

RISKS OF FINANCIAL EXCLUSION AMONG THE ELDERLY: EMPIRICAL EVIDENCE FROM THE REPUBLIC OF MOLDOVA

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Abstract

Combating extreme poverty and promoting financial inclusion are essential priorities for sustainable development, especially in emerging economies. The Republic of Moldova faces high levels of poverty, particularly among the elderly population, which requires targeted measures to reduce financial vulnerability. This study investigates the degree of financial inclusion of older people in the Republic of Moldova, identifying barriers that limit access to financial services and assessing the influence of socio-demographic factors through a logistic regression model. The results highlight that education level and income are the most important determinants of financial inclusion. Based on the empirical findings, the research proposes recommendations for the development of a national financial inclusion strategy, the development of financial products adapted to the needs of seniors, and the promotion of financial and digital literacy. The study contributes to the literature on financial exclusion and provides practical directions for inclusive public policies in the demographic and economic context of the Republic of Moldova.

Keywords: financial inclusion, vulnerability, elderly population, poverty, financial literacy

I. Introduction

Globally, combating extreme poverty remains one of the most pressing challenges to sustainable development. Currently, approximately 692 million people, or 8.5% of the world's population, live on less than \$2.15 a day, which places them below the extreme poverty line. Progress made in recent decades has been significantly slowed by modest economic growth, the negative effects of the COVID-19 pandemic, and increasing economic and social fragilities. As a result, poverty in low-income countries has reached levels higher than those recorded before the pandemic. According to World Bank estimates, by 2030, approximately 7.6% of the global population will still live below the extreme poverty line, which underlines the need for urgent and coherent measures to promote accelerated and inclusive economic growth [1].

Financial inclusion, closely linked to digital transformation, plays a decisive role in reducing economic vulnerabilities. The latest Global Findex 2025 report [2], entitled "Connectivity and Financial Inclusion in the Digital Economy", highlights both remarkable progress in the use of financial services and the persistence of significant gaps in access to them. Globally, 79% of adults now have a bank account, either at a financial institution or through a mobile payment provider,

compared to 74% in 2021 and 51% in 2011, when the first data were collected. In low- and middle-income economies, 75% of adults have access to an account, but gaps in digital access and low levels of financial literacy continue to limit the effective use of available services. It is estimated that approximately 1.4 billion adults globally remain outside the formal financial system, and digital technologies offer significant potential for expanding financial inclusion, particularly through mobile phones and digital bank cards [3].

The Republic of Moldova faces considerable challenges in this area, being one of the countries with the highest poverty rates in the region. According to data from the National Bureau of Statistics [4], 31.6% of the population lived below the absolute poverty line in 2023, a level much higher than the European Union average. The situation is even more acute among the elderly: the absolute poverty rate for the population aged 60 and over was 43.7% in 2023. This vulnerability is amplified by the demographic aging process: currently, 17.4% of the population of the Republic of Moldova is over 65 years old, and by 2040 this proportion is forecast to reach 25% [5]. In these conditions, promoting financial inclusion becomes a strategic necessity, both for poverty reduction and for strengthening social cohesion. This study was initiated to answer the research question: what is the level of financial inclusion of vulnerable groups, especially the elderly in the Republic of Moldova, and what are the challenges they face in accessing financial services? The research objectives aimed to: analyze the degree of use of financial services, identify barriers that limit access to these services, and formulate practical recommendations for the development of public policies and institutional solutions aimed at contributing to increasing financial inclusion and reducing the social vulnerability of the disadvantaged population.

II. Literature review

The issue of financial inclusion has been extensively analyzed by researchers in recent years. There are studies that address various scientific and methodological aspects of this phenomenon. The interaction between financial inclusion and social inequalities was analyzed by a group of authors led by Marta de la Cuesta-González [6]. They focused on the analysis of a group of vulnerable consumers in urban areas, namely those who face poverty and social exclusion. The study found that the difficulties in using financial services for these vulnerable groups are caused by banking pressure and lack of financial education.

