

Assessment of the Impact of Digitalization on the Development of the National Economy

Abstract

This study examines the impact of digitalization on the development of the national economy. The research is based on the assumption that the global economy is undergoing a digital transformation and that technological progress has become the primary driver of economic growth. The effects of information and communication technologies on production structures, market relations, and trade models are analyzed. Global and regional e-commerce data for the period 2025–2034 are evaluated comparatively. The findings show that the global e-commerce market is growing rapidly. The market size is projected to increase from US\$21.62 trillion in 2025 to US\$75.12 trillion in 2034. This represents approximately a threefold increase. The Asia-Pacific region stands out as the main driver of this growth. The region's market size is increasing from US\$12.32 trillion to US\$42.82 trillion during the same period. The region consistently holds approximately 57% of the global market. According to the regional distribution analysis, North America and Europe show strong but more balanced growth. Latin America, the Middle East, and Africa, as emerging markets, have future growth potential. Structural analysis shows that the B2B model dominates the global e-commerce market with a 65% share, while the B2C model accounts for 35%. It reveals that digitalization increases economic efficiency, competitiveness, and innovation. The widespread adoption of digital platforms supports sustainable economic growth. Therefore, digital transformation is considered one of the fundamental determinants of modern economic development.

Keywords: *Digital commerce, e-commerce, economic development, national priorities, economic assessment.*

Introduction

World history is shaped by transformations triggered by technological advancements. The current process is called Industry 4.0, or the fourth industrial revolution. This process necessitates a digital transformation in almost every aspect of life. It is predicted that the transformation in the field of information and communication technologies will create a significant change by seriously affecting macroeconomic dynamics in all areas of life, similar to the period after the Industrial Revolution in the 1770s. The impact of digitalization on the economy has been examined by several researchers at both international and national levels. Assessments related to these studies are summarized below. Topçu (2021), in his study titled "The Impact of the Digital Economy and Sustainable Development Indicators: The Case of EU Countries," explains that the concept of the digital economy was first introduced in Topçu's book "Digital Economy: Promise and Danger in the Age of Networked Intelligence," published in 1995, and that this concept refers to the digitalization of all information fields stored on computers and competing at the speed of light between networks. The concept of the digital economy has been further developed by the same researcher through international studies. Accordingly, Carlsson (2004) defines the digital economy as "a white or digital technology-based economy created by economic activities and professional interactions facilitated by ICTs on a global scale." According to Drucker, the only important resource in the new economy is information. Traditional factors of production such as land, labor, and capital have been relegated to the background. It is argued that these resources are easily accessible wherever information exists. The Organization for Economic Cooperation and Development (OECD) defines the digital economy as "change processes that make technology cheaper and more powerful, standardize business processes,

and simultaneously encourage innovation across all sectors of the economy." The potential impacts of information and communication technologies (ICTs) on the development of countries within the digital economy are examined as a separate research topic. Tocan and Duduman (2010) argue that the digital economy, which has become widespread with the development of ICTs, makes sustainable development possible, and that sustainable development also contributes to the development of the digital economy. Hilty and Hercheui (2010), examining the impact of ICTs on sustainable development, concluded that sustainable development will improve when decision-makers in the economy effectively utilize ICTs. Jovanovic et al. (2018) stated that the increase in the competitiveness of countries is achieved through the transition to digital business models, the biggest transformation in modern business life. They demonstrated that the adoption of digital transformation by society is necessary for the sustainable development and prosperity of countries. Dinana (2019) examined the impact of ICTs on the 17 sustainable development goals proposed by the United Nations. She stated that digitalization is one of the most important factors affecting the economy. Konu (2020), using cross-sectional data analysis and 2018 DESI (Digital Economy and Society Index) data, evaluated the relationship between the digital economy and sustainable development in EU countries. It was found that the digital economy has a positive and statistically significant impact on sustainable development. Gözükcük (2020) evaluated the impact of the digital economy on economic growth using OECD data from 2005-2017. This evaluation concluded that increases in broadband subscriptions and individual internet usage boosted economic growth. Deniz (2018) stated that developments in digitalization have had a positive impact on economic growth and productivity worldwide. It was emphasized that digitalization is one of the important building blocks of global development and should be a goal for countries to achieve.

