DOI: 10.33067/SE.2.2025.9
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Sweden in the Light of the European Union's "Path to the Digital Decade" Policy Programme 2030

Abstract

This article aims to analyse Sweden's position within the framework of the European Union's "Path to the Digital Decade" policy programme, which outlines the EU's vision for digital transformation by 2030. The policy seeks to enhance economic and social development, strengthen digital sovereignty, and promote principles such as the rule of law, openness, and democracy. The objectives established for Member States to achieve by 2030 are assessed using the EU's *Digital Economy and Society Index (DESI)* indicators. In 2024, the initial results of the policy's implementation, were published. These results offer valuable insights into Sweden's performance relative to other EU Member States. While the EU itself does not formally rank countries, an analysis of the data enables a comparative assessment of Sweden's standing within the Union. This article provides an overview of Sweden's general progress and a detailed analysis of its DESI performance. Furthermore, Sweden's achievements are compared with those of Poland, offering a broader perspective on the disparities and advancements among EU Member States. The study is based on official EU and Swedish government documents, relevant literature, and personal observations. Methodologically, it incorporates elements of statistical analysis and comparative evaluation.

Keywords: Sweden, Digital Transformation, European Union, the "Path to the Digital Decade" by 2030, European Union Policy, Digitalisation in Sweden, Digitalisation in Poland

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Introduction

When I think of Sweden, a vivid memory from my early childhood comes to mind. It takes me back to a house in Warmia (formerly East Prussia), where my parents settled after World War II, having left the ruins of Warsaw behind. In that house, on the heat regulators of the radiators, I noticed the following inscription: KIRUNA. As a child, I didn't understand what the word meant. My father explained that it was the name of a distant town, far to the north in a land "beyond the sea" in my father's words, and one renowned for its exceptional iron ore. He told me that the radiators in our home were made from that very ore. Those radiators endured for over fifty years, continuing to provide warmth in many homes in the region. And as for me, I developed a deep longing to one day see the country where these radiators originated. Prior to 1989, I only had one opportunity to visit Sweden, when I attended a conference at the University of Borås in August 1981. At that time, Poland's economic collapse had reached a critical point, prompting the conference organisers and participants to generously provide me with a 10-kilogram parcel of food. During that trip, I managed to visit Gothenburg, Stockholm and Uppsala and – the latter holding special significance for me as someone from the hometown of Nicolaus Copernicus (Olsztyn). However, Kiruna remained beyond my reach, too far north to include in my journey. I returned to Poland carrying not just invaluable food supplies but also memories of my brief glimpse into Sweden. Just three months later, the door to Poland slammed shut, ushering in a long, dark night of martial law. When the transformation of 1989 finally arrived, bringing hope, my interests had shifted. Instead of longing for Kiruna, I became deeply invested in the potential of modern information technologies, recognising Poland's alarming lag in this critical area. Although I never made it to Kiruna, I have followed with fascination the recent engineering marvel taking place there; the relocation of the entire town – house by house, street by street – to expand access to its rich iron ore deposits. Currently, the state-owned Swedish company Luossavaara-Kiirunavaara Aktiebolag (LKAB) operates the largest iron ore mine in the European Union, located in Kiruna (LKAB, 2024).

