“Digital financial inclusion: evidence from Ukraine”

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DIGITAL FINANCIAL INCLUSION: EVIDENCE FROM UKRAINE

Abstract

The article examines the influence of the current stage of economy digitalization on the financial inclusion in Ukraine. The purpose is to assess the level of financial inclusion in the country, to determine the dominant influence of price and non-price barriers to access to financial services for the Ukrainian population when compared to other world countries and to define which part of the adult population is able to join the formal financial services system through the use of innovative channels and financial service systems. Based on the methodological approaches proposed by the World Bank and the G20 Financial Inclusion Indicators, the authors analyze the real traditional and digital access opportunities of the general public to financial services in Ukraine compared to other countries across the world. Particular emphasis is placed on overcoming existing non-price barriers that impede formal financial inclusion of the Ukrainian population. The research findings stress the need to adhere to the basic principles of digital financial inclusion in order to regulate activities of financial institutions and their agents in the digital provision of financial services, strengthen regulatory control over the use of innovative financial products and service systems, and protect the rights of consumers of financial services in Ukraine.

Keywords digital financial inclusion, financial services, financial institution, digital payments, financial institution account, Ukraine

JEL Classification D14, G02, G28

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INTRODUCTION

The lack of the general population access to formal financial services reduces the level of citizens' welfare and their social protection, leads to increased social tension in society, which ultimately slows the development of the country's economy as a whole.

The economic downturn in Ukraine increases the share of the financially excluded population, complicates citizens' access to financial services in the most convenient due to price and non-price barriers. Eliminating these barriers is a priority for the stable development of the Ukrainian financial system. The use of modern digital infrastructures is a key factor in increasing public access to formal financial services.

In view of this, there is a need to assess the level of digital financial inclusion that is based on providing high mobility for financial services consumers and flexibility of financial services compared to traditional channels and systems. In the context of widespread use of financial innovations and modern services and channels of digital financial services to the population, it is necessary to clarify the list of basic financial services, providing access to which is crucial for the stable

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development of each country. In addition, financial sector regulators should pay particular attention to adhering to the basic principles of financial intermediaries' interaction with financial services consumers in the digital provision of financial services.

1. LITERATURE REVIEW

Recent years have witnessed considerable attention to financial inclusion. This is due to the need to tackle poverty, involve the wider population in the formal financial system, and ensure the economic development of countries. In 2017, about 1.7 billion adults (31% of the world's adult population) in the world did not have access to financial services (World Bank Group, 2018).

According to the World Bank, financial inclusion and access to finance are different concepts. Financial inclusion is defined as the proportion of adults who use financial services. However, lack of use does not necessarily mean lack of access. Some people may have access to financial services at reasonable prices, but they choose not to use them for religious and other reasons, while other people's access may be restricted by high costs for these services or regulatory barriers. Therefore, the key issue is the extent to which lack of inclusion stems from the lack of demand or the presence of barriers that prevent individuals and firms from accessing financial services (World Bank Group, 2014).

Given that, real consumer access to financial services is considered their timely provision in a consumer-friendly manner and at a price that is acceptable to the consumer and cost-effective, or economically rational, for the financial institution providing the service (Demirgüç-Kunt et al., 2017).

In view of this, financial inclusion is considered through the lens of consumer (population and small business) access to formal financial services and is based on the absence of all kinds of obstacles and barriers (price and non-price) for their timely and complete receipt (Naumenkova, 2015).

Financial inclusion is assessed on the basis of quantitative and qualitative indicators of 1) access, 2) quality, 3) usage and impact:

1) the access is determined by the availability of service infrastructure (financial institutions, their branches and offices, technical facilities, agent network, means for remote access to services: Internet, mobile communication, etc.);

2) the quality of financial services for consumers is evaluated in terms of price affordability, uninterrupted service, effective consumer protection system, etc.;

3) the usage is considered with regard to understanding the essence of the service by the consumer, the population's financial literacy, the positive impact of the service on quality of life, etc.

Hannig and Jansen (2010) analyzed regional trends and arrived at positive findings about taking the financial inclusion measures in countries where 25 percent of households receive incomes equal to or below USD 2 per day. Jin (2017) obtained results on the impact of financial inclusion on wealth creation, reducing poverty, and improving social protection for citizens.

According to Sarma and Pais (2011), the situation in the banking sector does not have a clear impact on financial affordability, unlike the ownership structure. However, Han and Melecky (2013) emphasize the positive impact of measures to increase access to bank deposits as a traditional savings service on financial stability. Morgan and Pontines (2014) described channels for increasing financial services availability, identified the positive effects of increased inclusion, and focused on the shortcomings related to regulation and control.

For a more detailed analysis of the impact factors and specific differences between countries, Honohan (2008), Park and Mercado (2018) have proposed to calculate the Financial Inclusion Index.