Literature review

In today's developing world, the understanding of production and competition has reached different dimensions. The perspective that was based on the production of goods using theories of absolute and comparative advantage in the past has given way to the production of knowledge. The production of knowledge depends on education, research, science, and technology. Technological advancements are directly related to the economic growth of countries. To increase international competitiveness and achieve long-term sustainable growth, it is necessary to produce new technologies. Increasing productivity and competitiveness can be achieved through the integration of manufacturing industries with innovative technologies. Today, digital transformation is needed to achieve this integration. Digital transformation aims to increase the global competitiveness of countries and reduce their dependence on foreign sources. Digital transformation can be defined as the integration of digital technologies into daily life, with the aim of providing new revenue and value generation opportunities in every operation that can be digitized within a business model or enterprise (Novikova, et.al.,2022). In this context, it is necessary to increase the number of technological initiatives that will enable global recognition and high economic value. The revolution, encompassed in various terms worldwide such as "Industry 4.0," "Smart Manufacturing," and broader expressions like "Industrial Internet" and "Society 5.0," is fundamentally based on creating a digital infrastructure in many areas, primarily manufacturing, by leveraging the digital technologies offered by Information and Communication Technologies (ICT). The fourth industrial revolution is the digital transformation process in industry through the use of cyber-physical systems in the manufacturing sector. Currently, the technologies that will enable this transformation include:

- The Internet of Things;
- Simulation Technologies;
- Smart Robotics;
- Big Data and Data Analytics;
- Artificial Intelligence;
- Virtual Reality and Augmented Reality;
- Cybersecurity;
- Vertical and Horizontal Integration;
- Cloud Technology, and Additive Manufacturing;

➤ Additionally, mobile devices are also crucial (Aleksandrova, et.al.,2022).

In the digital economy era, digital information, transaction technology, and internet-based business practices have found widespread application in the market. The digital transformation of the economy has profoundly impacted financial markets through the widespread adoption of internet-based banking, the faster execution of financial transactions and high-frequency trading, and the availability of easily accessible big data. The digital economy possesses a distinct list of characteristics not found in other types of economies. For example, free products and services like Wikipedia, email services like Gmail, and digital maps like Google Maps have significant economic value. Commercial transactions are facilitated through modern media, the internet, or the global web. User information necessary for the digital economy can also be used by other people. For instance, if a new drug is to be designed, information from people who have tried it is needed (Afonasova, et.al.,2019). If a consumer wants to buy a product, they will consider accessing feedback from other consumers who have experienced it. Therefore, it creates a beneficial externality for everyone by increasing social welfare. The greatest impact of digital technology or digital data on products and services emerged during the Covid-19 pandemic. During the pandemic, many schools and universities conducted their educational activities online. Similarly, numerous business meetings and academic conferences were held online. Consequently, companies providing virtual meeting platforms like Zoom experienced significant increases in their stock prices. Furthermore, during the Covid-19 global pandemic, externalities typically considered insignificant and associated with normal activity and close contact suddenly became critical. Social distancing rules, isolation, quarantine, and other measures that governments sought to implement became critical (Gnezdova,et.al.,2019).

The economic growth of a society is closely linked to technological revolution and development. The first and second industrial revolutions led to the age of industrialization worldwide. The incredible development and widespread adoption of ICT (Information and Communication Technologies) has given rise to the third industrial revolution, also known as the digital revolution. This has shifted almost all economies from an industrial to a digital economy. Because the dynamics of the digital economy are complex, achieving continuous innovation has been a challenging task. These challenges primarily involve creating updated business models tailored to the specific needs of small and medium-sized enterprises (SMEs). The growth of SMEs and their ability to overcome these challenges depend on the strategic plans developed by them. All organizations operating within the digital economy require continuous and increasing digital innovations to improve their technical capabilities (Sakhno,et.al.,2019).

