



## TECHNOLOGICAL INNOVATION FOR SUSTAINABILITY: ENCOURAGING ECONOMIC GROWTH IN THE DIGITAL ERA

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### Abstract

*In today's digital age, technology has become a crucial factor in increasing economic growth. This article comprehensively discusses the relationship between technology and innovation. Affecting the economy in the digital era, it also touches on the challenges and opportunities involved. By referring to the results of the literature review, this article has identified that information and communication technology (ICT), such as technologies such as the internet, cloud computing, big data, artificial intelligence (AI), and the Internet of Things (IoT) have changed business and economic work patterns. The importance of technology in driving economic growth is very evident through the endogenous growth theory which highlights the importance of investment in research and development and innovation as a key factor. The impact of technology on productivity, efficiency, and economic competitiveness is increasingly visible through its application in various industrial sectors. The role of open collaboration and innovation is vital in accelerating technological progress, while providing guidance on how to design policies that support economic growth. Inclusive and sustainable development in the digital era. In addition, this article also explores the problems faced, such as digital inequality and the need for regulations that can adapt. Drawing on a literature review, this article investigates that technology and innovation are key to achieving sustainable and inclusive economic growth in the digital age.*

**Keywords:** *SDGs, Digital Economy Growth, Technology Innovation.*

### INTRODUCTION

The role of innovative technology is vital in improving the efficiency of small-scale economies in the digital age. With the development of technology, many business processes that were previously time-consuming and costly can now be completed faster and more efficiently. For example, there are digital payment applications that make buying and selling transactions easier while reducing the necessary costs. What's more, technology facilitates companies to reach more markets at a lower cost. So, technological innovation is able to increase productivity, reduce costs, and ultimately increase revenue.

Today, the digital era is marked by rapid technological advancements. Nowadays, technology has become a very vital thing in daily life, including in the business realm. In the field of microeconomics, technological inventions can be considered as things that affect efficiency. Microeconomic efficiency refers to the expertise of economic actors in producing products and services with the most efficient production costs. Thanks to technological innovations, many business processes that previously required a lot of resources can now be carried out more efficiently. For example, the use of robots in production will increase production speed and reduce labor costs. Not only that, information technology facilitates companies in automating business processes, reducing errors, and increasing efficiency. With this approach, the application of technological innovation not only increases efficiency, but also increases the productivity and competitiveness of the company.

The digital transition has made major changes in many economic industries, including MSMEs, and has led to the development of new business models and opportunities. Business innovation has a

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crucial role in increasing the competitiveness and growth of micro, small, and medium enterprises (MSMEs) in the digital era. Digitalization has had a profound impact on various sectors, including SMEs, and inspired the birth of new business models and opportunities. E-commerce platforms help small and medium-sized enterprises (SMEs) to expand their marketing coverage and increase sales volume. A survey in Indonesia shows that most SMEs accept e-commerce and realize how important e-commerce is for business growth. The recovery of e-commerce may be determined by several factors, including human resources, financing, and infrastructure. SMEs need to focus primarily on marketing innovation, especially in challenging situations such as the COVID-19 pandemic. Combining offline and online advertising techniques can be an okay strategy for small and medium businesses. Digital marketing strategies that can be utilized by SMEs include creating a business account on Google, promoting products through social media such as Shopee, TikTok, and other platforms, collaborating with influencers, and using email marketing (Lestari, 2022). These strategies are said to help SMEs in increasing their target market, reducing marketing costs, and improving relationships with customers (Lestari, 2022). Adding insight, expertise, and capabilities to SME stakeholders is very meaningful in driving innovation and improving work results. SMEs are advised to spend time and resources in organizing training and skills development programs to help their employees face the challenges of the digital age. SMEs must focus on developing new products, processes, and marketing strategies to stay competitive in the digital era.