Financial inclusion opportunities of the population are determined by the modern trends of innovative development of the financial sector (Allen, 2012) under proliferation of remote financial ser-

vices, use of digital and mobile money and innovative systems.

Fintech Revolution opens new opportunities for financial inclusion (Demirgüç-Kunt et al., 2018). This applies in particular to the use of digital money, mobile accounts (Sarma & Pais, 2011), and the issuance of biometric smart cards (Karthik et al., 2016). Changes in the payment landscape in the current environment and the possibility of its usage for financial inclusion are covered in the WBG and BIS joint document (World Bank Group, 2016).

Klapper and Singer (2017) highlighted the benefits and challenges of implementing electronic payments by public authorities to citizens in the government-to-person (G2P) system. Gabor and Brooks (2017) analyzed the creation of fintech-philanthropy-development complexes that combine behavioral economics with forecasting algorithms via implementing the "Know Thy (Irrational) Customer" concept to accelerate access to finance.

Using financial innovation makes it possible to create new products and services, develop effective data processing and storage models, help expand customer reach, reduce cost, and improve financial services provision. Zimmerman and Baur (2016) described managing the risks arising in the process of digital financial services; in particular, risk management in the area of mobile money and mobile accounts was explored by Jack and Suri (2014).

It should be noted that recently in the field of remote financial services, there exist convergence and unification of national models. This promotes the introduction of standard approaches to the regulation of the financial sector and the protection of the rights of financial services consumers (Mishchenko et al., 2018). In addition, there is a combination of different forms of agency and remote servicing (World Bank Group, 2016).

In Ukraine, the strategic objectives of the financial sector digital development are outlined in the Concept of the Development of the Digital Economy and Society of Ukraine for 2018–2020 (Verkhovna Rada of Ukraine, 2018). Urgent issues of financial inclusion based on ensuring the balance between solving local problems, promoting innovation, risk management and consumer protection in Ukraine were discussed at the Second Financial Inclusion Forum (The National Bank of Ukraine, 2019).

2. DATA AND METHODS

Digital financial inclusion determines the possibility of access to formal financial services for the general public based on the implementation of basic principles of digital interaction between financial intermediaries and consumers, the use of innovative financial products, services, digital channels, as well as customer service and fund raising systems (Figure 1).

The digital financial inclusion core principles are the basis for the financial service digitalization. They are also consistent with the G20 Principles for Innovative Financial Inclusion (GPFI, 2011) and other generally accepted documents.

Thus, for digital financial inclusion, a remote method of servicing is the key. It allows consumers to obtain services not directly from financial institutions, but from third parties, namely agents or other third-party intermediaries who usually provide services based on an agreement concluded.

In addition, the use of remote models requires the interoperability of such service schemes, access to payment systems and communication infrastructure, as well as compliance with the requirements for the protection of customers' personal data and information of financial institutions.

In order to protect consumer rights effectively, it is important that the financial institutions and their agents are regulated in the digital provision of financial services. Financial institutions should be responsible for their own actions and those of their agents within the limits set out in agency agreements, regardless of whether such actions are directly or indirectly mandated. In addition, financial services must meet the customer needs and be provided at a cost that is affordable to consumers and acceptable to suppliers.

There is also an increased control over the additional risks (or relocation of existing ones) in the

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Source: Developed by the authors.

