

Doctoral (PhD) thesis

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Exploring the Prospects of Internationalization in Higher Education through Network and Behavioural Theories

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1. OBJECTIVES

In the 21st century, the world is facing many global challenges, the biggest of which is the continuing population growth. The global population is expected to exceed 10 billion by 2050, while climate change is having an increasing impact. Climate change will affect the geographic and spatial structure of existing agro-ecological potential and food security. Moreover, there will be increasing migration from South to North towards developed countries (from Africa to the EU). A significant part of the global challenges facing the world will be concentrated in developing countries and these will be the areas where the extent to which the UN's strategic development goals for sustainable development, to be achieved by 2030 and 2050, can be met, whether in terms of poverty eradication, hunger eradication, health and well-being or quality education, will be most in question. In this respect, the development of human resources is of paramount importance, and higher education has always played a key role in this respect. The question for the planet is how the developing world can address the challenges to stable sustainable development more effectively than at present. One of the possibilities I explore in my thesis is to encourage ambitious young people from developing countries to come to developed countries, including Hungary, and return to their home countries with the knowledge they have acquired here. This is a circle that can work effectively in theory, but in reality, it can raise a number of issues that require an inter- and multidisciplinary approach, as it requires the use of economics, sociology, network analysis, statistical models and a wide range of tools from cultural anthropology.

Host countries in the developed world are welcoming more international students and are even attractive destinations for the world's most talented young people, and new links can be forged in the process of knowledge production and diffusion between developed (core) and developing (peripheral) countries. Higher education institutions in the developed world attract more talented students who can contribute to the production and distribution of knowledge in the host country, thus creating a dependency of institutions in developing countries for technology, knowledge, goods and services. Countries with a highly developed infrastructure, attractive salaries and advanced research facilities have a significant competitive advantage in attracting talented international students who can bring with them long-term international experience and contribute to the development of the knowledge economy in the host countries. My thesis deals with the main factors that determine students' intention to study abroad and their choice of institution, and some aspects of the problem. To shed light on some of the issues of student mobility that have not been analysed in depth or at all, my analysis can

contribute to better targeting domestic and international efforts to internationalise higher education, to further developing national economic and higher education policy planning, and to the design and development of institutional internationalisation strategies.

In line with international trends in higher education, the importance of international students' choice of institution is increasingly discussed in Hungarian higher education professional forums, but there is very little literature on this activity in Hungary and research in this area is scarce. The choice of the topic of my doctoral thesis and the presentation of my research results thus also play a kind of gap-filling role in the field of domestic higher education marketing literature. With the growing international attractiveness of the university, the international positioning of the institution is also strengthened, which has a positive impact on other areas of internationalisation and the enrolment of Hungarian students.

My empirical research consists of two main modules: the first focuses on the intention to study abroad and institution choice (structural model), and the second on the significant differences in the values of the dimensions under study between the categories based on the characteristics considered important in the analysis (gender gap, geographical location of the sending country, parents' tertiary education). The research will examine the intention and institution choice of study abroad of students studying in any higher education institution in the country.

In my thesis, I seek to answer the question of what factors influence foreign students' intention to study and their choice of institutions in other countries.

The purpose of the thesis was to

- Uses Big Data analysis to identify research gaps in the field of international student mobility;
- Identifies clusters and regional nodes through network analysis;
- Through empirical research, it explores the main dimensions influencing international students' intention to study abroad and their choice of institution.

The thesis puts forward ten research hypotheses.

H1-H7 hypotheses relate to the intention to study abroad and the choice of institution.

H1: The intention to study abroad has a direct impact on the institution choice.

H2: EWOM has a positive impact on the intention to study abroad (H2_a) and the institution choice (H2_b).

H3: Low institutional trust in institutions in sending countries increases the desire to study abroad (H3_a) and influences institution choice (H3_b).

H4: The cultural awareness of students in sending countries has a positive influence on their intention to study abroad (H4_a) and their institution choice (H4_b).

H5: The intention to study abroad (H5_a) and the institution choice (H5_b) are positively influenced by the positive perception of the quality of higher education institutions in the host country.

H6: The dependence on people around is a statistically verifiable disincentive to the intention to study abroad (H6_a) and the institution choice (H6_b).

H7: The intention to study abroad (H7_a) and the institution choice (H7_b) are positively influenced by students' attitudes towards their future career goals.

The H8-H10 hypotheses explore the relationship between gender differences in willingness and choice of institution to study abroad, as well as the geographical location of the sending country and parents' higher education.

H8: There is a significant difference between men and women in their willingness to study abroad (H8_a) and their perception of the importance of choosing an institution (H8_b).

H9: The geographical location of the sending country influences the intention to study abroad (H9_a) and the institution choice (H9_b).

H10: Parents' qualifications have an impact on their intention to study abroad (H10_a) and their choice of institution (H10_b).

2. MATERIAL AND METHODS

The chapter is divided into five parts. In the first two subchapters, the two methodologies supporting empirical research, the methodology of bibliometric analysis and the methodology of network analysis, are presented, in the third part I illustrate the process of empirical research, which is further divided into five smaller subchapters, in which the research model, the operationalization of the conceptual model, the process of data collection, the main characteristics of the sample, the methodology of Structural Equation Modeling (SEM) and the software used for data analysis and, finally, statistical methods used to detect differences between groups.

2.1. Bibliometric analysis methodology

Analysis of the literature by bibliometric analysis can help examine trends in the literature. By visualising complex data, thematic maps can help users quickly identify patterns and trends and make it easier to communicate data to a wider audience. In my dissertation, I worked from the Web of Science (WoS) Core Collection literature database. The bibliometric analysis was performed with the help of the VOSviewer software on the one hand and the Biblioshiny application available in the environment of Rstudio on the other (JONES — GATRELL 2014).

2.2. Network Analysis

Social Network Analysis (SNA) is widely used as a powerful tool for pattern identification and dynamic modeling. The application of this method of analysis to the study of international student mobility has brought a new and more detailed understanding of the dynamics behind students' choice of country (CHEN – BARNETT 2000, BARNETT et al. 2016, KONDAKCI et al. 2018).

To carry out the research, I used the public database on the UNESCO website, and I used the Cytoscape program (SHANNON et al. 2003) to analyse the network. The two basic characteristics of a network are the connections between the nodes in the network and the nodes on the network. The nodes or "nodes" in the network correspond to the sending and receiving countries, and the edges of the network, i.e. the concept of edges connecting the different vertices of this graph in mathematical terms, corresponds to the intensity of movements in the network, i.e. student mobility. A network can be considered peculiar in that it is a graph in which the directionality of individual edges is also interpreted, so the individual edges can be considered vectors. The

orientation of the vector expresses which country the student flow takes place from, and in this sense, I examine a directed, weighted graph. The weighting is based on the number of student mobility, since it is obvious that very little information would be provided just by the fact that there is or is not student mobility from a given country to a particular country. In this case, we can complete the analysis if we consider that it has differences, i.e. the graph under study can be considered as a weighted, directed graph. Given the changes around us in recent years, I considered it appropriate to conduct the latest survey of global student flows, thus providing a more accurate overview of the current networking.

2.3. Material and methodology of empirical research

The research process is illustrated in Figure 1.

