here. Cluster 9 is the biggest and the most representative cluster of them all. It includes keywords, such as economics, internet,

network management, interconnection, legal aspects, management, measurement and security. This cluster consists of keywords from the most influential authors, such as David Clark and Kimberly C. Claffy. Keywords belonging to this cluster are applied in documents that discuss several economic effects, starting from the market power of internet service providers. These documents elaborate on methods for describing and assessing market power in today's internet (e.g. Claffy & Clark, 2020). They make conclusions regarding the levels of unfair competition and introduce the concept of a two-sided bilateral oligopoly, including the cost for consumers and potentially harmful discrimination. They also cover a privacy policy for the data that might be personally identifiable and discuss the connection that would inform future policy debates (e.g. Claffy, 2012). Based on this and an additional review of the documents' abstracts, this cluster can be called "internet economics". Finally, what is common to all the documents in this cluster is that they all explore the common objective of setting a course for the developing yet empirically underdeveloped subject of internet economics. Themes in this cluster pose high density but relatively weak centrality, meaning they are very strong internally but not very interactive with other clusters. Thus, according to the thematic map, internet economics is specialized but less important for the field.

The final cluster, cluster 10, developed based on the digital environment and ICT-competence keywords, addresses the idea of digitalization and outlines the fundamental distinctions from informatisation. Documents in this clusters stress how the advancement of the internet, the digitization of resources, mobile communications, digital technology, particularly in finances and economics, and the blending of online and offline services allow digital transformation, facilitating digital economy (e.g. Shrayberg, 2019). Additionally, the documents are concerned with developing ICT-based competency and emphasize that global trends in the digital environment mandate this development (e.g. Beloglazova, Procenko, Safonova, Vasenina, 2020). These themes have strong internal connections but weak external connections, making them of minor significance for the field.

Based on the above discussion, interesting conclusions can be made. Although "internet economics" initially seemed to be one of the most representative fields, the thematic map showed that it is a topic of smaller importance for the broad research field. While it is highly interconnected, it shows very weak links with other clusters. However, this can be explained by its complexity of being a very specialized research topic within highly specialized teams of researchers. The same conclusion can be drawn from the field's leading documents, which do not primarily cover internet economics. However, the most influential authors are still from the "internet economics" research stream. Moreover, even though digital economics is represented in the most influential documents, this research stream does not show extensive significance in the thematic map where instead the digital economy prevails. While they are very similar in terms of centrality and density, digital economics and digital economy portray a difference, evident already from the narrative literature review. This difference is now, once again, confirmed by the bibliometric analysis. Digital economy extensively covers the topics of digital technologies, while digital economics analyses those consequences. Finally, the platform economics topic, which appeared as a very basic and general topic, has

ultimately been shown as fundamental. On top of that, it can be concluded that there is a high dispersion in themes, in sources as well as within authors due to the field being very heterogeneous and interdisciplinary.

## **CONCLUSION**

The internet used to be a vital tool for improving communication, but it has since developed into a widespread technology that has impacted all aspects of economic and societal development, which is both an opportunity and a challenge. Since it encourages connectivity between people and information and significantly impacts the economy, society, and culture, it is profoundly shaping modern society. Technological developments in information and telecommunications technology in recent years have brought many revolutionary changes to business and social life, significantly impacting business and social characteristics. Market conditions have changed, demanding new business models or the redesign of old ones to adapt to new conditions. It is evident from the internet's general functionality, plasticity, transversality and selectivity, that contemporary technology has invaded various areas of people's everyday lives and the functioning of economy through computerisation, standardisation and digitalisation. This indicates that we have entered a time characterised by rapid transformation, which will likely be the most significant area of economy in the near future.

The internet's ability to create or close information spaces, which bring new players to the network and input a wide range of content of all kinds, has attracted the attention of several practitioners in this field. Its ability to interact seamlessly across economic, geographic, political or social boundaries improves access to pertinent information about its strategic activities, has given rise to a brand-new dimension of economy known as "internet economy." Numerous studies are devoted to internet economy, which speaks about its popularity and, all in all, its importance.

There are some differences between internet economy and previous, traditional models. In a world where digital technology is the dominant force, many fundamental assumptions in traditional economy are suddenly shifting. In internet economy, this fundamental notion of market equilibrium, which has proven to be such a powerful instrument of traditional economic research, loses some of its significance. Internet-based mechanisms, which facilitate and speed up innovation, reduce the gap between business owners and customers and change traditional business model management strategies, which constitute the internet economy's foundation. In addition, the nature of markets and commodities, methods of production and payment, the amount of capital required to do business worldwide and the need for human capital have all changed due to the changes brought about by the digital age. Additionally, enterprises were exposed to cutting-edge concepts, technology, management and business strategies and new market access routes were established. All of this was achieved at a relatively low cost.

Despite this deviation from traditional economy, internet economy brings several benefits, particularly for three economic agents: (1) Businesses, (2) People, and (3) Governments. Some of the most significant benefits of the internet include increased business productivity through greater access to digital goods and services, increased ability to capture and store data digitally, faster and more effective business processes and many others. For people, internet economy enhances greater access to a broader selection of goods and services at reasonable rates, ensures the ability to purchase items from anywhere in the world providing significant time savings, decreases consumer search cost and increases purchasing power and new chances for the business and employment generation. Finally, for governments, it ensures greater access to tools that enable the government to provide more and better public services and other benefits for the people and the country, increases ability to provide information to citizens more affordably and precisely and offers better support to help governments eliminate "black economy", etc. In contrast, internet economy presents significant challenges, such as inadequate IT infrastructure, lack of experience and expertise among top management, shortage of highly skilled and qualified workers and similar for businesses. Collection of consumer data and related data protection concerns, increased likelihood of price discrimination, violation of certain customers' inherent privacy preferences and greater inequality are the challenges for people. Moreover, conflicts between national security and the advantages of the free flow of data, knowledge and technology around the world, tensions between individual rights and community interests and the need to impose restrictions on the free flow of information are the constraints for governments.

To further explain the effects of the internet on economy, the transaction cost theory, which is one of the earliest attempts to create a complete theory that views the firm's structure as a source of explanation for outcomes (Cordella, 2006, p. 52), proved effective. As a growing number of transactions are conducted through digital means every day, transaction cost theory is becoming widely applicable and a subject of many researchers' interests. The theory illuminates the consequences of the internet in economy through three fields: inclusion, efficiency and innovation. By promoting inclusion, digital technologies positively impact every economic area. The internet makes it easier for businesses to participate in the global economy by facilitating trade, creating job opportunities for households and providing citizens access to public services. Additionally, the internet increases capital's productivity and efficiency. In turn, people may become more productive, governments can provide services at a lower cost and corporations can more easily coordinate production. Finally, the internet increases market competitiveness, which in turn points to innovation and results in consumer surplus. However, the internet also brings some negative economic impacts. The biggest and the most significant market failure is the growth and dominance of successful internet companies, or rather, internet platforms, which grow rapidly and dominate their markets, and, in consequence, become digital monopolies. When those companies have market power, inefficiency results. This introduces the need for regulation. Moreover, market imperfections like increased privacy concerns, information asymmetries, greater inequality and negative externalities also lead to market inefficiency. Addressing the regulation of these issues is just as crucial.

Based on the above-presented characteristics, it is evident that this Master's thesis addresses various research topics within internet economics. The first and the most apparent topic addressed is the role of the internet in economy. In this regard, digital innovation and the role of digital technologies are addressed. At the same time, the research topics such as digital transformation and e-commerce are trying to be avoided, even though they often interfere with the topics of my interest. Moreover, the core of this Master's thesis also addresses the consequences of the internet on economy. Here, various broad research topics emerged, which provided great insight into the functioning of economy in this new digitally mediated environment. Such research topics were primarily various market structures, specifically monopolies. Digital monopolies were the central research topic in this regard since their impacts are pronounced throughout the whole topic of internet economics. Essentially, greater privacy concerns, imperfect information and information asymmetries, negative externalities and greater inequality were also recognized as fundamental research topics, whereas all those topics were ultimately explained through the implications of transaction cost theory.

