THE EXPERIENCE OF COUNTRIES IN DIMINUING THE “BRAIN DRAIN” EXPERIENCE

Brain drain is the migration of skilled human resources for trade, education, etc. Trained health professionals are needed in every part of the world. However, better standards of living and quality of life, higher salaries, access to advanced technology and more stable political conditions in the developed countries attract talent from less developed areas. The majority of migration is from developing to developed countries. This is of growing concern worldwide because of its impact on the health systems in developing countries. These countries have invested in the education and training of young health professionals. This translates into a loss of considerable resources when these people migrate, with the direct benefit accruing to the recipient states who have not forked out the cost of educating them. The intellectuals of any country are some of the most expensive resources because of their training in terms of material cost and time, and most importantly, because of lost opportunity. A brain drain can result from turmoil within a nation, the existence of favorable professional opportunities in other countries or from a desire to seek a higher standard of living. In addition to occurring geographically, brain drain may occur at the organizational or industrial levels when workers perceive better pay, benefits or upward mobility within another company or industry.

Key words: migration, brain drain, benefits, qualified staff, workforce.

Introduction. Exodus of brain or intellectual migration is a serious global problem. For the most part, this issue concerns countries with less developed economies. States are not able to adequately meet all the needs of the population, and the population does not want to reconcile with the lack of sufficient attention. This implies a desire to go to another place in another country where work is better paid, where mental work is more appreciated. This is beneficial to host countries, as they often have the choice of more qualified, highly qualified and worthy staff. To the detriment of migrants, host countries generate even higher levels of economy, security and prestige
on the world stage. One striking example is the US, which is the indisputable leader in international economic relations. This country is the largest magnet for intellectual migration for specialists from different regions in different countries. For countries that lose their intellectuals, the phenomenon of "brain drain" is manifested in the worst case. If migration is temporary, it can bring benefits to the donor country as additional capital. But, for the most part, migration takes place over long periods of time. For this reason, the country loses part of its intellect, loses the possibility of effective development, economic growth and security.

**Analysis of recent research and publications.** The issue of "brain drain" is currently being discussed with interest by the world scientific community due to the size of the migration process of scientific staff, high skilled specialists and the many problems that arise for all countries as a result of this type of labor migration. Only foreign authors have published over the past 40 years over a thousand papers on the subject. In our country, the issue of intellectual migration has begun to be intensively studied since the end of the 1980s (XX century) due to geopolitical changes and the active involvement of native researchers in the migration process. In national political science, there is not yet any serious work devoted to a comprehensive study of the issue of intellectual migration, including in the context of national development and security, economic security and competitiveness. Existing studies usually only affect certain aspects of the problem, mainly related to the study of the situation in certain scientific (sectoral) institutions or categories of researchers. A significant contribution to the investigation of the theme were the methods used by Belobrov A., Beniuc V., Jucov A., Luca Ala, Moraru V., Moșneaga V., Rusu R., Zbigniew Brzeziński, Acsionov V. S., Agamova N., Allachverian A. and others.

**Setting the objectives.** The issue of intellectual migration is also very acute in the Republic of Moldova, Romania [6], Ukraine, Russia and other countries. Here, the work of scientific workers is not sufficiently appreciated. Scientists, professors, scholars, specialists from other fields believe their work deserves more respect and attention. Compared with the salaries of specialists from other countries, we do not have to be experts to understand that in Moldova the material remuneration, which contributes to increasing the prestige of science and other spheres, is not big enough and even inappropriate, ridiculous.

*The purpose* of this research is to study the global problem of "brain drain", its necessity and the regulatory methods in the light of the experience of countries abroad.
Methodology of research includes the method of comparison, statistical, causal-causal, modeling, predictive, induction and deductive, historical etc.

