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Article

Competition, innovation, and consumer trends in the digital economy

Zoltán Zéman[1], Judit Bárczi[1,*], Botond Géza Kálmán[2,3,4,5]

[1] Doctoral School of Management and Business Administration, John von Neumann University (NJE GSZDI // JNU DSMBA), 6000 Kecskemét, Hungary
[2] Department of Economics and Management, Faculty of Economics, Kodolányi University of Applied Sciences (KJE GTK GMT // KU FE DEM), 8000 Székesfehérvár, Hungary
[3] Institute of Economic Research, Faculty of Economics, Kodolányi University of Applied Sciences (KJE GTK GMT // KU FE DEM), 1117 Budapest, Hungary
[4] Department of Finance and Accounting, Faculty of Economics, John von Neumann University (NJE GTK PSZT // JNU FE DFA), 6000 Kecskemét, Hungary
[5] Institute of Economics and Finance, Budapest Metropolitan University of Applied Sciences (METU ÜKT GPI // METU FBCT IEF), 1148 Budapest, Hungary
*** Corresponding author:** Judit Bárczi, barczi.judit@nje.hu

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Abstract: This review paper delves into the intricate landscape of the digital economy, focusing on the multifaceted interplay between innovation, competition, and consumer dynamics. It investigates the transformative impact of digital technologies on market structures and consumer behaviors, spanning areas such as e-commerce, online publishing, taxation, and big data challenges. By analyzing network effects, market concentration, and the influence of key players like Google and Amazon, this study draws on insights from previous research. Furthermore, it examines evolving regulations with an emphasis on consumer protection, competition law, and privacy concerns. Through a comprehensive exploration of the digital ecosystem, this paper offers a nuanced understanding of how businesses, consumers, and policymakers navigate the complexities of the digital marketplace.

Keywords: digital economy; competition dynamics; innovation; consumer behavior; market structures

1. Introduction

Entering the digital economy, we immerse ourselves in a realm dominated by the internet, smartphones, and online shopping—a space where technology, business, and consumer habits converge. This review examines the dynamics of the digital world, highlighting the operations of major online platforms like Amazon, Google, and Facebook, and their influence on our daily lives (Garai-Fodor et al., 2023).

The advent of the digital economy reshapes traditional market dynamics and challenges established norms. In this era of rapid technological advancement, businesses, consumers, and policymakers navigate a complex and interconnected digital landscape. This paper aims to unravel the complexities of competition within the digital economy, exploring its effects on market structures, innovation, and consumer welfare (He et al., 2021). From the surge in online purchasing to the challenges posed by big data and tax avoidance strategies of multinational enterprises, we investigate the transformative forces at play (Katarzyna et al., 2020). By integrating insights from various sources, we strive to provide a clear understanding of the digital marketplace and its impact on all stakeholders (Rabe et al., 2022).

2. Materials and methods

Information technology (internet, third- and fourth-generation mobile phones, digital television) reached all sectors of the economy (Grotte 2020). 5G technology is also having a huge impact on the development of digitalisation, as the development and deployment of new networks can increase the efficiency of telecommunications infrastructure and reduce energy consumption (Balassa et al., 2024). The intersection of the digital economy, artificial intelligence (AI), and fintech has garnered significant academic and practical attention in recent years. These domains are interlinked and collectively drive substantial changes in economic structures, competitive dynamics, and regulatory landscapes. This literature review synthesizes key research findings from these fields to provide a comprehensive understanding of their interconnections and implications.

In the digital society, every citizen must participate, and helping the disadvantaged groups is the responsibility of the state and responsible companies (Módosné and Jenei, 2021). The socio-economic implications of crises such as the COVID-19 pandemic underscore the critical role of digitalization in mitigating unemployment and supporting workforce resilience, as demonstrated by comparative analyses of Slovakia and Hungary (Mura et al., 2022a). Comparative analyses of economic recovery measures in Slovakia and Hungary emphasize the importance of targeted strategies to revitalize entrepreneurship and mitigate disparities in the post-crisis economic landscape (Mura et al., 2022b).

Public opinion surveys on Hungarian battery production highlight the interconnected challenges of sustainability, labor market impacts, and environmental protection in shaping public attitudes toward industrial transitions, as explored by Remsei, Módosné, and Jenei (2023). The COVID-19 pandemic significantly influenced human resource management practices, leading to widespread changes in organizational strategies and employee support mechanisms (Módosné and Jenei, 2021).

