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FINTECH AS A KEY TO THE FUTURE FINANCIAL INCLUSION AND REDUCTION OF FINANCIAL EXCLUSION

Abstract

- *Goal* – The aim of the article is to assess the impact of the fintech sector on financial inclusion and the reduction of financial exclusion, with particular emphasis on the access to financial services and its role in the socio-economic development.
- *Research methodology* – The article adopts an integrated methodological approach, combining scientometrics and desk research to analyse the evolution of knowledge about fintech and its impact on financial exclusion. The desk research involves reviewing literature, statistics, and reports to identify key trends and challenges. Descriptive, comparative analyses, and case studies illustrate how fintech increases access to financial services and supports inclusion.
- *Score/results* – Fintech holds significant potential for promoting financial inclusion and economic development by integrating underserved groups, emphasising the need for further research to reduce barriers to financial access.
- *Originality/value* – The article provides a significant contribution to the debate on the role of fintech in society, encouraging an analysis of its impact on the future development of financial services and the issue of financial exclusion.

Keywords: fintech, financial exclusion, financial services, financial inclusion

1. Introduction

The negative consequences of the contemporary civilisational progress highlight the issue of systemic exclusion of individuals who, despite being potentially capable of participating in economic life, lack access to the necessary means and resources for various reasons. As M. Grząba points out, financial standing determines the ability to benefit from market goods, leaving many people on the economic margins [Grząba, 2019: 101]. In Poland, this phenomenon takes on particular importance in the context of financial exclusion, which limits access to basic services such as banking, saving, or making online payments.

This article examines the role of the fintech sector in reducing these barriers, referencing data from the reports by the World Bank, Eurostat, and Statistics Poland (GUS), which confirm the potential of modern financial technologies to increase access to banking tools for socially excluded groups.

However, the rapid development of the fintech sector, while being a significant step towards financial inclusion, also raises new research questions about its impact on various socio-economic aspects. On the one hand, fintech solutions can effectively remove barriers to financial services. On the other hand, there is a risk that they may contribute to the emergence of new forms of exclusion – technological, educational, or regulatory. One key challenge is the partnership between fintechs and traditional financial institutions, which may prove essential for the effective integrating of the marginalised groups.

Another dilemma worth highlighting is how to balance innovation in the sector with the need to protect user privacy and to introduce regulations that support the sustainable development of financial technologies without hindering their adaptability. In this context, a crucial question arises: Does fintech development truly enable the full integration of the excluded social groups into the financial system, or does it generate new barriers that limit their participation in the digital economy? These are the issues that must be explored in order to fully understand both the transformational potential of the fintech sector and its limitations in creating a more inclusive society.

2. The concept of financial exclusion and its determinants in the context of the fintech sector development

In Poland, the concept of "social exclusion" emerged at the beginning of the 21st century [Klimczak et al., 2017: 8]. It refers to the process of limiting various groups' access to rights and opportunities, leading to marginalisation and a lower quality of life [Becker-Pestka et al., 2017: 10]. This phenomenon is linked to an unfair distribution of entitlements, which hinders social integration [Kacperska, 2021: 184].

Financial exclusion is considered an integral part of social exclusion [Szpringer, 2009: 101] and involves limited access to the basic financial services [Ziemba et al., 2014: 146]. Foundational work by A. Leyshon and N. Thrift in the 1990s contributed to a deeper understanding of this issue. They defined it as the set of processes that restrict access to the financial system, primarily affecting low-income groups [Leyshon, Thrift, 1995: 313–314].

S. Smyczek and J. Matysiewicz define financial exclusion as a process in which individuals have difficulties accessing and using financial services that meet their needs – services that are essential for social functioning [Smyczek, Matysiewicz, 2014: 80]. This definition highlights the importance of both access to and the usage of services for achieving social integration.

M. Zdanowska describes financial exclusion as the inability of individuals, households, or social groups to use essential financial services [*Wykluczenie finansowe…*, 2013: 136]. The reasons may include the lack of availability, high costs, weak marketing, poor financial education, or self-exclusion resulting from negative experiences or attitudes towards debt. This aligns with the European Commission's definition [www 1], which describes difficulties in accessing appropriate financial products.