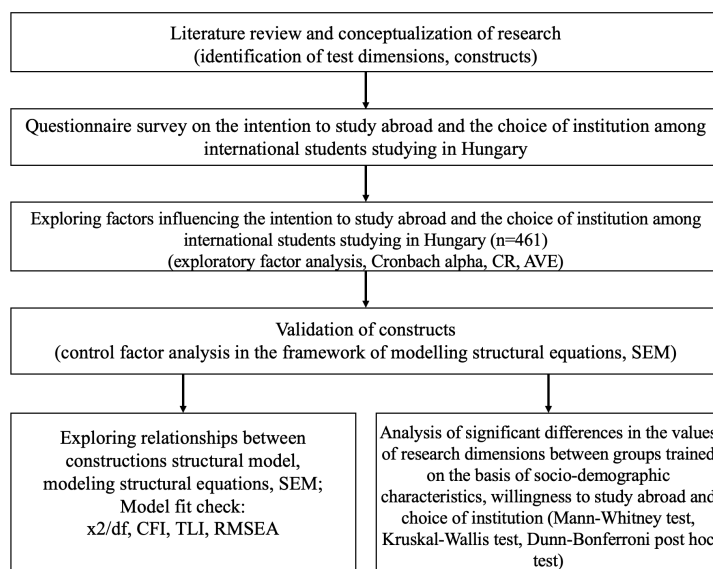


Figure 1. The course of empirical research

Source: own editing based on the progress of my research work

The empirical research consists of two main modules: the first is to explore the relationships between the intention to study abroad and the choice of institution and the dimensions determining it (structural model), and the second is to examine the significant differences measured in the values of the dimensions studied, other characteristics considered important in the analyses (gender, geographical location of the sending country, higher education of parents, first-generation student), on the basis of statistical methods used to detect discrepancies between categories established on the basis of the system.

2.4. The structural research model

The measurement and structural model, which includes attitudes and behavioural elements related to the intention to study and choose institutions abroad, includes eight latent constructs (Figure 2).

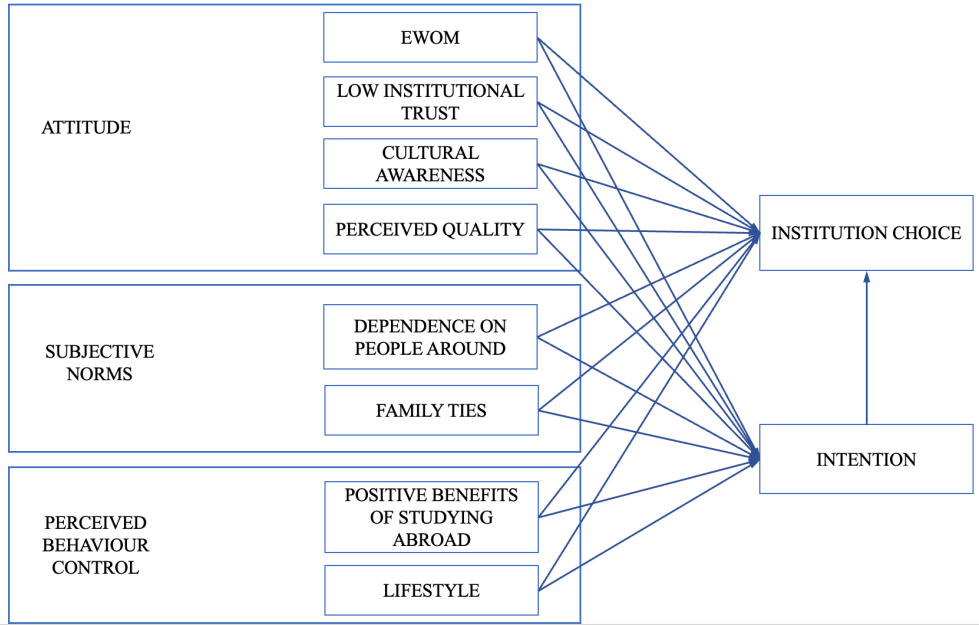


Figure 2. A conceptual model based on Ajzen's Theory of Planned Behaviour (TPB)
Source: own editing based on the conceptual model used in my research

2.5. Operationalization of the conceptual model

According to the original conceptual model, eight research dimensions were identified, two target dimensions (Institution choice and Intention) and six explanatory dimensions. The operationalized research model consists of a measurement model showing the components (items) of each research dimension (construct) and a structural model analysing the relationships between the dimensions.

Table 1. Operationalization of constructions

EWOM (REZA JALILVAND – SAMIEI 2012)	
EWM1	I often collect information from student reviews online before choosing a university.
EWM2	If I don't read students' online college reviews when choosing a destination, I worry about my decision.

EWM3	When I choose a university, students' online assessments make me optimistic about studying at that university.
Low institutional trust (HALAPUU et al. 2013)	
LTR1	Low institutional trust in the Hungarian higher education system.
LTR3	Low confidence in domestic higher education staff.
LTR4	Low confidence in the value of the diploma in the country of origin.
Cultural awareness (CHANG – CHOU 2021, WU et al. 2020)	
CAW1	Positive awareness of foreign cultures.
CAW2	High respect for foreign customs. I believe that global mobility can increase personal soft power in terms of career development.
CAW3	
CAW4	Affection for foreign life and culture.
Perceived quality (LIM et al. 2015)	
PQU1	I need enough information to plan my studies abroad.
PQU2	The availability of quality accommodation/dormitory is important.
PQU3	The availability of quality leisure activities is important.
PQU4	The quality level of service at the university is important.
Dependence on people around (TUNG et al. 2021, AMMARI 2022)	
DEP1	My friends had a big influence on my college enrollment.
DEP2	Maybe I'll study where my friends study. My decision to enroll in a foreign university was influenced by international alumni.
DEP3	
Positive benefits of studying abroad (MAZZAROL et al. 1997, AMMARI 2022, JIN et al. 2022)	
PBC1	A university degree abroad helps me get a high-paying job. Having a degree from a foreign university increases my career prospects when I return to my home country.
PBC2	
PBC3	After graduating from a foreign university, I will have a high income.
PBC4	Studying abroad frees me up to do what I want. After graduating from a university abroad, I will receive excellent healthcare in my host country.
PBC5	
PBC6	Studying abroad gives you the opportunity to offer a job in your host country after graduation. During graduation from a foreign university, I build a high-quality social network.
PBC7	
PBC8	Studying abroad will improve my quality of life.
Intention (TUNG et al. 2021, AMMARI 2022)	
INT1	I was considering studying abroad.
INT2	I am very interested in studying abroad.
INT3	I expected to study abroad.
INT4	I have great intentions to study abroad.
Institution choice (ROCCA – WASHBURN 2005, MAZZAROL – SOUTAR 2002)	
INC1	The university has a good reputation.
INC2	Very high quality institution in this area.
INC4	This institution provides good practical training.
INC5	In this institution it is possible to study further (PhD).
INC6	I wanted to study at this institution.

Source: based on operationalization applied in own research

The following dimensions are included in the research: EWOM, Low institutional trust, Cultural awareness, Perceived quality, Dependence on people around, Perceived behaviour control, Intention, Institutional choice.