Table 1. Transition from Industrial Economy to Digital Economy

Category	Industrial Economy	Digital Economy
Production Factors	L (Labor), K (Capital)	D (Data) as the key factor
Industrial Organization	Supply chain and value chain: specialization and cooperation with upstream and downstream enterprises	Two-sided platforms and industrial platforms: platform ecosystem connectivity and capabilities
Business Model	Single business model: selling specific products/services	Ecosystem business model: integrating and developing multiple business models together
Global Environment	Developed countries lead in organizing global value chains for developing countries	Digital economy offers new opportunities for developing countries to catch up

Source: Sakhno,et.al.,2019

The digital economy is deeply integrated with economic and social development, constantly creating new technologies, new ways of working, and new platforms, opening up all production, distribution, circulation, and consumption links, as it significantly facilitates social productivity through high-tech innovation and application, including mobile networks, AI, blockchain, and cloud

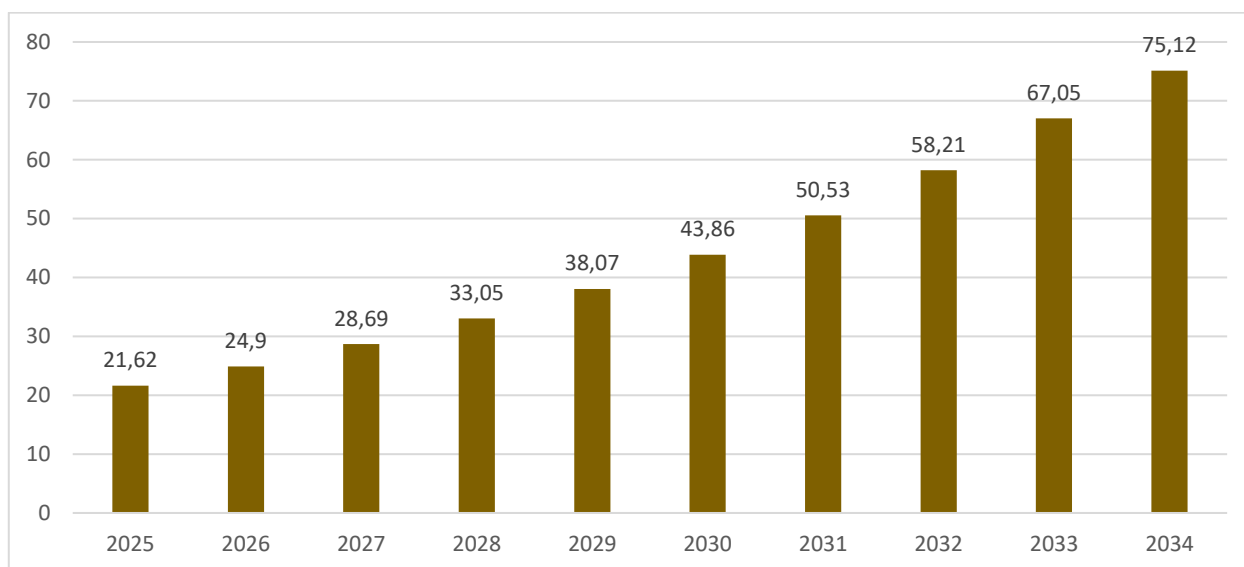
computing. The contribution of traditional factors to economic growth is decreasing day by day. Thanks to the rapid advancement of ICT, such as big data, AI, cloud computing, and blockchain, countries around the world are facing the creation of a profound information technology landscape. Online work via the internet is being carried out on an unimaginable scale. While previously offering many conveniences, online grocery shopping and restaurant ordering have become a necessity for many during the pandemic. Online healthcare services are making virtual doctor appointments widespread. The Covid-19 pandemic, experienced worldwide, has played an active role in the digital economy and has made it a driving force for economic growth. It has opened the way for people to work from multiple locations, from official offices, from their homes, and even from a local cafe. Although the workplace may have changed, everyone has experienced the same level of experience as if they were in a physical office. The emergence of this flexible, virtual, and globally interconnected business, and the dynamic capabilities provided by emerging digital business processes, necessitate the efficient management of its ecosystem. While it remains a matter of debate whether GDP estimates still provide a good measure of growth in a digitized economy, the digital economy has recently been seen as a key determinant of global economic growth and development. Therefore, the development of the digital economy contributes to the use of innovative technology, creating new opportunities for companies. For countries with relatively small real GDP, economic growth at a rate of 8-10% can be considered normal, while for countries with high real GDP, an economic growth rate of 2-3% can be significant. The advancement of science and technology has become a crucial factor in achieving increased labor productivity and economic growth. Technological progress has led to the development of new production methods, as well as new forms of management and production organization. Fundamentally, since ideas in the digital economy are experienced from the perspective of innovation, knowledge, and creativity, economies in many parts of the world are being transformed digitally. However, significant coordination problems arise among countries in the development of digital technologies during this transformation. In the modern economy, large commercial transactions take place online. Digital transactions are replacing cash transactions and increasing transparency, thus reducing corruption. The global spread of the digital economy creates significant growth and innovation, creating a ripple effect in other sectors of the economy. Another distinguishing feature of the digital economy is the ubiquity of information. Today, the digital economy offers a wide range of services impacting various traditional economic sectors, including banking, transportation, healthcare, education, publishing, and energy. This is because ICT has transformed business dynamics as well as personal interactions. Many firms across different sectors are increasingly adopting new digital technologies, driving the daily digitalization of the economy. Electronic commerce (e-commerce), meaning online shopping, has created mainstream channels for consumption. Products in e-commerce have evolved from tangible media (CDs, videos, books) to digital media. The cross-border e-commerce market is creating market opportunities and the necessary relationships for cross-border e-commerce, with the aim of developing international logistics. Cross-border e-commerce encompasses the negotiation, contracting, payment, logistics, and other aspects of the trade process. Companies must develop cross-border e-commerce to enter markets. Furthermore, cross-border e-commerce improves international logistics. A rapid increase in e-commerce transactions has been recorded in the last few years. All credit goes to the digitalization of business operations, making the production, purchase, delivery, marketing, and tracking of goods and services much easier, more affordable, and more profitable (Neamtu et.al., 2019:p.485).

