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DEVELOPMENT OF DIGITALLY DELIVERABLE SERVICES AND EU-US TRADE RELATIONS

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Purpose: The aim of this article is to compare foreign trade in digitally deliverable services between the United States and the European Union and to characterize EU–US trade relations in the exchange of digital services, including an identification of the reasons for the EU's weaker position.
Design/methodology/approach: Research methods were used: critical analysis of source literature, comparative analysis and secondary data analysis, as well as logical reasoning and deduction. The study was conducted on the basis of data available in national and international reports, including those of the UN, WTO, EC and public statistics. The time frame of the research covered the years 2010-2025.
Findings: The EU achieved higher values for exports and imports of digital services, but it was the US that "earned" from the exchange of these services as a net exporter. The reasons for the EU's weaker position are: low investment in intangible capital and the ICT sector, high energy costs, lower productivity, and regulations on digital services. Trump's tariff policy has ushered in a new era of international trade operating in unpredictable and difficult market conditions.
Research limitations/implications: The research was also limited by gaps in statistical data on trade in digital services between selected economies and the reporting of export and import volumes in different currencies, i.e., US dollars or euros.
Social implications: The results of the study may increase awareness among businesses of the need to invest in intangible capital and the ITC sector in order to develop digitally deliverable services (DDS) and remain competitive in today's economy. Public awareness may be increased regarding the importance of acquiring and developing digital skills.
Originality/value: The value of the work lies in the findings based on a long-term analysis of the digitally deliverable services and a broad and up-to-date approach to EU-US trade relations.
Keywords: digitally deliverable services, digitally services, EU-US trade relations, international trade in digital services.
Category of the paper: Research paper.

1. Introduction

Advancing digitalization, including the development of digital services, is driving global trade in services (Jiang et al., 2022; Autio et al., 2021). According to data from the United Nations Conference on Trade and Development (UNCTAD, 2025), the global value of digital services exports increased from $1.8 trillion in 2010 to $4.9 trillion in 2024, representing an increase of over 270%. During the same period, global imports of digital services increased from $1.7 trillion to $4.1 trillion, an increase of over 240%. Thus, the growth rate of exports was higher than that of imports[1]. Digitally deliverable international trade has been on a sustained rise since 2010, further boosted by the COVID-19 pandemic. Boston Consulting Group (BCG, 2025) forecasts a further acceleration in the growth of foreign sales of services, including digital services. The value of services crossing borders is projected to grow by around 5.6% annually through 2032 - twice as fast as trade in goods. Digitally deliverable services (DDS[2]) accounted for 56% of all services exports worldwide in 2024. This share is therefore significant. Exports of digitally deliverable products are growing faster in developed than in developing economies.

Exports of services, including digital services, are having an increasing impact on the economic development of some countries and thus determine the need to adapt their trade policies to the changing reality (Chen et al., 2025; Lei et al., 2024; Sepashvili 2020; Lee et al., 2019). The United States (US) and the European Union (EU)'s 27 Member States share a $7.1 trillion economic relationship, the largest economic relationship in the world. The digital economy underpins practically every aspect of it (International Trade Administration US, 2024).

In the third decade of the 21st century, due to geopolitical conditions (including new tariffs introduced by Donald Trump from 2025 and the issue of Greenland, which the US President is demanding), the discussion on EU-US trade relations has gained momentum. The issue of digital services plays an important role in this debate. Europe is a key market for American tech giants, and the US has a significant and growing trade surplus in the digital services sector (European Digital SME Alliance, 2025). Hence, the European Commission is working on a plan to possibly correct the imbalance in trade relations.

The aim of this article is to compare foreign trade in digitally deliverable services between the United States and the European Union and to characterize EU–US trade relations in the exchange of digital services, including an identification of the reasons for the EU's weaker position.

[1] In this work, data is given in US$.
[2] At work, the acronym DDS stands for digitally deliverable services.