Sweden's unique historical circumstances (including volatile relations between Sweden and Poland), allowed it to remain largely untouched by the devastation of World Wars I and II, enabling it to preserve its infrastructure and resources during a period of widespread destruction. Since the 1930s, Sweden has implemented progressive political reforms that have established and reinforced its democratic, social, and welfare state systems. Despite its neutrality during World War II (albeit not entirely), Sweden undertook notable humanitarian initiatives, such as the so-called "White Buses" operation, led by Count Folke Bernadotte, the then vice-president of the Swedish Red Cross. This mission was supposed to facilitate the rescue of prisoners (mainly Swedish) from concentration camps in Germany. There were also included Polish women from the Ravensbrück concentration camp where they were deported after the failure of the Warsaw Uprising. Many of these women, subjected to inhumane medical experiments in the camp, known as Rabbits of Ravensbrück, were supposed to be offered care and rehabilitation in Sweden following their release. However, many women never made it to Sweden, succumbing to exhaustion during the journey or falling victim to an unexpected Allied bombing of the convoy – a tragedy that claimed also the life of one of my relatives (Persson, 2012). Another renowned act of Swedish humanitarianism during World War II was the heroic effort of Raoul Wallenberg to save Jewish people from the Holocaust. Wallenberg paid for his bravery with his life and was later honoured by the Yad Vashem Institute with the title "Righteous Among the Nations" (Lundberg, 2024). Sweden's legacy of offering refuge extends beyond World War II; many Poles associate Sweden with its support for political refugees during significant moments in Polish history. Notably, Sweden provided aid to those fleeing political persecution in March 1968 (Andersz, 2018) and during the martial law period introduced in Poland on December 13th, 1981. These gestures allowed countless Poles to escape repression and find safety in Sweden. Today, as both Sweden and Poland are members of the Council of Europe, the European Union, and NATO, Sweden stands out as one of the most developed European nations, serving as a model for Poland, particularly in the realm of new technologies. Soon, my focus has shifted from Kiruna to another remarkable northern Swedish city by the name of Luleå. Situated near Kiruna on the Gulf of Bothnia, Luleå has become a hub of technological advancement and innovation. It is home to a massive data centre built by Mark Zuckerberg for Facebook (now Meta) (Sverdlik, 2018) and the renowned Luleå University of Technology. This university boasts extensive research and teaching facilities in cutting-edge fields such as Computer Science, ICT, and Technology (Luleå University, 2024).

As a Scandinavian and Nordic country, Sweden is the third-largest EU Member State by area, covering approximately 450,000 km^2, and, with a population of 10.551 million at 1st January 2025 (Eurostat, 2025b), it boasts a high GDP *per capita* of around 48,810 euros as at 1st January 2025 (Eurostat, 2025a) and maintains a relatively low Gini coefficient in 2021 of 29.3 (Gini index, 2021) among EU countries. Sweden's population, though subject to fluctuations, still continues to grow. at a rate of approximately 0.5% annually (World, 2024). Despite its diversity and around 20% of its population being foreign-born – mainly in Syria, Iraq, Iran, Somalia and Afghanistan – over 90% of Sweden's residents identify as Swedish. The average age of the population is around 42 years (Statista, 2024). Projections show that by 2100 there will be 13.8 million people living in Sweden (Statista, 2025). The country maintains a low poverty rate 14.80% as at December 2024 (Trading, 2024), which is supported by a robust social welfare system. Sweden allocates more than 26.7% (2022) of its GDP to social programs, ensuring universal access to education, culture, and healthcare (Eurostat, 2022). Furthermore, with nearly 3.5% of its GDP dedicated to scientific research, Sweden is an EU leader in innovation and technological advancement. In 2023, Sweden ranked second in the Global Innovation Index (WIPO, 2024) and the first among the EU's Member States. Natural resources, including iron ore, non-ferrous metals, and timber, continue to play a significant role in Sweden's economy, although agriculture accounts for only about 7% of its economic output. Sweden's industrial focuses strongly on such sectors as ground and air transportation, machinery, electrical engineering, chemical and pharmaceutical industries, and military technologies (OECD, 2025). Sweden was also one of the 10 founding members of the Council of Europe, a human rights organisation established on May 5th 1949, in London. Even at that time, Sweden could take pride in progressive legal provisions that anticipated key principles later enshrined in Council of Europe conventions. One notable example is the Freedom of the Press Act introduced in 1766, which granted Swedish citizens the right of access to public information and government documents (Nordin, 2016). Sweden became a member of the European Union on 1st January 1995, but opted not to pursue accession to the Economic and Monetary Union. On 25th March 2001, Sweden further integrated into Europe by joining the Schengen Area. More recently, the geopolitical shifts caused by the war in Ukraine created a new security landscape in Europe, paving the way for Sweden's historic accession to NATO, which was finalised on 7th March 2024 (European Union, 2024e).

