

# **Microfinance: Methods, Models and its Impact on Economic Development**

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*Abstract:* - The main purpose of the academic paper is to analyze the dynamics of microfinance services and assess their impact on the entrepreneurial activity of small and medium-sized enterprises and the consequences for the population. Methods of generalization, analysis, comparison, correlation and regression analysis have been used in order to achieve the purpose outlined. The academic paper considers the impact of microfinance services on the performance of small and medium-sized enterprises in the form of net profit. The results have showed that the impact of the cost of microfinance services on the development of financial activities of small and medium-sized businesses have a positive result, and, when using the proposed regression equation, the company will receive positive results in 2020-2024. The conducted correlation analysis of the impact of microfinance services on the level of the average salary of the population of Ukraine has revealed a high level of dependence of citizens on loans obtained. This is confirmed by the high correlation coefficient.

*Key-Words:* - Microfinance, Financial Services, Microcredit, Microinsurance, Microdeposits

Received: April 22, 2021. Revised: October 17, 2021. Accepted: November 1, 2021.

## **1 Introduction**

The main purpose of microfinance is to improve the financial situation of the population and increase the economic development of a country or a region. Consumers of microfinance services are citizens with low-income, retirees, students, people who have fallen on hard times, as well as people who

plan to start their own business. However, with the development of market relations, the need for financial services arises among farmers, entrepreneurs of small and medium-sized businesses. The relative share of 85% among microfinance services belongs to micro crediting. In the structure of financial services, the basic ones are credit, microinsurance and microdeposits. However,

despite the positive aspects of microfinance, the question remains open whether microfinance services are really effective in improving the lives of the population.

The positive impact of microfinance services is manifested not only in the profits of microfinance institutions, but also in the establishment of financial well-being of citizens. For an individual or small business, access to financial services makes it possible to receive loans, make timely payments, save and insure risks. In general, micro-organizations set a full interest rate of 0-2%, however, this is the cost for one day of use without additional fees and charges. Herewith, the annual rate can reach several hundred percent. This situation leads to the deterioration of the financial condition of citizens and the bankruptcy of small and medium-sized businesses.

## 2 Literature Review

Numerous scientific achievements of scientists have been devoted to determining the impact of microfinance on the country's economy. Scientists, such as: Morduch [1], Milgram and Lynne [2], Mosley [3], Vergun and Matvienko [4] describe the popularity of microfinance services and their positive impact on economic development. However, the works of Sodoma et al. [5], Shiriyan [6], Gritsenko [7], Kravchenko [8], Krasnomovets [9] have revealed the negative consequences of the introduction of financial services. Some relevant studies can be found in [10] and [11]. Despite the significant scientific achievements of scientists, the issue remains debatable and requires further research.

Verhun and Matvienko agree with this statement, arguing in their investigations that "microfinance means the creation of stable local financial institutions [4]. Building financial systems for the poor involves creating strong local financial intermediaries that can provide financial services to the poor on a long-term basis". Volha divides microfinance models into two stages, namely: first, depending on the type of countries and their economic level (advanced countries; developing countries; countries with economies in transition); secondly, author argue that the national economy of each country is characterized by a separate model of microfinance ("Hungarian", "Polish", "Bolivian", etc.), with its inherent features and microcredit organizations [12]. Tadjibaeva et al. consider it appropriate to divide microfinance models into the following types: a "rural model", an educational model, a credit model [13].

However, Abrar [14] argues that in order to determine the state of microfinance services it is necessary to use a correlation matrix that examines the degree and direction of the interrelationship between variables, namely the impact of financial and social performance of microfinance institutions on loan interest rates. Return on Equity (ROE), Return on Assets (ROA) and Success Rate (OSS) indicators have been used to analyze financial indicators. This technique has positive consequences for consumers of microfinance services; microfinance organizations have the opportunity to reduce their costs by reducing the lending rate from 5-10%.

Some authors emphasize that the basic problem of the functioning of microfinance organizations is the high-risk factor for non-repayment of loans by consumers. Therefore, scientists propose an approach to the formation of reserves of microfinance institutions. However, they suggest that it is necessary to divide the microfinance organizations into two groups in order to improve their functioning, namely: "banking" ones (microfinance banks and companies) and "non-banking" (private microfinance institutions) [10; 11].

## 3 Methods

To study the impact of microfinance on economic development, the study analyzed the subsistence level, the dynamics of average and minimum wages of the population of Ukraine, microfinance services of the population of Ukraine.

