Proceedings of the 3rd International Conference on Financial Technology and Business Analysis
DOI: 10.54254/2754-1169/89/20231417

A Literature Review of Digital Economy in China: Trends, Drivers, and Implications

Zixin Weng[1,a,*], Jiayu Duan[2], Jiayu Zhou[3], Liangchen Zhao[4]

[1]*Alliance Manchester Business School, University of Manchester, Manchester, M15 6PB, UK*
[2]*International Business School, Xi'an Jiaotong-Liverpool University, Suzhou, 215028, China*
[3]*Shenzhen College of International Education, Shenzhen, 518000, China*
[4]*Shenyang No. 2 High School, Shenyang, 110801, China*
a. zweng44@outlook.com
**corresponding author*

Abstract: The digital economy, characterized by the use of digital tools and platforms for various economic activities, holds paramount importance in shaping contemporary economies. This work conducts a thorough review of China's digital economy, focusing on key trends, influential drivers, and their extensive implications. This review begins by examining prevailing trends, encompassing technological advancements and the growth of e-commerce. Subsequently, it delves into the regulatory, innovative, and market forces propelling China's digital transformation. The implications of China's digitalization on industries and societal dynamics are also investigated. This review reveals how China's digital economy is fundamentally reshaping its economic and social landscape. Drawing primarily from evidence in the political, economic, and socio-cultural realms, this work underscores the broad macro-level implications. However, the review provides a limited exploration of certain potentially significant factors, such as environmental considerations and the convergence of digital technologies with other industries and regions. Future research directions should delve deeper into sector-specific digital transformation trends, offering a more focused perspective on the opportunities and challenges emerging from this transformative digitization.

Keywords: digital economy, e-commerce, technological innovation, digitalization, China

1. Introduction

Amidst the tides of technological innovation and digital transformation, China has emerged as a global powerhouse in the realm of the digital economy. With a staggering 854 million internet users as of June 2019, China's position as a digital giant on the world stage is undeniable [1]. This digital proliferation is further underscored by an impressive internet penetration rate of 61.2%, fundamentally reshaping the interactions of individuals, businesses, and society within China [1]. Recent data from China SCIO in 2023 reveals that the scale of China's digital economy surged to an impressive 50.2 trillion yuan (approximately 7.25 trillion U.S. dollars) in 2022 alone. However, the significance transcends mere numerical representation, serving as a resounding testament to the foundational role the digital economy plays in shaping the contours of China's economic landscape.

DOI: 10.54254/2754-1169/89/20231417

The digital economy often called the comprehensive use of digital tools, technologies, and platforms to create, distribute, and consume goods and services, has become a defining feature of modern economic landscapes worldwide [2]. This review extensively employs statistics on internet penetration, digitalization, federal economic reports, and recent studies to assess the economic and societal implications. It comprises three primary sections, which respectively examine the main trends and development of the digital economy in China, analyze the driving factors behind it, and evaluate the impact and consequences. A distinctive contribution of this review lies in its succinct English analysis of China's digital economy, structured around a cause-and-effect framework. This approach enables a comprehensive overview, capturing the essence of this emerging subject, crucial for comprehending China's trajectory within the digitalization era.

2. Trends and Developments of China'S Digital Economy

2.1. Definition of Digital Economy

In the contemporary economic discourse, the term "digital economy" has been conceptualized by scholars from diverse vantage points, reflecting the vast scope of its influence. Don Tapscott, credited with coining the term in his seminal work "The Digital Economy: Promise and Peril in the Age of Networked Intelligence" in 1996, emphasized the fusion of technology, business, and economy, highlighting how networking propels wealth creation and societal progress [3]. While Tapscott's perspective offers a broad overview, recent definitions have provided more refined insights. Notably, in OECD 2013: The Digital Economy, the digital economy is defined as a facilitator of product and service exchange through online commerce on the Internet. Scholars like Elmasry perceive it as a dynamic operational method, generating value at the forefront of the business landscape and elevating customer experiences that form the foundation of the entire framework [4]. These distinct interpretations, while diverse, collectively underscore the undeniable role that digital technologies play in shaping economic structures and cultural dynamics. In this section, we embark on the prevailing trends and developments within China's digital economy, from technological breakthroughs to the growth of Internet users and the rise of e-commerce.