This article examines Sweden through the lens of digital technologies, focusing on its development and utilisation of digitalisation processes. Commonly used term "digitalisation" understood as "digital transformation" refers to the adoption and integration of digital technologies, encompassing technical, economic, and organisational activities aimed at embedding digital devices and systems into various sectors of the economy, public services, and the everyday lives of citizens. Narrower term "digitising" represents the conversion of analogue information into a digital form (OED, 2025). Over time, digitalisation has evolved from being a foundational component of the information society to something that shapes digital society and, more recently, gigabit society. In contemporary global rankings, the level of advancement in digital technology development and implementation is a critical determinant of a country's status and competitiveness. This study draws on official EU and Swedish government documents, relevant academic literature, and personal observations. A key source of data was the visualisation tool *DESI Dashboard for the Digital Decade (2023 onwards)* (European Commission, 2024a). The study also employs elements of statistical analysis and the comparative method to evaluate Sweden's position in the context of EU digital transformation goals. A short comparison of Swedish outcomes with Polish is included.

Sweden in the Light of DESI Indicators

The levels of digitalisation across EU Member States vary significantly, reflecting diverse stages of technological development. To address this issue, the European Union adopted the decision of 14th December 2022 (Decision EU, 2022) establishing the "Path to the Digital Decade" Policy Programme 2030. This initiative aims to build a human-centric, sustainable, and law-abiding digital society grounded in European values. The program establishes four primary objectives to be achieved by 2030 in the EU's Member States:

1) Digital skills: at least 80% of individuals aged 16–74 should possess basic digital skills, and the ICT sector should employ 20 million specialists, emphasising gender balance and high qualifications;
2) Safe and sustainable digital infrastructure: universal access to gigabit networks and 5G, increasing the EU's global semiconductor production to 20% of the world level, at least 10,000 edge nodes, and advancing the development of computers with quantum acceleration;
3) Digital transformation of enterprises: 75% of EU companies should adopt at least one of the following technologies: cloud computing, artificial intelligence, or big data analytics, at least 90% of SMEs are expected to reach a basic level of digital intensity; there should be a growth of innovative enterprises, including so-called "unicorns";
4) Digitalisation of public services: all public services should be fully digitised to enable seamless interactions between citizens, businesses, and administrative offices; and 100% of citizens should have access to their medical records and be equipped with a functional electronic ID (e-ID) (Decision EU, 2022).

The progress made toward these goals is assessed using the *Digital Economy and Society Index* (DESI), which tracks the advancements made by individual Member States in building a European digital society. Although DESI has been a key metric published by the European Commission, prior to the adoption of the "Path to the Digital Decade" on 14th December 2022, it incorporated a slightly different set of indicators in its evaluations (human capital, connectivity, the integration of digital technology, and digital public services) (European Commission, 2022a). Following the adoption of the "Path to the Digital Decade" policy program (Decision EU, 2022), the DESI index was expanded to include additional requirements, now comprising 36 indicators.

During the period from 2019 to 2022, when the DESI index relied on a previous set of metrics, Sweden's overall position in the EU rankings experienced a gradual decline. While Sweden ranked 2nd in 2019 and 2020, it fell to 3rd place in 2021 and to 4th place in 2022. Despite this downward trend, Sweden consistently performed significantly above the EU average in terms of human capital and integration of digital technologies, though it lagged slightly in connectivity and digital public services. Sweden's 4th place ranking in the 2022 DESI evaluation was shaped by a number of factors. Human capital remained Sweden's strongest area, with 65.2% of the population possessing at least basic digital skills, securing 4th place in the EU for this category. Sweden also excelled in the integration of digital technologies, achieving 3rd place. However, in the area of connectivity, Sweden ranked 9th, primarily due to limited 5G network coverage, which extended to only approximately 20% of the population in 2022. The digital public services category also placed Sweden in 9th position. The challenge stemmed largely from Sweden's highly decentralised political system, which grants substantial autonomy to local authorities. This decentralisation posed challenges to the development of a unified e-administration system characterised by central databases and the "once-only principle" (European Commission, 2022b).