2. Literature review

The definition of services has evolved over time from being perceived as "service/duty" to include elements of digitization and artificial intelligence (AI) (Tokarz-Kocik, 2024), but there is still a lack of clarity in this regard in international trade. Various entities in the global economy, including the UN and the WTO, define services or digital services differently, which determines the statistical data. The definition of services trade under the GATS (2026) is four-pronged, depending on the territorial presence of the supplier and the consumer at the time of the transaction: (1) Cross-border trade/service; (2) Consumption abroad; (3) Commercial presence; (4) Presence of natural persons. In summary, these are methods of providing services in international trade. For the purposes of this paper, the UNCTAD (2025) definition has been adopted. Digitally deliverable services (DDS) include: insurance and financial services, telecommunications, computer and information services, intellectual property charges, research-and-development services, trade-related, technical, managerial, consultancy, engineering, scientific and architectural services, audiovisual services, as well as health and education personal services, and cultural heritage and recreational services.

The modern global economy is undergoing a paradigm shift in which traditional mechanisms of commodity exchange are being systematically replaced by the dynamic expansion of digitally delivered services. These are mainly identified with services provided via the Internet or electronic networks, which are automated and require minimal human involvement. This phenomenon, defined as all transactions ordered or delivered electronically, now forms the foundation of global value chains (GVCs) and is a key determinant of GDP growth. The digital transformation taking place in every sector of the economy is an opportunity to stimulate productivity growth in businesses and economies, stimulate innovation, and create global social benefits (Heuser et al., 2017; Freund et al., 2002).

Numerous studies indicate that DDS drive the centralization of GVCs by improving productivity and reducing resource allocation errors, especially in developed countries. The development of the digital economy increases the length of GVC chains and supports advancement in the value hierarchy, but in many cases it deepens inequalities between individual economies (Garrote Sanchez et al., 2021; Antràs, 2020). The impact of the development of the digital economy on the labor market is particularly noteworthy. The development of artificial intelligence has a substitutive effect on the need and opportunities for human capital utilization. This is particularly true for traditional labor-intensive industries. This may lead to an increase in unemployment and structural changes in labor demand (Acemoglu et al., 2022; Dauth et al., 2020). At the same time, the possibility of developing regional markets through the use of the internet in the creation of GVCs is emphasized (Gan et al., 2025; Egwuonwu et al., 2022). The digitization of services promotes the matching of supply and demand and supports cooperation at the local and global levels, giving new impetus to glocalization processes (Foster, 2024; Stryabkova et al., 2021).

Research also shows that attitudes toward digital data are changing. It is no longer treated solely as a factor of production, but as a valuable strategic resource that is subject to dynamic market circulation. Data is a new form of capital whose value increases as digital ecosystems develop. It is the essential fuel for the dynamic development of AI and machine learning. It drives innovation and optimizes processes in organizations and entire economies. It allows for a deeper understanding of customer needs and enables them to be met. Digital data (processed by AI algorithms) allows for the generation of new products, the optimization of services, and more accurate business decisions (Nayak et al., 2024; Sadowski, 2019).

In the regulatory context, the literature analyzes the issue of legal frameworks aimed at regulating the digital services market and global trade in digital services (Robbins, 2018; Talar 2018). In particular, there are growing geopolitical tensions between the main players on the global stage – the United States, the European Union and China. The emergence of a "digital trade imbalance" resulting from the asymmetry between the pace of innovation and the regulatory capabilities of states is emphasized (Zu et al., 2022; Aaronson, 2016). Lack of trust in the use of digital data, the growing role of artificial intelligence, and problematic internal policies adopted by Big Tech companies are contributing to the tendency to extrapolate regional regulations to the global market. An example of this is the European Union's policy leading to the implementation of the Digital Markets Act (DMA) and the Digital Services Act (DSA), which fundamentally changes the rules of access to the European market (Jaskiernia, 2025). Through the implementation of regulatory instruments, the EU seeks to impose values such as transparency, AI ethics, and privacy protection. China is actively pursuing external expansion through the implementation of the "Digital Silk Road" project, exporting its own standards for digital services to developing countries (Eguegu, 2022; Triolo et al., 2020). The American model of digital services is based on the ideology of complete freedom on the internet. In this view, the internet is a space where large corporations from Silicon Valley shape the conditions for the development of the digital market. It is based on defending the free flow of data and opposing any attempts by third countries to tax digital services.