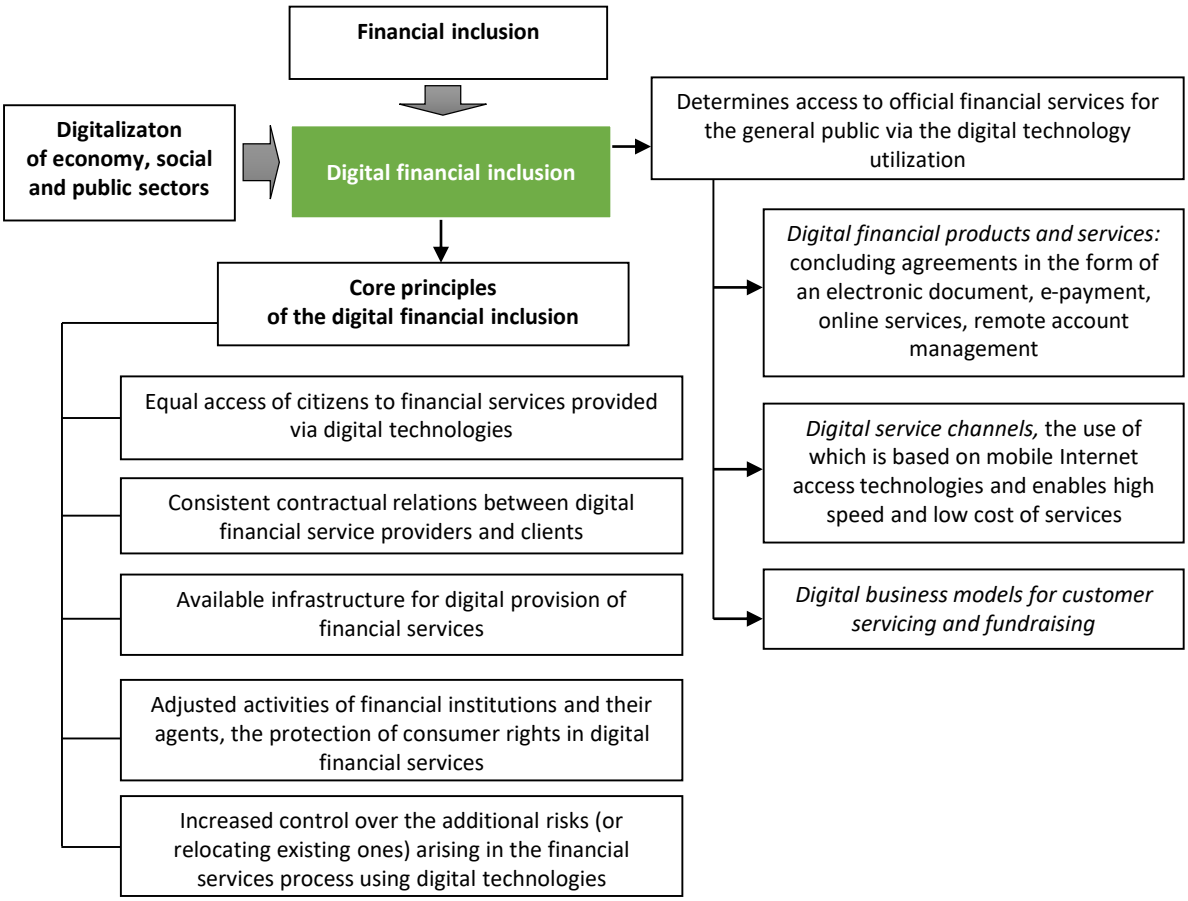

Figure 1. The digital financial inclusion components

financial services process that arise when managing and storing customer accounts and funds, making payments, engaging agents in the process of creating and using the customer interface, etc.

The Global Partnership for Financial Inclusion (GPFI) developed a system of indicators approved by the G20 in 2012. In 2013, GPFI presented an updated list of these indicators structured by directions:

- access;
- service usage (by population and SMEs); and
- service quality.

In addition, the list includes quality indicators according to the following areas:

- financial literacy and capability;
- market conduct and consumer protection;
- barriers to use.

In 2016, indicators of the use of digital payments and access to digital infrastructure were added to the list (GPFI, 2016).

Given the international practice and the existing limitations as to obtaining and generalizing information on the issue, it is advisable to follow the Global Findex methodological approaches and perform analyses using G20 Financial Inclusion Indicators. Figure 2 presents the sequence of data analysis using these indicators to assess the level of digital financial inclusion.

The focus of the analysis was on a set of indicators that allow for distinguishing the proportion of adults with active accounts at formal financial institutions and the ability to access them and subsequent digital financial services (access to and management of their own finances, including payment of bills, online purchases, receiving funds through digital channels and service systems) (see Figure 2).

Source: Developed by the authors.