2.2. Technological Breakthroughs

China's rapid rise in the digital economy is propelled by notable technological advancements in AI, big data, IoT, and, particularly, 5G technology. Huawei, a significant player, has pioneered 5G with self-developed hardware and software [5]. This reflects China's global commitment to innovation. Digital accessibility is a key focus, evident in optical fiber and 4G networks in over 98% of villages, maintaining low costs relative to income [5]. China's digitally literate population is well-prepared to benefit from the digital economy.

The proliferation of the Internet of Things (IoT) further underscores China's technological trajectory. As shown in Figure 1, there has been a staggering increase in cellular IoT terminal users from 2019 to 2022. China has embraced a net addition of 447 million cellular IoT terminal users in 2022 alone [6]. This growth surpasses the increase in mobile phone users by 161 million households, reflecting the rapid integration of IoT devices into various aspects of daily life. Cellular IoT users now account for over half of all terminal connections within the mobile network, highlighting the transformative impact of IoT technology. This phenomenon encapsulates China's proactive approach to leveraging IoT for diverse applications, underlining its role as a key player in the global digital economy [6].

DOI: 10.54254/2754-1169/89/20231417

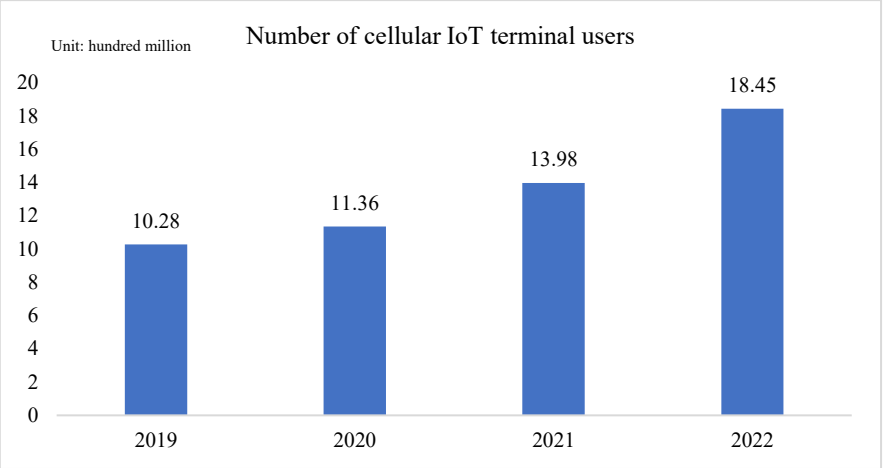

Figure 1: Number of cellular IoT terminal users in China.

2.3. Explosive Growth of Internet Users

China's digital transformation is epitomized by its explosive growth in internet users, particularly in mobile internet. As of December 2022, the number of internet users in the country has soared to an astounding 1.067 billion (see Figure 2), showcasing an impressive annual increase of 35.49 million new users compared to December 2021 [6]. This exponential surge underscores the unparalleled role of the internet in propelling China's digital economy. The trajectory of internet penetration is equally noteworthy, with the internet penetration rate scaling new heights. In December 2022, the penetration rate stood at an impressive 75.6% (see Figure 2), marking a notable rise of 2.6 percentage points from December 2021 [6]. This remarkable growth signifies a populace that is increasingly interconnected and actively participating in the digital realm. The proliferation of mobile internet has been particularly instrumental in this digital surge. With most users accessing the internet through mobile devices, the mobile economy has cemented its position as a driving force behind the expansion of China's digital landscape. Mobile internet not only empowers consumers with convenience but also serves as a catalyst for the flourishing of e-commerce, digital payment systems, and mobile applications. The explosive growth of internet users, coupled with the ascendancy of mobile internet, exemplifies China's meteoric rise in the digital arena. This phenomenon not only reshapes consumer behavior but also lays the foundation for a dynamic digital economy that thrives on connectivity, innovation, and transformative opportunities.

