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The connection between government expenditure and economic growth: Case study of four Eastern African countries

Abstract. The governments today are concerned not only with performing basic responsibilities but also with promoting the economic development of their respective countries. The aim of the study was to examine the connection between government expenditure and economic growth in Ethiopia, Kenya, Tanzania, and Rwanda to provide information for policymakers on fiscal policy issues. Panel (time-series cross-section) data over the period of 2011 to 2020 was used. A linear regression model was employed, and a descriptive analysis was carried out. The findings of the study revealed that the four countries' economies grew at a fluctuating rate over the study period. Ethiopia had a substantially larger GDP and the lowest GDP per capita, while Kenya had the lowest GDP and the highest GDP per capita among the nations. Kenya's GDP per capita was double that of Ethiopia's and Tanzania's at the end of the study period. In addition, the results of the regression model show a positive but insignificant connection between government expenditure and economic growth in the four countries

Keywords: GDP, GDP per capital, regression, spending and fiscal

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INTRODUCTION

Economic growth is one of the most important indicators of a country's progress in terms of living standards, employment, and wealth. It denotes the signs of strengthening general economic conditions. The purpose of a country's financial collection is to fund the expenditure of the government. The governments today are concerned not only with performing basic responsibilities but also with encouraging the economic development of their respective country [1]. Fiscal policy is a key tool for reducing short-run production and employment fluctuations. Meanwhile, fiscal policy takes the spotlight in policy debates in both developed and developing economies on macroeconomic challenges such as high unemployment, insufficient national savings, unsustainable budget deficits, and massive public debt burdens. During the worldwide economic depression of the 1930s, both developed and emerging nations' government sectors played a critical role in promoting economic growth and development, as recommended by Keynes. Every economy tries to stimulate economic

development in such circumstances by boosting government spending and lowering taxation. These empirical results, as well as Keynesian theoretical expression, attracted economists' and policymakers' interest in fiscal policy as a stabilizing influence [2]. Public spending is a key tool for influencing the long-term viability of government finances through fiscal balances and government debt. Furthermore, public spending may be used to achieve additional goals such as increased output, employment, and redistribution, all of which contribute to economic well-being. Tax policy, on the other hand, may be utilized to achieve fiscal policy goals such as equitable distribution of income and wealth, efficient resource allocation, and economic stabilization. Taxes have a variety of effects on economic growth rates, such as interfering in people and businesses' saving and investing, preventing workers from learning new skills, etc.

In developing countries, public spending is critical to economic growth. Developmental and non-developmental public expenditures are the two categories of public

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spending. The government's development spending is primarily focused on infrastructure, industry, health care, and educational institutions, among other things. Non-developmental expenditures are generally maintenance-related and include things like law and order, defense, and administrative services, among other things. The influence of taxes, spending, and budget balance on numerous fiscal matters such as resource allocation efficiency and factor accumulation rate are projected to affect a country's economic growth through the effects of government size on taxation, expenditure, and budget balance [3]. Economic theory does not always lead to firm findings on the impact of government spending on economic growth. Most economists would agree that there are times when lower levels of government expenditure would be beneficial to economic growth and other times when higher levels of government expenditure would be beneficial. If government expenditure is cut to zero, it is likely that economic growth will be limited since enforcing contracts, protecting property, and constructing infrastructure will be difficult. To put it another way, some government spending is required for the rule of law to function effectively [4]. The expansion of the public sector together with continued economic growth has become a commonly acknowledged truth. In this context, Wagner's law of increasing state activity, which postulates a long-term positive link between economic growth and government activity, has gotten a lot of attention. This nexus is explained by Wagner as a continuous "cultural and economic growth" in which private economic activity replaces state action. In general, empirical research on Wagner's law has concentrated on the cross-sectional and time-series relationships between government expenditure and national revenue [5]. The effect of government services on private decision-making in general and, more specifically, the impact of government expenditure on long-run economic growth Government expenditure, according to macroeconomic theory, notably the Keynesian school of thought, increases economic development. As a result, government spending is viewed as an external factor that alters aggregate production [6]. The purpose of this study is to provide information for policymakers on fiscal policy issues and a reference for further study in the areas of the connection between public expenditure and economic growth.

LITERATURE REVIEW

According to Keynes economic theory, government expenditure has been proven to be either positive or negative for economic growth. Many components of public expenditures, especially those that are recurring, can contribute significantly to economic development through indirect impacts on aggregate demand, according to conventional Keynesian macroeconomics. Government consumption, on the other hand, may push out private investment, reducing short-term economic benefit and reducing long-term capital accumulation [7]. Economic system is determined in diverse ways based on the actors involved in economic activities and government planning's history, culture, and connection. As a result, the economic system cannot simply be classified as a market or a controlled economy. Even market economies like the United States, the United Kingdom, and Japan are not fully free of government planning. On the

other hand, Russia and China both have planned economies that incorporate many aspects of the market economy [8]. Public investment in basic infrastructure is a necessary requirement for the economy to run smoothly. Education and health-care expenditures have also been demonstrated to boost human capital creation. However, many economists believe that public spending is an area where severely ineffective elements might be identified. The role of government expenditures in attaining fiscal policy goals of seeking economic development, equity, and preserving macroeconomic stability has emerged as one of the major issues facing developing countries. Governments' major task in recent years has been to build capital and infrastructural bases in order to support economic growth and social well-being for their citizens. As a result, governments have increased expenditure on social and welfare programs [9]. Although economists, policymakers, and politicians have long debated the link between government spending and economic growth, the dispute continues. The debate centers on whether government size has a positive, negative, or inconsequential influence on economic growth. On this divisive issue, several schools of thought have reached different conclusions. According to the Keynesian theory, government spending boosts economic growth. The more money a government spends, the faster the economy grows [10].

There is a variety of empirical research on the impact of government expenditure on economic growth. Some empirical data supports the importance of government expenditure in economic growth, while others argue against it [11]. Using the ordinary least square (OLS) and generalized least square and (GLS) methods, the impact of government expenditure on economic growth was investigated. The findings show that effective government expenditure boosts the economy, whereas the economy is impeded by non-productive government expenditure. A study in India by [12] conducted using Simple Linear Regression found a substantial association between total and sectoral government expenditure and each of the macroeconomic indices; the research found that government expenditure had a significant impact on the country's economic growth. The findings of a panel data regression analysis conducted in eight districts/cities in Indonesia (Baten) from 2010 to 2017 reveal that government expenditure has a positive impact on economic growth [13]. The impact of government expenditure on economic growth in Nigeria from 1970 to 2019 was studied using an Autoregressive Distributed Lag (ARDL) model, and the study's findings revealed that government expenditure had a positive and significant influence on economic growth [14]. A research [15] examines how government spending influenced economic development in developed, developing, and underdeveloped nations from 1980 to 2012 using the unbalanced panel technique. The findings show that government expenditure has a significant positive impact on economic growth in developing nations but a significant negative impact on economic growth in developed countries. A research [16] was conducted on government spending, efficiency, and economic growth in low-income countries in Sub-Saharan Africa. The study uses Im-Pesaran-Shin and Fisher ADF tests to run panel unit root testing. The findings show that increased government spending stimulates low-income nations' economic growth in Sub-Saharan Africa.

MATERIALS AND METHODS

The study used panel (time-series cross-section) data from Ethiopia, Kenya, Tanzania, and Rwanda over the period of 2011 to 2020. A descriptive analysis was conducted with the aim of providing an overview of the conditions of economic growth and government expenditure in the four nations during the period. A linear regression model

was used to examine the relationship between government expenditure and economic growth. Secondary data about the government's expenditure growth rate, gross domestic product, and GDP per capita were obtained from the World Development Indicators of the World Bank (Table 1, Table 2).

Table 1. GDP (Annual %), GDP per Capital, and Government Expenditure Growth% GDP

Years	GDP growth (annual %)				GDP per capital (Current US\$)				Government expenditure Growth (Annual % GDP)			
	Ethiopia	Kenya	Tanzania	Rwanda	Ethiopia	Kenya	Tanzania	Rwanda	Ethiopia	Kenya	Tanzania	Rwanda
2011	11.18	5.12	7.67	7.96	354.48	1085.49	781.43	668.50	2.13	2.65	5.30	3.88
2012	8.65	4.57	4.5	8.64	467.08	1271.82	867.86	725.17	-0.26	13.51	13.30	15.78
2013	10.58	3.80	6.78	4.72	499.53	1354.82	970.34	722.89	12.33	-2.41	3.72	-0.17
2014	10.26	5.02	6.73	6.17	566.93	1462.22	1030.08	743.56	18.04	3.76	6.07	20.71
2015	10.39	4.97	6.16	8.86	640.54	1464.55	947.93	751.08	3.79	13.68	9.57	5.07
2016	9.43	4.21	6.87	5.97	717.12	1525.24	966.50	744.76	13.64	5.29	3.21	9.22
2017	9.56	3.82	6.79	3.98	768.52	1633.49	1004.91	772.32	8.30	6.23	1.08	7.36
2018	6.82	5.63	5.44	8.58	771.52	1794.09	1042.84	783.64	3.64	6.98	1.99	5.08
2019	8.36	4.98	5.80	9.46	855.76	1912.65	1085.88	820.15	12.09	6.96	2.35	17.51
2020	6.06	-0.32	2.00	-3.36	936.34	1878.58	1076.47	797.86	18.73	4.32	7.38	1.92

Source: [17]

Table 2. Descriptive statistics

	N	Range	Min	Max	Mean	Std. Dev.
GDP Ethiopia growth (annual %)	10	5.12	6.06	11.18	9.13	1.67
GDP Kenya growth (annual %)	10	5.95	-0.32	5.63	4.18	1.69
GDP Tanzania growth (annual %)	10	5.67	2.00	7.67	5.87	1.63
GDP Rwanda growth (annual %)	10	12.82	-3.36	9.46	6.10	3.81
GDP per capital (Current US\$) of Ethiopia	10	581.86	354.48	936.34	657.78	184.83
GDP per capital (Current US\$) of Kenya	10	827.16	1085.49	1912.65	1538.30	269.06
GDP per capital (Current US\$) of Tanzania	10	304.45	781.43	1085.88	977.42	94.77
GDP per capital (Current US\$) of Rwanda	10	151.65	668.50	820.15	752.99	43.23

Source: [17]

Table 1 shows that the GDP annual percentage, GDP per capita, and government expenditure percentage of GDP were collected from the World Bank data base for further analysis

RESULTS AND DISCUSSION

The above line graph shows the government expenditure growth rate as a percent of the annual GDP of the four nations over a period of 10 years (Fig. 1-Fig. 3). The government's expenditure growth rate experienced extremely fluctuating rate in all nations. The highest government

expenditure growth rate was experienced by Rwanda's, 20.71 percent of GDP in 2014. Kenya, Rwanda, and Tanzania showed increases for the first two consecutive fiscal years 2011 and 2012, while Ethiopia's showed a decline and reached its lowest rate in 2012. In 2013, the three countries declined sharply, and Rwanda and Kenya reached their lowest government expenditure growth rates of -2.41% and -0.17%, respectively, while Ethiopia's government expenditure growth began to rise substantially. All nations showed fluctuations in government expenditure and GDP percent growth between 2014 and 2020.

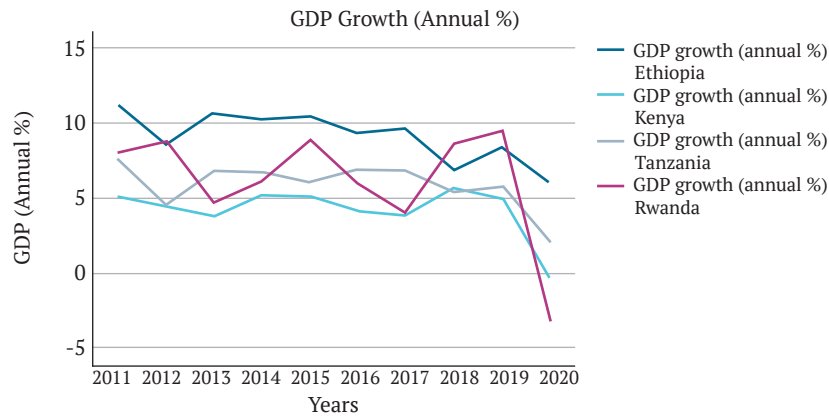


Figure 1. GDP annual % growth of Ethiopia, Kenya, Tanzania and Rwanda

Source: [17]

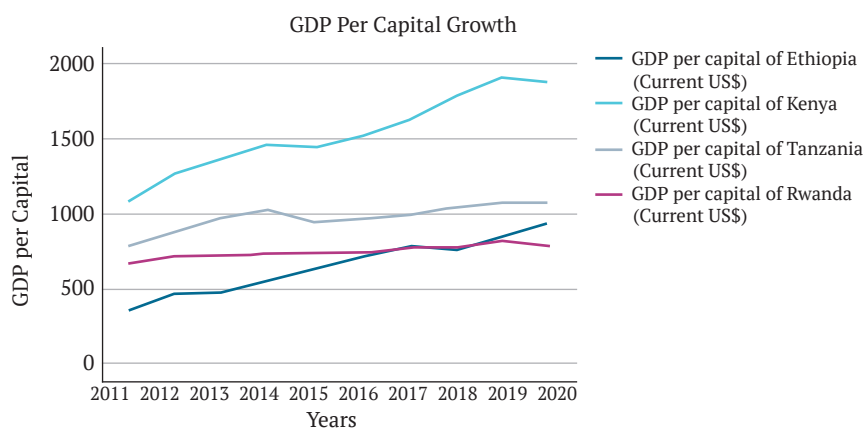


Figure 2. Graphic presentation of GDP per Capital of Ethiopia, Kenya, Tanzania and Rwanda

Source: [17]

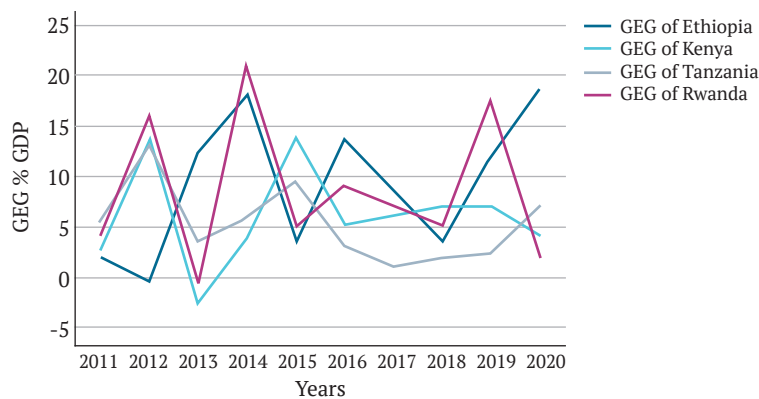


Figure 3. Government Expenditure Growth % Annual GDP Ethiopia, Kenya, Tanzania and Rwanda

Source: [17]

The regression analysis result reveals that there is a positive but insignificant relationship with a small and positive R square between government expenditure and economic

growth in all the four nations. Based on this, it can be concluded that government expenditure is not a good way to forecast the economic growth in the four countries (Table 3).

Table 3. Regression analysis result

Regression statistics	Ethiopia	Kenya	Tanzania	Rwanda
R	0.197	0.230	0.410	0.411
R square	0.039	0.053	0.168	0.169
Adjusted R square	-0.081	-0.065	0.064	0.065
Standard error	1.73396	1.74183	1.57292	3.68679
Sig.	0.585	0.522	0.240	0.238
Total number of cases	10	10	10	10

Source: developed by the author

As can be seen from Table 1 and Table 2, the GDP annual % growth rate, GDP per capita, and government expenditure growth % of GDP, over the specified periods of the four countries can be compared. Ethiopia's annual GDP growth rate has been remarkable from 2011 to 2015, with double-digit growth except in 2012 and a peak in 2011 (11.18). However, starting from 2016 to 2020, it exhibits consistent positive growth, with the lowest achievement in 2020 (6.06), but it is still the leading country among the four countries over the specified period, and with a mean value of 9.13, it is ranked among the fastest-growing countries in Africa. As the case of Kenya, the GDP annual growth shows an irregular growth pattern, with the highest growth rate in 2018 (5.63) and the lowest growth rate in 2020 (-0.32) and a mean value of 4.18. In the case of Tanzania, it shows a relatively stable GDP growth rate with the highest achievement in 2011 (7.67) and the lowest rate in 2020 (2.00) with a mean value of 5.87. In the case of Rwanda's GDP growth rate, it shows a very fluctuating rate, having achieved the highest in 2019 (9.46) and the lowest in 2020 (-3.36) with a mean value of 6.10. On the average GDP growth rate parameter, Ethiopia, Rwanda, Tanzania, and Kenya placed first, second, third, and fourth, respectively. The effect of COVID-19, which has a significant impact on economic growth throughout the world, was shown in all of the nations under consideration, resulting in the lowest GDP in 2020.

In terms of GDP per capita, Kenya achieved the highest in 2019 (1,878.58) and the lowest in 2011 (1,085.49). Tanzania had the highest GDP per capita of 1,085.55 in 2019 and the lowest GDP per capita of 781.43 in 2011. Rwanda's highest GDP per capita was 820.15 (2019) and the lowest growth rate was 668.50 (2011). Finally, Ethiopia has the highest GDP per capita at 936.34 (2019) and the lowest at 354.48 (2011).

According to the World Bank [17], Ethiopia's GDP growth rate was among the fastest growing in Africa. Based on the Worldwide countries' GDP parameter Ethiopia is ranked 60th with 107,645 million US dollars, Kenya is ranked 64th with 98,843 million US dollars, Tanzania is ranked 74th with 62,410 million US dollars, and Rwanda is ranked 143rd with 10,093 million US dollars. The comparison made in the present research of the four nations using the average GDP per capita income parameter, the average GDP per capita income of Kenya during the study period is 1,538.30, which is the highest average among the nations. Followed by Tanzania, with an average GDP per capita of 977.42, Rwanda ranked third with an average of 752.99, and Ethiopia placed fourth with an average of 657.78. Kenya's GDP per capita income is the highest among the four

nations. Tanzania's maximum GDP per capita income is almost equal to Kenya's minimum GDP per capita income, while the GDP per capita of Kenya at the end of the period (2020) is greater than double that of Ethiopia and Rwanda.