Corresponding to that, several names have emerged through the field analysis to describe those topics. The authors are very inconsistent in using these terms. Therefore, it is crucial to determine how the terminology relevant to the field has evolved over time to get a comprehensive view of the field. While the term internet economy appeared as the most suitable to describe the role of the internet in economy, thorough examinations of this field provided four additional terms used to describe this growing phenomenon, including "digital economy", "web economy", "new economy", and "platform economy" where all five can be used to explain these recent internet advancements in economy. While digital economy leads in the number of documents, internet economy arose first, in the second half of the 1990s, and was used in many publications addressing the subject of interest. Furthermore, the term internet economy is employed in most papers that discuss the internet's function in economic theory and its significance has only grown throughout the course of the study period. However, while literature extensively utilizes the terms internet economy, digital economy, web economy, new economy and platform economy to define the economic activity resulting from billions of connections made daily between people, businesses, devices, data and processes online, terms such as "internet economics", "digital economics" and even "platform economics" analyze and explain the resulting effects and consequences. Thus, these three terms represent the most relevant terminology in this field and their evolution over time has been very dynamic. Among these three research streams, internet economics was first present in the literature in 1997. Moreover, 2001 saw the emergence of digital economics, while platform economics appeared last in 2014. All this can be concluded based on the narrative literature review. In contrast, a bibliometric analysis of the evolving trends in internet economics, or rather, the thematic map analysis, which provided the final conclusions in this regard, revealed that digital economy displays relevance and that internet economics is a topic of minimal importance for the larger research area. Comparatively, digital economics also did not appear to have significant importance, while platform economics was ultimately shown as a fundamental topic.

While my research provided great insight into the topic, it was, to some extent, limited. Firstly, the small sample hindered some analysis because not much was seen from certain visuals based on such a small sample. The small sample size is due to the young nature of the field, which started to fully emerge only in recent years and, therefore, not many documents covering these topics have been published yet. This sample size was also problematic because it did not address all economic effects identified in the narrative literature review. Market power, unfair competition, privacy concerns and, to some extent, even externalities were addressed. However, greater inequality and information asymmetry were not identified in my sample, which is a downside since both economic effects are very important in the overall development of the field. Moreover, another limitation was also the difficulty in determining the relevant keywords. According to some other bibliometric analyses, the relevant keywords were obtained by formulating the survey sample of executives in the field and, based on their insights, the keywords were developed. I was limited in this regard as well, again due to the field being relatively young and the terminology not yet so established. Finally, authors not being consistent in using the internet economics-related terms created great constraint and limited me to some extent since some were confusing these terms and often used them in an inappropriate context, which often created uncertainty.

I anticipate the findings of this Master's thesis offer insightful information about internet economics research areas and address numerous essential issues raised due to technological advancements in economy. I presented internet economics' extreme diversity and dynamics. However, it would be necessary and insightful to look at how literature addresses the ways to effectively minimize the negative impact of the internet on social and economic problems, how to benefit from newly arisen opportunities due to the internet, how to improve the relevant laws and regulations policy, how to strengthen the related departments of supervision in the process of the internet's development and traditional economy integration and all other related issues that were considered within the scope of this Master's thesis. How these issues can be resolved is a potential topic for further research. While the field is dynamic and branched, numerous opportunities for considerable future work exist. There is much work to be done in this area since many theoretical presumptions and historical observations on which economics is established need to be re-examined. It can be concluded that the existing literature adequately addresses many relevant issues, however, there are still enormous potential research gaps.

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## **APPENDICES**



## Appendix 1: Summary in Slovene

Ustvarjalna in učinkovita uporaba informacijske in komunikacijske tehnologije postaja vse pomembnejša za konkurenčnost in napredek v enaindvajsetem stoletju. Vse hitrejši tehnološki preboji so revolucionirali poslovne modele in spremenili način interakcije med gospodarskimi subjekti v poslovnih procesih. Ključnega pomena je razumeti, v katero smer se ta novi trend razvija in ali pomeni kaj več kot le prilagoditev sedanjega gospodarskega sistema. Obseg gospodarskih dejavnosti na internetu se hitro povečuje, vsi gospodarski sektorji pa so sprejeli informacijsko-komunikacijsko tehnologijo (IKT), da bi povečali produktivnost, povečali obseg poslovanja in tržni delež ter zmanjšali stroške. Poleg tega tehnologija spodbuja gospodarsko vključenost, učinkovitost in inovativnost, saj odpravlja informacijske ovire, širi dostop in povečuje raven znanja in spretnosti, potrebnih za sodelovanje v gospodarstvu.

Podjetja v vseh dejavnostih lahko zdaj oblikujejo in gradijo poslovne modele, ki temeljijo na tehnoloških zmogljivostih, da bi okrepila svojo prisotnost na svetovnih trgih. To ljudem, podjetjem in vladam omogoča cenejše delovanje, saj uporaba IKT in interneta bistveno zmanjšuje stroške transakcij. Zato so proizvodnji dejavniki učinkovitejši in produktivnejši, zaradi česar so trgi in vlade hitrejši, cenejši in priročnejši. Povečana učinkovitost predstavlja pomemben delež koristi interneta in prinaša nove ljudi na trg ter omogoča ustvarjanje trgov, ki so bili prej morda nepredstavljeni. Vsak dan se pojavljajo novi sektorji, ki prinašajo številne vznemirljive nove raziskovalne izzive, kar pa prinaša tudi neskončne gospodarske priložnosti. Medtem ko nekatera podjetja uspevajo, se druga težko prilagajajo. Za tiste, ki zaradi različnih tehnoloških ali finančnih ovir ne morejo izkoristiti novih gospodarskih priložnosti, te spremembe pomenijo veliko oviro. Vendar morajo tisti, ki želijo v celoti izkoristiti velike spremembe, ki jih bo povzročil internet, ukrepati zdaj, da bi se izognili izgubi konkurenčnih prednosti. Čeprav obstaja obsežna literatura o vlogi IKT v gospodarstvu, pa področje ni dobro opredeljeno z vidika ekonomske teorije.

Namen tega magistrskega dela je sistematizirati učinke interneta na gospodarstvo in gospodarske subjekte ter opredeliti teoretične posledice in raziskovalna področja, ki so se v ekonomiji pojavila zaradi uporabe interneta in njegovega vpliva na gospodarske aktivnosti. V skladu s tem to magistrsko delo obravnava, ali literatura ustrezno obravnava vsa pomembna vprašanja in ali obstajajo morebitne raziskovalne vrzeli.

Pri preučevanju področja internetne ekonomike je magistrsko delo obravnavalo naslednji dve raziskovalni vprašanji:

- Kako se je skozi čas razvijala terminologija, ki je pomembna za področje internetne ekonomike?
- Katere raziskovalne teme se obravnavajo v okviru internetne ekonomike?

Cilji tega magistrskega dela so (1) raziskati uporabljeno terminologijo in zagotoviti pregled ustreznih opredelitev internetne ekonomije in ekonomike z obsežnim pregledom literature velikega števila publikacij, ki pokrivajo to hitro rastoče področje, (2) povezati področje z ustreznimi ekonomskimi teorijami, kot je teorija transakcijskih stroškov, (3) predlagati tipologijo ključnih ekonomskih učinkov in (4) izvesti bibliometrično analizo področja internetne ekonomike, da bi podrobneje prikazali njegovo rast in razvoj skozi čas ter tako razkrili terminologijo v smislu uporabljenih sinonimov, generičnih in podrejenih izrazov ter preučili trenutna raziskovalna področja.

Iskanje odgovorov na zastavljeni raziskovalni vprašanji temeljilo na izbrani relevantni literaturi, ki jo sestavljajo raziskovalne monografije, raziskovalni članki in drugi objavljeni dokumenti. To je pomagalo opredeliti posebne značilnosti opazovanih pojavov in jih sistematizirati. Sinteza preteklih raziskovalnih ugotovitev je ena najpomembnejših podlag za nadaljnji razvoj raziskovalnega področja.

To magistrsko delo je sestavljeno iz treh glavnih poglavij z ustreznimi podpoglavji. Prvo - teoretično - poglavje vsebuje pregled vloge interneta v luči nedavnega razvoja in inovacij na tem pomembnem področju gospodarske dejavnosti. Poleg tega so v prvem delu izpostavljene splošne lastnosti interneta, ki pojasnjujejo njegovo vlogo v gospodarstvu, in posebne značilnosti, ki pojasnjujejo njegovo ključno vlogo in obsežno prisotnost v ekonomski teoriji. Ker je internet univerzalni medij, ki povezuje vse gospodarske akterje, se je seveda začel uporabljati za številne gospodarske dejavnosti, kar je povzročilo uveljavitev pojma "internetne ekonomije" in z njim povezanega pojma "internetna ekonomika". Zato je magistrsko delo obravnavalo to novo razsežnost ekonomije. Na podlagi Clarivate podatkovne zbirke Web of Science je v tem poglavju nadalje obravnavana tudi s pojmom "internetne ekonomije" in "internetne ekonomike" povezana terminologija v smislu sinonimov ter generičnih in podrejenih izrazov, da bi v celoti razumeli dinamiko in raznolikost tega raziskovalnega področja. Da bi analizirali razlike in podobnosti v uporabljeni terminologiji, je v tem poglavju podrobno predstavljen časovni potek uvajanja ustrezne terminologije in časovni potek glede na leta največjih objav. Za vse relevantne preučevane pojme je analizirano in predstavljeno število publikacij, ki obravnavajo te pojme, ključna raziskovalna področja, leta z največjim številom objav in vodilne države z vidika objav. V tem pogledu sem to novo gospodarsko normalnost primerjala z značilnostmi tradicionalnih gospodarstev. Spremembe, ki jih je v naša gospodarstva prinesel internet, vplivajo tudi na ekonomsko znanost in vprašanja, ki jih obravnava. Zato je podobna analiza pripravljena tudi za področje internetne ekonomike, in sicer po enakem metodološkem pristopu, da je primerjava med obema še bolj enostavna in priročna. Prvo poglavje magistrske naloge vsebuje celovit pregled koristi in izzivov za vse gospodarske subjekte, na katere vpliva hitro razvijajoče se internetno gospodarstvo.