An international rules system on digital trade that can satisfy multilateral interest appeal has not been formed yet despite the rapid growth of digital services trade (Wang et al., 2024). The rivalry between superpowers for dominance in cyberspace manifests itself through the implementation of antagonistic political and technological models. However, the further development of digital services trade requires the creation of multi-layered agreements (Digital Economy Agreements – DEA) that will regulate not only market access, but also data transfer and AI standards (Burri et al., 2025; Lafuente et al., 2024). Given the extremely different approaches to trade regulation represented by the US, China, and the EU, this task appears to be very difficult. The strategic challenge remains to develop globally acceptable Data Free Flow with Trust, which will enable trade to continue in conditions of growing systemic mistrust.

3. Methods

This study attempts to answer the following research questions:

1. What are the differences and similarities in the development of the value and dynamics of foreign trade in digitally deliverable services between the European Union and the United States in the years 2010-2024?
2. What is the significance of foreign trade in digital services for the EU and US economies, including in the context of mutual trade?
3. Is there a need to increase protectionism in the European Union's relations with the United States in the digital services sector in the context of the process of shaping new international trade rules after 2024 initiated by D. Trump?

To verify the research question and achieve the set objective, the following research methods were used: critical analysis of source literature, comparative analysis and secondary data analysis, as well as logical reasoning and deduction. The analysis examined, among other things, the shares in global exports and imports of digital services; growth rates of EU and US exports and imports of digitally delivered services for the years 2010–2024; the shares of digital service exports and imports in total EU and US trade in services, the ratios of exports/GDP and imports/GDP and US trade in digitally delivered services by the European Union. The study was conducted on the basis of data available in national and international reports, including those of the UN, WTO, European Commission (EC), and public statistics. The basis was provided by the databases of the United Nations Conference on Trade and Development (UNCTAD) and the Commerce Bureau of Economic Analysis in the U.S. Department of Commerce. The time frame of the research mainly covered the years 2010-2024, but relevant data and information for 2025 were also taken into account.

The issue addressed is broad and multifaceted, therefore, due to editorial requirements, this article focuses on presenting the most important and selected issues. The research was also limited by gaps in statistical data on trade in digital services between selected economies and the reporting of export and import volumes in different currencies, i.e., US dollars or euros. These limitations were partially overcome by using various data sources and currency conversions where necessary.

4. Results

4.1. Foreign trade in digitally delivered services – a comparative analysis of the United States and the European Union

The United States is the leader in foreign trade in digital services, with a 15.5% share of exports and an 11.4% share of imports in 2024. Among EU members, Germany ranks highest in both exports (4th place) and imports (3rd place). (Table 1). The European Union's share of digital services exports was 38.7% and 42.9% of imports. Comparing the data in this way, the EU was the clear favorite.

Table 1.
Leading exporters and importers of digitally delivered services in 2024

Rank	Exporters	Value [Billion USD]	Share [%]	Rank	Importer	Value [Billion USD]	Share [%]
1	USA	741	15,5	1	USA	455	11,4
2	United Kingdom	488	10,2	2	Ireland	402	10,1
3	Ireland	425	8,9	3	Germany	273	6,9
4	Germany	280	5,9	4	United Kingdom	220	5,5
5	India	276	5,8	5	Netherlands	194	4,9
6	China	221	4,6	6	France	178	4,5
20	Poland	54	1,1	22	Poland	41	1,0

Source: WTO (2025).

In 2024, US exports in digitally deliverable services generated $759.9 billion, up from $329.3 billion in 2010. Thus, the US recorded a 230% increase. Analyzing the data in a chain-linked manner, a clear upward trend can be seen. Digitally deliverable services exports represented 64% of all US services exports in 2023. The value of digital services purchased followed a similar pattern. It increased by 213%, from $219.6 billion in 2010 to $468.4 billion in 2024. In this case, a steady upward trend was also observed, with the exception of a slight decline in 2018 (see fig. 1).