A country's GDP per capita is calculated as a country's gross domestic product (GDP) divided by its population. Ethiopia has the highest GDP but the lowest GDP per capita. The reason for the situation is that the population size of Ethiopia is almost double that of Kenya and Tanzania and ten times that of Rwanda. Based on the worldwide income level classification, Ethiopia and Rwanda fall under the low-income category (\$1,045 or less). Kenya and Tanzania fall under the category of lower-middle-income economies (\$1,046 to \$4,095).

The Ethiopian government's proactive and leadership role in creating socio-economic policies has been at the heart of the country's excellent economic and social performance. The government has been spending extensively on economic and social infrastructure, simplifying public services, reforming the tax collection system, and assisting small and medium-sized firms (SMEs), among other things, in order to make Ethiopia a middle-income country by 2025 [18]. The developmental state paradigm has resurfaced as a development option that emphasizes the role of government and market integration. Ethiopia, as one of the nations in Sub-Saharan Africa (SSA), has committed to implementing the developmental state model by tailoring the ideology to its own circumstances [17]. A study [16] shows that increasing government expenditure accelerates economic growth in low-income countries in sub-Saharan Africa, which is in line with the result of the study. The findings of [14] revealed that capital expenditure has a positive and significant impact on economic growth both in the short run and the long run, while recurrent expenditure does not have a significant impact on economic growth both in the short run and the long run. According to [19; 20], it was demonstrated that capital spending had a positive and significant effect on economic growth in East Africa which consistent with study.

CONCLUSIONS

From the results of the analysis, all the four nations under study experienced fluctuating positive economic growth between 2011 and 2019. However, in 2020, a radical economic decline was observed. This phenomenon was caused by the COVID-19 pandemic. With the exception of 2012, Ethiopia's GDP increased by double digits in each of the first five years of the study period (2011-2015). With regard to the GDP per capita, it showed an increase in the four nations

from 2011-2019 and declined in 2020, except in Ethiopia, which still has the lowest GDP per capita among the four nations. Kenya's GDP per capita is the highest, while Ethiopia's is the lowest among the four nations. Kenya and Tanzania are middle-lower income countries, whereas Rwanda and Ethiopia are low-income countries. The results of the linear regression analysis showed that there is a positive but insignificant relationship between government expenditure and economic growth in the four respective countries.

Governments of developing nations should use scarce resources effectively and efficiently to improve the

living standards of their citizens. Academicians should engage in conducting research on the study and come up with input for policymakers on the implementation of fiscal policies for the reduction of poverty, innovative technologies, and employment opportunities. International financial institutions should support developing nations with the necessary financial aid to promote economic growth. Research in this area plays a vital role in improving government resource management. Further research with a broader scope and depth should be conducted to address the overall issues in the areas.

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Зв'язок між державними видатками та економічним зростанням на прикладі чотирьох країн Східної Африки

Анотація. Сучасні уряди стурбовані не лише виконанням основних обов'язків, але й сприянням економічному розвитку своїх країн. Метою дослідження було вивчення взаємозв'язку між державними видатками та економічним зростанням в Ефіопії, Кенії, Танзанії та Руанді з метою надання інформації для політиків з питань фіскальної політики. Було використано панельні (зріз часових рядів) дані за період з 2011 по 2020 роки. Застосовано лінійну регресійну модель та проведено описовий аналіз. Результати дослідження показали, що економіка чотирьох країн протягом досліджуваного періоду зростала з коливанням темпів. Ефіопія мала значно більший ВВП і найнижчий ВВП на душу населення, тоді як Кенія мала найнижчий ВВП і найвищий ВВП на душу населення серед країн. Наприкінці досліджуваного періоду ВВП на душу населення Кенії був удвічі більшим, ніж в Ефіопії та Танзанії. Крім того, результати регресійного моделювання свідчать про наявність позитивного, але незначного зв'язку між державними видатками та економічним зростанням у цих чотирьох країнах

Ключові слова: ВВП, ВВП на душу населення, регресія, видатки та фіскальна політика

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Structural trends of international marketing in the conditions of globalization changes

Abstract. As a result of rapid technological progress and the emergence of new markets and competitors, companies must adapt their marketing strategies to remain competitive. The primary determinant of international marketing has shifted towards benchmarking, where companies seek to improve their methods and optimize their operations to increase profits, which is a pressing issue. The purpose of the article was to conduct a theoretical analysis of the concept of benchmarking and its meaning in the context of international marketing, as well as to identify new trends in global marketing that have arisen due to globalization. The theoretical and methodological basis of the article was the works of Ukrainian and foreign scientists. Methods of scientific abstraction, critical analysis, and abstract-logical methods were used during the research. The paper investigated how globalization affected the international marketing strategies of companies. It has been proven that companies must adapt to these changes using new approaches and strategies. The article identifies benchmarking as a significant trend for a company's success in international marketing, which allows for identifying areas for improvement and applying best practices. Other factors influencing international marketing success include market research, product adaptation, branding, distribution channels, and pricing strategies. The article also analyses the challenges and opportunities of international marketing, such as cultural differences and access to new markets. The study highlights the importance of structural trends, such as benchmarking, in determining a company's success in international marketing. This methodology also provides insight into the factors that influence international marketing success, the challenges and opportunities companies face, and the strategies they can employ to succeed in the global marketplace. The results of this research can be used to develop an international marketing strategy that considers the specifics of different markets and countries, expand the company's international markets and develop the company's international cooperation with other enterprises, and also to increase the effectiveness of international marketing campaigns and quick adaptation to changes in the international market

Keywords: internationalization, digitalization, augmented reality, gamification, facial coding, benchmarking

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INTRODUCTION

One of the biggest challenges for companies is breaking into the global market and maintaining their field leadership. Many companies felt confident within their national borders, but they have faced increasing competition and have been forced to look for new catalysts for growth in foreign markets [1]. The possibility of companies expanding beyond their local or regional markets is one of the options for further development and competitiveness.

Various researchers have discussed the concept of international marketing in the past. According to N.H. Tien [2] international marketing is a complex and multifaceted process involving various activities such as market research, product development, pricing strategies, branding, and distribution channels. The primary objective of international marketing is to identify and satisfy customers' needs in different countries while maximizing

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profitability for the company. International marketing is a complex process requiring firms to make numerous product design, promotion, pricing, and distribution decisions. Cultural distance is one of the factors that firms need to consider when making these decisions. Cultural distance refers to the differences between two or more cultures regarding values, beliefs, norms, and practices. These differences can affect how consumers perceive products and the effectiveness of marketing strategies. Thus, firms must carefully assess cultural distance when developing their international marketing mix.

Since the beginning of 2017, globalization has significantly influenced international marketing, leading to new business challenges and opportunities. According to Ph. Kotler [3], globalization has created a more competitive and complex business environment where companies must adopt new strategies to remain competitive. The authors argue that companies must be more customer-focused and adopt a holistic approach to international marketing, considering all the factors influencing their target markets.

Benchmarking is one of the critical structural trends in international marketing that can determine a company's success in the global market. According to N. Skryhun and S. Kolodiuk [4], benchmarking can help companies identify improvement areas and adopt best practices to enhance their international marketing strategies. O. Shymko [5] claims that benchmarking is a valuable marketing tool for trading enterprises to improve their competitiveness in today's dynamic and challenging business environment.

One more crucial factor that influences international marketing success is market research. According to M. Nukarinen [6], market research can help companies understand the needs and preferences of their target customers and develop effective marketing strategies to meet those needs.

Product adaptation is another critical factor that can influence international marketing success. Ph. Kotler [7] argues that companies must adapt their products and services to meet their target markets' cultural, social, and economic needs to succeed in international marketing.

Branding is also an essential factor in international marketing success. According to Ph. Kotler and K. Sarkar [8], a strong brand can help companies build customer trust and loyalty, leading businesses to increased sales and profitability.

Distribution channels and pricing strategies are also crucial factors that influence international marketing success. Ph. Cateora [9] argues that pricing strategies also play a significant role in international marketing success, as companies need to set competitive and profitable prices in different markets.

These authors focus on the importance and need to identify the determinants of international marketing. At the same time, more research is required on the formation, successful analysis, and practical use of data obtained after benchmarking in a company operating in the global market.

Also, the main disadvantage of these scientific developments is their isolation. It is necessary to ensure their interpenetration in several areas. Thus, accounting is focused on something other than marketing tasks and trends. Second, the formation, successful use, and implementation of the structure of international marketing

trends at the enterprise operating in the world market still need to be studied more. Thirdly, the information technology and digital marketing market are constantly changing. In this regard, it is necessary to monitor various sources of information, and reports of successful companies in the market, both large and small, by analysing and considering the best technologies.

Based on this, the aim of the article was a review of current structural trends in international marketing and their consideration, successful combination, and application in the activities of an enterprise operating in the international market; analysis of such a method and technology for achieving a better competitive position of the enterprise as benchmarking.

MATERIALS AND METHODS

The research on structural trends of international marketing in the conditions of globalization changes utilized various scientific methods to analyse and understand the impact of globalization on marketing trends. Scientific abstraction was used to generalize specific observations and data related to the topic and transform them into broader concepts. The analysis method was used to break down the issue into its parts for a better understanding.

Abstract-logical methods were used to create a framework for understanding the trends occurring in international marketing. Critical analysis was employed to evaluate the strengths and weaknesses of different ideas or arguments, which helped to identify critical trends and challenges in global marketing in the context of globalization.

Moreover, the theoretical and methodological basis of the article relied on the works of Ukrainian and foreign scientists who have explored problematic issues in international marketing, identified and justified structural trends, and developed marketing technologies based on economic theory. The researchers used general scientific and unique research methods, including empirical, comparative, and statistical analysis, allowing them to study this issue from multiple perspectives and comprehensively understand the topic.

In summary, a combination of scientific methods was employed to investigate the structural trends of international marketing in the context of globalization changes. Utilizing various methods and considering works by experts in the field helped ensure a thorough analysis of the topic.

RESULTS AND DISCUSSION

Impact of globalization on marketing activities

The 4Ps of the marketing mix are still relevant, but they need to be adapted to the global marketplace. For example, the product must be designed for international audiences, the price must be competitive in different countries, the distribution channels must be global, and the promotional messages must be adapted to different cultures [10]. Proposed in the 1950s by N. Borden and later reworked by J. McCarthy, the "marketing mix" marketing paradigm gained the most remarkable development and practical application in the final period of the industrial age. However, many marketers consider the standard 4P model too limited for today's markets, especially when dealing with international marketing challenges, due to the need to adapt the firm to the environment of another country and suggest additional elements [11].

International marketing is a new dialectically higher stage of reaction of international market participants to such processes as frequent changes in the nature and structure of market demand, its market fluctuations, intensification of competition, increasing and improving the quality of information support in terms of erasing national borders, so-called de-localization of the global economic environment, the constant acceleration of international transactions of both tangible and intangible assets associated with the rapid development of information technology, as well as strengthening of the convergence and interdependence of national economies.

Different methods have been proposed to classify marketing mix. For example, V. Cherenkov discovered advanced marketing mix concepts: Ph. Kotler's "Megamarketing" international marketing mix, which has become more accurate and relevant in today's company development in the global market [12]. The great variety of models of the marketing complex is because there is no perfect and unique for all companies. Hence, each company chooses its own, focusing on market positions and strategic goals.

International marketing has some features related to work specifics in each country [13]. First, it concerns the

company's macro-environment, which belongs to the uncontrolled environment. The social and political climate, cultural values, and level of technological development can play one of the most critical roles in the success or failure of marketing activities of organizations in the market. Microenvironmental factors demonstrate how ready a company is to compete in this market and what methods of competition it can attract and use. Depending on the macro and microenvironment indicators, the company's internal marketing environment can change significantly.

Due to the impact of the environment, in addition to changes in the company's personnel policy, there may also be a structural adjustment of its production capacity, sales potential, and material financial capabilities. Entering the world market, the company must be flexible and as efficient as possible and be ready to adapt to the needs of specific consumers [14]. It will have to be used along with the marketing approach and elements of quality management, environmental management, and project management.

The global restructuring of the world, which has been taking place for the last 20-30 years, could not but affect international marketing. The main factors influencing its development are presented in Figure 1.

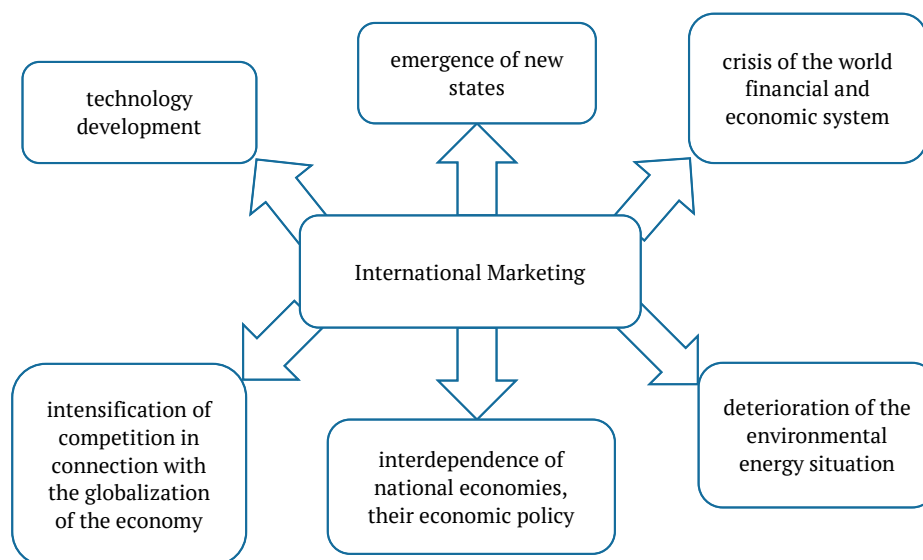


Figure 1. Factors influencing the development of international marketing

Source: compiled by the author based on [12; 13]

Marketing has existed for thousands of years. However, it has been accelerating in recent years, especially after the collapse of the USSR and the fall of the "iron curtain". The term "globalization" was first introduced in the dictionary in 1961, although the verb "to globalize" was mentioned for the first time in the Merriam-Webster dictionary in 1944 [15]. The term quickly became one of the most fashionable words of the time, and it is now used by politicians, business people, artists, union leaders, experts in environmental protection, sociologists, and economists. Globalization has brought about many changes in the business environment, the most important of which are the emergence of new opportunities and threats. Further possibilities include the increasing potential for market expansion, a rising number of potential clients, increased

investment potential, and resource availability. Threats include increased competitive intensity and difficulty forecasting the business environment due to its complexity and dynamism.

Since marketing is a highly dynamic domain strongly connected to the dynamic world, it has not been unaffected by globalization [16]. Although not all companies are interested in expanding to the global market, companies are nonetheless affected by globalization in two ways. On the one hand, they compete with companies that extend beyond national markets. On the other hand, (to a lesser extent) the consumers' demand in a market can migrate to another market.

The globalization process has had a profound impact on marketing activities [17]. The main effect of globalization has been to standardize products, prices, distribution

channels, and promotional campaigns. This has been done in the belief that companies can treat the world as a single market and that the differences between different markets or market segments need to be more significant to justify adapting the marketing mix elements to the requirements of these markets. As a result, internationalization has become the dominant marketing mode in the globalization era. In the context of internationalization, it is widely used that market segmentation and marketing strategies are tailored to the cultural, regional, and national peculiarities of the segments identified. Once market segmentation occurs, marketers start grouping regions or countries according to different criteria, such as cultural, social, political, economic, and technological and develop marketing strategies tailored to these groups of countries or regions.

A globalization strategy can generate essential economies of scale by standardizing operational marketing, packaging, and communication [18]. Speed to market is also a benefit, as globalized firms centrally plan and organize new product introductions worldwide within less than one year. A globalization strategy can also create a unique worldwide brand name and brand identity for the global company. This advantage significantly reduces communication costs by targeting the same segments of consumers in all markets, using the same product concept. Market expansion is a possibility, which could lead to a significant increase in sales volume. Finally, access to new resources and sources of financing are benefits of globalization. However, globalization has also brought several benefits not only for organizations but also for consumers and countries as a whole. For example, globalization has helped increase competition, leading to lower prices and improved quality of products. Globalization has helped to spread democracy and human rights around the world.

In addition to the benefits to organizations discussed above, globalization has some less favourable effects. The negative impact of centralization is that it can slow down some marketing decisions (prolonged reactions to local competitors' actions or specific local consumer problems). The insensitivity to local markets and lower responsiveness because marketing managers from company headquarters have fewer contacts with local markets. The danger of developing too standardized products that align with some consumer needs. High-risk management because a portfolio of brands constituted of a majority of global brands is more vulnerable (a problem arising in a local country on a global brand is rapidly made public and can be communicated to the whole world within a few hours or even minutes).

There are several disadvantages to globalization from a consumer perspective. The first is standardization, which can lead to a decrease in customer satisfaction. This is because customers may have fewer choices than before, and they may be unable to find products or services that meet their specific needs. Another disadvantage is the loss of identity and national culture. This can happen when a country becomes too reliant on foreign products and services, and its industries and culture start to disappear.

Types and functions of benchmarking

The term "benchmarking" comes from the two English words "bench" (level, height) and "mark" (score);

respectively, "benchmark" translates as "reference score", "height score", "starting point", and "benchmark". etc. In Japanese, "benchmarking" is etymologically related to the word "dantotsu", which means "the desire to be better, to become even better than someone". R.C. Kemp, a benchmarking leader in Xerox Times, describes benchmarking as "a continuous search for solutions based on industry best practices and processes (enabling best practices) that enable the company to excel" [19].

Benchmarking is a continuous process that discovers, studies, and evaluates the best in other organizations to use knowledge in their organization's work [20]. Thus, benchmarking is comparing your activities with the best companies in the market and the industry with the subsequent implementation of changes to achieve and maintain competitiveness. The most crucial part of benchmarking is using information obtained as a guide to action or, in other words, to implement change and improve the situation to achieve the highest standards, usually called best practices.