**Presentation of the main research material.** The concept and essence of "brain drain". The global labor market is influenced by the import and export of labor. Most countries, for their benefit, attract labor or send migrants abroad. International migration, ie external migration of labor, means the transfer of labor abroad to other countries in order to have a working relationship with the country. The emigration of the labor force is the departure of the population to work from one country to another, where higher earning and long-term residence or the arrival of labor in a country in another country are possible. There are several types of labor migration: seasonal, pendulous, irrevocable, illegal [11], temporary and permanent migration and the so-called "brain drain". According to UN data, there are currently over 258 million migrants worldwide, representing 3.4 % of the Earth's population [13]. Every tenth - is a refugee. The US has 50,000 migrants, five in the world. In Russia, Germany and Saudi Arabia - 12 million. About 74 % of migrants live on allowances, which is more like the working-age population (20-64 years), which accounts for 75 % [13].

<table>
<thead>
<tr>
<th>Country/ region</th>
<th>Total number of foreign migrants (per million)</th>
<th>Illegal migration (in millions of people)</th>
<th>Number of population (millions of people)</th>
<th>Share of illegal migrants in population (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>12</td>
<td>1,65</td>
<td>142.5</td>
<td>1.16</td>
</tr>
<tr>
<td>USA</td>
<td>50</td>
<td>6.87</td>
<td>316.7</td>
<td>2.17</td>
</tr>
<tr>
<td>Japan</td>
<td>2</td>
<td>0.3</td>
<td>137.2</td>
<td>0.24</td>
</tr>
<tr>
<td>EU-28</td>
<td>72.4</td>
<td>10.86</td>
<td>505.7</td>
<td>2.15</td>
</tr>
<tr>
<td>Middle East</td>
<td>3.3</td>
<td>0.495</td>
<td>175</td>
<td>0.28</td>
</tr>
<tr>
<td>Latin America</td>
<td>3.9</td>
<td>0.585</td>
<td>401</td>
<td>0.15</td>
</tr>
</tbody>
</table>

*Source: composed by authors.*

If we take into account the definition of the "brain drain" phenomenon, we may be confronted with a certain diversity of interpretation. Initially, the term "brain drain" was introduced into the British Royal Society (1962) report and originally addressed the emigration phenomenon of British scientists and engineers and technicians in the US. Later, this term has been extensively used in the study of the social and psychological factors of the
emigration of highly qualified specialists in so-called developing and post-socialist countries in developed world countries.

From a social point of view, this term can be interpreted as follows: one of the forms of migration behavior associated with the decision of the mental work people to move into a new socio-cultural environment. The phenomenon of "brain drain" is caused by dissatisfaction with the satisfaction of basic needs, individuals' values, the creative-innovation environment, and the expectations of their satisfaction in the new socio-cultural environment.

From an economic point of view: a mass emigration process in which qualified specialists, scholars and skilled workers leave the country or region for economic reasons do not find use for appropriate skills and appreciation that are not required in their country of residence. The main reason is the desire to significantly improve the material well-being.

Also, this term can be viewed politically, religiously, but its essence remains the same: migration in order to improve the socio-economic conditions of life.

The general term of the concept: "brain drain" is one of the forms of migration behavior. Departure, emigration, going abroad for a permanent job of highly qualified specialists who do not find use for their skills or do not receive the expected appreciation that is not required in the country of residence.

We can identify some causes of "brain drain":
- ensuring (lack) of the necessary equipment and technical-material base;
- inadequate attention of the state and society in the field of scientific research;
- the low level of remuneration for the work of highly qualified young scientists;
- poor integration of fundamental science with state and private enterprises;
- the low prestige of the status of a scholar in the country;
- the material and scientific success of many scholars abroad;
- bureaucracy in their own country.

Many of the reasons for migration are related to the country's development, in particular technology and science. Scientific and technological progress is an adhesive factor in the development of the world economy. "Brain Exodus" determines the different elements and the functioning of trade, economy. So, in many countries, but especially in the industrial and economic development countries, the workforce flow is directed. In fact, such a stream is made up
of scientists (scholars), what is called the "brain drain" that takes place in the US and Western Europe in Moldova, Russia, Asia, Africa and other countries. Scientific and technological progress evokes the process of moving the most skilled labor force. Such a workforce is attracted mainly by higher wages, the standard of living in the country and the latest technologies and technologies in society.