The implementation of the EU's "Path to the Digital Decade" Policy Programme 2030 aligns closely with the 2021–2027 Recovery Plan for Europe (commonly referred to as NextGenerationEU) (European Union, 2024b). This recovery initiative was established to revitalise the economy following the disruptions caused by the COVID-19 pandemic. At its core is the Recovery and Resilience Facility (RRF), supplemented by the smaller Technical Support Instrument (European Union, 2024c). The RRF provides a combination of non-repayable grants and low-interest loans to EU Member States. The allocation of non-repayable grants to Member States is determined by a formula outlined in Regulation 2021/241 of

12th February 2021 (Regulation, 2021a). For Sweden, this amounted to a total of 3.45 billion euros following adjustments. Notably, Sweden opted not to utilise the low-interest loan component of the facility. Under the regulation, Member States are required to allocate at least 20% of their non-repayable grants to digital transformation initiatives, aligning with the goals of the "Path to the Digital Decade" policy. Sweden's recovery and resilience plans indicated that 21.2% of its allocated funding as designated for digital transformation (Component 4). These funds were targeted specifically at addressing areas where Sweden had demonstrated weaknesses, such as enhancing digital public services and expanding broadband networks, while aligning with the climate-conscious objectives of the REPowerEU plan (European Council, 2024). Additionally, 42 million euros, from Component 2 (Education and Transformation) was allocated to improving digital skills within universities and other higher education institutions (European Union, 2024d). Member States can also access additional funds allocated for digitalisation through the Multiannual Financial Framework (MFF) 2021–2027 (Council Regulation, 2020), including the "Digital Europe" Programme (Regulation, 2021b) and the Connecting Europe Facility (CEF) (Regulation 2021c), as well as funds available under regional and cohesion policies. These funding streams are designed to support the EU's overarching goal of improving DESI indicators across Member States.

Although the implementation of the "Path to the Digital Decade" policy is still in its early stages, the first set of data has already been published (2024). This provides an opportunity to evaluate Sweden's position and progress on the path to its "Digital Decade". The data for this analysis were sourced from the European Commission's Digital Decade *DESI Visualisation Tool, DESI 2024, DESI indicators* (European Commission, 2024b).

Digital Skills

Sweden demonstrates strong performance in the area of digital skills with 96.87% of the population using the internet at least once a week, placing Sweden in 4th position among the EU Member States. Basic digital skills are held by 66.44% of the population, ranking Sweden 6th, while 36.51% of Swedes possess advanced digital skills, securing 7th place. In terms of the ICT workforce (as regards total employment), Sweden ranks first, with 8.7% ICT specialists employed (comprising 457,900 individuals, including 104,300 female). Among that number, 6.8% are certified specialists, i.e., people who hold degrees in ICT (2.3% of whom are female), a figure that places the country in 7th position. In this section, Estonia is the leader, with 9.6% of ICT graduates employed (of total employment), 3.2% of whom are female (European Commission, 2024b). Swedish enterprises provide also extensive ICT training to their personnel.

Overall, when these indicators are averaged, Sweden achieves 5th place in the EU for digital skills, reflecting its competitive and well-rounded digital proficiency.