The digital economy encompasses a wide range of economic activities enabled by digital technologies. It includes the digitization of goods and services, the rise of digital platforms, and the proliferation of digital transactions. The digital economy's growth has led to transformative impacts on traditional industries, altering competitive dynamics and market structures (OECD, 2020). Recent studies highlight how digital platforms create value through network effects, where the utility of the platform increases with the number of users (Cusumano et al., 2019). This phenomenon underscores the importance of understanding platform strategies and their implications for competition.

In the context of the digital economy, the digitalization of transfer pricing plays a crucial role in enhancing management accounting systems by enabling real-time monitoring and improving decision-making processes, which, as noted by the authors (Poyda-Nosyk et al., 2023), positively impacts a company's financial performance and efficiency.

The past period has seen revolutionary breakthroughs in the development of internet of things (IOT), big data, and artificial intelligence-based (AI) products that can impact almost every aspect of life (Hegedűs et al., 2020; Papp-Váry and Kerti, 2021; Ton et al., 2022a; Vinkóczi et al., 2023). The use of digital technologies has

recently become particularly important, among other things due to the rapid development of applications behind remote work, employment and knowledge sharing (Dajnoki et al., 2023; Poór et al, 2021), addressing environmental challenges (Poyda-Nosyk and Poida, 2023). Artificial intelligence (AI) is a critical component of the digital economy, driving automation, enhancing decision-making, and enabling new business models, and, in general, driving modernization (Aman et al. 2024; Aman and Papp-Váry, 2022; El Archi et al., 2023). Digitalization and the use of modern technologies can enhance competitiveness not only for companies but also for nations. (Papp-Váry, 2018)

It is imperative to understand the benefits of integrating this technology into their operations to remain competitive and provide exceptional service to their clientele. (Grotte 2023, Hinek and Papp-Váry, 2024)

AI technologies such as machine learning, natural language processing, and computer vision have transformative potential across various sectors (Brynjolfsson and McAfee, 2017). The integration of AI into business processes can lead to increased efficiency, innovation, and competitive advantage. However, it also raises concerns about job displacement, ethical considerations, and regulatory challenges (Cath et al., 2018). Thus, the human-human and human-machine conflict can be intensified, which can manifest itself in hiding knowledge and leaving the organisation (Gelencsér et al. 2024). Some research highlights that knowledge hiding has a detrimental effect on the effectiveness of team structures and hinders innovation. The trust factor is one of the few effective ways to facilitate knowledge exchange and bridge interpersonal conflicts, regardless of experience, authority, specialisation or age (Ton et al., 2022b; Ton et al., 2022c; Ogutu et al., 2023). Despite of growing need of preparing for employability in education, study (Cseh Papp et al., 2023) showed that business students' skills developed during university education are not related to the type of work the students want to accomplish during the professional practice, therefore not consequently supporting their employability. This directs the attention for the development of a well-educated workforce in soft and digital skills that could enable them to manage the challenges of the digital economy.

Another possible consequence regarding education is that the decades-long human capital vs. signaling debate (see Kun, 2013 for a summary of the empirical studies) comes to the fore again, this time with different emphases. The signaling role of education becomes more important if the stock-like knowledge elements of human capital are devalued by technological change, and the selection and allocation of the workforce according to their ability to learn and adapt becomes more important.

Fintech, the fusion of finance and technology, has revolutionized the financial services industry. It includes innovations such as digital payments, blockchain technology, and online lending platforms. Fintech's rapid growth has democratized access to financial services, particularly in underserved markets (Gomber et al., 2018). The rise of fintech has also prompted regulatory bodies to rethink traditional frameworks to address new risks and ensure consumer protection (Zavolokina et al., 2017).

The digital economy, AI, and fintech collectively reshape competitive dynamics in markets. The network effects in digital platforms can lead to market concentration and the dominance of a few large players, such as Google and Amazon. These

dynamics necessitate a reevaluation of antitrust policies to prevent monopolistic practices and promote fair competition (Ezrachi and Stucke, 2016). Furthermore, the interplay between competition law and data privacy has become a critical area of concern as companies leverage big data for competitive advantage (Tucker, 2019).

Regulating the digital economy presents unique challenges. The rapid pace of technological change outstrips traditional regulatory frameworks, requiring adaptive approaches. Innovative taxation strategies, such as digital services taxes, are being explored to address tax avoidance by multinational enterprises (MNEs) (OECD, 2019). Additionally, balancing the need for consumer protection with fostering innovation is a delicate task for policymakers (González, 2020).