Other research has emphasized the fact that household income is a determining factor in the adoption and promotion of certain digital financial practices [7]. A significant aspect emphasized by foreign researchers is the correlation between financial vulnerability, income and other socio-demographic characteristics. For example, the level of education of individuals is one of the critical characteristics [8], which has an impact on income levels, on the one hand, and indicates or creates risks related to the knowledge needed to promote financial inclusion, on the other hand.

International organizations emphasize that older people are among the most affected by financial exclusion, as a result of the accumulated barriers: modest incomes, cognitive and physical limitations, low digital literacy and the lack of financial products adapted to the needs of old age [9], [10]. The barriers to financial inclusion of this group have also been highlighted in the works of the authors Msweli & Mawela [11]. In response to the challenges stated, at the international level, the G20 Fukuoka Policy Priorities [10] promote policies oriented towards equity, digital literacy and the development of personalized financial products for seniors. In the Republic of Moldova, the National Program for Active and Healthy Ageing 2023–2027 [12] includes measures to reduce the social and financial exclusion of older persons. These efforts are supported by projects implemented by UNFPA Moldova, focused on digital literacy and creating an equitable framework for access to financial and public services [13].

III. Methods and Data

This study is based on the analysis of statistical data on income, education and the degree of access to financial products and services. The data used were taken from the reports of international authorities: World Bank, OECD, as well as the responsible national institutions: the National Bureau of Statistics, the National Social Insurance House, and the National Bank of Moldova. In order to facilitate the interpretation of the indicators by readers from other states, the financial values of the indicators in the Republic of Moldova were expressed in the reference currency - euro.

The reference period used in the research covers the years 2020-2024, and for the comparison of the indicators, the year 2024 was taken as a benchmark, this being the most recent for which data was available at the time of the research.

The research used factor analysis, based on data collected through a questionnaire approved by the Ethics Committee of the institution where the research was conducted. Taking into account the risk of limited digital skills of the elderly, data collection was carried out with direct assistance from trained interviewers using the Google Forms platform. The distribution of respondents according to socio-demographic characteristics obtained in the final stage of the research can be seen in Fig. 1.

We note that the research was designed as a pilot study, with an exploratory nature, since there are no previous empirical investigations specifically dedicated to the financial integration of the elderly in the Republic of Moldova.