Secure and Sustainable Digital Infrastructure

In the area of digital infrastructure, Sweden demonstrates significant strengths with 94.87% of Swedish households having access to various types of internet networks, placing the country in 7th position among EU Member States (this indicator shows relatively equal results for all Member States: from Luxembourg with a result of 99.06% of households to 86,90% respectively in Greece). Additionally, in Sweden 93.42% of users have fixed internet connections with a bandwidth of at least >=100 Mb/s, securing Sweden 3rd place in this category. However, the country lags behind in subscriptions to connections with a fixed bandwidth of at least >=1 Gb/s, with only 7.53% of users subscribing to such services. This figure places Sweden 12th, well below the EU average (18,52%), and far behind France, which leads with 51.57% of such subscriptions. Household access to fixed Very High Capacity Networks (VHCN) stands at 88.46%, ranking Sweden 10th in this area. When focusing on fibre networks delivered directly to premises (FTTP), Sweden performs well with 83.92% of households connected, earning it 6th place. Mobile broadband usage is another area of strength, with 96.53% of individuals utilising such connections, positioning Sweden 5th among EU countries.

Significant progress has been achieved in Sweden regarding the development and implementation of 5G networks. From the previously reported figure of 20% of the population covered by 5G access, this coverage has now expanded to 90.28% of households utilising at least one 5G mobile service, also according to the European 5G Observatory (European Commission, 2024c). Despite this impressive advancement, Sweden ranks 16th among EU Member States in terms of 5G adoption, a position still above the EU average (89,3% of households), while leading the list are: Cyprus, Denmark, Malta, and the Netherlands.

5G represents the fifth generation of mobile telecommunication technology, enabling seamless signal transmission with negligible information loss or delay, even while users are in motion (e.g., while driving or travelling by train). This technology provides significantly higher capacity and better-quality data transmission compared to its 4G predecessor, making it indispensable for applications such as smart cities, Industry 4.0, and big data analytics, and operates by integrating Internet access and telephone networks with advanced radio wave technology. Notably, the first 5G networks in Europe were established in Stockholm and Tallinn, led by two Swedish companies with long-standing legacies. Telia Company AB, founded in 1853, and Ericsson AB (Telefonaktiebolaget LM Ericsson), established in 1876 and well-known in Poland, have both played pivotal roles in shaping the global telecommunications landscape (Stock Analysis, 2024a; 2024b). These companies continue to hold a significant position in the advancement of 5G networks across Europe. In the second half of 2023, Telia met 84% of the demand for 5G network infrastructure in six countries near Poland: Sweden, Finland, Norway, Denmark, Lithuania, and Estonia (European Commission, 2023a). However, Sweden experienced some delays in the deployment of this infrastructure domestically, likely due to its unique geographical conditions, particularly in the sparsely populated northern regions, which discouraged private service providers from investing in network expansion. Substantial improvements were only achieved through public funding support.

Despite significant efforts by the EU, overall 5G network coverage within the Union remains relatively modest compared to other parts of the world. The EU is actively working toward the development of so-called "5G cross-border corridors", particularly along key transportation routes, using three designated frequency bands: 700 MHz, 3.6 GHz, and 26 GHz. These bands have been allocated globally by the International Telecommunication Union (ITU) for 5G networks (ITU, 2020). These corridors are intended to be organised through public tenders and are supported by funding from the Connecting Europe Facility (CEF) program, an EU initiative dedicated to advancing trans-European digital, energy and transport infrastructure networks (Regulation, 2021c). As of May 2024, the largest investments in these corridors are concentrated in the northern Baltic region – Sweden, Denmark, Finland, Norway, and Latvia – where such infrastructure remains underdeveloped (European Commission, 2024d). The European Union monitors the progress of individual Member States in making the 3.4–3.8 GHz frequency band available, as it is the most commonly utilised in urban areas. In this category, Sweden ranks 8th, with 64.50% of households having access to this frequency. Regarding the availability of all three designated 5G frequency bands, Sweden is placed 12th, achieving a score of 83.89% of harmonised spectrum assigned. Furthermore, the updated DESI indicators include the penetration of SIM card subscriptions that enable 5G connectivity within a country. In this metric, Sweden holds an impressive 6th place, with 32.22% of its population using 5G-enabled subscriptions. However, two leaders in this section present results: Cyprus – 124.25% of total population and Luxembourg – 114,71% respectively. The European Union's average is 24.62%.