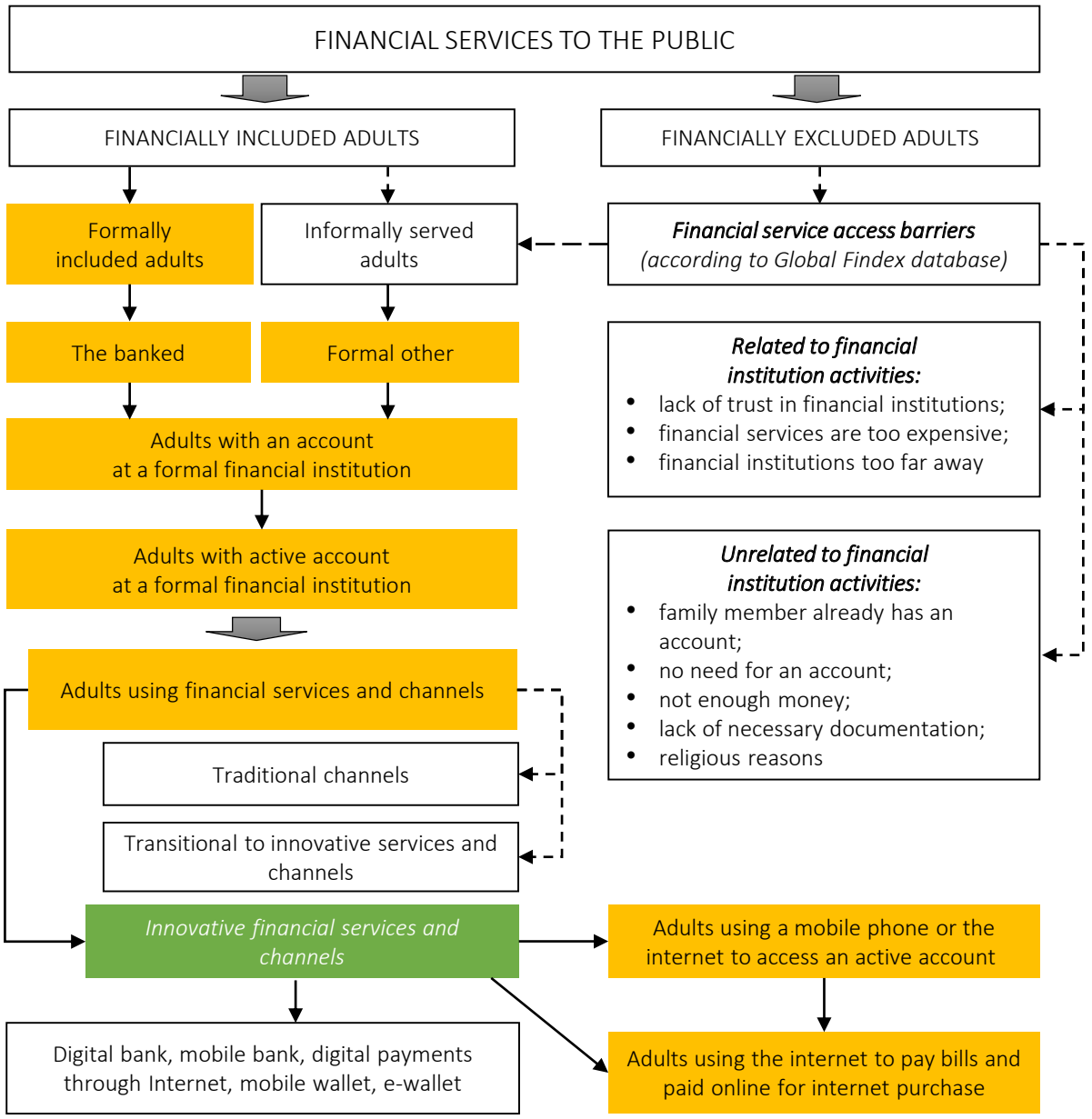

Figure 2. The sequence of analyzing the level of digital financial inclusion based on the G20 Financial Inclusion Indicators

Generally, the level of digital financial inclusion is determined through the following indicators:

$$DFI_i = FI_i \cdot K_{DP} = \\ = A_i \cdot (1 - Kinact_i) \cdot K_{DP} \cdot K_{MI} \cdot K_f, \quad (1)$$

where DFI_i is a digital financial inclusion indicator (age 15+), %, FI_i is a share of financially included adults (age 15+), %.

$$FI_i = A_i \cdot Kact_i = A_i \cdot (1 - Kinact_i). \quad (2)$$

A_i is a share of financially included adults (adults with an account at a formal *i*-th financial institution, age of 15+), %.

Correction coefficients:

$Kact_i$ – adults with active accounts at a formal financial institution;

$$Kact_i = (1 - Kinact_i);$$

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$Kinact_i$ – adults with no deposit and no withdrawal from a financial institution account (age 15+);

i is a type of financial institution $(i = 1, \ldots, n)$;

K_{DP} – adults made or received at least one digital payment in the past year;

K_{MI} – adults used a mobile phone or the internet to access a financial institution account in the past year (adults with a financial institution account, age 15+);

K_f – payment frequency.

It is possible to estimate separately the digitization level of payments of the adult population by the following formula:

$$DP_i = A_i \cdot Kact_i \cdot K_{DP}, \quad (3)$$

where DP_i is an indicator of digitizing payments of adult population with a formal financial institution account, %.

3. EMPIRICAL RESULTS

An analysis of the financial inclusion indicates that in 2017, only 63% of adults in Ukraine had formal financial institution accounts. Among working-age citizens, this figure was 70% being significantly lower than that in the EU (97%). However, there is a gradual decrease in the share of the Ukrainian population not included in the system of formal financial services. Thus, in 2011 the level of the financially excluded population reached 59%, in 2014 it was 47%, and in 2017 it decreased to 37% (Table 1).

The largest proportion of the financially excluded adults is observed in the poorest, out of the labor force and rural groups, varying between 68-75% of the respective group respondents. In addition, the share of women with no accounts in financial institutions was significantly higher than in the EU countries.

Public inclusion in formal financial services is hampered by the existence of barriers. The main barriers to public access to formal financial services can be divided into two groups:

- related to the financial institution activities: lack of trust in financial institutions, financial services are too expensive, financial institutions too far away; and
- unrelated to the of financial institution activities: religious reasons, lack of necessary documentation, family member already has an account, no need for an account.

