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ECONOMY

ASSESSMENT OF THE INDICATORS INFLUENCING THE DEVELOPMENT OF SMALL BUSINESSES

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ABSTRACT

The article analyzes the role of small and medium-sized businesses in the economic development of the country and assesses the factors affecting to the growth of small business income through the use of the Eviews software package. The study showed that the amount of capital investment plays a significant role in the development of small businesses.

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Introduction. The number of small and medium-sized businesses affects the economic development of the country, growth of gross domestic product (GDP), unemployment, and economic growth. Basically, state support will be provided to small and medium enterprises in the economies of all developed and developing countries, and entrepreneurial support funds will be established. Takes measures to increase the number of SMB in strategic areas for the country, such as subsidies, low-level loans, full or partial exemption from taxes, and so on [7].

Small and Medium Enterprises (SMEs) play a major role in their economies, especially in developing countries. Formal SMEs, that is, 60% of the total officially registered employment and 40% of national income in developing countries. These figures are significantly higher when informal SMEs are included. In the emerging markets, 4 out of every 5 jobs are created by SMEs. Note that the main limitation for the development of small and medium-sized businesses is that they are difficult to access [7].

According to a World Bank study, 365-445 million SMEs operate in emerging markets, 30-40 million of which are SMEs; 285-345 million are unofficial businesses. Entry of informal SMEs into the formal sector has important advantages for the SME sector (for example, better access to credit and public services can be many benefits provided by the state) and the overall economy (eg higher tax revenues, better regulation) may have [7]. It is also important for SMEs to benefit from financial opportunities and to find solutions for capital sources, and to develop and employ this potentially dynamic sector. The experience of developed countries shows that the role of SMEs in the economy has increased in recent years. The number of SMEs in both categories, both in developed and developing countries, is higher than in other businesses. According to the World Bank, Small and Medium Enterprises are more likely to be employed than developing countries.

During the last global economic crisis since 2008, SMEs are more responsive to crisis problems than large corporations. Therefore, many developed countries have begun to implement

several non-financial, financial incentives and support mechanisms to further increase the share of SMEs in their economies.

In each economy, there is a government body that supports the activities of Small and Medium Enterprises in each country, thanks to the increased government support for SMEs. Such entities can provide low-quality concessional loans to businesses. In addition to financial support, these agencies can also provide non-financial support to businesses, such as advisory support. Different countries are provided with direct or indirect support to businesses under different agencies.

Entrepreneurship Support Fund (SFF) in the Republic of Azerbaijan, Small Business Administration (SBA) in the United States - Small and Medium Industry Development and Support Office in Turkey (KOSGEB) Small and Medium Industry Development and Support Office in the European Union of Craft, Small and Medium-Sized Enterprises - Supporting SMEs, such as the European Union of Craftsmen, Small and Medium Enterprises, is an example. Almost all countries and countries have such organizations.

The main activity of the Fund is to provide preferential loans to business entities in cooperation with authorized credit institutions. Within this framework, Pasha Bank provides financial assistance to SMEs in cooperation with banks, Communication Bank and others.

In Europe, UEAPME represents small and medium-sized businesses in the member countries of the European Union. The organization consists of 80 organizations (confederations, unions, etc.) representing various SMEs in 34 countries. The organization represents 12 million businesses that employ 55 million employees [3]

Small and Medium-Sized Industrial Development and Support Department in Turkey was established in 1990 under the Ministry of Industry and Trade. One of the main activities is to provide low-interest or low-interest loans to those wishing to become entrepreneurs. Only the following persons can benefit from KOSGEB's support:

- Individuals who have passed courses related to the institution;
- Individuals who have graduated from the Young Entrepreneurship Development Program within universities
- Individual Entrepreneurs in Business Incubators for 1 year.

The organization provides loans up to 50,000 TL at 0% interest rate.

The main activities of the aforementioned bodies are to increase economic activity in the country, reduce the existing unemployment rate and achieve economic development in the country.

Main part. The classification of SMEs depends on the size of the market (population), development level, prices, and so on. Different countries have different types of classification of small and medium-sized businesses. Different classifications occur under the influence of factors that can affect the country's economic development, its classification, and so on. In the countries like Azerbaijan, Turkey, the US, the European Union, Brazil, Russia and Georgia, they are becoming more and more popular.

The distribution criteria of Micro, Small, Medium and Large Entrepreneurs, as approved by the Decree of the Cabinet of Ministers of the Republic of Azerbaijan No. 556 dated December 21, 2018, are as follows.

Table 1. Criteria for Micro, Livestock, Microbiological and Critical Preferences in the Republic of Azerbaijan

| Categories by size of business entities | Average list of employees (person) | Annual income (AI) (thousand manats) |
|---|------------------------------------|--------------------------------------|
| Micro Entrepreneur | 1 – 10 | $AI \leq 200$ |
| Small Entrepreneur | 11 – 50 | $200 < AI \leq 3\,000$ |
| Small Entrepreneur | 51 – 250 | $3\,000 < AI \leq 30\,000$ |
| Large entrepreneur | Large entrepreneur 251 and over | $30\,000 < AI$ |

Source: Source: cool My knowledge [1], The author.

It should be noted that small business is included in the criteria of small entrepreneurship by Decree No. 556 of the Cabinet of Ministers of the Republic of Azerbaijan dated December 21, 2018, with an average annual income of 200,000 manat in the Republic of Azerbaijan, with an average business income of 200,000 manat. The number of employees is 25 to 125 employees, and large business entities are enterprises with an annual income of 125,000 manats and above, with employees of 125 and above.

It should be noted that small business is included in the criteria for small entrepreneurship by Decree No. 556 of the Cabinet of Ministers of the Republic of Azerbaijan December 21, 2018, with an average annual income of 200,000 manat in the Republic of Azerbaijan, with an average business income of 200,000 manat [1]. The number of employees is between 25 and 125 employees, and large business entities have annual income of 125,000 manats and above, with employees of 125 and above.

Table 2. Dynamics of turnover and impact of small business entities in the Republic of Azerbaijan

| Years | Turnovers, mln. manat | Fixed capital investments, mln. manat | Labor productivity, manat | Value added, mln. manat | Inflation in% |
|-------|-----------------------|---------------------------------------|---------------------------|-------------------------|---------------|
| 2007 | 1653,5 | 289,4 | 17953 | 449,2 | 16,6 |
| 2008 | 2475,7 | 371,2 | 23983 | 718,7 | 20,8 |
| 2009 | 2910,1 | 289,3 | 27480 | 844,8 | 1,6 |
| 2010 | 3835,5 | 276,3 | 48985 | 1120 | 5,7 |
| 2011 | 4208,5 | 737,6 | 46657 | 1227 | 7,9 |
| 2012 | 5100,6 | 531,6 | 53405 | 1346,5 | 1 |
| 2013 | 6072,6 | 486,5 | 55712 | 1466,2 | 2,4 |
| 2014 | 5951,7 | 746,5 | 51754 | 1437 | 1,4 |
| 2015 | 5986,3 | 807,2 | 68337 | 1987,8 | 4 |
| 2016 | 4666,1 | 1828,6 | 46245 | 2928 | 12,4 |
| 2017 | 4884,7 | 2064,8 | 47936 | 3051,9 | 13 |
| 2018 | 9364,9 | 3878,2 | 84066 | 5703,3 | 2,3 |

Source: State Statistics Committee of the Republic of Azerbaijan [6].

Table 2 summarizes the regression dependence of the mathematical software packages from E-views, Mat Lab, MS Excel, Math Cad and others among the factors affecting the turnover of small entrepreneurship institutions in the Republic of Azerbaijan between 2007-2018 [6]. For this purpose, we will use the E-views software package according to Table 2 data.

Table 3.

| | | | | |
|----------------------------|-------------|-----------------------|-------------|----------|
| Dependent Variable: Y | | | | |
| Method: Least Squares | | | | |
| Date: 29/12/19 Time: 12:15 | | | | |
| Sample: 2007 2018 | | | | |
| Included observations: 12 | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| X4 | 1,276323 | 1,504187 | 0,848513 | 0,4242 |
| X3 | 0,082198 | 0,025864 | 3,178039 | 0,0155 |
| X2 | -0,620107 | 1,272202 | -0,487427 | 0,6408 |
| X1 | -53,38153 | 37,73062 | -1,414806 | 0,2000 |
| C | 1076,258 | 925,0261 | 1,163499 | 0,2827 |
| R-squared | 0.975999 | Mean dependent var | | 4243.833 |
| Adjusted R-squared | 0.952575 | S.D. dependent var | | 1651.302 |
| S.E. of regression | 357.7934 | Akaike info criterion | | 14.83251 |
| Sum squared resid | 384048.3 | Schwarz criterion | | 14.96399 |
| Log likelihood | -60.74629 | Hannan-Quinn criter. | | 14.54877 |
| F-statistic | 33.48069 | Durbin-Watson stat | | 2.094414 |
| Prob(F-statistic) | 0.007806 | | | |

Source: The authors prepared the information using the EViews application software.

Based on the results of the Eviews application software package, the regression equation will be as follows:

Estimation Command:

=====

LS Y X4 X3 X2 X1 C

Estimation Equation:

=====

$Y = C(1)*X4 + C(2)*X3 + C(3)*X2 + C(4)*X1 + C(5)$

Substituted Coefficients:

=====

$$Y = -53,38153069112 * X4 - 0,62010672504 * X3 + 0,08219841602 * X2 + 1,27632251311 * X1 + 1076,25849103 \quad (1)$$

Analyzes the correlation dependence between the free variable and the dependent variable in the model (1) and removes the weak correlation dependence factors from the research object and creates a new regression equation. To this end, if we fit the correlation matrix in the MS Excel Application Software package based on Table 1, we have the following table:

Table 4. Correlation matrix

| | X1 | X2 | X3 | X4 | Y |
|----|----------|----------|----------|----------|---|
| X1 | 1 | | | | |
| X2 | 0,652152 | 1 | | | |
| X3 | 0,984143 | 0,757166 | 1 | | |
| X4 | -0,08292 | -0,61719 | -0,20175 | 1 | |
| Y | 0,737786 | 0,956982 | 0,819172 | -0,60217 | 1 |

Source. The table was prepared by the authors using the MS EXCEL application software package.

As can be seen from the table, the variables Y and X1 and X5 have direct (0,7-0,9) on the Chedoke scale ($R_{yx_1} = 0,7378$, $R_{yx_3} = 0,8192$), Negative high feedback correlation between the Y and X4 variables ($R_{yx_4} = -0,60217$), Y and X2 have a very high direct relationship ($R_{yx_2} = 0,957$). Y and X1, X2, X3 and X4 have a high correlation relationship, so the relationship between the 1 contact equation remains. That is, no changes from the research object will be excluded. The regression equation will be as follows.

$$Y = -53,38 * X4 - 0,62 * X3 + 0,082 * X2 + 1,276 * X1 + 1076,26 \quad (2)$$

According to this relationship equation, we can conclude that the volume of small entrepreneurship issues in the Republic of Azerbaijan (X1), which represents the volume of investments for core capital, is increased by a unit of 1,276 units of volume of small entrepreneurship issues, a unit of the volume of annual labor productivity (X2) increase in the volume of small entrepreneurship issues by 0.082, increase in the volume of added value (X3) by a unit volume of small entrepreneurship issues by 0.62 units, in the volume of small entrepreneurship issues, (X4) an increase in interest rates leads to a decrease in the volume of small entrepreneurship issues by 53.4 units. As can be seen, one of the most important factors affecting the increase in the volume of small entrepreneurship issues is the increase of labor productivity and the nominal salary of employees.

The multiplicity correlation coefficient $R = 0.952$ shows that the relationship between the Y-dependent variable indicating the turnover of small entrepreneurial assets and the free variables (X1, X2, X3 and X4) that express the factors entering the model are quite high. The determinant coefficient $R^2 = 0.952$ means that the corresponding regression equation has 95.2% distribution results and 4.8% other factors. The high determinant coefficient indicates that the regression equation is better represented by the initial data and that the majority of the result factor (95.2%) depends on the modeling factor.