DOI: 10.54254/2754-1169/89/20231417

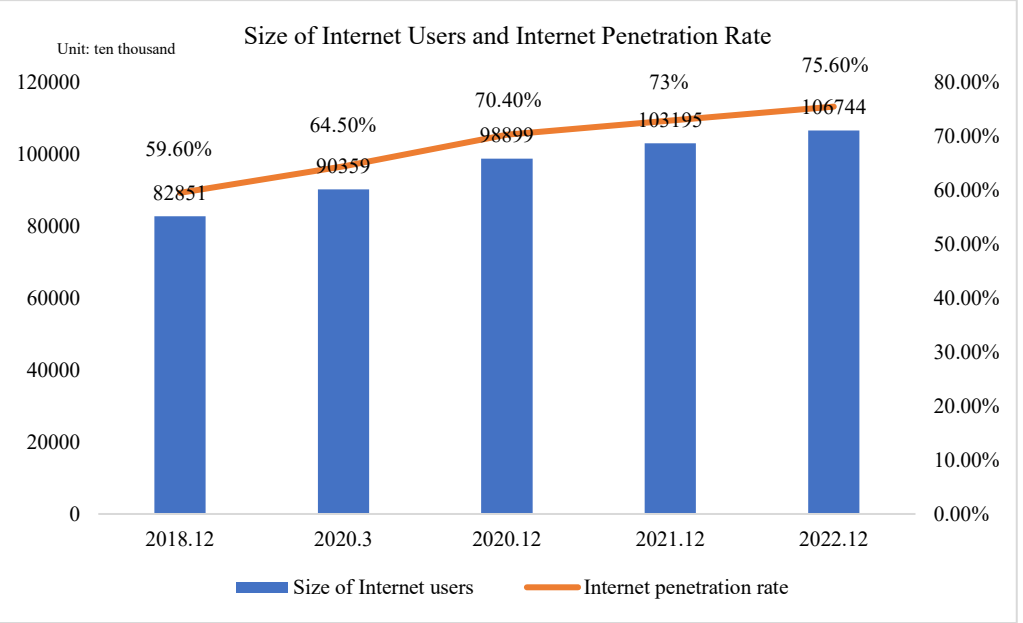

Figure 2: Size of Internet Users and Internet Penetration Rate in China.

2.4. Rise of Mobile Payments and E-commerce

China's e-commerce landscape was catalyzed by Alibaba's Taobao in 2003, and its rapid expansion in 2013 coincided with smartphone and 3G/4G network proliferation. By 2019, online shopping constituted over a quarter of retail sales [7]. The China Internet Network Information Center reveals in its latest report that China's e-commerce platforms prioritize integrating with the physical economy, aiding brands in discovering growth opportunities [6]. JD.com's "11.11" event launched 20 million new products, resulting in a 1.57 times transaction increase. About 15.2% of users engage in online purchases of new products or brands. Additionally, China's online live streaming audience reached 751 million, with 48.2% engaged in e-commerce live streaming [6].

A critical enabler of this growth was the evolution of mobile payment systems, with Alipay emerging as a game-changer. In response to the trust deficit between buyers and sellers, Alibaba introduced Alipay in 2004, a transformative move that addressed the challenge of closing online transactions. By mid-2019, Alipay boasted a staggering user base of 1.2 billion [7]. Similarly, WeChat Pay, launched on the popular social media platform in 2013, attracted users by introducing electronic red envelopes during the Chinese New Year in 2014. WeChat Pay's user base grew to about 900 million by mid-2019 [7].

3. Drivers and Catalysts of China'S Digital Economy

3.1. Role of Government Policies

Liang & Li used a panel data set containing 31 Chinese provinces from 2011 to 2020. An econometric model constructed for empirical analysis found that government support, such as investment in science and technology and R&D subsidies, plays a significant role in the development of the Chinese digital economy [8]. The Government Work Report first proposed that the Internet Plus Action Plan emphasizes the integration of the Internet and traditional industries to drive innovation, upgrade economic structures, and promote the development of the digital economy [9]. The E-commerce Law was enacted on August 31, 2018, and it outlines regulations and guidelines for various aspects of e-commerce activities within China. You & Bu found that a new governance model influenced by E-

DOI: 10.54254/2754-1169/89/20231417

commerce cross-sectionally on many other digital economy industries within China through the research of the evolution of one of the prime constituents of the digital economy, the electronic commerce sector, and its accompanying regulatory paradigm [10].