The literature on the digital economy, AI, and fintech highlights the transformative potential of these domains and their complex interdependencies. As these technologies continue to evolve, it is crucial for researchers, practitioners, and policymakers to collaborate in addressing the challenges and harnessing the opportunities they present. Future research should focus on developing integrated regulatory frameworks, exploring the socio-economic impacts of digital transformation, and ensuring that the benefits of technological advancements are widely shared.

This study utilized the SCOPUS database as the primary source for scholarly literature on "Digital Economy," "Competition," "Artificial Intelligence," and "Fintech" to identify relevant articles within a specified timeframe. Then the volume of research output concerning the intersection of "Digital Economy," "Competition," "Artificial Intelligence," and "Fintech" was assessed. Publication trends, including the growth of research in this interdisciplinary domain over time, were analyzed. Additionally, collaboration patterns among researchers from diverse backgrounds were identified to understand the multidisciplinary approach to the topic. This study involved reviewing selected articles to extract insights, findings, and emerging trends regarding the impact of Artificial Intelligence and Fintech on the Digital Economy and Competition. The opportunities, challenges, and potential threats presented in the literature were categorized and analyzed. Case studies and examples illustrating how business, finance, and accounting professionals are adapting to the changing landscape were also examined. The findings were synthesized to provide a comprehensive overview of the relationship between Artificial Intelligence, Fintech, the Digital Economy, and Competition. This research methodology offers a structured approach to examining the impact of Artificial Intelligence and Fintech on the Digital Economy and Competition.

Scopus is an abstract and reference database launched in 2004 by the scientific publisher Elsevier. Scopus journals are reviewed every year to ensure they are of adequate quality. For this reason, journals included in Scopus are considered to meet the quality requirements of peer review (Goodman and Deis, 2005). Burnham (2006) compared the usability and coverage of Scopus and the Web of Science (WOS) and concluded that Scopus is easy to navigate, while WOS has the undoubted advantage of going back to 1945, while Scopus to 1966. The two databases complement each other, as neither is comprehensive, their overlap is 90%. Among the two databases, Scopus provided an advanced query language and 3–5 more keywords for the same article than WOS (Echchakoui, 2020).

A systematic literature review (SLR) is a methodical and comprehensive approach to literature review, particularly used in scientific research. SLR aims to collect and synthesize relevant research on a given topic in a comprehensive and unbiased manner (Okoli and Schabram, 2010). The SLR begins with defining the research questions, followed by defining the databases used and search keywords to identify relevant literature. Defining inclusion and exclusion criteria will help decide which studies to include in the review. The execution of the search strategy and the collection of the resulting literature is called data collection. After the collection, data evaluation and extraction follows. In this stage, the collected studies are evaluated and the relevant information is extracted. After the extraction, the results of the data collection are analyzed and synthesized using quantitative and qualitative analysis methods. After that, all that remains is to prepare the report, which contains the main findings and conclusions. SLR is particularly useful for comprehensively summarizing existing knowledge in a given research area, identifying research gaps, and identifying new research directions (Nightingale, 2009).

Using the free, open-source VOSviewer software, the authors sorted the results into clusters. VOSviewer is a software tool for constructing and displaying bibliometric networks. These networks may include, for example, journals, researchers, or individual publications, and may be constructed based on citation, bibliographic attachment, co-citation, or co-authorship relationships. VOSviewer also offers a text mining function that can be used to construct and display co-occurrence networks of important terms extracted from the scientific literature. In addition to the search keywords, other frequently occurring keywords were included in these clusters (van Eck and Waltman, 2023). VOSviewer can be used to build networks of scientific publications, scientific journals, researchers, research organizations, countries, keywords or terms. VOSviewer also offers a text mining function that can be used to construct and visualize co-occurrence networks of important terms extracted from the scientific literature.

VOSviewer is a bibliometric visualization software. Visualization is distance based. This means that the keywords are located at the nodes of the network and the strength of the relationship between two keywords is characterized by the distance between them. A smaller distance indicates a closer relationship. The software is relatively easy to use and shows the closeness of the relationships between words better than other visualization tools that use a timeline or graph-based approach.

In the VOSviewer program, closely related keywords form a cluster (Waltman et al., 2010). The software has its own internal smart local moving algorithm (Waltman & van Eck, 2013). The size of each keyword shows the frequency of occurrence of each keyword. VOSviewer displays the network in such a way that as many keywords as possible are visible. Of course, the keywords given priority in the analysis are also given priority in the display. For a more detailed view of the network, VOSviewer also includes a zoom function (van Eck et al., 2013). This is especially important when viewing large keyword networks. When zooming in, the selected node is updated and its previously unseen keyword nodes are also displayed.

