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Ensuring the Quality of Higher Education and its Impact on Country Attractiveness for International Students

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ABSTRACT

The migration activity of students as one of the important factors of changes in the intellectual potential and economic development of countries requires a constant search for the causes and pull factors. To this end, our study analyses the impact of higher education quality factors. For this aim we analyse the impact of 15 factors, including efforts to develop technologies penetration via R&D cooperation of universities with business entities, ability of universities to meet the needs of a competitive economy, focus on STEM tertiary education. Using the data for 2023 on the example of OECD countries and applying the methods of correlation and cluster analysis, we confirmed the hypotheses about the greatest importance of such factors as Tertiary education expenditure, Average quality of higher education institutions, QS university ranking (top 3), Relevance of education system to the economy, University-industry R&D cooperation. Therefore, current management of higher education aiming at attracting talented youth should combine traditional technologies of quality assurance with agile reaction to changing economic and societal needs. The experience of a successful cluster of leading countries in attracting talents proves the importance of building strategies for the development of higher education systems based on the development of such factors.

KEY WORDS: higher education quality, human capital, intellectual potential, migration, talent attraction.

JEL Classification: I23, J11, O15, O30.

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1. Introduction

The problem of developing the intellectual potential of countries by attracting and retaining talent is becoming increasingly relevant in the context of growing competition in innovation-oriented economies with growing need for advances in technology. Among other categories of intellectual migrants, students are of particular importance for economic development, contributing to positive changes not

only in the intellectual potential but also in the demographic structure of the population. Increased competition for talented young people stimulates the search for new ways to make countries more attractive. Among such opportunities that are emerging in the field of education, the most obvious lever would be the quality of higher education. If we assume that the goal of strategic actions to attract young people is not only short-term economic benefits (tuition fees, consumer spending in host countries, etc.), but

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also the desire to develop long-term background for technological growth via establishing sustainable ties with intellectual migrants, then ensuring high-quality educational services should be subordinated to the following goals: creating a positive image of countries not only as providers of educational services, but also as comfortable living environments and the area for realisation of the human capital formed upon graduation. Such studies aim to ensure comfortable learning environments through investment in higher education (Hogan et al., 2021; Restaino et al., 2020), studying reputational factors (Bains & Rani, 2021; Decuyper & Landri, 2021; Trujillo et al., 2020), assessing the importance of individual or a set of higher education quality indicators as a factor in choosing a university and country of study (Abbas et al., 2021; Omarova et al., 2024; Pruchnicki et al., 2023; Santos et al., 2020; Wojciechowski & Korjonen-Kuusipuro, 2023). Special focus in terms of knowledge economy development is on development of STEM education (Shen et al., 2023; Tabarés & Boni, 2023) and related technologies to support advanced innovative types of education (Chugh et al., 2023; Zhou, 2023), studying the importance of intentions to profitably implement the education received in the labour market (Fakunle, 2021; Tran Ly Thi et al., 2020; Radu et al., 2023).

Such research areas are supported in practice by the constant monitoring of the attractiveness of countries for intellectual migrants (OECD, 2023) and the factors that currently determine the success of countries in creating competitive advantages through the quality of higher education systems, which are studied as partial components within The Global Talent Competitiveness Index (INSEAD, 2023), The Global Knowledge Index (UNDP and MBRF, 2023), The Legatum Prosperity Index (The Legatum Institute, 2023), The Global Innovation Index (WIPO, 2023). Due to the steep innovative changes in societal development the mentioned indices include a technologically oriented scope considering the role of R&D collaboration of universities and businesses, research activity of academic staff, STEM programs graduates and overall estimates of matching the gained skills with the economy needs.

The relevant scientific and applied interest in the topic, which today creates the basis for long-term

economic growth while easing the demographic problems of many countries, is increasingly relevant to the search for factors of attracting talented students. Understanding that the problem is actually complex and is not limited to the impact of the institutional environment supporting the quality of higher education on the formation of students' interest in a particular country, we aim to study the impact of higher education quality factors on country attractiveness for international students. Achieving this goal involves using the experience of countries with high quality assurance in tertiary education, as evidenced by both formal ranking indicators and migration interests; and where growing demands on the quality of the workforce with advanced skills allow considering migration for education as one in which the migration aspirations of young people reflect an understanding of both the prospects and the responsibility and effort required to obtain higher education. The group of countries where the study meets these limitations and allows us to most accurately identify the factors of higher education quality that are important today in the system of student attraction factors are the OECD countries. Their statistics for 2023 were used as an empirical basis for our own research using the methods of correlation and cluster analysis along with IBM SPSS Statistics software.

The paper is organized as follows. The subsequent section provides a literature review considering student migration, its factors, namely those reflecting efforts to ensure higher education quality. Section 3 describes the methodological basis of the authors' research. The data, empirical approach, and results of the empirical study conducted using the OECD cases are elaborated in Section 4. Lastly, concluding remarks can be found in Section 5.

2. Literature Review

The search for ways and tools to attract talented employees is taking place in the context of rapid innovation development. In the context of a global talent shortage (Kwok, 2022; Karamanis & Kolias, 2022), intellectual migration is a powerful tool for providing a sufficient supply of highly skilled workers who are a source of innovation and economic growth (Oliinyk et al., 2022). One of the categories of intellectual migrants is

international students, whose moving contributes to the economic growth of both donor and recipient countries (Chowdhury, 2022; Mishchuk et al., 2019). The potential market value of international university education is expressed in billions of dollars (Yilmaz & Temizkan, 2022). Countries are trying to increase their competitiveness to attract international students and gain a decent market share. Attracting international students has become a strategic priority for immigration policies in many countries (Sutherland et al., 2021). Countries that can accurately analyse the factors affecting the country and university preferences of international students will be more advantageous in developing appropriate competitive strategies (Yilmaz & Temizkan, 2022). The comparative analysis of approaches to attracting international students demonstrates the diversity of national strategies and policies in this area (Sin et al., 2021). Global challenges, in particular the Covid-19 pandemic, have revealed strengths and weaknesses in migration policy. For instance, Canada's federal policies quickly adapted to support international students and ensure they remained eligible for post-graduate work permits, preserving the appeal of Canada as a study destination. Meanwhile, in the US, federal policies for student visas required international students to maintain physical presence, reflecting a more hostile stance towards immigration (Buckner et al., 2022).

