

THE EVOLUTION OF E-SERVICE CONSUMPTION IN POLAND: A DECADE PERSPECTIVE

Robert WOLNY

University of Economics in Katowice; robert.wolny@ue.katowice.pl, ORCID: 0000-0003-4088-718X

Purpose: The purpose of this paper is to identify changes in e-service consumption in Poland between 2012 and 2024.

Design/methodology/approach: The study adopts a longitudinal research approach based on two quantitative surveys conducted in 2012 and 2024 using the CAWI method. Both surveys were carried out among Polish e-service consumers with comparable sampling criteria. The analysis focuses on changes in the frequency of using different categories of e-services, including social, leisure-related, and financial services.

Findings: The results indicate a significant expansion and diversification of e-service consumption in Poland. Between 2012 and 2024, consumer behaviour evolved from selective use of digital services to widespread and multidimensional adoption. The highest level of activity remains within the financial sector (online banking, electronic payments), yet the gap between this and other categories has clearly narrowed. Consumption of cultural e-services (films, music, audiobooks) and tourism services (online reservations and purchases) increased markedly, while moderate but steady growth was recorded in e-education and e-health.

Research limitations/implications: The study is subject to several methodological limitations. Although the CAWI method is well-suited to studying e-service users, it may exclude individuals with lower digital competences or limited internet access. Furthermore, the research does not account for consumers' digital maturity levels, which may influence e-service use. Future research should employ methodological triangulation.

Practical implications: The findings have practical value for service providers and policymakers. They highlight the need for further integration of digital services, improvements in usability, security, and personalization.

Social implications: The study reveals a growing level of digital inclusion among Polish consumers and the normalization of e-service use in everyday life. Widespread access to electronic services promotes convenience and time efficiency, while simultaneously raising challenges related to digital exclusion, data privacy and cybersecurity.

Originality/value: The paper offers a unique twelve-year perspective on changes in e-service consumption in Poland. It contributes to the growing body of research on e-consumer behaviour and e-service delivery in the digital economy. The study is addressed to scholars of the digital economy as well as practitioners in the e-service market.

Keywords: e-services; digital economy; e-consumer; longitudinal survey.

Category of the paper: Research paper.

1. Introduction

Technological change has become one of the key drivers of economic growth, exerting a significant influence on the innovativeness of market actors. This process is reflected in the ongoing virtualization of socio-economic life and the dynamic expansion of the market for electronically delivered services. The growth of e-services is closely linked to the evolution of the information society, in which both producers and consumers play an active role as co-creators of the digital economy. One of the indicators measuring the advancement of this process within the European Union is the Digital Economy and Society Index (DESI), which reflects the level of digitalization of economies and societies. In 2022, Poland, with a score of 40.5 points, ranked 24th in Europe. The widespread adoption of digital technologies has redefined the ways in which services are produced, delivered, and consumed, while also giving rise to new forms of interaction between providers and users. The consumption of e-services has become not only an expression of innovation but also a prerequisite for participation in a post-industrial society. As e-services increasingly integrate into everyday consumption practices, they have ceased to be a supplementary element and have become a permanent feature of the contemporary lifestyle.

There is a lack of long-term empirical studies examining changes in the consumption of different categories of e-services in Poland based on comparable data.

The purpose of this paper is to identify changes in e-service consumption in Poland between 2012 and 2024. The analyses aim to determine the directions and intensity of changes in e-consumer behaviour. The empirical basis consists of longitudinal research conducted using the CAWI (Computer-Assisted Web Interview) method in 2012 and 2024. Comparing the results from both measurement points makes it possible to capture the evolution of the digital consumption landscape within Polish society.