With the help of the F-Fisher criterion, it is possible to check the statistical significance of all regression equations. For this purpose, the F-Fisher criterion should be compared with the value of F-table (A; m; n-m-1) [3]. According to the Table 2 of the Eviews software package, **F-statistic = 33.48**. If we set the price of the F-table with the help of the $F_{table}(a; m; n - m - 1) = F$ формула in Excel, then.

$$F_{table}(a; m; n - m - 1) = F_{распоб}(0,05; 4; 7) = 6,09$$

The F-Fischer criterion $>F_{table}$ ($33.48 > 6.09$) occurs when comparing the $F_{table}(a; m; n-m-1)$ with the Fischer criteria. This means that the regression equation is a statistically significant character. This means the adequacy of the built model (2).

The Darbon-Watson statistics for the observations $m = 4$ and $n = 12$, with an explanatory variable from the $DW = 2.094414$ firewood to the significance level $\alpha = 0.05$, will be as follows (4).

$$d_l = 0.512, d_u = 2.177$$

Since $d_l = 0.512 < DW = 2,094414 < d_u = 2.17$, the residual autocorrelation is positive. This means that the regression equation is statistically significant in general and the model $Y = -53,38 * X_4 - 0.62 * X_3 + 0.082 * X_2 + 1,276 * X_1 + 1076,26$ is adequate.

Expression of Dependence Between Factors Affecting Small Business Development $Y = -53,38 * X_4 - 0.62 * X_3 + 0.082 * X_2 + 1,276 * X_1 + 1076.26$ What is the percentage change of the dependent variable as a result of the 1% change in the free variable? calculate the elasticity coefficient, which results in the following [4].

$$E_1 = \frac{\alpha_1 \times \bar{x}_1}{\bar{y}} = \frac{1,276 \times 1025,6}{4759,183} = 0,275, E_2 = \frac{\alpha_2 \times \bar{x}_2}{\bar{y}} = \frac{0,822 \times 47709,42}{4759,183} = 0,822$$

$$E_3 = \frac{\alpha_3 \times \bar{x}_3}{\bar{y}} = \frac{-0,62 \times 1856,7}{4759,183} = -0,242, E_4 = \frac{\alpha_4 \times \bar{x}_4}{\bar{y}} = \frac{-53,38 \times 7,425}{4759,183} = -0,0817$$

Based on these estimates of elasticity ratios, one can conclude that the 1% investment in fixed assets in small businesses in the Republic of Azerbaijan resulted in an increase in turnover of small businesses by 0.275%, a 1% increase in maize productivity by 0.82%. The incremental value added and incremental 1% reduced turnover by 0.242% and 0.0825% respectively.

Economic reforms in the Republic of Azerbaijan and an increase in investments in fixed assets for small businesses will also increase the turnover of business and services in this sector, according to forecasts. All of these can be seen in the figure below, which shows the forecasts of small businesses by 2025.

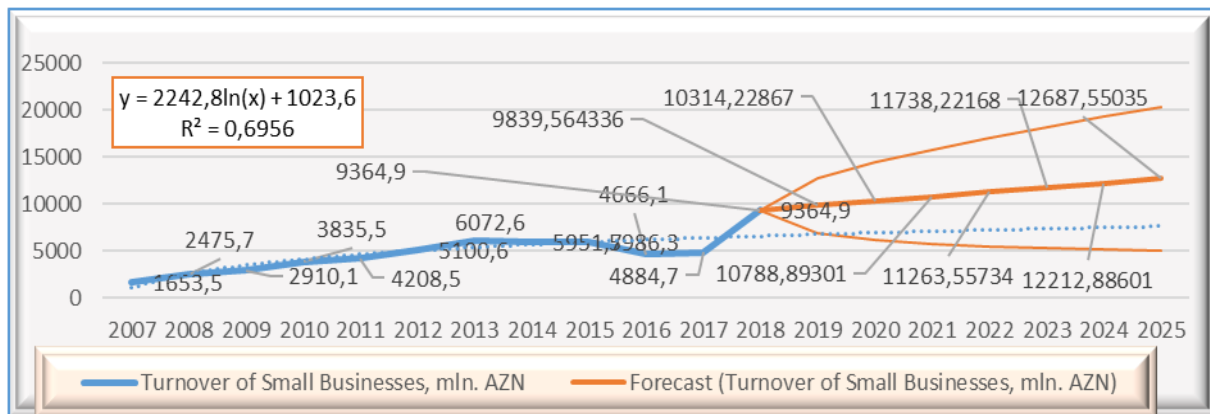


Fig. 1. Forecast prices on turnover of small business entities in the Republic of Azerbaijan till 2025.

Source: The authors prepared the information using the MS Excel software.

As can be seen from the figure, income from small businesses in the Republic of Azerbaijan will increase by 2025 according to forecasts.

Results. The study found that the turnover of small businesses in the Republic of Azerbaijan increased by 1%, increase in turnover of small businesses by 0.275%, annual labor productivity increase by 1%, and growth of small businesses by 0.82%. An increase of 1% will result in a reduction of turnover of small businesses by 0.242%, and a 1% increase in the volume of inflation in the country will result in a reduction of turnover of small businesses by 0.0825%. We also believe that the definition of criteria for small entrepreneurship should be based on turnover rather than the number of employees. Thus, the use of new innovative technologies may increase productivity, and these criteria may not be justified.

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DEVELOPMENT AND DISTRIBUTION OF INNOVATION FORMS OF SOCIAL CAPITAL ACCUMULATION IN UKRAINE

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ABSTRACT

In the article author defines the essence of social capital and basic theoretical approaches to its understanding. The possibility of diversification and dissemination of innovative forms of social capital accumulation in Ukraine have been proved. It is shown that new forms of manifestation and realization of social capital are emerging, which create new opportunities for socialization of economic relations and formation of new public institutions, which can reverse the development of the economy and the accumulation of social capital. It describes such new forms of social capital as: social entrepreneurship, social Internet networks, freelancing, sharing economy, digitization of economic entities interaction, crowdfunding, crowdsourcing, crowdsourcing, e-government, creation of "digital" communities, specially designed programs and projects, the task of which is to stimulate the activity of citizens and regulate their participation in solving local issues, the formation of corporate social capital, the creation of special social institutions at the global level.

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Introduction. With the development of socio-economic relations under the influence of internal and external factors is the development and formation new of social capital forms. This is an objective tendency of socialization of the economy, concerning the spread and diversification of various forms of social capital accumulation at each of the levels of management, and is an important factor of economic growth.

Social capital is nowadays regarded as an additional resource that provides for relations between people and allows for the reconciliation of socio-economic contradictions [5].

In explaining the essence of social capital, representatives of different social and behavioural sciences use the following basic approaches to study the essence of social capital:

1. Socio-anthropological (F. Fukuyama, 2004), according to which social capital means the natural desire of people for association and communication (benevolence, friendship, social relations), is the biological basis of the social order [14].

2. Sociological (J. Coleman, 2001; R. Rose, 2002), according to which social capital is the norms, networks and organizations through which individuals benefit. [11].

3. Economic-institutional (R. Putnam, 2000), whose representatives claim that individuals use social capital resources in their relationships to maximize individual utility [9].

4. Political science (Glaeser, 2001), according to which the treatment of social capital is defined as relations and norms that shape the quantity and quality of social interactions in society, and social unity is defined as the most important factor for economic prosperity and sustainable development [2].

In modern conditions, although the main components of social capital remain unchanged, their forms of manifestation and realization are emerging, which create new opportunities for socialization of economic relations and the formation of new public institutions that can reverse the economic development and accumulation of social capital.

Results of the research. The main areas of diversification and dissemination of innovative forms of social capital accumulation should be considered by the following criteria:

- 1) by types of social innovations at different levels of functioning of the economy;
- 2) by sources of formation and socio-economic consequences;
- 3) the possibility of influencing the development of economic relations and the improvement of public institutions.

Social innovations as a source of social capital have a focus on meeting certain social goals, needs, interests of different economic entities that have not been satisfied; changing the relationships between individuals and social groups and governance mechanisms; the search for more effective public institutions capable of promoting the sustainable development of society and the economy. They must ensure the communicative integrity of the social system, the growth of social capital as a resource of trust in society.

At different levels of economic relations functioning, social innovations have different forms, scales and influence on the formation of social capital. An important role in the formation of social capital at the nanoscale is the individual's social responsibility - for his or her well-being and the well-being of the family, for maintaining relationships with groups, partners, business, networks and more. Recently, the accumulation of social capital at the nanoscale is due to the development of social entrepreneurship. According to the survey "Best Experience and Modern Trends in the Development of Social Entrepreneurship: Ukraine", the following features of the development of social entrepreneurship in Ukraine appeared: the most common organizational form of social entrepreneurship is individuals (29.1%) and public organizations (25.4%); the most common type of social enterprise is SELI – "social enterprises of labour integration" (54.5%); by duration of operation, most social enterprises belong to groups of 1-3 years (38.2%) and 10 years and more (21.8%); the majority of enterprises have up to five employees (45.4%); The mission of most social enterprises is related to the social sphere: improving the quality of life of vulnerable populations, developing local communities and promoting healthy lifestyles; a third of enterprises have an environmental mission; most social enterprises have an annual financial turnover of up to UAH 500 000. (67.3%, 2015) [4].

Social entrepreneurship is not always properly perceived as social capital, though it is an effective form of accumulation. The study also identified the key difficulties that social enterprises face in the course of doing business: the indifference of society to the activities of social enterprises; limited information about social enterprises; difficulties in obtaining financing, high administrative costs and rent [12].

A relatively new social phenomenon that contributes to the accumulation of social capital has become social Internet networks. Networks can be professional in nature, and in this sense they are a source of economic capital for network members. Social networks are characterized by openness, which allows to expand the network of contacts, to receive additional information, to consult, to transfer / share approaches to solving professional tasks. Modern Internet technologies and the availability of social networks contribute to the spread of new forms of employment and professional communication, an increase in social contacts with colleagues, specialists-allies, which is a source of UK for individual professionals. The most common freelance professions are programmers; site designers, copywriters, specialists in the promotion, production, development and refinement of sites; translators; experts in 3D-modeling, etc. Setting up professional networks occurs through freelance exchanges (through which about 70% of freelancers find work), as well as through social networks (LinkedIn, Facebook, etc.). The most popular in Ukraine are the following freelance services: Upwork.com, Kabanchik.ua, Freelancehunt.com and Freelance.ua.

Ukraine is one of the leaders in freelancing. According to special studies, in 2013-2017, Ukraine ranked first in Europe and fourth in the world in terms of employment on digital platforms. While in 2011 the number of freelancers in Ukraine was approximately 9 thousand people, in 2016 it was already 60 thousand. In 2017, it was found that Ukrainian freelancers are relatively young and have a high level of education. According to the survey, 55% of respondents have a college degree and 2% have a PhD. 25% of respondents believe that working through digital platforms is their main

source of income. 33.8% of the respondents work for a Ukrainian customer, while others - wholly or partly for foreign clients [13].

The digitalization of society and the economy contributes to changing ways of communication between people. The digital society uses modern digital technologies for self-realization of personality, change of place of work, organization of rest, distance learning, and also for interaction with other citizens in the course of achievement of economic, social and public goals.

Modern digital technologies (Internet of things, robotics and cyber systems, artificial intelligence, big data, paperless technologies, 3D printing, cloud and fog computing, unmanned and mobile technologies, biometric, quantum technologies, identification technologies, blockchain, etc.) share their benefits by getting the information they need or by using available cloud services that allow you to migrate computing resources and data to remote Internet servers.

Digitalization has enabled small businesses and project teams to grow quickly and efficiently through start-ups, enabling them to quickly communicate and reach global levels. The rapid development of digital technologies is accompanied by innovations in social relations. If the years 2010-2020 were characterized by the proliferation of social networks and messengers, the next stage involves the construction of a so-called neuronet, that is, a network where communication between humans, animals and things will be based on the principles of neuro-communication, the use of artificial intelligence and the Comprehensive Internet of people, things, data, data etc.