Following the trends of economic and political debates on the spread of internationalisation of education, researchers have paid considerable attention to the reasons why people participate in educational migration, what factors influence the country's migration attractiveness for international students (Lipura & Collins, 2020; Aliyev et al., 2023). The results of scientific research in responding to these questions allow us to identify funding of higher education institutions as one of the priority factors that affect country attractiveness for international students. Based on higher education indicators from the Eurostat website, Restaino et al. (2020) concluded that investment in education is a key element to attract international students. The difficulties universities faced during the COVID-19 pandemic have further highlighted the importance

of the financial factor in a country's attractiveness as a study destination for foreigners (Hogan et al., 2021).

Beine et al. (2020) investigated the determinants of international student mobility. The results confirm the positive impact of the education quality assurance on the country attractiveness for international students. At the same time, additional parameters specific to the destination country are also valued: the capacity of the host country, the expected benefits from higher education, the cost of living and the availability of English-taught degree programmes, university social responsibility, the use of artificial intelligence in education, digital transformation on youth policy (Santos et al., 2020; Ahmed et al., 2023; Pruchnicki et al., 2023; Omarova et al., 2024; Wojciechowski & Korjonen-Kuusipuro, 2023). The quality of education is identified as one of the main goals that motivates students to study abroad. Students believe that studying in a better educational system is a good opportunity to broaden their horizons (Trujillo et al., 2020). The availability of employment prospects is also important for international graduates when choosing a foreign country for higher studies (Tran Ly Thi et al., 2020; Radu et al., 2023). Research on the decision-making processes and motivations for studying abroad emphasises the benefits of quality education and employment opportunities, contributing to the development of their human (Fakunle, 2021) and entrepreneurial (Sabary et al., 2023; Ilomo & Mwantimwa, 2023) capital.

Based on the internationalisation of higher education in today's global highly competitive education market, Abbas et al. (2021) aimed to examine the factors that influence students to choose a country for higher education. The results of the empirical analysis showed that international students consider academic reputation and image (Bacci & Bertaccini, 2021) to be the dominant factors when choosing a university. Reputation is a key intangible asset for ensuring a university's sustainable competitive advantage (Miotto et al., 2022). Reputation, as evidenced by high positions in international university rankings, has a significant impact on higher education both nationally and internationally (Bains & Rani, 2021). University

rankings have become commonplace in higher education (Decuyper & Landri, 2021). The history of the creation and development of international university rankings shows their importance in assessing the level of competitiveness of universities in the global education market (Polyakov et al., 2022). Therefore, many educational institutions are trying to achieve high positions in international university rankings to attract the best academic and student talent from around the world (Estrada-Real & Cantu-Ortiz, 2022).

Competition on educational and labour markets steadily grows in terms of the rapid development of technology (Cramarenco et al., 2023; Song, 2023) and the knowledge-based economy (Bilan et al., 2023; Oliinyk et al., 2021; Yildiz et al., 2024). These patterns of economy changes cause increasingly drawn attention to the relationship between academic institutions and private enterprises (Pinto & Fernandes, 2021; Borah et al., 2021). Universities are a major source of knowledge creation; various industries are increasingly recognising the importance of scientific knowledge creation and are seeking alliances with universities to not only expand their knowledge base but also to gain a competitive advantage (Tseng et al., 2020; Jangsiriwattana & Duangkummerd, 2023). The review discerned three major forms of University-Industry Collaboration implementation processes: educational collaboration, academic entrepreneurship and research related collaboration (Nsanzumuhire & Groot, 2020). The existence of such collaborations with representatives of the business environment is an important competitive advantage of universities (O'Dwyer et al., 2023), which helps to attract international students (Blackmore, 2020; Li, 2020).

3. Methodology

To study the impact of ensuring the quality of higher education on the attractiveness of the country for international students, the authors formulated and tested the following hypotheses:

H1 – a high level of financial support for higher education is an important factor in the country's attractiveness to international students;

H2 – countries with a high level of higher education quality are attractive to international students;

H3 – the positive image of universities, including their high places in education rankings, are important factors in the country's attractiveness to international students;

H4 – the relevance of skills developed in the process of obtaining higher education to modern economic requirements attracts students to study at universities abroad;

H5 – high achievements of academic staff and academic freedom in universities attract international students.

The authors tested the hypotheses on the example of OECD countries, as these countries are increasingly competing to attract and retain talented migrants, in particular by adopting more favourable migration policies for the best and brightest (OECD, 2023). International students are one of the key categories of talented migrants, and their number is constantly increasing: over the past decade, the total number of study permits in OECD countries issued to new international students increased by 61% in 2022 compared to 2012 (OECD, 2023).

As a dependent variable, the authors use the OECD Talent Attractiveness Indicator for the group of intellectual migrants "University students" - Y (score: 0 - the least attractive country, 1 - the most attractive country), which is a comprehensive tool for determining the strengths and weaknesses of OECD countries in their ability to attract and retain talented migrants - international students (OECD, 2023).

To test the defined hypotheses, the authors formed a list of indicators - independent variables that characterise the quality of higher education in the country (Table 1).

Hypotheses H1-H5 were tested using correlation analysis along with IBM SPSS Statistics software. The authors calculated the correlation coefficients and assessed their statistical significance:

- to test hypothesis H1 – between the indicator of country attractiveness for international students (Y) and variables X_1 – X_3 ;

- to test hypothesis H2 – between the indicator of country attractiveness for international students (Y) and variables X_4 and X_5 ;

- to test hypothesis H3 – between the indicator

Table 1

Indicators for Assessing the Impact of Quality Assurance in Higher Education on Country Attractiveness for International Students

Indicator	Publisher, number of countries involved	Characteristics	Unit of measurement	Symbol of variable
Tertiary education expenditure	The Global Talent Competitiveness Index, 134 countries (INSEAD, 2023)	Initial government funding per tertiary student (constant PPP\$)	Score	X_1
Teaching staff compensation	The Global Knowledge Index, 133 countries (UNDP and MBRE, 2023)	Teaching staff compensation as a percentage of total expenditure in tertiary public institutions (%)	Value	X_2
Pupil-teacher ratio in tertiary education	The Global Knowledge Index, 133 countries (UNDP and MBRE, 2023)	Average number of pupils per teacher in tertiary education in a given academic year	Value	X_3
Average quality of higher education institutions	The Legatum Prosperity Index, 167 countries (The Legatum Institute, 2023)	A composite measure, made from the score given to the top-1000 universities in the QS World University Rankings and TES Higher Education World University Rankings, normalised by number of higher education institutions in the country.	Score	X_4
Tertiary enrolment	The Global Innovation Index, 132 countries (WIPO, 2023)	School enrolment, tertiary (% gross)	Score	X_5
Tertiary inbound mobility	The Global Innovation Index, 132 countries (WIPO, 2023)	Tertiary inbound mobility rate (%)	Score	X_6
QS university ranking, top 3	The Global Innovation Index, 132 countries (WIPO, 2023)	Average score of the top three universities according to the QS world university ranking	Score	X_7
Relevance of education system to the economy	The Global Talent Competitiveness Index, 134 countries (INSEAD, 2023)	Average answer to the question: In your country, how well does the education system meet the needs of a competitive economy? [1 = not well at all; 7 = extremely well]	Score	X_8
Skills matching	The Global Talent Competitiveness Index, 134 countries (INSEAD, 2023)	Workers whose education matches their occupation (%)	Score	X_9
Graduates in science and engineering	The Global Innovation Index, 132 countries (WIPO, 2023)	Graduates from science, technology, engineering and mathematics programs (% of total tertiary graduates)	Score	X_{10}