*Migration policy to prevent "brain drain": Russia's experience.*

The causes of a massive "brain drain" in Russia are noted during the 1990 general economic crisis, which significantly reduced government support for scientific activities and forced the industry to abandon research, refuse any research (sometimes even financially supported by the Soros Foundation) [18]. Scientists began to receive $ 500. The process of "brain drain" abroad began in the early 1990s, after the collapse of the USSR, when the economic situation in the country was deplorable. Many Russian scholars [12], who left the country after the collapse of the USSR, occupied leading positions in the scientific community. As a rule, the most talented specialists who go abroad are leaders of priority research directions or prospects to become.

The number of persons employed in science from 1991 to 1999 decreased more than twice (from 878.5 thousand to 386.8 thousand persons). For fourteen years, between 2000 and 2014, between 1.5 and 1.8 million people left the country. As a result, tens of thousands of Russian scientists are currently working in the US alone, and the total brain drain is not clear. The fact that official statistics only take into account those specialists who travel abroad for permanent residence. Some researchers have estimated Russia's annual losses in the 1990s, due to brain drain to $ 50 billion. The current "brain drain" is very different from what happened during the Cold War - now the Russians are not leaving their homeland forever. Often, they retain Russian citizenship and constantly monitor their situation at home, adding that some are ready to return when things in the Russian economy are going better. The amount of money, directed to research and development, is an indicator of a country's technological progress. This shows the average annual GDP share that countries reserve for R & D over the period 2005-2013.

Reducing the number of scientists in Russia is 1.3 % annually. The number of scholars in the EU, the US increased by 2-3% in Brazil, South Korea and China - from 7 % to 10 %. The share of collaborators with the scientific degree of doctor habilitated in science diminished from 13.8 % to 13.0 %, doctor in science - from 31.7 % to 30 % [12]. Although the share of scholars aged up to 39 years has risen from 41 % to 43.3 %, the average age of researchers has exceeded 50 years, and every third is retired [3].
In 2015, the New York Business Insider News portal recognized Russia as one of the best countries to emigrate. Russia ranked 17th in the ranking, well ahead of the US and most of the European countries. Russia has achieved good positions at the expense of a favorable social environment, the opportunity to make friends, healthy food, excellent entertainment, quality education and a high economy. According to the migration policy established by the President of Russia by 2025, the orientation towards attracting intellectual (not physical) resources in the country is declared. It should be noted that Russia is not attractive to scholars like the US or the EU. However, migration has increased to Russia from other countries [12].

### Table 2

**Exchange of migrant students with higher education (CIS) with CIS countries – 2016, [8]**

<table>
<thead>
<tr>
<th>Country</th>
<th>They emigrated from Russia</th>
<th>They immigrated to Russia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azerbaijan</td>
<td>1125</td>
<td>2203</td>
</tr>
<tr>
<td>Armenia</td>
<td>3250</td>
<td>5855</td>
</tr>
<tr>
<td>Belarus</td>
<td>1623</td>
<td>3338</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>6398</td>
<td>15847</td>
</tr>
<tr>
<td>Kirgystan</td>
<td>1555</td>
<td>2773</td>
</tr>
<tr>
<td>Republic of Moldova</td>
<td>2782</td>
<td>6010</td>
</tr>
<tr>
<td>Tadjikistan</td>
<td>2213</td>
<td>6543</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>342</td>
<td>566</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>4291</td>
<td>7356</td>
</tr>
<tr>
<td>Ukraine</td>
<td>11560</td>
<td>46169</td>
</tr>
<tr>
<td>Total</td>
<td>35139</td>
<td>94660</td>
</tr>
</tbody>
</table>

*Source: composed by authors.*
From 44,000 people 35,000 in emigration not to Western countries, but to CIS countries, Syria, Iran, Georgia, Vietnam. We note that the reason was not precisely the deplorable state of Russian science, but other reasons.

Factors influencing increased migration, including brain drain:

1. International educational marketing activities aimed at attracting foreign citizens for professional training and retraining.