A new phenomenon is the emergence of business models of sharing economy, which works on the basis of digital technologies (shared living, use of cars, offices, gadgets, even, cloud technologies). Sharing economics is based on the use of social networks and online sites as a means of communication. The main principles of its existence are: self-regulation (equal responsibility of all participants for all possible consequences); environmental friendliness of the solutions (keeping the activity safe and environment friendly); rationality (all participants have complete information, and their actions are aimed at maximizing the benefits to both parties); openness (total information openness and barrier-free transparency); "Evangelism" (understanding the benefits of goods or services by users of goods and services, but also realizing benefits for society that matter more than commercial profit) [15].

A significant influence on the socialization of economic relations and the formation of social capital is exercised by E-government - a model of public administration, based on the use of modern information and communication technologies, which allows to improve the interaction of citizens with state bodies. Today, 95% of all interactions with the state do not require the participation of people, the processes take place automatically, unnoticed by citizens, in particular through the electronic office, you can see all your income, expenses, bank account status, you can make a request to state bodies with an electronic signature and get prompt answer, form a tax return, sign contracts, vote, participate in referendums and more.

Modern digital technologies (Internet platforms) allow to form new tools of mutually beneficial interaction between private investors and developers of certain projects. An example is crowdfunding as an innovative tool that allows you to raise money for the implementation of digital economy ideas and projects through a large number of people. "For developers, the benefits of using this type of financing are the low cost of capital, access to a lot of information. For individual investors, it is more open and accessible to understand and use than other traditional financing options; the opportunity to invest small sums in absolutely any project, and therefore the small risks; access to a new product before its official launch; participation in the "community", the opportunity to exchange ideas, ideas, as well as being part of innovative projects; support for creative ideas and projects" [6, p. 147].

Another form of crowdsourcing is the method of online lending to individuals by other individuals or companies through specially created online resources. These are the so-called P2P loans. In 2016, the P2P lending segment accounted for almost 70% of the world market and is projected to decline to 54% by 2021, showing a nearly 16% decline in market share [3]. The most popular crowdfunding platforms in Ukraine are the Ukrainian Philanthropic Stock Exchange, "Commonwealth", Na-Starte, KUB and GoF, whose activities are mainly focused on humanitarian, social, environmental, cultural, educational projects. The first in Ukraine was established in 2011. The Ukrainian Charity Exchange is an independent nationwide social infrastructure for online charity. Over 7 years of existence of this stock exchange, UAH 159 million was raised. Only for charity. Community-Based was founded in 2012 and focuses primarily on innovative, cultural projects that are

not aimed at generating financial benefits. As of 01.03.2019, this platform has raised funds for the amount of UAH 20.2 million. [8].

If crowdfunding raises funds, then another form - crowdsourcing - allows a concerted effort to do a specific job. In 2019, the WikiInvestigation team unveiled a crowdsourcing investigation platform that allows them to jointly investigate corruption. Crowdfunding and crowdsourcing are networking methods that are based on a high level of trust, indifference, voluntariness, initiative of the participants, united for the common purpose. The development of such a network allows differently to form organizational structures, to distribute work and to increase its efficiency.

Networks establish a horizontal communication system, improve the degree of self-organization (in the absence of rigid organizational structures), and ensure the dominance of collective interest over the private.

Networking is the first, most dynamic mechanism for the accumulation of modern forms of social capital.

The second mechanism should be explained on the basis of the idea of increasing public trust. It should be based on the formation of new approaches to the structure of social organization, a certain social order.

The problem lies in the inefficiency of public institutions, their inability to unite society and direct it to achieve common goals on the principles of mutual trust, tolerance, and coherence of economic interests. Ukrainian society seeks to create new frames of social interaction, new types of social contacts. In particular, that is why voters of President V. Zelensky believe that his victory in the elections is connected with their desire for a radical renewal of power (69%). The main motives for voting for parties in the parliamentary elections were: new ideas and proposals (25%), leaders (29%), the desire to support the newly elected president (14%), the desire for renewal (11%). In carrying out the reforms, citizens rely on the newly elected President Vladimir Zelensky (66%), the newly elected Verkhovna Rada (43%) and the future government (35.5%). All other instances previously relied on by citizens for reform have significantly lost their value - NGOs, Western countries, the IMF, and the World Bank, scientists. In 2019, compared to 2017, Ukrainians became more satisfied with their level of personal freedom, their ability to influence their own lives and society. In particular, the level of satisfaction with public participation opportunities increased from 3.2 to 3.7 points (this aspect was satisfied by 32% in 2017, 44% in 2019, not satisfied - 22% in 2017, 13% in 2019), the ability to be independent - from 3.5 to 3.8 points (satisfied with 45% in 2017, 58% in 2019, not satisfied - 17% in 2017, 13% in 2019), the ability to influence what is happening with them - from 3.3 to 3.5 points (satisfied with 42% in 2017, 50% in 2019, not satisfied - 21% in 2017, 19% in 2019).¹

The emergence and spread of new forms of social capital are influenced by objective and subjective reasons. As social, economic, technological, political and other external conditions change, which significantly affect the internal state of economic entities, transformational changes in their behavior occur, and these changes lead to changes in relationships and the emergence of new forms of social capital. An example is the formation and accumulation of social capital of united territorial communities. Adoption of the Law of Ukraine "On Voluntary Association of Territorial Communities" (February 5, 2015), approval of the Methodology of formation of capable territorial communities (April 8, 2015), developed by the Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine, as well as Reform of Intergovernmental Budget Relations in the context of decentralization reform, it has provided local communities with current legal conditions and economic incentives to more efficiently fill their budgets, move to self-sufficiency and carefully plan their donations.

These changes have led to a strengthening of the revenue side of local budgets. The most significant result of fiscal decentralization was the increase in the share of local taxes and fees in local

¹ A nationwide public opinion poll was conducted by the Kyiv International Institute of Sociology at the request of the Ilko Kucheriv Democratic Initiatives Foundation from 8 to 20 August 2019. The survey was conducted in 103 settlements in all regions of Ukraine except the Autonomous Republic of Crimea. In the Donetsk and Luhansk regions, polls were conducted only in territories controlled by Ukraine. A total of 2040 respondents were interviewed, who by their characteristics represent the adult population of Ukraine (over 18 years). The sampling error does not exceed 2.3%.

budget revenues from 2.5% in 2012-2014 to 30% in 2018. For the first time in 2018, local budgets exceeded the state budget and accounted for 52% of Ukraine's consolidated budget.

Over 15% of GDP is redistributed through local budgets in Ukraine. The share of own revenues of local budgets (general fund) in GDP in 2018 amounted to 7.1% (in 2014 - 5.1%), in 2019 it is estimated 6.8%, and the own revenues of local budgets increased from 68.6 billion UAH in 2014 to UAH 234.1 billion. - in 2018, the forecast for 2019 - up to 267 billion UAH. New financial conditions have become an important factor in the dynamic formation of ATGs: as of 2015, 159 were formed in Ukraine; for 2016 - 366; for 2017 - 665; and as of March 2019, there were already 884 United Territorial Communities (CTGs). As of April 2019, the territory of the formed ATGs is more than a third (38.5%) of the total area of Ukraine. These communities are home to over 9.1 million people (25.7% of the total population of Ukraine). In general, nearly 70% of the population of the population is in the prosperous communities, such as OTGs and regional cities. The average number of territorial communities merged into one CAG is 4.6, and the average population of one CAG is 10 284 people [6]. Therefore, further successful implementation of local self-government reform leads to a willingness of citizens to act together in order to achieve positive goals and change in their lives.

According to sociological research, the processes of accumulation of social capital have ambiguous trends: the percentage of active Ukrainians is only 15% to 25%; most Ukrainians do not feel responsible for the situation in their community; NGOs are often encouraged by foreign donors, and these funds are often channeled to the needs of public officials; the interaction of non-governmental NGOs with the government decreases; there is competition between NGOs instead of constructive cooperation.

At the same time, new forms of interaction of NGOs are gradually emerging through social networks, implementation of joint projects and direct, informal communication of leaders and activists of NGOs. The peculiarity of NGOs is that their social capital is formed around the desire to provide assistance to a specific target audience (participants of the anti-terrorist operation (ATO), veterans, disabled people, children), often with the assistance of the media. This applies to such areas as: medical, psychological and social rehabilitation and adaptation of ATO participants and their families; solving problems of internally displaced persons, adapting them to local communities, providing assistance to socially disadvantaged, low-income groups; activities of advisory and advisory bodies, public councils; implementation of joint projects.

The development of social capital in communities should be facilitated by specially designed programs and projects aimed at stimulating citizens' activity and regulating their participation in solving local issues and shaping and implementing local policies, as well as creating conditions for communication between residents and community associations.

According to the results of special studies, the programs of 8 regions of Ukraine: Volyn, Dnipropetrovsk, Donetsk, Lugansk, Odesa (project), Sumy, Kharkiv, Kherson oblasts and Kyiv are fully provided for the conditions for the formation and development of social capital in communities. The objectives of the programs of 5 regions of Ukraine: Zhytomyr, Transcarpathian, Zaporizhia, Poltava and Rivne do not provide adequate conditions for the formation and development of social capital in communities. IC communities are formed as they participate in solving local problems. Forms of participation differ depending on the tasks: work in the composition of organizing committees, expert and working groups, advisory and advisory bodies at local executive bodies and local self-government bodies; participation in public hearings, holding community meetings, promoting activities of executive bodies, proposing projects and programs, etc. Such forms include public-private partnerships, formation of management mechanisms in ATG, ACMH, in public associations.

The development of social capital at the local level is facilitated by the creation of "digital" communities where the following are important: activity in social networks; launching investment sites for potential investors; clear definition of priorities and strategies for community development, etc. Even in such a framework, new forms of social capital do not automatically emerge. Their formation is influenced by such factors as: the desire of the community to guarantee safety and therefore to preserve the commonality of interests and actions; uncertainty and unpredictability of environmental changes; unequal desire for cohesion among representatives of different social groups, varying in income level, property scale, access to certain resources, etc.

At the enterprise level, social capital also does not automatically emerge. With skillful purposeful management, it develops as a corporate social capital, which can be characterized by such processes and

phenomena as: improving the image and reputation of the company, attracting new customers, increasing the competitiveness of the company and more. And the management measures aimed at accumulating the social capital of the enterprise should be the ones that will hinder the communication and teaming of employees for making collective decisions; delegation of authority, formation of corporate culture, definition of mission, values, priorities in the development of enterprise development strategy.

Special social institutions (foundations, NGOs, innovation centers, etc.) are innovative in terms of opportunities for forming global social capital, reflecting the perspectives and mechanisms of social policy in different countries (for example, SITRA (Finland) - a non-governmental organization contributions from private corporations and implements five major programs: innovation, health, food and nutrition, environmental protection and machine support; Estonian Development Fund (Argengufond), joint venture supported by innovative projects and venture investments in Estonia; Enterprise Social Investment Fund (UK) supporting a social investment business on behalf of the UK Ministry of Health; Social Innovation Park (Spain) focused on creating new social enterprises with access to training and mentoring (10, p.162).

Conclusions. The accumulation of social capital is one of the regularities of socialization of the modern economy. This process objectively occurs at different levels of economic relations. In order to accelerate the processes of socialization and increase the level of people's trust in the authorities, new forms of interaction of the authorities with civil society, joint actions and socially important actions are needed. Unfortunately, these processes can also generate negative social capital. Expert studies have identified such major trends in the accumulation of social capital in Ukraine as: situational activity and cohesion, which become higher in the face of social cataclysms, and thus have a wavy nature; inefficiency of government-public relations due to a lack of understanding of the mechanisms of effective cooperation and its own benefits, incompetence of NGOs and their leaders. For a long time, the cause of mistrust in Ukrainian society is the existence of the problem of social injustice (especially in the system of distribution of power and property, ownership, disposal, management of objects of property; in the distribution and use of income), which reduces the interest in joint actions, creates controversy between the participants of economic relations, lack of interest in the formation of social capital by the ruling elite, misunderstanding of citizens of the expediency of cooperation and their own benefits from it.