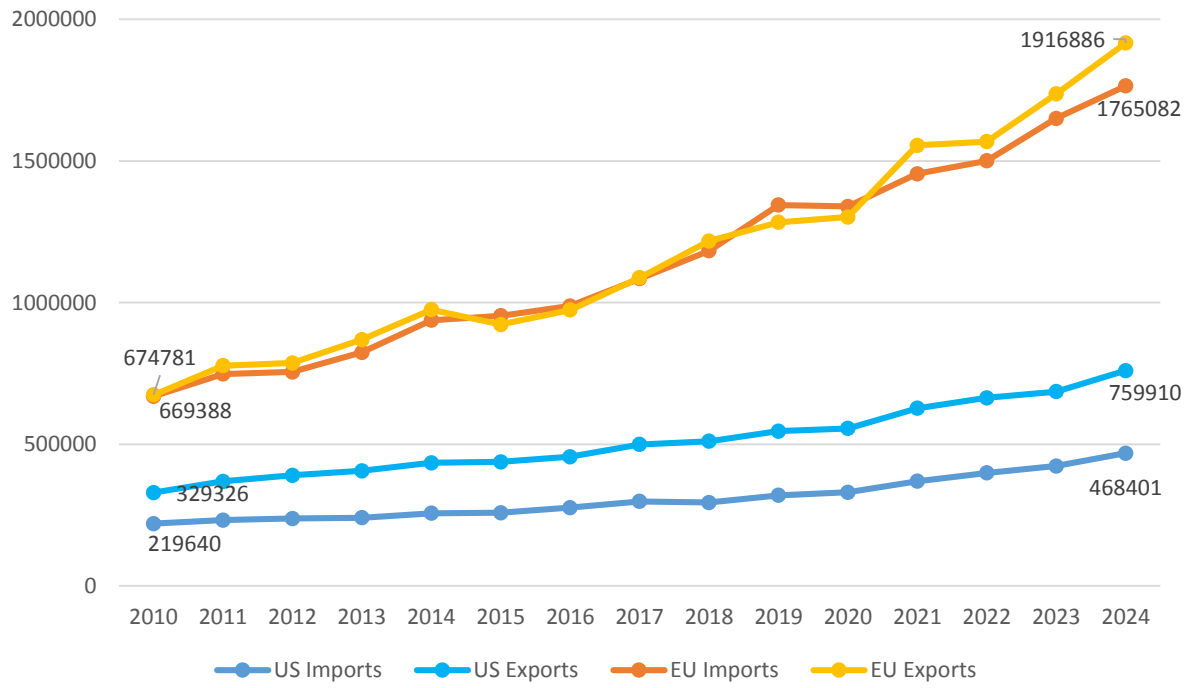

Figure 1. US and UE exports and imports in digitally delivered services in the years 2010-2024 [in millions USD].

Source: the author's own work based on UNCTAD Data Center (UNCTAD, 2025).

According to data for 2022, the largest share in creating US added value in the digital economy was contributed by: e-commerce (35.9%), telecommunications services (27.9%), cloud services (11.5%), Internet and data services (9.3%) and all other priced digital services (15.4%) (United States Chamber of Commerce, 2024). The most crucial parts of technology and online services are: (1) Software and Services on the Cloud (2.) Money-Related Technology (Fintech); (3.) The Places for Streaming and Making Things (4.) Using AI and Looking at Data (Import Globals, 2025). The US Department of Commerce (2024) estimates that approximately 8.9 million people work in jobs related to the digital economy in nearly every sector and industry.

Fig. 1. also presents data on the European Union's foreign trade in digital services. In 2010, exports of digital services generated revenues of $674.8 billion, and in 2024, this figure rose to $1,916.9 billion. The EU thus recorded an increase of 284%. Between 2020 and 2024, there was a steady increase in revenues from exports of digital services, with the only exception being a slight decline in 2015. The value of digital services purchased by the EU also increased during the period analyzed, from $669.4 billion in 2010 to $1,765.1 billion in 2024. Over the 15-year period studied, EU imports of digital services increased by almost 264%. Slight declines were recorded in 2019-2020.

In 2024, more than 10 million people in the EU worked as ICT specialists, representing 5% of total employment. The share of ICT specialists in the EU has been increasing over the last decade, and has risen by 1.6% since 2014. Among the EU countries, the share of employed

ICT specialists was the highest in Sweden (9%), Luxembourg and Finland (both 8%). The smallest shares were observed in Greece and Romania (both 3%) (EC, 2025).

