

Digital Economy: A Primer

Matthew N. O. Sadiku¹, Uwakwe C. Chukwu², Abayomi Ajayi-Majebi³, Sarhan M. Musa¹

¹Roy G. Perry College of Engineering, Prairie View A&M University, Prairie View, TX, USA

²Department of Engineering Technology, South Carolina State University, Orangeburg, SC, USA

³Department of Manufacturing Engineering, Central State University, Wilberforce, OH, USA

ABSTRACT

The digital economy is the type of economy which operates predominantly with the help of digital technology. It is the economic activity that results from the online transactions among people, businesses, devices, and processes. The economic activity is enabled by information and communications technologies. The transition from traditional to digital economy will boost national competitiveness and bring about new opportunities for businesses and jobs. This paper provides a primer on digital economy.

KEYWORDS: digital transformation, digital economy, digital economics, Internet economy, web economy, new economy, global economy, digitalized economy

How to cite this paper: Matthew N. O. Sadiku | Uwakwe C. Chukwu | Abayomi Ajayi-Majebi | Sarhan M. Musa "Digital Economy: A Primer" Published in International

Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470,

Volume-5 | Issue-6, October 2021, pp.713-719,

URL: www.ijtsrd.com/papers/ijtsrd46449.pdf



Copyright © 2021 by author (s) and International Journal of Trend in Scientific Research and Development Journal. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0) (<http://creativecommons.org/licenses/by/4.0>)



INTRODUCTION

Our world is continually changing, and digital transformation is one of the drivers.

Digitalization is drastically changing nature of work and making the world a more complex place. It is creating an increasingly interconnected world and challenging the structure of the traditional economy. Digital transformation (the representation of information in bits) is transforming the world economy at an unprecedented rate and strongly affecting how businesses operate and how consumers obtain services and goods.

From the media to cars, tourism, and healthcare, the whole of the economy is now digital [1].

Digitalization is integrating every aspect of our life: education, healthcare, banking, agriculture, government, transportation, entertainment etc. The Internet has changed the way we do business. Digital media are transforming businesses around the world.

Leading companies such as Google, Amazon, Apple, Microsoft, Facebook, Baidu, Alibaba, SAP, PayPal, AT&T, Uber, Tencent, Cisco, Oracle, Huawei,

Siemens, Bosch, Netflix, Booking.com, and others are developing digital devices and platforms [2].

WHAT IS DIGITAL ECONOMY?

Digital economy, also known as Internet economy, web economy, global economy, or new economy, refers to a broad range of economic activities that use digital and computing technologies. It may be regarded as a collective term for all economic transactions that occur on the Internet. The term "digital economy" was first coined by a Japanese professor in the 1990s. It was popularized by Don Tapscott in his 1995 best-selling book: *The Digital Economy: Promise and Peril in the Age of Networked Intelligence*. The digital economy uses digital technologies including hyper connectivity, the Internet of things, big data, advanced analytics, wireless networks, mobile devices, and social media.

The digital economy is the single most important driver of innovation, competitiveness, and growth. It permeates all aspects of our society, including the way people interact and the economic landscape. Growth of the digital economy has widespread impact

on the whole economy. The traditional economy is based on physical goods and cash payments. It is compared with digital economy as in Figure 1 [3]. With the advent of digital technologies and the process of globalization, the digital and traditional economies are merging into one.

Some consider digital economy as a societal revolution similar to the Industrial Revolution in the late 1800s. Both are strategic transitions into new ways of operating a business. Figure 2 shows the elements of digital economy [4]:

The digital economy encompasses all economic activities using digital technologies, digital infrastructure, digital services, and data. A representation of the digital economy is depicted in Figure 3 [5]. The primary three components of digital economy:

- **e-business:** The business can function much better by adopting the digital economy. In the digital economy, all customers prefer to interact with businesses whenever and wherever they want at their convenience.
- **e-business infrastructure:** Digital infrastructure is the basis for industry and the economy. It includes the basic physical materials and organizational arrangements that support the existence and use of computer networks and the digital economy. Examples of e-business infrastructure include computers, computer networks, software, routers, satellite, optical networks.
- **e-commerce:** The digital economy requires organizations and individuals to connect and rely on reliable and secure digital infrastructure. E-commerce is the remote sale of goods and services over computer networks. Buying, distribution, marketing, creating, selling have all become easier due to the digital economy. The need for tangible products is gone. The future of commerce will be conducted using digital channels.