Promising in terms of social capital accumulation in Ukraine, further digitalization processes are envisaged, providing for the creation of new platforms for electronic interaction by 2025: e-contracting, e-invoicing, e-docflow, e-business services (LegalTech, FinTech, InsurTech, in particular, using blockchain technologies (smart contracts, etc.), platforms for life support (education, medical, transportation, public safety, environmental monitoring, etc.) Implementation of these areas will improve interaction between business ub'yektamy, citizens, and representatives of the state.

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HISTORICAL AND DYNAMIC REVIEW OF POLISH AND AZERBAIJANI RELATIONS (FROM CULTURAL RELATIONS TO ECONOMIC RELATIONS)

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ABSTRACT

Cultural ties are primarily based on economic relations between Poland and Azerbaijan. These links, which date back to the fifteenth century, have always been in the ascending direction. The visits of Azerbaijani intellectuals to Poland in the 19th century, as well as the interest of Polish Orientalists to Azerbaijani literature and culture are indicative of this. The great epic "Koroglu", created by the Azerbaijani people, was first published by Polish Orientalists and published as a book. In addition, at the beginning of the 20th century, the most magnificent architectural monuments in Baku were created by Polish architects. After Russia's occupation of Azerbaijan, a significant number of prominent intellectuals fled to Poland. The policy pursued by Azerbaijan in the cultural, economic and political spheres since the 1990s is a new milestone in the history of both Poland and Azerbaijan. All of this makes it clear that historical links are on the rise.

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Introduction. An analysis of relations between Azerbaijan and Poland at the same level needs to clarify the history of political and cultural relations. Because, at the beginning of all things, cultural ties are at stake and everything starts from there. The information provided by historical sources, scientific literature, and print media is indicative of a wealth of facts. Since the beginning of the XIX century Poland's interest in science, culture, creative environment, geography and the Caucasus, as well as its part in Azerbaijan, has always been on the rise. Architectural monuments, Polish ethnographers, archaeologists, historians, literary critics and musicians make this clear. For example, Polish orientalist Josef Sepkovski's translations, Romanovic's articles on Baku and its architecture (1825), as well as the construction of today's protected buildings as a magnificent architectural monument, are related to the names of Polish experts. The first edition of the Koroglu epic as a book, the first acquisition of ashug music (1842 by Alexander Hodzko) and others. It is an indication of these links, their interest in Azerbaijan. The Polish School of Oriental Studies has done a great deal of work in relation to Azerbaijan. The history of the Polish-Azerbaijani cultural, political and economic relations dates back to the 15th century, when the state of Aggoyunlu. Poland had a special place in the political and cultural relations that Uzun Hassan had as president. The great work of the famous Azerbaijani diplomat Sara's letter in the fifteenth century continued through the following period. There are interesting points about Poland in the works of Ismail bey Kutgashinly and Abbasgulu aga Bakikhanov in the 19th century. The first information on the Azerbaijani folklore was given by Polish orientalist I. Chopin (1840). The notes of ashug music were also first introduced by Polish musician in the 1840s. It is no coincidence that Azerbaijan prefers cultural ties with Poland after independence in the early 20th century. After Azerbaijan was invaded by Bolshevik Russia in 1920, most of the intellectuals preferred to go to Poland. For example, the head of the Republic of

Azerbaijan MA Rasulzade (his wife is Polish) went to Poland and lived there for a while. Prominent military officer Vali bey Sadigbey oglu Yadigarov went to Poland (1921) after the invasion of the republic (his wife was Polish). He was the commander of the cavalry and the commander of the 10th cavalry division in the Army Kraiova in Poland. There is a memorial in Poland. The course of events during the Soviet era is another one. Since Azerbaijan's independence, these relations have always been in the state direction. Therefore, the general picture of these two countries following the collapse of the Soviet Union, the study of the level of development, is characterized by the essential features and the richness of the facts.

Problem setting. The Republic of Azerbaijan and the Polish Republic, with their history and traditions of statehood, are connected to the ancient and medieval times. Thus, according to historical sources, the first Polish state dates back to the 10th century (966) and coincides with the borders of today's Polish Republic. This state, which became a kingdom in 1025, united with the Lithuanian dynasty in 1569, laid the foundations of the Polish-Lithuanian union and collapsed in 1795. Poland regained its independence in 1918 and was again occupied by the Second World War. After the defeat of the Germans, it was under the control of the Soviet Union and gained independence again following the collapse of the regime (1989). This structure is emphasized by modern historiography as the "third republic" in Polish history. Poland is a member of the European Union, NATO, UN, Economic Cooperation Organization, World Trade Organization. It ranks sixth in the European Union in terms of population. Poland, a liberal democratic country of sixteen regions, is of particular importance as a partner with all economic indicators and capabilities.

As for the Republic of Azerbaijan, there are quite basic studies related to its history, rich cultural fund of the people, and traditions of statehood. It is both the oldest living place in the world and one of the oldest cultural centers in the world. Azikh cave, Gurchay culture, Dripli characterized by serious archeological facts. Archaeologists from different countries have been paying more attention to Azerbaijan in recent years. Ethnographers, historians, musicologists, etc. his interests and monographs are an example of this. The history of statehood has been measured for thousands of years. All these are justified by the fact that the economic parallels at the level of Azerbaijan and the Polish Republic are being monitored and the processes taking place in the economy of recent times. As you can see, the industry structure, historical perspectives and features of the economy of Azerbaijan and Poland enable rich analysis and are characterized by an invoice in the context of the processes taking place in the European and Asian economies. With its vast territory and population in Europe, Poland is of great importance for Azerbaijan as a serious economic partner.

Both Poland and Azerbaijan have made significant progress in liberalizing society and the economy. The concept of systematic approach implemented by the country in this direction has been the basis for success in various fields. For the success of economic processes, the scientific literature emphasizes the following trends: liberalization, stabilization, privatization, economic institutions, restructuring of the economy for any country. In essence, the essence of these lines lies in the solution of the fundamental problems that Azerbaijan and Poland are making and taking necessary steps in this area. Already, economic institutions, in almost all areas of the economy, perform systematic analyzes, and can make meaningful conclusions by analyzing what is happening in the country and the world economy. Over the past decades of independence, the general patterns of economic restructuring have been studied, and global challenges of modernization have been identified and the necessary successes in that direction have been achieved. The specifics, tendencies and prospects of the Azerbaijani economy have been clarified. The same is true when considering the development dynamics of the Polish economy. Therefore, the comparative study of the development of the Azerbaijani and Polish economy, the structure of the industry, and the comparative study of foreign economic relations is characterized by greater accuracy.

There are similarities here as both of them lived the same weight under the Soviet Union and had a close thinking system. The mechanisms underlying their ideological systems were also the basis for their economic picture. They have established political, ideological, cultural behavior within the same circle as a single system. The situation they are facing after the collapse of the Soviet Union reveals the same picture. That is why serious ties and intimacy between these countries arise, and it is the basis for economic cooperation in the context of mutual understanding. The agreements, treaties, promising projects, documents signed between Azerbaijan and Poland at the level of international economic relations are the result of this successful start, mutually beneficial relations. The processes that take place in the modern economic picture of the world, the formation of geo-economic space, and the new content, in essence, undoubtedly make it necessary to participate in and follow these processes.

Poland recognized the independence of Azerbaijan on December 27, 1991, and on February 21, 1992 diplomatic relations were established between the two countries. The Polish Embassy in Poland was established in 2001, and in 2004 the Embassy of Azerbaijan in Poland. Significant progress in the Azerbaijan-Poland economic and trade relations has been made in recent years. Oil and oil products dominate in the products exported from Azerbaijan. There are great prospects for cooperation in the energy sector as well. This indicates that Azerbaijan's importance in ensuring Poland's energy security will increase in the coming years.

Taking into account statistical data of recent times, it is clear that the Polish industry is characterized by high rates and is of interest to the diversity. Mechanical engineering, chemical industry, agrarian industry, metallurgy, forestry and others increase in the field is an example of this. In addition, furniture production, construction materials and construction have a special weight. Light and heavy industry, chemical industry, shipbuilding, metal industry, aircraft, machinery, cement, aluminum are the main industrial aspects. Recently, the wood and paper industries, textile and forest products also play a special role in the economic life of the country. The mining and mining industries are well developed. The most important of these are coal, zinc and copper. Efficiency of underground resources also proves that Poland is a serious partner in international economic relations. All these are the basis for the success of foreign economic relations and geo-economic relations between Poland and Azerbaijan. As it is known, the geo-economic space of Europe differs by its economic performance and the weight of its economic potential. Therefore, in terms of power and potential, these countries themselves are governed by different economic relations. For example, countries in the eurozone have more favorable advantages. The positive in the EU countries is that economic stability is being observed as a special case. This is what the European Commission has highlighted. The Czech Republic, Sweden, Romania and Poland are among the highest economic growth rates. Let us add that Poland is the sixth largest European country in terms of potential economic opportunities. This, in turn, explains the importance of Poland's economic opportunities and the overall picture of development.

For clarity, let's take a look at some of the goods produced in Poland; These include electronics, helicopters and aircraft (PZL Swidnik, PZL Mielec), ships (Gdansk Shipyard, Szczecin Shipyard, Gdynia Poland Marine Corps), bus and tram (Solaris, Solbus), military equipment (FB "Lucznik" Radedy, Labum-SA), chemical products, medicines (Polpharma, Polfa), glass pottery (Boleslawiec), food (Tymbark, Hortex, E.Wedel), clothing (LLP). In addition, Poland is one of the largest copper, silver and coal producers in the world. All this creates serious opportunities for the establishment of mutual economic relations in the geo-economic sphere.

Poland, European Union, NATO, UN, World Trade Organization, Economic Cooperation and Development Organization (OECD), European Economic Area, Operations in Europe, International Atomic Energy Agency, European Space Agency, G6, Baltic States Council, Visegrad Group, Weimar It is represented in international organizations and groups such as the Schengen Understanding. In some of these, Azerbaijan and Poland are united under the same system and participate in the implementation of various problems and economic projects. That is, the world is shrinking significantly in the face of political, economic, and technological processes, as well as serious links for the development of relations and mutual understanding. The closure of Poland with the Baltic States and Azerbaijan's Caspian basin also facilitates the establishment of contacts and contact lines with other state bodies. As it is known, the Black Sea countries and the Caspian basin countries are the most important areas for the success of their geographical conditions, trade and transport. From ancient times, these areas, connecting the West and the East, the South and the North, have significant economic, political and cultural links as caravan routes. The collapse of the Soviet empire was a wake-up call to that, a basis for transnational projects. Big economic projects, the construction of oil and gas pipelines, the efforts of the world's power centers to represent them in these projects all show that the processes on the global economic map are more global than separations, and that global interests are important. It is fully understood as the alphabet of the world economic sphere.

Bilateral cooperation of Poland and the Republic of Azerbaijan is based on mutual understanding, strengthening of economic ties, mutual benefit in the implementation of market relations and large projects. The arrival of high-level Polish government officials to Azerbaijan, as well as visits by the Azerbaijani government officials to Poland will further deepen economic relations and provide additional opportunities for joint activities. The Odessa-Brody Pipeline, an important part of the Eurasia Oil Corridor Project (EACTR), is implemented in the Sarmatia Consortium, which

provides additional opportunities and benefits. Energy companies from Poland, Lithuania, Ukraine, Georgia and Azerbaijan are making significant success here. At the fourth meeting of the Polish and Azerbaijan Intergovernmental Commission (November 24, 2010), the Polish Prime Minister and the Minister of Economy emphasized the need to increase efficiency and the need to adapt Sarmatia to new conditions. Delivery of Azerbaijani oil to Ukraine and transportation of raw materials to Belarus was one of the key issues for establishing and successful development of foreign economic relations. The state and the modern landscape of these countries promise promising solutions to the existing problems, to meet the needs of the country, and to improve the living conditions of people. Therefore, it is important to take advantage of the opportunities available to sustainability in the country as the first step. At the end of the eighteenth century at the beginning of the nineteenth century, prominent economist D. Ricardo emphasized that "sometimes the large profits provided by private traders in foreign trade are the basis for the rise of the general profit rate in the country. Effective cooling from other jobs, using new and profitable foreign trade will generally increase prices and thereby increase profits"¹. An important part of Poland's eastern policy is economic relations with Azerbaijan.