2. Literature review

The development of the e-services market was initiated by the emergence of new technological and organizational opportunities for providing services via the internet, which began to take shape in the final years of the twentieth century. In Western literature, the concept of e-services is defined in a multifaceted manner, encompassing various research perspectives - from process-oriented to relational approaches. Among the scholars who have examined this issue are K.K. Boyer, R. Hallowell and A.V. Roth (2002), R. Järvinen and U. Lehtinen (2004), K.D. Hoffman and J.E.G. Bateson (2007), A. Henten (2008), and Te-Hsin Liang (2011). In Polish literature, two approaches to defining e-services are particularly noteworthy. The first

emphasizes that e-services constitute “a new formula for providing services, and thus for meeting needs, through the use of the internet - from the moment of a company’s first contact with a client (individual or institutional) to present an offer, through ordering and service delivery, up to post-sale communication” (Dąbrowska, 2008). The second defines e-services as “a form of service provision using the internet, encompassing in particular the presentation of a service, its ordering, payment, and online use, with the reservation that for some services the consumption stage takes place in the physical world” (Wolny, 2013).

The provision of e-services in Poland was legally regulated by the Act of 18 July 2002 on the Provision of Electronic Services. According to this act, an e-service is any service performed without the simultaneous presence of the parties - at a distance - through data transmission at the individual request of the recipient. This transmission takes place using devices for electronic data processing and storage, via a telecommunications network, with the entire process - from sending to receiving data - being digital in nature. This definition represents the implementation and extension of the provisions contained in Directive 2000/31/EC of the European Parliament and of the Council on electronic commerce and information society services.

The range of e-services available on the market is very broad, encompassing public, commercial, and social services. The literature most commonly distinguishes the following categories (Dąbrowska, 2008; Wolny, 2012a; Wolny, 2012b): e-government, e-banking, e-education, e-commerce, e-culture, e-tourism, e-insurance, and e-health. Other classifications group services according to functional criteria - for example, e-education and e-health are categorized as social e-services, while e-culture and e-sport are classified as leisure-oriented services (Fig. 1).

In economic practice, several types of e-services can be distinguished (Wolny, 2013, p. 13):

- services provided both traditionally and online, in which individual elements of the service process (presentation, ordering, payment, execution) may take place either in a traditional manner or within a digital environment,
- services provided exclusively online, where all stages - from presenting the offer, through ordering and payment, to actual use - are carried out entirely on the internet,
- services sold online but delivered traditionally, in which the stages of presentation, ordering, and payment are conducted digitally, while the actual consumption of the service occurs in the physical world.

The extent to which the internet is used in each phase of the service provision process depends on the nature of the service itself. Full digitalization of all stages (presentation, purchase, payment, and consumption) is possible in the case of e-banking, e-education, and e-sport.

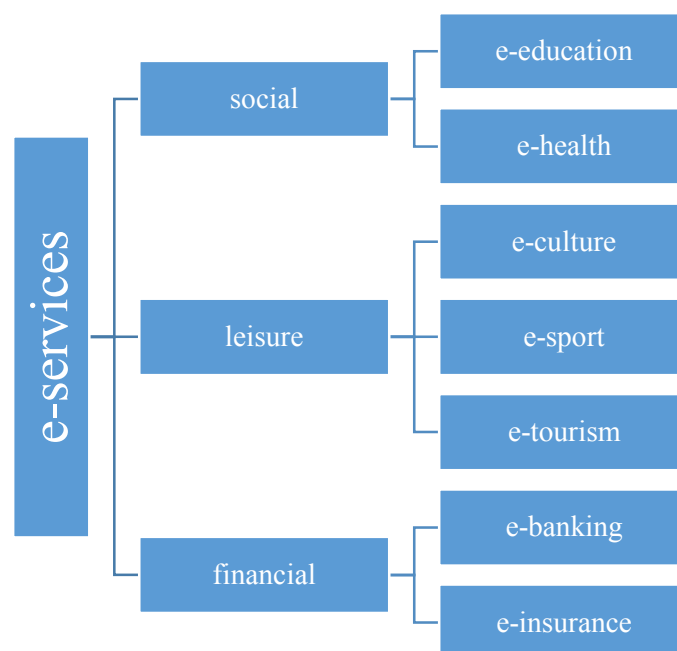


Figure 1. Classification of e-services.