Table 1

Indicators for Assessing the Impact of Quality Assurance in Higher Education on Country Attractiveness for International Students (Continued)

Indicator	Publisher, number of countries involved	Characteristics	Unit of measurement	Symbol of variable
University-industry R&D collaboration	The Global Innovation Index, 132 countries (WIPO, 2023)	Average answer to the survey question: In your country, to what extent do businesses and universities collaborate on R&D? [1 = not at all; 7 = to a great extent]	Score	X_{11}
Skillset of university graduates	The Legatum Prosperity Index, 167 countries (The Legatum Institute, 2023)	"In your country, to what extent do graduating students from university possess the skills needed by businesses?" [1 = not well at all; 7 = extremely well]	Score	X_{12}
Researchers in higher education	The Global Knowledge Index, 133 countries (UNDP and MBRF, 2023)	Researchers (FTE) in higher education (%)	Value	X_{13}
Academic freedom	The Global Knowledge Index, 133 countries (UNDP and MBRF, 2023)	The Academic Freedom Index is designed to provide an aggregated measure on five indicators: freedom to research and teach; freedom of academic exchange and dissemination; institutional autonomy; campus integrity; and freedom of academic and cultural expression	Value	X_{14}
Citable documents per R&D personnel in higher education	The Global Knowledge Index, 133 countries (UNDP and MBRF, 2023)	Citable documents normalized by total R&D personnel in higher education (FTE)	Value	X_{15}

of country attractiveness for international students (Y) and variables X_6 and X_7 ;

- to test hypothesis H4 – between the indicator of country attractiveness for international students (Y) and variables X_8 – X_{12} ;

- to test hypothesis H5 – between the indicator of country attractiveness for international students (Y) and variables X_{13} – X_{15} .

The evaluation of the relationships of factors was carried out based on Pearson correlation coefficient values using MS Excel software. The interpretation of the values of correlation coefficients is based on the Cheddock scale criteria. According to this approach, depending on the values of the cor-

relation coefficient, the relationship of the factors is interpreted as follows: 0-0,1 – none; 0,1-0,3 – weak; 0,3-0,5 – moderate; 0,5-0,7 – noticeable; 0,7-0,9 – close; 0,9-0,99 – strong; 0,99-1 – functional (Turan, 2020).

To group countries according to the level of quality assurance in higher education in terms of country attractiveness for international students, the authors conducted a cluster analysis using the IBM SPSS Statistics software. In the process of cluster analysis, the method of hierarchical agglomerative clustering was used, which involves the gradual merging of objects from smaller clusters into larger segments. To measure the similarities or differences between countries, i.e. to calculate the

distances between observations, the Euclidean distance was used. To determine the distances between clusters, the Ward method was chosen, which is based on analysis of variance procedures and usually results in the formation of small clusters.

4. Results

The authors analysed the relationship between the country attractiveness for international students and the higher education quality on the example of 37 out of 38 OECD countries in 2023 (see Table 2 for the baseline data). Costa Rica was not included in the study due to the lack of a value for the attractiveness indicator for international students in 2023.

The results of the comparative analysis allow us to identify the countries with the highest level of attractiveness for international students. They include the USA (0.6), Germany (0.56), the United Kingdom, Norway, and Australia (0.55 each). In a competitive international education market, the opportunity to gain work experience after graduation in a host country is one of the key decision-making factors for international students and is crucial for education exports, especially in destination countries such as Australia, Canada, the United Kingdom and the USA.

The values of higher education quality assurance indicators demonstrate significant differentiation by OECD country, which is confirmed by the calculated values of the variation coefficient. Thus, the most variable are the indicators of Tertiary inbound mobility (0.873) and Average quality of higher education institutions (0.773). At the same time, Skills matching and Tertiary education expenditure are characterised by the smallest fluctuations in actual values (coefficients of variation of 0.102 and 0.133, respectively) for 37 OECD countries in 2023. This proves that OECD countries have different capacities to attract the best students from abroad, improve the quality of education, update and adapt teaching materials and the educational process in general to the requirements of the business environment.

The results of hypotheses testing based on the calculation of correlation coefficients and the assessment of their statistical significance are presented in Appendix 1.

The results of the correlation analysis demonstrate

the impact of state funding of higher education per student on the country attractiveness for international university students (correlation coefficient value of 0.637). Among all 15 independent variables analysed, this indicator turns out to be closely related to the dependent variable Y . Close relationships point at the importance of the financial factor in shaping the strategy of attracting international students. The success of such actions is confirmed in the group of European countries – leaders in terms of attractiveness for international students, the value of which is above average (0.45), namely Switzerland (0.53), Sweden (0.51), Portugal (0.51), Denmark (0.49), Luxembourg (0.49), the Netherlands (0.48), Finland (0.48), etc. (Table 2). Thus, H1 is confirmed.

The value of the correlation coefficient of 0.530 between Y and Average quality of higher education institutions (X_4) confirms the hypothesis (H2) that international students are attracted to countries with a high level of higher education quality. The quality of education is determined by the requirements to the content and outcomes of the educational activities of higher education institutions, the availability of advanced degree programmes whose graduates are in demand in the labour market, the research achievements of the teaching staff, the infrastructure and educational space of educational institutions, opportunities for research and international academic mobility, etc. The high quality of education is confirmed by the university's high positions in international rankings. The calculated values of the correlation coefficients confirm the hypothesis that a positive image of the university, including high positions in the rankings of the world's best universities, are important factors in the attractiveness of the country for foreign students (H3). Thus, the value of the correlation coefficient between Y and X_7 (QS university ranking, top 3) is 0.572. Higher education institutions that are leaders in global rankings have international recognition, which makes them particularly attractive to international students seeking recognition of their degrees or diplomas and more opportunities in the international labour market. Top universities usually have more resources to recruit the best teaching staff, conduct research, develop infrastructure, and create a multicultural educational environment. This provides international students

with access to advanced knowledge, research opportunities and intercultural exchange.