A comparison of US and EU foreign trade data for digital services shows that exports and imports grew in both cases, but the EU recorded higher growth rates. The EU also generated higher values for both exports and imports throughout the entire period under review. The growth rate of the share of DDS exports in total trade in services was higher for the EU (an increase of 11.4 pp) than for the US (an increase of 9.34 pp). The growth rate of the share of DDS imports in total trade in services was also higher for the EU (an increase of 9.83 pp) than for the US (an increase of 5.38 pp) – see Table 2.

Table 2.
Share of digital services in total trade in services [in %]

Economy	United States		European Union	
Year	2010	2024	2020	2024
Exports	56.58	65.92	46.49	57.93
Imports	50.32	55.70	50.43	60.29

Source: the author's own work based on UNCTAD Data Center (UNCTAD, 2025).

However, an important element in the comparative analysis of foreign trade is the trade balance. Data in this regard is presented in fig. 2. The US trade balance in digitally deliverable services was positive throughout the period 2010–2024 and grew steadily, which should be viewed positively. In the base year, the US trade surplus was $109.7 billion, and in the target year it was already $291.5 billion. The US recorded an impressive increase of 266%.

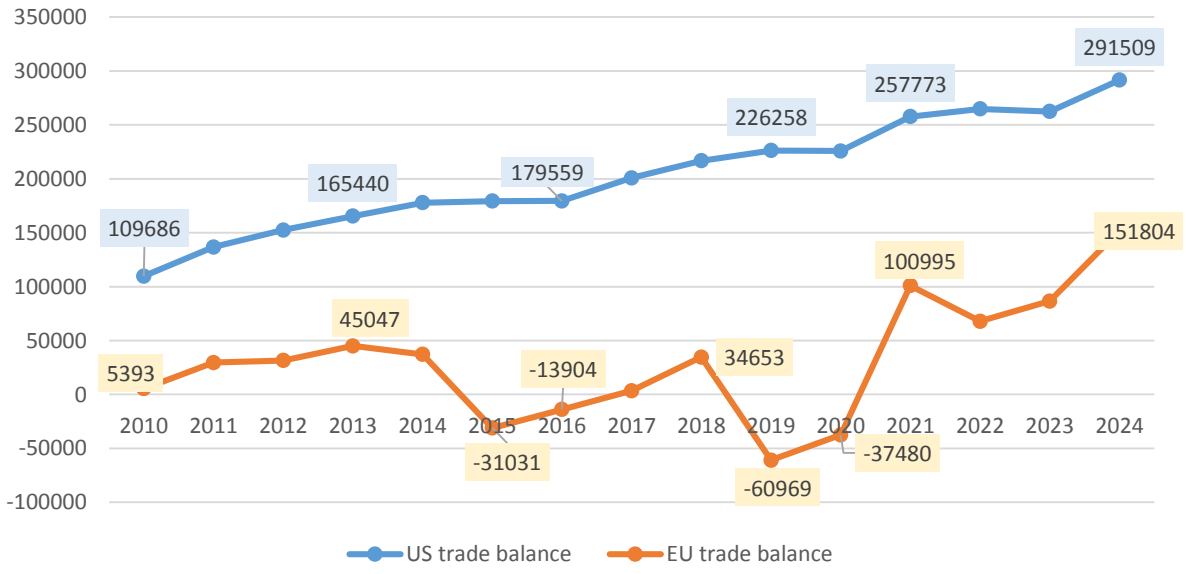

Figure 2. US and UE trade balance in digitally delivered services in the years 2010-2024 [in millions USD].

Source: the author's own work based on UNCTAD Data Center (UNCTAD, 2025).

In turn, the EU's trade balance in digitally deliverable services varied during the period analyzed. In 2020, it amounted to $5.4 billion, and in 2024, to $151.8 billion. The EU thus recorded an impressive increase of over 2800%. The growth rate of the balance under review was higher than in the US, but the value of the digital services balance was significantly higher throughout the period in favor of the US. In addition, it should be noted that the EU recorded a trade deficit in the following years: 2015 (-$31.0 billion); 2016 (-$13.9 billion) and 2020 (-$37.5 billion).

The export rate indicates a country's economic potential and its competitiveness in relation to its trading partners. The higher it is, the better for the economy. During the period under review, the export rate of DDS increased. In the case of the US, from 2.2% in 2010 to 2.6% in 2024, and for the EU from 5.5% to 10.7%. The export rate and its growth dynamics were more favorable for the EU (see tab. 3).