The Caspian basin is represented by the countries with great potential. Rich hydrocarbon deposits, oil strategy, and the growing trend in the non-oil sector give us a solid basis for creating a dynamic development and sustainability system using their coefficients of economic success. The energy resources of Azerbaijan, Kazakhstan and Turkmenistan underpin the need for new markets and new economic relations in the face of strong competition and make the region a point where economic interests are concentrated. The economic policy pursued by Russia, the United States, the European Union, and Iran has the potential for Azerbaijan at the same time. In addition, all this wealth, along with geo-economic interests, also represents a struggle for geopolitical and geostrategic positions.

Polish economist Jean Toporowski says in his article "Polish Contribution of Economics" that "there is no such thing as a national school in the economy. The ideas of Polish professional economists are largely derivative, as do the economists of many countries of the world; that is, the manifestation and extension of those of the past in one way or another"². After the establishment of diplomatic relations between the two countries (February 21, 1992), the establishment of the Polish Embassy in Azerbaijan (2001) and the Embassy of Azerbaijan in Poland (2004) became the basis for economic revival and implementation of major projects. Agriculture, tourism, air transport, transportation, participation of Polish companies in Azerbaijani industrial parks, etc. it is of greater significance as a fact of understanding. The first official visit of the President of the Republic of Azerbaijan H. Aliyev to Poland (26-28 August 1997) was considered to be the development of bilateral relations. Declaration of friendship and cooperation, avoidance of double taxation, avoidance of income and property tax evasion, cultural and scientific cooperation, mutual promotion and protection of investments, real estate, cooperation in tourism, etc. the issues are in the works. During the Polish President's visit to Azerbaijan (October 27-29, 1998) economic cooperation was also in the spotlight. For example, the Memorandum of Mutual Understanding between the State Oil Company of the Republic of Azerbaijan and the Oil and Gas Company of the Republic of Poland and other important economic decisions was considered for the future development of the countries.

Further visits of the Azerbaijani President to Poland (5 March 2005, 26 February 2008, 26-28 June 2017), as well as visits by the Polish President to Azerbaijan (March 30, 2007, June 2, 2009) or at the GUAM Summit (June 18, 2007 in Baku, July 1, 2008 in Batumi), etc. The meetings were designed to improve bilateral cooperation. Charter of the Advisory Committee of the Presidents of the Republic of Azerbaijan and the Republic of Poland; all of which are designed to strengthen economic ties in one direction. At the last meeting (June 26-28, 2009), the business forum in the format of the plenary session reaffirms the more important nature of the issues and the need for mutual benefit in the economic field. The Joint Declaration on the Roadmap for Partnership and Economic Cooperation between the Republic of Poland and the Republic of Poland on that visit, as well as the five paragraphs, are the most obvious examples of strengthening economic ties between the two countries. For example, at a meeting with Polish President Andrzej Duda (June 26-28, 2017), the Polish President emphasized that "the economic potential of our countries is, in fact, very great and our trade

¹ Rikardo D. On the prinsiplen of political economy and taxation. Canada, Ontario, Kitchener, 2001, 85 p.

² Janek Toporowski. İqtisadiyyatda Polşa töhfəsi. www.res.org.uk/view/art4Apr14Features.html.

exchanges are carried out. Its volume is about \$ 100 million a year.”¹ The views expressed by the Polish president in terms of economic cooperation in the Asian and European context are also of great importance. He said, “You have expressed your views on strengthening economic ties between Europe and Asia. I would like to note that our relations in transport should be expanded. We would like to see a direct railway line between Azerbaijan and Poland pass through Georgia and Ukraine. This is very important. Because of this, our transport corridor is, in fact, fully implemented by China's "One Pipeline, One Road" project. We are also part of this project and we provide access to India and Iran. We believe that we will expand our business relationships and contacts. We have great opportunities for Poland and Azerbaijan. For this reason, our economic relations are an important part of our bilateral relations. I am very pleased that our position on strengthening our economic cooperation with the Asian region coincides.”² Apparently, Azerbaijan as a country is not of interest to Poland at the level of Azerbaijan, of course it is an important player in economic relations, but on the other hand its strengthening relations with Asia is of great importance. China's "one-belt, one-way" principle is based on history, trade relations of nations that have been in the past.

Proper allocation of renewable and non-renewable resources in the overall context of Azerbaijan's foreign economic relations is important. It clarifies the purpose and purpose of the country's economic policy. Smith emphasized that “human progress seems unavoidable to have such a long-term sustainability by ensuring that any major country is effective for all three purposes. Even by all accounts, all over the world, the three richest countries (China, India, Egypt) are predominantly agricultural. They are not exclusive to foreign trade.”³ The economic picture of the world now requires analysis of all problems in a synchronous and diachronic manner with complex approaches. Because what is happening in the international arena and reality as a whole makes them an inevitable fact. The participation of Azerbaijan and Poland in economic policies and major projects, as well as the passage of both East-West and North-South corridors from Azerbaijan is the basis for the success of economic goals as a single territory. These issues were highlighted in the speech of the President of Azerbaijan (June 26-28, 2017, during the visit of the Azerbaijani President to Poland). He noted, “Both East-West and North-South transport corridors pass through Azerbaijan. All modern infrastructure has been created in our country. Seaports, railway airports, highways and regional cooperation format have also been established. Our task now is to deepen this cooperation and draw European countries to this cooperation. A recent meeting of railway executives in Baku suggests that a broader international cooperation format has already been established. The Polish side also participates in this format. This opens up great prospects for us. I am confident that coordination and joint efforts in this area will soon lead to good results, and all participating countries will benefit from this.”⁴ The essence of Azerbaijan's economic cooperation with Poland lies in the mutual benefit, the economic advancement of problems, the successful implementation of the country's economic strategy, and the justification of the dynamics of these processes. Because both Azerbaijan and Poland are important in terms of economic cooperation and promise promising prospects. For example, the successful implementation of the Southern Gas Corridor project and the work in this area make exceptional promises in the European space. The first phase of this forty billion project is expected to be completed in 2018, and the second and final phase in 2020. This will open new perspectives in terms of sustainability and profitability of economic relations, and to clarify that Azerbaijan has a greater role as a partner for Europe. At the same time, it demonstrates in detail that Azerbaijan is a necessary partner in ensuring European energy security. The projects implemented within the framework of the regional cooperation format are aimed at strengthening the overall economic situation and improving the welfare of the people. Works in the field of transport, airports, seaports, railways, highways, etc. all are regulated by the principle of "one belt, one way." The essence of this is the principle of the correctness of economic processes in the home of the world, the desire to regulate joint economic relations of rights and states in a globalized world. This is the view given by those who have seen the main prospects of economic cooperation between Azerbaijan and Poland.

¹ Electronic resource: <https://www.stat.gov.az/>

² Electronic resource: <https://www.stat.gov.az/>

³ Smith A. An inquiry into the nature and causes of the wealth of nations. USA, New York, Metalibri, 2007, 287 p

⁴ Electronic resource: <https://www.stat.gov.az/>

During the Polish Prime Minister's visit to Baku in May 2015, the Polish Ambassador to Azerbaijan Marek Tsalka specifically emphasized, "Despite the mutual sanctions of the countries, the Polish economy still maintains its economy and agriculture. Poland cooperates with many countries in Europe and Asia. In the first quarter of this year, Poland exported 5.4 billion euros. After the machinery and chemicals in the country, the food industry is ranked third in terms of exports."¹ The main directions of economic relations of Azerbaijan and Poland are mechanical engineering, building materials and construction, chemical industry, metallurgy, agrarian industry, forestry and furniture production, light industry, heavy industry, shipbuilding, textile, automotive, aircraft, machinery, cement, aluminum industry, etc. consists of. The wood and paper industries are also among them. This is the basis of foreign economic relations with Azerbaijan. When we look at Poland's economic growth trend, we see that the mining and mining industries are growing more and more. Poland, the largest coal producer in Europe (third place), has a successful trade relationship with Azerbaijan. All these are important areas of economic relations between Poland and Azerbaijan. In addition, according to analysts, about two-thirds of Poland's foreign trade are former communist bloc countries. These countries account for 35% of imports and 26% of exports. Import products include textile raw materials, iron ore, machinery and supplies, cereals and oil.

The agreements and treaties on economic cooperation of Azerbaijan with the Republic of Poland, and the agreements made by the large companies at the state and company levels are completely clear. The Joint Declaration on the Roadmap for Partnership and Economic Cooperation between the Republic of Poland and the Republic of Azerbaijan, accompanied by the visit of the President of the Republic of Azerbaijan to Poland (June 26-28, 2017), further signing of five documents is a necessary step towards further development of bilateral economic relations. As you can see, one of the noteworthy issues when pursuing the main directions of economic cooperation between Azerbaijan and Poland is that it creates a mechanism for the economic ties between the two countries, a full picture of the modern picture of internationalization.

Economic relations between Poland and Azerbaijan promise serious perspectives on each other in terms of geo-economic space. The directions highlighted in the official visit of the President of Azerbaijan to Poland, the organization of the business forum and discussions underline the importance of joint work not only at the state level, but also at the level of a separate company, private organization and sector. Agreement between the Oil and Gas Company of the Republic of Azerbaijan and the Oil and Gas Company of the Republic of Poland, etc. this is an obvious example. During his visit to the Republic of Poland (26-28 June 2017), the President of Azerbaijan emphasized that "Poland is developing rapidly. Poland has a very strong position in the international arena. Mutual relations, of course, cover the economic field. We have agreed that the current trade turnover cannot satisfy us. I hope that the business forum and its results will contribute to the development of our trade relations.

Transport and energy, I think, should be the focus of the economic bloc. In the energy sector, Azerbaijani oil is supplied to the Polish markets. Today, Azerbaijan successfully implements the Southern Gas Corridor Project, a major project with its partner countries. This project will transport Azerbaijani gas to Europe. The total cost of the project is \$ 40 billion, and the project is being continued successfully."²

In addition, the Baku-Tbilisi-Kars railway is the most successful in promoting Asian access to European and world markets. In the future, the transportation of goods to Europe and Asia will have a significant impact on the volume of foreign trade. At a meeting with the President of the Republic of Poland (June 26-28, 2017), the President of the Republic of Poland made a proposal to build an alternative road from Azerbaijan through Georgia and Ukraine, and said it would be good. As a geographical area, Azerbaijan plays an important role in establishing and developing economic relations with the Asian region. More precisely, transport communications opportunities in Azerbaijan are of great importance to all transnational countries, including Europe.

Conclusions. Thus, cultural relations are at the beginning of their relations with Azerbaijan and Poland. These relations have been the basis of economic and political ties between the two countries. Subsequent development and modern vision are also the basis for great success on this core. Therefore, the economic cooperation of these two countries promises great prospects and makes the

¹ Electronic resource: <https://www.stat.gov.pl/>

² Electronic resource: <https://www.stat.gov.az/>

development of historical links more successful and positive. Light industry, heavy industry, metallurgy, agrarian industry, forestry (combine) and furniture production, shipbuilding, mechanical engineering, textile, automotive, aircraft, machinery, cement, aluminum, building materials and construction, chemical industry and others. From the point of view of the establishment of economic cooperation, it gives us reason to think of trade relations. As you know, Poland is a fairly advanced energy country. Powerful hydroelectric power stations, coal-based iron and steel industry are the country's most important sources of income. Large mechanical and electrical engineering operates with the industrial center, which plays an important role in the economic potential of the country. Azerbaijan is also an important Asian country in its economic cooperation with Poland, with its rich resources and advantages over its geographical location. All this clarifies the main directions and prospects of cultural and economic cooperation between Azerbaijan and Poland and the growing trend.