The abnormally low development of financial infrastructure when compared to other countries is an extremely negative tendency impeding the physical access of the population to financial services. Thus, the number of bank branches per 100,000 adults in Ukraine decreased almost 7.5 times during 2009–2018: from 3.22 to 0.43, while in most European countries this figure ranges between 30-40 (Table 2).

The growth of ATMs in terms of population coverage and penetration rates is increasing, which positively impacts payment terms. However, the remoteness of financial institutions has a negative impact on the availability of saving services

Table 1. Financially excluded population in Ukraine and other countries, 2017, %

Source: Calculated based on the Global Findex Database.

Population classified by individual characteristics	World	Europe and Central Asia	Ukraine	Income group (based on GNI per capita)				
				High income	Upper middle income	Middle income	Lower middle income	Low income
No account (age 15+)	31.5	34.7	37.1	6.3	26.9	34.7	42.2	65.1
No financial institution account (age, 15+)	32.9	34.9	37.1	6.3	27.2	35.7	43.9	75.5
Financially excluded adults by individual characteristics (age 15+), %: women	35.2	37.5	38.7	7.1	30.7	39.0	47.0	70.1
adults belonging to the poorest 40%	39.5	43.7	46.7	10.0	37.6	43.5	49.3	74.5
adults out of the labor force	34.0	47.2	45.2	10.1	38.4	44.8	49.2	76.6
adults living in rural areas	40.7	38.3	44.5	6.3	27.1	35.2	42.4	67.7

Table 2. Number of commercial bank branches per 100,000 adults in selected countries in 2009–2018

Source: Compiled based on the IMF data.

Country	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Canada	24.19	24.05	24.18	24.30	23.32	23.14	22.84	22.27	20.79	20.05
France	41.91	41.55	41.35	38.96	38.58	38.00	37.54	37.08	36.00	34.86
Germany	15.86	15.71	15.85	14.18	14.89	14.55	14.05	13.51	12.90	11.10
Italy	59.66	58.40	57.96	56.43	53.26	50.79	49.83	47.63	44.63	40.93
United Kingdom	25.42	24.71	24.06	22.09	25.14	N/A	N/A	N/A	N/A	N/A
United States	35.90	35.40	35.14	34.88	33.62	32.40	32.69	32.10	31.23	30.90
Japan	33.82	33.82	33.90	33.95	33.90	33.89	34.14	34.10	34.03	34.07
Czech Republic	22.74	22.61	23.29	23.84	24.30	24.22	23.69	22.36	21.28	21.26
Latvia	35.35	34.18	32.77	24.64	21.60	20.40	18.05	17.10	16.43	14.69
Lithuania	29.52	29.05	19.00	19.27	18.08	16.24	14.55	13.45	13.61	11.51
Poland	32.94	32.19	32.58	33.97	32.98	32.96	31.14	31.02	29.29	29.67
Romania	36.23	35.44	35.24	33.16	31.61	30.72	28.68	27.98	26.62	25.49
Slovak Republic	26.46	26.29	25.97	26.63	26.90	27.99	28.27	28.26	26.92	25.60
Spain	99.06	95.73	88.22	83.75	73.56	69.68	67.52	61.82	58.56	55.15
Sweden	22.96	22.50	21.70	21.81	21.54	21.10	19.32	17.54	16.18	14.91
Switzerland	52.68	51.77	50.24	48.88	47.44	46.03	44.35	42.46	40.84	39.51
Belarus	3.67	3.19	2.10	1.71	1.56	1.20	0.89	0.86	0.78	NA
Moldova	39.11	39.51	42.36	42.73	43.40	45.14	27.54	27.22	26.92	26.95
Russian Federation	34.63	35.05	36.71	38.22	38.50	37.02	32.91	30.13	29.22	26.23
Ukraine	3.22	2.33	1.60	1.07	0.92	0.77	0.56	0.50	0.45	**0.43**

to the public: outstanding deposits with commercial banks (% of GDP) in Ukraine decreased from 34.1% to 24.8% (Figure 3). In 2017, the share of adults borrowing not from financial institutions but relatives and friends has increased from 32% to 36% compared to 2014.

According to the results, the lack of funds to open an account is the main reason for excluding the population of certain countries from the formal financial services system. For most countries across the world, this figure exceeds 50%, for lower middle-income countries it is 76.7%, and it amounts to 58.4% for Ukraine. It should be noted that in Ukraine the main reasons for the population exclusion from the formal service system are related to the activity of financial institutions. Thus, for 50.3% of the respondents from those with no financial institution accounts, the

Source: Calculated and constructed by authors according to the World Bank and IMF data.