2.6. Data collection process, main characteristics of the sample

The data required for empirical research comes from your own online questionnaire survey. The online interface of the questionnaire was created with the LimeSurvey questionnaire editing software. The target population consisted of foreign students studying in Hungary. Participation in the survey was voluntary, the questionnaires were filled in anonymously based on random interviews.

The online interface was open for completion between 29 October 2022 and 17 December 2022, with data from 461 fully completed questionnaires evaluated. The proportion of men and women in the sample was approximately identical, i.e. about 52% of men and 46.6% of women, and over 0.5% of those who did not wish to declare their gender. This is interesting in that we can now observe the predominance of women (52%) in Hungarian higher education as a whole. The age of the sample examined was higher than that of higher education students in Hungary, partly due to the specificities of the countries sent, and partly due to the relatively high proportion of doctoral and master's students, which explains why 45% of all respondents were between the ages of 26 and 40. The proportion of 18-25 year olds is the highest, at 53.1%. More than 1.5% of respondents were over 40 years old. Some of the students arriving in Hungary already live in families, so the proportion of those with children was relatively high, reaching almost 12% in the total sample. In the case of those who came to Hungary to study, more than half (55%) of the father had a higher education degree, the mother's level of education was generally lower, which can also be explained by the often paternalistic family structure from which the students coming to us came, but here too, the proportion of those who had a university degree was much higher than the average of the sending country, about 45%.

2.7. Structural Equation Modeling

The explorative analysis of latent constructions was performed by principal component analysis. The validity of the hypothetical model and the reliability of the latent variables forming the research dimensions were checked by confirmative factor analysis (CFA/Confirmatory Factor Analysis). Confirmative factor analysis was carried out within the Structural Equation

Modeling (SEM/Structural Equation Modeling) (BYRNE 2010). The internal consistency of latent structures was checked based on Cronbach's alpha. In the literature, the value of Cronbach-alpha (TABER 2018), which indicates adequate internal consistency, is not clearly defined, since this value also depends on the number of elements (statements) that make up the latent construction. Therefore, Cronach-alpha values in the 0.65-0.80 value range recommended by several researchers were considered appropriate when examining the internal consistencies of latent constructions. For the validation of latent constructions, the average extracted (AVE) and CR/Composition Reliability indicators were applied. The value of AVE indicates the average proportion of variances of the indicators that make up a given latent variable that is compressed in the artificial variable. A value of this indicator higher than 0.5 (BAUMGARTNER – HOMBURG 1996, HULLAND 1999, HAIR et al. 2021). The composition confidence index (CR) expresses the common variance ratio for observed indicators (statements) that form a given latent structure. Based on the threshold criterion for CR, the CR value of all latent variables in the model should be equal to 0.7 (HAIR et al. 2021), but for exploratory research, a value above 0.6 is sufficient to confirm the reliability of the model (NUNNALLY – BERNSTEIN 1994). If the mean explained variance indicator is below the threshold value of 0,5, but the composition confidence index value exceeds 0,7, the reliability of latent structures is acceptable (FORNELL – LARCKER 1981, CHIN 1998, LAM 2012). For the fit indicators of the structural model, the following acceptance ranges were used: relative Chi-squared, the absolute fit index (χ^2/df) below 3 (2.250) was considered appropriate (BOATWRIGHT et al. 1999, KIM – BENTLER 2006), the values of the CFI/Comparative Fit Index (CFI) BENTLER (1990) and the TUCKER and LEWIS (1973) TLI (Tucker-Lewis index) reaching 0.9 were acceptable, the RMSEA (Root Mean Square Error of Approximation) fit index below 0.08 (0.052) was considered acceptable for a good fit imply (HU – BENTLER 1999). IBM SPSS Statistics 27.0 and AMOS 23.0 were used to run the tests.

2.8. Statistical methods used to detect differences between groups

Since the normal distribution of values could not be demonstrated for several test dimensions based on the significant results of the Kolmogorov-Smirnov test (NOE 1972, FREEDMAN 1979), the differences between the two categories (e.g. men and women) were investigated using the Mann-Whitney nonparametric test (AHMAD 1996, MACFARLAND – YATES 2016), and for more than two categories (e.g. geographical location of the sending country) the Kruskal-Wallis test (KATZ – MCSWEENEY 1980, VARGHA –

DELANEY 1998) was used to detect significant differences between the categories values. In the case of significant results of the Kruskal-Wallis test, the Dunn-Bonferroni post hoc test (BAILEY 1977, KIRK 1982) was used to determine the groups showing significant differences (Figure 3).

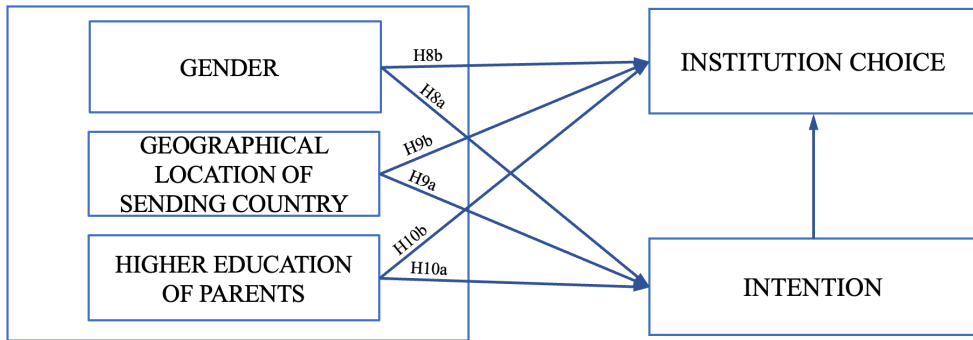


Figure 3. Research model for detecting differences between groups
Source: own edit based on my research model

3. RESULTS AND DISCUSSION

3.1. Bibliometric analysis of international student mobility

I collected publications and bibliographic data related to the topic using the TS= ("student mobility") AND ("higher education")) algorithm, and obtained the research data on January 20, 2023. Analysing the data obtained during bibliometric analysis, it can be concluded that the first relevant study was published in 1992. The annual growth dynamics of the number of documents were about 5.3%, which corresponds to moderate growth dynamics if we compare the development of the examined database over time with the average annual growth values reported for and determined for other fields. Above the average, above 11 citations characterize the use of a literature source. The examined database contained a total of more than 63,000 literature references, so we can rightly consider the examined data as Big Data. A total of 2000 documents were entered into the database. A relatively large number of sources contained these documents, a total of 862 literature sources, i.e. journals, books, or other scientific publications. More than 4,000 authors participated in the preparation of the documents. In summary, it can be stated that the large number and significant references of documents, the extensive network of contacts of the authors, as well as the large number of works cited, make it possible to create a global overview with the help of the documents used.