3. Results and discussion

Table 1 contains the results of the keyword analysis.

Table 1. Results of the keyword analysis (Source: author's own).

keyword	occurrences	total link strength
digital economy	350	892
competition	296	1000
artificial intelligence	35	137
fintech	12	43

Occurrences and total link strength are two different metrics that are often used in bibliometric and network analysis studies. The number of occurrences measures the number of times a given term, keyword, or topic appears in a given database or set of publications. A high number of occurrences indicates that the term is very common and likely to play a central role in the study area.

The total link strength measures how strongly a given term or keyword is related to other terms in the network. This value considers the number and strength of relationships between the term and other terms. A high total link strength indicates that the term is central to the network and highly intertwined with other terms.

Neither metric is necessarily superior to the other, as they measure different aspects. There is no direct basis for comparison between the number of occurrences and the strength of all relationships, since one measures the frequency of a given expression, while the other measures the strength of relationships (Spence and Owens, 1990). A frequently used keyword in a particular discipline may have a high occurrence count, but if it is not closely related to other keywords, the strength of all connections will be low. A less common keyword that has very close and strong relationships with other keywords can have a high total relationship strength even with a low occurrence count.

The test results of VOSviewer are shown in **Figure 1**. The figure shows not only the examined keywords, but also other frequently occurring words and phrases.

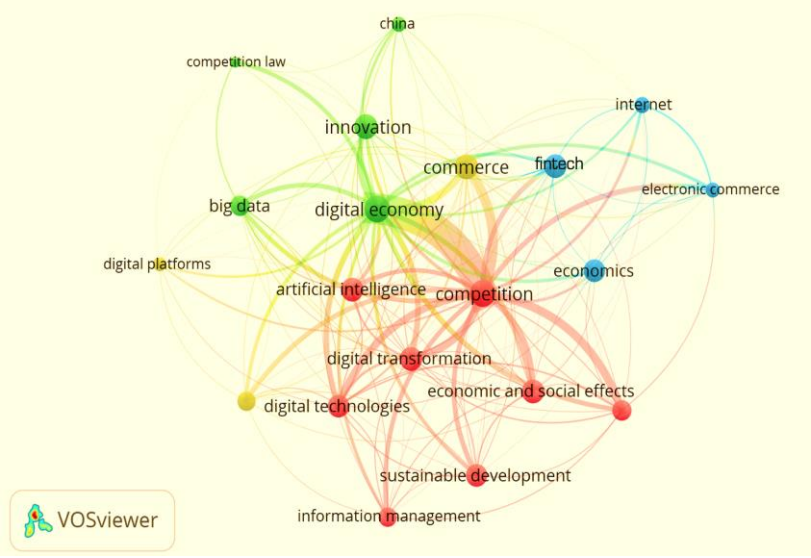

Figure 1. VOSviewer results of SLR (Source: authors' own)

Based on the VOSviewer results, the authors created clusters based on the relationships between the examined words (**Table 2**).

Table 2. Keyword clusters (Source: author's own).

Clusters based on VOSviewer SLR results		
Cluster 1	Cluster 2	Cluster 3
competition	digital economy	
artificial intelligence	commerce	fintech
digital transformation	innovation	economy
digital technologies	big data	electronic commerce
economic and social effects	China	internet
sustainable development	digital platforms	
information management		

3.1. Cluster 1: "Digital Transformation"

The advent of the Internet and digital technologies has drastically reduced the costs of search, entry, transit, and replication, thereby unlocking significant potential for enhancing economic efficiency (Goldfarb and Tucker, 2019). Historically, intermediaries have played a key role in reducing these costs and expediting transactions. As digital technologies and the Internet increasingly mediate transactions, customers can access goods with lower search costs. Bundling often emerges as a beneficial business strategy because it decreases the dispersion of customer valuations and allows businesses to capture more consumer surplus (Chen and Riordan, 2013). The digital economy's evolution has led to a significant shift in market competition. Digital capabilities in products and services enable businesses to aggregate resources beyond conventional industry boundaries, which are typically tied to physical constraints, thus expanding the potential for innovation (Selander et al., 2013; Tiwana et al., 2010; Yoo et al., 2012; Yoo et al., 2010a).