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ПЕРСПЕКТИВИ ФІНАНСОВОГО ЗАБЕЗПЕЧЕННЯ ВІЙСЬКОВОСЛУЖБОВЦІВ ЗБРОЙНИХ СИЛ УКРАЇНИ

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ABSTRACT

The efficiency of meeting the needs of the military personnel of the Armed Forces of Ukraine directly depends on financial planning, which includes: correct identifying of the needs and ensuring timely and efficient use of the funds specified by law. It is determined that the level of financing of the Ukrainian Armed Forces is insufficient and adversely affects the fulfillment of the tasks assigned to them.

The article defines the dynamics of defense expenditures from the State Budget of Ukraine, as well as their share of the volume of domestic gross product. A comparative analysis of the structure of budget expenditures of the Ministry of Defense of Ukraine and NATO countries is carried out. It was proved that the current structure of the state budget expenditures does not allow to satisfy fully the needs of the Ministry of Defense of Ukraine and provide military servicemen with their social guarantees.

The forecast of financial support of the Armed Forces of Ukraine on general and special funds till 2023 is presented. In course of conducted research, the following scientific methods were used: modeling – to determine the projected financial support for the Armed Forces of Ukraine; economic and statistical – to assess the dynamics of defense expenditures; analysis and synthesis – to find out the reasons for the change in the structure of expenditures; tabular and graphical – to represent the results of the study; abstract-logical – in implementation of theoretical and methodological conclusions.

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Вступ. Основною передумовою обороноздатності держави є формування ефективного військового бюджету, який би забезпечував оптимальний розподіл видатків за напрямками використання, особливо в умовах військового конфлікту. Тому, під час проведення операції Об'єднаних сил ефективний механізм розподілу та перерозподілу коштів, виділених на утримання та розвиток Збройних Сил України (далі – ЗСУ), є одним із важливих факторів успішного виконання завдань, визначених Конституцією України. Тому на виконання вимог Стратегії реформування системи управління державними фінансами на 2017 – 2020 роки та Стратегічного оборонного бюлетеня керівництвом Міністерства оборони проводиться робота щодо оптимізації використання бюджетних коштів з урахуванням практики держав-членів НАТО. Дане питання стосується і розподілу видатків, спрямованих на соціальне забезпечення військовослужбовців ЗСУ, яке в умовах інтеграції економіки України до світового економічного простору набуває все більшої актуальності. В останні роки відбуваються суттєві

зміни в економіці країни та законодавстві, що безпосередньо регламентує соціальний захист як усього населення країни, так і військовослужбовців.

Проблеми фінансування Збройних Сил України досліджували у працях як зарубіжні, так і вітчизняні науковці. Досить суттєвий внесок у дослідження даного питання зробили Л. Абалкін, А. Барабаш, О. Голота, В. Горбулін, Дж. Дентон, Р. Лукабо, Р. Міллер, І. Марко, І. Семеніхін, Дж. Стігліц, О. Черняк, А. Чухно. У своїх дослідженнях особливу увагу вони приділили питанням формування військового бюджету, ролі військових фінансів, визначили перспективи кількісних і якісних змін у Збройних Силах України. Проте, незважаючи на значну кількість наукових праць, питання фінансового забезпечення військовослужбовців та їх соціального захисту потребують подальшого дослідження.

Практика останніх років засвідчить про необхідність зміни підходів використання бюджетних коштів з метою досягнення максимально-ефективного розподілу обмежених фінансових ресурсів та забезпечення можливості оперативно змінювати напрями фінансування в залежності від характеру конкретних завдань, поставлених перед Збройними Силами України.

Результати дослідження. На сьогодні відбувається повноцінне реформування оборонної сфери, де важливим питанням є гідне забезпечення військовослужбовців та членів їх сімей. У Конституції України визначено [1], що держава забезпечує соціальний захист громадян України, які перебувають на військовій службі в ЗСУ, а також членів їх сімей, а Закон України “Про соціальний і правовий захист військовослужбовців та членів їх сімей” визначає основні засади та зміст державної політики у сфері соціального захисту військовослужбовців [2], проте у сучасних умовах держава не забезпечує ефективного та реального соціального захисту військовослужбовців ЗСУ. Основною причиною є складна економічна ситуація, пов’язана зі збройним конфліктом на сході України та недостатнім фінансуванням оборонного відомства. Тому, потрібно проводити послідовну і цілеспрямовану політику, направлену на підвищення статусу військовослужбовців, що безпосередньо впливає на ефективність соціального напрямку. Адже створення належної мотивації до військової служби за рахунок посилення соціального захисту військовослужбовців та членів їх сімей, а саме збільшення розміру грошового забезпечення, забезпечення їх житлом, надання кваліфікованої медичної допомоги сприяє покращенню виконання поставлених завдань. Варто пам’ятати, що військовослужбовці мають значно вищі ризики у порівнянні з іншими громадянами у зв’язку з безпосередньою участю у військових конфліктах, та особливо в сучасних умовах захисту цілісності держави на сході України. Однією з умов залучення висококваліфікованих фахівців до Збройних Сил України є створення ефективного механізму фінансового забезпечення соціальних гарантій військовослужбовців. Однак, через відсутність належного фінансування фактично забезпечити повну реалізацію цих гарантій досить складно. Вирішення цієї проблеми потребує спрямування великого обсягу фінансового ресурсу на зазначений напрямок.

В Україні за останні роки прослідковується складна ситуація щодо організації фінансового забезпечення ЗСУ, що пов’язано із існуванням цілого ряду чинників, як зовнішнього (на державному рівні), так і внутрішнього (на рівні Міністерства оборони) характеру. Крім того, існує проблема нераціонального розподілу фінансових ресурсів, що безпосередньо впливає на рівень боєздатності ЗСУ та воєнну безпеку держави в цілому.

Фінансування потреб національної оборони держави здійснюється виключно за рахунок коштів Державного бюджету України в обсягах, розмір яких визначається щорічно Законом України “Про Державний бюджет України”. Крім того, на законодавчому рівні визначено обсяг фінансування на сили оборони не менше 3% запланованого обсягу внутрішнього валового продукту (далі – ВВП) [3]. Проте варто зазначити, що до сектору оборони відноситься не лише Міністерство оборони України, а й Служба зовнішньої розвідки України, Національна поліція та Державна спеціалізована служба транспорту, тому визначені 3% від ВВП ділять між собою ці відомства. Фактично такий показник і сума не зовсім відповідає умовам сьогодення та реальному стану Збройних Сил України.

Аналіз відповідності кількісно-якісних показників ЗСУ та економічних можливостей держави свідчить, що механізм фінансового забезпечення ЗСУ має суттєві недоліки й не забезпечує їх якісного реформування та розвитку. Однією з основних причин такої ситуації є розподіл видатків Державного бюджету для Міністерства оборони України на загальний і спеціальний фонди. Якщо видатки за загальним фондом виконуються майже завжди

стовідсотково, то надходження до спеціального фонду мають нестабільний характер, адже основними джерелами наповнення спеціального фонду є кошти, отримані від господарської діяльності; благодійна допомога юридичних та фізичних осіб, гуманітарна та міжнародно-технічна допомога інших країн [4]. Крім того, додатковим джерелом наповнення спеціального фонду є державні гарантії для фінансування програм, пов'язаних із підвищенням обороноздатності та безпеки держави, а також кошти від конфіскації.

Варто відмітити, що в Україні для аналізу фінансового забезпечення ЗСУ використовується узагальнюючий показник частки видатків на оборону у ВВП. Проте в країнах НАТО для аналізу фінансового забезпечення оборони використовується цілий ряд показників, а саме: оборонні витрати як частка ВВП (%), обладнання, як частка витрат оборони (%), оборонні витрати в національній валюті, оборонні витрати в доларах США, частка оборонних витрат у процентному відношенні до ВВП і річна реальна зміна, реальний ВВП і його частка на душу населення, частка оборонних витрат на душу населення і військовослужбовців, розподіл оборонних витрат за категоріями (видатки на обладнання, видатки на персонал, видатки на інфраструктуру та інші видатки).

З метою з'ясування фактичного стану фінансового забезпечення Збройних Сил України був проведений аналіз видатків оборонного бюджету (рис. 1).

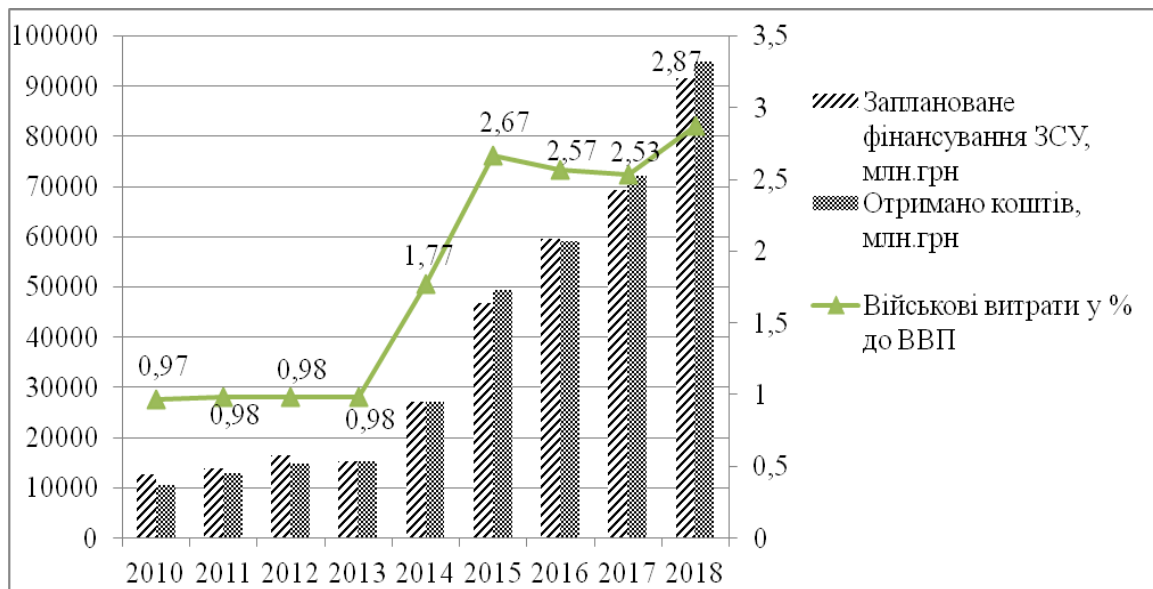


Рис. 1. Динаміка видатків на оборону з Державного бюджету України за 2010-2017 роки, млрд. грн.

Джерело: сформовано автором на основі даних Міністерства оборони України [6].

Проведені дослідження свідчать, що протягом 2010-2018 рр. рівень фінансування ЗСУ суттєво зріс, кардинальні зміни відбулися починаючи з 2014 року, що є закономірним і пояснюється загостренням військового конфлікту на сході України. Так фінансування оборонного сектору країни у 2018 році склало 94,9 млрд грн., порівняно з 2014 роком даний показник зріс більше ніж у 3,5 рази. Варто також відмітити зростання видатків у відсотках до ВВП, так до 2014 року зазначений показник був менше одиниці, починаючи з 2015 року відбулося його зростання і у 2018 році він склав 2,87% (рис. 1).

Варто зазначити, що на сьогодні у Збройних Силах України є ряд проблемних питань, що утворилися внаслідок недостатнього фінансування, які потребують нагального вирішення, серед яких:

- забезпечення належного рівня грошового забезпечення військовослужбовців, який би був здатний конкурувати із заробітною платою на ринку праці;
- забезпечення житлом військовослужбовців та членів їх сімей;
- необхідність проведення переозброєння ЗСУ;
- завершення виконання програми забезпечення живучості та вибухопожежобезпеки арсеналів (складів боєприпасів).

Значна частина військового бюджету спрямовується на забезпечення життєдіяльності Збройних Сил, утримання особового складу, адже військовослужбовець на ринку праці має бути серед лідерів за рівнем привабливості заробітної плати, так як в умовах ризику для життя та здоров'я вони мають отримувати гідне грошове забезпечення. Однак, незважаючи на суттєві видатки даного напрямку, соціальний захист військовослужбовців залишається досить низьким.