3.1.1. Keyword map visualization

After analysing the international scientific elaboration of the topic and researching the network of global scientific cooperation, I prepared a keyword network of publications published in the field of international student mobility. It is also useful to examine the interconnection of different topics by considering the co-occurrence of keywords or key phrases appearing in the articles and creating clusters of different topics based on the proportion of these co-occurrences (Figure 4). The clusters were determined with the help of VOSviewer software, where I accepted the algorithm of the software without any prior assumption, based on which it classifies the examined topics into seven clusters. VOSviewer has its own clustering technique (WALTMAN et al. 2010), and I used this clustering technique to split it into groups. I marked each topic with different colors, the colors represent the different clusters, i.e. I had the opportunity to separate seven clusters according to the algorithm by characterizing the relative significance of different keywords and key phrases

and thinking, this cluster approaches the topic basically from the side of social psychology, considering the issues of experience, perception, perception and adaptation. The United States, and again China, appear as an independent element in the cluster. A new approach to social psychological investigations, the so-called acculturation stress concept, is emerging. To psychologically deepen the central theme of acculturation, the problem of identity is inevitable, this key word is also part of the cluster. Cluster 3 marked in red raises the problem of student migration and student mobility. This question also reflects the ways in which student mobility helps or appears in global migration processes, i.e. student mobility is considered as a subsystem of global migration processes. Migration, globalisation, geographical separation are the most frequently used words here, as well as certain countries such as Hong Kong and the United Kingdom, and the issue of family strategies and geographical mobility also appears here. The labour market and return to the country of origin are also part of this cluster. This cluster is displayed in dark blue. In cluster 4, marked in ochre yellow, intention, choice of institutions, gender differences and the situation of women are outlined in the set of key words. In cluster 5, marked in purple, cultural differences, gaining experience, perspectives and competences come to the fore. In this cluster, the international transfer system of curricula, credit transfer systems, the combination of educational programs and their compatibility and interoperability, as well as the issues of practical implementation will come to the fore. Cluster 6 is shown in light blue. As I expect, 'mobility' and 'higher education' are the most common occurrences, but this is also where we can see the meaning of words such as 'networking', 'flow', 'decision-making' and 'migration of qualified professionals'. Interestingly, the United Kingdom and China also appear in this cluster. It is also emphasized that cluster 6 has a relatively high degree of interconnectedness with clusters 3 and 5 in many areas, and this is clearly visible in the plane. Thus, in this case, the basic tools of investigation are the driving forces of mobility, but already in this case, sociological factors such as the building and development of social networks and the question of networking are also gaining importance. The other, significantly smaller, cluster 7 is shown in orange, which approaches the issue of higher education mobility from the side of political science and political science and seeks to answer how migration between different countries fits into the geopolitical strategy of the given country. The concept of "soft power" comes to the forefront of this cluster. Typically, words such as "strategy", "politics" or "recruitment" play a decisive role in this cluster and, interestingly, "Asia", which is known to play a significant role in international student mobility.

In summary, it can be stated that the research that deals with the examined issue can be basically divided into seven main directions. These are very complex issues with different depths and horizons, so this shows the complexity of international student mobility.

3.2. Exploring international student mobility through network analysis

When we look at student mobility between countries, we see a very complex network with many nodes and large numbers of edges. The nodes represent the sending and receiving countries in this system, and the edges represent the flow of students from one country to another. If we try to analyse the network as a whole, we can describe it relatively easily using mathematical methods based on different centrality indicators, but obviously visualizing and understanding it will be much more difficult, because the flow of listeners between different countries is difficult to map. Therefore, it is advisable to divide the most important global student movements into a relatively narrow circle of sending and receiving countries. I examined how it can be characterized and visualized if I consider the movement of students between countries with more than 20,000 students. There is also a huge difference between the countries involved in the most significant student mobility. The fundamental difference in mobility between countries is that there is mobility between countries that are mainly based on historical, cultural traditions, connections, a common language and geographical proximity (HUANG et al. 2023), such as the appearance of Syrian and Azerbaijani students in Turkish higher education, or the study of young people from Slovakia at traditionally high-level Czech universities, as well as student movements between Brazil and Argentina. A peculiar microcosm can be seen in the exploration of student mobility between the former post-Soviet states. It is clearly visible that many students are coming to Russia from Kazakhstan. A similar flow can be observed from Tajikistan, Uzbekistan, Kyrgyzstan, and Turkmenistan to the territory of the Russian Federation. A significant number of them are believed to come from families of former or current Russian citizens who preferred to use Russian as their mother tongue for intra-family communication. The flow of students between Ukraine and Poland is striking, here too the similarity of linguistic and cultural relations and the fact that many people have relatives living in Poland due to historical movements probably play a significant role. China represents the largest number of students in international higher education, and student movements from China to the United States should be highlighted (Figure 5). Of course, the flow of Chinese students is not limited only to the territory of the United States, but many students also come from

3.3. Dimensions of the measurement model and their reliability

The examination of the reliability of latent constructs for measuring research dimensions confirms the appropriate validity of the elements of the measurement model (Table 2). The weighting values obtained because of the control factor analysis exceed 0,6 (lowest value 0,602) in all but three statements. The lowest value of the Cronbach-alpha indicator, which measures the internal consistency of scales, is 0.701, indicating a strong internal consistency of constructions. The average extracted variance (AVE/Average Variance Extracted) did not reach 0.5 for two latent variables, but the CR/Composition Reliability index exceeded 0.7 for each of these constructs, so the research dimensions can be measured well in the model. The statement "It is possible to study further (PhD) at this institution" was excluded from the model due to its low internal consistency value.

Table 2. Descriptive statistics and results of the examination of the reliability of schemes belonging to the structural dimension of willingness to study and institution choice abroad

Construction/Elements	Code	Average (standard deviation)	Weight	Cronbach-alpha	CR	BIRD
EWOM		3,12 (1,02)		0,768	0,853	0,530
I often gather information from online student reviews before choosing a university.	EWM1	3,20 (1,22)	0,757			
If I don't read students' online college reviews when choosing a destination, I worry about my decision.	EWM2	2,77 (1,29)	0,657			
When I choose a university, students' online assessments make me optimistic about studying at that university.	EWM3	3,30 (1,21)	0,766			
Low institutional trust		2,55 (1,27)		0,895	0,941	0,740
Low institutional trust in the Hungarian higher education system.	LTR1	2,59 (1,38)	0,862			
Low confidence in domestic higher education staff.	LTR3	2,47 (1,39)	0,870			

Low confidence in the value of the diploma in the country of origin.	LTR4	2,60 (1,42)	0,848		
Cultural awareness		3,83 (0,90)		0,800	0,881 0,528
Positive awareness of foreign cultures.	CAW1	3,77 (1,08)	0,827		
High respect for foreign customs.	CAW2	3,66 (1,18)	0,799		
I believe that global mobility can increase personal soft power in terms of career development.	CAW3	4,15 (0,97)	0,692		
Affection for foreign life and culture.	CAW4	3,80 (1,22)	0,559		
Perceived quality		4,09 (0,08)		0,825	0,897 0,560
I need enough information to plan my studies abroad.	PQU1	3,88 (1,00)	0,645		
The availability of quality accommodation/dormitory is important.	PQU2	3,94 (1,12)	0,749		
The availability of quality leisure activities is important.	PQU3	4,15 (0,95)	0,828		
The quality level of service at the university is important.	PQU4	4,30 (0,86)	0,759		
Dependence on people around		2,39 (1,07)		0,701	0,807 0,467
My friends had a big influence on my college enrollment.	DEP1	2,61 (1,39)	0,779		
Maybe I'll study where my friends study.	DEP2	2,10 (1,20)	0,725		
My decision to enroll in a foreign university was influenced by international alumni.	DEP3	2,45 (1,32)	0,519		
Perceived behaviour control		3,61 (0,84)		0,873	0,923 0,475
A university degree abroad helps me get a high-paying job.	PBC1	3,57 (1,09)	0,812		
Having a degree from a foreign university increases my career	PBC2	3,85 (1,12)	0,606		