To study the relationship between microfinance and wages of the population of Ukraine, as well as microfinance and financial performance of Ukrainian enterprises in the study used the method of correlation and regression analysis. Interpretation of indicators was carried out using the Chaddock scale. Information data for the study were obtained from official websites, namely: official materials of the National Bank of Ukraine [15; 16], State Statistics of Ukraine, the Pension Fund of Ukraine, the Ministry of Finance of Ukraine [17], the Ministry of Social Policy of Ukraine [18].

Forecasting of indicators of financial results and microfinance of the enterprises of Ukraine is carried out by means of functions "forecast" of the statistical analysis. This function is a linear regression that allows you to estimate the degree of dependence between variables, offering a mechanism for calculating the estimated value of a variable from several already calculated values. That is, based on a statistical sample of certain

values of the function  $F(x)$  and arguments  $x$ , you can predict the behavior of the function by substituting new values of arguments.

#### 4 Results

Microfinance is a system of financial support for individuals and businesses in case of adverse situations or deteriorating living conditions. The process of microfinance can be implemented through methods (see Fig. 1), which are divided into microcredit, microinsurance and microdeposits.

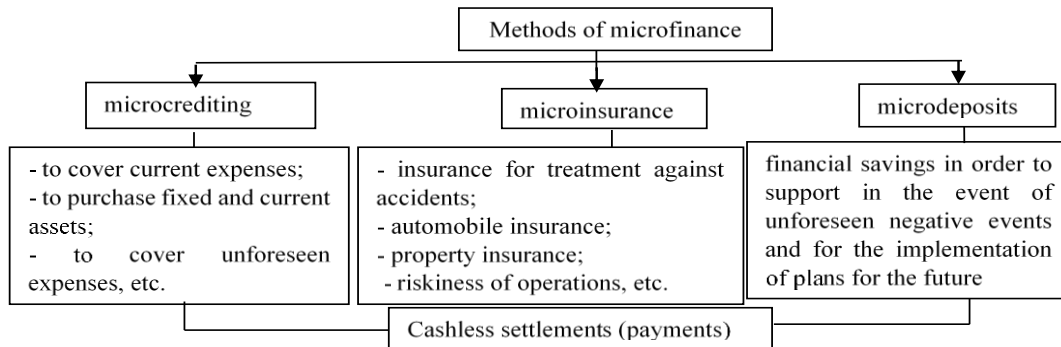


Fig. 1. Methods of microfinance

Each of the methods outlined has a list of financial services in its structure, which is constantly updated and expanded. Thus, taking into account the volume of microfinance level in Ukraine, the structure of microfinance services is distributed as follows: the leading place belongs to microcredits – 80% (or 4,10250.00 million UAH), microdeposits – 12% (or 311,05 million UAH), microinsurance – 8% (or 21,2 million UAH) in

2020. The full range of microfinance services can be obtained through: informal financial organizations (creditors, pawnshops, savings and credit unions); member organizations (credit and savings association); non-governmental organizations (specialized institutions), formal financial institutions (commercial banks, state banks, non-bank financial institutions).