Drugo poglavje povezuje posledice interneta s teorijo transakcijskih stroškov in opredeljuje tri področja, na katerih je mogoče analizirati posledice uporabe interneta na gospodarstvo in gospodarske subjekte, tj. vključenost, učinkovitost in inovacije. Zadnji del tega poglavja je

namenjen razpravi o tržnih nepopolnostih, povezanih z internetom, in njegovim vplivom na konkurenco in s tem povezano potrebo po regulaciji tega področja.

Tretje poglavje magistrskega dela je v celoti namenjeno bibliometrični analizi literature, povezane z internetom in njegovimi posledicami. Bibliometrična analiza je uveljavljena metoda za raziskovanje in lepo dopolnjuje teoretični del magistrskega dela z uporabo informacij, zbranih iz Clarivate podatkovne zbirke Web of Science, in njihovo analizo s pomočjo programa StudioR. V tem poglavju najprej pojasnujem metodologijo bibliometrične analize, nato vzorec ustrezne literature, različne vrste analiz in nazadnje rezultate.

Rezultati analize so pokazali več imen za to področje, vendar so avtorji pri uporabi le-teh zelo nedosledni. Zato je bilo ključnega pomena, ugotoviti, kako se je terminologija, ki se nanaša na to področje, razvijala skozi čas. Čeprav se je izraz internetna ekonomija sprva zdel najprimernejši za opis vloge interneta v ekonomiji, je analiza tega področja pokazala štiri dodatne izraze za opis tega naraščajočega pojava, vključno z "digitalno ekonomijo", "spletno ekonomijo", "novo ekonomijo" in "platformno ekonomijo", pri čemer se lahko vseh pet uporablja za pojasnitev teh nedavnih napredkov interneta v ekonomiji. Medtem ko digitalna ekonomija vodi po številu dokumentov, se je internetna ekonomija pojavila najprej, v drugi polovici devetdesetih let, in je bila uporabljena v številnih publikacijah, ki obravnavajo izbrano tematiko. Poleg tega se izraz internetna ekonomija uporablja v večini dokumentov, ki obravnavajo vlogo interneta v ekonomski teoriji, njen pomen pa se je s časom le še povečal. Medtem ko se v literaturi pogosto uporabljajo izrazi "internetna ekonomija", "digitalna ekonomija", "spletna ekonomija", "nova ekonomija" in "platformna ekonomija", pa izrazi, kot so "internetna ekonomika", "digitalna ekonomika" in celo "platformna ekonomika", analizirajo in pojasnjujejo učinke in posledice. Med temi tremi izrazi se je internetna ekonomika prvič pojavila v literaturi leta 1997, digitalna ekonomika leta 2001, platformna ekonomika pa leta 2014. Vse to je mogoče sklepati na podlagi pregleda literature. Nasprotno pa je bibliometrična analiza razvoja področja ekonomike interneta pokazala, da je digitalna ekonomija pomembna in da je internetna ekonomika tema minimalnega pomena za širše raziskovalno področje. Tudi digitalna ekonomika se ni izkazala za zelo pomembno, medtem ko se je platformna ekonomika na koncu izkazala za temeljno temo.

**Appendix 2: The most representative years and the number of publications in that years for each term used**

	Prevailing year(s)	Number of publications
<b>Internet economy</b>	2017	37
<b>Digital economy</b>	2019	1217
<b>Web economy</b>	2013	2
<b>New economy</b>	2016	173
<b>Platform economy</b>	2021	166

**Appendix 3: 10 most cited documents in the field**

Rank	Document title	Authors	Year	Journal	Nr. of citations
Internet Economy					
1	Networked incubators - Hothouses of the new economy	Hansen, M. T., Chesbrough, H. W., Nohria, N., & Sull, D. N.	2000	Harvard Business Review	214
2	Information and Communication Technologies and Society A Contribution to the Critique of the Political Economy of the Internet	Fuchs, C.	2009	European journal of communication	118
3	A comparison of the knowledge-based innovation systems in the economies of South Korea and the Netherlands using Triple Helix indicators	Park, H. W., Hong, H. D., & Leydesdorff, L.	2005	Scientometrics	89
4	How Add-on Pricing Interacts with Distribution Contracts	Geng, X. J., Tan, Y. L., & Wei, L.	2018	Productions and operations management	79
5	Leveraging missing ratings to improve online recommendation systems	Ying, Y. P., Feinberg, F., & Wedel, M.	2006	Journal of marketing research	78

6	The internet and the new energy economy	Romm, J.	2002	Resources conservation and recycling	77
7	Identifying success factors for rapid growth in SME E-commerce	Feindta, S., Jeffcoate, J., & Chappell, C.	2002	Small business economics	70
8	Constitutional democracy and technology in the age of artificial intelligence	Nemitz, P.	2018	Philosophical transactions of the royal society a-mathematical physical and engineering sciences	60
9	MASCOT: an agent-based architecture for dynamic supply chain creation and coordination in the internet economy	Sadeh, N. M., Hildum, D. W., Kjenstad, D., & Tseng, A	2001	Production planning and control	59
10	A flexible downlink scheduling scheme in cellular packet data systems	Sang, A. M., Wang, X. D., Madihian, M., & Gitlin, RD	2006	IEEE transactions on wireless communications	54
Platform Economy					
1	The Rise of the Platform Economy	Kenney, M., & Zysman, J	2016	Issues in science and technology	425
2	Promises and paradoxes of the sharing economy: An organizing framework	Acquier, A., Daudigeos, T., & Pinkse, J.	2017	Technological forecasting and social change	316
3	Platform labor: on the gendered and racialized exploitation of low-income service work in the 'on-demand' economy	Van Doorn, N.	2017	Information communication and society	198
4	The "sharing" economy: labor, inequality, and social connection on for-profit platforms	Schor, J. B., & Attwood-Charles, W.	2017	Sociology compass	157
5	What Do Platforms Do? Understanding the Gig Economy	Vallas, S., & Schor, J. B.	2020	Annual review of sociology	142
6	The who, why, and when of Uber and other ride-hailing trips: An examination of a large sample household travel survey	Young, M., & Farber, S.	2019	Transportation research part a-policy and practice	130
7	Platform-Capital's 'Appetite' for Control: A Labour	Veen, A., Barratt, T., & Goods, C.	2020	Work employment and society	118



	Process Analysis of Food-Delivery Work in Australia				
8	Regulating Uber: The Politics of the Platform Economy in Europe and the United States	Thelen, K.	2018	Perspective on politics	103
9	Platform economies and urban planning: Airbnb and regulated deregulation in London	Ferreri, M., & Sanyal, R.	2018	Urban studies	97
10	Industry 4.0: a supply chain innovation perspective	Hahn, G. J.	2019	International journal of production research	93
New Economy					
1	Knowledge management: An organizational capabilities perspective	Gold, A. H., & Malhotra, A., & Segars, A. H.	2001	Journal of management information systems	2334
2	Capturing value from knowledge assets: The new economy, markets for know-how, and intangible assets	Teece, D. J.	1998	California management review	1272
3	Ecosystem services: From eye-opening metaphor to complexity blinder	Norgaard, R. B.	2010	Ecological economics	609
4	Creative cities: Conceptual issues and policy questions	Scott, A. J.	2006	Journal of urban affairs	583
5	Using case methods in the study of contemporary business networks	Halinen, A., & Tomroos, J. A.	2005	Journal of business research	548
6	Strategies for managing knowledge assets: the role of firm structure and industrial context	Teece, D. J.	2000	Long range planning	512
7	Globalization, the new economy, and the commodification of language and identity	Heller, M.	2003	Journal of sociolinguistics	475
8	Is a finance-led growth regime a viable alternative to Fordism? A preliminary analysis	Boyer, R.	2000	Economy and society	468