prospects when I return to my home country.						
After graduating from a foreign university, I will have a high income.	PBC3	3,33 (1,15)	0,799			
Studying abroad frees me up to do what I want.	PBC4	3,58 (1,23)	0,699			
After graduating from a university abroad, I will receive excellent healthcare in my host country.	PBC5	2,84 (1,23)	0,586			
Studying abroad gives you the opportunity to offer a job in your host country after graduation.	PBC6	3,83 (1,17)	0,664			
During graduation from a foreign university, I build a high-quality social network.	PBC7	3,83 (1,04)	0,669			
Studying abroad will improve my quality of life.	PBC8	4,13 (0,99)	0,644			
Intention		4,50 (0,68)		0,814	0,897	0,565
I was considering studying abroad.	INT1	4,62 (0,72)	0,701			
I am very interested in studying abroad.	INT2	4,60 (0,74)	0,882			
I expected to study abroad.	INT3	4,18 (1,10)	0,602			
I have great intentions to study abroad.	INT4	4,49 (0,85)	0,793			
Institution choice		3,83 (0,91)		0,825	0,897	0,566
The university has a good reputation.	INC1	3,90 (1,07)	0,831			
Very high quality institution in this area.	INC2	3,92 (1,06)	0,871			
This institution provides good practical training.	INC4	3,54 (1,18)	0,651			
In this institution it is possible to study further (PhD).	INC5*	3,53 (1,35)	0,423			
I wanted to study at this institution.	INC6	3,83 (1,15)	0,625			

*excluded

Source: own survey, n=461

Evaluations of affirmations vary more across the dimensions Cultural Awareness, Perceived Quality, Dependence on People around, Intention. Average values on the five-point Likert scale are lowest for claims belonging to the dependence on people around. This indicates that behaviour belonging to the dependence on people around is weakly manifested in decisions of international students studying in Hungary regarding the intention to study abroad and the choice of institution. The average values of the dimensions of the model determined on the five-point Likert scale confirm that the behaviour belonging to the dependence on people around is less characteristic of international students studying in Hungary. Only the average value for this dimension (2.39) and low institutional trust (2.55) is lower than the 'indifferent' level three of the scale. Interestingly, the measured level of Intention (average of the scale: 4.50) is relatively high for international students studying in Hungary. Before each data analysis, I used the Kolmogorov–Smirnov statistical test to test the normality of the sample. The results of the data test showed that all variables in the study are not normally distributed since all p-values are less than 0.05. Therefore, I used alternative, non-parametric statistical tests for data analysis. Mann-Whitney U tests were performed to determine whether there were significant differences in response to scales between gender, parents' tertiary education, and country/continent of origin. The satisfaction of discriminant validity can be demonstrated using the Fornell–Larcker criterion: for all latent constructions, the square roots of the AVE values are greater than the correlation coefficients between the individual variables.

3.4. Results for the measurement and structural model

The results for the measurement and structural model are shown in Figure 6. The values for the arrows connecting the dimensions of the model are standardized regression coefficients that measure the strength of relationships. Based on the coefficients of the structural model, it can be concluded that among the factors examined, the perceived quality ($\beta=0.22$, $p=0.001$) has the strongest influence on institution choice, and the perceived behaviour control ($\beta=0.21$ $p=0.001$) has the greatest influence on the intention to study abroad.

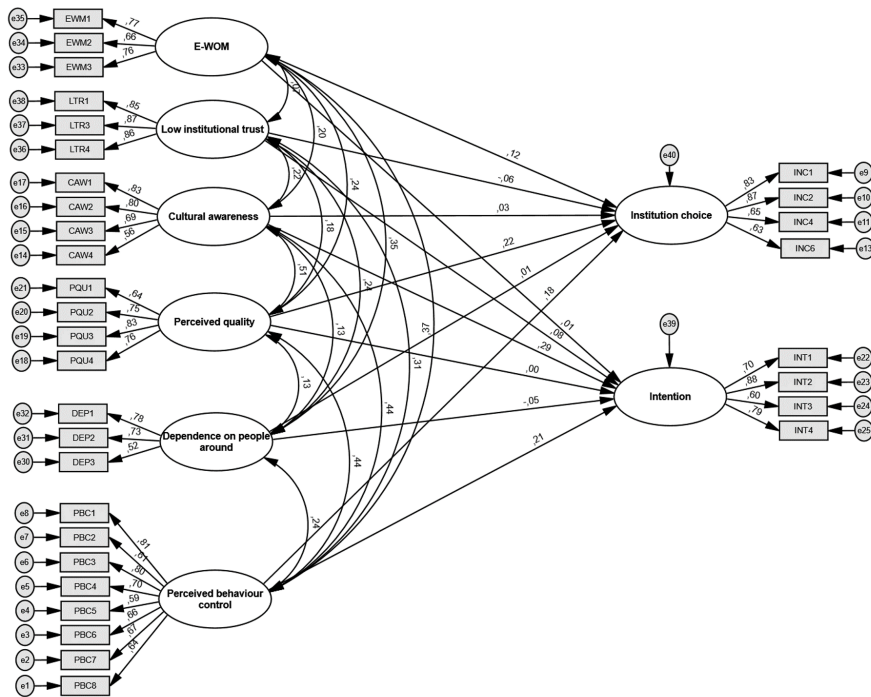


Figure 6. Results for the measurement and structural model

Source: own survey, n=461

H1: The intention to study abroad has a direct impact on institution choice.

It has been confirmed, as predicted by the model, that the intention to study abroad and the choice of institution are not equal. Based on the results, there is no verifiable effect ($p=0.933$), so the intention has no effect on the choice of institution, the H1 hypothesis was rejected.

H2: EWOM has a positive impact on the intention to study abroad (H2_a) and the institution choice (H2_b).

In the case of H2a, there is no verifiable effect ($p=0.859$), for example eWOM does not affect the intention to study abroad, while in the case of hypothesis H2b there was a rather weak, positive effect ($\beta= 0.12$, $p=0.050$), so it can be concluded that eWOM influences institutional choice, nevertheless, hypothesis H2 has only been partially confirmed.

H3: Low institutional trust in institutions in sending countries increases the desire to study abroad (H3_a) and influences institution choice (H3_b).

Low institutional trust does not affect the intention to study abroad ($p=0.126$) or the institution choice ($p=0.288$).

H4: The cultural awareness of students in sending countries has a positive influence on their intention to study abroad (H4_a) and their institution choice (H4_b).

Cultural awareness has a weak positive effect ($\beta=0.29$, $p<0.001$) on the intention to study abroad. However, cultural awareness does not significantly influence institutional choice ($p=0.596$). The H4 hypothesis has been partially confirmed.

H5: The intention to study abroad (H5_a) and the institution choice (H5_b) are positively influenced by the positive perception of the quality of higher education institutions in the host country.