Financial exclusion is not limited to the physical lack of access – it also includes insufficient fulfilment of the clients' financial needs by banks [Solarz, 2018: 33], which highlights the need for solutions aimed at reducing exclusion [Warchlewska, 2020: 125].

The literature identifies various levels of financial exclusion [Hańderek, 2017: 21], and addressing this issue requires a comprehensive approach that enhances social integration and improves the quality of life for the affected individuals.

Fintech, as a rapidly growing industry, plays a key role in countering financial exclusion by offering innovative solutions that facilitate access to financial services for underserved populations. Through digital technologies, mobility, artificial intelligence, and data analytics, fintech has the potential to lower barriers to financial access, to promote financial inclusion, and to support economic development by integrating the marginalised social groups. Fintech companies adapt their solutions to the needs of those who previously lacked access to the full range of financial services.

The term FinTech combines "finance" and "technology" [Dorfleitner et al., 2017: 5–10; Kim, 2015: 137], and refers to innovative financial services based on ICT technologies, targeting the financial sector and its clients. The Basel Committee defines fintech as technological financial innovations that impact business models, processes, and products, significantly transforming how financial markets and institutions operate. The main goal of fintech is to improve the efficiency and accessibility of financial services [Milic-Czerniak, 2019: 41].

Partnerships between fintech companies and traditional financial institutions allow for the development of technology and access to capital, while banks gain opportunities to enhance their products, to improve operational efficiency, and to reduce costs. This type of collaboration is especially beneficial for the low-income clients who seek more affordable and convenient financial solutions. The integration of modern technologies with traditional banking models allows for better tailoring of services to the needs of these groups, while also promoting financial inclusion.

In her publication [Harasim 2020: 46–55] defines fintech as a sector encompassing entities outside traditional financial institutions that use innovative technologies to efficiently deliver financial services and create new value for customers. Unlike banks, fintechs are characterised by flexibility and the ability to rapidly adapt to client needs, offering fast, convenient, and often cheaper services. However, they face challenges such as product concentration, the lack of a stable customer base, limited capital resources, and difficulties in risk and regulatory management.

3. The impact of the fintech sector on the level of financial exclusion in Poland – data and trend analysis

The level of banking penetration, a key indicator of access to financial services, affects the degree of financial exclusion. The lack of access to services such as bank accounts, credit, insurance, or the ability to save may lead to both social and economic marginalisation. In 2021, according to World Bank data [*The Global…*, 2021], banking penetration in Poland reached 96%, representing a 26-percentage-point increase compared to 2011. Additionally, 81% of the population reported using bank cards [*Ubankowienie w Polsce…*, 2023].

A high level of banking penetration indicates broad access to financial services, which supports the reduction of financial exclusion and enables the effective personal finance management. Nevertheless, groups vulnerable to exclusion – such as low-income individuals, the elderly, and residents of rural areas – are still facing barriers to accessing these services.

Financial exclusion in Poland remains a significant social challenge, manifested through various indicators and trends. Despite the high level of banking penetration, the issue continues to affect a substantial part of the population. This includes limited access to financial products, over-indebtedness, and a lack of financial stability. The key indicators of financial exclusion include difficulties in accessing credit and loans, low levels of credit card ownership, overdue payments, the lack of insurance and savings, and limited ability to engage in cashless transactions. These indicators highlight diverse dimensions of financial exclusion, ranging from basic access issues to the consequences of financial scarcity.

Savings exclusion is a growing concern – in 2022, 42% of Poles reported having no savings [*Oszczędności Polaków*…, 2022], and by 2023, that figure rose to 46% [Raport CBOS, 2023]. At the same time, indebtedness remains a serious challenge, with 2.6 million Poles having unpaid debts in 2023 [Szymański, 2024].

Consumer bankruptcies and business insolvencies also reflect this issue. The number of consumer bankruptcies dropped to 14 800 in 2022 [Miernik, 2023] but increased to 21 000 in 2023 [Miernik, 2024], possibly reflecting deteriorating economic conditions. A 16% increase in business bankruptcies in 2023 [Raport, 2024] further indicates that financial exclusion also affects the business sector.