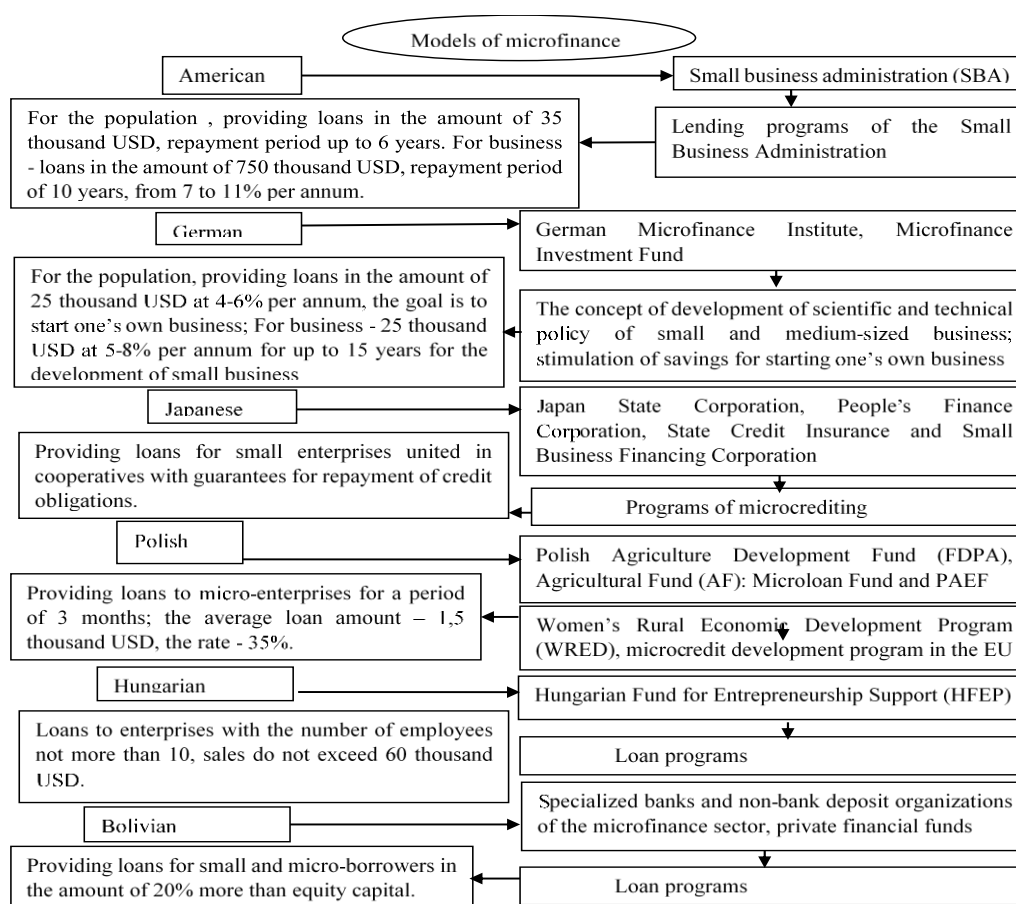


Fig. 2. Models of microfinance

In countries where the models shown in Figure 2 are used, the process of microfinance is carried out through the creation of a credit system in order to increase the level of profitability and sustainability of small and medium-sized enterprises, which in turn will increase the number of jobs, improve productivity. The creation of microfinance models aims to provide financial support to the economically active population in the form of loans for entrepreneurial activities, which in turn will contribute to the creation of local markets and increase incomes. These models are developed for the long-term perspective in the expectation of a positive result from the business activity of borrowers who have special professional education and practical experience for running a small business.

In order to create a "Ukrainian" model, the basic objective is to regulate the financial sector, balance the financial support of microfinance structures and improve legislation and regulations in this financial area as well as promote the development of microfinance institutions.

Programs providing microfinance services are as follows: 1) for microcredits – the amount that can

be obtained up to 3 000 UAH for new customers, 10 000-15 000 UAH for regular borrowers for up to 1 year; the interest rate depends on the conditions of the microcredit institution that provides this service; 2) for microinsurance – the sum insured ranges from 0,1 to 3%; the term of the contract is 1 year; 3) microdeposits – the amount that can be deposited into the account is from 500 UAH for up to 18 months.

Ukrainian companies providing microfinance services are popular not only with the population, but also with entrepreneurs. In the "Ukrainian" model, the following organizations are entitled to provide microfinance services, namely: specialized institutions dealing exclusively with crediting. They, in turn, are funded by external sources; credit unions. They are formed to provide financial services to their members. The sources of funds are directly the contributions of members. As a rule, such structures have no external revenues; credit agricultural cooperatives. They deal mainly with farms and enterprises engaged in agricultural production, processing and marketing of manufactured products, purchase of equipment, new technologies, construction and reconstruction of

production facilities, etc.; funds of supporting small businesses. Such associations provide services

without a bank license.

Table 1: Dynamics of the average wage and microfinance services for the population of Ukraine, million UAH

Indicator	Year					Average value	Growth rates from 2015 till 2019, %
	2015	2016	2017	2018	2019		
Average wage, UAH	3661,41	4482,35	6273,45	7841,88	9205,19	6292,86	251,41
Microcredit	89,56	91,5	87,95	98,50	101,23	93,75	113,03
Microinsurance	13,89	11,32	10,58	12,5,	16,3	322,95	117,35
Microdeposits	141,58	132,12	125,68	140,00	151,26	3453,20	106,84

Analyzing the data in Table 1, it should be noted that the growth rates of microcredit, microinsurance

and savings on deposit accounts increased by 13,03%, 17,35% and 6,84% respectively.