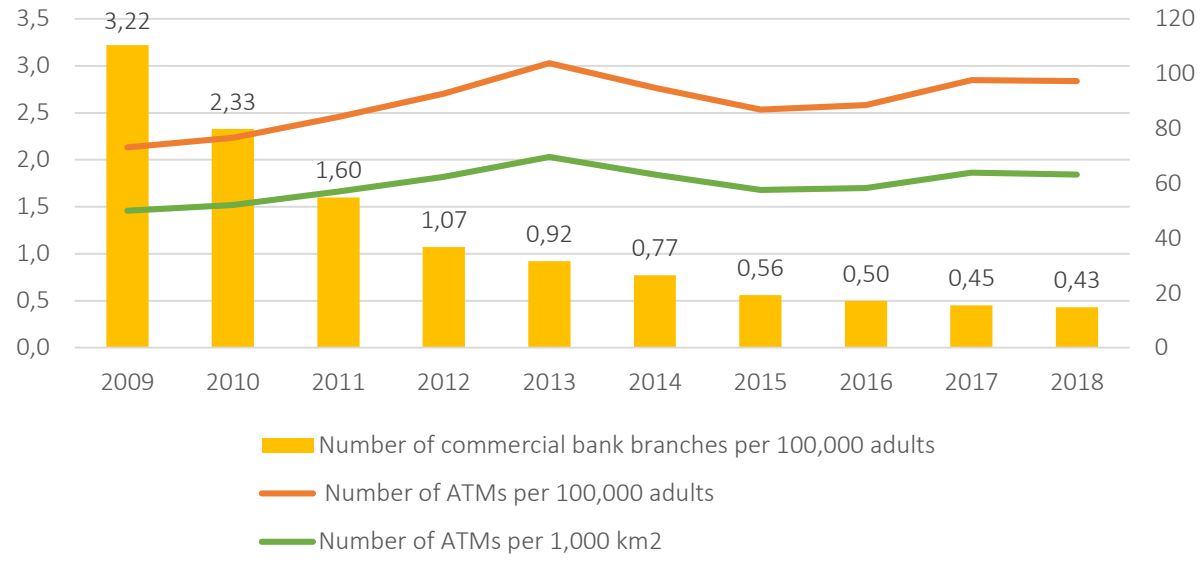

Figure 3 (a). Development of financial services infrastructure in Ukraine in 2009–2018

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Source: Developed by authors according to the Global Findex Database.

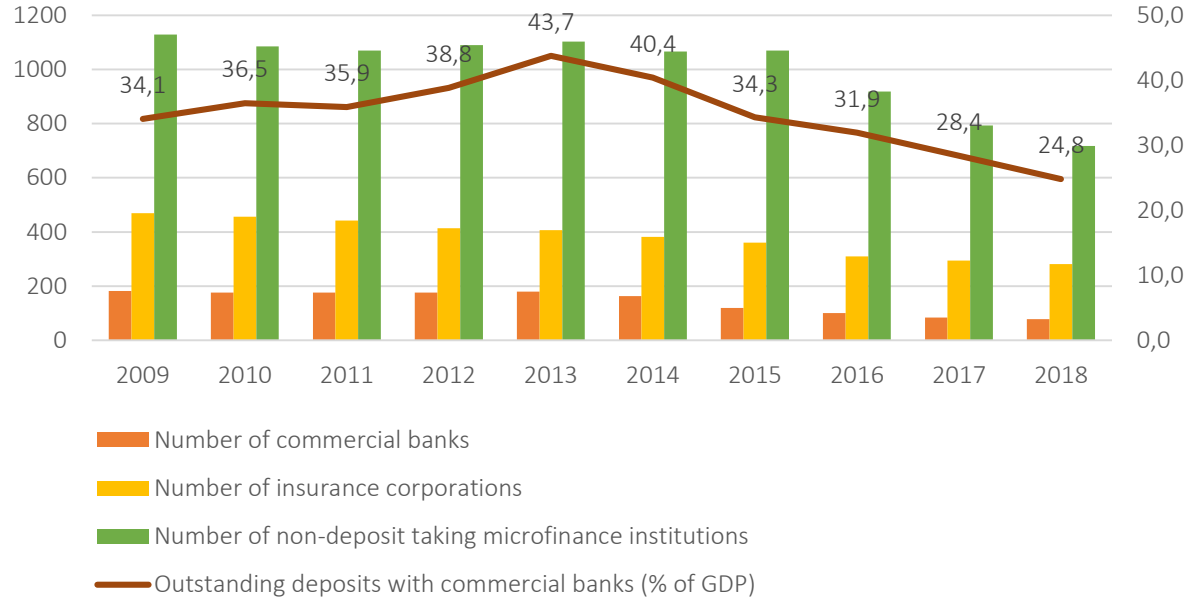

Figure 3 (b). Development of financial services infrastructure in Ukraine in 2009–2018

main reason for not opening accounts was the lack of trust in financial institutions (Figure 4).

In Ukraine, the access of adults to the Internet, which is a necessary prerequisite for the transition to innovative financial services is approaching 63%, and for youth this figure exceeds 86%. However, using the Internet to pay bills and do shopping online is low, 22.9% and 21.7%, respectively (Table 3). Critically low are the values of Internet usage by rural populations – within 18-23%.