These indicators demonstrate the complexity of financial exclusion, from the lack of access to services to the broader consequences of financial hardship, which ultimately affect the country's socio-economic stability.

The metrics of financial exclusion identify particularly vulnerable groups, such as the homeless, persons with disabilities, incarcerated individuals, the poor, those with low education levels, and the unemployed [Warchlewska, 2020: 134]. In 2024, a research by the Ministry of Family and Social Policy showed that the homelessness crisis affected approximately 31 000 people [*Ogólnopolskie badanie*…, 2024], although aid organisations estimate this number may be higher. Homelessness severely limits access to banking services, deepening marginalisation. In 2023, about 2.3 million individuals with disability certifications also faced barriers in accessing financial services [www 3].

In the same year, around 70 000 incarcerated individuals in Poland were also affected by financial exclusion [*Informacja o zaludnieniu*…, 2024]. Poverty rates in 2023 were 6.6% for extreme poverty, 12.2% for relative poverty, and 4.1% for legal poverty thresholds [www 6], pointing to the worsening material conditions for some social groups, which in turn limits their ability to access financial services.

Although these indicators do not directly quantify financial exclusion, they reveal social groups especially vulnerable to such issues, largely due to real declines in material well-being.

The labour market also impacts financial exclusion. In December 2022, the number of unemployed individuals was 812 300, with an unemployment rate of 5.2% [www 5]. Although the number of people receiving social assistance fell from 910 000 in 2022 to 888 400 in 2023, these individuals remain financially vulnerable [www 4].

Educational disparities between rural and urban areas also matter – for instance, 25% of rural residents and 16.1% of urban residents had vocational education only, affecting their access to financial knowledge and personal finance management skills [www 2].

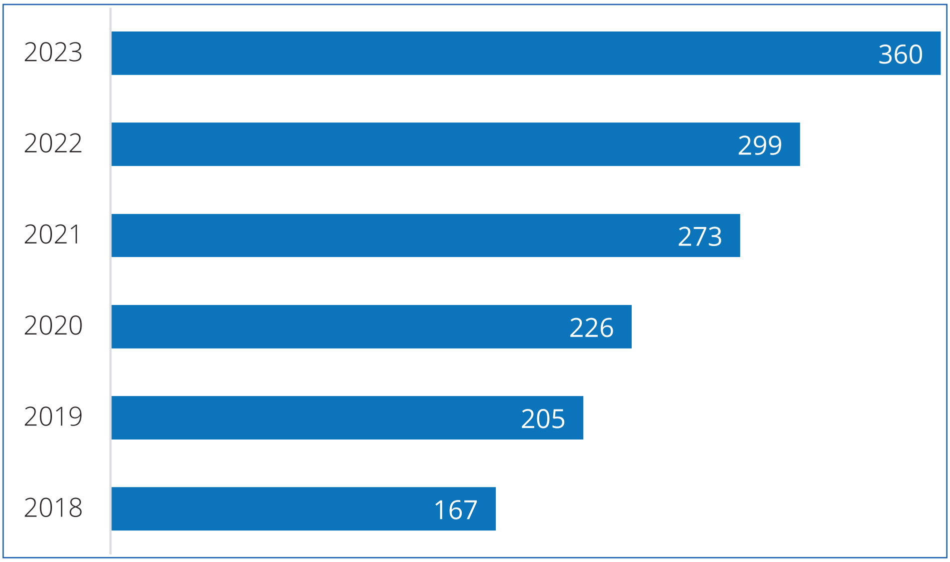
Fintech, encompassing innovative payment solutions, plays a key role in reducing financial exclusion. New technologies enhance access to financial services by removing cost and geographic barriers. Fintech is among the fastest-growing tech sectors – global investments in fintech companies rose from USD 2 billion in 2010 [*Report Accenture*, 2015] to USD 63 billion in 2022 [*Global fintech…*, 2023].

Poland is a leader in fintech, especially in the area of modern retail payments, making Polish banks a model for other countries [Milic-Czerniak, 2019: 38]. Notable partnerships in 2022 – such as Horizon Software's collaboration with Business France Poland and the acquisition of Team4U by Polskie ePłatności – demonstrate the sector's continued growth [Methri, 2022].