The European Union is closely monitoring a recommendation to relocate data processing and storage closer to the point of use, rather than relying on distant, large-scale computing clouds typically owned by dominant multinational corporations. This recommendation is motivated by two primary factors: the need to meet climate goals, such as reducing energy consumption and minimising carbon footprints; and the imperative to enhance data security. This approach, known as "edge" computing or "distributed" computing, involves establishing micro data centres either within end devices themselves or in their immediate vicinity. By adopting this model, data transmission over long distances – such as via undersea cables connecting continents – is minimised, leading to significant energy savings and restricted access to sensitive data by external entities. Essentially, this represents a decentralisation of traditional large-scale computing clouds. Currently, 1,186 such centres operate within the EU. Notably, Sweden ranks 6th with 34 centres, while Poland – surprisingly – surpasses it with 44 centres, securing 5th place. This disparity is likely due to Poland's historically limited access to large-scale computing clouds compared to more developed nations. The European Union anticipates a significant increase in the number of micro data centres by 2030, with projections estimating 319 centres in Sweden, 401 in Poland, and approximately 10,000 across the entire EU (European Commission, 2024e). It is important to note, however, that Sweden also hosts several large data centres, including one of the largest European facilities owned by Meta (formerly Facebook) mentioned above. This centre, located in Luleå on the Gulf of Bothnia near the Arctic Circle, serves as a hub for managing operations related to European users of the social networking platform. The Luleå data centre exemplifies the owner's commitment to adhering to European climate regulations. The facility leverages the naturally low air temperatures for cooling its hundreds of servers, thereby reducing energy consumption. Furthermore, it is powered by a dedicated hydroelectric power plant that not only supplies the centre itself but also provides electricity to nearby Swedish towns as well as regions in Norway and Finland (Gregory, 2013). In total, Sweden is home to 69 data centres, 36 of which are located in Stockholm, and which are equipped to deliver advanced cloud services (DataCenterMap, 2024).

Semiconductor production is not currently monitored within the DESI indicators. However, according to a report by Sweden's RISE (Research Institutes of Sweden) (RISE, 2024), despite Sweden's comprehensive development program in this field, the country is not considered a leader in semiconductor production. Instead, Sweden has opted to concentrate on specific, strategically selected areas of semiconductor manufacturing. Similarly, the development of computers with quantum acceleration is not measured by a DESI indicator but aims of the Swedish strategy relating to quantum technologies is available in *Swedish Quantum Agenda* published in March 2023 by RISE (RISE, 2023). Sweden is not at the leading forefront, however, the KAW foundation allocated SEK 1,2 billion in the Wallenberg Centre for Quantum Technology and such Universities as KTH, Chalmers, Stockholm and Lund run research in this field. Sweden is the full member of the EU's *Quantum Technologies Flagship* (European Commission, 2023b) and has developed a cooperation with the USA. It is worth noting that amongst the EU's Member States the Netherlands and Germany are very active in this field and Poland, too, has significant achievements, namely those developed in the Centre for Quantum Optical Technologies in Warsaw (QOT, 2024).

When conducting a similar analysis to determine Sweden's standing in terms of safe and sustainable digital infrastructure, the data reveals that Sweden ranks 8th among EU Member States (European Commission, 2024b).

The Digital Transformation of Enterprises

The digital transformation of enterprises represents another area of monitoring under the EU's "Digital Decade" initiative. According to data from 2022, Sweden is home to 1,416 large enterprises (defined as those employing 250 or more individuals), collectively employing approximately 1.5 million people and generating EUR 139 billion in added value. Additionally, there are 641,361 small and medium-sized enterprises (SMEs) in Sweden, each employing between 10 and 249 individuals. These SMEs collectively employ approximately 1.9 million people and contribute roughly EUR 129 billion in added value (European Commission, 2022c).