Hypothesis H4 is confirmed by the calculated correlation coefficients between the indicator of country attractiveness for international students (Y) and the indicators Relevance of education system to the economy (X_8) and University-industry R&D cooperation (X_{11}) – the correlation coefficients are 0.617 and 0.519 respectively. In order for a country to remain competitive in the global economic environment and to be attractive to international students, its higher education system must provide graduates with theoretical knowledge and practical skills that meet the needs of the economy and the modern labour market. Close cooperation between universities and the business community is crucial to ensure the quality of higher education and successful integration of graduates into the labour market. Universities generate new knowledge through research and pass it on to students, developing competencies that the economy demands. Companies then benefit from this scientific knowledge by hiring university graduates and/or using the services of academic researchers. Universities are a source of valuable knowledge for the development and implementation of innovations in the business environment, and cooperation between universities and businesses is considered an important tool for generating potential benefits for companies. In turn, such cooperation allows universities to receive feedback from business representatives on the relevance of their graduates' knowledge and skills for a successful professional career in a particular field. This allows universities to update their degree programmes and ensure that they meet the requirements of the modern labour market.

At the same time, high research and teaching achievements and academic freedom in universities are not currently the factors of country attractiveness for international students, as the calculated values of the correlation coefficients of the dependent variable Y with the independent variables X_{13} , X_{14} , and X_{15} are less than 0.5, which does not confirm hypothesis H5. Potential applicants may be insufficiently aware of the scientific research of university professors, as evidenced by the number of publications in internationally cited journals, or they may place more weight on other factors not directly related to the quality of higher education.

Both assumptions should be tested in further studies. At the same time, the lack of awareness of research achievements and the possibilities of their integration into the educational process is one of the tasks of university marketing, which is seen to be developing rapidly, bringing higher education to the status of markets with very developed competition. At the same time, based on our results, competitive strategies today are focused on other sources of competitive advantage with insufficient emphasis on the research component of university activities.

To segment countries by the level of quality assurance in higher education in terms of country attractiveness for international students, the authors conducted a cluster analysis using the IBM SPSS Statistics software. Since the results of the correlation analysis revealed a significant relationship between the dependent variable Y and the independent variables X_1 , X_4 , X_7 , X_8 , and X_{11} , these indicators of higher education quality assurance were used in the clustering. The resulting dendrogram is presented in Figure 1.

The results of clustering confirm the fact of uneven and asymmetric development of OECD countries in terms of quality assurance in higher education. The analysis of the dendrogram in Fig. 1 allowed us to identify 2 large clusters of OECD countries by the level of quality assurance in higher education. The relationship between the segmentation of countries and the values of the indicator of OECD countries attractiveness for international students is shown in Table 3.

Within the first cluster, two sub-clusters are clearly visible. The first sub-cluster is formed by the Netherlands, Sweden, Denmark, Ireland, Finland, Austria, Norway, Belgium, Germany, Canada, Austria, the United Kingdom, Australia, and the US. The second sub-cluster includes such countries as France, Japan, Korea, Italy, New Zealand, Estonia, Iceland, Czech Republic, Portugal, Israel, and Luxembourg.

Thus, the formed clusters confirm the importance of ensuring the quality in higher education as a factor of migration attractiveness of a country for such a group of intellectual migrants as international students. Within each of the identified large clusters, smaller sub-clusters have also been formed, which detail the segmentation of countries by the level of

Table 2

Values of Higher Education Quality Assurance Indicators and the Country Attractiveness Indicator for International Students and their Numerical Characteristics in OECD Countries in 2023

	Y	X1	X2	X3	X4	X5	X6	X7
Belgium	0,46	84,76	55,5	77,3	0,49	80,9	10,4	54,6
Czechia	0,4	79,09	44,1	52,8	0,23	68,1	15	32,5
Denmark	0,49	90,47	*	85,2	0,65	82,8	10,2	57,6
Germany	0,56	84,29	*	95,3	0,42	73	11,2	72,9
Estonia	0,41	74,65	24,2	86,9	0,47	69	12,3	17,6
Ireland	0,41	81,74	40,8	*	0,45	74,7	10,2	47,9
Greece	0,31	52,59	39,5	19,8	0,31	150,9	2,8	23,2
Spain	0,48	72	56,7	83	0,42	96	3,8	45,1
France	0,48	80,59	41,8	63,4	0,15	69,3	9,2	77,9
Italy	0,47	75,05	36,3	64,6	0,64	69,5	2,9	49,5
Latvia	0,36	62,07	30	87	0,09	94,5	12,8	9,7
Lithuania	0,45	66,83	31,3	91	0,14	70,8	6,2	20,3
Luxembourg	0,49	100	9	100	1,00	19,2	48,4	0
Hungary	0,4	71,74	*	86,9	0,18	52,5	13,5	19,7
Netherlands	0,48	84,89	*	82	0,75	92	13,3	66,7
Austria	0,47	86,9	63,4	95,6	0,35	87,2	18	44,7
Poland	0,43	74,2	*	80,1	0,03	70,5	4,5	32,2
Portugal	0,51	69,67	82,9	86,4	0,14	70,4	11,6	33,4
Slovenia	0,42	75,64	*	86	0,03	79,9	7,8	10,8
Slovakia	0,43	73,25	35,1	84,5	0,05	47,6	10,3	16,8
Finland	0,48	80,25	34,3	73,2	0,69	95	8	50,5
Sweden	0,51	85,96	*	82,9	0,76	84,5	7	59,7
Australia	0,55	70,68	32,4	*	0,98	114,2	26	82,2
Canada	0,53	79,17	40	90,6	0,55	79,5	18,2	81,2
Chile	0,4	64,24	31,3	*	0,20	91,7	1,1	43,2
Colombia	0,27	54,69	100	75,9	0,04	51,7	0,2	37,1
Iceland	0,48	79,6	49,9	*	0,40	84,3	8,5	0
Israel	0,26	68,67	44,4	91,4	0,25	61,1	3,4	36,2
Japan	0,52	71,37	*	*	0,10	65,3	5,7	80,8
Mexico	0,27	60,91	61,4	83,4	0,01	44,8	0,9	45,1
Korea	0,51	66,14	27,8	81,8	0,28	102,5	3,7	77,4
Norway	0,55	89,28	*	92,2	0,43	84,4	4,4	44,7
New Zealand	0,49	77,26	*	75,3	0,70	79,9	17,5	47,8
Türkiye	0,3	69,49	*	7,8	0,06	117,1	2,3	24,4
Switzerland	0,53	89,98	50,2	92,1	1,00	65,3	18,1	83,2
United Kingdom	0,55	83,66	*	76,4	0,84	69,5	20,1	99,4
United States	0,6	79,9	31,8	84,2	0,24	87,6	5,1	100
Minimum	0,26	52,59	9	7,8	0,01	19,2	0,2	0
Maximum	0,6	100	100	100	1	150,9	48,4	100
Average	0,45	75,99	43,76	78,59	0,39	78,30	10,39	46,65
Std. Dev.	0,086	10,216	18,995	19,666	0,298	22,605	8,860	26,871
Coefficient of variation	0,191	0,134	0,434	0,250	0,759	0,289	0,852	0,576