2. Increasing interest in the work of Russian scientific communities at international forums and congresses.

3. The quality of life must be higher than that of the previous migrant residence, mainly due to the combination of economic and social conditions.

4. Possibility of solving problems by meeting the need for food and the ability to quickly obtain housing (including due to affordability), especially in rural areas.

5. The ability of migrants to adapt quickly to the country's modern socio-political and economic life due to the high level of cultural development of regions and civil society.

6. The application by Rosstat of the new progressive methods for registering the arrivals and departures of migrants.

Migration policy to prevent "brain drain": the experience of foreign countries

"Exodus of Brains" is not just an East European phenomenon. Many previous barriers between nations and states have been eliminated, people have begun to move more and more often where they feel safer, more comfortable. This is used by industrialized countries who prefer to reserve "cream", ie the most educated, capable, creative people. In this way, developed countries save for education and scientific training, while benefiting from newly-arrived talent. On the other hand, many experts believe that "donor countries" benefit from certain advantages in the context of globalization: they develop international relations through temporarily traveling citizens, they are attached to advanced technologies through project competitions, prizes, internships, publications, access to laboratories research, etc.

Despite the fact that the consequences of the exodus of the country's specialists are not always bad, many states in the world are trying to oppose or control this process. According to the Institute for the Study of Labor, some countries legally forbid the departure of certain categories of specialists - for example doctors and teachers. However, these measures help a little: Specialists wishing to go find opportunities to circumvent restrictions [1]. The situation is alarming in Romania [22]: about 2.5 million of the Romanian population with stable residence, representing 12 %, are leaving Romania.
aged 25-39. Most emigrants in 2017 are: Moldova (17.7 %), Dobrogea (14.4 %) and Transylvania (11.4 %) [19].

According to the investigators, a UN report brings to light a cruel truth. According to Syria, Romania is ranked second in the world in the top of the countries that lost most of the population due to the exodus. According to UN data, over the last decade 3 million Romanians have definitely left Romania [22], locating in Italy, Spain, Portugal, Great Britain, Belgium, Austria [16].

According to official statistics, in the early 1990s, research and development activities took place in Ukraine in 13344 and there were 313,079 scholars. Since 2015, these numbers have been reduced to 978 and 63 864, respectively. Now, with regard to the number of research workers per 1000 inhabitants, it is one of the lowest rates in Europe. For example, only between 2010 and 2014, the number of graduates from the National Academy of Sciences of Ukraine, the largest scientific organization in Ukraine, fell from 2,716 to 2,045 people [14].

An analysis by the Organization for Economic Cooperation and Development (OECD) shows that many states are using "American" methods to attract talented young people. For example, Australia, New Zealand, Canada, France, Romania [22] and the United Kingdom have simplified their visa for foreign applicants and, in some cases, have exempted them from tuition fees. In addition, they facilitate the process of obtaining citizenship.
for graduates and their family members. The Scandinavian countries, Germany, the Netherlands and Hungary offer training in scientific and technical disciplines in English. Education in these countries and the price is often much cheaper than in the US, Canada and Australia. A number of European countries support mainly foreign students who receive education in technical disciplines and offer them various benefits. Great Britain, France, Germany, Japan and other states have created special types of visas for highly qualified professionals. For example, over the past three years, Japan has issued 220,000 such visas. Germany (Blue Card – skilled worker) and Ireland intentionally attract foreign programmers, which is considered necessary to strengthen the local computer industry.

![Fig. 3. Exodus of scholars from Ukraine in 1996-2017, [12]](image)

The issue of "brain drain" has led EU leaders. In Europe, "brain drain" is perceived, first of all, as a threat to the loss of scientific elite. "Creme de la Creme", the "stars of science," whose powerful talents can bring enormous benefits to the country where they work. Throughout the European Union, spending on science is projected to increase, which will make it easier to hire talented graduates from local universities from abroad. The reality is that the EU spends less on research than the US and Japan (1.9 % of GDP, compared
with 2.8 % and 3 %, respectively). Increasing funding will create hundreds of thousands of new jobs that will attract "brains". Currently, the number of students in the EU countries exceeds those in the US and Japan. However, there are fewer scientists in the EU – in 2005 there were 5.4 scientists per 1000 workers, while in the US – 8.7, and in Japan – 9.7. However, civilization is trying to move faster on the path of technological evolution. Investment in science grows every year, both in absolute terms and relative. Despite the crisis, from 2007-2013, the increase in science spending in the world was 30.7 %, exceeding global GDP growth (20 %). Developing countries in Southeast Asia are particularly increasing their share in these investments – from 29 % to 37 %, Brazil, India and Turkey are investing more and more.