Source: own elaboration based on: (Wolny, 2024).

For services such as e-insurance or e-tourism, part of the process - especially the use of the service - takes place outside the virtual environment. In the area of e-culture, the model of service provision is more diversified: some services (for example, film streaming or online concerts) are carried out entirely digitally (Table 1).

Table 1.

Internet elements of the e-service delivery process carried out via the internet.

Services		Possibilities of performing activities via the internet			
		Presentation	Purchase/order	Payment	Use
Social	e-education	yes	yes	yes	yes
	e-health	within the selected scope	yes	within the selected scope	within the selected scope
Leisure	e-culture	yes	yes	yes	within the selected scope
	e-sport	yes	yes	yes	yes
	e-tourism	yes	yes	yes	within the selected scope
Financial	e-banking	yes	yes	yes	yes
	e-insurance	yes	yes	yes	no

Source: own elaboration based on: (Wolny, 2013).

Others services (such as purchasing tickets for events) combine elements of both the online and offline worlds. In the case of e-health, the degree of digitalization is limited - the presentation of services and certain aspects of their delivery take place online, but most activities still have a traditional character.

E-services, like other goods and services available on the market, satisfy consumer needs and therefore constitute an object of consumption. In the literature, the consumption of services is defined as activities aimed at meeting various human needs through the use of assistance

provided by specialized individuals, institutions, or devices designed to perform specific service-related tasks (Olearnik, 1990). The specific nature of e-services, however, means that their consumption takes on a somewhat different form compared to traditional services. Depending on the nature of the e-service - whether it is delivered entirely online or only sold via the internet - the consumption process may occur either in the virtual space or in the physical world, following an online purchase, as discussed earlier.

In the context of the e-service market, defining the subject of consumption also becomes particularly important. The consumer of e-services is a person who actively uses digital technologies to satisfy their needs (Jaciow, Wolny, 2011a). This group includes:

- e-consumers: “a natural person who expresses and fulfils their consumption needs using products (goods and services) purchased on the internet” (Jaciow, Wolny, 2011b),
- m-consumers: “a natural person who expresses and fulfils their consumption needs using goods and services purchased through mobile devices” (Jaciow, Wolny, 2022),
- c-consumers: “a natural person who expresses and fulfils their consumption needs through personalized digital products purchased online” (Jaciow, Wolny, 2022).

A fully integrated participant in the consumption of e-services within the digital economy is the digital consumer (c-consumer).

3. Methods

In the analysis of socio-economic phenomena, repeated studies - longitudinal research - are of particular importance. Such studies make it possible not only to assess the current state of the examined phenomena but also to trace their changes over time. They involve multiple measurements of the same phenomena and characteristics, conducted on different samples drawn from the same population (Sagan, 2016). To capture changes in the consumption of e-services in Poland, longitudinal studies were carried out in 2012 and again in 2024. In both surveys, conducted using the same measurement scale, the frequency of e-service use was among the variables studied. The sampling criteria remained unchanged and included individual consumers who purchase or use e-services.

The 2012 survey was conducted using the CAWI (Computer-Assisted Web Interview) method between September 1 and September 30 on the SurveyMonkey.com platform. The study was nationwide in scope. After formal and substantive verification, 1200 fully completed questionnaires were qualified for further analysis. The 2024 survey was also conducted using the CAWI method, between November 18 and December 31, 2024, via SurveyMonkey.com. After verification, 1243 fully completed questionnaires were included in the final dataset. In both cases, the sample was controlled for gender, age, place of residence, household size, professional activity, and self-assessed financial situation. The use of the CAWI

method in both studies was justified by its broad reach and the ability to access respondents in line with predefined distributions. The CAWI technique is commonly applied in studies on consumption and consumer behaviour (Gajdzik et al., 2024; Olko, 2019; Fandrejewska et al., 2022; Gajdzik et al., 2025b).