Відповідно до міжнародних стандартів видатки на оборону повинні становити не менше, ніж 2% від запланованого обсягу ВВП, у разі, якщо рівень фінансування є нижчим зазначеного показника, це свідчить про низький рівень військово-економічної безпеки країни. В Україні, яка перебуває в центрі збройного конфлікту, цей показник встановлено на рівні 3% від ВВП. Варто відмітити, що основною складовою оборонних видатків відповідно до стандартів НАТО є розподіл на особовий склад, який становить не більше 50%, 20% – на підготовку військ та на закупівлю зброї і військової техніки – не менше 30%. В Україні ситуація є зовсім іншою: витрати на утримання ЗСУ протягом останніх 5 років коливалися в межах 68-80% всього оборонного бюджету (рис.2). Привести систему фінансового забезпечення ЗСУ до стандартів країн – членів НАТО планується до 2020 року.

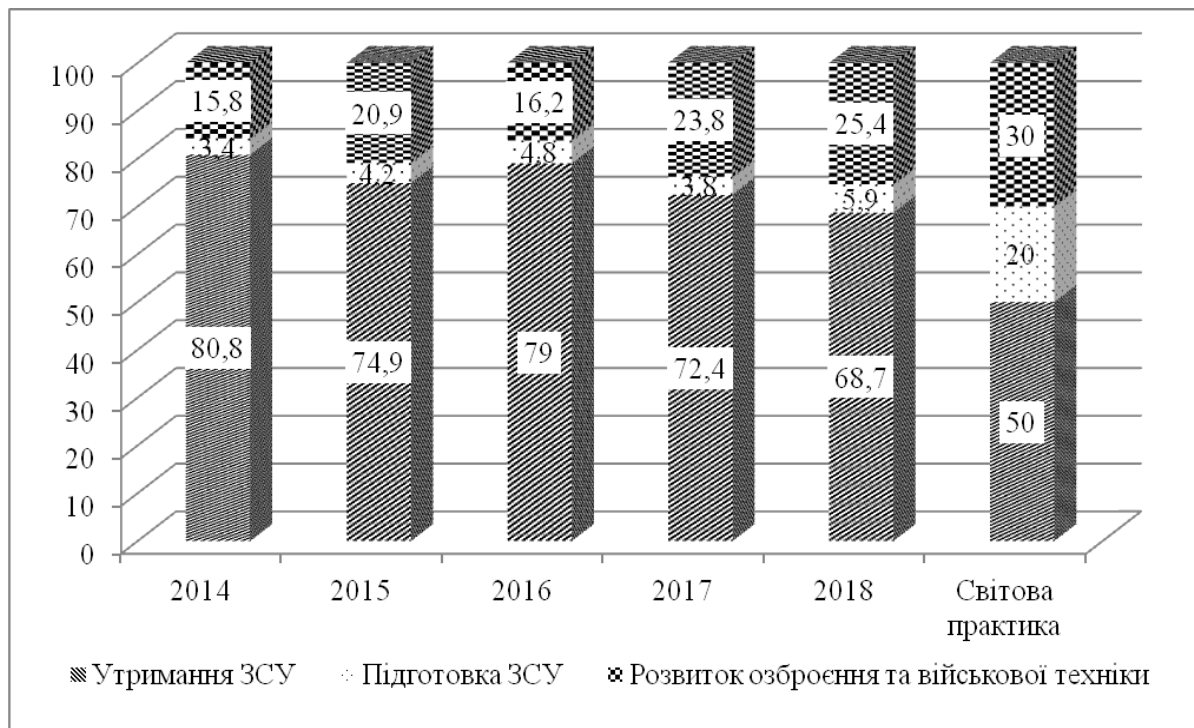


Рис. 2 Структура видатків з бюджету міністерства оборони в Україні та країнах НАТО

Джерело: сформовано автором на основі[6].

Як зазначають вчені, оптимізація формування і раціональне використання оборонного бюджету на утримання Збройних сил можливе на основі стабільного розвитку економіки та раціонального індикативного планування їх розміру. При цьому слід орієнтуватися на оптимальні потреби ЗСУ та підвищення їх боєздатності. Помилково розраховувати, що в умовах недофінансування Збройних сил можливо здійснити їх необхідне реформування без докорінної перебудови бюджетної політики і створення потрібного оборонного бюджету. Сьогодні фінансове забезпечення Збройних сил є вирішальною ланкою всієї воєнної політики держави. Недостатні відрахування коштів є свідченням того, що державна воєнна політика неефективна, не забезпечує зростання боєздатності, перешкоджає розбудові оптимального оборонного комплексу [5, с.32].

Боєздатність та соціальний захист особового складу ЗСУ головним чином залежать від реалізації фінансового механізму забезпечення військ. Для ефективного реалізації завдань, поставлених перед ЗСУ, потрібна чітка взаємодія всіх складових фінансового механізму. Потрібно розуміти, що фінансове планування та фінансовий контроль за використанням коштів на утримання Збройних Сил України відіграють вирішальну роль. Основною передумовою фінансування

соціальної сфери Збройних Сил України та забезпечення соціального захисту військовослужбовців, а також членів їх сімей є забезпечення надходження коштів до Державного бюджету.

Кожного року, під час розгляду та прийняття Державного бюджету на наступний рік, перед політиками постає завдання адекватного розподілу фінансових ресурсів, наявних у державі. Ті самі обмеження стосуються і розподілу оборонного бюджету, тобто обмежені ресурси необхідно розподілити таким чином, щоб це давало можливість виконати поставлені завдання у сфері оборони держави. Так як потреби оборони традиційно забезпечувалися за залишковим принципом, тому одним із вкрай важливих завдань держави має бути фінансове забезпечення Збройних Сил України у межах прогнозованих видатків на потреби оборони [9].

Для прогнозування фінансового забезпечення Збройних Сил України доцільно використовувати екстраполяційні методи, в основі яких покладені тенденції та чинники, що діяли в попередні періоди. Проте потрібно пам'ятати, що під час прогнозування варто звертати увагу на тенденції, які не втратили своєї значущості і мають вплив на досліджуваний процес у даний час. Крім того, варто розуміти, що для багатьох рядів економічної інформації останні значення, порівняно з початковими, повинні мати більший вплив на прогноз.

При короткостроковому прогнозуванні, а також при прогнозуванні в ситуації зміни зовнішніх умов, коли найбільш важливими є останні роки досліджуваного процесу, найбільш ефективними виявляються адаптивні методи, що враховують нерівноцінність рівнів часового ряду.

Основною метою адаптивних методів прогнозування динамічних рядів є побудова економіко-математичних моделей, які здатні відображати зміну певних умов в часі, враховувати інформаційну цінність різних часових рядів зазначеної послідовності та давати досить точні оцінки майбутніх показників даного ряду. Враховуючи дану особливість в короткостроковому прогнозуванні найбільш перспективними є саме адаптивні методи. Це пояснюється, перш за все тим, що при обробці тимчасових рядів, як правило, найбільш цінною є інформація останнього періоду, тому що необхідно знати, як буде розвиватися тенденція, яка існує в даний момент, а не тенденція, що склалася в середньому на всьому розглянутому періоді. Адаптивні методи дозволяють врахувати різну інформаційну цінність рівнів часового ряду, а також ступінь «старіння» даних.

Адаптивна поліноміальна модель другого порядку має вигляд:

$$Y_t = a_1 + a^2 t + \frac{1}{2} a_3 t^2 + \varepsilon_t$$

Безпосередньо для прогнозування надходження коштів до загального фонду матиме вигляд:

$$Y_{\tau}(T) = 76660,22 + 6305,97 t - 1/2 \cdot 1378,4 t^2$$

Адаптивна поліноміальна модель прогнозування надходження коштів до спеціального фонду має вигляд:

$$Y_{\tau}(T) = 11233,79 + 958,16 t - 1/2 \cdot 305,67 t^2$$

Прогноз надходження коштів до спеціального фонду відображає аналогічну тенденцію, що пояснюється перш за все зростанням даного показника в останні роки. Варто відмітити, що суттєвий вплив на нього в останні роки мали надходження від благодійної допомоги, що отримували військовослужбовці і Збройні Сили в цілому та додатково виділені кошти для фінансування програм, пов'язаних із підвищенням обороноздатності і безпеки держави.

Так за прогнозами до 2023 року надходження коштів до спеціального фонду зростуть до 20,3 млрд. грн., що в порівнянні з 2018 роком більше на 58,8% (у 2018 році вони становили 12,8 млрд. грн.). Верхня межа даного прогнозу становить 24,6 млрд. грн., хоча зазначений показник є значно нижчим від коштів загального фонду, проте прослідковується чітка динаміка його суттєвого зростання.

Прогноз фінансового забезпечення ЗСУ свідчить про значне його зростання. Зокрема, в середньому у 2023 р. фінансування становитиме 148,8 млрд. грн., що в порівнянні з 2018 роком більше на 56%. Щодо оптимістичного прогнозу (верхня межа), то зазначений показник складе 174,7 млрд. грн., що майже у два рази більше в порівнянні з 2018р. (табл. 1). Враховуючи стандарти НАТО щодо розподілу коштів, то на утримання особового складу (50% видатків бюджету) у 2023 році за оптимістичним прогнозом буде виділено 87,3 млрд. грн.

Таблиця 1. Прогноз фінансового забезпечення ЗСУ за загальним і спеціальним фондами до 2023р., млрд. грн.

| Роки | Всього | | | Загальний фонд | | | Спеціальний фонд | | |
|------|---------------------|---------------------------------------|----------------------|---------------------|---------------------------------------|----------------------|---------------------|---------------------------------------|----------------------|
| | Нижня межа прогнозу | Розрахункові значення за моделлю (Yt) | Верхня межа прогнозу | Нижня межа прогнозу | Розрахункові значення за моделлю (Yt) | Верхня межа прогнозу | Нижня межа прогнозу | Розрахункові значення за моделлю (Yt) | Верхня межа прогнозу |
| 2020 | 117,2 | 107,5 | 127,0 | 101,8 | 93,6 | 109,9 | 15,5 | 13,9 | 17,1 |
| 2021 | 130,4 | 119,5 | 141,3 | 112,9 | 103,8 | 122,0 | 17,5 | 15,7 | 19,3 |
| 2022 | 145,2 | 133,3 | 157,2 | 125,4 | 115,4 | 135,4 | 19,8 | 17,8 | 21,8 |
| 2023 | 161,8 | 148,8 | 174,7 | 139,3 | 128,5 | 150,1 | 22,5 | 20,3 | 24,6 |

Висновки. Дослідження свідчать, що в Україні протягом останніх років суттєво змінилися підходи щодо формування оборонного бюджету. Зокрема, вже до 2020 року планується привести систему фінансового забезпечення ЗСУ до стандартів НАТО. Крім того, визначено основні стратегічні цілі розвитку: об'єднане керівництво силами оборони відповідно до принципів НАТО; ефективна система планування та управління ресурсами; формування оперативних спроможностей оборони; забезпечення соціального захисту військовослужбовців та створення необхідного військового резерву.

Проблеми фінансового забезпечення ЗСУ є актуальними і потребують першочергового вирішення, що пов'язано з їх реформуванням. У процесі реформування ЗСУ постає цілий ряд питань щодо зміни підходів у планування, пошуку додаткових джерел фінансування (благодійна допомога) та контролю за ефективним витрачанням фінансових ресурсів.

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ПРОБЛЕМЫ И ЗАДАЧИ ЭФФЕКТИВНОГО РАЗВИТИЯ СЕТЕЙ 5G В УСЛОВИЯХ ОПТИМИЗАЦИИ РАСХОДОВ

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ABSTRACT

The article analyzes problems and tasks of effective deployment and development of 5G networks in the context of cost optimization.

KEYWORDS

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Введение. С каждым новым поколением мобильных технологий для поддержки растущих уровней трафика данных растет и количество сотовых сайтов (сайт — это место, где разворачивается оборудование базовой станции). Данная тенденция будет и дальше прогрессировать введением 5G, так как будет необходимо поддерживать большого разнообразия вариантов использования моделей и трафика, и некоторые из них предъявляют высокие требования к доступности и надежности, а также скорости передачи данных. Варианты использования 5G, в свою очередь, будут опираться на большое количество полос спектра.