Nearly one-third of world spending on science is assumed by the US, one fifth of China and the EU, and one tenth of Japan. The rest of the world, where two-thirds of mankind lives, allocates less than a quarter of total research costs. The share of Russia in the global scientific budget is quite modest – 1.7 %, decreasing: in 2008 it was 2 %.

In 2013, Russia spent 40.7 billion USD on science, about 10 times less than the US leader. Russia spends 1.13 % of the country's GDP for science, ranked 25th in the world in terms of this indicator. The bulk of its revenue is invested by Israel – 4.21 % of GDP, and China has the most fascinating indicator in recent years. The share of related costs was significant in Germany, the USA, Brazil and Turkey.

Even African countries rely more and more on R & D and innovation, trying to get rid of the poverty trap. Indeed, without investing in the science, innovation and training of skilled workers, it is impossible to diversify the economy and develop a modern infrastructure: hospitals, schools, communications, roads ... For example, Kenya, despite the crisis, has increased spending on science from 0.36 % to 79 % [20].

Asian countries, such as Singapore, Qatar and Malaysia, follow a similar path to the American one. They use various methods to attract foreign students: Singapore, for example, has entered into agreements with major US universities to open large American universities on their campuses.
Today, a quarter of foreign students come from India and China. However, in recent years, India and China themselves are making serious efforts to attract talent. Both countries have significantly increased the allocations for universities. In these countries (in China there are 100 university models) where foreigners are taught not only traditional "export" disciplines (eg Chinese or Indian folklore), but also biology, information technologies, etc. In addition to teaching, in such universities, research is developing, facilitating employment. These programs play a triple role: firstly, this policy allows local universities to earn money, secondly it attracts foreign "brains" and, thirdly, it allows them to train local specialists in the field, consistently direct with growing Asian business.
In recent years, a new term has emerged – Scientific Diaspora: Many states of the world are trying to use their knowledge, experience and ties to their "brains" abroad [17] (including Qian Xuesen, Hsue-Shen Tsien) [7]. Similar initiatives are being practiced by some countries in Latin America, South Africa, India, China and even Switzerland.

Conclusions. Globalization has spawned population migration and "brain drain". Reducing the number of qualified specialists, scholars and innovative people reduces the creative workforce in the country leads to an increased risk of the country's economic placement on the periphery of the "scientific galaxy", loss of national competitiveness in several areas. On the contrary, recipient countries of "brains" (industrialized and industrialized countries) increase their innovative and competitive potential.

Addressing the issue of brain drain will enable "brain" countries to maintain at least a minimum level of development of the scientific, technical and internal production potential, which, in the event of a strong deterioration in external and internal conditions, would guarantee survival the country to the detriment of its own intellectual and technological resources. To this end, the following activities should be carried out:

- creating (using experience from South Korea, Taiwan, India and other countries) and implementing a mechanism to facilitate the adaptation of specialists returning from abroad with material benefits and scientific preferences;
- improving the legislative base in the field of migration of qualified specialists, scholars, inventors and talented people;
- ensuring mobility, facilitating the results of scientific researches, internships abroad in the world scientific centers;
- ensuring the state orders of research in various scientific fields;
- ensuring participation in various projects, financed by the state and private funds.