In the 2012 survey, the sample included nearly equal proportions of women (50.3%) and men (49.7%). About 30% of respondents were aged up to 24 or between 25 and 34 years. Almost one in five was between 35 and 44, and roughly one in seven was over 45. The youngest participant was 18 years old, and the oldest was 68. Most respondents had higher education (60.9%), while nearly one-third had secondary education. Those with primary or vocational education accounted for only 3.2% of the sample. The majority lived in cities of various sizes (71.5%) and were employed (78.0%). Almost half rated their financial situation as good or very good, nearly one-third as satisfactory, and 17.4% as poor or very poor.

In the 2024 survey, 51.1% of participants were women and 48.9% men. One in ten respondents was aged 18-24, and one in three was aged 25-44. The remaining participants were over 45 years old. Most respondents had higher (49.2%) or secondary (38.1%) education, while those with vocational or primary education represented 15.7% of the sample. Nearly two-thirds of respondents were professionally active, while 37.6% were not working. Urban residents of various city sizes accounted for 60.8% of participants. Over 60% rated their financial situation as good or very good, almost one-third as satisfactory, and only a small share - 4.6% - described it as poor or very poor.

4. Results

The analysis of the 2012 and 2024 survey results makes it possible to identify significant changes in the frequency of using various categories of e-services in Poland. In both measurements, a five-point scale was applied, where 1 meant never, 2 – rarely, 3 – often, 4 – very often, and 5 – always.

In 2012, the structure of e-service consumption had a clearly selective character. Financial services were used most frequently: making online transfers and checking bank account balances were part of the everyday practices of a substantial share of respondents. The high proportion of very often and always responses confirms that electronic banking was, at that time, the most advanced segment of the e-service market. Other categories showed a noticeably lower level of user engagement. Educational services, such as thematic courses or foreign language learning, were used only occasionally. A similar pattern characterized the use of cultural e-services (reading e-books, watching films, listening to music or radio) and tourism-related services (purchasing tickets, booking accommodation). Health and insurance e-services

had even less importance, as the vast majority of respondents declared that they never or very rarely used them (Table 2).

Table 2.

Frequency of using e-services in 2012 (in %)

Items	1	2	3	4	5
Payments by bank transfer (e.g. rent)	8,8	28,7	18,9	15,9	26,8
Checking account balance and transaction history	7,8	12,0	29,3	31,1	19,8
Participation in training courses and thematic workshops	45,1	32,4	17,1	2,9	2,5
Learning a foreign language	58,2	20,8	10,8	3,6	6,7
Reading newspapers	27,7	16,2	17,8	18,8	19,5
Reading e-books	56,9	21,5	16,5	2,3	2,8
Watching films	25,7	11,5	23,0	20,3	19,6
Listening to the radio	31,8	10,9	18,3	8,1	30,9
Listening to music	53,4	19,3	10,8	12,7	3,8
Buying tickets for cinema/theatre/concerts	30,8	36,9	27,4	2,8	2,0
Buying train/bus/plane tickets	58,8	27,7	10,8	1,6	1,1
Purchasing domestic or international trips	64,0	32,5	2,3	1,0	0,3
Booking accommodation	54,1	41,9	2,8	0,6	0,6
Buying property/car insurance	73,0	24,3	1,6	0,5	0,6
Buying life/travel/accident insurance	82,4	15,2	1,9	0,3	0,3
Scheduling medical appointments	82,9	13,3	3,3	0,3	0,2
Using online medical consultations	89,0	7,7	2,3	0,5	0,5

Note: 1 – never, 2 – rarely, 3 – often, 4 – very often, 5 – always.

Source: own research.

The 2024 results indicate a significant expansion in both the scope and intensity of e-service use. In most of the analyzed categories, there was an evident increase in the share of responses such as often, very often, and always. This demonstrates the clear development and widespread adoption of e-service consumption. Financial services still recorded the highest level of user activity; however, the gap between this category and others has noticeably narrowed. While in 2012 e-banking and online payments were primarily used by the most technologically advanced consumers, by 2024 they had become a common practice and an integral part of everyday financial management (Table 3).