The main building blocks of the digital economy are [5]:

- **Internet:** This consists of computer networks. It is the foundation of the digital economy. It provides connectivity and enables users to be connected to computer networks. Half of the world's population is connected to the Internet. Some countries need better connectivity.
- **E-mail:** Electronic communication enables very cheap, instantaneous communication across the world.

- **Digital payments:** The digital economy is moving us towards a cashless society, which involves using credit cards, Apple Pay, Google pay, Zelle, bitcoin, and bank transfer.
- **Automation:** The digital economy relies on AI, mass use of electronic data, and automated technology. Automation is making inroads into the modern business as managers realize the opportunities for increased productivity, lower cost, and improved customer experience.
- **Social media:** This is an important aspect of the digital economy. For example, in 2018, Americans spent an average of 6.3 hours a day on digital media. Individuals using social media share recommendations about business.

EXAMPLES OF DIGITAL ECONOMY

The digital age is transforming everything: the nature of markets and products, how to produce, how to deliver and pay, and human capital requirements. It is also boosting productivity, exposing companies to new ideas, technologies, new management and business models, and creating new channels of market access [6]. The following examples show how digital economy is penetrating every sector of the economy [7]:

- **Business:** Digital technologies (such as cloud computing, the Internet of Things, robotics, big data analytics, artificial intelligence, social media, 3D printing, augmented reality, and virtual reality) are transforming the way we operate business [8]. Consumer-oriented sectors such as retail, finance, and travel are also rapidly digitalizing.
- **Banking:** Banks try to use digital tools to improve their traditional business. This leads to a cashless society, where transactions no longer use physical currency but are undertaken electronically [9].
- **Retailers:** The digital economy has made a significant impact on retail sales of consumer product goods. It has enabled retailers to allow customers to place online orders. Most retailers develop their websites to enable online sales.
- **Farming:** As shown in Figure 4, the digital economy allows a small holder farmer to access finance on a mobile device without going to a bank [10].
- **Manufacturing:** The digital economy has enhanced design and the ability to monitor production processes in factories.
- **Education:** As the digital economy spreads, colleges can provide courses remotely without the need for face-to-face interaction.

- **Healthcare:** The digital economy is revolutionizing the healthcare sector, such as in enabling remote diagnosis and patient experience through electronic health records.

BENEFITS

The digitization of economies delivers numerous benefits. Some of benefits include [11,12]:

- **Promotes Use of the Internet:** Digital economy has increased the number of people using the Internet worldwide. Today most people work on the Internet.
- **Rise in E-Commerce:** Every activity related to buying, distribution, marketing, creating, or selling is just a click away all because of the digital economy.
- **Digital Goods and Services:** Today, intangible goods are available digitally. Services such as banking and watching movies are now available on the internet.
- **Transparency:** All the transactions in the digital economy happen online, giving our economy more transparency.
- **Contributes to Economic Growth:** The digital economy has recorded tremendous growth and innovation. Nations that embrace digital economy are poised for economic growth.
- **Expands Business Opportunities:** Digital economy enables small firms and businesses to actively participate in international commerce. It allows companies in financial services to operate more efficiently.
- **Creates New Jobs:** Digital economy has the potential to boost jobs creation.

Some of these benefits are illustrated in Figure 5 [12].

CHALLENGES

To reap such benefits of digital economy, several challenges must be addressed. Some challenges of digital economy include the following [13]:

- **Loss in Employment:** The advancement of the digital economy may lead to the loss of many jobs since it requires less use of human resources
- **Lack of Experts:** Since digital economy requires complex processes and technologies, it needs experts and trained professionals. There is lack of expertise to operation digital economy.
- **Heavy Investment:** Digital economy requires a strong infrastructure, which links all the cities, towns, and villages. Building such infrastructure involves heavy investment.

- **Cybersecurity:** A drastic increase in cyber threats has been reported due to increasing digitalization of the economy. Digitalization requires a robust cybersecurity and data protection scheme. Cybersecurity programs must be built to mitigate data-related risks.

- **Monopoly power:** Several aspects of the digital economy have become dominated by multinational companies with monopoly power.

- **Digital Divide:** The positive changes that occurred as a result of digital transformation and digital economy had not benefited everyone equally. Digital connectivity is more confined to economically prosperous parts of the world. The large digital divide between the rich and poor, between men and women still exists.

- **Privacy:** Using data has become big businesses. For example, Facebook collects a large range of data on its users and share the data with politicians.