According to numerical data (Figure 1), the number of fintech firms in Poland has grown steadily from 2018 to 2023. In 2018, there were 167 fintech firms; in 2019, this rose to 205 – a 22.8% increase year-on-year. The most significant jump came in 2023, when the number reached 360 firms, a 20.4% rise from 2022. From 2018 to 2023, the fintech sector in Poland grew by approximately 115.57%. This increase reflects dynamic development driven by factors such as innovation, government and institutional support, and growing consumer and business interest in fintech solutions.

Despite economic challenges from the global COVID-19 pandemic, the fintech sector in Poland has shown resilience and robust growth, reflecting its capacity to adapt to difficult economic conditions. The steady year-on-year increase in fintech firms highlights Poland's appeal as a technology hub for financial innovation and its favourable investment climate for start-ups and foreign capital.

Figure 1. Number of Fintech Firms in Poland



Source: the author's own compilation based on [*Mapa polskiego fintechu…*, 2022: 11], [*Mapa polskiego fintechu…*, 2024: 14].

Figure 2 illustrates the structure of the Polish fintech market, showing the percentage share of each segment in 2023. The largest segment is "Payments" (22.2%), underscoring its dominance in the industry. The popularity of payment solutions reflects how fintech can make everyday transactions easier for a wide range of users, including those previously excluded from traditional banking.

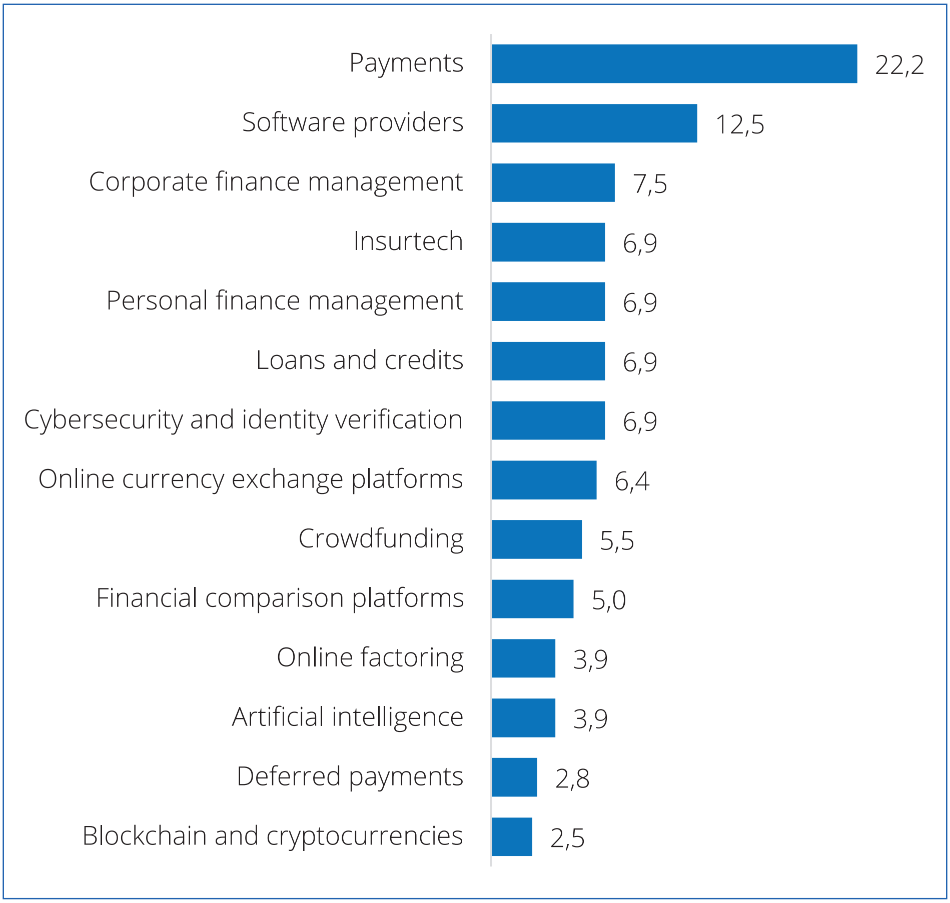
Other important segments include "Software Providers" (12.5%) and "Corporate Finance Management" (7.5%), reflecting the rising demand for tools to support businesses and financial operations.