The impact of the intention to study abroad on the positive perception of the quality of higher education institutions in the host country cannot be demonstrated ($p=0.942$). However, the choice of institution is favourably influenced by the perceived quality ($\beta=0.22$, $p=0.001$), so hypothesis H5 has been partially confirmed.

H6: The dependence on people around is a statistically verifiable disincentive to the intention to study abroad (H6_a) and the institution choice (H6_b).

The results show that the dependence on people around has no influence on intention ($p=0.379$) or institution choice ($p=0.924$).

H7: The intention to study abroad (H7_a) and the institution choice (H7_b) are positively influenced by students' attitudes towards their future career goals.

Perceived behaviour control has a weak positive effect ($\beta=0.21$, $p=0.001$) on the intention to study abroad and a rather weak positive effect ($\beta=0.18$, $p=0.008$) on institution choice. This hypothesis has therefore been fully confirmed.

Overall, it can be stated that out of all research hypotheses related to the structural model, one was verified (H7), three were confirmed in three parts (H2, H4, H5), and three hypotheses were rejected (H1, H3, H6) based on the results of empirical research.

H8: There is a significant difference between men and women in their willingness to study abroad (H8_a) and their perception of the importance of choosing an institution (H8_b).

The Mann–Whitney test showed significant differences between men and women only in the dependence on people around dimension ($Z=-0.355$, $p<0.001$). For men, the opinions of acquaintances and friends are significantly more important in terms of their intention to study abroad and their decision to choose an institution (Figure 7).

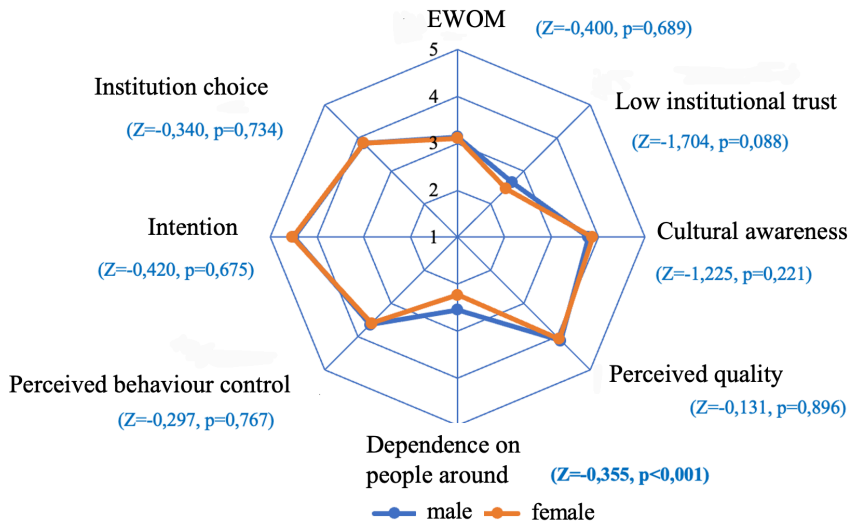


Figure 7. Gender gap analysis in the assessment of research dimensions
Source: own survey, n=461

In the case of gender, therefore, only the perception of the importance of the dependence on people around justifies significant differences between men and women.

H9: The geographical location of the sending country influences the intention to study abroad (H9_a) and the institution choice (H9_b).

Except for eWOM, the value of all dimensions examined varies considerably in terms of geographical location of the sending country (Figure 8).

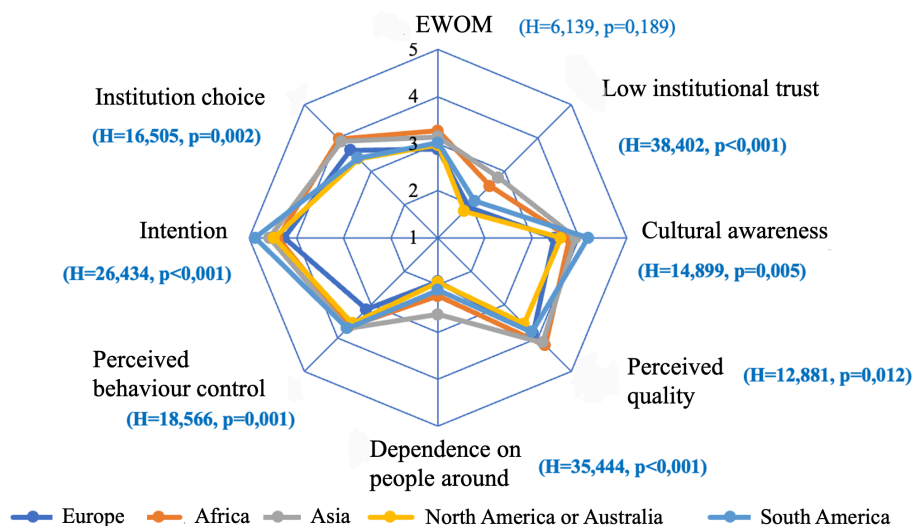


Figure 8. Examining differences between continents in the evaluation of research dimensions
Source: own survey, n=461

The Dunn-Bonferron post hoc test (Table 3), which included a significant result of the Kruskal-Wallis trials ($H=38.402$, $p<0.001$), shows that students from Asia and Africa have significantly higher levels of trust in higher education institutions in the sending country compared to their counterparts from North America or Australia or Europe. Asian and African students have the lowest confidence in the value of their degree in their country of origin. Asia does not show any significant differences compared to Africa but compared to all other continents (North America and Australia, South America, Europe), institutional trust in the higher education system and administrative staff working in higher education is much lower in the case of Asia.

Table 3. Examining the significant differences between the continents of sending countries in the intention to study abroad and institution choice

Dimensions	Trial statistic value, p-value	Significant differences (based on Dunn-Bonferron test results)
EWOM	$H=6.139$, $p=0.189$	n.sz.
Low institutional trust	$H=38.402$, $p<0.001$	Asia, Africa > North America or Australia, Europe
Cultural awareness	$H=14.899$, $p=0.005$	Asia, South America > Europe

Perceived quality	H=12.881, p=0.012	Africa > other continents except Asia
Dependence on people around	H=35.444, p<0.001	Asia > other continents
Perceived behaviour control	H=18.566, p=0.001	South America, Asia, Africa > Europe
Intention	H=26.434, p<0.001	South America > Asia, Africa, Europe
Institution choice	H=16.505, p=0.002	n.sz. Africa, Asia > other continents

n.sz.= not significant

Source: own survey, n=461

Africa, Asia, North America, and Australia, as well as South America, have higher values of cultural awareness, while Europe has lower values. In the case of Africa and South America, the attraction to foreign life and culture is significantly stronger than that of students from Europe. These students believe that global mobility can increase personal "soft power" in terms of career development. They are more likely to have a positive awareness of foreign cultures and a greater respect for foreign customs. Students from Africa believe that they need sufficient information to plan their studies abroad and that quality accommodation/dormitory, access to quality leisure activities and the quality of the university's level of service are paramount to these students. In the case of the dependence on people around dimension, it can be stated that students from Asia are most influenced by their dependence on people around (H=35.444, p<0.001), these students believe that they will study where their friends also study. The decision to enrol students from Asia at a foreign university was influenced more by international alumni than by students from North America and Australia, South America, Europe, and Africa. Since Asian countries mainly compete for the same student population in the region, it is understandable that Asian students are most influenced by the dependence on people around dimension. For North America and Australia, South America, Europe and Africa, this figure is lower, so students from these continents are less affected by the dependence on people around. For the perceived behaviour control dimension, North America, Australia, and Europe form one group, and North America, Australia, Africa, Asia, and South America form another. Between Africa, Asia and South America, the perceived behaviour control value of these countries is significantly higher (H=18.566, p=0.001) compared to students coming from Europe. The assessment of the usefulness of studying abroad is therefore highest in Africa, Asia, and South America. In the case of Europe, this figure is lower, which means that for students from countries belonging to these continents, the