Table 2: Correlation matrix of average wages and microfinance services for the population of Ukraine

	Average wage	Microcredit	Microinsurance	Microdeposits
Average wage	1			
Microcredit	0,832067	1		
Microinsurance	0,460069	0,691114	1	
Microdeposits	0,483094	0,789322	0,970421	1

According to the Chaddock's scale, the interrelationship between microcredit and the size of the average wage is strong, forasmuch as the correlation coefficient is 0,832. The impact of microinsurance and microdeposits on the size of the average wage of the population can be considered moderate according to the correlation coefficients of 0,46 and 0,48. This analysis is a confirmation that microcredits are the most popular among the population. The analysis of dynamics shows that the growth rate of profits of Ukrainian enterprises for the period 2015-2019 was 17,63 times (or 494 073.28 million UAH); growth rates of microcredit

are 122,62%, microinsurance – 120,0%, respectively.

Using the regression equation will reveal the dependence between the studied values:

$$Y = 106545.966 + 0.804X_1 - 2.673X_2 - 5.225X_3$$

where: Y – received profits (losses) of enterprises, million UAH; X1- microcredit, million UAH; X2 – microinsurance, million UAH; X3 – microdeposits, million UAH. The calculated data of the regression equation and the results of regression statistics of the dependence of net profit on factors are presented in Table 3.

Table 3: Dependence of net profit (loss) and microfinance services of Ukrainian enterprises

	Coefficients	Standard error	t-statistics	P-Value	Bottom 95%	Top 95%	Bottom 95,0%	Top 95,0%
Y	10645,966	1706.023	6,240	0,101	-1,107	323,230	-1,107	3232,304
X1	0,804	1,279	-2,191	0,272	-19,063	13,454	-19,062	13,454
X2	-2,673	265.882	-4,766	0,131	-4645,711	211,007	-464,571	211,007
X3	-5,225	655.432	-7,972	0,079	-135,529	310,250	-135,529	3102,120
Regression statistics								
Multiple regression coefficient R						0,99803		
Coefficient of determination $R^2$						0,99606		
Standardized coefficient of determination $R^2$						0,98425		
Standard error						0,41805		
Observation						5		

The obtained indicators characterize the possibility of using this model for forecasting profits by enterprises when using microfinance services. The coefficient of multiple correlation R, which is 0,99803, indicates the quality of the obtained model and its high correlation. The coefficient of

determination  $R^2$  is 0,99606, which characterizes the correspondence between the original data and the regression model, because its value is as close as possible to one point. The standard regression error (0,41805) shows the approximate value of the prediction. The dispersion analysis of the

dependence of net profit (loss) on microfinance services of Ukrainian enterprises has confirmed the sufficient regularity of variables. In particular, F significance is 0,079829, and the variance and F-statistics, which are characterized by a high value, reflect the variation of the dependent and

independent variables, which is evidence of the significance of the regression equation. In order to confirm the validity of the model, Table 4 reflects the calculation of net profit (loss) from microfinance services of Ukrainian enterprises according to the regression equation data.

Table 4: Calculation of net profit (loss) from microfinance services of Ukrainian enterprises, million UAH

Year	Y (actual)	(X1)	(X2)	(X3)	Total	Y (calculated by the regression equation)
2015	-373516,00	248754,00	1,50	161,23	248916,73	209797,75
2016	29705,00	301449,00	1,30	154,89	301605,19	252030,72
2017	168753,00	315448,00	1,30	152,60	315601,90	261495,50
2018	288305,00	350986,00	1,60	140,50	351128,10	292100,32
2019	523779,00	305017,00	1,80	133,70	305152,50	555176,24

Continuation of regression analysis is the forecasting of indicators for the future period by using the functions “forecast” of statistical analysis. This function is a linear regression that allows assessing the degree of dependence between variables, offering a mechanism for calculating the estimated value of a variable from several already calculated values. That is, based on a statistical sample of determined values of the function F (x) and arguments x, one can predict the behavior of the function by substituting new values of arguments (see Fig. 3).

The result of the forecast analysis proves that the net profit of small and medium enterprises tends to increase. The conducted regression analysis has shown that with an increase in net profit by 1 million UAH, the entrepreneur is obliged to increase the use of microloans by 0,804 million UAH, to reduce the attraction of microinsurance services in the amount of 2,673 million UAH and to reduce the volume of microdeposits by 5,225 million UAH. Correlation analysis of the dependence on microfinance services has shown that the closest interrelationship is established between the average wage and microcredit (0,832067).