Smaller but stable market segments include "Insurtech," "Personal Finance Management," "Loans and Credit," and "Cybersecurity and Identity Verification" – each with a 6.9% share. These segments play a critical role in expanding access and building trust in digital financial solutions, particularly among users sceptical of online banking.

Niche technologies such as "Blockchain and Cryptocurrency" (2.5%) and "Buy Now, Pay Later" (2.8%) hold smaller shares, but they offer potential to revolutionize value storage and transfer, enabling financial services without intermediaries and enhancing financial inclusion.

In regions where exclusion is caused by infrastructure gaps – such as rural and developing areas – fintech solutions like online currency exchanges or crowdfunding platforms can provide alternative sources of financing.

Figure 2. Share of Fintech Categories in Poland in 2023 (in %)



Source: [*Mapa polskiego fintechu…*, 2024: 14].

The fintech ecosystem is highly diverse, but the payments and money transfer segment play a central role in transforming the financial services market and in challenging traditional banks. The diversity of fintech offerings supports inclusion by delivering more accessible and secure services that reduce financial exclusion.

In Poland, payment methods dominate the fintech landscape, including innovations in payment cards, mobile payments, and cryptocurrency. A successful example is the BLIK system, which has seen a sharp rise in transaction numbers. Instant transfers (Express Elixir, Bluecash) and API standards aligned with the PSD2 directive have gained international recognition, helping to expand secure and fast online payment systems.

Legal regulations play a crucial role in governing and supporting fintech sector development, ensuring both user safety and financial system stability. An example is PSD2 (Payment Services Directive 2) – Directive 2015/2366 of the European Parliament and Council – which regulates payment services within the EU internal market. PSD2 introduced open banking, allowing fintechs access to banking data (with client consent), thereby supporting innovation in payments and finance management. It also improved transaction security (e.g., strong customer authentication) and consumer protection. While opening up new opportunities, PSD2 also imposes requirements like TPP licensing and GDPR compliance [Dyrektywa…, 2015].

The COVID-19 pandemic accelerated the adoption of electronic money, gradually reducing cash use. Forecasts suggest that by 2028, the value of e-transactions in Poland will reach nearly USD 109 billion, underscoring fintech's growing role in modern financial services [Shewale, 2024].

Reducing financial exclusion requires actions aimed at increasing the availability and usability of financial services for all social groups, including through financial education, the development of digital banking, and the creation of products tailored to the needs of individuals in more challenging economic situations. Fintech plays a key role in this process – especially in the Polish market – by integrating modern technologies with financial services. It offers more accessible, convenient, and often more affordable solutions that address users' specific needs, contributing to higher levels of banking penetration and a reduction in financial exclusion. Table 1 illustrates examples of initiatives that support this process.

Fintech significantly contributes to the democratisation of financial services by increasing their accessibility and convenience. Modern technologies eliminate traditional geographic and economic barriers, enabling users to manage their finances from anywhere. They offer alternative forms of financing that are more accessible to low-income individuals and reduce the costs associated with traditional financial services.

Table 1. Examples of fintech initiatives contributing to increased access to financial services and the reduction of financial exclusion