Note. * - data are absent. Source: compiled after (OECD, 2023; INSEAD, 2023; WIPO, 2023; The Legatum Institute, 2023; UNDP and MBRF, 2023).

Table 2

Values of Higher Education Quality Assurance Indicators and the Country Attractiveness Indicator for International Students and their Numerical Characteristics in OECD Countries in 2023

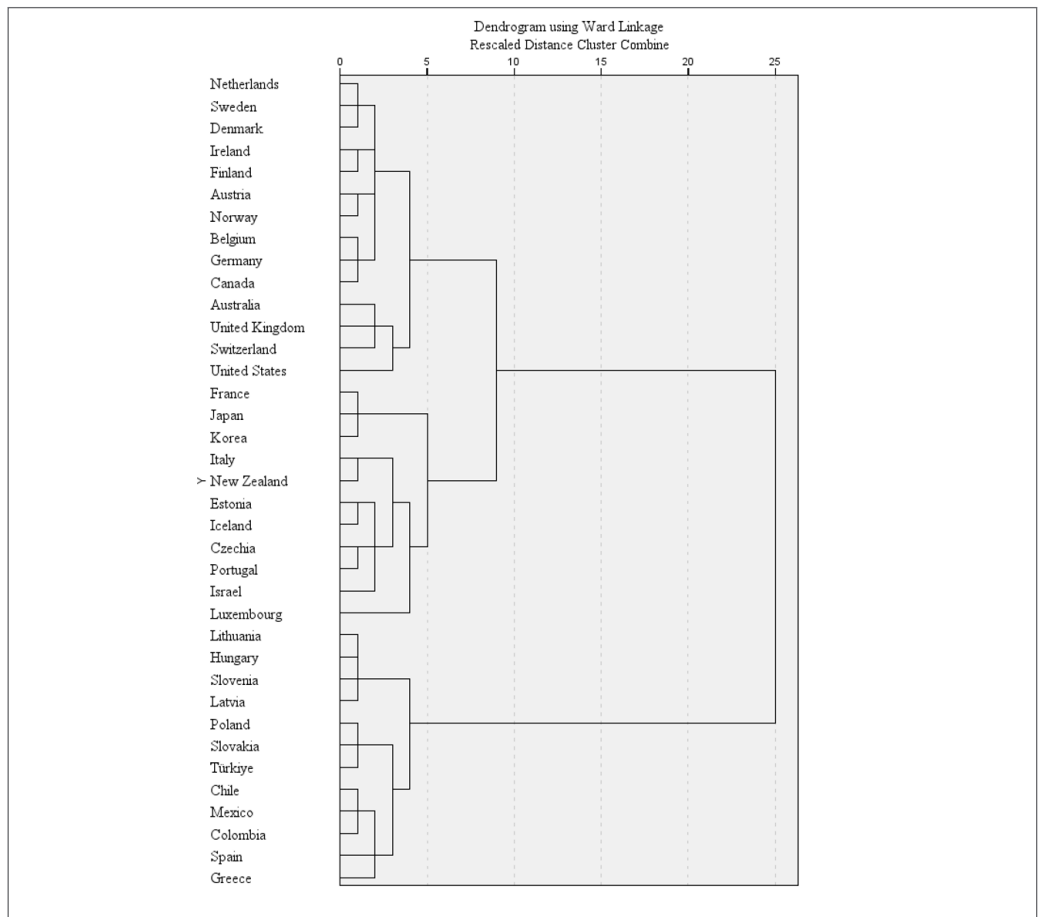
	X8	X9	X10	X11	X12	X13	X14	X15
Belgium	70,17	75,56	17,6	85,1	0,84	34,2	96,8	31
Czechia	56,87	86,33	25,9	72,4	0,60	28,5	97,7	33
Denmark	78,79	76,89	23	81,5	0,84	34,9	91	29,8
Germany	58,55	72,57	35,8	76,2	0,78	25,8	96,2	28,2
Estonia	62,43	74,89	27,5	54,1	0,71	55	97,1	23,8
Ireland	87,41	75,11	26,4	78,6	0,81	49,2	90,9	21,2
Greece	29,77	79,59	27,4	19,9	0,60	50,9	77,1	18,4
Spain	29,96	75,27	20,8	42	0,67	45,6	93,8	27,3
France	50,74	74,9	25,9	58,6	0,71	26	91	22,9
Italy	57,79	74,73	22,7	74	0,60	37,2	96,5	33
Latvia	43,02	77,25	19,3	42,8	0,61	64,2	95,4	15,3
Lithuania	41,63	83,05	26	63,9	0,54	50,7	91,7	17,5
Luxembourg	65,79	88,91	19,2	76,8	0,84	35	95,5	44,3
Hungary	39,95	87,4	15,5	49	0,51	20,3	33,8	29,7
Netherlands	75,97	73,02	18,8	87,9	0,87	23	82,3	41,1
Austria	63,59	79,75	30,6	68,3	0,84	27,8	88,3	32
Poland	26,4	86,86	19,4	29,3	0,44	48,5	73,8	16,5
Portugal	63,54	76,28	27,8	61	0,73	62	92,4	18,7
Slovenia	50,57	85,63	28,6	50,2	0,60	20,2	93,1	57,8
Slovakia	22,95	81,17	22,2	28,2	0,42	57,1	94,7	21
Finland	90,55	77,81	27,9	81,5	0,89	33,4	95	29,6
Sweden	74,44	78,49	27	82,1	0,84	21,3	94,5	51,1
Australia	72,92	75,42	20,6	70,2	0,73	*	91	26,9
Canada	74,76	*	25,7	85,8	0,79	37,6	89	31,8
Chile	33,68	74,34	21,4	35,7	0,77	49,7	94,5	38,4
Colombia	34,48	57,13	23,9	47,7	0,60	92,5	70,8	*
Iceland	67,81	80,05	18,2	63,7	0,83	45,2	91,8	34,8
Israel	56,29	78,63	26,9	100	0,83	*	93,2	42
Japan	46,13	*	19,5	64	0,61	*	*	*
Mexico	20,42	68,83	25,8	37,9	0,59	43,6	67	20,4
Korea	58,98	56,55	30,2	72,8	0,66	8,7	86,6	28,6
Norway	73,2	81,27	21,2	72,6	0,78	37,5	92,3	33,6
New Zealand	44,43		23,6	56,2	0,75	62,1	79,7	17,9
Türkiye	20,89	60,01	15,2	39,4	0,46	38,1	8,4	18,2
Switzerland	100	76,9	25,2	99,4	0,98	49,4	90,3	34,2
United Kingdom	68,59	69,41	22,8	82	0,72	56	82,7	23
United States	87,07	67,47	20,1	99,9	0,82	*	78,8	*
Minimum	20,42	56,55	15,2	19,9	0,42	8,7	8,4	15,3
Maximum	100	88,91	35,8	100	0,98	92,5	97,7	57,8
Average	56,77	76,10	23,66	64,61	0,71	41,55	85,41	29,21
Std. Dev.	20,908	7,722	4,505	20,959	0,137	16,659	17,875	10,048
Coefficient of variation	0,368	0,101	0,190	0,324	0,194	0,401	0,209	0,344