Benchmarking as a tool for market analysis began to be used by companies in the second half of the XX century. Rank Xerox was one of the first to use this method during the crisis in the late 1970s [21]. Then the company lost a significant market share, giving way to Kodak, Canon, and others. Rank Xerox compared its performance with competitors regarding production costs, copier assembly method, customer satisfaction, and so on to restore its former competitiveness. This has helped the company to optimize business processes, including reducing distribution costs and becoming a leader in its segment of the copier market.

J. Grayson [22], head of International Benchmarking Clearinghouse, identifies the following reasons for the popularity of benchmarking:

- global competition. In the era of business globalization, companies are aware of the need for a comprehensive and detailed study of the best achievements of competitors and the further use of information for their survival;

- a reward for quality. Competitions for the title of leader in the quality field, held at the national level, are becoming more widespread. An obligatory condition for participation in them, in addition to the demonstration by companies – participants in the competitive advantages of products produced by them, is the application of the concept of benchmarking;

- the need to adapt and use world achievements in production and business technologies. To stay caught up to their competitors, all companies, regardless of size and field of activity, must constantly study and apply best practices in production and business technologies.

As with any study, the goal will be successfully achieved if the objectives of benchmarking are clearly defined.

Among the main ones are the following: analysis of the company's resources and search for potential, analysis of competitors and search for market leaders, comparative analysis with the benchmark company, analysis of benchmark practices and finding ways to achieve them, streamlining strategy according to sample experience [23].

Given the broad scope of benchmarking, it is helpful to understand the methods of its implementation further and identify different types and sub disciplines that are part of the reference comparison. It is common to define

benchmarking as comparing an organization with the best companies in the market or industry and further implementing change to achieve and maintain competitiveness. This approach emphasizes the existence of two separate

stages in benchmarking. If, at the first stage, the work is aimed mainly at obtaining information, the second is related to implementing changes and is therefore no less important. Highlight the main functions of benchmarking in Figure 2.

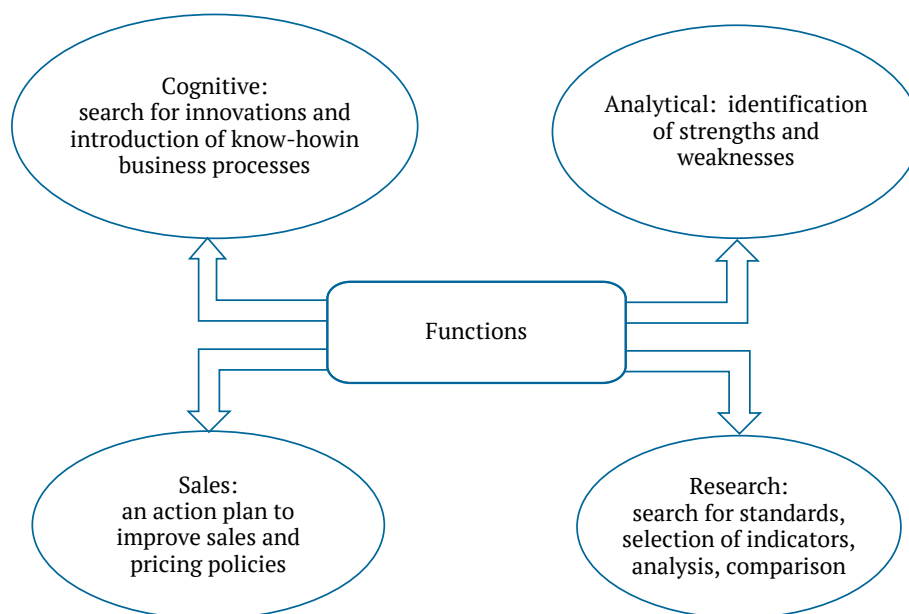


Figure 2. Benchmarking functions

Source: compiled by the author based on [16; 17]

Given the broad scope of benchmarking, it is helpful to understand the methods of its implementation further and identify different types and sub disciplines that are part of the reference comparison. Benchmarking is commonly defined as comparing an organization with the best companies in the market or industry and further

implementing change to achieve and maintain competitiveness. This approach emphasizes the existence of two separate stages in benchmarking. If, at the first stage, the work is aimed mainly at obtaining information, the second is related to implementing changes and is therefore no less important. Highlight the main subspecies listed in Table 1.

Table 1. Subspecies of external benchmarking

Sectoral (or functional)	Comparison of companies from one industry
Strategic	Comparison of successful strategies, analysis of strengths and weaknesses of partner companies.
Competitive	Comparison of your company's activities with competitors.
Synergetic	Implementation of positive experience in any relevant field.

Source: compiled by the author based on [20; 21]

Another important aspect of benchmarking is its gradual transformation into a continuous process. Although benchmarking takes the form of individual projects, these projects follow one another, providing companies with constant learning and self-improvement. This phenomenon has only accelerated with the advent of social media, significantly reducing the cost and time of each benchmarking cycle.

It is also essential to dwell in more detail on the market of consumers of goods and services, to highlight similar characteristics and features. Particular attention will be paid to such a phenomenon as the "theory of generations". This theory was developed by American scientists N. Gove and W. Strauss [24].

Generations are groups of people who were born in the same period and grew up in similar conditions. People in each group show identical characteristics, values, and preferences [25]. It is important to remember that at the individual level, everyone is different. But if we look at people through the prism of generations, we can get a helpful sequence that will help to communicate, work, motivate, and attract people of all ages.

It is interesting to consider the three main generations directly shaping the consumer market and describe their main behaviours. Of course, they can be attributed to certain groups only by age. Still, if we consider the domestic market and the foreign, it is necessary to view events that affect generations (Table 2).

Table 2. Theory of generations

Name of generations	Time	Characteristic	How to use in marketing strategy
Generation X	1965-1980	Fully integrated into the labour market, paying their taxes, and working to create and improve their careers; value the balance between work and personal life; time has a higher value, not money; the first witnessed the introduction of the Internet, gadgets, computers; share the company's philanthropic values.	Focus on products and services that benefit society and the environment [17].
Generation Y or millennials	1980-2000s	Grown in a highly competitive technological world, flexible to change, online 24 hours, ambitious, unconventional thinkers, for personal self-realization is very important [18].	To emphasize the environmental friendliness of the company's brand and its products or services.
Generation Z	2000s – now	Lack of discrimination in society and the media grew up in different structural groups and blurred gender roles; do not imagine their lives without social networks; nothing is impossible for them.	To emphasize individuality and freedom of choice in marketing strategies.

Source: compiled by the author based on [22; 23]

A generation change occurs every 20 years, and now is the time for a change. Of course, some companies continue to work according to the usual, unified schemes, as they know their target consumer. Others, in turn, understand the importance of change and engage the younger generation, aware of the trends of differences in market segments, creating a prosperous future for their companies and brands.

Analysis of proposed new structural trends in international marketing

Renewing the solvent audience of the international market creates recent structural trends in international marketing. Consider the most current and most important of them:

1. Strengthening the social mission of the business. Every company needs to articulate its values and mission. It has become clear to many companies that “doing good” can be different from the competition. So many companies began to donate part of their profits to charity and publicly declare it [26]. The actions of companies in this direction must be justified and correlated with the areas of application of their participation in projecting their corporate values. It is essential to fight not for publicity and demonstration of “good deeds” but for the relevance of projects. For example, in February of this year, Amazon founder Jeff Bezos announced the launch of a fund, “Bezos Earth Fund”, aimed at combating global climate change on the planet, the starting budget of which was \$ 10 billion [27].

2. Emphasis on three core values: humanity, environmental friendliness, and sustainability. Any severe economic crisis at the state level creates in most people psychological depression, insecurity, industrial throwing, and the desire to anticipate the principles that can lead their business on the path to recovery and overcoming the post-crisis state. And as society develops priorities for caring for the environment and spreading standards of a service culture as part of the company's business model, companies' humanistic approach to customers, environmental friendliness, and sustainability will be significant trends for business and marketing if development is the goal.

3. A new look at lifestyle. Lifestyle has changed, we shop online, communicate online, and play sports online, and most of our lives are concentrated online. Now not only programmers and people who have worked outsourced

spend their working day at home, but also people from other fields. House was transformed from a place of rest into a work office and an entertainment room, influencing the more meticulous choice of housing, interior, and lifestyle in general. As some of the entertainment became inaccessible, a lot of online entertainment and the same video games appeared. So, in the previous year, there was a global economic breakthrough – revenues from video games for the first time exceeded revenues from sports and cinema. Many values have shifted, and people are gradually getting used to the new living conditions and may remain true to their habits even after all the lockdowns. This means adapting their products and services to the new reality for businesses. It is necessary not only to transfer business from the world offline to online but also to consider the convenience of purchase, logistics, and speed of delivery.

4. Digitalization is the main direction of innovative development. Digitalization is a new term (transition to digital communication, recording, and data transmission using digital devices) [28]. On the one hand, the pandemic has caused significant losses for both large and medium-sized small companies and enterprises. Still, on the other hand, it has become a powerful impetus, an accelerator of change. Many companies have been forced to digitalize their logistics and communication processes. It turned out that even signatures could be digital, eliminating the bureaucratic red tape.

5. Mobile market. Nowadays, it needs to focus not on adaptive sites or sales but on new features of social platforms (Facebook, Instagram) that provide direct sales [29]. There is already an infrastructure for their implementation: online payment, delivery, and legal aspects. Much shopping, browsing content, games, and other entertainment now falls on smartphones. Brands must do their best to optimize their services, websites, and advertising for mobile devices.

6. Video communications, live broadcasts. Video broadcasts are becoming a priority for social platforms to keep users' attention on the platform and advertising sales. Because the modern user has access to almost unlimited content, but their time is limited, they will pay attention only to advertising that can capture them from the first second [30]. The successful video is short, attractive, concise, and straightforward.

7. Augmented reality (A.R.) [31]. When people could not travel freely or visit cinemas, theatres, or museums, the most creative marketers introduced new trends to entertain people during the pandemic. For example, museums located in different parts of the United States have exhibited their world-famous collections on the Internet, which could be visited by anyone from around the world. This caused a positive public response.

8. Gamification. The introduction of the principle of the game over the past two years has been tested not only online but even offline to attract customers [32]. Currently, an exciting and effective advertising tool is interaction with the consumer in the form of a game (various surveys at checkouts in supermarkets, which are displayed on screens, and after choosing the answers, buyers include a positive video with advertising).

9. Facial coding – provides information on how people will react to your video and allows you to avoid spending money on “failed marketing” [33]. Nowadays, automated face coding (AFC) based on machine learning algorithms and webcams has appeared. The system reads information units, interprets them, and publishes an analysis of human reactions. This has led to the spread of technology in many sectors, including Facial coding. This information about spontaneous, unfiltered viewers’ responses to visual content provides much data for analysis.

10. Individualism. Every buyer dreams that the thing he bought is unique, unlike millions of others. This

is a modern world where everyone wants to stand out, and manufacturers are trying to support it. Changes in the aesthetic and creative preferences of consumers are observed in a variety of industries. When choosing, for example, clothes, all buyers want an original design, style, exciting colour solutions, and elegant packaging [34].

Highlight the most important thing. For these trends in international marketing to be effective, it is necessary to pay special attention to targeted communication with consumers, namely the adaptation of content, messages, and channels to the needs of the target audience by age groups and generations; narrow market segmentation – hyper personalization; creation by companies of interactive content and advertising format, use of games; a trend towards individuality, environmental friendliness, and consumer involvement in the process of developing goods, products, and services; flexibility in obtaining data; collaborations with international brands; active introduction of new features on social platforms (such as Shops on Instagram/ Facebook) in your marketing.

These are not all marketing trends. The modern world is marked by the extraordinary development of technology, the Internet, the latest, modernized production technologies, and marketing is not far behind this movement. It is also developing in the same direction and improving its consumer interaction.

Highlight the main parameters of the international marketing system in Figure 3.

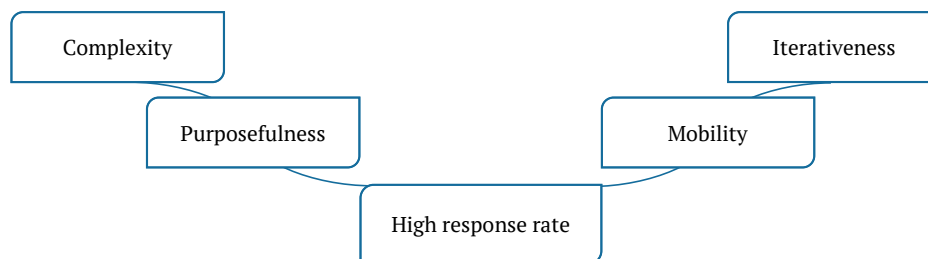


Figure 3. The main parameters of the international marketing system

Source: compiled by the author based on [30; 31]

In the modern international marketing space, there are a variety of directions, trends, and tendencies. The article presented and analysed the most relevant, which is usually impossible.

The modern person wants to get everything quickly and easily. They strive to have new emotions and experiences and non-standard approaches in communication with brands. For companies and enterprises to expand their influence boundaries, attract more loyal consumers of goods and services, make more profit, and influence demand, they need to understand and apply structural marketing trends.

In this research on the structural trends of international marketing in the conditions of globalization changes, some commonalities and differences were found with the results of other authors. M.R. Czinkota and I.A. Ronkainen [13] also noted that globalization has created a more competitive international business environment, and companies need to be more innovative and flexible in their marketing approaches.

T. Levitt [16] discussed the challenges of standardization versus localization in international marketing. Balancing global and local marketing efforts to succeed in the international marketplace was also emphasized. While some authors focus on the role of culture and cultural differences in international marketing, this research discussed the impact of globalization on consumer behaviour and the need for companies to adapt to changing consumer preferences to succeed in the global marketplace.

M.V. Vilkina and O.V. Klimovets [31] also argued that A.R. can provide a unique and immersive experience for consumers that can positively impact their engagement with the brand and their attitudes towards it. Moreover, A.R. can be a valuable tool for marketers to create a memorable and engaging brand experience, build brand loyalty, and drive sales.

C. Santos Pereira [28] highlighted the importance of digitalization for firms seeking to expand internationally. Key areas where digital technologies can provide a competitive advantage, such as supply chain management, customer engagement, and data analytics, were identified. It

was also concluded that digitalization is a significant and ongoing transformation that will continue to shape the international business landscape for years to come.

Y. Dwivedi [34] accentuated the growing importance of digital marketing in international marketing. It also discussed the need for companies to integrate traditional marketing approaches with digital marketing to reach their target audiences effectively. And one more critical thought by O. Shevchenko: when using benchmarking, an organization can assess its performance, compare it with its leaders and competitors, and identify areas for improvement for its development [22].

Overall, these research findings align with and build upon the works of authors in the field of international marketing listed above while also bringing a unique perspective on the structural trends occurring in the area due to globalization changes. The article presents a unique perspective on how the structural trends of international marketing are evolving due to globalization changes, which have led to increased competition, innovation, and opportunities for businesses operating on a global scale.

Moreover, the research uses benchmarking to identify best practices and strategies for firms to adapt to these structural trends. This approach helps firms to benchmark their performance against competitors, identify best practices, and develop strategies to improve their competitiveness.

By combining benchmarking with a unique perspective on the structural trends of international marketing, the article provides a valuable contribution to the field. It offers a practical approach for firms to adapt to the changing global landscape and compete effectively in the international market.

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CONCLUSIONS

The study finds that benchmarking is an effective tool for determining the position of an organization compared to similar ones, and its competent adoption can lead to cost reduction, increased profits, optimized activity strategy, and competitive product sales. The presence of Ukrainian enterprises in the benchmarking process can strengthen their position in world markets, so it should become an urgent strategic need. The research recommends using benchmarking to reveal the company's best performance indicators, standards, and guidelines, which contribute to developing strategies to improve the quality of goods and services. The study emphasizes the need for an international marketing policy that considers current trends and is adaptable to the changing business environment.

Ukrainian enterprises should adapt foreign developments regarding benchmarking to their market environment and make benchmarking management and best practice implementation programs imperative for all enterprises. The study concludes that adopting benchmarking experience will create a system of continuous improvement of business performance in Ukraine, allowing enterprises to compare performance indicators and identify weaknesses and strengths compared to competitors in the national market and world leaders.

Therefore, further research in this direction should involve an in-depth study of successful foreign benchmarking practices, as one of the main structural trends of international marketing, to increase the efficiency of operations, improve quality, and increase the competitiveness of an enterprise that seeks to become a leader in its field of activity.