9	Cracking the code of change	Beer, M., & Nohria, N	2000	Harvard Business Review	456
10	Does the "new economy" measure up to the great inventions of the past?	Gordon, R. J.	2000	Journal of economic perspectives	440
Digital Economy					
1	Consumer surplus in the digital economy: Estimating the value of increased product variety at Online booksellers	Brynjolfsson, E., Hu, Y., & Smith, M. D.	2003	Management science	491
2	Profiting from innovation in the digital economy: Enabling technologies, standards, and licensing models in the wireless world	Teece, D. J.	2018	Research policy	296
3	ICT and productivity: conclusions from the empirical literature	Cardona, M., Kretschmer, T., & Strobel, T.	2013	Information economics and policy	273
4	Blockchain-Enabled Smart Contracts: Architecture, Applications, and Future Trends	Wang, S., Ouyang, L. W., & Wang, F. Y.	2019	IEE Transactions on system man cybernetics-systems	271
5	Models for supply chains in e-business	Swaminathan, J. M., & Tayur, S. R.	2003	Management science	264
6	Institution-based trust in interorganizational exchange relationships: the role of online B2B marketplaces on trust formation	Pavlou, P. A.	2002	Journal of strategic information systems	241
7	How Big Old Companies Navigate Digital Transformation	Sebastian, I. M., Ross, J. W., & Fonstad, N. O.	2017	MIS quarterly executive	240
8	Smart Cities at the Forefront of the Future Internet	Hernandez-Munoz, J. M., Vercher, J.B., & Petterson, J.	2011	Future internet: Future internet assembly 2021: Achievements and technological promises	219
9	Research commentary: The organizing logic for an enterprise's IT activities in the digital era - A prognosis	Sambamurthy, V., & Zmud, R. W.	2011	Information systems research	194

	of practice and a call for research				
10	Effects of big data analytics and traditional marketing analytics on new product success: A knowledge fusion perspective	Xu, Z. N., Frankwick, G. L., & Ramirez, E.	2000	Journal of business research	169
Web Economy					
1	Economics of information in the Web economy - Towards a new theory?	Biswas, D.	2004	Journal of business research	61
2	The Economics of the Online Advertising Industry	Evans, D. S.	2008	Review of network economics	54
3	Pivot to Internet Plus: Molding China's Digital Economy for Economic Restructuring?	Hong, Y.	2017	International journal of communication	42
4	The digital, quaternary or 4.0 web economy: aspects, effects and implications	Cooke, P., Yun, J. J., & Kim, Y.	2019	International journal of knowledge-based development	5
5	The web is watching you: A comprehensive review of web-tracking techniques and countermeasures	Sanchez-Rola, I., Ugarte-Pedrero, X., & Bringas, P. G.	2017	Logic journal of the IGPL	4
6	Social media: forum webcare as a proactive information strategy in health promotion	Quast, T., & Nocker, G.	2015	Bundesgesundheitsblatt-gesundheitsforschung-gesundheitsschutz	1
7	Towards a micropolitics of formats. content id and the management of sound	Heuguet, G.	2019	Revue d anthropologie des connaissances	0
8	Fine-Grained Control over Tracking to Support the Ad-Based Web Economy	Achara, J. P., Parra-Arnau, J., & Castelluccia, C.	2018	ACM transactions on internet technology	0
9	Web, economy shift distrib models for automation/control products	Thryft, A. R.	2012	/	0
10	Regularities in the formation and evolution of information cities	Lelis, S., Kavassalis, P., & Hatzistamatiou, A	n.d.	Digital cities ii: computational and sociological approaches	0

**Appendix 4: Web of Science results for the overview of the main field**

	<b>"Internet economy"</b>	<b>"Platform economy"</b>	<b>"New economy"</b>	<b>"Digital economy"</b>	<b>"Web economy"</b>
Nr. of results	294	592	2731	7604	14
Filter 1	Abstract OR Title	Abstract OR Title	Abstract OR Title	Abstract OR Title	Abstract OR Title
Nr. of results	267	405	2157	3610	14
Filter 2	Document type: Article, Early access, Review article, Book chapter	Document type: Article, Review article, Book chapter, Early access, Book	Document type: Article, Review article, Book chapter, Early access, Book	Document type: Article, Review article, Book chapter, Early access, Book	Document type: Article, Review article
Nr. of results	138	342	1320	2228	10

### Appendix 5: Web of science results for the overview of the supporting field

	"Internet economics"	"Digital economics"	"Platform economics"
Nr. of results	223	110	49
Filter 1	Abstract OR Title	Abstract OR Title	Abstract OR Title
Nr. of results	43	35	30
Filter 2	Document type: Article, Book chapters, Early access	Document type: Article, Book chapters, Early access	Document type: Article, Review article, Early access,
Nr. of results	21	17	26

### Appendix 6: The most representative years and the number of publications in that years for each term used

	Prevailing year(s)	Number of publications
<b>Internet economics</b>	2014	54
<b>Digital economics</b>	2020	59
<b>Platform economics</b>	2021	13