Note. * - data are absent. Source: compiled after (OECD, 2023; INSEAD, 2023; WIPO, 2023; The Legatum Institute, 2023; UNDP and MBRF, 2023).

Table 3
Characteristics of the Level of Country Attractiveness for International Students and the Level of Higher Education Provision

Level of country attractiveness for international students	Clusters of OECD countries by the level of higher education quality assurance	
	Cluster 1 (25 countries)	Cluster 2 (12 countries)
Above average (>0,45)	22 in 25 countries from cluster 1	1 in 12 countries from cluster 2
Below average (<0,45)	3 in 25 countries from cluster 1	11 in 12 countries from cluster 2

Figure 1
Dendrogram of OECD Countries by Indicators of Higher Education Quality in Terms of Country Attractiveness for International Students



quality assurance in higher education. One of these is the group of the US, Switzerland, the United Kingdom and Australia, which are the countries that are most attractive to international students according to the values of the dependent variable Y. Thus, the results obtained can confirm the significant links between the country attractiveness for international migrant students and such factors of higher education quality as its proper financing, high university ranking in terms of the quality of educational activities, as well as proven effectiveness in providing practical skills to students (in terms of compliance with the needs of the labour market and cooperation between universities and businesses in R&D).

5. Conclusion

The implementation of strategies for developing talent and the innovative potential of countries today largely depends on the sustainable development of educational systems. It is especially obvious for adult education where competitiveness in attracting international students is closely related to higher education quality alongside the other factors of choosing country of destination. The results of our study allow us to identify a number of useful dependencies with proven effectiveness in creating an attractive environment for foreign students. The tested hypotheses on the influence of higher education quality factors allow us to conclude that higher education financing plays a decisive role in assessing the impact of the selected indicators on the level of country attractiveness for international students. Therefore, governments should consider the financial aspect as a priority in ensuring the quality in higher education. In this case, a positive experience is not only an increase in financial allocations for the development of higher education institutions, but also the introduction of the principle of their financial autonomy. Such a mechanism is successfully operating in European countries, where financial autonomy of universities is one of the rights respected by all countries. Education development policies in European countries are aimed at increasing state budgets for higher education, ensuring greater financial autonomy, developing links between funding and results, and encouraging diversification of funding sources and partnerships (Tuan, 2022).

Somewhat unexpected and controversial is the low correlation between the factors characterising the research and teaching achievements of university staff and the country attractiveness for migrant students. On the one hand, such factors impact other important factors (e.g., university rankings), but on the other hand, their own impact has not yet been assessed by students as a direct factor in the attractiveness of the quality of the education system in another country. Therefore, the results with an obvious and direct impact on attracting talent from among students are of greater practical value in developing strategies for reforming higher education. Such factors include the development of mechanisms for financing the higher education system, the formation of a positive image, including ranking indicators (which includes not only indicators of research and teaching activities, but also a set of university achievements), the development of graduates' competencies that meet the needs of the modern labour market, and the establishment of effective cooperation with business environment representatives.

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References

- Abbas, J., Alturki, U., Habib, M., Aldraiweesh, A., & Al-Rahmi, W. M. (2021). Factors affecting students in the selection of country for higher education: A comparative analysis of international students in Germany and the UK. *Sustainability*, 13(18), 10065. <https://doi.org/10.3390/su131810065>
- Ahmed, R. R., Streimikiene, D., Alam, S. H., Streimikis, J., & Hanafi, M. R. (2023). Extended Signaling Theory and Role of Corporate Social Responsibility and Brand Personality. *Engineering Economics*, 34(4), 470-484. <https://doi.org/10.5755/j01.ee.34.4.33348>
- Aliyev, K., Abbasova, A., Alishzada, R., & Jafarova, A. (2023). Expatriation and permanent emigration intention among youth in Azerbaijan. *Journal of*