Furthermore, empirical studies explore the link between government policies and technological innovation within digital economy sectors. Deng et al. find that R&D subsidies significantly boost technological innovation in digital enterprises, particularly in the media and Internet service industry [11]. Yu et al. shed light on the impact of industrial policy on technological innovation, revealing that government subsidies and industry access systems notably influence patent applications and inventions in the digital economy sector [12].

3.2. Impact of Technological Innovations

Besides, the rapid development of the digital economy is inseparable from Technological Innovations. Li et al. researched that technological innovation is an important way for the digital economy to improve the efficiency level of the green economy, based on a study utilizing digital economy and green economy efficiency indices derived from panel data encompassing 277 Chinese cities from 2011 to 2018 [13].

Blockchain, on the other hand, is a technology that allows multiple parties to securely record and share information in a transparent, tamper-proof, and decentralized manner. Sigley & Powell not only outlined the potential societal and economic ramifications of blockchain but also laid the foundation for understanding its influence on China's structural evolution [14]. Building upon this, Xia et al. delve further into this realm, dissecting the blockchain effect on the quality of the digital economy across 43 Chinese cities using the Technology-Organization-Environment (TOE) framework theory [15]. Their fuzzy set qualitative comparative analysis (fs/QCA) illuminates the interplay between technology, organization, and environment in shaping the digital economy's landscape.

Moreover, the integration of 5G technology has significantly propelled China's digital economy forward. With its enhanced speed, capacity, and reliability, 5G has acted as a catalyst for more seamless and innovative digital interactions across sectors. This sentiment is echoed by Wang, who uses the development of 5G as a case study to explore the profound implications of integrated digital economics [16]. The interconnectedness of these technological innovations underscores a broader narrative: the transformative power of innovation not only enhances the efficiency of existing systems but also lays the groundwork for new modes of economic engagement.

3.3. Shift in Market Demand

Undoubtedly, the surge in China's digital economy is intimately intertwined with changing market demand, shaped by higher disposable incomes, higher acceptance of the Internet, and relatively cheaper goods online.

Firstly, the surge in disposable income among urban residents has catalyzed this transformation. The per capita consumption of electronic goods and other products is rising while the disposable income population is increasing [17]. With China's per capita gross national income skyrocketing from $940 in 2000 to $10,310 in 2019, people have experienced profound lifestyle changes alongside substantial increases in disposable income [18]. This substantial purchasing power is driven by a unique, culturally and legally protected market environment, fortified by a low aversion to uncertainty, fostering an inclination to embrace change and innovation [18, 19].

Secondly, the younger generation's high acceptance of technology, especially internet-native individuals born in the 1990s and 2000s, has amplified the demand for digital solutions. Chinese youth, accounting for 1.83 million web users, exhibit a remarkable 94.9% internet penetration, far surpassing adults [6]. Digital services such as food delivery and online shopping have gained

DOI: 10.54254/2754-1169/89/20231417

popularity among the younger generation. This eagerness for technology extends to online shopping, with 93% adoption among those born between 1980 and 1995 and approximately 42% of post-1995 Gen Z spending at least a third of their income on online purchases [6].

Moreover, the allure of cost-effective online shopping resonates significantly with Chinese consumers, influenced by decades of economic constraints. This sensitivity to prices has made the advantages of online shopping particularly attractive. Approximately 81% of China's population utilizes smartphone mobile payments [6], leading to amplified adoption of e-commerce platforms like JD.com that offer substantial discounts while minimizing counterfeit products [18].