## Appendix 7: Bradford's law of scattering

Bradford\_Law-5

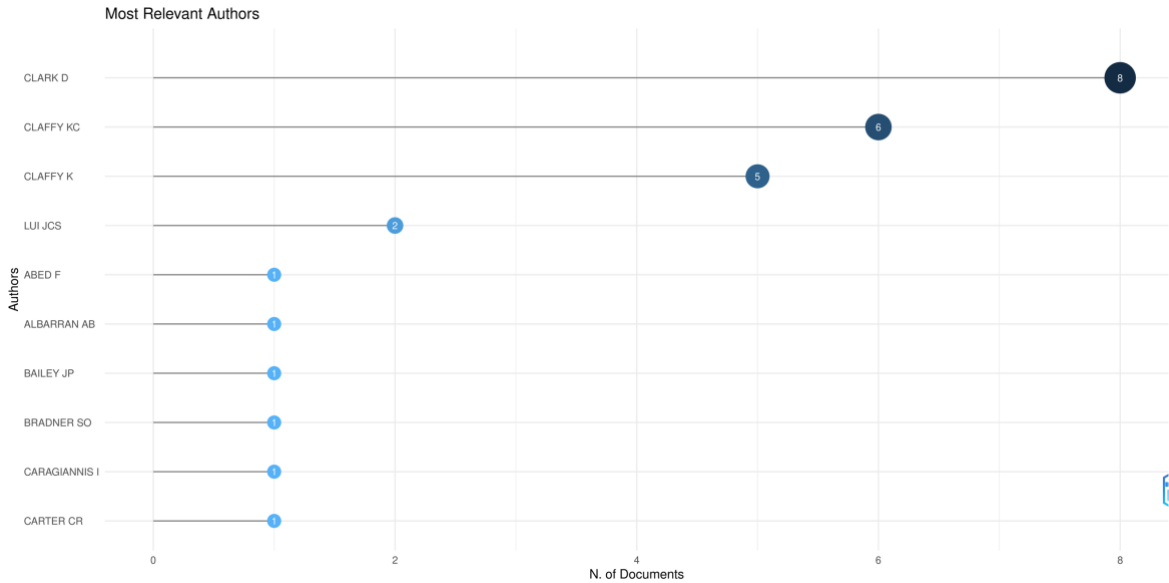
SO	Rank	Freq	cumFreq	Zone
ACM SIGCOMM COMPUTER COMMUNICATION REVIEW	1	10	10	Zone 1
HANDBOOK OF DIGITAL LIBRARY ECONOMICS: OPERATIONS, COLLECTIONS AND SERVICES	2	2	12	Zone 1
REVIEW OF NETWORK ECONOMICS	3	2	14	Zone 1
TRANSPORTATION RESEARCH PART E-LOGISTICS AND TRANSPORTATION REVIEW	4	2	16	Zone 1
ACM TRANSACTIONS ON INTERNET TECHNOLOGY	5	1	17	Zone 1
ADVANCES IN PRODUCTION ENGINEERING & MANAGEMENT	6	1	18	Zone 1
AGRICULTURAL SYSTEMS	7	1	19	Zone 1
ALGORITHMICA	8	1	20	Zone 1
ANNALS OF TELECOMMUNICATIONS	9	1	21	Zone 1
CANADIAN JOURNAL OF COMMUNICATION	10	1	22	Zone 1
COMPUTATIONAL INTELLIGENCE AND NEUROSCIENCE	11	1	23	Zone 1
COMPUTERS & INDUSTRIAL ENGINEERING	12	1	24	Zone 1
DECISION SCIENCES	13	1	25	Zone 1
DECISION SUPPORT SYSTEMS	14	1	26	Zone 2
DEFENCE AND PEACE ECONOMICS	15	1	27	Zone 2
ECONOMIC RECORD	16	1	28	Zone 2
ENERGIES	17	1	29	Zone 2
FINANCIAL AND CREDIT ACTIVITY-PROBLEMS OF THEORY AND PRACTICE	18	1	30	Zone 2
GEORGE WASHINGTON LAW REVIEW	19	1	31	Zone 2
GLASS AND CERAMICS	20	1	32	Zone 2
HANDBOOK OF CULTURAL ECONOMICS, 2ND EDITION	21	1	33	Zone 2
HARVARD BUSINESS REVIEW	22	1	34	Zone 2
IEEE ACCESS	23	1	35	Zone 2
IEEE INTERNET COMPUTING	24	1	36	Zone 2
IEEE-ACM TRANSACTIONS ON NETWORKING	25	1	37	Zone 2
INDUSTRIAL RELATIONS	26	1	38	Zone 2
INFORMATION SOCIETY	27	1	39	Zone 2
INFORMATION SYSTEMS MANAGEMENT	28	1	40	Zone 2
INTERNATIONAL JOURNAL OF APPLIED EXERCISE PHYSIOLOGY	29	1	41	Zone 2
INTERNATIONAL JOURNAL OF ENERGY SECTOR MANAGEMENT	30	1	42	Zone 2
INTERNATIONAL JOURNAL OF HOSPITALITY MANAGEMENT	31	1	43	Zone 2
INTERNATIONAL JOURNAL OF PARALLEL EMERGENT AND DISTRIBUTED SYSTEMS	32	1	44	Zone 2
INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS	33	1	45	Zone 2
JMM-INTERNATIONAL JOURNAL ON MEDIA MANAGEMENT	34	1	46	Zone 2
JOURNAL OF ANTITRUST ENFORCEMENT	35	1	47	Zone 2
JOURNAL OF CHINESE ECONOMIC AND BUSINESS STUDIES	36	1	48	Zone 2
JOURNAL OF DIGITAL MEDIA & POLICY	37	1	49	Zone 2
JOURNAL OF ECONOMIC LITERATURE	38	1	50	Zone 3
JOURNAL OF ECONOMICS & MANAGEMENT STRATEGY	39	1	51	Zone 3
JOURNAL OF INFORMATION TECHNOLOGY	40	1	52	Zone 3
JOURNAL OF INTELLECTUAL CAPITAL	41	1	53	Zone 3
JOURNAL OF MEDIA ECONOMICS	42	1	54	Zone 3
JOURNAL OF PHILOSOPHICAL ECONOMICS	43	1	55	Zone 3
JOURNAL OF REGIONAL SCIENCE	44	1	56	Zone 3
JOURNAL OF SERVICE MANAGEMENT	45	1	57	Zone 3
JOURNAL OF THE AMERICAN SOCIETY FOR INFORMATION SCIENCE	46	1	58	Zone 3
MANAGEMENT SCIENCE	47	1	59	Zone 3
MATHEMATICS	48	1	60	Zone 3
MEDIA CULTURE & SOCIETY	49	1	61	Zone 3
MIROVAYA EKONOMIKA I MEZHDUNARODNYE OTNOSHENIYA	50	1	62	Zone 3
NAUCHNYE I TEKHNICHESKIE BIBLIOTEKI-SCIENTIFIC AND TECHNICAL LIBRARIES	51	1	63	Zone 3
NUOVA RIVISTA MUSICALE ITALIANA	52	1	64	Zone 3
REGIONAL STUDIES	53	1	65	Zone 3
RESEARCH POLICY	54	1	66	Zone 3
REVIEW OF INTERNATIONAL BUSINESS AND STRATEGY	55	1	67	Zone 3
REVIEW OF INTERNATIONAL POLITICAL ECONOMY	56	1	68	Zone 3
SAGE OPEN	57	1	69	Zone 3
SUSTAINABILITY	58	1	70	Zone 3
TECHNOLOGY INNOVATION MANAGEMENT REVIEW	59	1	71	Zone 3
TOMSK STATE UNIVERSITY JOURNAL	60	1	72	Zone 3
WISDOM	61	1	73	Zone 3

**Appendix 8: Most local cited sources covering the topic of internet, digital and platform economics**

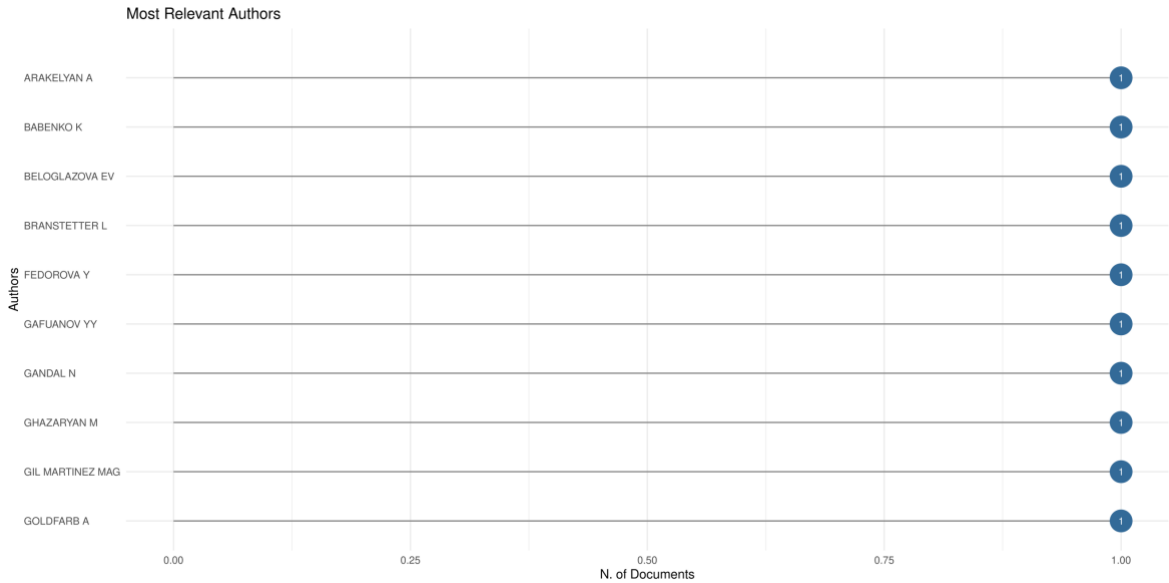
	<b>INTERNET ECONOMICS</b>	<b>DIGITAL ECONOMICS</b>	<b>PLATFORM ECONOMICS</b>
<b>1.</b>	Management Science	American Economics Review	Management Science
<b>2.</b>	Journal of Marketing Research	Management Science	Research Policy
<b>3.</b>	European Journal of Operational Research	The RAND Journal of Economics	The RAND Journal of Economics
<b>4.</b>	Internet Economics	The Journal of Industrial Economics	International Journal of Hospitality Management
<b>5.</b>	The Journal of Industrial Economics	Ros Gaz Journal	European Journal of Operational Research
<b>6.</b>	Computer and Industrial Engineering	International Journal of Industrial Organization	American Economics Review
<b>7.</b>	European Journal of Political Economy	Journal of Economic Perspective	Harvard Business Review
<b>8.</b>	Production and Operations Management	The Quarterly Journal of Economics	International Journal of Production Economics
<b>9.</b>	The Review of Economic Studies	Journal of Political Economy	Journal of Business Research
<b>10.</b>	American Economics Review	Marketing Science	Sustainability-Basel