Methodology

This study employs a quantitative and comparative analytical framework to assess the developmental patterns of the global e-commerce market and its regional dynamics. The methodology is based on secondary statistical data from international market research sources. The analysis concentrates on four primary indicators: the rise of global market size, the distribution of regional markets, the expansion of the Asia-Pacific market, and the structural composition of e-commerce models. First, a longitudinal study is used to look at how the global e-commerce market grew from 2025 to 2034. This helps us find long-term growth trends and how global and regional markets are

related to each other. Second, a regional comparison method is employed to figure out how much each major geographic location adds to the global e-commerce structure. The Asia-Pacific area is given special attention because it has the largest market share. The methodology uses trend analysis to look at how the Asia-Pacific market has grown over the past year. This helps figure out how steady and fast digital transformation is happening in different parts of the world. Finally, a structural analysis is done to look at how different e-commerce models are used, with a focus on how B2B systems are more common than B2C systems.

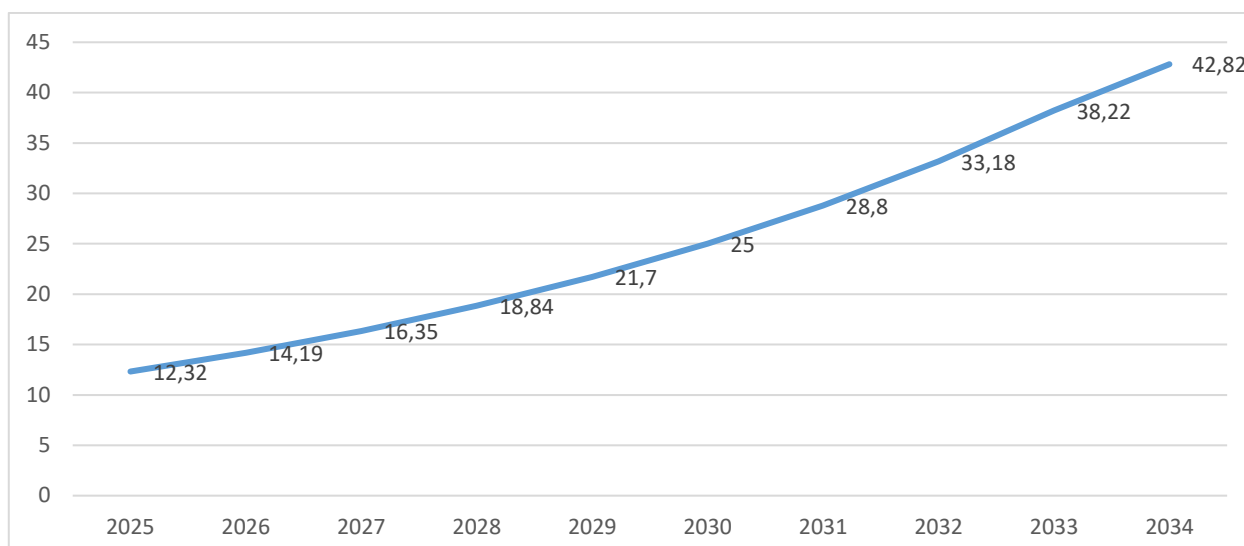
Graphic 1. Global e-commerce market size, trillion dollars, 2025-2034