4. Implications and Consequences of China'S Digital Economy

4.1. Economic Growth and Industry Upgrades

The evolution of the digital economy has fostered a profound impact on economic growth and industry upgrading in China. This transformative effect is rooted in the intricate interplay of various mechanisms. Firstly, empirical investigations rooted in regional data spanning several years underscore the transformative impact of the digital economy. Notably, it has been found that the digital economy acts as a robust catalyst for high-quality economic development across regions [20, 21]. The diffusion dynamics of the digital economy not only amplify the economic growth of its epicenter but also radiate outward, enhancing the economic quality of neighboring regions.

Moreover, the fusion of the digital economy and technological innovation exhibits intricate mechanisms underpinning industrial structure upgrading. The empirical findings corroborate that innovation, especially inventive innovation, holds the reins in steering industrial transformation. This pivotal role of innovation is manifested through the improvement of material foundations, reconfiguration of resource allocations, and augmentation of industrial productivity [22]. The marriage of technological prowess and the digital economy accelerates the transition toward a service-oriented economic structure, driving the country's pursuit of high-quality economic development.

Furthermore, these conclusions underscore the multifaceted nature of the digital economy's influence on economic growth and industry upgrading. The findings are not confined to isolated impacts but encompass a complex interplay of technological innovation, spatial dynamics, and regional disparities [21]. The digital economy's impact resonates across sectors beyond just the surface-level advancements, fundamentally reshaping China's economic landscape.

4.2. Changing Societal Lifestyles

The profound impact of the digital revolution, characterized by the surge in internet users and the widespread adoption of online shopping, has reshaped societal lifestyles, especially in response to the COVID-19 pandemic. China's exceptional internet penetration, reaching an astounding 989 million users in 2021, has laid the groundwork for a substantial shift in how people interact, work, and consume [6].

The pandemic served as a catalyst, expediting the integration of digital practices into daily life. Online education became a standard, revolutionizing learning and professional development. Simultaneously, remote work and virtual collaboration tools transformed the workplace, enabling businesses to function during lockdowns [23]. As concerns about physical contact heightened, the allure of online shopping grew stronger. China's fervent embrace of e-commerce translated into online retail sales, accounting for a remarkable 26% of total retail sales in 2019, starkly contrasting to the 2.4% in developed countries [18]. This pandemic-induced acceleration towards digitalization showcased the advantages of digital connectivity, leading to intensified preferences for virtual engagement, remote services, and contactless transactions. These shifts reflect a broader

DOI: 10.54254/2754-1169/89/20231417

transformation in how people perceive and engage with their surroundings, emphasizing the pivotal role of the digital realm in shaping contemporary lifestyles.

Within this landscape, mobile payment platforms like Alipay and WeChat Pay have emerged as influential fintech products, transcending transaction facilitation to become comprehensive ecosystems. These platforms seamlessly integrate various activities, from hotel bookings to food delivery and transportation services, offering users a cohesive digital experience [6, 23]. Furthermore, the societal ramifications of mobile payments are far-reaching. They played a crucial role in stabilizing the macroeconomy during the pandemic by fostering digital economic activities. Equally important, mobile payments have expanded financial inclusion by granting access to payment and financial services through smartphones and telecom signals, bridging gaps in underserved segments [7, 23]. This convergence of factors underscores how the digital economy has fundamentally transformed societal behaviors and preferences.

5. Conclusion

In conclusion, this review has delved into the multifaceted realm of China's digital economy, revealing its transformative impact across various dimensions. The surge in internet users, the proliferation of online shopping, and the rise of mobile payment systems have redefined societal lifestyles. The factors of technological innovation, government policies, and changing consumer behaviors have catalyzed this digital revolution, shaping economic and social landscapes. In this case, traditional industries face both challenges and opportunities, with the digital economy reshaping norms while offering new avenues for growth. Looking ahead, the digital economy will remain dynamic in China, driven by continuous technological advancements and evolving consumer preferences. As digitalization becomes an entrenched trend, the evolving landscape will necessitate adaptable strategies to harness its potential. This review underscores the need for ongoing research and policy measures to navigate the complexities and potential of the digital economy in the future.