However, bundling by dominant firms can also impede competition. For instance, in 2018, EU authorities fined Google a record €4.3 billion ($5 billion) for antitrust violations, alleging that Google abused its market dominance in the Android ecosystem by bundling its search engine and Chrome apps with the operating system (The New York Times, 2018). Digitization has expanded markets, enabling new products to reach broader audiences and boosting demand. This can elevate the value of innovation, as evidenced by the recent surge in global patent applications. In 2017, 3.17 million patent applications were filed worldwide, with 43% originating from China. This trend of increasing patent activity has persisted for eight years, with 13.72 million active patents globally in 2017, including 2.98 million in the United States, 2.1 million in China, and 2 million in Japan (WIPO, 2019).

Large incumbents characterize the market structure in the digital economy, raising concerns about the risks associated with market power. The Internet has been crucial in creating and collecting vast amounts of information, both online and offline. Platforms' ability to leverage big data effectively to personalize user experiences is another competitive dimension. For example, e-commerce sites can recommend related products to users. Economic theory posits that if an incumbent cannot establish strong entry barriers, it remains vulnerable to new competitors and cannot exploit its market power against consumers (Baumol, 1986). The rise of online markets

intensifies competition, driving down product prices. Internet booksellers exemplify consumer surplus gains, but similar trends are evident in other categories like electronics and furniture. Increased product variety and competition lead to lower prices and greater consumer benefits. Besides lowering prices, the Internet facilitates the discovery of new products and varieties (Brynjolfsson et al., 2003).

The prevalence of Internet-based services has increased, with successful companies like Google, YouTube, and Skype dominating the market and limiting space for smaller competitors. Consumers can download products such as Acrobat Reader, Microsoft's MediaPlayer, or RealPlayer for free, appealing to more price-sensitive segments. Platform operators earn most of their revenue from the less price-sensitive side of the market due to lower price elasticity of demand. Consequently, platform markets may be more concentrated than other industries due to indirect network effects. Examples of the opposite include online real estate brokers, travel agencies, and dating websites that coexist with rival platforms. Thus, indirect network effects do not necessarily lead to monopolies or high market concentration (Haucap et al., 2014).

A monopolistic platform can be efficient because network effects are maximized when all agents coordinate on a single platform, as demonstrated by Caillaud and Jullien (2003) and Jullien (2005). Hence, significant network effects can easily result in highly concentrated market structures that are often efficient. Many two-sided markets exhibit a cost structure characterized by high fixed costs and low variable costs (Jullien, 2006). For instance, companies like eBay, Expedia, and Booking.com incur most expenses managing their databases, with additional transactions typically incurring minimal extra cost.

The value of a platform to the demand side is higher when users are more homogeneous. More varied platforms will emerge, and concentration will be lower when potential users are more heterogeneous and platforms can easily differentiate themselves. Switching costs are relatively low when changing travel agencies or search engines but higher when switching social networks like Facebook due to strong direct network effects (Haucap et al., 2014). Search engines were scarcely used on a broad scale in the early 1990s, but now companies like Google and Bing are worth billions. In 2012, internet search advertising revenues in the US alone reached $16.9 billion (PWC, 2013). Selling on smaller platforms risks selling goods below market value because the price mechanism works best with sufficient buyers and sellers on both sides. Consequently, multi-homing presents challenges for sellers. Although less critical for buyers, reputation systems still function to some extent, reducing buyer lock-in (Haucap et al., 2014). However, buyers face switching costs due to differences in market rules, platform design, and handling, deterring them from exploring alternative platforms unless sellers migrate to them.

In the early stages of developing businesses, there is often a lack of financing, which limits their ability to innovate products. Almost all of the investigated digital enterprises obtained a significant part of their capital from friends, family or their own resources (Ansong and Boateng, 2019). Most start-ups, especially in the digital space, rely mainly on personal funds and the support of friends and family due to their limited debt capacity. This is due to the unpredictability of the digital economy, which makes support extremely risky for banks and investors. This is exacerbated by the fact that

most new businesses fail within 42 months of their founding (Allen et al., 2007). Crowdfunding has emerged as a viable fundraising option for digital businesses, especially those without access to traditional funding sources (Ansong and Boateng, 2019).

Entrepreneurs and managers believe that their internal resources, primarily intellectual resources, are sufficient to support innovative activity within the company. Digital platforms form a self-organizing, sustainable system, the so-called digital ecosystem. These platforms create a unified information environment in which ecosystem members can collaborate even in the absence of formal functional relationships. Members can connect, share resources and information, organize processes and coordinate goals in the digital environment (Barykin et al., 2020).