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Структурні тренди міжнародного маркетингу в умовах глобалізаційних змін

Анотація. В результаті швидкого технологічного прогресу та появи нових ринків і конкурентів, компаніям доводиться адаптувати маркетингові стратегії, щоб залишатися конкурентоспроможними. Основний визначальний фактор міжнародного маркетингу перемістився в бік бенчмаркінгу, коли компанії прагнуть вдосконалити свої методи та оптимізувати свою діяльність для збільшення прибутку, що є актуальним питанням. Метою статті було проведення теоретичного аналізу поняття бенчмаркінгу та його значення в контексті міжнародного маркетингу, а також виявлення нових тенденцій у міжнародному маркетингу, які виникли в результаті глобалізації. Теоретико-методологічною основою статті стали праці українських та зарубіжних вчених. Під час дослідження використовувалися методи наукової абстракції, критичного аналізу та абстрактно-логічні методи. В статті було досліджено, як глобалізація вплинула на міжнародні маркетингові стратегії компаній. Доведено, що компанії повинні адаптуватися до цих змін, використовуючи нові підходи та стратегії. У статті визначено порівняльний аналіз як важливу тенденцію для успіху компанії в міжнародному маркетингу, яка дає змогу визначати сфери вдосконалення та застосовувати найкращі практики. Інші фактори, які впливають на успіх міжнародного маркетингу, включають дослідження ринку, адаптацію продукту, брендинг, канали розподілу та стратегії ціноутворення. В статті також проаналізовані виклики та можливості міжнародного маркетингу, такі як культурні відмінності та доступ до нових ринків. В дослідженні підкреслено важливість структурних тенденцій, таких як бенчмаркінг, у визначенні успіху компанії в міжнародному маркетингу. Ця методологія також дає уявлення про фактори, які впливають на успіх міжнародного маркетингу, виклики та можливості, з якими стикаються компанії, і стратегії, які вони можуть застосувати, щоб досягти успіху на глобальному ринку. Результати цього дослідження можуть бути використані для розробки міжнародної маркетингової стратегії, що враховує особливості різних ринків та країн, для розширення міжнародних ринків компанії та розвитку міжнародної співпраці компанії з іншими підприємствами, а також для підвищення ефективності міжнародних маркетингових кампаній і швидкої адаптації до змін на міжнародному ринку

Ключові слова: інтернаціоналізація, діджиталізація, доповнена реальність, гейміфікація, кодування обличчя, бенчмаркінг

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Analysis of the higher education institutions network and the problem of its financing

Abstract. The problem of the quality of specialists training and the issue of financing the training of higher education seekers in Ukraine at the expense of budget funds and the funds of individuals and legal entities are examined. The purpose of the study is to identify ways to increase the efficiency of the use of budget funds to finance the training of students while ensuring the proper quality of this process. During the research, the Data Science toolkit has been used to work with large arrays of Big Data information. In combination with the application of a set of empirical methods, the research enables to put forward a hypothesis about the existence of an irrational distribution of budget funds among higher education institutions (HEIs) to finance the training of students in certain specialties. The article reviews the dynamics of the development of the network of HEIs of Ukraine during the period of independence of state-owned, communal and private forms of ownership and departmental subordination. A comparative analysis of the network structure in relation to the number of higher education seekers has been carried out in comparison with the corresponding structure of the network of educational institutions in European countries and in the USA, which confirms the relevance of the optimization of the network of HEIs and its structure. The presence of artificially created HEIs, which are subordinate to individual ministries and state services with privileged operating conditions, gradually reduces the quality of training in the absence of internal competition, which leads to a gradual decrease in the efficiency of the use of budget funding. The work quantitatively substantiates the state's financial losses from the irrational distribution of the state order among HEIs for the training of specialists with higher education. HEIs with a high proportion of incomplete groups, that are unable to ensure high quality of specialist training, are unable to attract external sources of funding for specialist training as a result of non-competitiveness in the market of educational services, are only spending budget funds without proper results. According to the research results, generalized optimization criteria of the network of HEIs of Ukraine are proposed, which can be used by the governmental bodies of Ukraine

Keywords: state order for the training of specialists, optimization criteria, formation of a special fund, formation of a general fund, use of funds for education, applicants training costs

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INTRODUCTION

The desire to enter the world economic space and the globalization processes that exist in the world, do not bypass Ukraine and influence the trends of economic relations. The levelling of barriers, the free movement of capital, the movement of resources of all kinds, the wide spread of digital technologies and artificial intelligence have led to the transformation of the labour market. There is a radical change in the requirements for specialists in various

specialties, their competencies, their readiness to work in conditions of rapid changes. New requirements are designed to ensure the proper quality of specialist training. Providing the labour market with in-demand highly qualified specialists, who meet not only modern requirements, but are also ready to work in the conditions of a new type of economy, is one of the important tasks of the state government.

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The training of specialists is carried out through an educational network, which includes different levels of educational institutions, a heterogeneous structure of subordination and financing of educational activities. The existing discrepancy between the demand for specialists of certain specialties and the requirements for them, the offers available on the labour market, the discrepancy between the level of training and the unwillingness to actively participate in the economic relations of a certain number of graduates of HEIs (higher education institutions) after receiving diplomas, indicate the need for an urgent solution to the specified problem. The inability of some HEIs to respond promptly to modern challenges, to the change of the environment, and inability to provide high-quality training of specialists determines the need to reorganize their activities. The effectiveness of the educational system of Ukraine is determined by a combination of factors. On the one hand, the results must be evaluated. How quickly graduates are included in active economic relations, in the processes of creating GDP (gross domestic product), how well they meet the modern demands of the economy, how quickly they can adapt to changing conditions, what positive effect they can create for the economy. On the other hand, the cost component is evaluated, namely, what resources and in what amount were spent to achieve the specified effect. It is the optimal ratio of spent resources and the obtained result that becomes the basis for determining the efficiency of resource usage. The presence of disproportions in the labour market in combination with constant requests to increase the amount of funding determines the need to optimize the network of HEIs of Ukraine. Taking into account the world trends regarding the creation of large scientific and educational centres, the merger of universities [1], while preserving a group of small institutions with specific, unique features, it is advisable to consider the main directions of optimization of the network of HEIs of Ukraine, including those caused by their merger.

In modern conditions, the study of higher education financing is of particular relevance. The main sources of funding for the activities of HEIs of Ukraine are budget funds through the general fund, as well as funds from individuals and legal entities that fill the special fund. In the work of O. Komarova [2], an analysis of the amount of state financing of education was carried out in terms of different levels of training, namely preschool, general, vocational and higher education. The author proved the low level of financing education costs in the structure of GDP, as well as in the structure of general budget expenditures. In conditions of underfunding of education, O. Komarova [2] used the concept of “survival budget”, which almost excludes opportunities for development. However, in the studies, emphasis is placed on the need to increase state allocations for education in general, on the need to comply with legally recognized requirements regarding the share of education costs. But the problem of effective distribution of available funds and identification of the reasons for the irrational distribution of state funding has not been carried out. The search for optimal models of financing higher education is relevant for scientists from different countries of the world. The paper presents the results of the impact on the development of higher education as a whole, changes in mechanisms of state funding and principles

of allocation of funds. F. Huang [3] cited the experience of Japan, where the interaction between national, regional educational institutions and central authorities has been transformed. N. Van Long [4] insisted on the expediency of using a model of government loans that depend on ICLs (income contingent loans) to finance higher education. The proposed funding model is used in the Australian co-financing system for education, as there is actually a sharing of risks between the private and public sectors. The model considered in the study is actually an element of lending. A. Edmund [5] investigated the relationship between state support of educational institutions and their positioning in global rankings, citing the lack of a clear direct relationship for the studied HEIs of European countries between their positioning in global rankings and the amount of state funding. Thus, confirming the hypothesis regarding the expediency of finding an individual model of financing education for each country, depending on regional characteristics. Investigating the relationship between the rating positioning and the amount of funding, issues regarding the quality of specialist training and the effectiveness of the use of financial resources were neglected.

The purpose of the study is to carry out a meaningful analysis of the existing structure of the network of HEIs of Ukraine, to study the peculiarities of financing educational institutions for each of the segmented groups of HEIs; to identify the problems of financing education and to find ways of improving the efficiency of the use of state budget funds for financing education with the provision of high-quality training of students.

MATERIALS AND METHODS

A wide range of Data Science analysis tools were used during the research. Data aggregation was applied to conduct research based on official data of the State Statistics Service on the population of Ukraine [6] for the period 1992-2020, and indicators on Higher Education in Ukraine [7], namely the number of educational institutions according to the classification of the State Statistics Service. The array of data of the Unified State Electronic Database on Education (USEDE) by years, regarding the contingent of higher education seekers [8], the results of admission to HEIs [8], information on registered HEIs [9] was processed using a set of approaches and methods that apply Big Data to process structured and unstructured information. Tabular and graphic methods were used to visualize the obtained results of information analysis. The application of comparative analysis methods in combination with statistical research made it possible to formulate generalized indicators of the number of educational institutions per person of the population of Ukraine, based on the calculated indicators of European countries. Methods of economic-mathematical analysis of financial and statistical reporting of the activity of HEIs of Ukraine, including a set of calculation and analytical methods were used. Through the methods of grouping, groups of HEIs were formed. The application of methods of analysis and synthesis became a toolkit for segmentation within each of the groups of HEIs.

The results of research conducted within the framework of the European University Association (EUA) were also used [10]; according to the results of the implementation of the DEFINE project [11] regarding the practice

of university mergers in European countries. Along with this, data from the European Register of Higher Education were involved for the analysis of European experience [12]. The criteria for the distribution of HEIs by size, which are proposed in [10], depending on the contingent of higher education seekers, namely, up to 500 students; from 500 to 20 000 students, from 20 000 to 50 000, and more than 50 000 students were taken as the basis for the grouping of HEIs of Ukraine, with an adjustment for the fact that today there are no HEIs in Ukraine with a contingent of more than 50 000 students. Therefore, all institutions with a contingent of more than 20 000 students are classified as large HEIs.

Financial reporting data of HEIs of Ukraine, published on the official websites of educational institutions about the receipt and use of funds from the general fund and the special fund under the budget program “Training of personnel by institutions of higher education and ensuring the operation of their practice bases”, was used to calculate the receipt of the general fund per student for each of the HEIs, calculation of the sums of funds raised from external stakeholders, incoming sums to the special fund per student. Also, the mentioned data on vocational education and training made it possible to rank educational institutions

according to their ability to independently attract external sources of funding for training through the calculation of the amount of income to the special fund per hryvnia of funding from the general fund. In fact, this indicator provides an opportunity to assess the effectiveness of the use of state budget funds that go to the general fund of HEIs.

RESULTS AND DISCUSSION

During the years of an independent state establishment, a network of HEIs was formed in Ukraine. During this time period, the structure of the network of educational institutions, their form of ownership, and subordination changed significantly. The transformation of priorities and attitudes in society to educational processes led to changes in the structure of the network of educational institutions and its quantitative indicators. In 1994-1998, the number of institutions with the status of “institution of higher education” grew rapidly, and private HEIs were opened. In the study [13], it is indicated when a hundred or even more HEIs were created within two years. Figure 1, according to data [7], shows the dynamics of the structure of the network of HEIs for the period 1991-2020 and the number of higher education seekers studying in the respective institutions.

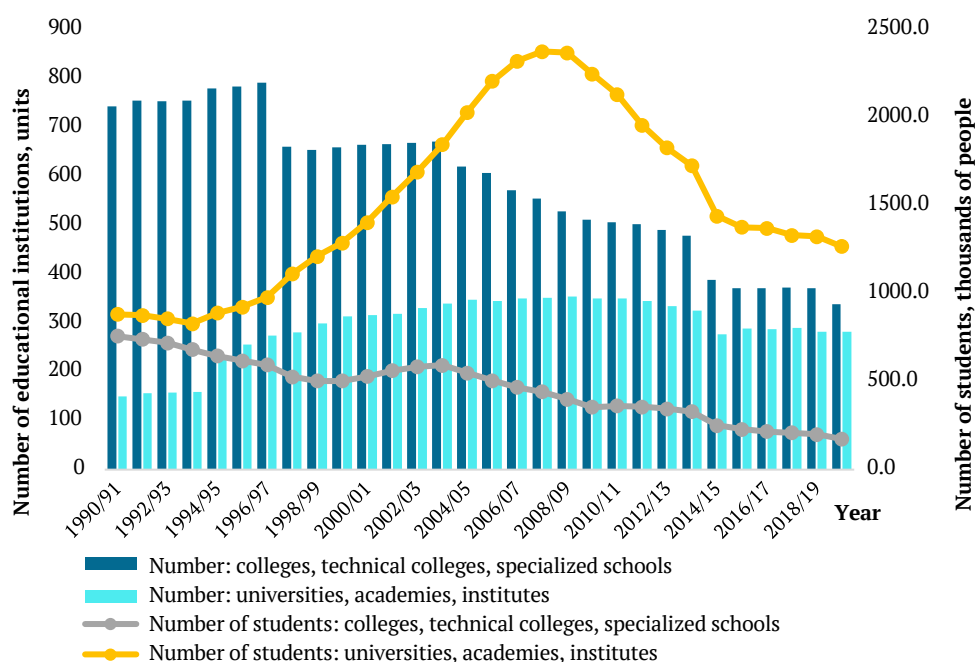


Figure 1. Dynamics of the number of educational institutions and their students

Source: built by the author based on data [7]

The number of colleges, technical schools, specialized schools had a tendency to fall, from almost 800 units in 1996, it decreased more than 2 times in 2019. The number of universities, academies, on the contrary, had a tendency to grow. Whereas since 2014/2015, their number is gradually decreasing. At the same time, the population of Ukraine during the period of independence tended to decrease from more than 52 million people in 1993 to less than 42 million people in 2020. The study of modern trends in migration processes, the expansion of opportunities for the movement of resources of all kinds,

the levelling of borders, taking into account the steadily high rates of population decline in Ukraine, give reasons to assume the continuation of such a trend of population decline. One of the defining features of the present-day is the active development of digital technologies, which are gradually being introduced into all spheres of life. Restrictions that were applied as a measure to prevent the spread of the COVID-19 pandemic, on the one hand, led to negative consequences, significant economic losses, a drop in socio-economic activity, on the other hand, gave a new impetus to the development of remote



technologies and their application in various spheres of socio-economic relations, including the educational process. Digitization processes put forward new requirements, both for HEIs regarding the level of provision and implementation of the educational process, for technical equipment, personnel support, and for the higher education system as a whole.

Taking into account the indicated trends, a problem of ensuring the compliance of HEIs of Ukraine, their quantitative and substantive parameters, with the modern requirements of the economy and the needs of society

arises. Globalization processes, the acceleration of integration of the higher education system of Ukraine into the world educational space, necessitates the transformation of the education system, taking into account the main European trends and guidelines, under the conditions of ensuring high quality of education. The indicators of the average number of the population per HEI and the average number of students per HEI in different countries of Europe and the United States are informative. Table 1 demonstrates the need to optimize the quantitative parameters of the network of HEIs in Ukraine.

Table 1. Average indicators of “coverage” of the HEIs network in different countries

Indicator	USA	Germany	France	Ukraine
Number of population, persons	331 893 745	83 237 124	67 626 396	41 902 000
The number of students, persons	19 637 000	2 945 000	1 935 800	1 183 207**
Number of HEIs, units	3982	422	331	335*
<i>Calculated indicators</i>				
Coverage level (the average number of population per HEI), persons	83 348.50	197 244.37	204 309.35	124 708.33
The average number of students per HEI, persons	4 931.44	6 978.67	5 848.34	3 521.45

Note: * – without taking into account educational institutions where training of cadets, conscripted for military service is conducted according to the data of USEDE; ** – without taking into account the contingent of cadets of military institutions according to the data of the USEDE

Source: developed by the author based on [6; 8; 12; 14-16]

According to Table 1, the average number of students per HEI in Ukraine is lower than in other countries. Such a situation is due, on the one hand, to an excessive number of HEIs, and on the other hand, a significant share of small institutions with a small contingent of applicants, but which have been granted the status of “institution of higher education”. The indicator of the estimated number of population per HEI is also lower than in European countries. The issue of optimizing the number of HEIs in Ukraine becomes urgent. In the future, the average number of students per HEI should be brought up to at least 6 000 people, and the average number of population per HEI to 200 000 people, which will correspond to the average European indicators. However, the calculated indicators are averaged. Their use can only be a guideline for each region. In order not to destroy the system of higher education in Ukraine, it is necessary to systematically and carefully approach the solution of the specified problem, taking into account the strategic needs of Ukraine, the characteristic features of the higher education network and regional characteristics.

The study of networks of HEIs of European countries and the USA showed a variety of systems, features for each of the countries, and at the same time allowed to identify certain trends. Merger processes are one of the areas of optimization of the HEIs network. The processes of merger of HEIs take place in different parts of the world, in European countries, Asian countries, the USA with different intensity and scale of implementation. In Europe, the process of consolidation of HEIs through mergers has been going on for many years. In the research “University mergers in Europe” of the European University Association (EUA) [11], which was carried out as part of

the DEFINE project, it was determined that over the past two decades there have been more than 130 mergers with more than 2100 HEIs in 22 European countries, which is about 6%. As part of the implementation of this project, an interactive “mergers map” [17] was built, which provides information on mergers both by individual countries and the dynamics over the past 20 years. The results of the analysis show that in different countries the process of transformation of the network of HEIs is extremely uneven, both in terms of time and quantitative characteristics. There are countries with only 1 merger each, such as Italy and Portugal, and countries with more than 10 mergers, such as Greece and Norway. Similarly, there are significant differences in the percentage coverage of HEIs that have undergone transformation. The share of such HEIs ranges from 0.5% in Italy to 77.8% in Estonia of the total number in the country. The greatest peak of mergers of private and public institutions in European countries occurred in 2013-2015. In three years, 37 mergers took place. However, since 2016, this process has slowed down significantly and the number of mergers did not exceed 4 per year. From 2003 to 2012, a fairly stable situation was observed, the number of mergers ranged from 5 to 8.

Optimizing the network of HEIs of Ukraine is an objective necessity, but the process must be balanced and gradual. The network of HEIs is not homogeneous, its elements are institutions of different subordination, forms of ownership and with different sources of financing. Figure 2, according to the data of the State Statistics Service [7], shows the distribution of HEIs of Ukraine at the beginning of the 2020/2021 academic year by forms of ownership in comparison with the share of students studying at such HEIs.

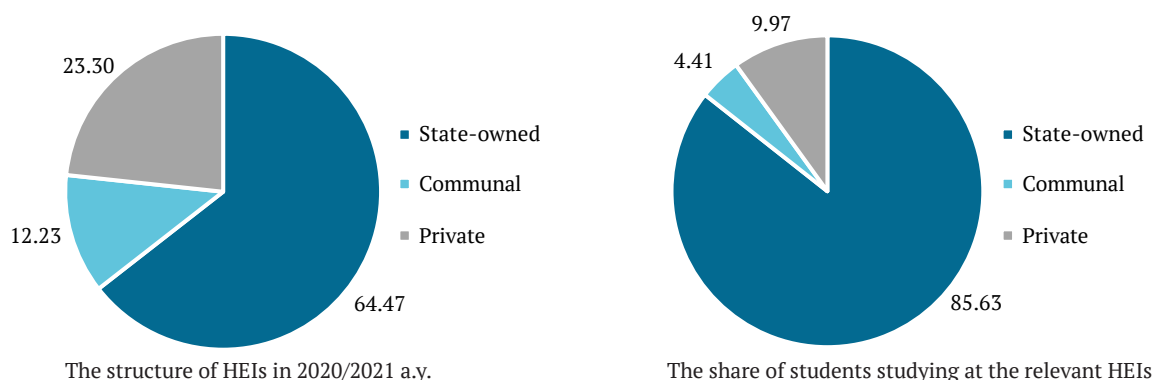


Figure 2. Distribution of HEIs by forms of ownership and the share of students for 2020/2021 a.y.