An important consideration is the extent to which Swedish SMEs integrate digital technologies into their operations. Firstly, using DESI indicators, the adoption of at least a basic level of digital intensity was analysed (counting how many out of 12 selected technologies were used by SMEs – a basic level requires at least 4 technologies) (Digital intensity index, 2024), (European Union 2024a) and Sweden is placed 2nd in this category with 79.90% of such SMEs only behind Finland. Sweden is also ranked 3rd with 57.50% of SMEs who have in use ERP (enterprise resource planning i.e. the software package to share information between different areas: accounting, planning, production and marketing). The use of various types of social media platforms for business purposes was also assessed (social media, social networks, blogs, microblogs, websites, wiki-based knowledge sharing tools etc. – required at least two of them including a user profile or an account of the SME) revealing that 42,80% of Swedish SMEs use at least two platforms, placing Sweden 5th in this category. Additionally, 33.40% of SMEs in Sweden employ data analytics – digital tools that enable the identification of trends, the creation of profiles, and predictive analysis to inform marketing decisions – ranking the country 14th. Interestingly, Hungary leads this metric with a score of 52.60%. Cloud services are utilised by 65.30% of Swedish SMEs, earning the country third place in this category. In contrast, only 9.40% of SMEs report using artificial intelligence, placing Sweden in tenth position. When examining the combined adoption of data analytics, cloud computing, and artificial intelligence, Swedish SMEs rank third, with 72,30% of SMEs employing all three technologies. Finally, the adoption of e-invoicing was evaluated, with 56.90% of Swedish SMEs using this technology, placing the country fifth in the EU rankings. The highest rank in this category belongs to Italy – 97.40%.

Swedish SMEs also rank 2nd, after Denmark with 34,40% as regards online sales with at least 1% of their turnover generated throughout such sales. In terms of total turnover from e-commerce, Swedish SMEs rank fourth, with 17.30% of their revenue derived from online sales. In this category Ireland is leading with 21,10% of total turnover from e-commerce.

This section also highlights the phenomenon of the aforementioned so-called "unicorns" – private companies established in the EU since 1991 that are valued at over USD 1 billion. These companies typically focus on a single product or service and utilise a single sales channel, and are characterised by their rapid growth and significant market impact, with some achieving annual revenues of up to USD 10 billion. Examples include companies offering innovative services, such as ride-hailing platforms or artificial intelligence solutions. As of 2024, there are 263 unicorns in the EU, with Germany hosting the largest number of them (67). Sweden ranks 4th with 36 such enterprises, while Poland, for example, holds 7th place with 11 unicorns. The global distribution of these companies can be explored in greater detail on the CBINSIGHT website (CBINSIGHT, 2024).

Some DESI indicators relating to the digital transformation of enterprises present also data on large companies but as they are not complete and are not changing significantly the overall picture, these data were abundant. On the other hand, some indicators relating to SMEs present additionally more detailed information on each type of SMEs (small or medium) but for this research only total values for SMEs have been taken under the consideration.

In conclusion, Sweden ranks 5th overall in the EU in the digital transformation of enterprises, further underscoring its strong performance in this domain (European Commission, 2024b).