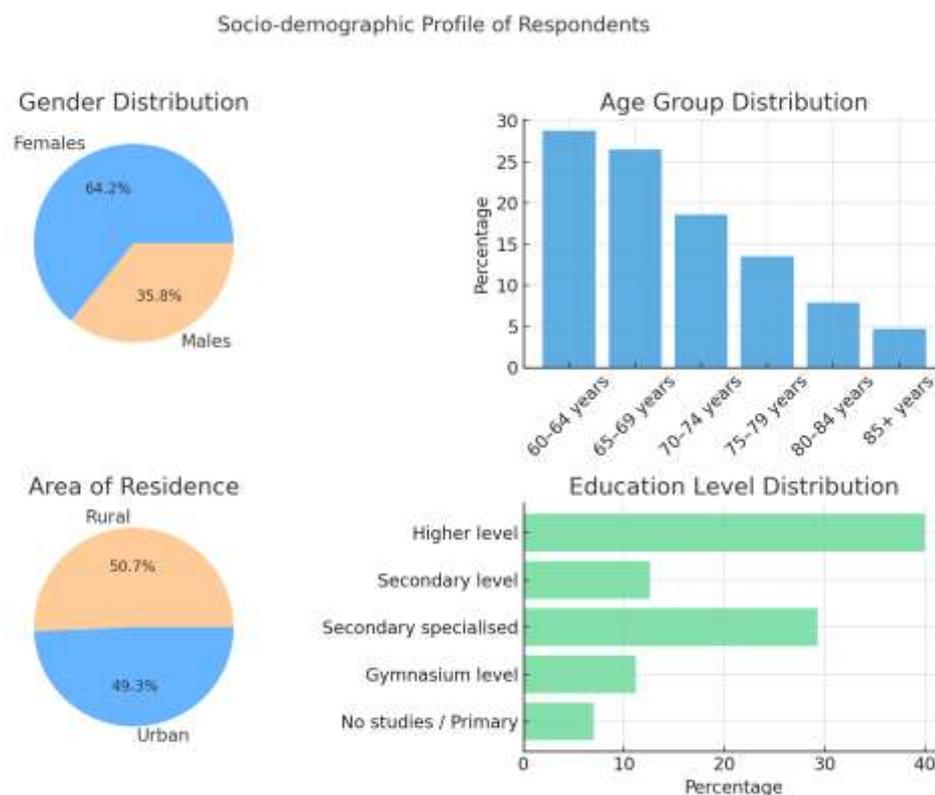


Fig. 1: Socio-demographic profile of respondents

Although the sample size is relatively small, this structuring allowed for the capture of a diversity of relevant opinions and experiences, thus ensuring an exploratory representativeness appropriate to the purpose of the study.

To identify factors associated with the likelihood of older people being financially integrated, we estimated a binary logistic regression model, using the following general formula:

$$\log\left(\frac{p}{1-p}\right) = \beta^0 + \beta^1 * Education + \beta^2 * Income + \beta^3 * Age + \beta^4 * Sex + \beta^5 * Residence + \Sigma\beta_i * Stat_eco + \varepsilon \quad (1)$$

Where,

p - represents the probability that a person is financially integrated;

β_n - are the estimated coefficients associated with the explanatory variables;

ε - is the random error term.

The estimation of the logistic regression model (Table 1) was performed using the Python programming language, through the statsmodels library, calling the Logit() function based on the design matrices constructed using the patsy package. This approach allowed for the rigorous estimation of the coefficients related to the categorical variables included in the model. For an intuitive and clear interpretation, the resulting coefficients were analyzed both in logit (log-odds) format and converted into odds ratios (odds ratio).

Table 1. Regression model indicators

Variabilă	Coef.	Std.Err.	z	p> z	Confid. interval		OR
					[0.025	0.975]	
Intercept	-1.1786	1.2886	-0.9146	0.3604	-3.7041	1.3470	0.3077
Education (medium)	0.6338	0.5507	1.1509	0.2498	-0.4456	1.7131	1.8847
Education (high)	2.3028	0.6106	3.7711	0.0002	1.1059	3.4996	10.0018
Income (medium)	0.2706	0.4376	0.6185	0.5363	-0.5870	1.1283	1.3108
Income (high)	1.4686	0.7238	2.0290	0.0425	0.0500	2.8873	4.3433
Age group (65-69)	-0.4967	0.4725	-1.0512	0.2932	-1.4229	0.4294	0.6085
Age group (70-74)	0.0758	0.5139	0.1474	0.8828	-0.9315	1.0830	1.0787
Age group (75-79)	-0.8300	0.6055	-1.3708	0.1704	-2.0167	0.3567	0.4360
Age group (80+)	-0.8011	0.6350	-1.2617	0.2071	-2.0456	0.4434	0.4488
Economic status (active)	0.6108	0.5254	1.1626	0.2450	-0.4189	1.6405	1.8419
Sex (female)	-0.1542	0.3675	-0.4197	0.6747	-0.8745	0.5660	0.8571
Residence (rural)	-0.1596	0.3833	-0.4165	0.6771	-0.9109	0.5916	0.8525

Source: Authors estimation

This integrated approach, based on official statistical data, rigorous econometric tools, and an exploratory perspective on the elderly population in the Republic of Moldova, provides a solid basis for understanding the factors that shape financial inclusion and underpin relevant public policy directions.

IV. Results

In the last five years, 2020-2024, the Republic of Moldova has seen an increase in the number of payment cards in circulation. In 2024, this indicator reached 3.75 million cards (see Fig. 2), which means that each citizen of the Republic of Moldova owns 1.5 bank cards, comparable to the European Union average of 1.6 payment cards per capita. Taking into account the fact that only 58.7% of the total number of cards are active, we can see that the degree of use of this financial service remains low in the Republic of Moldova.