Source: created by the author

According to data [7], state-owned institutions make up 64.47% of the total number of HEIs in Ukraine and cover more than 85% of education seekers. While less than 10% of higher education seekers study at private HEIs, the share of which is 23.3% in the total number of HEIs. Less than 4.5% of students study in communal educational institutions (12.23% of the total number). This distribution shows that education seekers traditionally

prefer state-owned institutions, despite the high rate of opening of private HEIs. Traditions, material and technical base, scientific schools, image play a decisive role in choosing an educational institution. It is necessary to take into account the fact that HEIs in Ukraine have different founders, both public and private, and different departmental subordination. The structure of the HEIs network for 2021 is presented in Table 2.

Table 2. Structure of the network of state-owned HEIs by departmental subordination

Nº	group	Departmental subordination of state HEIs	Number of HEIs
1	I	Ministry of Internal Affairs of Ukraine	8
2		Ministry of Defence of Ukraine	3
3		Security Service of Ukraine	1
4		Administration of the State Border Service of Ukraine	1
5	II	The State Emergency Service of Ukraine	3
6		Ministry of Health of Ukraine	16
7	III	Ministry of Education and Science of Ukraine	152
8	IV	Ministry of Foreign Affairs of Ukraine	1
9		Ministry of Environmental Protection and Natural Resources of Ukraine	1
10		Ministry of Culture and Information Policy of Ukraine	13
11		State Statistics Service of Ukraine	1
12		Ministry of Social Policy of Ukraine	1
13		Ministry of Finance of Ukraine	1
14		Ministry of Justice of Ukraine	1
15		National Academy of Sciences of Ukraine	2
16		National Academy of Pedagogical Sciences of Ukraine	1

Source: built by the author based on data [9]

In Table 2, ministries and departments are grouped as follows. Information on HEIs, which are subordinate to the ministries and state services of the I group, is not public and has strict restrictions on publication. HEIs, which are assigned to the II group under departmental subordination, partly have civilian specialties, but there are also certain restrictions on the disclosure of information in full. HEIs under the Ministry of Education and Science of Ukraine belong to the III group. The IV group includes HEIs that are subordinate to ten other ministries and state services. Only 45% of the total number of HEIs are under the supervision of the Ministry of Education and Science of Ukraine. State-owned

HEIs are subordinated to 16 ministries and state services, on the one hand, this is aimed at specialized training, and on the other, it significantly disperses state budget funds for the training of specialists with higher education, especially in non-specific specialties. Communal institutions of higher education are subordinated to and, accordingly, receive funding from the general fund through regional councils, city councils and regional state administrations.

The structure of subordination and forms of ownership of institutions of vocational education (VE) and vocational-technical education (VTE) are somewhat different. According to data [8], the share of state institutions is

51.9%, in turn, only 34% of VE institutions are subordinated to the Ministry of Education and Science of Ukraine. The share of such institutions of communal form of ownership is almost 40% compared to 7% of communal institutions in the structure of the HEIs network. Funding of general fund revenues occurs due to the redistribution of the educational subvention of the state budget, as well as local budgets. Less than 10% of VE institutions belong to privately owned institutions. Similarly, as for vocational training, there is a wide differentiation of departmental subordination of vocational training institutions, which also leads to dispersion of budget funds and inefficient placement of state orders.

Solving the problem of optimizing the network of HEIs in Ukraine cannot be achieved only at the level of the Ministry of Education and Science of Ukraine. The problem requires a comprehensive approach and finding ways at the level of the Cabinet of Ministers of Ukraine. The optimization criteria must be uniform for all HEIs that receive funds from the general fund (GF) of the State Budget (SB). An exception may be departmental HEIs, which train specialists with higher education exclusively in specific specialties that correspond to the profile of the relevant department. Their number and size should be justified within the framework of these departments. These are HEIs, which according to Table 2 are assigned to groups I and II.

65.8% of state-owned HEIs under the supervision of the Ministry of Education and Science of Ukraine are in the structure of state-owned HEIs. In such a situation,

the question arises of the expediency of maintaining HEIs, which are subordinate to other ministries and departments (group IV) and conduct training in specialties that are in the system of HEIs of the Ministry of Education and Science of Ukraine. In fact, the maintenance of the said HEIs is carried out at the expense of the state budget, and the receipt of funds to the general fund occurs through other managers of budget funds. In general, according to data [8], as of October 1, 2020, outside the sphere of management of the Ministry of Education and Science of Ukraine and outside its subordination, there are 106 private HEIs, 23 communal HEIs and another 54 state-owned HEIs operating in Ukraine, which is almost 55%. In fact, the Ministry of Education and Science of Ukraine is limited in its influence on more than half of the institutions of the higher education network.

The structure of the HEIs network is heterogeneous not only in terms of ownership and subordination, but also in terms of the size of educational institutions, depending on the number of students. As part of the research conducted by the association of European universities EUA, on the basis of the data of the European Register of Higher Education (ETER) [18], groups for the distribution of HEIs by size are given [12]. In accordance with this classification, the distribution of Ukrainian HEIs was carried out. Figure 3 shows a diagram of the distribution of European HEIs in comparison with the distribution of Ukrainian HEIs by the number of education seekers.

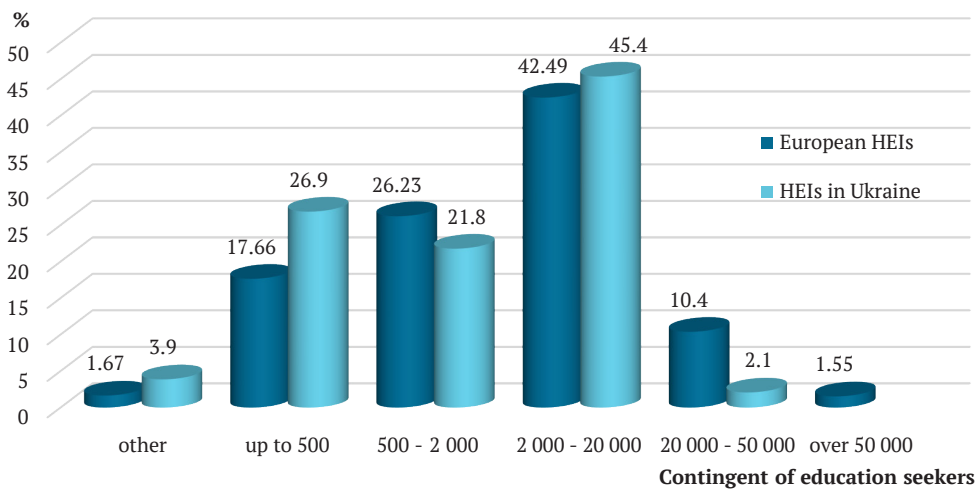


Figure 3. Structure of the network of European and Ukrainian HEIs by the number of education seekers

Source: created by the author

The structure of the network of Ukrainian HEIs in terms of the number of students generally corresponds to the structure of European HEIs. However, according to some groups there are certain differences. In the category of others, Ukrainian HEIs, which are included in the I group under departmental control (Table 2), because a correct assessment of the number of applicants of such HEIs is impossible due to restrictions on the publicity of data of these higher educational institutions. The percentage of average HEIs with a contingent of students from 2 000 to 20 000 is almost the same and is 45.4% in Ukraine, against 42.49% in Europe. Among middle-sized HEIs, the number of private ones is small, only 6 institutions. The fundamental

differences in the comparison of the structures of higher educational institutions networks are the fact that there are no higher educational institutions with a contingent of more than 50 000 students and a small share (2.1%) of HEIs with a contingent of 20 000 to 50 000 students.

The share of institutions in the category with the number of up to 500 students significantly exceeds the similar indicator of European HEIs. The vast majority of small HEIs are private HEIs (74.4% in this category). Thus, the main financial burden for ensuring the functioning of HEIs of this group falls on non-state sources of functioning. In the category with students' number from 500 to 2 000, the share of privately owned HEIs is 30%. It is objec-

tive that the Ministry of Education and Science of Ukraine does not exert organizational influence on private HEIs regarding the optimization and adjustment of their sizes. Ensuring effective activity, attracting and using funds is the prerogative of private owners. Taking into account the fact that Figure 3 shows the distribution of all private educational institutions, regardless of the forms of ownership

and sources of their financing, it is appropriate to separately consider private educational institutions that receive budget funds for the implementation of their activities. Figure 4 shows the distribution of HEIs by the number of education seekers of communal and state ownership without taking into account specific HEIs, which are assigned to the I group of departmental subordination (Table 2).

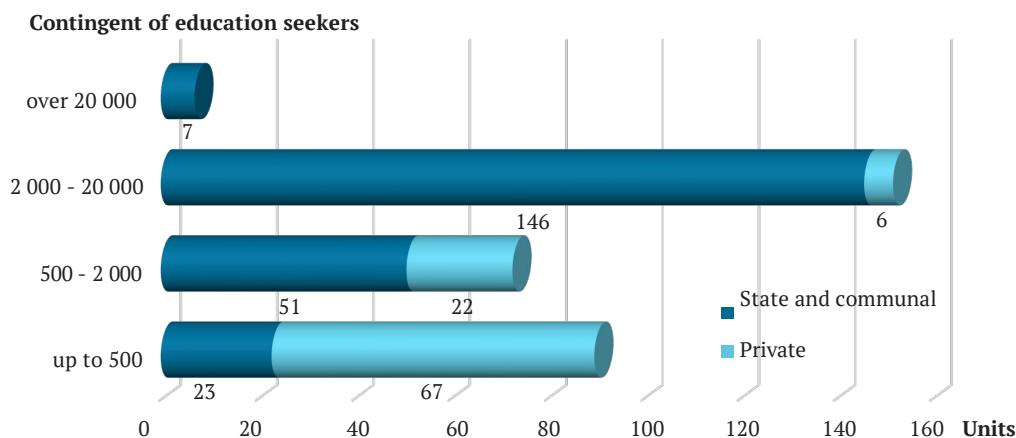


Figure 4. Diagram of the distribution of HEIs of Ukraine according to the volume of the contingent of education seekers and the form of ownership

Source: created by the author

According to [8], there are 227 state-owned and communal HEIs in Ukraine, of which 74 are small (with a contingent of up to 2 000 students) (32.6%). The number of medium-sized HEIs with a contingent of 2 000 to 20 000 students is 146 (64.3%). The number of large HEIs with a contingent of more than 20 000 students is 7 (3%). The problem of small HEIs, the contingent of which is less than 2 000 students, needs to be solved. These are 74 institutions of communal and state ownership and 89 institutions of private ownership. The number of such establishments must be reduced to a minimum. HEIs with a contingent of up to 500 people training at the “Bachelor” educational level for 4 years have about 100 students in each course, and these are only 4 academic groups. There are questions about the number of specialties and educational programs for which training is carried out, the number of students in each educational program and the number of years of training; staff support, financial support for the implementation of educational activities at the appropriate level, and as a result, the quality of specialist training.

In the conditions of a systematic decrease in the amount of financing of state budget expenditures on education, the question of the most effective use of budget funds for the training of specialists is becoming more acute. Among the directions of cost optimization, the direction of optimization of the HEIs network is highlighted. The implementation of the model of optimization of the HEIs network should be balanced and should take into account the peculiarities of each region. Considering the total number of small HEIs (163), optimization and merger of them at this segment is inevitable. Formation of the parameters of the optimization model of the HEIs network, along with other aspects, should take into account the following aspects, namely: territorial and geographical location; the

list of specialties for which training is conducted; availability of the specified specialties in other HEIs of the relevant region; elimination of duplication of specializations for the training of specialists if it is possible to meet the needs of society with a smaller number of HEIs. This will provide an opportunity to carry out optimization in the middle of this segment without significant losses for the region. Due to the redistribution of educational subvention funds among educational institutions for the financing of activities, the possibilities of additional financing of their development are expanding, and funds from the state and local budgets will be released. On the other hand, there are certain HEIs, regardless of their size, which, from a statesman’s point of view, must be left for the realization of some specific goal. For example, the preservation of a cultural centre, since HEI is a forming city one. Or they train specialists with higher education for special, unique specialties that are not trained in medium-sized and large HEIs.

Another group of HEIs where there are significant differences between the European and Ukrainian networks is the group with a contingent of education seekers of more than 20 000 people. In the European network of such HEIs, 12% make up, while in Ukraine they are only 2.1%. This group of HEIs should be considered in more detail. The group includes 7 HEIs: Ivan Franko Lviv National University; National Aviation University; National Technical University of Ukraine “Ihor Sikorsky Kyiv Polytechnic Institute”; National University of Bioresources and Nature Management of Ukraine; Kyiv National University named after Taras Shevchenko; Kyiv National University of Trade and Economics; Lviv Polytechnic National University. Involvement of external stakeholders in the financing of educational activities becomes the basis for filling the special fund (SF) of higher educational institutions and a source

of financing development costs [13]. Today, a significant number of HEIs provide training for each specialty. Therefore, students and their parents always have a choice which educational institution to study at and whom to pay. The amount of funds raised from external sources becomes an indicator for the educational institution regarding its image, the quality of training, priorities regarding the effectiveness of the work of the higher educational institution staff. The indicators of attracting funds to the SF become an indicator for the management bodies of higher educational institutions regarding the effectiveness of the management of the educational institution and the ability to attract external sources for co-financing. In the conditions of limited budget funding, the factor of readiness and ability of HEIs to independently ensure development and ensure compliance with the most modern requirements is an important aspect.

The level of the indicator of the amount of revenues to the special fund per hryvnia of revenues to the general fund shows how much the HEI independently attracts financial resources for each invested hryvnia of budget funds. According to the group of large HEIs, this indicator is within 0.5, except for the Kyiv National University of Trade and Economics (KNUTE) (1.85), i.e., on average, HEIs attract from external sources within 50 kopecks for each hryvnia of budget funding. And for the National Technical University of Ukraine “Ihor Sikorskyi Kyiv Polytechnic Institute” this indicator is the lowest and is 0.23. The average amount of income to the SF for 1 scientific and pedagogical worker is UAH 237 726 precisely due to the high indicators of KNUTE.

Solving the problems of financing higher education through the optimization of the network should focus not only on quantitative indicators, such as average values for

the region or country, but also be based on indicators that ensure the achievement of the strategic goals of the country’s development. Therefore, simple merger of HEIs cannot become a solution to the problem. In the first place should be the criterion of the possibility of potential improvement of the quality of training of specialists with higher education in certain specialties and the corresponding preservation of established, effectively operating scientific schools. Not less important is the criterion of reducing the costs of the general fund of the state budget under the budget program “Training of personnel by institutions of higher education and ensuring the operation of their practice bases” [19], [20]. The complexity of solving this problem is due to the peculiarity of the network of HEIs, given the dispersion of budget funding of state-owned and communal educational institutions, which is actually carried out through different administrators of budget funds. A wide list of management bodies to which the HEIs are subordinate and which are their founders leads to situations of artificial creation of HEIs. 8 departments have only 1-2 HEIs under their control, each of which functions outside of a competitive educational environment. This situation leads to a gradual decline in the quality of education, the lack of internal development incentives, uneven funding as a result of the receipt of funds from different managers.

From the point of view of optimizing expenditures from the State Budget of Ukraine for the maintenance of HEIs and the organization of educational activities (according to the budget program 2201160 “Training of personnel by institutions of higher education and ensuring the operation of their practice bases”) [20], it is important to separately consider state HEIs, which are subordinate to the Ministry of Education and Science of Ukraine (Fig. 5).

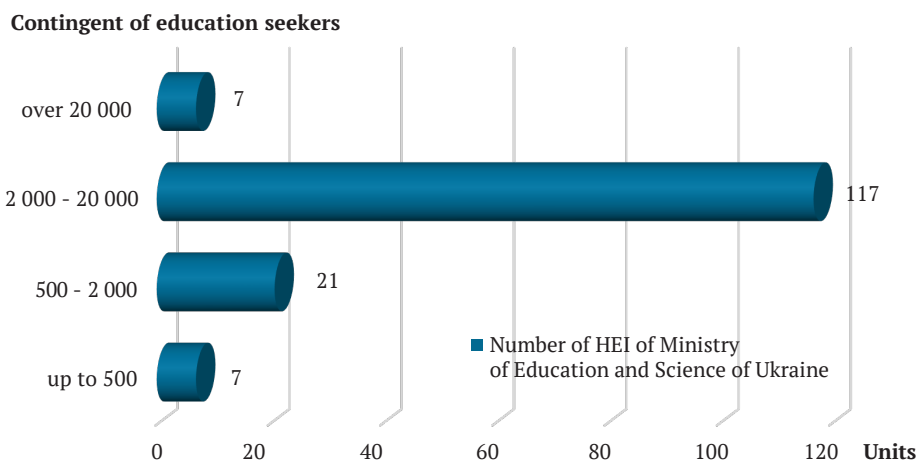


Figure 5. Distribution of HEIs subordinated to the Ministry of Education and Science of Ukraine according to the contingent of education seekers

Source: created by the author

According to the European classification, it is medium-sized HEIs with a contingent of 2 000 to 20 000 education seekers that occupy the main share, almost 77%, in the network of HEIs subordinated to the Ministry of Education and Science of Ukraine. The maintenance of state-owned HEIs is carried out at the expense of the state budget through receipts to the general fund, as

well as by attracting sources of external funding through receipts to the special fund from external stakeholders. Indicators of the level of attraction of external funding are among the criteria for the effectiveness of the management of HEIs. In accordance with the Decree of the Cabinet of Ministers of Ukraine (CMU) [21], the formula for the distribution of State budget expenditures among

institutions of higher education under the program “Training of personnel by institutions of higher education and ensuring the operation of their practice bases” contains indicators of the amount of funds received by the special fund based on the results of scientific activities, results of international activity, the coefficient of scale of activity, which depends on the contingent of students. According to the indicator of attracting funds to the special fund per hryvnia of general fund revenues, the following results are observed.