Brain exodus affects the educational system and economic growth by reducing the number of skilled workers. It is therefore necessary to develop policies to correlate the relationship between the education and training of youth (including qualified staff) and the requirements of the real economy. Regretfully, the domestic higher education system does not include all the specialties required on the labor market. A number of current professions require specializations that the education system does not offer. The process of training and development of general specialized skills is carried out in theoretical and general terms, the practical aspect being often absent.
The "Gold Student of Braila" (Romania) of the 12th grade at Nicolae Bălcescu College from Braila, awarded at the International Olympiads of Physics, Astronomy and Astrophysics, was admitted with a full scholarship at Harvard University. The young man wants to work in research after completing his studies, but not in the country but abroad, where he believes he has much more opportunities to affirm. The number of Romania's annual offers is, in fact, comparable to the official number of the "losses" of Romanian universities due to the "brain drain" of young people going abroad. Similar cases are found in many countries, including the Republic of Moldova. Moldovan Radu Rățoi won the world accord accordion in Kaunas in the Senior Coupe World category and Senior Virtuoso Entertainment from 100 participants, but he studies at the Copenhagen Academy of Music.

Bibliography


ОПЫТ СТРАН В ПРЕДОТВРАЩЕНИИ «УТЕЧКИ МОЗГОВ»

«Утечка мозгов» – это процесс миграции высококвалифицированного человеческого капитала с целью дальнейшей их работы за рубежом. Обученные и здоровые профессионалы нужны по всему миру. Однако лучшие стандарты и качество жизни, высокие заработные платы, доступ к современным технологиям и стабильные политические условия в развитых странах привлекают талантливых людей из менее развитых регионов. Большая часть миграционных потоков наблюдается из развивающихся в развитые страны мира. Это вызывает обеспокоенность по всему миру из-за своего влияния на систему здравоохранения в развивающихся странах. Эти страны инвестируют в образование и развитие молодых здоровых профессионалов, что приводит к значительным убыткам для этих стран, когда эти люди мигрируют, и, наоборот, к позитивному эффекту для принимающих стран, которые не инвестировали в образование этих людей. Интеллектуалы любой страны представляют собой наиболее дорогой ресурс благодаря финансовым и временным затратам, и более того, из-за «потерянных возможностей». Утечка мозгов возникает из-за беспорядков внутри страны, существующим благоприятным профессиональным возможностями в других странах или желания приобрести лучшие условия жизни. Утечка мозгов возникает не только по географическому признаку, но и организационному и индустриальному, когда работники надеются на лучшую заработную плату, преимущества или растущую мобильность в рамках деятельности в других компаниях и отраслях.

Ключевые слова: миграция, утечка мозгов, возможности, квалифицированный персонал, рабочая сила.
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ДОСВІД КРАЇН У ЗАПОБІГАННІ «ВИТІКУ МІЗКІВ»

«Витік мізків» – це процес міграції висококваліфікованого людського капіталу з метою подальшої їх роботи за кордоном. Кваліфіковані та здорові професіонали потребують в всьому світі. Однак кращі стандарти та якість життя, високі заробітні плати, доступ до сучасних технологій та стабільні політичні умови у розвинених країнах приваблюють талановитих людей із менш розвинених регіонів. Більша частина міграційних потоків спостерігається із країн, що розвиваються до розвинених країн світу. Це викликає стурбованість по всьому світі із-за свого впливу на систему охорони здоров’я у країнах, що розвиваються. Ці країни інвестують в освіту та розвиток молодих здорових професіоналів, що призводить до значних втрат для цих країн, коли ці люди мігрують, та, навпаки, до позитивного ефекту для країн, що їх приймають. Інтелектуали будь-якої країни представляють собою найбільш дорогий ресурс завдяки фінансовим та часовим затратам, більше того, завдяки «втраченим можливостям». Витік мізків виникає із заворушень в країні, існуючим сприятливим професійним можливостям в інших країнах чи бажанні отримати кращі умови життя. Витік мізків виникає не тільки за географічною ознакою, але й організаційною та індустріальною, коли робітники сподіваються на кращу заробітну плату, переваги чи мобільність в рамках діяльності в інших компаніях та галузі.

Ключові слова: міграція, витік мізків, можливості, кваліфікований персонал, робоча сила.

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