L.P.	Funkcjonalność	Przykłady
Easier access to banking services	Fintech enables remote access to banking services via the Internet and mobile devices, allowing users to open accounts, perform transactions, and manage finances without visiting a branch. This is particularly important for individuals in rural areas where access to bank branches is limited.	Applications such as Revolut, BLIK, mBank, IKO, and Alior Bank allow for remote account opening, transactions, financial management, and investing, eliminating the need to visit a branch – especially relevant in rural areas. Vivus.pl offers fast online loans for people without access to traditional banking services. Twisto provides “buy now, pay later” options and supports expense control through its mobile app.
Low-cost solutions	Fintech offers more affordable financial solutions, increasing their accessibility for individuals with lower incomes.	BLIK and other mobile payment systems enable cashless transactions, reducing costs and improving access to financing for low-income users. Vivus.pl provides fast online microloans for individuals with limited creditworthiness. Beesfund and Crowdway are crowdfunding platforms that offer a more affordable alternative to traditional forms of financing for start-ups and social initiatives.
Innovative financial products	Fintech introduces financial products tailored to the needs of various social groups, including the financially excluded. Examples include apps that support budgeting, saving, and investing, even with small amounts.	Revolut enables multi-currency accounts, favourable currency exchange, saving, and investing within a single app. IKO offers account management, BLIK payments, and savings options. Wonga provides quick online loans for individuals without access to traditional financial services. Absolvent helps students manage the student debt and find employment.
Financial education	Fintechs support financial education through advice, webinars, blogs, and budgeting tools, which raise user awareness and help reduce financial exclusion.	Revolut: A global fintech platform offering articles and guides on money management, saving, investing, and fraud prevention. mBank: Runs mAcademy, a series of webinars and educational materials on personal finance, investing, and using modern financial tools. PKO Bank Polski: Implements the “Everyday Economics” program and provides financial guides aimed at increasing the financial literacy of Polish citizens.
Inclusion of marginalised groups	Fintech has the potential to integrate traditionally marginalised groups, such as women, young people, and ethnic minorities, by tailoring services to their specific needs, thus supporting their inclusion in the financial system.	Spoko.app enables low-cost international money transfers, particularly benefiting ethnic minorities. Autenti provides e-signature solutions for young people, women, and minorities, facilitating online legal and financial formalities. Kontomierz supports budgeting and expense tracking. Absolvent assists young people with career planning and financial

Source: the author’s own elaboration based on information from websites related to the fintech tools presented in the table.

In 2023, the global fintech market was valued at approximately USD 294.74 billion, with projections indicating continued growth to over USD 550 billion by 2030. An analysis of fintech adoption trends between 2019 and 2023 reveals a substantial increase in the global adoption rate – from 16% to 64% [Shewale, 2024]. This dynamic reflects the intensifying uptake of financial innovations driven by rising consumer awareness and the growing engagement of small and medium-sized enterprises in fintech services. This development highlights a shift in attitudes toward financial technologies and emphasises their increasing role in the economy.

Countries in which consumers most actively used fintech services included China and India (both at 87%). The lowest adoption rates were recorded in Japan (34%) and France (35%). Among the developed economies, the UK had the highest adoption rate at 71%, while others showed moderate or low levels – for example, 58% in Australia, 50% in Canada, and only 46% in the United States. Generally, higher adoption rates and stronger growth are observed not in developed economies, but in emerging markets [Shewale, 2024].

However, alongside the rapid development of the fintech sector – which is revolutionising access to financial services – there is an increasing debate about its actual impact on financial inclusion. The literature reveals significant discrepancies in researchers' perspectives. On the one hand, fintechs are viewed as tools that reduce economic barriers and promote social integration. On the other hand, they are seen as technologies that may generate new forms of exclusion and marginalisation.

A positive example is the study by G. Arunkumar and N. Manju, who argue that Direct Benefit Transfers (DBT) significantly increase digital financial inclusion, particularly in marginalized communities. At the same time, the authors note that the lack of adequate technological infrastructure is a major limitation to these programs [Arunkumar, Manju, 2024: 159].

In contrast, M. Kim and M. Duvendack highlight the issue of over-indebtedness caused by easy access to digital loans, which may deepen economic exclusion among the poorest [Kim, Duvendack, 2024: 1–18].

Similar differences in opinion appear when it comes to technological challenges associated with fintech. C. Habasonda argues that the success of fintech depends on financial education, as a lack of digital skills limits people's ability to use such services [Habasonda, 2024: 153–164]. Meanwhile, H. Sadok and M. El Hadi El Maknouzi point to technological exclusion as a key issue, emphasising that individuals without access to the internet or smartphones remain outside the reach of modern financial services [Sadok, El Hadi El Maknouzi, 2024].