For the group of large HEIs with a contingent of more than 20 000, the value of the indicator, as noted, is 0.6 on average for the group. For the group of small HEIs with a contingent of up to 2 000, the indicator was 0.55. For each hryvnia of budget funding, institutions attract 55 kopecks from external stakeholders. According to the group of medium-sized HEIs with a contingent of 2 000 to 20 000 people, for 117 HEIs, this indicator by group was 0.68 on average. That is, on average, for each hryvnia of budget funding, the institution of higher education received 68 kopecks from external sources. The discrepancy between the minimum – 0.13 and the maximum – 2.7 value of the indicator in the group of medium-sized HEIs indicates the heterogeneity of the HEIs network and the noticeable difference in the management of them. 10 HEIs groups have an indicator of less than 0.3; the level of the indicator from 0.3 to 0.5 is in 46 HEIs groups; 36 HEIs have an indicator in the range from 0.5 to 1.0; only 21 HEIs attract funds

from external stakeholders to the special fund more than they receive budget funding to the general fund, for them this indicator is between 1.01 and 2.7. Optimization of financing of higher education through the optimization of the network of HEIs, in combination with increasing the efficiency of the use of budget funds, should be based on a set of indicators, including the ability of HEIs to attract funds to a special fund from external sources.

It is obvious that medium-sized HEIs not only more effectively use the funds of the general fund of the state budget, but also more actively attract funds from external stakeholders, adhere to a more flexible financial and economic policy. The argument that the exclusivity of this situation is due to the fact that medium-sized HEIs train specialists in more popular specialties than large ones is not justified, since in Ukraine any HEIs has an opportunity and accredit a set of those specialties that they consider necessary at their own choice. Therefore, the more effective use of the funds of the general and special funds of the state budget by medium-sized HEIs largely depends on the quality of management of the relevant HEIs. On the basis of reporting information on the receipt and use of budget funds by HEIs under the budget program 1160 “Training of personnel by HEIs and ensuring the operation of their practice bases”, the average amount of higher education income from the general fund per student for each group of small HEIs, medium-sized and large was calculated (Fig. 6), depending on their size.

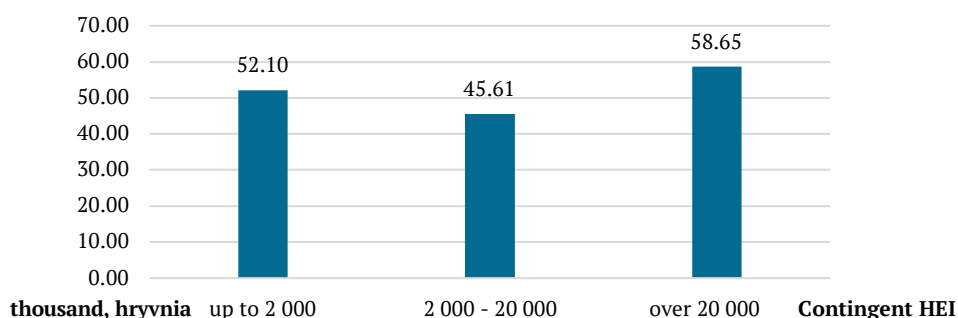


Figure 6. The average level of expenditures of the general fund per higher education seeker by groups of HEIs

Source: created by the author

A comparison of the absolute values of incomes of HEIs according to the general fund for different groups of HEIs cannot be informative and provide an adequate result. Only comparable given values can be the basis for further evaluation of the use of funds. The most expensive for the state budget turned out to be the maintenance of large HEIs, with a quota of more than 20 000 students. The average costs per student in this group are more than UAH 58.65 thousand. Maintenance of small HEIs is carried out at the level of UAH 52.1 thousand per student. Whereas the expenditure of budget funds for the financing of medium-sized HEIs by UAH 13.000 below the large ones. Revenues of the general fund of such HEIs on average for the group amount to UAH 45.61 thousand. Funding under the program “Training of personnel by institutions of higher education and ensuring the operation of their practice bases” per student of large institutions is almost a third (28.6%) higher than the funding of medium-sized HEIs.

The given calculations prove the following. The existing hypothesis about the feasibility of optimizing the network of HEIs through their merger, creating only large HEIs, will help save public funds, optimize the costs of maintaining higher educational institutions and contribute to improving the quality of education, is not proven, neither from a financial point of view, nor from a statement about the effectiveness of the result in terms of quality education, nor from the position of solving social problems.

Equally important in the process of optimization of the network of HEIs is the socio-economic criterion. It is necessary to preserve HEIs in those cities where they are city-forming, because they support the appropriate educational and historical-cultural level of the population in these cities and play an important role in the formation of the economic component of their development. The decision to preserve and even increase the number of young people in regions that are of strategic importance in the

political and economic aspect, including border regions, is well-founded. Returning to the quality of training of specialists with higher education, it must be decided who and how evaluate this quality in a specific specialty. There is a widespread thesis that the inclusion of HEIs in certain international ratings ensures the high quality of specialist training. However, the analysis of the structure and weighting coefficients of the indicators taken into account in these ratings shows that they are irrelevant to the specialties for which competent specialists are formed in a particular HEI. The entry of HEIs into one or another rating is not a guarantee of the quality of training in each of the specialties, especially in the current period of time. More informative is the external stakeholders' assessment of the quality of training of specialists with higher education in a certain specialty at a specific HEI. Employers and applicants with their parents act as such stakeholders, who evaluate the attractiveness of HEIs and the quality of education by their choice of HEIs and their own funds when enrolling in a contractual form of education. If the HEI has an order from employers for the development of scientific and project solutions in a certain field of knowledge, has an order from them for the training of specialists in a specialty related to this field, this can be an evaluation characteristic of the quality of training of specialists with higher education. Similarly, the measuring evaluation of the quality of training of specialists is the number of applicants to the contract form of training at the corresponding HEI in a specific specialty under the conditions of dumping restrictions.

The state also acts as an external stakeholder in relation to the activity of a HEI. On the one hand, due to a set of restrictions, on the other hand, due to relevant orders, the state significantly influences the activities of educational institutions. It formulates its priorities in the form of a state order for the training of specialists with higher education. However, unlike the stakeholders of business entities and individuals, it evaluates the quality of training of specialists in a specific HEI indirectly through the allocation of funding in accordance with the Resolution of the CMU [21] regardless of specialties. The existing financing system assumes that the state finances the training of even one specialist in a certain specialty in a separate HEI. It is clear that the quality of such training cannot be high due to lack of funding. This amount of funds per applicant (Fig. 6) is not enough even for salaries with accruals to scientific and pedagogical workers, therefore there is no question of development. The specified problem is closely related to the formation of parameters for the effective distribution of state orders based on a wide competition. In the process of forming a list of HEIs that have the right to receive a state order for a certain specialty, it is necessary to take into account the history of recruitment of a specific HEI for a certain specialty or educational program during the previous two to three years.

If, during the studied period of time, the relevant specialty or educational program of the first bachelor's level of HEI does not enrol a sufficient number of students, taking into account those who study under the state order, as well as students who study at the expense of individuals or legal entities, then there is a high probability of a repetition of a similar situation in the current year. The trend of extremely low popularity among applicants of the

relevant specialty in a certain HEI may be preserved. As a result, for several years in a row, according to a certain educational program, the training of students in the so-called incomplete groups is carried out under conditions of underfunding. A direct negative consequence of such a situation is the impossibility of providing educational services at a high-quality level. Since the financing of the training of higher education seekers has two sources, budget funds and funds of individuals or legal entities. The formulaic approach to the distribution of funds from the general fund of the state budget among institutions of higher education involves adjusting the amount of funding taking into account a set of indicators, among which there is a contingent of seekers. The amount of funds that the educational institution receives as income to the special fund from individuals and legal entities depends on the amount of the contract. The low popularity of a certain specialty limits the possibility of increasing the amount of tuition fees for the funds of individuals and legal entities. In total, the reduced volume of funding from the general and special fund leads to underfunding of the process of training specialists. As a result, this HEI will not be able to provide high-quality training for education seekers, and as a result, this is an inefficient use of budget funds. The state does not receive high-quality specialists, which means that this is an irrational distribution of the state order for the specialists training.

In case if the situation with an incomplete group is not an isolated problem for a certain HEI, objectively there is a need to cover the minimum necessary costs for the students training, including the salary of the scientific and pedagogical workers. There is a conditional internal redistribution of funds. The financial resources received by the HEIs for the students training for other specialties, both from general and special funds, will be partially used to cover costs due to underfunding of incomplete groups. Depending on the amount of such overlap of costs, there is a situation of actual underfunding of training in other specialties. Accordingly, the quality of the training of specialists is low, which means the inefficient use of budget funds, which are directed not only to financing the training of education seekers from incomplete groups, but also to the training of students in other specialties. Gradually, the problem takes on a progressive character. The importance of this problem is confirmed by the number of expenditures from the general fund for the training of specialists with higher education, which was approved for 2021.

According to the data of the admission results in 2020, which are given in the USEDE [8], an analysis of the efficiency of the distribution of state-ordered places among HEIs according to the relevant specialties was carried out. When making calculations, the following assumption was applied. The threshold for the number of education seekers who are enrolled in studies with the funds of the state budget and the funds of individuals and legal entities is 15 people. A group with a smaller total number of education seekers is considered incomplete, regardless of the ratio of the number of education recipients in it by funding sources. Allocation of budget funds from the general fund to finance the training of students for incomplete groups is an inefficient use of budget funds from the general fund of the budget. Sources of funding for the training of specialists

are state and private funds. Even if only 1 student studies under the state order, and the other 14 – with the funds of individuals and legal entities, the author of the study believes that in total, such revenues from the general fund and the special fund ensure the implementation of expenses for the training of specialists. In authors opinion, the use of state budget funds is effective.

The smaller number of education seekers does not ensure the receipt of funds to cover the minimum necessary expenses for the training of specialists. Moreover, these assumptions do not take into account the peculiarities of training in specialties that require specific conditions and an appropriate base. The economically justified minimum number of students for one group will be higher there. A small share of incomplete groups among the wide list of specialties for which training is conducted by

popular and powerful HEIs will not lead to losses in the quality of training, since powerful HEIs are able to cover the lack of funding for a specific group to cover the corresponding costs. At the same time, the quality level of specialist training is maintained. The presence of a significant share of incomplete groups to ensure the funding of training costs leads to the need to combine groups from different specialties or specializations, with corresponding adjustments to the curricula, and the loss of not only the uniqueness of the program, but also the quality of training. According to the results of the admission campaign of 2020, according to open data [8], an analysis of the effectiveness of the allocation of state order places under the conditions of the formation of full-fledged, complete groups was carried out. The analysis was carried out in the section of groups of HEIs by size, depending on the contingent (Fig. 7).

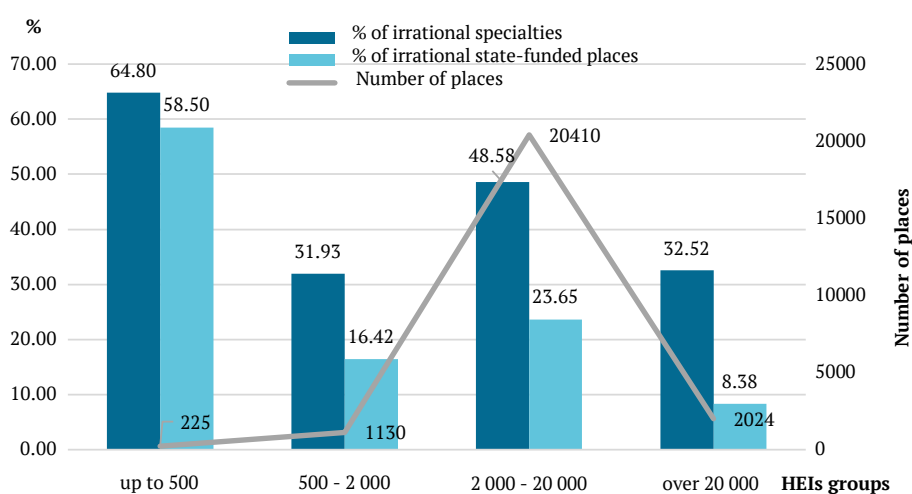


Figure 6. The average level of expenditures of the general fund per higher education seeker by groups of HEIs

Source: created by the author

An analysis of the effectiveness of the distribution of state-funded places was carried out within each group of HEIs. The share of positions, specialties or specializations with incomplete groups in relation to the total number of positions, specialties or specializations for which a certain HEI has been awarded state order places is determined for each HEI. That is, the share of higher education specialties on which the budget was irrationally spent has been determined. The calculation of the share of state-ordered places for such specialties in relation to the total number of budget places provided to the relevant HEI was carried out. The average of the following indicators per group was calculated for each group of HEIs. In the group of small HEIs, with a contingent of up to 500 people, among HEIs that received a state order for specialists training, no full-fledged groups were formed for each of them for an average of 64.8% of positions (specialties or specializations). That is, in 64.8% of specialties, less than 15 students are enrolled with the funds of the state order and the funds of individuals and legal entities. On average, by group, 58.5% of state-ordered places belong to each HEI, which is actually an irrational use of budget funds. In the group of medium-sized HEIs, more than 23% of places on average for each institution are irrationally distributed. 48% of positions from the list for which a state order for the training of specialists was issued

are positions with incomplete groups. More than 20 000 state-ordered places, which are irrationally distributed, belong to the group of medium-sized HEIs alone. Out of more than 123 000 places ordered by the state, more than 23 000 places fell to groups with a small contingent and cannot be recognized as rationally used. Almost 20% of the funds of the general fund for specialists training were dispersed in the network of HEIs for training in incomplete groups.

According to the Passport of the budget program 2201160 for the year 2020 [19], the average costs per student (represented contingent) are UAH 55 180.9. Thus, the irrational distribution of state-ordered places leads to inefficient use of budget funds in the amount of over UAH 1.3 billion per year from approved expenditures in the amount of UAH 16.6 billion from general fund. Taking into account the need to train students at the bachelor's level for 4 years ($1.3 \times 4 = 5.2$ billion UAH), and the tendency towards an annual increase in the amount of expenses for the training of one student, this amount will increase. The quality of training of students in incomplete groups and the level of compliance of the competences acquired by them with those declared by the program raises certain doubts. This is how an unsuccessful use of budget funds with a distortion of the economic and social effect is achieved. At the same time, conducting a more detailed analysis of each of the

groups of HEIs indicates a significant differentiation between institutions of the same group. In each of the HEIs groups by size, there are segments in which the share of specialties with an irrational distribution of budget places is insignificant, and there is a segment with a significant share of specialties for which there is an insufficient admission of applicants to a certain HEI.

First of all, the HEIs segments with a high share of specialties with irrational distribution of state order places require the most careful attention. The suspension of allocation of state orders for unpopular specialties of such HEIs will lead to their withdrawal from the market of educational services in such specialties. In the conditions of limited financing of the educational sphere, the artificial retention of a significant number of specialties from a wide list of HEIs is unacceptable. There is a list of specialties that are unpopular among applicants, but are in demand in the state and require additional support. For such specialties, it is expedient to concentrate the state order in a few specialized HEIs and ensure the quality of specialist training, rather than scattering 3-5 budget places for all HEIs. Applying an approach with constant monitoring and preventing the allocation of funding for the training of incomplete groups will ensure the selection of only those HEIs that can potentially qualitatively train specialists with higher education in a certain specialty. Ignoring this state of allocation of budget funds harms the state in several directions. In the conditions of the deficit of the State Budget, the constant reduction of expenses for education in general and for funding under the budgetary program of specialists training, the irrational use of budget funds on such a scale is unacceptable. Artificial support at the expense of the funds of the general fund of the budget of a wide list of specialties in all HEIs where they are opened, even in the presence of incomplete groups for a long period, leads to the forced redistribution of funds and the actual underfunding of other specialties at the expense of the funds of the general fund. Systematic training of education seekers in incomplete groups with an insufficient level of funding does not ensure the full acquisition of the necessary list of competencies and affects the quality of training. After a few years, a large number of specialists who do not meet the modern demands of the market enter the socio-economic environment of the country. The problem of retraining and employment arises. There is a postponement of the moment of active inclusion of such graduates in the economy and their creation of economic benefits. At the same time, this leads to image losses of the system of education in Ukraine.

Summarizing the results of the conducted research, the system of higher education of Ukraine needs significant transformations. On the one hand, the extensive network of HEIs with different departmental subordination and different levels of funding does not fully ensure the high quality of training of specialists at each HEI. On the other hand, the present day makes new and new demands on specialists, on their competences, on the education system as a whole. The system of higher education should train specialists of the future, who meet not only modern advanced requests, but also are able to respond quickly to changing requirements. The effectiveness of the use of financial resources can be one of the indicators in

the mechanism of optimizing the network of HEIs and improving the quality of education.

High-quality training of specialists cannot be implemented without the introduction of modern information systems and technologies into the educational process. Agreeing with the statement of A. Alqahtani and A. Rajkhan [22] regarding the existence of a close connection between the degree of development and introduction of modern information and distance technologies in the educational process and the results of the educational process, the formation of the so-called success factor, we note the following. The level of readiness of HEIs of Ukraine for e-learning is significantly differentiated. In 2021, not all Ukrainian HEIs are fully ready to conduct training using distance technologies at a high level and in full. The insufficient level of financing of the educational activities of HEIs becomes an obstacle for timely technical re-equipment of the material base, updating of information support and attracting appropriate personnel support. In papers [23] and [24], the directions of transformational processes, including digital transformation, management transformation, their impact on the implementation of educational activities are considered, but exclusively from the perspective of educational institutions. There is no doubt about the need to introduce such transformations within each element of the educational system. The transformational processes of each element of the system create a synergistic effect and lead to the transformation of the system as a whole.