quality of life after graduation, the social network acquired during graduation, the career prospects of students returning to their home country or even the high income after graduation are less important. European students are the least likely to think that a university degree abroad helps them to do what they want. For Africa, Asia, and South America, students consider post-graduation healthcare important in their host country. Students from Asia, North America and Australia are more open to studying abroad than students from Europe. However, the highest score was measured for students from North America and Australia, South America, compared to Europe, Asia, and Africa. This means that students from South America are most interested in studying abroad and have the highest willingness to study abroad ($H=26.434$, $p<0.001$).

The continent of the sending country can therefore be shown to have a significant impact on all dimensions considered, except for eWOM. In summary, the results related to the differences between groups supported the H9 hypothesis in that significant differences can be found between continents in the value of all dimensions examined, except for eWOM.

H10: Parents' qualifications have an impact on their intention to study abroad (H10_a) and their choice of institution (H10_b).

The mother's higher education does not significantly influence the values of the dimensions studied, and the father's higher education has a significant impact on both the intention to study abroad and the choice of institution. Whether a student becomes a first-generation graduate also has a significant influence on the intention to study abroad and the choice of institution. Empirical research among international students has not confirmed the impact of a mother's higher education on her intention to study abroad and choose an institution. Based on the results of the Mann-Whitney test, significant differences in test dimensions between those whose mother had a higher education and those whose mother did not have a higher education degree could not be demonstrated. Whether or not the mother has a higher education had no significant impact on dimension values (Figure 9).

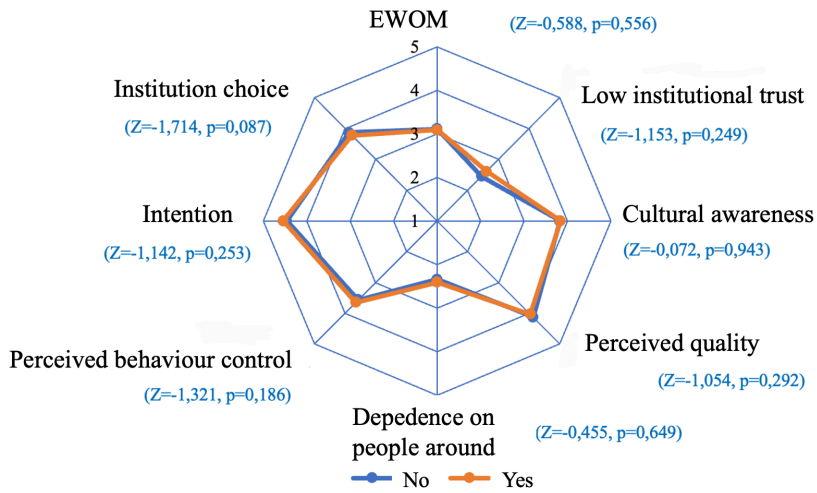


Figure 9. Examining the mother's higher education in the evaluation of research dimensions

Source: own survey, n=461

Empirical research among international students confirmed in two cases the impact of the father's higher education on the intention to study abroad and on the choice of institution. If the student's father had a higher education degree, the intention to study abroad is higher (Mann–Whitney test: $Z=-2.600$, $p=0.009$), i.e. students whose father had a higher education degree expected to study abroad and were more interested in studying abroad. If the student's father did not have a higher education degree, the role of choosing an institution was higher (Mann-Whitney test: $Z=-2.025$, $p=0.043$), i.e. the university should have a good reputation, provide good practical training, and be a high-quality institution. For the other dimensions, no significant difference can be demonstrated (Figure 10).

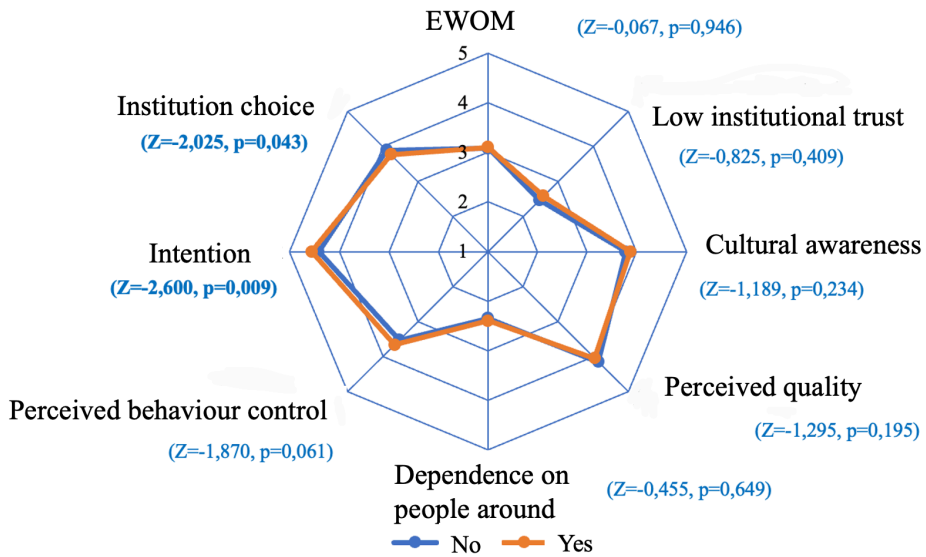


Figure 10. Examining the father's higher education in the evaluation of research dimensions
 Source: own survey, n=461

Empirical research among international students has only confirmed the influence of the first-generation student on the intention to study abroad and choose an institution. In the case of first-generation graduates (i.e. students whose father or mother has neither a higher education degree) nor a first-generation student, the choice of institution is more important than for non-first-generation students, and here there is a strong difference (Mann-Whitney test: $Z=-2.080$, $p=0.038$). In the case of intention, the value is at the limit (Mann-Whitney test: $Z=-1.940$, $p=0.050$), the empirical significance level exceeded 5%, it is possible that the effect could be detected by increasing the number of elements in the sample. For the other dimensions, no significant difference can be demonstrated (Figure 11).