Table 3. Indicators of access to and use of the Internet by the Ukrainian population in 2017

Source: Compiled based on the World Bank data.

Indicators	Adults, %
Access to internet, age 15+	62.8
Age 60+	25.3
Ages 15-34	86.4
Ages 35-59	69.5
Adults using the internet to pay bills (aged 15+):	22.9
in labor force	27.9
out of labor force	15.9
female	22.8
rural	15.6
Adults using the internet to buy something online (aged 15+)	21.7
in labor force	27.3
out of labor force	13.9
female	18.0
rural	17.6

It should be noted that having a formal financial institution account is a necessary prerequisite for the population inclusion in the system of formal financial services, but it is worth paying attention to the focus of using the account. Significantly, in 2018, only 21.0% of private sector citizens used formal financial institution accounts to obtain wages, indicating a high level of income shadowing (Figure 5).

According to the authors, digital financial inclusion provides an extremely high level of population mobility and flexibility in financial services through access to an account using a mobile phone or the Internet. In Ukraine, only 18.1% of adults have this opportunity, while in highly developed countries this figure exceeds 51.8%. The coverage of the population by traditional payment card service channels in Ukraine is 39.1%, which corresponds to a similar indicator for the upper-middle-income countries – 38.1% (Figure 5).

According to the analysis, the results have been obtained on the level of financial inclusion of adults through the use of traditional and digital channels and services (see Table 4).

The results show that in Ukraine, the availability of financial services using traditional channels and services is almost 60%, while the possibility

Source: Constructed by authors according to the World Bank data.

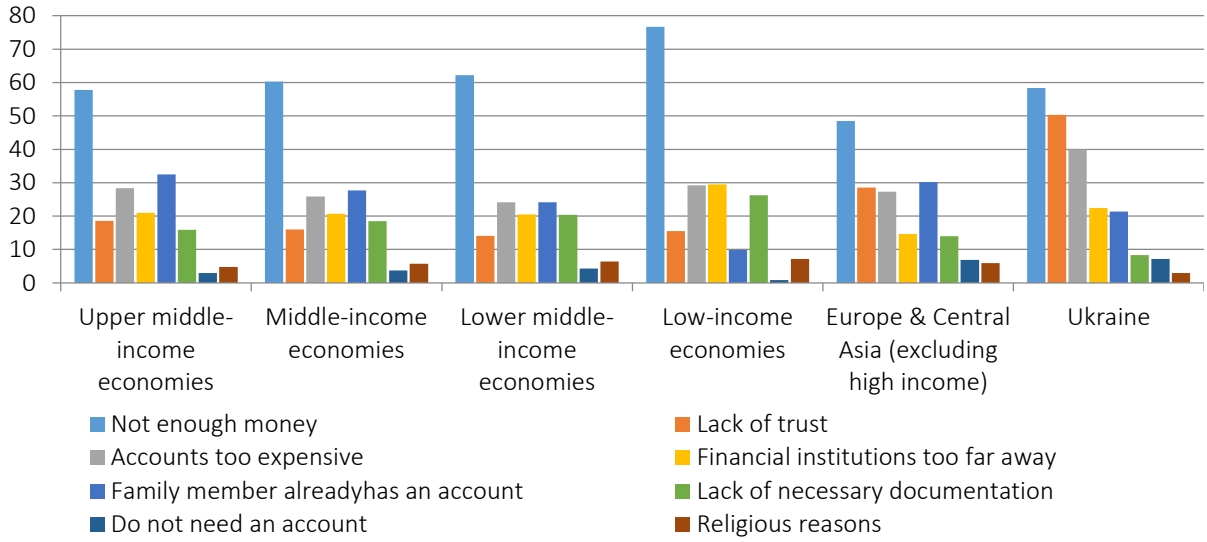

Figure 4. Financially excluded adults due to barriers of financial institutions in 2017 (age 15+), %