- International Studies*, 16(4), 153-165. <https://doi.org/10.14254/2071-8330.2023/16-4/10>
- Bacci, S., & Bertaccini, B. (2021). Assessment of the university reputation through the analysis of the student mobility. *Social Indicators Research*, 156, 363-388. <https://doi.org/10.1007/s11205-020-02322-x>
- Bains, S., & Rani, N. (2021). Impact of University Reputation and Ranking among the Students of the University of Jammu: A Survey. *Library Philosophy & Practice*. URL: <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=9219&context=libphilprac>
- Beine, M., Delogu, M., & Ragot, L. (2020). The role of fees in international education: evidence from Italy. *Journal of Economic Geography*, 20(2), 571-600. <https://doi.org/10.1093/jeg/lby044>
- Bilan, Y., Oliinyk, O., Mishchuk, H., & Skare, M. (2023). Impact of information and communications technology on the development and use of knowledge. *Technological Forecasting and Social Change*, 191, 122519. <https://doi.org/10.1016/j.techfore.2023.122519>
- Blackmore, J. (2020). The carelessness of entrepreneurial universities in a world risk society: A feminist reflection on the impact of Covid-19 in Australia. *Higher Education Research & Development*, 39(7), 1332-1336. <https://doi.org/10.1080/07294360.2020.1825348>
- Borah, D., Malik, K., & Massini, S. (2021). Teaching-focused university–industry collaborations: Determinants and impact on graduates' employability competencies. *Research Policy*, 50(3), 104172. <https://doi.org/10.1016/j.respol.2020.104172>
- Buckner, E., Zhang, Y., & Blanco, G. L. (2022). The impact of COVID-19 on international student enrolments in North America: Comparing Canada and the United States. *Higher Education Quarterly*, 76(2), 328-342. <https://doi.org/10.1111/hequ.12365>
- Chowdhury, M. B. (2022). Internationalisation of education and its effect on economic growth and development. *The World Economy*, 45(1), 200-219. <https://doi.org/10.1111/twec.13174>
- Chugh, R., Turnbull, D., Cowling, M. A., Vanderburg, R., & Vanderburg, M. A. (2023). Implementing educational technology in Higher Education Institutions: A review of technologies, stakeholder perceptions, frameworks and metrics. *Education and Information Technologies*, 28(12), 16403-16429. <https://doi.org/10.1007/s10639-023-11846-x>
- Cramarencu, R. E., Burcă-Voicu, M. I., & Dabija, D. C. (2023). The impact of artificial intelligence (AI) on employees' skills and well-being in global labor markets: A systematic review. *Oeconomia Copernicana*, 14(3), 731-767. <https://doi.org/10.24136/oc.2023.022>
- Decuypere, M., & Landri, P. (2021). Governing by visual shapes: University rankings, digital education platforms and cosmologies of higher education. *Critical Studies in Education*, 62(1), 17-33. <https://doi.org/10.1080/17508487.2020.1720760>
- Estrada-Real, A. C., & Cantu-Ortiz, F. J. (2022). A data analytics approach for university competitiveness: the QS world university rankings. *International Journal on Interactive Design and Manufacturing (IJIDeM)*, 16(3), 871-891. <https://doi.org/10.1007/s12008-022-00966-2>
- Fakunle, O. (2021). Developing a framework for international students' rationales for studying abroad, beyond economic factors. *Policy Futures in Education*, 19(6), 671-690. <https://doi.org/10.1177/1478210320965066>
- Ferguson, T., & Rooft, CG (2020). SDG 4 in higher education: Challenges and opportunities. *International Journal of Sustainability in Higher Education*, 21 (5), 959-975. <https://doi.org/10.1108/IJSHE-12-2019-0353>
- Hogan, O., Charles, M. B., & Kortt, M. A. (2021). Business education in Australia: COVID-19 and beyond. *Journal of higher education policy and management*, 43(6), 559-575. <https://doi.org/10.1080/1360080X.2021.1926616>
- Ilomo, M., & Mwantimwa, K. (2023). Entrepreneurial Intentions of Undergraduate Students: The Moderating Role of Entrepreneurial Knowledge. *International Journal of Entrepreneurial Knowledge*, 11(1), 14-34. <https://doi.org/10.37335/ijek.v11i1.178>
- INSEAD (2023): The Global Talent Competitiveness Index 2023: What a Difference Ten Years Make What to Expect for the Next Decade Fontainebleau, France. 314 p. URL: <https://www.insead.edu/system/files/2023-11/gtci-2023-report.pdf>
- Jangsiriwattana, T., & Duangkumnerd, V. (2023). Enhancing knowledge sharing in organizations through the proactive personality of employees. *Polish Journal of Management Studies*, 28(1), 157-171. <https://doi.org/10.17512/pjms.2023.28.1.09>
- Karamanis, K., & Koliass, G. (2022). Analyzing employment by occupation across sectors in Greek labor market. *Economics and Sociology*, 15(2), 24-40. <https://doi.org/10.14254/2071-789X.2022/15-2/2>

- Kwok, L. (2022). Labor shortage: a critical reflection and a call for industry-academia collaboration. *International Journal of Contemporary Hospitality Management*, 34(11), 3929-3943. <https://doi.org/10.1108/IJCHM-01-2022-0103>
- Lacmanović, S., & Škare, M. (2024). The comparative analysis of B Corp Impact Report results in higher education organizations. *Journal of International Studies*, 17(4), 255-277. <https://doi.org/10.14254/2071-8330.2024/17-4/15>
- Legatum Institute (2023). The Legatum Prosperity Index 2023. URL: <https://index.prosperity.com/>
- Lipura, S. J., & Collins, F. L. (2020). Towards an integrative understanding of contemporary educational mobilities: A critical agenda for international student mobilities research. *Globalisation, Societies and Education*, 18(3), 343-359. <https://doi.org/10.1080/14767724.2020.1711710>
- Miotto, G., Del-Castillo-Feito, C., & Blanco-González, A. (2020). Reputation and legitimacy: Key factors for Higher Education Institutions' sustained competitive advantage. *Journal of Business Research*, 112, 342-353. <https://doi.org/10.1016/j.jbusres.2019.11.076>
- Mishchuk, H., Roshchuk, I. Sułkowska, J. & Vojtovič, S. (2019). Prospects of Assessing the Impact of External Student Migration on Restoring the Country's Intellectual Potential (Case Study of Ukraine). *Economics & Sociology*, 12(3), 209-219. <https://doi.org/10.14254/2071-789X.2019/12-3/14>
- Nsanzumuhire, S. U., & Groot, W. (2020). Context perspective on University-Industry Collaboration processes: A systematic review of literature. *Journal of cleaner production*, 258, 120861. <https://doi.org/10.1016/j.jclepro.2020.120861>
- O'Dwyer, M., Filiari, R., & O'Malley, L. (2023). Establishing successful university-industry collaborations: barriers and enablers deconstructed. *The Journal of Technology Transfer*, 48(3), 900-931. <https://doi.org/10.1007/s10961-022-09932-2>
- OECDa (2023). International Migration Outlook 2023. *OECD Publishing*, Paris, <https://doi.org/10.1787/b0f40584-en>
- OECDb (2023). Talent Attractiveness 2023. URL: <https://www.oecd.org/migration/talent-attractiveness/>
- Oliinyk, O., Bilan, Y., & Mishchuk, H. (2021). Knowledge Management and Economic Growth: The Assessment of Links and Determinants of Regulation. *Central European Management Journal*, 29(3), 20-39. <https://doi.org/10.7206/cemj.2658-0845.52>
- Oliinyk, O., Mishchuk, H., Bilan, Y., & Skare, M. (2022). Integrated assessment of the attractiveness of the EU for intellectual immigrants: A taxonomy-based approach. *Technological Forecasting and Social Change*, 182, 121805. <https://doi.org/10.1016/j.techfore.2022.121805>
- Omarova A., Niyazov M., Turekulova A., Turekulova D., Mukhambetova L., Mukhambetov Y. (2024). Socio-economic Development of Youth Policy in the Context of Digital Transformation. *Montenegrin Journal of Economics*, 20(1), 197-208. DOI: 10.14254/1800-5845/2024.20-1.18
- Pinto, E. B., & Fernandes, G. (2021). Collaborative R&D the key cooperation domain for university-industry partnerships sustainability-position paper. *Procedia Computer Science*, 181, 102-109. <https://doi.org/10.1016/j.procs.2021.01.109>
- Polyakov, M., Bilozubenko, V., Korneyev, M., & Nebaba, N. (2022). Analysis of key university leadership factors based on their international rankings (QS World University Rankings and Times Higher Education). *Problems and Perspectives in Management*, 18(4), 142-152. [http://dx.doi.org/10.21511/ppm.18\(4\).2020.13](http://dx.doi.org/10.21511/ppm.18(4).2020.13)
- Pruchnicki W., Smal, T., and Tomaszycycki, M. (2023). Shaping leadership at the Military University of Land Forces in Wrocław - recommendations for improving the process. *Administrative Management Public*, 40, 95-112. DOI: <https://doi.org/10.24818/amp/2023.40-06>
- Radu, M. T., Rădulescu, M., Pentescu, A., Marinov, G., & Kharlamova, G. (2023). The Effects of Immigration and Unemployment on European Countries: A Comparative Social and Fiscal Perspective. *European Journal of Interdisciplinary Studies*, 15(2). <http://doi.org/10.24818/ejis.2023.25>
- Restaino, M., Vitale, M. P., & Primerano, I. (2020). Analysing international student mobility flows in higher education: a comparative study on European countries. *Social Indicators Research*, 149, 947-965. <https://doi.org/10.1007/s11205-020-02282-2>
- Sabary, G. S., Durda, L., Asad, A. I., & Ključnikov, A. (2023). Key motivational factors behind Asian immigrant entrepreneurship: A causal relationship analysis employing the DEMATEL approach for Germany. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 18(1), 287-318. <https://doi.org/10.24136/eq.2023.009>
- Santos, G., Marques, C. S., Justino, E., & Mendes, L. (2020). Understanding social responsibility's influence on service quality and student satisfaction in higher education. *Journal of cleaner pro-*