CONCLUSION

Digital economy refers to all economic transactions done on the Internet. It is regarded as a new type of emerging economy. It has created waves of disruption, disrupting old industries while giving rise to new ones. The digital economy is a recently-emerging phenomenon. Although digital economy has had a profound impact on the global business landscape, it has generated some new challenges for the international investment policy community.

The digital economy is with us. It is growing fast, especially in developing nations. As shown in Figure 6, education is the heart of digital economy [14]. Introducing the Internet into classrooms is a necessity for the digitization of education. It will transform the experience of children and teachers around the world and prepare future leaders for digital economy. More information about digital economy can be found in the books in [15-31] and the following related journal: *International Journal of Innovation in the Digital Economy*.

REFERENCES

- [1] N. Colin et al., "The digital economy," in *Notes du conseil d'analyse économique*, vol. 26, no. 7, 2015, pp. 1-12.
- [2] A. Ferretti, "The approach that will determine the winners in our digital economy," August 2019, Unknown source.
- [3] T. Pettinger, "The digital economy – Pros and cons," May 2020, <https://www.economicshelp.org/blog/164275/economics/the-digital-economy-pros-and-cons/>

- [4] P. Diwan, "Digital economics — What is it?" November 2020, <https://pdiwan.medium.com/digital-economics-what-is-it-eaad5167381a#:~:text=%E2%80%9CThe%20Digital%20Economy%20is%20an,companies%2C%20computers%2C%20etc%E2%80%9D>.
- [5] "Digital Economy Report 2019," https://unctad.org/system/files/official-document/der2019_en.pdf
- [6] J. Arbache, "Seizing the benefits of the digital economy for development," September 2018, <https://voxeu.org/content/seizing-benefits-digital-economy-development>
- [7] "Chapter 4: The digital economy, new business models and key features," <https://www.oecd-ilibrary.org/docserver/9789264218789-7-en.pdf?expires=1631822690&id=id&accname=guest&checksum=C64E85538409D76BAA230AB3CEAFE0CE>
- [8] C. D'Souza and D. Williams, "The digital economy," *Bank of Canada Review*, Spring 2017, pp. 5-18.
- [9] "Digital economy," *Wikipedia*, the free encyclopedia https://en.wikipedia.org/wiki/Digital_economy
- [10] B. Armstrong, "The digital economy is becoming ordinary. Best we understand it," January 2020, <https://theconversation.com/the-digital-economy-is-becoming-ordinary-best-we-understand-it-130398>
- [11] S. Saini, "What is digital economy? Meaning, advantages & disadvantages," January 2021, <https://financeninsurance.com/digital-economy/>
- [12] "Digital economy," <https://businessjargons.com/digital-economy.html>
- [13] "Digital economy," <https://www.toppr.com/guides/business-environment/emerging-trends-in-business/digital-economy/>
- [14] J. Naylor, "Why education is at the heart of the digital economy," May 2020, <https://businesschief.eu/technology/why-education-heart-digital-economy>
- [15] S. G. Idenberg, E. Ernst, and K. North (eds.), *Managing Work in the Digital Economy: Challenges, Strategies and Practices for the Next Decade*. Springer 2021.
- [16] G. Anggadwita and E. Martini (eds.), *Digital Economy for Customer Benefit and Business Fairness: Proceedings of the International Conference on Sustainable Collaboration in Business, Information and Innovation (SCBTII 2019)*, Bandung, Indonesia, October 9-10, 2019. Routledge, 2020.
- [17] L. J. Underhill, *Defining the Digital Economy: The Structure of the Digital Economy in Focus*. Independently published, 2019.
- [18] N. Agar, *How to Be Human in the Digital Economy*. MIT Press, 2019
- [19] K. T. Westra, *The New Invisible Hand: Five Revolutions in the Digital Economy*. New Degree Press 2019.
- [20] L. Zhang and S. Chen, *China's Digital Economy: Opportunities and Risks*. International Monetary Fund, 2019.
- [21] D. Tapscott, *The Digital Economy ANNIVERSARY EDITION: Rethinking Promise and Peril in the Age of Networked Intelligence*. McGraw-Hill Education; 2nd edition, 2014.
- [22] T. Jordan, *The Digital Economy*. John Wiley & Sons, 2020
- [23] U. Huws, *Labor in the Global Digital Economy: The Cybertariat Comes of Age*. MR Press, 2014.
- [24] U. W. Chohan, *Public Value and the Digital Economy*. Routledge, 2021.
- [25] X. Zhu, *Emerging Champions in the Digital Economy: New Theories and Cases on Evolving Technologies and Business Models (Management for Professionals)*. Springer, 2019.
- [26] G. I. Zekos, *Economics and Law of Digital Economy*. Nova Science Publishers, 2020.
- [27] A. Goldfarb, S. M. Greenstein, and C. E. Tucker (eds.), *Economic Analysis Of The Digital Economy*. University of Chicago Press, 2015.
- [28] A. Arvidsson, *Change makers: The Industrious Future of The Digital Economy*. John Wiley & Sons, 2019.
- [29] G. Valenduc and P. Vendramin, *Work in The Digital Economy: Sorting The Old From The New*. European Trade Union Institute, 2016.
- [30] M. Peitz and J. Waldfogel, *The Oxford Handbook of The Digital Economy*. Oxford University Press, 2012.
- [31] G. Illing and M. Peitz (eds.), *Industrial Organization and The Digital Economy*. The MIT Press, 2006.
- [32] T. Scholz, *Uberworked and Underpaid: How Workers are Disrupting The Digital Economy*. John Wiley & Sons, 2017.