The conducted research also reveals an increase in the consumption of culture-related e-services. Watching films, listening to music, and using audiobooks have become activities performed frequently or very frequently by a large proportion of respondents. In the area of education, the level of engagement remains moderate; however, there has been a clear rise in the share of respondents declaring frequent or very frequent participation in online courses and language learning. Nevertheless, e-education services are still perceived mainly as complementary to traditional, in-person forms.

Table 3.
Frequency of using e-services in 2024 (in %)

Item	1	2	3	4	5
Payments by bank transfer (e.g. rent)	5,2	6,4	21,5	31,1	35,8
Checking account balance and transaction history	3,7	9,6	32,8	31,2	22,7
Participation in training courses and thematic workshops	25,2	33,4	23,2	13,4	4,9
Learning a foreign language	26,1	30,8	24,5	12,4	6,1
Reading newspapers	27,4	34,7	19,1	13,5	5,3
Reading e-books	36,7	27,8	19,4	11,0	5,1
Watching films	3,9	16,7	28,2	30,3	20,9
Listening to the radio	17,4	27,8	25,3	16,0	13,4
Listening to music	5,6	10,2	30,3	29,1	24,8
Buying tickets for cinema/theatre/concerts	32,7	26,8	20,4	13,1	6,9
Buying train/bus/plane tickets	12,1	30,7	28,5	15,5	13,2
Purchasing domestic or international trips	8,4	25,3	30,1	17,6	18,6
Booking accommodation	20,6	29,1	25,1	12,6	11,6
Buying property/car insurance	11,8	28,2	29,9	14,5	15,5
Buying life/travel/accident insurance	31,8	23,7	18,7	13,8	12,1
Scheduling medical appointments	32,0	26,3	17,2	14,2	10,2
Using online medical consultations	21,9	27,0	24,0	20,0	7,1
Korzystam z konsultacji lekarskich online	34,4	28,2	20,9	13,2	3,3
Filing taxes online	24,5	14,8	18,1	13,0	29,6
Signing documents with an electronic signature	29,3	23,7	25,2	14,2	7,5
Making payments using BLIK	11,5	7,7	23,8	39,0	17,9

Note: 1 – never, 2 – rarely, 3 – often, 4 – very often, 5 – always.

Source: own research.

A similar upward trend is observed in the sphere of e-tourism. Compared to 2012, the number of respondents purchasing tickets, booking accommodation, or organizing trips online has increased significantly. The same applies to e-insurance, where the share of individuals not purchasing insurance via the internet has markedly declined. In the field of e-health, the growing importance of digital channels is evident. More than 40% of respondents now book medical appointments online. Although remote consultations are not yet widespread, their use has increased several times compared to 2012.

A novelty in the 2024 study was the inclusion of additional categories of e-services that were either unavailable in 2012 (mobile BLIK payments, online tax settlements) or not yet common (electronic signature). The results in these areas show that the digitalization of administration and payment systems has reached a high level of social adaptation. BLIK mobile payments have become part of the daily routine for the majority of respondents, as has online tax filing, while the electronic signature - though used less frequently - is gradually becoming a standard tool in the lives of e-consumers.

5. Discussion

The obtained results confirm the ongoing evolution in the consumption of e-services in Poland. In 2012, although e-consumers were already relatively active in the e-service market, their engagement was rather selective. By 2024, however, the use of digital services had become widespread and multidimensional. The findings are consistent with global trends described in the literature, which emphasize the growing integration of electronic services into consumers' everyday lifestyles (Wolny, 2016a; Śledziwska, Włoch, 2020; Surmacz et al., 2024; Wolny, 2023; Zarzycka, 2021; Gajdzik et al., 2023; Gajdzik et al., 2025a; Wolny et al., 2025).