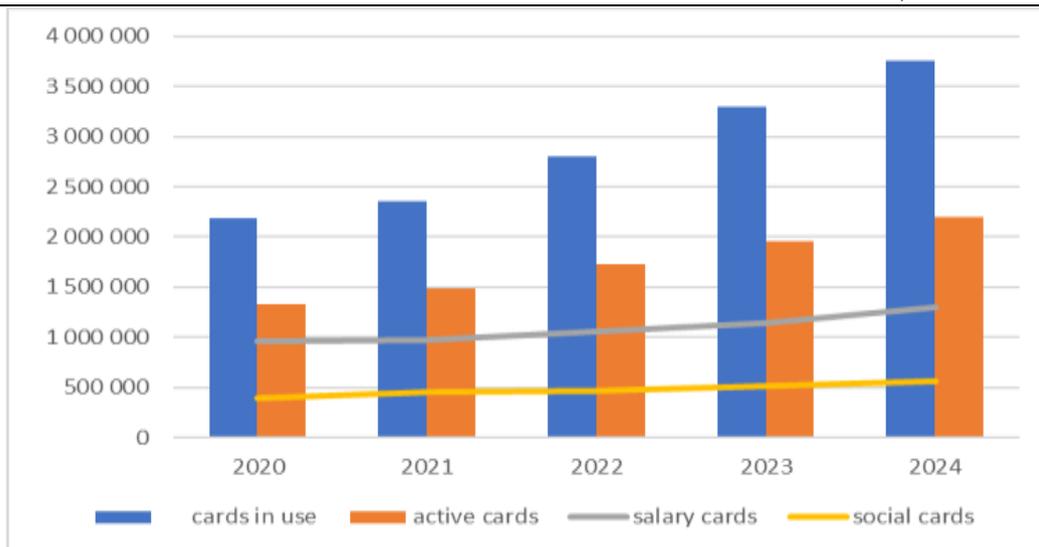


Fig. 2: Number of payment cards in circulation, 2020-2024

The activity rate of cards in circulation is approximately 80%, with social cards being the most active. Initially, they were mainly used for cash withdrawals related to social benefits, but, in the context of the COVID-19 pandemic, their use for cashless payments has increased significantly. In just four years, the share of cashless payments made with social cards has increased from 52% in 2019 to 76% in 2023, approaching the general average of cashless payments, which is 85.5%. This indicator is relevant in our research, as it reflects the level of access to banking services by the vulnerable population, with the beneficiaries of social benefits being, for the most part, people in difficulty or unable to obtain sufficient income.

Despite the positive dynamics, data on other financial products remain well below the European average. For example, private insurance services are little accessed by the population of the Republic of Moldova. Insurance density, measured by reporting the total volume of gross written premiums to the population, reaches only 65 Euros in 2024. In the European Union, the average of this indicator is approximately 2000 Euros [14].

Regarding credit services, we consider that the low level of income is a major impediment to accessing credit, because social groups with low incomes are ineligible for credit. The same situation is also in the case of savings products offered by the banking and non-banking market in the Republic of Moldova. Even though, according to NBM data, bank deposits are the most used savings instruments, these financial products can still be accessed if the income level exceeds expenses, generating an amount of free money for storage.

There is a potential for increasing financial inclusion based on the expansion of digitalization significantly boosted by the COVID-19 pandemic. We know that digital technologies offer a powerful solution for expanding access to financial services. Bank account holders are increasingly using their mobile phones or debit or credit cards linked to their accounts to make transactions. The Republic of Moldova has an advantage due to the high level of internet connection, but also the increased penetration of electronic connection devices. Approximately six out of ten households (57.3%) in the country have a computer at home. It is worth noting that in recent years consumers have changed their preferences by choosing other, more accessible and convenient devices to browse the internet, such as mobile phones. The overall internet connection rate in the Republic of Moldova in 2023 was 88.1% [15] (see Fig. 3).