Traditional economy	Digital economy
Factories	Data Centres / Cloud computing
High street shops	Internet website
Newspaper ads/word of mouth	Social media reviews
Transportation	E-sales – digital downloads
Banks and cash points	E-Banking
Schools/textbooks	E-learning, e-books
9-5 commute	Working from home
Physical assets	Google rankings / brand image
Construction	Website development
Real estate	Domain ownership
Cash – cheque payment	e-payment, cashless society
Labour and capital	Automation and AI.

www.economicshelp.org

Figure 1 Comparing traditional economy with digital economy [1].

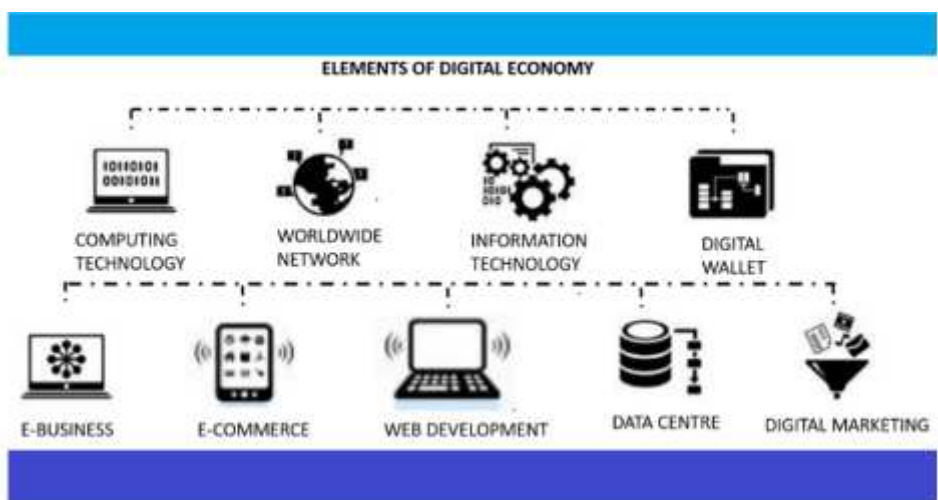


Figure 2 Elements of digital economy [4].

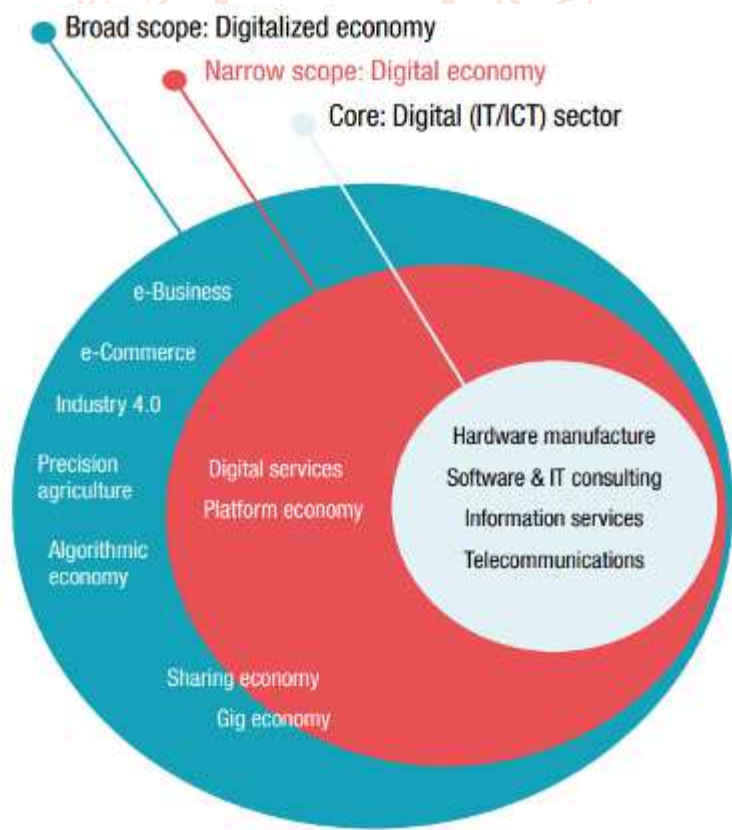


Figure 3 A representation of the digital economy [5].