Innovation helps companies achieve breakthroughs and improve overall performance. Digital human resource technology can help talent management become easier and improve efficiency in operations, helping companies to improve their excellence (Degtyareva, 2021). Implementing the use of digital human resource tools is able to increase employee comfort and optimize the running of business processes. The development of micro, small, and medium enterprises can be accelerated by being involved in the use of the digital economy and adopting technologies such as e-commerce, social media, and mobile platforms in running a business (Lestari, 2022).

This growth has the potential to increase income, create jobs, and encourage overall economic development. The government's efforts to support digital transformation can be a positive encouragement for creative industry makers to increase creativity, access to markets, and efficiency. However, the government also needs to consider the risks and impacts of digital transformation, and provide appropriate support to help creative companies take advantage of opportunities and face challenges. However, in addition to the benefits, digital transformation also poses various important challenges, such as risks, limited access and competence in the digital field in some regions, cybersecurity issues, regulatory compliance, and so on.

Digital technology not only changes our business cooperation, but also changes the future of the global economy (Nizar and Sholeh 2021). Reshaping the future of the global economy was discussed by Nizar and Sholeh in 2021. Adapting to these changes is key for you to stay competitive and unlock new growth opportunities amid the continuous development of the digital economy. We need to create new opportunities for growth in the digital economy that continues to advance. However, the advantages of technological innovation are obvious, the progress is disproportionate. Inequality in access to technology between urban and rural areas, as well as across socioeconomic circles, leads to a lack of access to technology. Inequality in access to technology between urban, rural, and various socioeconomic strata raises a number of social problems that are important to address. We need to solve this digital divide. This gap further deepens economic imbalances and prevents some groups from fully engaging in the digital economy. This gap hinders the ability of certain groups to fully engage in the digital economy.

Research conducted by Nugroho and Rosyidah in 2022 found that rural areas often lag behind in several aspects: The absence of digital infrastructure further widens the digital divide, causing people's access to the internet or digital services to be difficult. The lack of easy access causes a widening gap



between those who can access and those who cannot. Similarly, people with low incomes have difficulty using digital devices and services. There are hurdles when it comes to accessing digital devices and services that are necessary to use digital devices and services.

### RESEARCH METHODS

The research methods used include literature studies to build a strong theoretical foundation and secondary data analysis to assess the impact of digital technology. Literature review is one of the important qualitative research methods to build a strong theoretical foundation. Literature review involves searching and analyzing literature from various sources such as journals, books, research reports, and other related documents.

### RESULTS AND DISCUSSION

The digital economy is a modern economy supported by digital technology, where main economic activities such as production, distribution, and consumption are carried out through digital platforms and information technology infrastructure. The digital economy is a modern economy supported by digital technology, where major economic activities such as production, distribution, and consumption are carried out significantly through digital platforms and information technology infrastructure. Major economic activities such as production, distribution, and consumption are significantly carried out through digital platforms and information technology infrastructure (Aysa 2021; Rahayu). This economy includes various economic sectors that have adopted information and communication technology (ICT) in a broad sense, including e-commerce, fintech, and information technology. including e-commerce, fintech, digital media, and platform-based services (Agus Supriyono, and Mulyawan 2022).

Platform-based services. The main characteristics of the digital economy are the integration of high technology into business processes, the use of big data for decision-making, online interaction between economic actors, and the adoption of new business models such as sharing the economy and digital markets. sharing the economy and digital market (Maharani and Ulum 2019). The digital economy reflects a rapid and dynamic transformation in the way we interact, transact, and collaborate, creating new opportunities for economic growth. The digital economy also reflects a rapid and dynamic transformation in the way we interact, transact, and collaborate, creating new opportunities for economic growth, innovation, efficiency, and economic inclusion.

The digital economy as a modern phenomenon can be analyzed based on economic theory that examines how digital technology is used in daily life. The digital economy as a modern phenomenon can be analyzed based on economic theory that examines how digital technology affects overall economic growth. The digital economy has an impact in stimulating overall economic growth. Investment in knowledge and innovation, including information and communication technology. Investment in knowledge and innovation, including information and communication technology (ICT), is an important factor in driving long-term growth. growth.