References

[1] *Shkvarya, L.V., Hailing, Y. (2021) Digital Economy in China: Modern Trends. Modern Global Economic System: Evolutional Development vs. Revolutionary Leap: 1209–1216.*

[2] *Carlsson, B. (2004) The Digital Economy: what is new and what is not? Structural Change and Economic Dynamics, 15: 245–264.*

[3] *Bukht, R., Heeks, R. (2017) Defining, Conceptualising and Measuring the Digital Economy. Development Informatics Working Paper, 68.*

[4] *Elmasry, T. (2016) Digital Middle East: Transforming the Region into a Leading Digital Economy. https://www.mckinsey.com/featured-insights/middle-east-and-africa/digital-middle-east-transforming-the-region-into-a-leading-digital-economy.*

[5] *Jiang, H., Murmann, J.P. (2022) The Rise of China's Digital Economy: An Overview. Management Organization Review, 18: 790–802.*

[6] *China Internet Network Information Center. (2023) The 51st Statistical Report on China's Internet Development.*

[7] *Huang, Y. (2021) How digital technology is transforming China's economy. East Asia Forum Q. 12: 31–32.*

[8] *Liang, L., Li, Y. (2023) How does government support promote digital economy development in China? The mediating role of regional innovation ecosystem resilience. Technology Forecasting & Social Change, 188: 122328.*

[9] *The State Council. (2015) Report on the Work of the Government. http://english.www.gov.cn/archive/publications/2015/03/05/content_281475066179954.htm.*

[10] *You, C., Bu, Q. (2020) Transformative Digital Economy, Responsive Regulatory Innovation and Contingent Network Effects: The Anatomy of E-Commerce Law in China. European Business Law Review, 31: 725–768.*

[11] *Deng, F., Yang, G.G., Ren, Z.Z. (2021) R&D subsidies and technological innovation of digital enterprises: empirical evidence based on digital economy industry. Ind. Econ. Res., 04: 27–41.*

[12] *Yu, C.L., Yang, G.G., Du, M.Y. (2021) Industrial policy and technological innovation of China's digital economy industries. Stat. Res., 38: 51–64.*

DOI: 10.54254/2754-1169/89/20231417

[13] *Li, J., Chen, L., Chen, Y., He, J. (2022) Digital economy, technological innovation, and green economic efficiency—Empirical evidence from 277 cities in China. Managerial and Decision Economics, 43: 616–629.*
[14] *Sigley, G., Powell, W. (2023) Governing the Digital Economy: An Exploration of Blockchains with Chinese Characteristics. J. Contemp. Asia, 53: 648–667.*
[15] *Xia, M., Xie, Z., Lin, H., He, X. (2022) Synergistic Mechanism of the High-Quality Development of the Urban Digital Economy from Blockchain Adoption Perspective—A Configuration Approach. J. Theor. Appl. Electron. Commer. Res., 17: 704–721.*
[16] *Wang, Y. (2022) Development of the Digital Economy: A Case Study of 5G Technology. Digital Transformation in Industry, Lecture Notes in Information Systems and Organisation: 215–225.*
[17] *Ravikanth, M., Rao, P.V. (2016) Buying Behavior of Electronic Products in Andhra Pradesh – A Study of Selected Electronic Consumer Product. Int. J. Recent Res. Asp., 3: 101–106.*
[18] *Word Bank. (2022) World Bank Open Data. https://data.worldbank.org.cn/country/china?view=chart.*
[19] *Hofstede, G. (1984) Culture's consequences: International differences in work-related values. Sage, Beverly Hills.*
[20] *Zhang, W., Zhao, S., Wan, X., Yao, Y. (2021) Study on the effect of digital economy on high-quality economic development in China. PLOS ONE, 16: e0257365.*
[21] *Ding, C., Liu, C., Zheng, C., Li, F. (2022) Digital Economy, Technological Innovation and High-Quality Economic Development: Based on Spatial Effect and Mediation Effect. Sustainability, 14: 216.*
[22] *Su, J., Su, K., Wang, S. (2021) Does the Digital Economy Promote Industrial Structural Upgrading?—A Test of Mediating Effects Based on Heterogeneous Technological Innovation. Sustainability, 13: 10105.*
[23] *Jiang, X. (2020) Digital economy in the post-pandemic era. J. Chin. Econ. Bus. Stud., 18: 333–339.*