Table 3.
The ratio exports/GDP and imports/GDP [in %]

Economy	United States		European Union	
Year	2010	2024	2020	2024
Exports/GDP	2.2	2.6	5.5	10.7
Imports/GDP	1.5	1.6	5.4	9.9

Source: author's own calculations.

The years under review also saw an increase in the import rate: from 1.5% to 1.6% for the US and from 5.4% to 9.9% for the EU (tab. 3). In relation to the US, this indicator is relatively low, which should be viewed positively from the perspective of the US economy. The lower it is, the lower the economy's dependence on foreign imports. The import rate indicates a greater dependence of the EU on imports of digital services. At the same time, it should be emphasized that these imports can improve the structure of services available to a given economy, which may have a positive impact on further economic growth.

4.2. UE-US trade in digital services

In 2024, total EU-US trade in services was worth around $964 billion. $569 billion was worth of EU imports from the US and $395 billion worth of EU exports to the US. With regard to trade in services (including digital services), the EU had a deficit of almost $175 billion. The main services in both export and import mostly fall into the category of digital services. These include, among others: Professional, scientific, and technical services; Telecommunications, computer and information services and Charges for the use of intellectual property (tab. 4.)

Table 4.
Top services the EU exports to the US and the EU imports from the US

Top services the EU exports to the US	Top services the EU imports from the US
Professional, scientific, and technical services	Charges for the use of intellectual property
Telecommunications, computer and information services	Professional, scientific, and technical services
Transport	Telecommunications, computer and information services

Source: UE-US trade…, (2025).

The latest data (tab. 5) also show that the US trade balance with the European Union in digitally delivered services amounted to $104.5 billion in 2023. Thus, the EU market accounted for approximately 41% of the US trade surplus in digitally delivered services. For the euro area, the balance was $97.3 billion in 2022 and $107.6 billion in 2024, respectively.

Table 5.
USA trade in digitally delivered services by European Union or selected countries in the years 2022-2024 [in Millions of dollars]

Item	Digitally deliverable services exports			Digitally deliverable services imports			Digitally deliverable services trade balance		
	2022	2023	2024	2022	2023	2024	2022	2023	2024
All countries	641503	659675	729646	382689	404753	447589	258815	254923	282057
EU	191641	(D)	(D)	87181	97755	104938	104459	(D)	(D)
Euro area	176015	(D)	199678	78666	87606	92061	97349	(D)	107617

(D) Suppressed to avoid the disclosure of data of individual companies. Release Date: July 3, 2025.

Source: the author's own work based on: U.S. Bureau of Economic Analysis…, (2025).

Although some of the data in tab. 5. is covered by statistical confidentiality, the available data provides a sufficient description of the issue in question. In summary, the EU achieved higher values for exports and imports of digital services, but it was the US that "earned" from the exchange of these services as a net exporter, which usually has a positive impact on gross domestic product (GDP) growth and strengthens the national currency.

5. Discussion

Guinea and Sharma (2025) point out that the EU's weaker position compared to the US in terms of effective trade in digital services stems from the fact that the economic contribution of the European ICT sector remains significantly lower than that of the US ICT sector. The reason for this is insufficient investment in European Union's intangible assets, which is strongly linked to lower overall productivity and digital regulations adopted at the EU level. Erixon et al. (2024) point out that between 1995 and 2020, the share of investment in intangible capital relative to gross value added (GVA) was on average 5 pp higher in the US than in the EU. There are also differences in investment in ICT infrastructure. Between 2015 and 2020 alone, US investment in this area increased by almost 16 pp, while in Europe it increased by only

3 pp (Thales, 2024). In addition to EU's declining productivity relative to the US and China, Draghi (2024) highlights factors such as high energy costs, excessive regulation of businesses, and fragmentation of the internal market. The result is weaker EU productivity growth and a slowdown in the diffusion of ICT, which slows down the digital transformation.