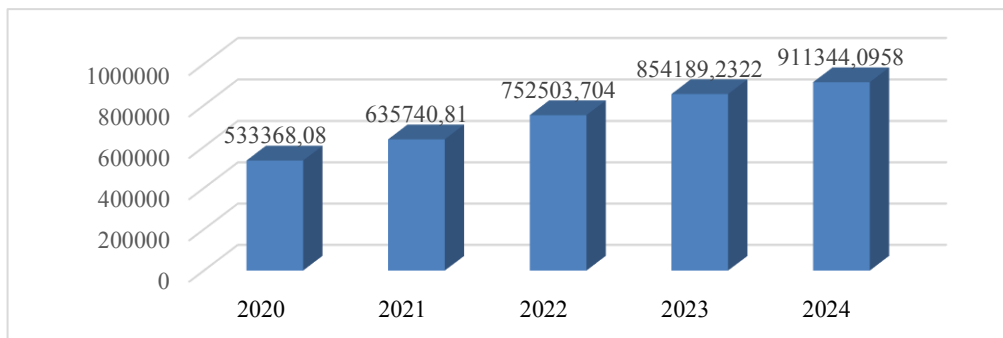


Fig. 3. Forecast data of net profit (loss) of small and medium-sized enterprises based on the use of the regression equation for 2020-2024, million UAH.

Obtaining microcredit for the population is a way out of a difficult situation. The regression analysis has shown that when using the regression equation, small and medium-sized businesses are able to reduce losses and improve the level of net profit. Forecast data show that the growth rate of net profit will increase by 164,15% (or 356,167.86 million UAH) compared to 2024 with 2020.

## 5 Discussion

Microfinance instruments, in particular microcredit, play a key role in the implementation of the European strategies to support entrepreneurship, employment, social and financial inclusion [19; 20]. The results of survey [21] reflect a steady growth of the microfinance sector over the past two years. Total growth remained high in terms of portfolio size and new customers, while the sector’s social mission and organizational characteristics remained largely unchanged. Authors observe some differences between Western and Eastern Europe,

but there are more similarities than differences in general.

Volha [12] argues that the use of microfinance models involves the implementation of services through a list of microfinance organizations, the purpose of which is to improve the living standards of the population and obtain income. In our research, a correlation and regression analysis has been carried out in order to identify the interrelationship of dependence between microfinance and its impact on the financial activities of enterprises. Obtained results have confirmed the positive impact of microfinance services on the enterprises' net income. However, the correlation analysis of the dependence of the received average wage on microfinance financial services has shown the demand only for microcredits. The required development will aspire to strengthening of the formal segment into the micro financial industry. That means to minimize the groups 'destination' and 'extreme poor' and so to strengthen the functioning of the 'Business model' [22; 23]. Abrar has suggested using the panel data estimation method and the Hausman test for microfinance analysis [14]. The obtained results show that all indicators of financial results have a significant positive attitude towards the loan interest rate. It has been established that the smaller the size of the loan is, the higher the interest rates are, which are charged by microfinance institutions. Tadjibaeva et al. propose to use the "MIX" model in order to assess microfinance, which includes a comparative and trend analysis of indicators of microfinance institutions. This model evaluates long-term prospects, sustainability, quality of management, corporate governance. The aggregate estimate is an assessment of the long-term stability and solvency of a microfinance organization through a comprehensive assessment of risks, activities, reputation, and market position [13].

The COVID-19 pandemic has hit at a time when microfinance is at its historical peak, with an estimated 139 million microfinance customers globally. Some researchers suggest that as a result of the health and economic impacts associated with COVID-19, credit-taking is likely to escalate further in terms of the number of borrowers and loan amounts. Furthermore, to reverse the reliance of so many households on the microfinance industry for survival, inclusive socio-economic policies and public welfare services must be prioritized [24].

## 6 Conclusions

The results of the research have showed a positive impact on improving the financial situation of both enterprises and population. It has been proven that for small and medium-sized businesses, the involvement of microfinance services in financial activities has a positive result in the form of an increase in net profit. This is confirmed by the correlation-regression analysis, which has showed the density of the interrelationship between the variables, which is evidence of the dependence of the analyzed indicators from each other. Along with this, a regression equation has been formed, compliance with which will provide a net profit, which has been projected for the period of 2020-2024. The conducted correlation analysis of the impact of microfinance services on the size of the average wage has showed a close connection only with microcredit services. This is evidence that microloans are most in demand among the population. This is confirmed by the illustrated structure of microfinance services in Ukraine.

However, the question remains debatable whether the main function of microfinance is improving the living standards of the population, forasmuch as microfinance institutions provide services for low-income segments of the population, giving a small amount of loans, while requiring a high interest rate to cover the cost of the service, associated with a loan. The issue of improving the living standards of the population through the use of microfinance services needs further research.

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