Требования для 5G будут выполняться с использованием нового оборудования, таких антенн как Massive MIMO (множественный вход, множественный выход) и базовые мини-макро-станции, которые обеспечивают производительность макросоты в компактном факторе. Исследовательская компания Analysys Mason [3] прогнозирует, что к 2025 году базовые станции будут установлены в 14 раз больше, чем в 2017 году.

Эти плотные сети в будущем будут проблемами из-за количества сайтов, которые им требуются. Из этого, по нашему мнению, можно выделить три категории проблем-задач, которые являются основными:

- общая стоимость владения (ТСО) при увеличении количество сайтов
- эксплуатация и техническое обслуживание (ЭиТО) для большого количества базовых станций
- Проблемы с потреблением энергии в плотных сетях с большими антенными решетками.

Жэнмао Ли, исполнительный Вице-президент «China Mobile», с точки зрения размещения и энергопотребления подчеркнул [4] следующие различия между 5G и LTE:

- 5G требуется на 300% больше базовых станций для того же уровня покрытия, который предлагает LTE, из-за более высоких полос спектра
- Сайт 5G будет потреблять на 300% больше энергии, чем сайт LTE, и будет стоить в четыре раза дороже, чем сайт LTE, если они будут развернуты таким же образом.

В данной статье мы рассмотрим, как операторы и другие заинтересованные стороны будут решать эти проблемы. По нашему мнению, 5G будет жизнеспособным только в том случае, если затраты и энергопотребление могут быть значительно снижены, что будет означать развертывание и управление сайтами и их системами электропитания совершенно новым способом.

По прогнозам того же исследовательской компании если планирование, развертывание и управление сайтом 5G осуществляется так же, как и для 4G, то к 2023 году затраты на объект увеличатся на 500%, а затраты на электроэнергию - на 900%. Все это происходит в то время, когда операторы мобильных сетей хотят радикально сократить свои эксплуатационные расходы (которые в настоящее время составляют почти 70% совокупной стоимости владения).

Однако учитывая то, что в некоторых странах таких как странах западной Европы начинают включать коммерческие сети 5G можно с уверенностью сказать, что новые решения уже начинают появляться. Конечно, невозможно с одного раза решить все проблемы размещения 5G, но операторы могут выполнить поставленные перед ними цели по снижению совокупной стоимости владения, повышению емкости и покрытия и повышению энергоэффективности, если они примут комбинацию новых подходов, ориентированных на различные аспекты развертывания сети и операции.

В рисунке №1 приведены проблемы и решения по развертыванию и обслуживанию сайтов 5G. основные решения, которые подробно описаны в этом документе, приведены в таблице ниже.

Результаты исследования. По нашему мнению, операторы мобильной связи должны оценить варианты, описанные в рисунке №1, прежде чем они начнут развертывать 5G. Также, как и в любой деятельности они должны разработать свою стратегию, которая будет учитывать все специфические составляющие развертывания 5G сетей начиная от выбора мест, заканчивая клиента ориентированность, то есть предоставления полного спектра услуг в данной сети. Эффективная стратегия размещения 5G включает в себя ключевые элементы, такие как форм-факторы новой базовой станции и антенны, оптимизированные процессы утверждения площадки, интеллектуальные системы питания и платформы управления облаком с поддержкой AI (Artificial intelligence - искусственный интеллект (ИИ)). Если все запланировать интегрированным образом, эффект будет значительно выше. Сети 5G представляют значительные проблемы для операторов, когда речь идет о стоимости, эффективности и потреблении энергии.

Операторы мобильной связи должны будут принять новые подходы к планированию, развертыванию и управлению своими новыми сетями, если они хотят избежать роста расходов и серьезного ущерба для бизнес-кейса 5G. На рис. 1 приведены основные решения в каждой из трех важнейших областей экономики 5G - развертывание, обслуживание и энергоэффективность.

Развертывание и установка.

Сильно упрощенные структуры сайтов, которые можно масштабировать в стиле Lego, позволяют развертывать быстро и без дополнительных затрат на развертывание новых базовых станций. Это особенно важно в городских условиях, где будет развернуто большое количество площадок, а также для того, чтобы оборудование оставалось незаметным, и чтобы не портил вид городской среды, то есть чтобы не нарушать городскую «жизнь». Появляются все больше компактных оборудования, которые позволяют делать «компактные» решения и являются достаточно маленькими и легкими для установки на улицах города без ущерба облику. Некоторые решения также позволяют полностью скрыть базовую станцию в столбе, под тротуаром и так далее.



Рис. 1. Проблемы и решения развертывания сетей 5G

Участку 5G обычно требуется два полюса: один для активных антенн и миллиметровых волн, а другой для пассивных антенн и радиоголовок. Тем не менее, устройства Massive MIMO и многополосные устройства значительно увеличивают вес - некоторые изделия M-MIMO весят 40 кг, в то время как некоторые опоры имеют ограничение в 47 кг, а для установки тяжелого оборудования требуются дорогостоящие краны. Также вводятся более компактные антенные решетки, которые можно устанавливать с помощью шкивов. Кроме того, во многих сотовых узлах может быть развернут только один полюс на сектор, поэтому важно иметь возможность объединять активные и пассивные антенны в одном пакете, чтобы внедрить Massive MIMO даже там, где пространство полюсов ограничено.

Важно, как можно быстрее заменить устаревшие сети, которые имеют эти упрощенные структуры. Оператор может полностью отключить 2G / 3G и принять подход 4G / 5G. Это может значительно снизить уровни мощности и сложность ЭИТО, используя только современные эффективные технологии, а также добавляя к спектру 5G и освобождая пространство на месте для новых антенн и других устройств. Если это нецелесообразно, операторы все еще могут заменить устаревшее оборудование базовой станцией «все в одном», которая поддерживает любую комбинацию 2G, 3G, 4G и 5G и позволяет гибко распределять ресурсы основной полосы частот и радиочастот между ними, чтобы максимизировать эффективность использования ресурсов. Данные решения снижают энергопотребление и упрощают эксплуатацию и обслуживание.

Влияние упрощенных решений на площадке будет значительно усилено (особенно в городских или промышленных условиях) за счет расширения сотрудничества между операторами и другими заинтересованными сторонами, такими как муниципалитеты, владельцы недвижимости и коммунальные услуги.

Роль городской администрации в уплотнении 5G будет иметь решающее значение. Есть несколько способов, которыми местные власти будут влиять на то, как быстро и эффективно будет развернут 5G в городских условиях.

- Город может ввести упрощенную систему разрешений и правил для оборудования, установленного на улице, или даже в обмен на доступ к сети для поддержки услуг «умного города». Например, развертывания в Лондонском Сити, Амстердаме и Париже являются хорошими примерами перехода к системе, в которой стандартизированные модули могут быть автоматически утверждены, поскольку они соответствуют установленным ограничениям на такие функции, как высота, размер и выходная мощность.

- Город может еще больше ускорить уплотнение, открыв свои собственные уличные площадки и предписав стандартные спецификации для интеллектуальных столбов и другой городской возвышенностей (общий теплоотвод и гидроизоляция облегчат развертывание всего оборудования одинаковым образом). Например, в Барселоне действует усовершенствованная программа стандартизированной инфраструктуры полюсов.

- Город может также ввести правила, которые побуждают другие заинтересованные стороны открывать доступ к своим сайтам по разумной цене. К ним могут относиться автодорожные учреждения, коммунальные службы, железнодорожные операторы и владельцы частной коммерческой недвижимости. Результатом такой политики будет больше доступных сайтов для мини-макросетей, которые можно быстро и дешево развернуть с помощью стандартных модулей, которые автоматически запрограммированы для работы с различными типами сайтов.

Обслуживание.

Упрощенная структура сайта также важна для снижения стоимости обслуживания. Они менее сложны и, следовательно, менее уязвимы к сбоям, и сбой можно исправлять без специальных навыков. Однако для обеспечения эффективной работы плотных сетей 5G потребуется высокий уровень автоматизации для достижения приемлемой совокупной стоимости владения. Некоторые операторы мобильной связи уже имеют дорожные карты в направлении сетей микросетей «без прикосновения», в которых по меньшей мере 90% процессов можно обрабатывать удаленно, чтобы избежать посещений сайтов, и по меньшей мере 80% можно полностью автоматизировать.

Автоматизация включает в себя множество видов инструментов и процессов, и, согласно нашим исследованиям, наиболее важными из них с точки зрения влияния на совокупную стоимость владения в сети 5G являются следующие:

- СОС (Самоорганизующиеся сети) для минимизации помех через такие приложения, как автоматические взаимосвязи между сайтами и для максимального охвата, емкости и эффективности использования ресурсов за счет автоматизации наклона антенны и других сетевых функций.

- Интеллектуальное обслуживание, которое использует машинное обучение (МО) для понимания поведения сети, моделей трафика и других показателей, чтобы заранее знать, когда может произойти сбой, и устранить его до того, как произойдет сбой.

- В будущем полная оптимизация сети на основе AI (ИИ) и ЭИТО.

Энергоэффективность.

Стоимость возобновляемой энергии, особенно солнечной, падает и, как ожидается, упадет ниже, чем стоимость обычной энергии. Это особенно актуально в такой солнечной стране как Узбекистан. Операторы должны серьезно найти решения по использованию солнечной энергии, особенно в тех регионах, где бывают перебои с электроэнергией. Это поможет операторам достичь сокращения затрат и достижения зеленых целей и расширить географию охвата предоставлению услуг даже в самых отдаленных местах Республики Узбекистан. Но им также потребуется принять другие решения, чтобы улучшить эффективность мощности достаточно, чтобы сделать его экономически выгодным для 5G.

Многие из новых решений используют сетевые ресурсы гораздо разумнее, чем решения предыдущих поколений. Некоторые из методов применяются к RAN. Например, макро базовые станции и микросоты могут быть отключены, когда они простаивают, динамическим способом и, с использованием AI (ИИ) / ML (МО), прогнозирующим образом.

Другие решения реализованы в системе электроснабжения. Например, охлаждение базовой станции, на которое приходится около половины энергетических потребностей BTS, может применяться только тогда, когда этого требует облачная интеллектуальная энергосистема. Другие приложения включают повышение напряжения.

Одним из наиболее важных решений для снижения стоимости и энергопотребления площадки 5G является тесная интеграция умной литиевой батареи с основным источником питания. Это решает проблему повышенных требований к мощности 5G и массивного MIMO, при этом оператору не нужно обновлять мощность сети для поддержки пиковых требований на каждом объекте. Вместо этого интеллектуальная система питания может дополнять питание от батареи интеллектуальным аккумулятором только тогда, когда это необходимо, в то время как для приложений или в определенные периоды дня, когда требуется меньше энергии, аккумулятор автоматически отключается. Внедрение интеллектуальных литиевых батарей могло бы избежать затрат на капитальные и эксплуатационные расходы на модернизацию сетевого питания в 90% сайтов 5G, а также повысить эффективность резервного копирования в местах с ненадежным подключением к сети.

Выводы. Большинство тактик, которые операторы мобильной связи планируют использовать в краткосрочной перспективе, связаны с энергоэффективностью и, в частности, с более динамичными способами включения и выключения базовых станций в соответствии с требованиями, а также с переходом на новые источники энергии (например, солнечная энергия), поскольку они становятся более рентабельными.

Тем не менее, с точки зрения ожидаемого воздействия на экономическое обоснование 5G, операторы сделали больший упор на некоторые из только что появившихся подходов к эффективности сайта, особенно те, которые основаны на искусственном интеллекте или машинном обучении. Прогнозирующее обслуживание и интеллектуальное использование энергии с поддержкой AI, а также автоматизированные операции - все это считается наиболее эффективным подходом в среднесрочной перспективе, несмотря на то, что это новые решения и тот факт, что многие операторы мобильной связи полагают, что не смогут принять их в масштабе еще несколько лет.

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