Sisto et al. (2024) point to two global forces changing Europe's digital future. First, the growth in demand for European Union digital services from outside Europe. Secondly, the maturation and development of digital service industries at an extraordinary pace, where capital investment is now on par with many manufacturing sectors. It is therefore clear that the EU must take strategic action to further Europe's digital transformation, including the development and foreign sales of digitally deliverable services. The EU has set itself two main goals for the digital transformation of businesses by 2030, as indicated in the Digital Decade Program: more than 90% of SMEs should reach at least a basic level of digital intensity, and 75% of EU companies should use cloud computing services, perform big data analysis, or use big data.

Since 2025, there has been a lively debate on restrictions on trade in services between the EU and the US, triggered by Trump's introduction of tariffs on goods (Kokuashvili, 2026; Alcidi, 2025; Bickenbach et al., 2025; Hong, 2025). Despite the existence of international agreements, average barriers to trade in services are higher than in trade in goods (Kersan-Škabić, 2020). According to a recent report from the OECD (2024), barriers to digitally-enabled services increased by 25% globally between 2014 and 2023, a trend "driven by increasing regulatory hurdles that affected communication infrastructures and data connectivity". It is also known that certain barriers have a dampening effect on the export performance of digital services, e.g., barriers related to payment systems and intellectual property rights (Wang et al., 2024).

The new US trade policy, formulated in early 2025 by Donald Trump's second administration, is a continuation and intensification of the "America First" paradigm. Its main objective is to structurally reduce the trade deficit through the use of extensive tariff instruments, strengthen the protection of sectors considered strategic, and favor bilateral negotiations over multilateral mechanisms (Heerman, 2026). The implementation of this policy involves discretionary and executive actions. The consequence of this is uncertainty and risk for global market participants and a lack of predictability.

In response to the new geopolitical conditions, the EU is considering the possible introduction of new trade restrictions (e.g., investment restrictions; license suspensions; exclusion of companies from public tenders; revocation of patents; tax increases for European branches of corporations; financial penalties; or the use of countervailing measures (ACIs), which may largely focus on American tech giants. Europe is undoubtedly an important market for the largest American technology companies. This dependency is also a source of strength in EU negotiations. The possible introduction of further restrictions on trade in digital services would create additional barriers to the international exchange of digital services, which would result in the risk of increased costs for the entire digital economy. Political risks cannot be ruled out either.

6. Summary

The extremely rapid development of digital services, resulting in a systematic increase in digitally delivered services in US and EU trade, justifies the need for in-depth and extensive research in this area. However, the statistical data collected in this field is not homogeneous due to different definitions of digital services, including the inclusion of different categories/types of these services. There is a clear gap in the available public statistics or data sources regarding the clear separation of total digitally deliverable services exports and imports in trade with individual trading partners. Such data are fragmentary or often subject to statistical confidentiality, which hinders the research process and drawing conclusions.

The analyses conducted indicate that foreign trade in digitally delivered services in both the EU and the US has shown a clear upward trend. This applies to exports, imports, and the trade balance. This can be considered a similarity between the entities being compared. The results of the study indicate a clear advantage for the EU in terms of total digitally services exports and imports in 2010-2024 (i.e., with all trading partners). The US achieved lower values over this long period, but during the fifteen years studied, it always achieved an overall trade surplus, which grew steadily. Thus, digitally services trade plays an important role in the economic development of the United States, as confirmed by the growing export rate. These are the main differences identified in the comparative analysis. The reasons for the EU's weaker position are: low investment in intangible capital and the ICT sector, high energy costs, lower productivity, and regulations on digital services. Nevertheless, studies have also shown the growing importance of foreign trade in digital services for the EU economy. Differences in EU-US trade relations also extend to the types of digital services exchanged between the two.

Research confirms the need to increase protectionism in trade in digital services between the European Union and the United States, particularly in the context of Donald Trump’s new trade policy. Trump's tariff policy has ushered in a new era of international trade operating in unpredictable and difficult market conditions. Based on the research conducted, it can be concluded that mutual trade in digitally delivered services between the US and the EU also results in a positive trade balance for the United States. That is why American Big Tech companies have recently become the focus of the EU's attention. The EU is considering introducing new instruments to restrict their activities. Decisions in this area are not easy because they require taking into account many factors, including dependence on certain digital services, building relations with the most important economic partner, i.e., the US, but also the unpredictability of Donald Trump's customs policy. There are many dilemmas, and 2025 may go down in the history of global trade as a new era of slowing trade liberalization in favor of protectionism.

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