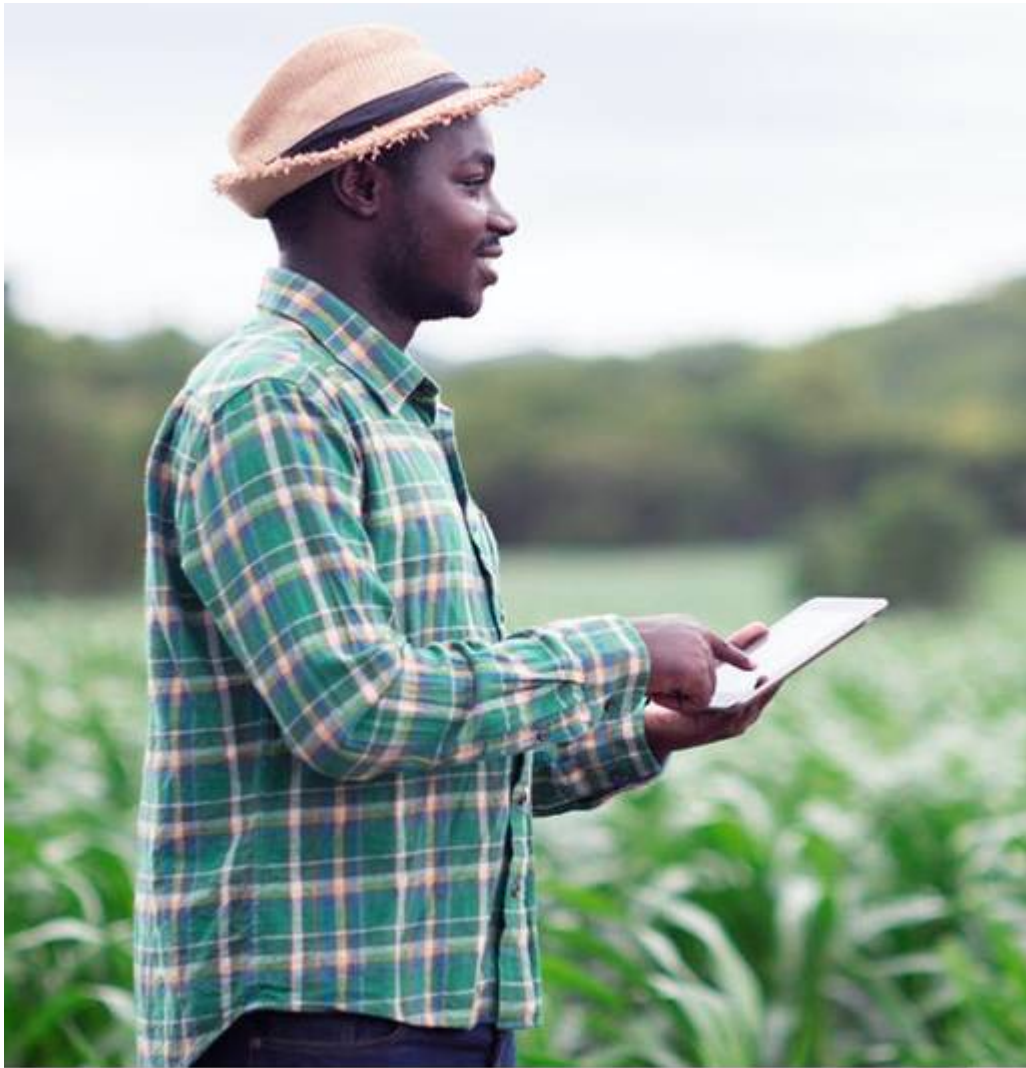


Figure 4 The digital economy allows a small holder farmer to access finance on a mobile device without going to a bank [10]



Figure 5 Some of these benefits of digital economy [12].



Figure 6 Education is the heart of digital education [14].