Similar to other studies conducted in recent years, the highest intensity of use was recorded in the area of financial services. The increase in the frequency of online transfers, electronic payments, and mobile transactions results not only from technological progress but also from changing attitudes toward digital trust and security. These findings align with the observations of Fandrejewska et al. (2022), who demonstrated that the COVID-19 pandemic permanently increased consumers' openness to digital channels. Other studies also confirm that people adopt new digital technologies and modify their behaviour in the e-banking market (Grigorescu et al., 2023).

The growing importance of e-services in the field of e-culture (or, more broadly, e-entertainment) corresponds with the findings of Szewczyk (2014) and Słaby and Bazydło-Egier (2021), who observed that the digitalization of cultural and entertainment goods has become one of the main dimensions of modern consumption. Watching films, listening to music, or using audiobooks online increasingly shapes the lifestyle of contemporary consumers, particularly among younger generations (Szojda, 2024; Wolny, 2016b). Over the past decade, the share of consumers in Poland who read or download online magazines has increased nearly fourfold, while the share of those watching on-demand television has risen sevenfold. It can therefore be concluded that digitality is no longer, as it was at the beginning of the 21st century, an addition, but rather an integral component of cultural institutions and their audiences (Wolny, 2023).

Meanwhile, the moderate increase in the use of e-education services aligns with the findings of Wierzbicka (2019), who emphasized that despite the development of e-learning tools, online education continues to play a complementary role to traditional teaching forms. Similar conclusions were drawn by Jackowski, whose results indicate that remote learning, if implemented, tends to take the form of blended learning - that is, as a supplement rather than a replacement (Jackowski, 2023).

The observed increase in the use of e-health services, including online medical appointments and consultations, reflects a broader trend toward the digitalization of healthcare. As noted by Bukowska-Piestrzyńska (2021), e-health represents a response to the logistical challenge of ensuring sufficient healthcare resources amid long waiting times for medical

services. Although these services have not yet reached the level of mass adoption, their growth confirms the ongoing transition toward a patient-centered digital health model.

6. Conclusion

The conducted research allows for the formulation of several important conclusions regarding the evolution of e-service consumption in Poland over the past decade. Between 2012 and 2024, a clear shift can be observed - from selective and cautious use of digital services toward their widespread and diversified adoption. E-services have become a permanent element of Polish consumers' everyday practices, as evidenced by both the increased frequency of use and the broader range of service categories.

Financial e-services enjoy the greatest popularity, having reached a high level of social acceptance by 2024. The development of mobile payment systems such as BLIK demonstrates a strong internalization of digital innovations in consumer behaviour. A dynamic rise has also been observed in the area of e-culture, where the consumption of audiovisual and multimedia content has become one of the key dimensions of modern lifestyles. The moderate yet consistent growth of e-education, along with the significant increase in the use of e-health services, points to the consolidation of hybrid models of service consumption that combine the online and offline spheres. The findings are consistent with recent European research, which indicates that the digital transformation of consumption is redefining the role of the consumer - from a passive recipient of services to an active co-creator and participant in the digital ecosystem.

From both theoretical and practical perspectives, the results confirm that the development of the e-services market in Poland is part of a broader process of technological and social convergence, in which the digital consumer (c-consumer) becomes the central link in the service system. This transformation is continuous and evolutionary in nature, and its further trajectory will depend, among other factors, on the level of consumers' digital competence and the state of cybersecurity.

Despite the broad scope of the study and the use of quantitative methods, the presented analyses are subject to several important methodological and cognitive limitations. The research employed the CAWI method, which, while appropriate for studying individuals who use e-services, may have excluded certain groups of respondents. Another limitation is the lack of consideration of consumers' digital maturity levels, including their digital skills, which may influence the extent of e-service consumption. Differences in digital maturity could modify the observed relationships and should therefore be taken into account in future studies.

Future research could consider the use of methodological triangulation, complementing declarative data with alternative sources of information, such as behavioural data or digital activity tracking. Moreover, comparative studies are planned to broaden the research scope, including the exploration of additional motives and determinants of e-service consumption.

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