Source: <https://www.precedenceresearch.com/e-commerce-market>

The numbers for 2025–2034 demonstrate that the global e-commerce market and the Asia-Pacific area are both growing at the same rate. The total value of the worldwide market rises from \$21.62 trillion in 2025 to \$75.12 trillion in 2034. The total growth throughout this time is about 3.47 times. The market volume in the Asia-Pacific area goes up from 12.32 trillion to 42.82 trillion within the same time. This means that the number has gone up by about 3.47 times. A comparison analysis demonstrates that the Asia-Pacific region continues to be the primary catalyst of the worldwide market. The region will have almost 57% of the worldwide market in 2025 ($12.32 / 21.62$). This ratio stays the same in 2034 ($42.82 / 75.12 \approx 57\%$). This shows that the region's leading position in the global e-commerce structure remains stable. The yearly growth patterns are likewise moving in the same manner. The worldwide market grows by an average of 5 to 8 trillion dollars per year. The region's growth is between 2 and 5 trillion dollars. This comparison indicates that most of the increase in global e-commerce comes from the Asia-Pacific area.A

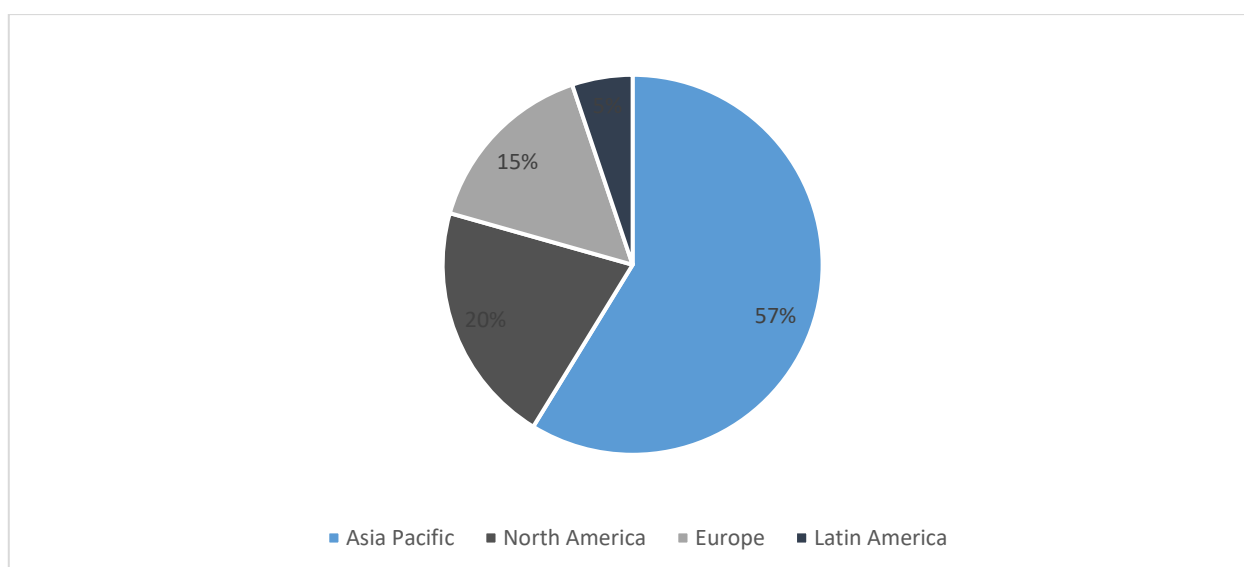
Graphic 2. The size of the Asia Pacific e-commerce market is projected to be trillions of dollars by 2025–2034