# Appendix 9: The most relevant authors covering the topic of internet, digital and platform economics

## Internet economics

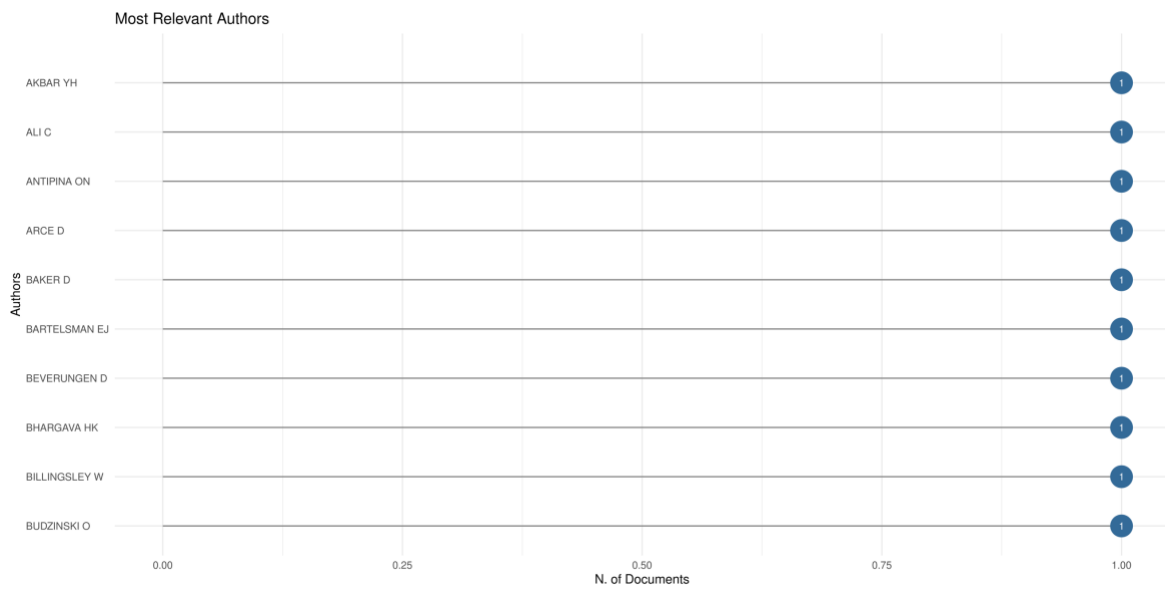


## Digital economics



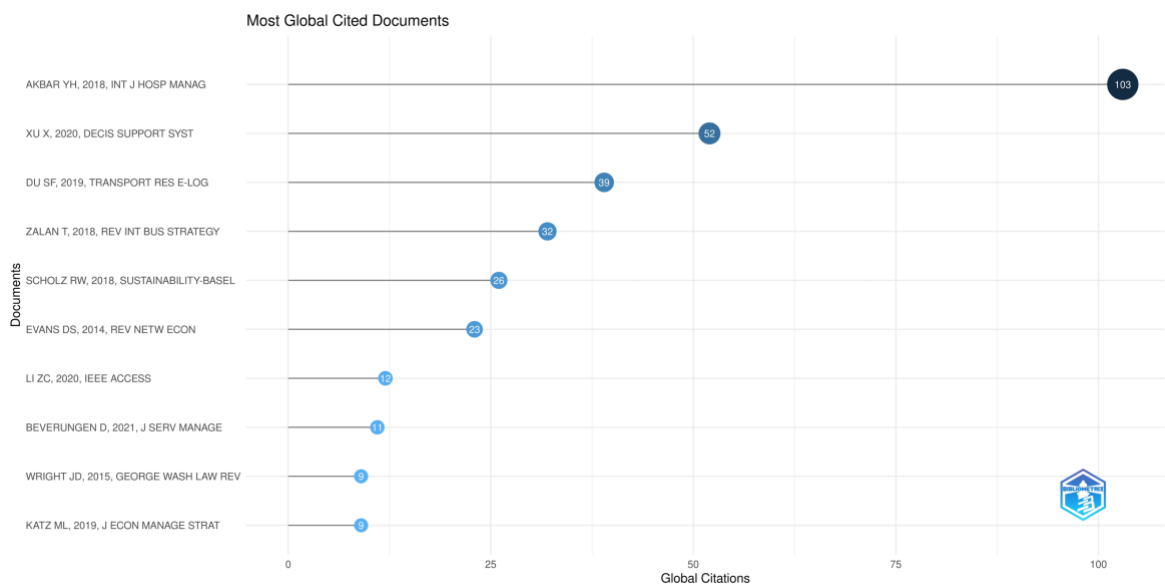


## Platform economics

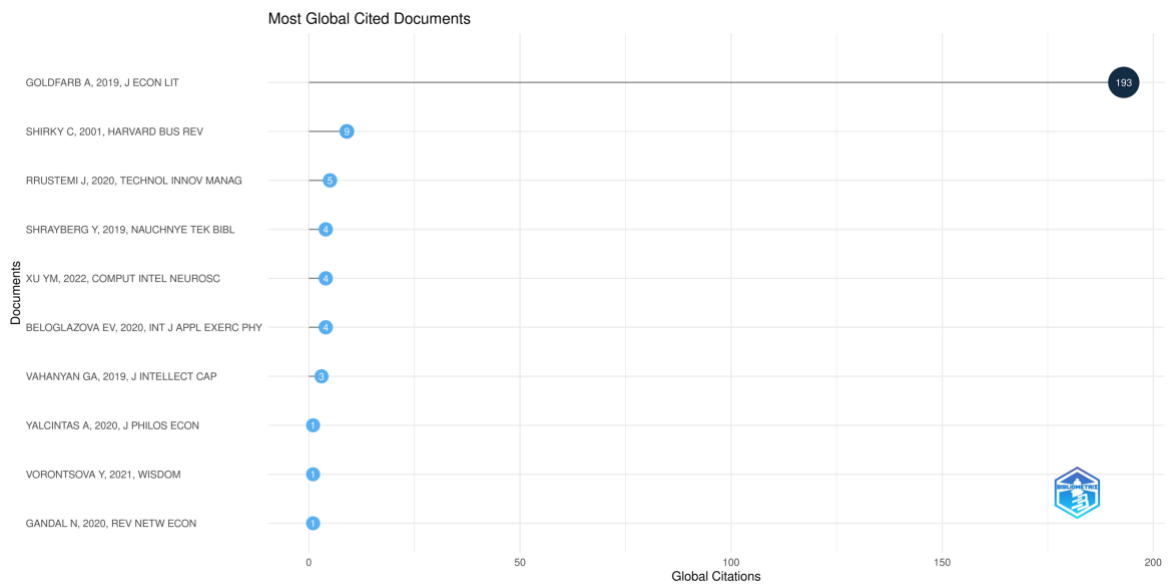


## Appendix 10: Most global cited documents in the internet, digital and platform economics field

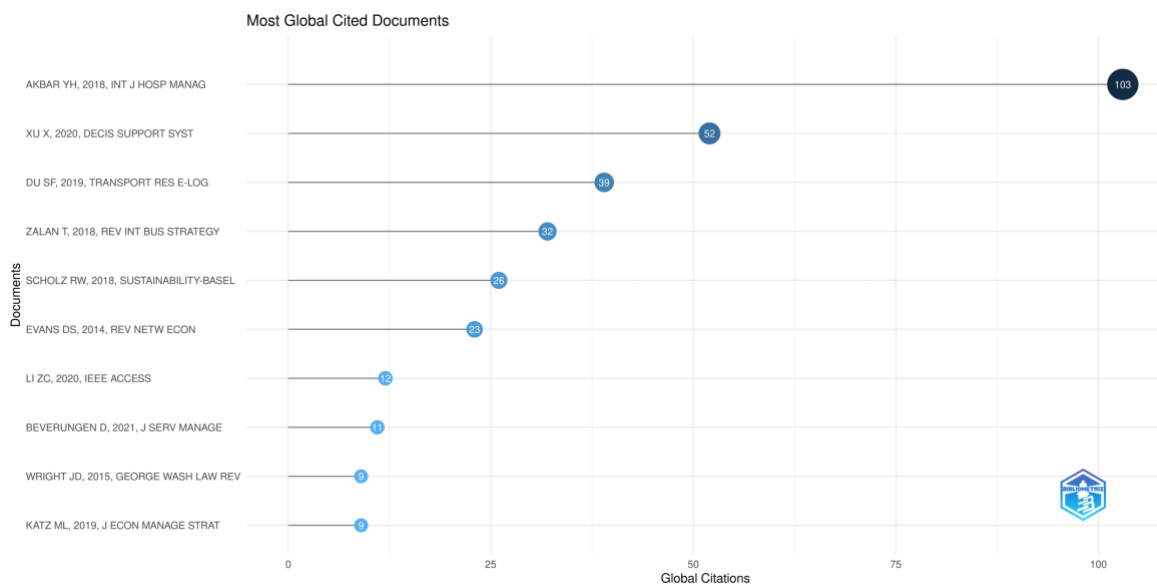
### Internet economics



## Digital economics



## Platform economics

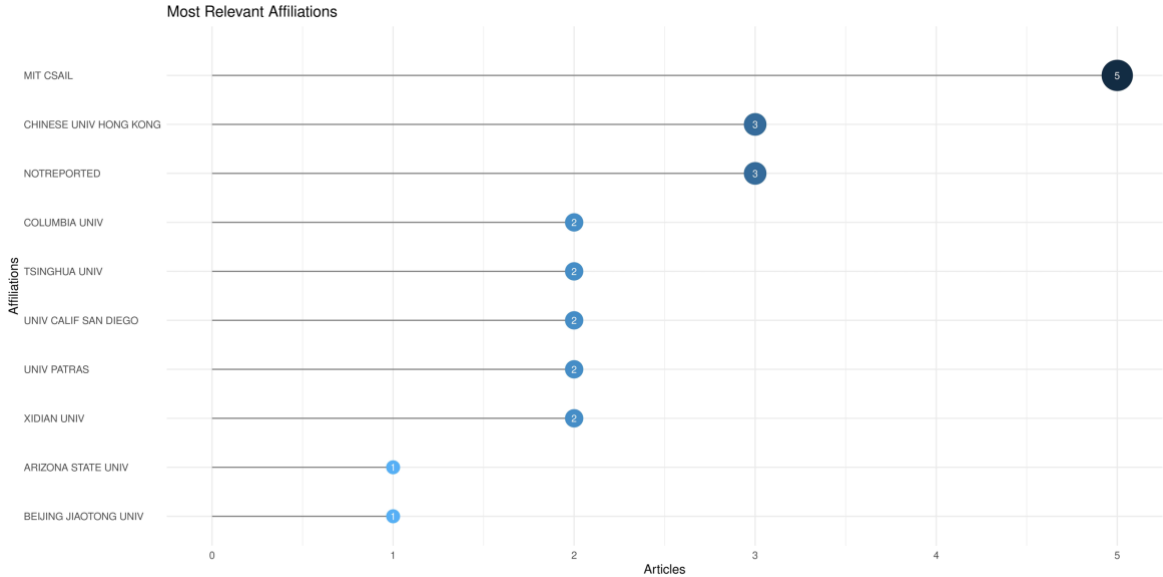