The impact of a combination of factors, namely, technological development, political problems, specific requirements for the higher education system, the inconsistency of society's requests with the existing opportunities of the education system, which are discussed in detail in [25], determine the need for transformations to maintain competitive positions. Sharing the thesis of the authors that innovativeness and creativity at various levels of the educational system affect the competitive position of the educational institution and the growth of the efficiency of the educational system as a whole, at the same time, consideration of the issue of creating a modern innovative, competitive HEI cannot be limited exclusively to managerial aspects and the model of leadership behaviour. The question of financing activities, sufficiency and efficiency of resource use is an integral component of creating a modern innovative HEI. One of the criteria for evaluating the competitiveness of HEIs is the degree of readiness of stakeholders to cooperate with such an institution. Stakeholders, such as the state, individuals and legal entities, provide financing for HEIs, as they act as customers of educational services, scientific developments, etc. The functioning of a competitive model of financing educational activities in the field of higher education will gradually lead to transformational processes of the higher education network, since only the most competitive institutions with the greatest potential will receive a higher level of funding.

A number of studies are devoted to the analysis of the effects that have been achieved as a result of merger processes. A set of approaches to the transformation of the network of HEIs through the application of a set of administrative tools is considered, namely through the decision to merge universities. Q. Liu, D. Patton, M. Kenney [26]

conduct an analysis of the results of the merger of universities in Northern Europe and universities in China. The impact on academic synergy and publication activity of scientists is studied, with the gradation of categories of educational institutions. The authors emphasize the ambiguity of the positive effect of the merger of educational institutions. There is no direct connection between the merger of HEIs and the growth of the rating positions of the newly created institutions, and the growth of the publishing activity of scientific and pedagogical workers of such institutions. The unification of scientific schools did not always lead to scientific results of a new level. The physical unification of various business entities produced the effect of only quantitative growth of certain indicators, as the sum of individual elements. Moreover, cases with an existing negative effect from the merger of the HEIs were studied. Namely, the complication of the processes of managing a new enlarged object, the reduction of its flexibility and the ability to quickly respond to the high rates of change in the modern environment.

An interesting approach to merger, which was introduced in Japan, is given in a study by K. Yoshinaga [27]. In order to strengthen the quality of training in a certain specialty, for example, the medical field, a merger was carried out at the level of structural subdivisions of the same profile but different HEIs. The work summarizes the peculiarities of the financing of such projects, the shortcomings, the problems that arise, and the result of such transformations.

The goal of optimizing the network of HEIs cannot be a formal reduction in the number of institutions due to their merger. The priority should be to ensure the high quality of education. According to the author of the study, the development and implementation of the system of criteria should be integrated into the optimization mechanism of the network of HEIs of Ukraine. Such a mechanism should take into account the peculiarities of the current state of Ukrainian HEIs, modern needs, prospects for the development of the country and the world, and contribute to the implementation of the education development strategy as a whole. The paper [28] proposed generalized "steps to improve the quality of Ukrainian higher education" at the current stage of development. The cost of specialists training is one of the key aspects of financing educational activities. S. Londar [29] was engaged in the study of issues of formation of the cost of training specialists, analysis of differences in the cost of training in one specialty for different HEIs. However, within the scope of his research, he did not carry out a detailed analysis of the presence of incomplete groups in certain specialties and the calculation of their influence on the formation of the cost of training. The author believes that the factor of the presence of incomplete groups in a certain HEI and the share of such groups

influence the formation of the average cost of a specialist training in each specialty for HEIs. A significant gap in the cost estimate of the costs for the training of one student under a state order within the same specialty for different HEIs, along with other factors, may be due to the presence of such incomplete groups.

CONCLUSIONS

The work substantiates the direct financial losses of the state from the irrational distribution of the state order among HEIs. The presence of HEIs with a high proportion of incomplete groups indicates a low level of their competitiveness, low opportunities to attract funding from external sources, and certain difficulties in ensuring high quality training of specialists. An analysis of the structure of expenditures of the general fund of the budget of Ukraine for the maintenance of the HEIs network was carried out. An analysis of the financial burden on the budget regarding the maintenance of HEIs of different sizes was carried out, due to the sum of general fund expenditures per student, with the determination of the costliest items. The analysis of the structure of the network of HEIs of Ukraine revealed the need for its optimization in view of the excessive number of small HEIs, the presence of duplicative specialties of training in HEIs, which are subordinate to the Ministry of Education and Science of Ukraine and other ministries and state services, and receive budget funding through various managers of budget funds.

The network of HEIs is significantly differentiated, and different educational institutions have different capacities to attract external sources of funding for students training. According to the results of the research, it was found that there are facts when, for a certain specialty, an educational institution receives a budgetary order for the training of specialists, receives appropriate funding, but is unable to enrol applicants in the number of one academic group, including budgetary and contractual forms of funding. The result of the presence of an incomplete academic group is an insufficient level of funding for the training students of such a group, which affects the quality of their training. The significance of the impact of insufficient funding largely depends on the share of specialties and educational programs for which incomplete groups are formed in the general structure of training for a certain HEI. Among the directions of further research is the development of a model for the distribution of state-ordered places for each specialty among HEIs, taking into account regional needs, ensuring the rational use of budget funds, ensuring high-quality training of specialists; development of a mechanism for optimizing the network of educational institutions with justification of transformation criteria.

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Аналіз мережі закладів вищої освіти та проблеми її фінансування

Анотація. Розглянута проблема якості підготовки фахівців та питання фінансування підготовки здобувачів вищої освіти в Україні за рахунок бюджетних коштів та коштів фізичних і юридичних осіб. Метою дослідження стало виявлення шляхів підвищення ефективності використання бюджетних коштів на фінансування підготовки здобувачів освіти із забезпеченням належної якості підготовки. При проведенні дослідження застосовано інструментарій Data Science для роботи з великими масивами інформації Big Data. У поєднанні із застосуванням сукупності емпіричних методів проведення дослідження дозволило висунути гіпотезу щодо наявності нераціонального розподілу бюджетних коштів між закладами вищої освіти для фінансування підготовки здобувачів за певними спеціальностями. В статті здійснено огляд динаміки розвитку мережі ЗВО (закладів вищої освіти) України за часів незалежності державної, комунальної, приватної форм власності та відомчого підпорядкування. Проведено порівняльний аналіз структури мережі по відношенню до кількості здобувачів у співставленні з відповідною структурою мережі закладів освіти європейських країн та США, що підтвердило актуальність питання оптимізації мережі ЗВО та її структури. Наявність штучно створених ЗВО, які підпорядковані окремим міністерствам та відомствам із привілейованими умовами функціонування поступово знижують якість підготовки за відсутності внутрішньої конкурентної боротьби, що призводить до поступового зниження ефективності використання бюджетного фінансування. В роботі кількісно обґрунтовані фінансові втрати держави від нераціонального розподілу державного замовлення між ЗВО на підготовку фахівців з вищою освітою. ЗВО з високою часткою некомплектних груп, які не спроможні забезпечити високу якість підготовки фахівців, не спроможні залучати зовнішні джерела фінансування підготовки фахівців у наслідок неконкурентоспроможності на ринку освітніх послуг, лише витрачають бюджетні кошти без належного результату. За результатами досліджень запропоновано узагальнені критерії оптимізації мережі ЗВО України, які можуть бути використані державними органами України

Ключові слова: державне замовлення на підготовку фахівців, критерії оптимізації, формування спеціального фонду, формування загального фонду, використання коштів на освіту, витрати на підготовку здобувачів

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System of economic security and levels of its formation

Abstract. In order to develop a methodology for assessing the system of economic security of entities in conditions of economic and political instability, there is a necessary and urgent task to determine the nature, characteristics, relationship between its levels, factors influencing their formation. The purpose of the study is to generalize scientific approaches and clarify the essence, features and relationship between the levels of formation of the economic security system. The generalization of the existing approaches to the formation of the economic security system was carried out using a monographic method. The essence of the levels of the economic system is determined by methods of analysis and synthesis. The research analysed existing approaches to determining the hierarchy of the economic security system and presented a scheme for the formation of levels of economic security, consisting of a mega-level (global and international economic security), a macro-level (national), a meso-level (regional and sectoral economic security), a micro-level (economic security of entrepreneurship, enterprise, individual) and the relationship between them. The category "economic security of the industry" was defined as a set of conditions that ensure economic development, competitiveness and protection of its economic interests. It was established that the economic security of the industry depends on its specifics, functions, objects, subjects, specific risks and threats. The role of the economic security of the industry and the economic security of the individual in the system of the hierarchy of levels of economic security was substantiated. The obtained results are the basis for the development of a methodology for assessing the system of economic security of various entities, which can be used by their management in order to identify threats in a timely manner and quickly implement measures to eliminate them

Keywords: threats, risks, industry, hierarchy, interrelation of types

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INTRODUCTION

In modern conditions, which are characterized by both economic and political instability of the economy, the study of the problems of ensuring economic security, in particular, the definition of its essence, levels of hierarchy and the interrelation between them, which will allow the development of a methodology for the qualitative assessment of the economic security system as a whole, is gaining special relevance and will contribute to increasing the level of its protection against external and internal threats.

Scientists I. Balanyuk and M. Maksymyuk [1], defining the essence, characteristic features and levels of economic security, characterized it as a reaction to external threats of globalization. At the same time, the interpretation of economic security of each level should take into ac-

count the peculiarities of the activity of economic objects on this level. Researcher I. Baron [2], highlighting the key features of the ecosystem, taking into account the dynamic nature of the socio-political context of the conditional hierarchy of key characteristics, proposed to define it as the ability to neutralize the negative impact of various threats. O. Kudrina and O. Datsenko [3], in the study of the role of socio-economic security in ensuring the competitiveness of regions, paid attention to its connection with national security. The researchers claimed that the competitiveness of the region depends on the competitiveness of economic sectors and formation of an environment, which determines the conditions, nature and interaction between economic entities in the region. Ya. Samusevych, A. Vysochyna,

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T. Vasylieva, S. Lyeonov, S. Pokhylko [4] using the method of multifactorial analysis according to the data from 6 Eastern European countries based on 9 indicators of ecological, energy and economic security, identified their main components and found out that the highest level of interaction exists between energy and ecological security, and the lowest one – between energy and economic security. Considering economic security as a component of national economic security, S. Bugaytsov [5] determined its interrelation with the level of stability in the state. This makes it possible to diagnose the state of national economic security and guide the development of the state using an effective model of public administration. In his opinion, economic security ensures effective functioning of the state, rational use of its resources and sustainable growth in the future.

Yu. Krakos and O. Kalinina [6] believed that the concept of economic security is interconnected with investment attractiveness and competitiveness, since it represents protection from dangers and allows more efficient use of resources, which contributes to increasing investment attractiveness and competitiveness. According to N. Bondarchuk [7], economic security is closely related to investment security, since the ability to prevent possible threats, avoid risks and achieve set goals in competitive conditions depends on the effective organization of investment activities. I. Petrova, V. Syrota [8], revealing the essence of economic security of the enterprise and its characteristics, justified the existence of interrelation between corporate social responsibility and the level of economic security of the enterprise. They defined corporate social responsibility as one of the factors of ensuring the economic security of the enterprise in the conditions of modern economic environment, which exerts a complex influence on it in terms of several components. In their opinion, the interrelation between corporate social responsibility and the level of economic security of the enterprise is based on the personnel of the enterprise, owners, buyers, suppliers, representatives of the state and local authorities, public organizations, society. Proposing a multidimensional approach to the hierarchy of the economic security system, Ye. Mishchuk [9] claimed that it best reflects its theoretical essence, takes into account its binary nature and can be used to calculate the general level of economic security and its individual components, which allows choosing effective measures to increase their level.

Currently, there are many definitions of the economic security system, which differ from each other. Such terminological uncertainty indicates the interest and high search activity of scientists in this field. However, for the development of the theory of economic security as a science, a clear designation of the basic definitions and a common vision of the object of research by representatives of various scientific schools are necessary. The generalization of existing approaches to the formation of the economic security system on the basis of thematic scientific research of 2010-2020, carried out by the monographic method, shows that the subject of numerous research by scientists is the category of “economic security” itself and individual levels of its formation. The analysis of scientific publications on the determination of the essence of the levels of the economic security system and the synthesis of the results presented in them shows the existence of different

views on their formation and confirms the relevance of the research, which aims to generalize scientific approaches to the construction of the hierarchy of the economic security system, determine the essence of its levels, interconnection between them and clarify the place of the economic security of the industry in this system.

HIERARCHICAL STRUCTURE AND INTERCONNECTION OF THE LEVELS OF ECONOMIC SECURITY

Economic security is formed at different levels. As evidenced by the analysis of scientific literature, most scientists single out the following among them: global economic security, national or economic security of the state, regional economic security, economic security of the enterprise; economic security of the individual. According to Ya. Zhalilo [10] there are three main levels of economic security: of the individual, of the economic entity and of the state, which are indivisible. T. Gladchenko [11] adds the economic security of the region to the specified levels. T. Vasylytsiv [12] singles out the following levels: of the economic security of the state, of the regions, in the industrial and sectoral aspect, at the micro-level of the management hierarchy, of the society (group), of the individual. The hierarchy proposed by G. Ivashchenko [13] includes: global economic security; international economic security; economic security of the state (macro-level); economic security of the region (meso-level); economic security of the enterprise (micro-level). V. Kovalenko, O. Levchuk [14] propose to single out similar levels, but supplement the name of global economic security with the “mega-level”, and call the state economic security as the national economic security. O. Ruda and L. Malyuta [15] add economic and property security of enterprises to global, international, national economic security and economic security of the region. The same opinion is held by Z. Yakubovych [16]. Scientists do not distinguish the level of individual economic security, which, in the opinion of the author of the study, is a disadvantage of this hierarchy, since the individual is the main element of the enterprise, industry, region, state and the world. The system of economic security, proposed by Yu. Tymchyshyn [17], is devoid of this drawback, which includes five levels (global, national, regional, business and personal security). O. Khimich [18] also distinguishes five levels (global, national, regional, enterprise and individual security).

A. Shtangret, O. Petrashova [19], in addition to global, international, regional and local security, distinguish national security, the components of which are the economic security of the state, industry, enterprise and individual. At the same time, they note that distinguishing the industry level is extremely important for the rational management of economic security. O. Ilyenko [20] believes that the category of “economic security” covers all spheres and levels of human activity, and distinguishes four levels of economic security: mega-level (economic security of the society and world economy), macro-level (economic security of the country (state), national economy, groups of countries (states)), meso-level (economic security of regions, industry), micro-level (economic security of the enterprise, individual, group of individuals, family) depending on the objects of attention (world economy, society in general, state, region, industry, individual, his/

her family, etc.). Scientists O. Lyashenko, B. Pleskach, V. Bantush [21] propose a hierarchy of the economic security system, which includes the following levels: global security (mega-level), international security, which is a component of global security, national security (macro-level), regional (meso-level), individual, local (micro-level). O. Chubukova, T. Voronkova [22] and O. Hrybinenko [23] have a similar view on the hierarchy of levels of economic security. However, at the micro-level, they distinguish the economic security of the enterprise, organization, institution and add a basic level – the economic security of the individual. V. Tretyak and T. Gordienko [24] claim that the micro-level consists of: the economic security of the enterprise and the economic security of the entrepreneur (individual). O. Oliinychuk [25] considers it logical that the economic security system of the state is formed by economic entities of regions and industries and includes

the micro-level represented by the economic security of an individual economic entity; sectoral meso-level – the economic security of a set of single industry economic entities; regional meso-level, i.e. the economic security of a certain region where economic entities operate.

In most of the scientific approaches presented, there is no industrial level of economic security. However, in the author’s opinion, this category occupies a prominent place in the system of economic security, because in the conditions of economic integration and globalization, the emergence of certain problems in a particular industry affects the economic security of enterprises, that belong to this industry, the regions where they are located, the state as a whole. Taking into account this and the existing scientific approaches to determining the hierarchy of the economic security system, it is appropriate to distinguish its following levels (Fig. 1).

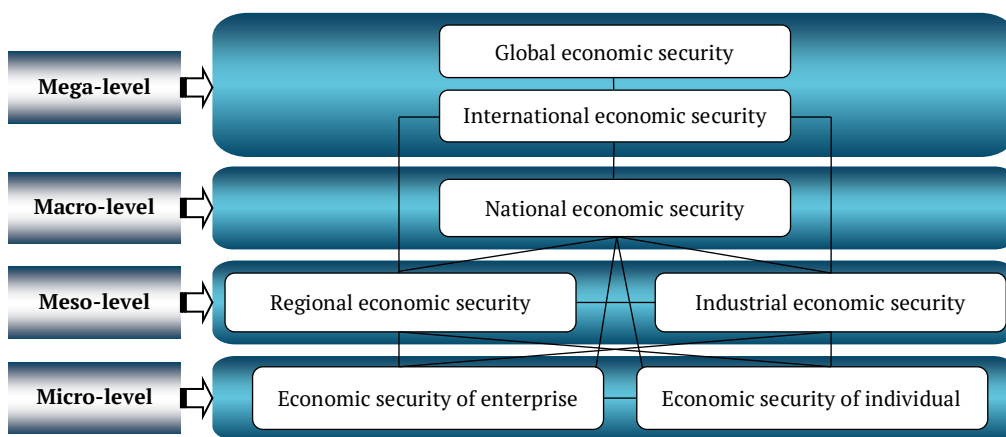


Figure 1. Levels of economic security and their interrelation

Source: developed by the author

Mega-level: global economic security represents the security of human development, the mechanism for solving its global problems and the globalization of the economy of various countries of the world. It includes international economic security (studies the factors and components of competitiveness at the macro-level). Macro-level: state-wide or national – economic security of the state, which also includes sub-sectors. They include financial, technological, social, budgetary and environmental sectors. Meso-level: regional economic security (projects state economic security to the regional level) and sectoral economic security (includes regulatory, financial, ecological, informational and other components). Micro-level: constitute the economic security of entrepreneurship, which combines informational, intellectual, financial, technical and technological, social, ecological components; economic security of the enterprise, which allows preventing threats and ensuring the economic efficiency of the enterprise; the economic security of the individual is determined by the ratio of the level of income, expenses and savings of the individual. As noted by T. Vasylytsiv [12], in the system of the hierarchy of economic security, each higher level must create prerequisites to ensure the protection and comfortable functioning of the components of the lower levels. In turn, according to O. Oliinychuk [25],

the lower levels of economic security should be the basis for strengthening the higher levels. Yu. Tymchyshyn [17], supporting the position of the relationality of security at various hierarchical levels of management, notes that “its local (regional), state (national) and global (macroeconomic) levels are interconnected institutionally, spatially, structurally and informationally”.