Competition authorities around the world face a significant problem in the current debate on the intertwining of competition law and data protection, following the rise of big data and social media. According to a 2017 Ghostery analysis, at least 77% of sites have at least one tracker for statistical or advertising purposes. Of these, more than 60% include Google and more than 27% include Facebook, while Comscore, Twitter and Yandex also play a significant role. On the other hand, the use of third-party cookies and third-party domains has reportedly decreased as a result of the implementation of stricter data protection laws such as General Data Protection Regulation (GDPR).

One of the main differences between traditional and digital ecosystems is that the business organization of the latter relies heavily on human decision-making in management. In digital ecosystems, things like artificial intelligence, computer vision play a significant role in creating a unified information environment that benefits society, business, and government, as well as the growth of digital ecosystems (Barykin et al., 2020). According to Schwab (2017), we are currently experiencing the fourth industrial revolution, which is based on the merging of technologies from the digital, physical and biological domains. Digital transformation presents challenges, as many companies fail to recognize that they must compete in new ways, and even those that try to change end up failing. Digital technology innovations often have an impact throughout the enterprise as well as externally, affecting supply chains, ecosystems, sales channels, business processes and products (Matt et al., 2015).

3.2. Cluster 2: “Innovation in Digital Economy”

Ting and Gray (2019) state that it is unsurprising the tax system struggles to address the challenges posed by the development of contemporary, internationally integrated multinational enterprises (MNEs). The effective tax avoidance strategies of major MNEs such as Apple, Google, and Microsoft highlight this issue. Given the high mobility of MNE profits, they argue that dividends and sales should be the primary targets for taxation due to their greater efficiency.

In industries where companies might engage in diverse research and development (R&D) activities, Chen et al. (2018) examine how patent policy, particularly patentability requirements, can influence the rate and direction of cumulative innovation. The digital economy has significantly altered the organization of R&D and innovation. Companies can pursue innovations either internally or externally. Internal

innovation allows a company to fully leverage its own R&D resources and enhance coordination between R&D and production, although it limits the opportunities and achievements in innovation. External innovation, on the other hand, offers a broader range of innovation prospects but may involve higher transaction costs due to processes such as acquisitions, collaborations, joint ventures, and licensing.

The rise of the digital economy and the expansion of product and customer service sectors introduce new challenges. Constant innovation and competition in the digital economy drive consumer welfare. However, new business models pose threats to the current regulatory framework in several areas, including taxation, consumer protection, intellectual property rights, privacy, and competition law (Gazzola et al., 2017).

MNEs' tax avoidance strategies motivate the placement of global value chains in low-tax jurisdictions and the shifting of profits to these locations while maintaining the "real" locations of GVCs (Ting and Gray, 2019). It is crucial to understand that MNEs may choose locations for both "real" activities and "virtual" intra-group transactions to minimize tax liabilities. Although this issue is not new, it has become more prevalent with the development of digital business models.

The study has examined the tax structures of two companies, Apple and Caterpillar. Furthermore, the research gap discussed in the paper focuses on the concept of zero corporate tax. Ting and Gray (2019) suggest that reducing corporate income tax rates to zero could encourage MNEs to invest in ways that maximize global value. They argue that zero corporate tax would eliminate the practice of companies reporting lower profits to reduce their tax burden, although this proposal is debatable. Taxing shareholders is another consideration, but it presents various challenges. While it is assumed that shareholders are less mobile than MNEs, in reality, shareholders can be highly mobile and located anywhere in the world, making taxation based on the location of value creation questionable.

The paper also explores the idea of taxing sales instead of profits. One reform proposal is to base corporate tax on the distribution of a group's global profits according to the percentage of sales to consumers in each country, rather than on the profits reported by individual group firms. This model would reduce the incentives for international tax competition by eliminating MNEs' ability to shift earnings to low-tax jurisdictions through intra-group transactions. Additionally, it capitalizes on the fact that sales are significantly less mobile than profits (Ting and Gray, 2019).

3.3. Cluster 3: "Fintech Economics of E-Commerce"

Understanding the advancements developed within the realm of technology has become fundamental to the company's function. (Grotte et al., 2023)

Businesses are constantly developing new and innovative marketing strategies to map consumer preferences. Although these measures often help businesses to serve their customers more effectively, marketing innovations that collect consumer information tend to have different private and social incentives (Chen, 2006). A related concern is that strict data protection laws can hinder businesses' efforts to understand consumer preferences, and since this knowledge is often necessary to develop new products, restrictions on consumer data protection can stifle innovation. Conversely,

strict data protection laws can also encourage businesses to commit to strict protection of consumer data. Based on the knowledge of data protection development, consumers share more information, thereby promoting innovation. The Internet has significantly reduced entry, reproduction, transport and search costs, which has opened up many new opportunities for increasing market efficiency. At the same time, the increase in the number of platforms, innovation and the growing importance of consumer data pose serious challenges to the competitiveness of the digital economy, the protection of intellectual property and the effectiveness of consumer data protection (Chen, 2020).