**Appendix 11: Most cited countries in the internet, digital and platform economics field**

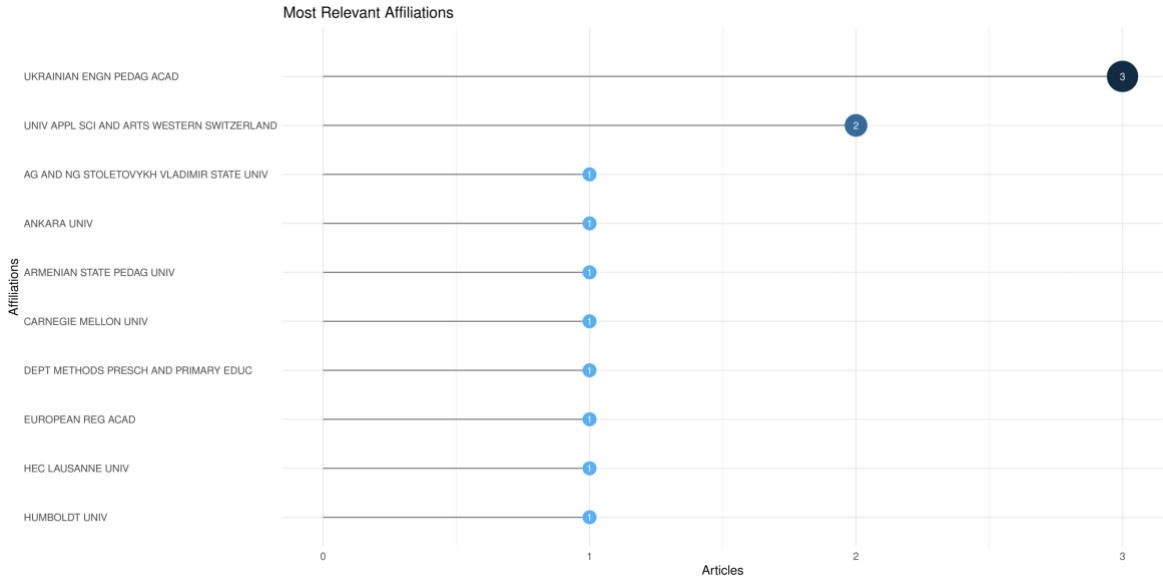
<b>Country</b>	<b>TC</b>	<b>Average Article Citations</b>
<b>USA</b>	204	7.85
<b>CANADA</b>	193	193.00
<b>CHINA</b>	115	9.58
<b>HUNGARY</b>	103	103.00
<b>AUSTRIA</b>	85	21.25
<b>U ARAB EMIRATES</b>	32	32.00
<b>ARGENTINA</b>	23	23.00
<b>GERMANY</b>	18	4.50
<b>AUSTRALIA</b>	13	4.33
<b>RUSSIA</b>	9	1.50
<b>NETHERLANDS</b>	7	7.00
<b>SWITZERLAND</b>	5	5.00
<b>UNITED KINGDOM</b>	5	5.00
<b>ARMENIA</b>	3	3.00
<b>POLAND</b>	2	2.00
<b>FRANCE</b>	1	1.00
<b>GREECE</b>	1	1.00
<b>ISRAEL</b>	1	1.00
<b>TURKEY</b>	1	1.00
<b>NORWAY</b>	0	0.00
<b>UKRAINE</b>	0	0.00