The author of the study believes that there is a close interrelation between all levels of economic security (Fig. 1), because they are elements of a single system, and therefore changes that occur with one element affect others. For example, social protests, political conflicts, strikes negatively affect the financial stability of the state (macro-level). In turn, due to the unstable economic situation in the country, the efficiency and profitability of economic sectors, regions, business entities and individuals (meso- and macro-level) are decreasing. At the same time, damages and losses suffered by economic entities, economic sectors, regions (micro- and meso-level) due to the political crisis affect the condition of economic security of the state (macro-level). On the other hand, progressive political decisions, stimulating tax policy of the state contribute to the development and improvement of the efficiency of industries, regions, individual business entities, and, accordingly, strengthen the economic security of

the state. The uneven development of a particular region leads to a low standard of living of its population, creates tension in society, which threatens the territorial integrity of the country and its economic security. The introduction of industry regulations, the provisions of which meet the modern requirements of the international community (as is currently happening in the construction industry of Ukraine), expands the opportunities for cooperation with foreign partners of the enterprises that are part of it. Large-scale emergency situations (floods, droughts, earthquakes, etc.) in the region of a certain country lead not only to the deterioration of the economic security of economic entities in this area, but also cause losses to their partners due to the disruption of relations, affect the financial stability of the state as a whole and sometimes affect international security. The economic security of the enterprise is the basis of national security, because the production of material goods determines the vital activity of society. There is a close relationship between the latter and national security. It depends on the quality of the legal system created by the state [26]. The decision of a business entity to improve the state of the environment contributes to strengthening the ecological safety of a particular region and improves the image of this entity among the population of adjacent territories, representatives of local authorities, which causes an increase in interest in the products manufactured by it,

and, accordingly, contributes to increasing the volumes of sales of these products; increasing the scope of activity.

DETERMINATION OF THE ESSENCE OF HIERARCHICAL LEVELS OF ECONOMIC SECURITY

All levels of economic security are characterized by one goal, a similar methodology of formation, a mechanism for ensuring it, the essence of which is defined as counteraction to existing risks and threats to economic security. Economic security at any level aims to protect against external and internal threats for smooth, efficient and stable activity at that level. At the same time, according to O. Denisov [27], “the content of the concept of ‘security’ in each specific situation is different and depends on the object of the analysis being determined”. O. Ilyenko [20] believes that when defining the concept of “economic security”, one should take into account the scope of coverage (mega-, macro-, meso-, macro-level) and the type and features of the research subject. The results of the analysis of the opinions of scientists regarding the content of the concept of “economic security” at different levels give grounds for asserting that the complexity, versatility, structure and diversity of this category determines the existence of a number of interpretations of the term “economic security” in modern economic literature (Fig. 2).

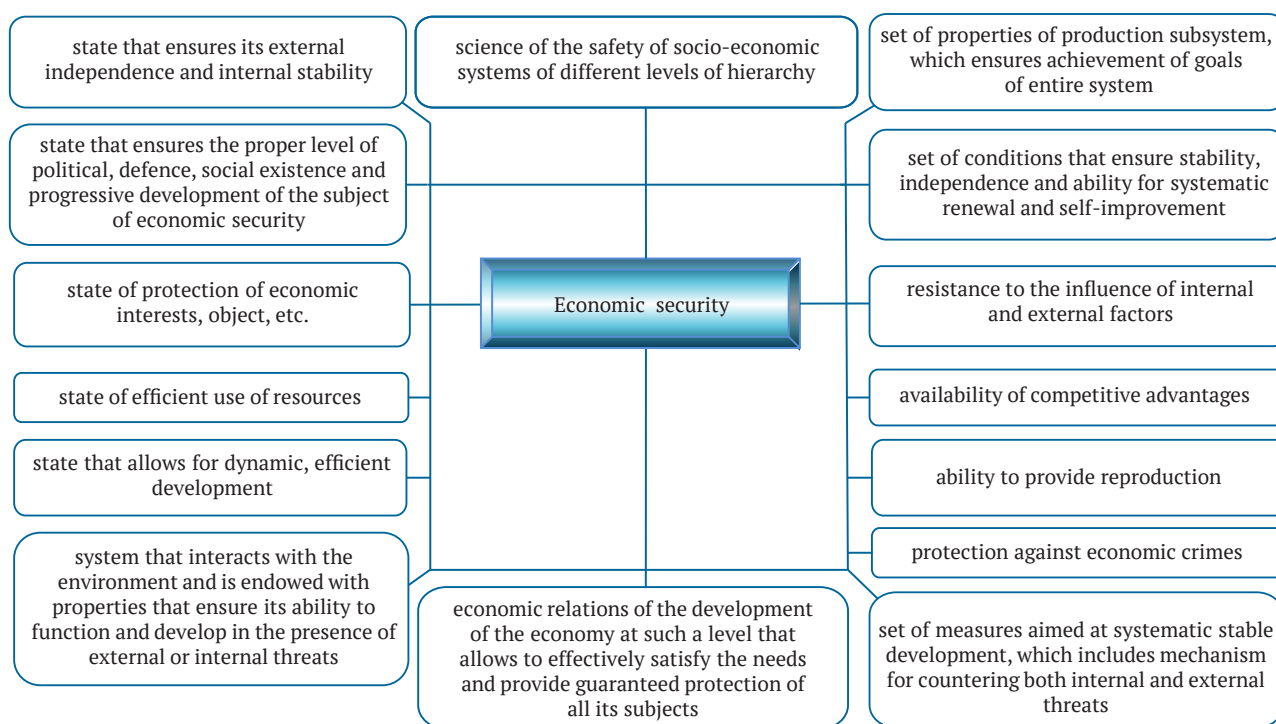


Figure 2. Levels of economic security and their interrelation

Source: developed by the author

As shown in Figure 2, it is proposed to consider it from the point of view of a state that ensures external independence and internal stability, a sufficient level of existence, efficiency of the use of resources, production system, dynamic economic development, security of activities and interests, harmonization of the latter; the system that ensures its ability to survive and develop; economic

relations, under which effective satisfaction of needs and guaranteed protection are carried out; resistance to the influence of factors; a set of properties of the production subsystem, conditions that ensure independence, stability and development; availability of competitive advantages; ability to reproduce; protection against economic crimes; a set of measures for stable development and countering

threats. Despite the fact that economic security is formed at different levels, starting with the state and ending with the citizen, the majority of scientific research, as evidenced by the analysis, is devoted to the economic security of the enterprise. Global, international, national, regional economic security is also a subject of attention of scientists. Therefore, relying on the research of the scientists O. Lyashenko [28], O. Chubukova, T. Voronkova [22], who interpret global economic security as the formation and securing of the functioning of the system of world economic relations, the effective interaction of economic blocs and national economies, and summarizing characteristic features in their views on the definition of this category, under global economic security it is understood that a set of measures allows to ensure the sustainable economic development of the states of the world in order to achieve the maximum safe and high standard of living of each individual. Identifying the features of international economic security, defined by scientists O. Skoruk [29], G. Ivashchenko [13], O. Khimich [18], it is characterized as a component of global economic security, which should ensure such cooperation between countries that will allow to resolve national and global problems of humanity on mutually beneficial terms and will contribute to their socio-economic development.

Recently, there has been a negative impact on the international economic security of such factors as: the outflow of highly qualified personnel from certain countries to the developed countries of the world, where more favourable conditions of activity have been created. As a result, there is an imbalance of personnel potential, which restrains the development of some countries, and at the same time promotes even greater prosperity of others; growth of the value of strategic resources under the influence of political manipulations and limitation of access to them by some countries. The Russian Federation uses energy “weapons” to influence the domestic political situation in European states; complication of the exchange of new technologies for political reasons; the lack of an adequate degree of cooperation even in the face of challenges and threats common to all humanity, such as the COVID-19 pandemic; the aggravation of the struggle between the United States of America and the People’s Republic of China for world leadership; the hybrid war of the Russian Federation against Ukraine. The emergence of these and similar factors is mostly explained by the presence of political antagonism, anti-democratic manifestations, global and local ideological contradictions on the world stage and it leads to the destabilization of international economic security, escalation of existing and emergence of new conflicts on the world stage, restrains the development of world society.

In the world scientific literature, there are many approaches to the interpretation of national economic security. At the same time, the scientists S. Stetsenko [30], V. Kovalenko, O. Levchuk [14], Z. Varnaliy, S. Onishchenko, A. Masliy [31] single out its sustainability, stability of the economic development of the state, counteraction to internal and external threats, economic independence, possibility of independent adoption and implementation of strategic, for the development, economic and political decisions by any entity, reliability of connections between all elements, possibility of using national competitive advantages

to ensure stability and development, self-reproduction and self-development, national interests. Taking into account the above, national economic security, in author’s opinion, should be considered as the state of the economy and government institutions, which allows to insure the guaranteed protection of national interests, socially oriented, harmonious development of the state. Ukraine is going through a complex process of market transformation and modernization of the economy, which is taking place in the presence of numerous negative factors (the shadow economy, growing economic inequality among the population, increasing unemployment, the spread of the coronavirus disease (COVID-19), increasing threats to national interests from the Russian Federation, etc.). To prevent the action of these factors and ensure the protection of national interests and the development of the country, the National Security Strategy of Ukraine [32] was developed for the period until 2025, which defines the following priority directions for ensuring national security: defence of independence and state sovereignty; European and Euro-Atlantic integration; restoration of territorial integrity.

For the purpose of their effective implementation, it is envisaged to create competitive conditions for attracting investments, in particular foreign ones, in such fields as metallurgy, energy, agro-industrial complex, pharmaceuticals, logistics and infrastructure, woodworking, furniture production and the IT industry, since they have a significant investment potential and are the most attractive from the point of view of profitability for the investor. An important step on the way to the implementation of the National Security Strategy of Ukraine should also be the implementation of judicial, land, defence, educational and security reforms. All kinds of support from the state should be given to those sectors of the economy where environmental protection and careful treatment are guaranteed, that is, safe disposal of all waste is provided for, natural resources are effectively used, conditions are created that are favourable for the introduction of the latest technologies that are safe for people and the environment. The further development of the activity of the agro-industrial complex should also be ecologically oriented. In parallel with the ecological transformation of the economy, Ukraine must integrate its own energy markets into the EU energy market, which will allow for diversification of energy sources and energy resource supply routes. The energy system of Ukraine, with the exception of the Burshtyn energy island, which is connected to the European energy system, works in synchronous mode with the systems of Russia, Belarus and Moldova. Integration into the European network will help balance the energy system, reduce dependence on Russia, gain access to new solvent markets, and provide the Ukrainian consumer with reliable and high-quality electrical energy. To create favourable conditions for the development of economic sectors, modernization of transport infrastructure, improvement of tariff policy, acceleration of customs procedures and increase in the use of inland water and air transport are required. An important direction of strengthening national economic security is the development of relations with the United States of America, the United Kingdom of Great Britain and Northern Ireland, Canada, the Federal Republic of Germany, the French Republic, neighbouring and other states and a special partnership

with the North Atlantic Treaty Organization with the aim of gaining full membership of Ukraine in NATO. The national security strategy takes into account the risks Ukraine faces as a result of a hybrid war with Russia, the pandemic and other factors, and the effectiveness of its implementation will contribute to the neutralization of both internal and external threats that have arisen in recent years.

Economic security of the region [33-35] has its own peculiarities in formation and functioning, which determine its essence. In connection with this, scientists do not have a single position on its interpretation. Most often, this category is characterized as the ability of the region's economy to operate in the mode of extended reproduction and sustainable economic growth, maximally providing the proper conditions for life and personal development [36-37]. The economic security of the region is considered as a characteristic of the state of the economic system of the region, which characterizes the ability to resist internal and external threats, thanks to the management tools and means of protection in all spheres of the life of society [38] and its ability to resist the destabilizing action of internal and external factors and not create threats to the elements of the region, external environment [39-40]. In addition, it is revealed as a range of levels of economic and social indicators that ensure long-term sustainable development of the region or the ability of regional authorities to ensure stability, sustainability and competitiveness of the development of the region's economy [41].

Summarizing the views of scientists, it is suggested that regional economic security should be understood as the state of the socio-economic system of the region, formed thanks to the influence of regional tools of management, business, society, characterized by the ability to resist internal and external threats and the ability to provide appropriate conditions for the life and development of the population. Most scientists do not single out the industry level in the hierarchy of the economic security system at all. According to I. Balanyuk, M. Maksymyuk [1], this type of economic security is a peculiar combination of the economic security of the country and enterprises with their distribution by industries. In the author's opinion, the economic security of the industry is a set of conditions that allow ensuring competitiveness, protection of economic interests and economic development of enterprises that manufacture the same or similar products. The formation of the economic security of the industry is influenced by its specificity, purpose, functions, objects, subjects, inherent risks and threats and the method of their assessment. Under the economic security of entrepreneurship, the state of stability of the enterprise and its ability to develop is understood, which is achieved by the actions of the administration and the staff of the enterprise through the implementation of a system of legal, economic, organizational, engineering and technical, social and psychological measures for the effective use of resources and prevention of threats now and in the future [12].

S. Onyshchenko [42] considers the economic security of entrepreneurial activity as a set of external and internal conditions that ensure reliable protection of the economic interests of the enterprise against the influence of potential and real threats, stable functioning and sustainable development. Analysing the variety of approaches,

the author agrees with the interpretation of the economic security of entrepreneurship proposed by G. Sytnyk [43], according to which it is a state of entrepreneurial activity characterized by a complex of factors that preserves the ability for balanced development of the enterprise and ensures the economic security of the state and the well-being of the nation. The category "economic security of the enterprise", despite the greatest attention of scientists to it, which is due to both the multidimensionality and complexity of this concept, as well as its importance from the point of view of practical significance, remains the least unambiguous. Z. Yakubovych [16], I. Sosnovska, M. Zhytar [44], O. Illiashenko, N. Havlovska, Y. Rudnichenko, T. Momot [45] understand the economic security of an enterprise as: the state of the most efficient use of enterprise resources to prevent threats and ensure stable functioning both now and in the future; the state of protection against internal and external threats; protection against crimes; the ability to provide reproduction, etc. The most comprehensive is the definition proposed by T. Vasylyshyn [12]: the economic security of entrepreneurship plays a decisive role in strengthening and creating conditions for the stable development of national economic security. It represents the competitive state of the enterprise and its products on the market, which guarantees: effective use of resources, intellectual potential; stability, sustainability and progressivity of development; the ability to counteract threats from the external and internal environment. In our opinion, the economic security of the individual, which is not given enough attention in the scientific community, is the main object of the economic security system, because it is the individual and his/her interests that play a key role in the evolution of society and the economy. It represents the state of protection of the vital interests of a human being (individual) in the economic sphere and reflects the totality of economic, social, ecological, technological, scientific and information relations in society.

CONCLUSIONS

The conducted research made it possible to determine the following levels in the hierarchy of the economic security system: global, international, national, regional, sectoral economic security, economic security of entrepreneurship, enterprise and individual. Each level of economic security has its own interpretation depending on the characteristics of the activity of economic objects on it. Ensuring economic security at all these levels is a guarantee and basis for the successful development of the world community. There is a close relationship between these levels of economic security, which ensures its effectiveness and systematicity. In the system of the hierarchy of economic security, an important component that remains out of the attention of scientists is the economic security of the industry. It is a multi-factorial category that ensures the most rational and effective use of resources of enterprises that manufacture the same or similar products to meet the demand of society, neutralization of internal and external threats to their activities and contributes to the development of the state's economy and strengthening of its economic security. The economic security of the industry is formed by the resources needed for its operation, the demand for its products, the structure, the competitive position on the market and the

relationship with other industries. Most scientific studies consider economic security on the basis of industry specific characteristics only at the level of individual enterprises, while not taking into account the interrelations between them, which form the industry level of security. Consider-

ing the number of scientific research on the economic security of the state, the region and the enterprise, and their insufficiency in the field of ensuring the economic security of the industry and the individual, further research should be focused on these areas.

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Система економічної безпеки та рівні її формування

Анотація. Для розроблення методик оцінки системи економічної безпеки суб'єктів в умовах економічної та політичної нестабільності, необхідним й актуальним завданням є визначення суті, характеристики, взаємозв'язку між її рівнями, факторів, що впливають на їх формування. Метою дослідження є узагальнення наукових підходів та з'ясування сутності, особливостей і взаємозв'язку між рівнями формування системи економічної безпеки. Узагальнення існуючих підходів до формування системи економічної безпеки проведено монографічним методом. Сутність рівнів економічної системи визначено методами аналізу і синтезу. У дослідженні проведено аналіз існуючих підходів до визначення ієрархії системи економічної безпеки та представлено схему формування рівнів економічної безпеки, що складається з мегарівня (глобальна та міжнародна економічна безпека), макрорівня (загальнодержавна), мезорівня (регіональна та галузева економічна безпека), мікрорівня (економічна безпека підприємництва, підприємства, особи) та взаємозв'язку між ними. Визначено категорію «економічна безпека галузі» як сукупність умов, що забезпечують економічний розвиток, конкурентоздатність та захист її економічних інтересів. Встановлено, що економічна безпека галузі залежить від її специфіки, функцій, об'єктів, суб'єктів, специфічних ризиків і загроз. Обґрунтовано роль економічної безпеки галузі та економічної безпеки особи в системі ієрархії рівнів економічної безпеки. Отримані результати є базисом для розроблення методик оцінки системи економічної безпеки різних суб'єктів, яка може бути використана їх менеджментом з метою своєчасного виявлення загроз та швидкого впровадження заходів щодо їх усунення

Ключові слова: загрози, ризики, галузь, ієрархія, взаємозв'язок видів

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