Source: <https://www.precedenceresearch.com/e-commerce-market>

From 2025 to 2034, the e-commerce market in the Asia-Pacific area is steadily growing. The market size is expected to grow from US\$12.32 trillion in 2025 to US\$42.82 trillion in 2034. The total growth throughout this time is about 3.5 times, which shows how quickly the region's digital economy is growing. When you look at the annual growth patterns, you can see that they are steadily rising. From 2025 to 2028, the market size grows from US\$12.32 trillion to US\$18.84 trillion. The market grows faster from 2029 to 2031, reaching between US\$21.70 trillion and US\$28.80 trillion. The period of highest growth is from 2032 to 2034. The market grows from US\$33.18 trillion to US\$42.82 trillion over this time. The average annual growth rate is still high. This is because more people in the area are using the internet, mobile commerce is growing, and digital payment systems are getting better. The Asia-Pacific area is becoming one of the most important places for the global e-commerce business to flourish.

Graphic 3. E-commerce market share by region (%), 2024

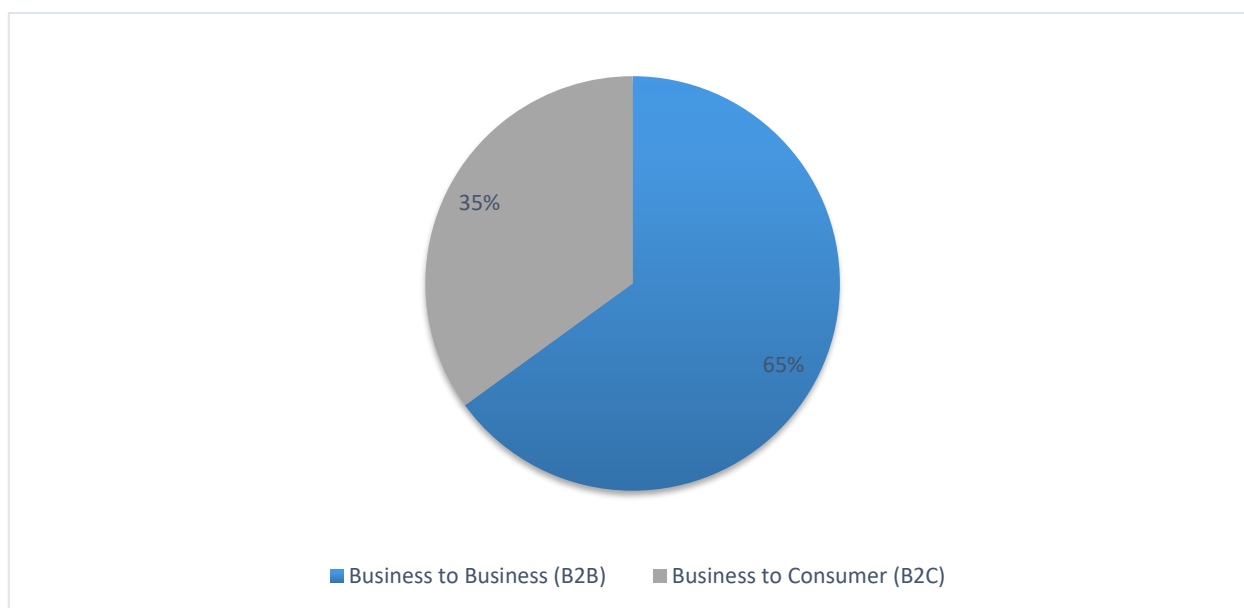


Source: <https://www.precedenceresearch.com/e-commerce-market>

The e-commerce market for 2024 demonstrates that the Asia-Pacific region is obviously the leader in the worldwide market. The area makes up 57% of the whole market. This signal gives you a big edge over other areas. The Asia-Pacific area has a significant proportion since it has a large population, digital technologies spread quickly, and mobile commerce has grown a lot. With a 20%

market share, North America is in second place. This area has a very advanced e-commerce infrastructure. Strong logistical systems and digital payment channels keep the market stable. Europe comes in third with a 15% stake. Even if e-commerce is still growing in this area, the market has already reached a mature stage. Latin America has a 5% stake, while the Middle East and Africa have a 3% share. People think of these areas as developing markets. Their little percentage is because the digital infrastructure isn't very strong now and people are just starting to become used to purchasing online.

Graphic 4. E-commerce market share by model type (%), 2024



Source: <https://www.precedenceresearch.com/e-commerce-market>

The e-commerce market for 2024 shows that the B2B (Business to Business) model is the most popular one around the world. The B2B segment, which makes up 65% of the total market, illustrates that there is more trading between businesses than between consumers. This model mostly deals with digital commerce transactions that have to do with wholesale operations, managing the supply chain, and making things. The B2C (Business to Consumer) model is in second place, with a 35% share. This indicator shows that internet shopping is common, but the amount