Digital technologies, such as cloud computing, artificial intelligence, and IoT, enable companies to significantly improve their efficiency, product innovation, and global market access (Asir et al., 2022). Technological innovation not only creates new products and services, but also changes the traditional way of operating businesses, replacing old business models with more efficient and adaptive ones (Judijanto et al. 2023). The adoption of new technologies by economic actors plays an important role in shaping the dynamics of the digital economy.

The adoption of new technologies by economic actors plays an important role in shaping the dynamics of the digital economy. This process can accelerate economic growth by expanding access to innovation, creating new opportunities for entrepreneurs, and enabling greater economic inclusion. allowing for greater economic inclusion. The digital economy also shows the characteristics of the network economy (Hadid and Al-Sayed 2021), where value is generated through interaction between various parties through digital platforms (Effendi and Nasution 2022). While technology and innovation provide many benefits, they also bring challenges. The digital divide is a major issue facing many

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countries. According to the World Bank report (2016) in the "World Development Report 2016: Digital Dividends", inequality in the use of digital technology between developed and developing countries, as well as between various social groups in a country, can significantly deepen the gap both economically and socially. Therefore, it is important to develop policies that ensure equitable access to digital technologies and increase digital literacy. An important role in encouraging technological development and innovation is also held by regulations and public policies.

Based on the OECD report (2019) entitled "Measuring Digital Transformation: A Roadmap for the Future", it can be concluded that support for digital infrastructure, investment in research and development, and increased education in the field of digital skills are important factors to achieve optimal economic outcomes from digital technology. This policy needs to be drafted with gentleness so that it can adapt to the rapid development of technology. Advances in digital technology have changed the face of the global economy by opening up various new opportunities to increase productivity and efficiency, (Ardiansyah, 2023). However, to achieve sustained and inclusive economic growth, it is necessary to address challenges such as the digital divide and the need for adaptable regulations. By investing in research and development, the education sector, and digital infrastructure, as well as implementing policies that strengthen innovation and open cooperation, countries can optimize the capabilities of technology and innovation to stimulate economic growth in the digital age.

#### 1. Sustainable Agriculture

Innovations in agricultural technology, such as the use of drones and sensors for crop monitoring, are helping farmers increase crop yields more efficiently. Precision agriculture techniques allow for more efficient use of water and fertilizer, thereby reducing the impact on the environment.

#### 2. Renewable Energy.

The development of renewable energy technologies such as solar panels and wind turbines brings new opportunities in the energy industry. Investing in green energy not only helps reduce dependence on fossil fuels, but also helps create jobs and stimulate local economic growth.

#### 3. Sustainable Transportation

Innovations in electric vehicles and smart transportation systems have contributed to efforts to reduce carbon emissions. Providing infrastructure for electric vehicles, such as charging stations, could increase the acceptance of these technologies and support the shift towards greener transportation.

#### 4. The Circular Economy concept supports the use and recycling of resources to reduce waste and increase efficiency.

The circular economy model focuses on reducing waste by reprocessing and reusing products. Digital innovations such as blockchain can increase transparency in supply chains and support more sustainable business practices.

#### 5. Information and Communication Technology (ICT).

ICT has an important role in improving business process optimization and efficiency. Digital platforms facilitate companies to reduce their carbon footprint by using automation and managing resources more efficiently.

### CONCLUSION

The digital economy is a modern economy supported by digital technology, where main economic activities such as production, distribution, and consumption are carried out through digital platforms and information technology infrastructure. The digital economy is a modern economy supported by digital technology, where major economic activities such as production, distribution, and consumption are carried out significantly through digital platforms and information technology infrastructure. The digital economy as a modern phenomenon can be analyzed based on economic theory that examines how digital technology affects overall economic growth. The digital economy has an impact in stimulating overall



economic growth. The digital economy also shows the characteristics of a network economy where value is generated through interaction between various parties through digital platforms. While technology and innovation provide many benefits, they also bring challenges.

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