The Internet offers many advantages to consumers and sellers. Such benefits include reducing transaction costs, increasing efficiency, promoting innovation, creating new jobs and inclusive growth (World Bank, 2016). Due to the widespread use of the Internet and various reservation systems, the process of organizing business travel has been also significantly shortened. (Grotte, 2022)

However, in addition to the benefits provided by the digital economy, there are also many challenges, such as consumer protection and consumer data protection.

As the digital economy grows, legislation or policies will need to be revised to protect consumers. The objective of consumer welfare is a common element of competition policies and consumer protection, which is why there is a close interaction between the two (OECD, 2008). Competition increases productivity, reduces costs and improves the quality of products (EC, 2016a). In the digital economy, competition affects online purchasing decisions and consumer awareness. Consumer protection results in conscious consumer behavior, which further influences online shopping decisions.

The digital technology landscape has undergone significant improvements, and the nature of products and infrastructure has also changed. Through the generativity of digital products, heterogeneous enterprises can create endless combinations of different products and services, as well as create new value creation models. A digital ecosystem is a network in which many heterogeneous and diverse actors participate and contribute in different ways to value creation activities (Koch and Windsperger, 2017). This participation takes place in different ways in different cultures and cultural contexts, but education, whether economic or social, has a significant role to play. (Annus, 2017; Annus, 2021)

The digital ecosystem is an extremely dynamic, complex and uncertain environment due to the diverse and unpredictable roles of the actors. These pervasive digital technologies challenge the environmental and conceptual assumptions of classic sustainable competitive advantage models, including the industrial structure perspective, the resource-based view, and the dynamic capabilities approach (Koch and Windsperger, 2017). Through education, access to relevant information, and the ability to accurately evaluate information, empowered consumers can drive innovation, productivity, and competition. Organizations competing in the online market must place a higher priority on adapting to current market conditions, as new generations of consumers focus on sustainable, ethical, long-lasting and feasible products, responsible consumption and logical decision-making. Salespeople need to gain a deeper understanding of the situations in which consumers use their judgment, logic, and emotions. The challenge for Internet service providers is to abandon their linear thinking business strategies that focused on multidimensional consumer specialization

(Gazzola et al., 2017). Social media and the digital revolution are increasing consumer expectations by offering more options for products and services. Due to fluctuating consumer demands and global economic conditions, the global economy is unstable in the current competitive environment. Demand is also subject to changes (Nudurupati et al., 2016). Companies can use the concept of customer experience to develop a unique marketing strategy, enabling them to create and deliver higher value for their products and services more efficiently (Marczell Szilágyi et al., 2023).

Another significant issue related to the use of big data in the digital economy is price discrimination. According to Acs and Audretsch (1987), additional revenues from market power are necessary for the R&D expenditures required for innovation. The dynamic nature of technologies and the nature of data do not provide permanent barriers to entry. Discriminatory practices in online markets generally benefit consumers, as they allow companies to increase production by lowering prices for lower-cost consumers while maintaining the welfare level of older consumers (Nuccio and Guerzoni, 2019). Trust and security are key when working with other stakeholders and developing joint solutions. Any collaboration will only be successful if participants bring their own relevant resources and capabilities, participate in continuous performance improvement initiatives, and take the critical steps that lead to improved performance. In the digital age, an informed workforce is needed to keep pace with business developments (Nudurupati et al., 2016). While the leaders of some digital companies, such as Google, Facebook and Apple, have successfully adapted to digital technologies, others have difficulties in applying the logic of innovation that underpins these companies (Remane et al., 2017).

4. Conclusion

The discussion covers the effects of digital technology on strategy-making processes, organizational transformation and the democratization of strategic processes through digital platforms. They recognize the challenges posed by the convergence of data protection and competition law in the era of big data, emphasizing the need to reassess regulatory frameworks. Essentially, the literature review highlights the multifaceted nature of the digital economy, highlighting the need for adaptive regulatory frameworks, innovative tax approaches, and a careful balance between promoting competition and consumer protection in the evolving digital age. As the digital revolution unfolds, policymakers, businesses and consumers must navigate these complex issues together to ensure a sustainable and inclusive digital future. The information society reduces the lag of rural areas since transferred funds appear immediately even in peripheral regions, the residents' level of awareness depends only on their willingness, and through online stores, residents can obtain products at the same prices (Poór et al., 2023).