of money spent is less than the amount of money spent on business-to-business commerce. Mobile commerce, digital payment systems, and changes in how people shop are the key reasons why the B2C model has grown. The B2B model is better statistically since it has a higher transaction value. Most business-to-business contracts are big, which means that the overall market share goes up. Even though there are a lot of transactions in the B2C model, the value is not very high.

Discussion and conclusion

The results of this research indicate that digital transformation has emerged as a primary catalyst for structural change in the contemporary economy. The move from old-fashioned industrial systems to digital ones has changed how goods are made, traded, and sold. The worldwide e-commerce market's rise from 2025 to 2034 is a clear sign of this change. The market keeps growing because of new technologies and the extensive use of digital platforms. When looking at the world as a whole, the Asia-Pacific area is the most important for the growth of e-commerce. This area is the key driver of digital commerce because it has about 57% of the world's market. The high population density, quick adoption of new technologies, and growth of mobile commerce and digital payment systems all help explain this strong position. North America and Europe are stable because they have good infrastructure. Latin America, the Middle East, and Africa, on the other hand, are all growing regions that could see growth in the future. Structural study indicates that the B2B model prevails over the

B2C paradigm. Business-to-business digital commerce has a lot of transactions and a lot of money, which makes this model more important in the worldwide market.

Conclusion

The study's results suggest that the worldwide e-commerce market has been growing steadily and strongly during the time period studied. The fact that the market is getting bigger shows that digital platforms are becoming more essential in global trade. The Asia-Pacific area is still in first place, growing at the same time as the rest of the world. Statistics demonstrate that growth in the region is in line with worldwide trends. The Asia-Pacific market is developing at about the same rate as the worldwide market, and it accounts for most of all e-commerce activity. This means that the region will still be the key driver of global growth in the future. The Asia-Pacific area has the largest share of the regional market, followed by North America and Europe. Latin America, the Middle East, and Africa have smaller proportions, but as internet infrastructure grows, they could see more growth. The B2B model is the most popular one in 2024, which demonstrates that digital trade between businesses shapes the market. This dominance can be explained by B2B activity with high transaction values.

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