# Appendix 12: Most relevant affiliations in the internet, digital and platform economics field

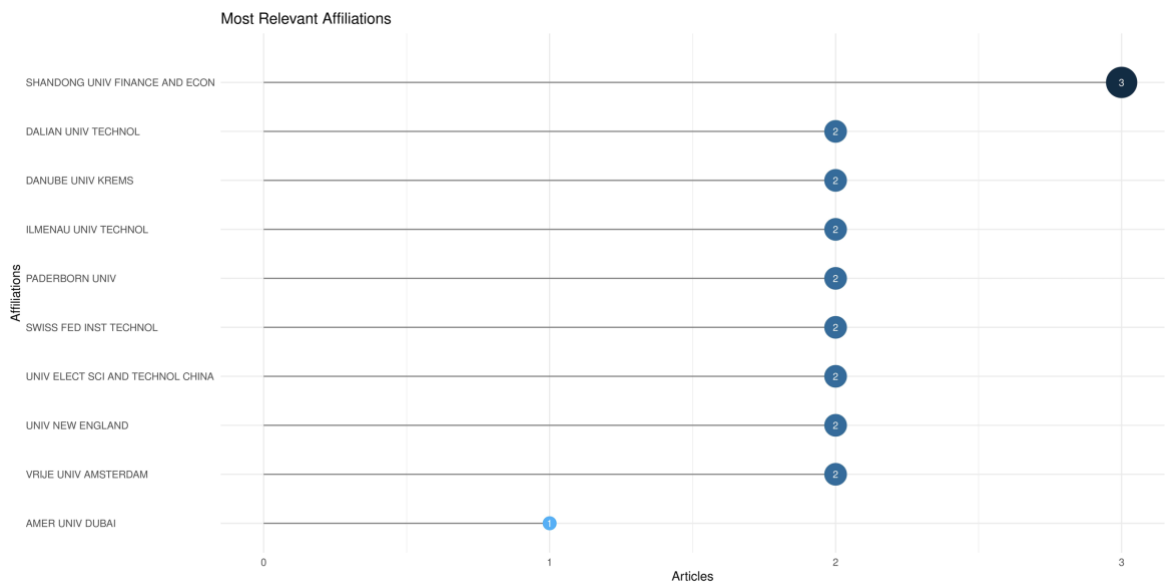
## Internet economics



## Digital economics

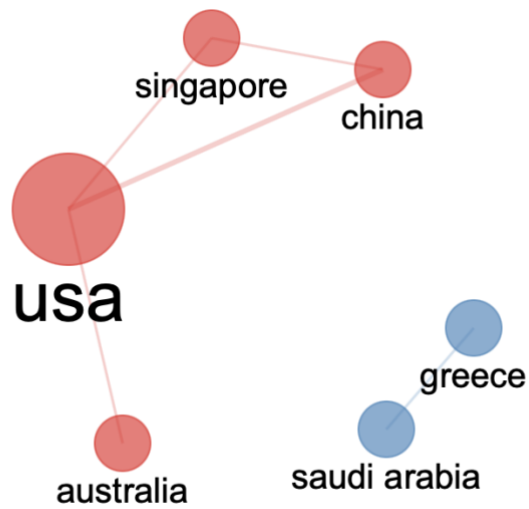


## Platform economics

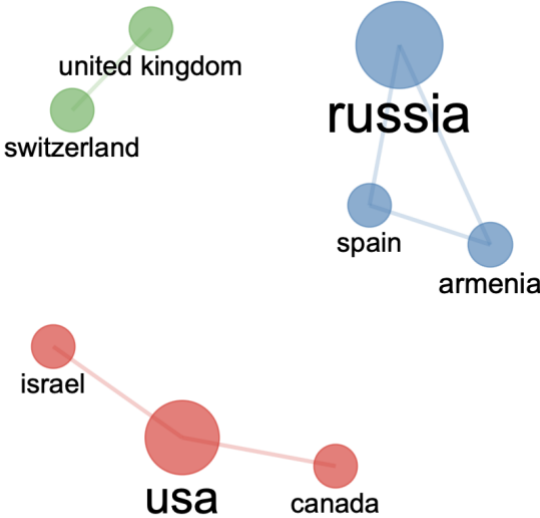


## Appendix 13: Collaboration network for countries in internet, digital and platform economics

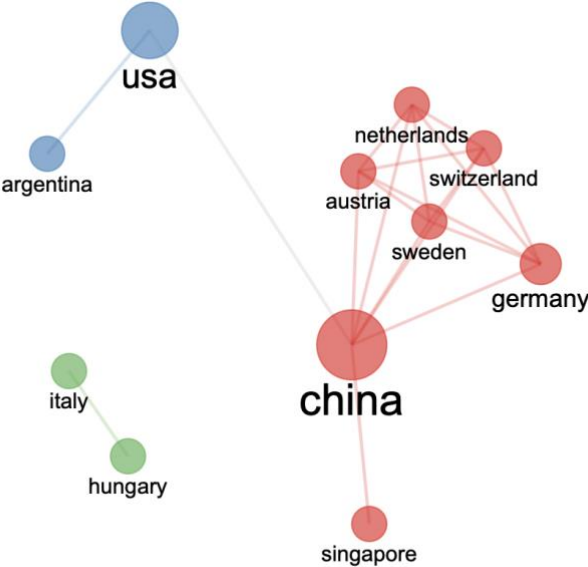
### Internet economics



Digital economics

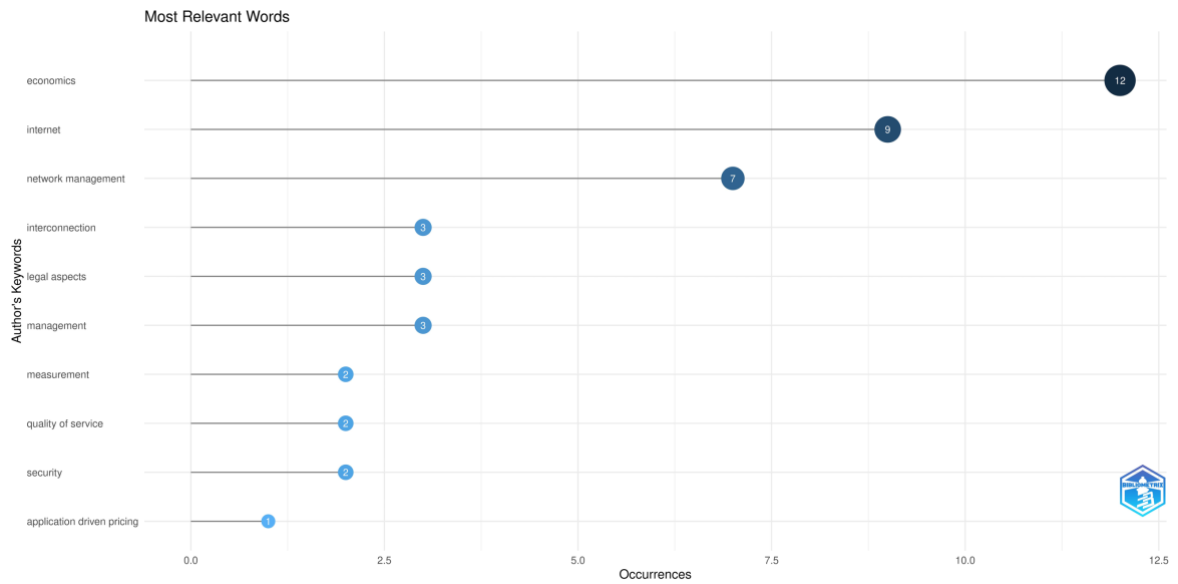


Platform economics

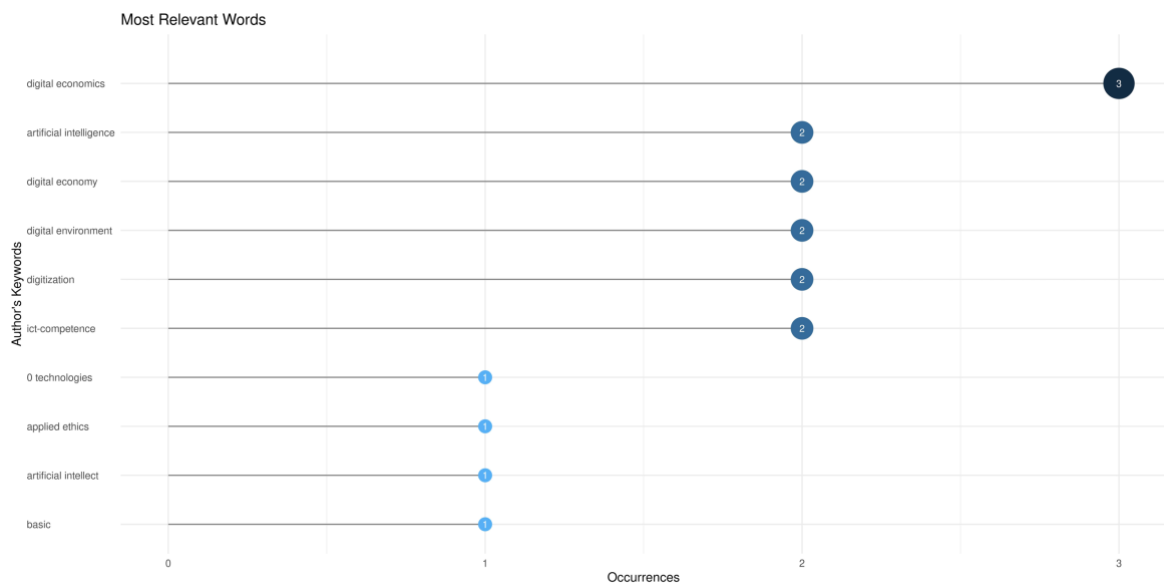


## Appendix 14: Most frequent words in the internet, digital and platform economics field

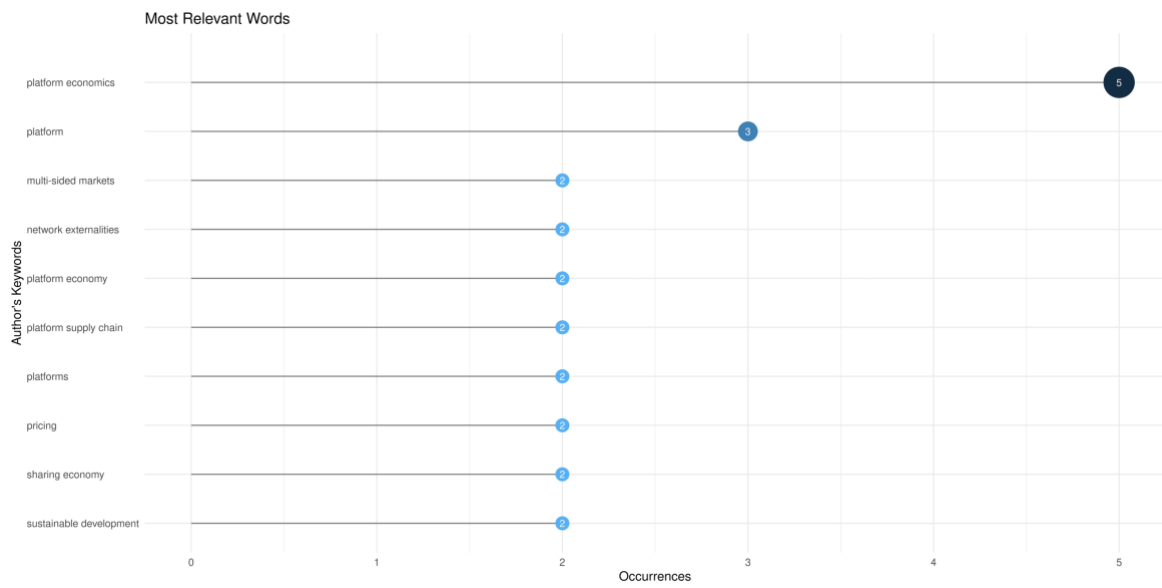
### Internet economics



### Digital economics



# Platform economics



## Appendix 15: Tree map in the internet, digital and platform economics field