Digital Public Services

In Sweden, 96.44% of individuals aged 16–74 utilise digital public services, placing the country 3rd in the EU rankings. These services encompass administrative procedures related to various aspects of citizens' and residents' lives, which can be conducted electronically. Sweden ranks 4th in terms of the breadth of these services, with 93.28% of administrative procedures available online (on the national level and cross-border). However, Sweden's performance differs slightly when considering digital public services for businesses, where 95.97% of such interactions can be conducted electronically, placing the country 6th (surprisingly, with a better result in cross-border operations then on the national level). The top three performers in this category – Finland, Ireland, and Malta – achieve a perfect score of 100%, indicating that all state-business interactions (national and cross-border) can be handled digitally. An important element in the implementation of digital public services is the availability of digital tools for the automatic pre-filling of forms. This feature enables data to be retrieved from various sources and integrated into forms, streamlining the processing of administrative tasks. In terms of the amount of data accessible for pre-filled forms in public online services relating to all available life events, Sweden ranks 7th among EU countries, with an index of 83.12 on a scale from 1 to 100. However, Sweden's performance is less competitive in other aspects of digital public services. Regarding transparency – encompassing the clarity of regulations on personal data protection and the ability of individuals to participate in these procedures – Sweden ranks 13th, with an index of 70.45 (score 0–100). The country's performance is even weaker in terms of online user support both for national and cross-border procedures. Here, Sweden is ranked 21st, tied with Cyprus, with an index of 80.16 (score 0–100). Notably, only two countries, namely, Luxembourg and Malta, achieve a perfect score of 100 in this category. In the area of public services available on mobile devices, Sweden ranks jointly with Finland in 1st place, both achieving a perfect score of 100 of available services. However, when it comes to access to health information, Sweden performs less favourably. The discussion of health data extends beyond mere patient access to their health records – available in both mobile and desktop versions from public and private healthcare providers. It also encompasses more advanced data management systems that facilitate data analysis, consultation, and decision-making. These systems are integral to the functioning of electronic health records (EHR) and are used by patients, healthcare providers, medical facilities, the pharmaceutical industry, and the care sector. In this regard, Sweden ranks 18th with the result 77,94 (score 0–100) below the EU average, in the implementation of EHR systems. Interestingly, Poland surpasses Sweden in this area ranking 5th with the result 90,00 (score 0–100) likely due to the more centralised nature of Poland's healthcare system and its unified governmental platform (pacjent.gov.pl, cofinanced from EU programmes) (pacjent.gov.pl, 2025). There isn't a DESI indicator measuring usage of electronic ID (e-ID) among EU citizens. Temporally, some biometric data are used and a trusted profile identity is commonly applied in electronic admonition systems, but there has been undertaken a large-scale action by the European Commission towards the „European digital identity wallet" for EU citizens, residents and businesses. (European Commission, 2024f).

To summarise, Sweden ranks 9th overall in the digitalisation of public services within the EU (European Commission, 2024b).

Summary and Comparison With Poland

Based on the analysis and the overall average calculations, it can be concluded that Sweden ranks 7th overall on the "Path to the Digital Decade" by 2030 (see Table 1). This study is based on data published in 2024 by the European Commission within the framework of the DESI indicators (European Commission, 2024b). Sweden performs best in two areas: the digital skills and digital transformation of enterprises, holding 5th places, while it ranks lower in the area of secure and sustainable digital infrastructure (8th) and digital public services (9th place). The final results will be available once data for 2030 is published. While Sweden is not among the top EU countries, it consistently exceeds the EU average. It is difficult to identify a clear frontrunner, as the indicator values vary significantly across countries. Sweden's performance stands out in two areas; it ranks 1st in terms of the number of ICT employees (of total employment in the country) and ties with Finland for 1st place in terms of availability of mobile public services.

In comparison, Poland's performance is less favourable. Only 7 indicators show slightly over the EU average, others place the country below this median, with some even ranking it in the lowest positions. Poland still faces challenges in advancing its digitalisation, largely due to historical delays stemming from the impact of World War II, the rule of the Polish People's Republic until 1989, and, more recently, issues related to the rule of law and delays in accessing EU funds for digital development. However, with a few years remaining in the program, there is hope that both Sweden and Poland will continue to improve their results.

Table 1. EU DESI Results Published in 2024

Section and number of indicators	Country most often ranked 1st in one section	Sweden's place	Poland's place
Digital Skills, 6	Netherlands 3	5	19
Secure and Sustainable Digital Infrastructure, 11	Cyprus 2	8	16
Digital Transformation of Enterprises, 11	Finland 4 Denmark 3	5	19 / 20
Digital Public Services, 8	Malta 3 Finland 2	9	19
Average		7	18/19

Source: Table prepared by the author based on: European Commission (2024b).

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