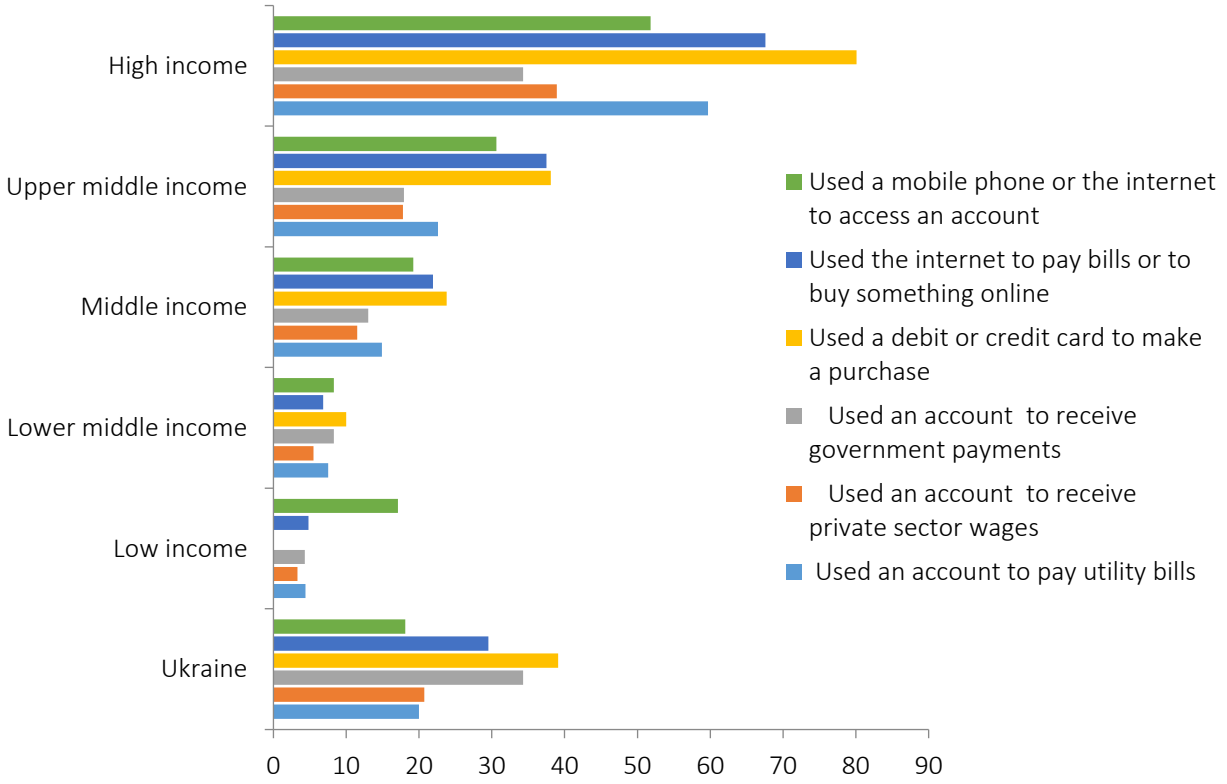

Figure 5. Use of traditional and innovative financial service channels for adults in Ukraine and other countries in 2017

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Table 4. Financial inclusion indicators by features of financial services to population in Ukraine and other countries across the world in 2017

Source: Calculated by authors based on the World Bank data.

Financial inclusion indicators by features of financial services	World	Europe and Central Asia	Ukraine	Income group based on GNI per capita				
				High income	Upper middle income	Middle income	Lower middle income	Low income
Financial services availability: using traditional channels and services	57.9	60.7	59.8	90.1	64.8	53.6	43.8	22.9
using digital channels and services	14.4	14.0	10.8	46.7	19.8	10.3	3.6	3.9

of integrating the population into the formal financial services system based on the use of digital channels and services is at around 10% of adults, stimulating the development and implementation of necessary measures in both the financial sector and the country as a whole.

CONCLUSION

The study concludes that the financial service infrastructure in Ukraine is unbalanced, and the level of digital financial services remains relatively low compared to European and middle-income countries.

The main reasons for the limited access of a large number of consumers to financial services in Ukraine are:

1) compulsive removal (financial isolation) resulting from hostilities, terrorism, and natural disasters;

2) forced removal due to lack of trust in financial institutions, their remoteness, high tariffs, etc.;

3) voluntary refusal due to lack of income or demand for financial products and services;

4) unequal access of citizens to financial services in some regions of the country;

5) low interest or limited ability of non-banking financial institutions to provide certain types of financial services using digital service channels;

6) inadequate legislative and regulatory control for the provision of certain types of services and the use of individual channels and innovative tools;

7) low public awareness of the use of innovative products and services.

Increased use of financial innovation in the financial sector requires a renewed confidence in financial institutions, improved risk management for both clients and financial institutions that may arise in the implementation and use of financial innovation.

The principal directions towards increased innovative accessibility of financial services of financial institutions, which should be under the constant control of the National Commission for State Regulation of Financial Services and the National Bank Ukraine, include:

- state regulators must clarify the criteria for identifying and listing basic financial services that financial institutions can provide using digital channels and service systems;
- identifying and removing barriers excluding certain consumer categories from financial services;
- monitoring of tariffs for basic and innovative financial services;

- developing information and telecommunication infrastructure and digital technologies;
- enhancing the consumers' physical accessibility to financial services by increasing access points based on the development of financial infrastructure and expanding digital service channels using digital business models of banking and non-banking financial institutions;
- creating a remote client identification system and empowering non-bank financial institutions to use the services of credit bureaus;
- creating regulatory environment for the interaction of banks and non-bank financial institutions, expanding the ability to combine individual financial services, expanding the list of financial services that agents can provide.

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