An overview of the competitive dynamics of the digital economy provides a nuanced picture of the interplay of factors shaping market structures, consumer behavior and regulatory environments. The transformation of the digital economy is evident in the way consumers make purchasing decisions. The abundance of choice offered by online platforms has significantly changed the traditional retail dynamic, allowing consumers to choose from a wider range of products and services.

Direct and indirect network effects appear as key factors of competition in the digital environment. The review emphasizes the importance of understanding how these effects work, affecting market concentration and the dominance of large players such as Google and Amazon. These technological giants have not only transformed the competitive landscape, but also revolutionized traditional business models, highlighting the need for businesses to adapt to the digital paradigm. Challenges related to the taxation of multinational enterprises (MNEs) operating in the digital economy are also presented in the review. Proposals for alternative taxation approaches such as zero corporate tax or turnover-based taxation reflect the need for innovative solutions to ensure that businesses contribute fairly to the economy. Highlighting the tax avoidance strategies of companies such as Apple and Google points to the urgency of revising existing tax frameworks, taking into account the specificities of digital business models.

Consumer protection and data protection concerns are central to the discussion, emphasizing the need to rethink laws and regulations. The intersection of competition law and consumer protection is a critical area that requires attention. As the digital economy evolves, ensuring consumer wellbeing becomes paramount and the review calls for a regulatory framework that strikes a fine balance between promoting healthy competition and protecting consumer rights. Emphasizing the role of a well-educated workforce in managing the complexities of the digital ecosystem is key. Businesses and decision-makers alike must invest in the education and training of professionals to understand and adapt to the rapid changes brought about by digital technologies. In addition, consumer empowerment emerges as an incentive for innovation and healthy competition.

5. Implications and further scope of the study

The implications of this study are extensive, highlighting the necessity for flexible strategies in regulation, taxation, and consumer protection. Policymakers must confront the challenge of developing regulatory frameworks that encourage competition while safeguarding consumers in the rapidly changing digital landscape. The predominance of key players necessitates antitrust measures to prevent monopolistic behaviors and encourage a varied and competitive digital market. The suggested alternative taxation methods, such as eliminating corporate tax or shifting to sales-based taxation, have significant implications for global tax policies. International cooperation and consensus on new tax models for digital enterprises are crucial to effectively address the taxation of multinational enterprises (MNEs). This study advocates for a reassessment of existing tax structures to better align with the realities of the digital economy.

Additionally, the focus on the intersection of competition law and privacy protection underscores the need for cohesive regulatory frameworks. As big data remains central to the digital economy, balancing competition goals with privacy concerns is a delicate challenge. Policymakers must navigate this intersection to ensure regulations foster fair competition without compromising individual privacy rights. The study also underscores the democratizing effect of digital platforms on strategy-making and organizational transformation. Companies must adapt their

strategies to leverage digital technologies, and the democratization of strategy through digital platforms allows for broader participation. This necessitates a reevaluation of organizational structures and strategic planning methods to embrace the opportunities offered by the digital revolution.

While this review offers a thorough understanding of current competition dynamics in the digital economy, there are several areas for further research. One such area is exploring the evolving role of artificial intelligence (AI) and machine learning in shaping competition. Understanding how these technologies impact market dynamics, pricing strategies, and consumer experiences will be crucial for predicting future trends. Moreover, the review addresses the challenges posed by the convergence of competition law and privacy protection in the big data era. A more detailed investigation into the ethical implications of data collection and usage, and their impact on competition, would provide valuable insights. This includes examining potential algorithmic biases and the ethical responsibilities of companies in handling consumer data. Additionally, the review touches on the democratization of strategy through digital platforms. A deeper exploration of how digital platforms empower small and medium-sized enterprises (SMEs) to compete with industry giants, and the implications for market diversity and innovation, would be beneficial.

The study lays a solid foundation for understanding the multifaceted nature of the digital economy and its impact on competition, consumer protection, and regulatory frameworks. Future research should delve deeper into these emerging areas, ensuring scholarly efforts keep pace with the rapidly evolving digital landscape. As the digital revolution continues, an ongoing and adaptive research approach will be crucial to inform policymakers, businesses, and consumers for a sustainable and inclusive digital future.

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