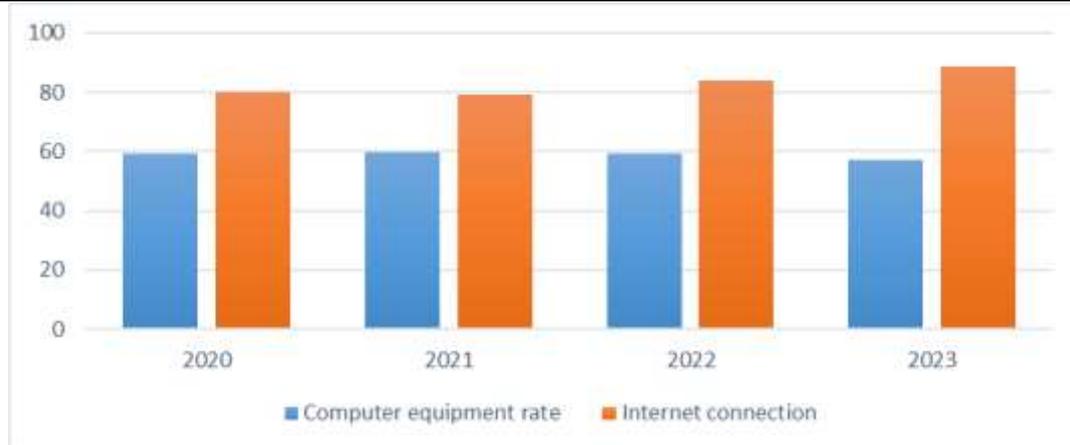


Fig. 3: Access to Internet by the population of the Republic of Moldova

With regard to financial education, we note that current initiatives focus mainly on promoting general financial literacy within educational institutions, but pay limited attention to the development of digital financial literacy skills. Courses are geared towards the younger generation and there are very few opportunities for the development of financial and digital skills for adults in the Republic of Moldova. Although several public institutions and financial market actors are active in this area, the lack of a coherent national strategy and a formal coordination mechanism leads to gaps and overlaps.

Statistical data analyzed at national level show that the financial situation of the elderly is quite complicated, oscillating around the absolute poverty line and the subsistence minimum (see Fig. 4). We can see that the minimum pension is only 16 Euros higher than the subsistence minimum, and the average pension, at the country level, exceeds this subsistence minimum by only 50 Euros. These observations indicate that pensioners in the Republic of Moldova have extremely low pension incomes, which limits their ability to access financial services.



Fig. 4. Overview of pensioner population income by 2024

The estimated logistic regression model allowed us to understand which sociodemographic characteristics influence the likelihood of financial inclusion of older people. Based on the analysis, we find that the most important factors determining a person's familiarity with the financial system and the use of financial services are:

Determining factors

1. *Education.* People with higher education are 10 times more likely to be financially integrated compared to those with no education or primary education. The level of secondary education has a positive effect, but not statistically significant, which means that only advanced education matters decisively.
2. *Incomes.* People with higher incomes (equivalent to approximately 400 euros/month and above) are 4.3 times more likely to be financially integrated than those with lower incomes.

Factors with potential influence, but not statistically significant

1. *Age.* Older people (75+, 80+) tend to be less financially included, but the differences are not

large enough to be statistically significant.

2. *Economic status.* Those who are economically active have a higher probability of integration, but even this result is not strong enough to be taken into account.
3. *Gender and residential environment.* It doesn't matter if the person is male or female, urban or rural – these variables do not significantly influence financial inclusion when analyzed alongside other factors.

The correlation between financial inclusion, education and income was a premise, within the framework of this study, for the analysis of objective data, based on official statistics of the National Bureau of Statistics. Thus, over the last five years, it is observed that with the increase in the level of education, income also increases. People with higher education consistently have the highest incomes (see Fig. 5).