- duction, 256, 120597. <https://doi.org/10.1016/j.jclepro.2020.120597>
- Shen, F., Roccosalvo, J., Zhang, J., Tian, Y., & Yi, Y. (2023). Online technological STEM education project management. *Education and Information Technologies*, 28(10), 12715-12735. <https://doi.org/10.1007/s10639-022-11521-7>
- Sin, C., Antonowicz, D., & Wiers-Jenssen, J. (2021). Attracting international students to semi-peripheral countries: A comparative study of Norway, Poland and Portugal. *Higher Education Policy*, 34, 297-320. <https://doi.org/10.1057/s41307-019-00135-3>
- Sutherland, M., Thompson, D., & Edirisingha, P. (2021). Try before you buy: a small business employer (SME) perspective of international student mobility in England. *Studies in Higher Education*, 46(7), 1256-1271. <https://doi.org/10.1080/03075079.2019.1680965>
- Song, L. (2023). Business intelligence (BI) and Big Data Analytics (BDA) in industry 5.0: application of adaptive optimization algorithms (AOA) to improve firm performance. *Transformations in Business & Economics*, 22(2). URL: <https://www.transformations.knf.vu.lt/59/article/busi>
- Tabarés, R., & Boni, A. (2023). Maker culture and its potential for STEM education. *International Journal of Technology and Design Education*, 33(1), 241-260. <https://doi.org/10.1007/s10798-021-09725-y>
- Tran Ly Thi et al. (2020). Post-study work for international graduates in Australia: opportunity to enhance employability, get a return on investment or secure migration? *Globalisation, Societies and Education*, 18(5), 495-510. <https://doi.org/10.1080/014767724.2020.1789449>
- Trujillo, J. P. C., Mohammed, P. J., & Saleh, S. T. (2020). Students' motivations to study abroad: The case of international students at the university of Debrecen. *Central European Journal of Educational Research*, 2(1), 76-81. <https://doi.org/10.37441/CEJER/2020/2/1/5760>
- Tseng, F. C., Huang, M. H., & Chen, D. Z. (2020). Factors of university-industry collaboration affecting university innovation performance. *The Journal of Technology Transfer*, 45, 560-577. <https://doi.org/10.1007/s10961-018-9656-6>
- Tuan, N. A. (2022). Financial autonomy in universities around the world management implications for Vietnam. *International Journal of Research in Education Humanities and Commerce*, 3(01), 2583-0333. URL: https://ijrehc.com/doc/ijrehc03_01.pdf
- Turan, U. (2020). A correlation coefficients analysis on innovative sustainable development groups. *EU-REKA: Social and Humanities*, 1(1), 46-55. <https://doi.org/10.21303/2504-5571.2020.001130>
- WIPO (2023). Global Innovation Index 2023. Innovation in the face of uncertainty. URL: <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2023-en-main-report-global-innovation-index-2023-16th-edition.pdf>
- UNDP and MBRF (2023). The Global Knowledge Index 2023. URL: https://knowledge4all.com/admin/2023/Methodology/GKI2023_Report_EN.pdf
- UNESCO (2025). Monitoring SDG 4: Higher education. Global Education Monitoring Report. URL: <https://www.unesco.org/gem-report/en/higher-education>
- Wojciechowski, A., & Korjonen-Kuusipuro, K. (2023). How artificial intelligence affects education?. *Human Technology*, 19(3), 302-306. <https://doi.org/10.14254/1795-6889.2023.19-3.0>
- Yildiz, B., Çiğdem, Ş., Meidutė-Kavaliauskienė, I., & Činčikaitė, R. (2024). The nexus of big data analytics, knowledge sharing, and product innovation in manufacturing. *Journal of Business Economics and Management*, 25(1), 66-84. <https://doi.org/10.3846/jbem.2024.20713>
- Yılmaz, K., & Temizkan, V. (2022). The effects of educational service quality and socio-cultural adaptation difficulties on international students' higher education satisfaction. *SAGE Open*, 12(1), 21582440221078316. <https://doi.org/10.1177/21582440221078316>
- Zhou, C. (2023). Integration of modern technologies in higher education on the example of artificial intelligence use. *Education and Information Technologies*, 28(4), 3893-3910. <https://doi.org/10.1007/s10639-022-11309-9>