Another area of contention is the role of regulation. D.A. Zetzsche stresses the need for clear legal frameworks to ensure user privacy and prevent abuse [Zetzsche, 2024: 7]. In contrast, S. Sathyanarayana calls for flexible regulations, such as the Unified Lending Interface (ULI), that support innovation and operational efficiency in fintech while minimising entry barriers [Sathyanarayana, 2024: 45].

Globally, fintechs are also viewed as tools for reducing inequality, though not without criticism. B. Rolando argues that financial technologies can effectively reduce social inequalities, especially in developing countries, provided they are adapted to local needs [Rolando, 2024: 59]. However, E.F. Boamah, N.S. Murshid, and M.G. Mozumder emphasise that the lack of infrastructure – such as electricity or internet access – in many regions of the Global South hinders the effective implementation of fintech solutions, potentially exacerbating inequalities [Boamah et al., 2021].

These differing views in the literature underscore the complexity of fintech's impact on society and on the economy.

4. Conclusion

Fintech companies, by leveraging modern technologies, are effectively reducing financial exclusion by offering accessible and low-cost financial services. Process automation and innovative solutions allow them to operate at lower costs compared to traditional financial institutions, which is particularly important for low-income individuals. As a result, these individuals gain access to financial products tailored to their needs, breaking down both economic and geographic barriers. In doing so, fintechs contribute to broader financial inclusion by enabling more people to participate in the financial system.

Cooperation between fintechs and banks helps complement each other's weaknesses. Fintechs benefit from banks' resources such as risk management, regulatory compliance, and licensing, while banks gain access to new technologies and increased flexibility. This synergy enables fintechs to grow faster and helps banks respond more effectively to market demands and improve service quality [Szpringer, 2016: 58].

Fintechs expand service availability, reduce transaction costs, and offer transparent financial products, creating new business models adapted to customer needs. In Poland, sector leaders such as Blue Media, PayU, and Blik are promoting innovation and improving service quality. Through streamlined processes and personalised products, fintechs are also reaching individuals affected by financial exclusion [Hornuf et al., 2018: 7].

The fintech sector plays a vital role in promoting financial inclusion and supporting economic development by integrating previously marginalized groups into the financial system. At the same time, collaboration between fintechs and traditional institutions helps them adapt to rapidly changing market conditions, positively impacting the quality of services offered. To fully realise the sector's potential, it is essential to continue research on consumer trust and adapt regulations to the sector's dynamic nature. The proposed legal frameworks, such as PSD3 (Payment Services Directive 3) and PSR (Payment Services Regulation), are key to improving the regulatory environment for fintech, supporting its sustainable growth. PSD3 and PSR may increase transparency and security in financial transactions, thereby building greater consumer trust. Additionally, research into public awareness of fintech and levels of consumer trust is needed. A higher level of technological awareness could lead to more effective use of fintech services across various social groups, especially those at risk of financial exclusion.

The development of the fintech sector is revolutionising access to financial services, opening new opportunities for financial inclusion. However, it also presents a range of challenges for both the society and regulators, which must consider the technological, social, and ethical dimensions of this transformation. While fintech reduces barriers to financial services, it can paradoxically create new forms of exclusion – such as digital illiteracy or lack of access to technology. Regulations like PSD2 have taken steps towards standardisation, but future frameworks must remain flexible to keep pace with rapid technological change.

On a global level, fintechs have the potential to reduce inequalities by delivering services in underdeveloped regions. It is crucial, however, to adapt technologies to local contexts and invest in financial education. Partnerships between fintechs and traditional financial institutions, especially in rural and developing areas, can accelerate the financial inclusion process by combining innovation with the experience of established players.

These observations underscore both the enormous potential of fintech as a catalyst for transformation and its limitations, which must be considered in shaping the sector's future.

The research conducted provides a multidimensional perspective on fintech's role in reducing financial exclusion in Poland. It shows that the sector plays a key role in promoting financial inclusion and supporting socio-economic development. The findings highlight the complexity of financial exclusion in Poland, while also demonstrating the transformative potential of fintech. They offer valuable contributions to the academic understanding of the issue and provide practical recommendations for the development of the financial sector and for initiatives aimed at enhancing social inclusion.

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