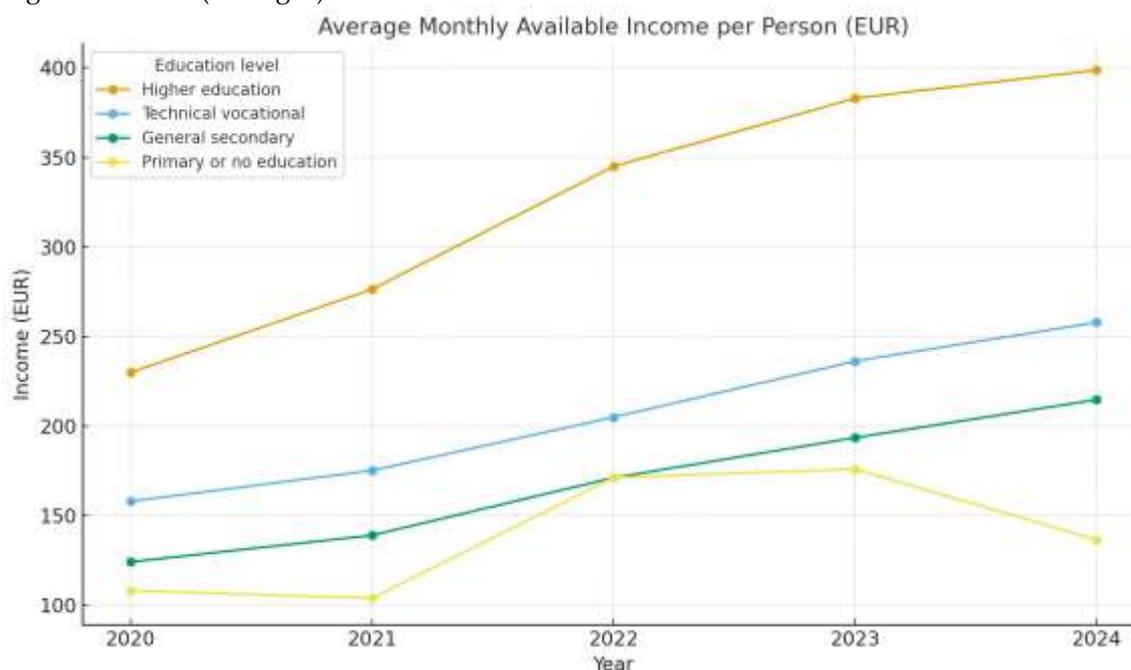


Fig. 5. Average monthly disposable income per person, by level of education (2020–2024)

Starting from the observation that education and income are the main determinants of financial inclusion, we believe that public policies aimed at increasing it should focus on improving the level of financial education and supporting low-income groups through financial support measures. In this regard, we come up with the following recommendations for governments, financial and educational institutions:

1. Developing a National Financial Inclusion Strategy that aims to facilitate access, use and quality of financial services for citizens and households from diverse social backgrounds, with an emphasis on vulnerable groups or those excluded from the financial system.
2. Establishing educational programs aimed at vulnerable groups that contribute to increasing their digital and financial skills.
3. Creating special financial products for seniors, with preferential conditions, adapted to the needs of the elderly, such as: savings products with preferential interest rates; credit lines with subsidized interest rates and simplified procedures; mobile banking applications with visually and functionally adapted interface.
4. Development of financial support programs for vulnerable groups, aimed at contributing either to increasing income levels (for example, through pension indexation) or to reducing expenses incurred by these groups (such as granting exemptions from paying utility bills).

The implementation of the proposed measures can significantly contribute to increasing the

degree of financial inclusion, which will indirectly lead to an improvement in the standard of living and well-being of vulnerable social groups, especially the elderly in the Republic of Moldova.

V. Conclusion

Financial inclusion is low in the Republic of Moldova and poses a challenge for vulnerable groups, especially the elderly. Even though there is an increase in the number of payment cards and internet access, older people continue to face difficulties in using financial services.

The research highlighted a number of obstacles that older people face in accessing financial services. The main barriers reported by respondents are low income and limited financial literacy. These two factors were also confirmed by the logistic regression model estimated in the study, as essential determinants of the level of financial inclusion. Thus, people with higher education have significantly higher chances of being financially included, as do those with incomes above the average level.

There are barriers related to the offer of financial services, including the lack of products adapted to the specific needs of older people. In addition, the low level of financial and digital literacy limits their ability to access and effectively use available financial products. To reduce these vulnerabilities, the active involvement of financial institutions is recommended, along with public policies supported by longitudinal research. Integrated measures are needed such as: a national financial inclusion strategy, the creation of banking products adapted to the elderly, accessible financial and digital education, as well as direct financial support for vulnerable categories (pensions indexation, tax exemptions, etc.).

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CONFLICT OF INTEREST.

The authors declare that they have no conflict of interest.

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