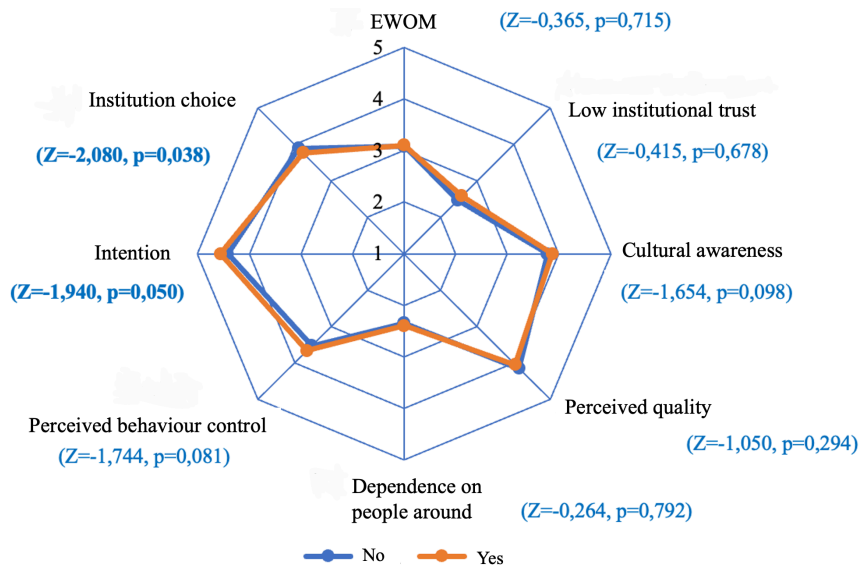


Figure 11. Examining the first generation student in the evaluation of research dimensions

Source: own survey, n=461

Regarding the H10 hypothesis, empirical research among international students confirmed in two cases the effect of the father's higher education on the intention to study abroad and the choice of institution. Consequently, the results of the study support the perspective on the importance of willingness and choice of institution to study abroad and the partly positive interactions between elements of the research dimensions.

4. CONCLUSIONS AND PROPOSALS

The main research objective of the study consisted of three components.

1. To identify research gaps in the field of international student mobility through Big Data analysis;
2. Identify clusters and regional nodes through network analysis;
3. Explore the main dimensions of international students' intention to study abroad and their choice of institution through empirical research.

The first step in achieving these goals was to review the literature.

1. During bibliometric analysis, I found that based on the large number of documents and references to them, the extensive network of contacts of the authors, as well as the high number of works cited, it is possible to prepare a global overview with the help of the documents used. Less intensively researched topics include research on student progression, student success, and possible dropout. Motor topics include topics dealing with higher education itself, the situation and role of the choice of higher education institutions. The researchers of the topic have tried to arrive at more general conclusions, which explains the use of "model" as a search word, "perception" as perception and the examination of student movements with modern tools, such as the application of "network analysis". There are emerging or declining topics that are not yet in the spotlight, such as gender, student achievement, international mobility, and the role of the United States. Core topics include studies on students' experiences abroad and studies of the impact of student mobility abroad from both sending and receiving countries. Questions related to national identity, which affect student mobility on the one hand and students' well-being on the other, were also included.

2. When exploring student flows through network analysis, I examined student movements of more than 20,000 people between countries and concluded that similarities in linguistic and cultural relations, as well as common language and geographical proximity, play a significant role. The geographical proximity of the sending and receiving countries can also be an important factor in the movement of students. Although less important than most push-pull factors, it still helps explain the strong flow of Canadian students to the United States, Korean students to Japan, and Indonesian students to Australia.

Furthermore, I found that many students are coming to the territory of Russia from Kazakhstan, Tajikistan, Uzbekistan, Kyrgyzstan and Turkmenistan. China represents the largest number of students in international higher education and student movements from China to the United States, Australia and the United Kingdom deserve special mention. There is an increasing trend

of student flows from India to Germany, the United States, Canada, as well as Australia. At the same time, the presence in North Africa has traditionally been of great importance in France, and based on its francophone identity, students from Morocco, Tunisia and Algeria are received in extremely large numbers.

3. In line with the research goals, I formulated ten research hypotheses.

The first seven hypotheses relate to the intention to study abroad and the choice of institution. The eighth hypothesis deals with the relationship between gender differences in willingness and choice of institution to study abroad, while the ninth hypothesis deals with the geographical location of the sending country. The tenth hypothesis reveals connections with the higher education of parents.

I developed and tested the multidimensional scale through a series of exploratory and confirmatory studies that show that it is reliable and valid. Despite the significant number of subdimensions, in the sequel this structure showed high internal validity based on the proposed model. It is therefore possible for researchers to use validated scales to examine students' intentions to study abroad, their choice of institution and the dimensions influencing them. Thus, this research proposes a novel, empirically verified conceptualization of the intention to study abroad and the choice of institution, and empirically proves the validity of the model.

The application of Structural Equation Modeling has shown that certain dimensions of the intention to study abroad and the choice of institution mutually influence each other. It has been confirmed, as predicted by the model, that the intention to study abroad and the choice of institution are not equal. Based on the results, there is no verifiable effect, so the intention has no influence on the choice of institution. Choosing which institution of higher education to apply to is a high-risk decision for international students, as it has long-term consequences for students' future lives and careers. The decision of students is based on a combination of available information.

During my research, I pointed out that eWOM does not influence the intention to study abroad, but eWOM has an impact on the choice of institution.

One of the most important issues of the internationalisation of higher education is how smooth the transfer of information is in a multicultural environment. In the case of Anglo-Saxon higher education institutions, which are at the forefront of internationalisation, this cannot be questioned since the language of training is already English. However, in countries where English is not the official language, great care must be taken to ensure the proper use

of a foreign language in the cultivation and transmission of science. Students also pay special attention to this, as the English language skills of Hungarian university professors are a decisive criterion in the selection process.

In Hungary, the domestic market for higher education is rather limited due to the low population, so it is vital to expand its global market by recruiting international students. As the higher education market becomes increasingly competitive and consumer-oriented, higher education providers need to identify key factors influencing students' decisions in choosing higher education institutions. This can help higher education institutions either immediately adjust their current marketing strategies or develop new marketing strategies to strategically position themselves in the market based on these factors. Research on marketing strategies can be a further research direction in my research. It has been shown that low institutional trust does not influence the intention to study abroad and the choice of institution. It has been proven that there is no significant link between low institutional trust and the intention to travel abroad.

There is no demonstrable impact between the intention to study abroad and a positive perception of the quality of higher education institutions in the host country. However, the choice of institution is positively influenced by the perceived quality. Universities need to know which factors influence decisions students make when enrolling in an institution to improve their institutional recruitment strategies. The academic reputation of the institution is one of the reasons why students choose a university. The perceived quality of the university may be related to the services offered or the quality of teaching and research programs. Several studies have shown that international students' decision to choose a university is influenced by various characteristics of the prospective institution, such as quality of staff, availability of desired programs, quality of curriculum, quality of facilities such as libraries, IT and social facilities, university infrastructure, factors outside educational hours such as sports, leisure, or dining options.

Based on the research results, I found that behaviour belonging to the dependence on people around is weakly manifested in the decisions of international students studying in Hungary regarding the intention to study abroad and choose an institution. In contrast, the dependence on people around has a positive effect on the intention to study abroad TUNG et al. (2021). found that there is no significant relationship between the human environment and the intention to study abroad. According to COLLINS et al. (2022), strengthening the relationship between the university and former students through alumni associations and/or other means could prove beneficial in increasing the number of incoming international students. The impact of

international alumni on their willingness to study abroad in students' lives today is not significant JIN et al. (2022).

Based on the coefficients of the structural model, it can be concluded that among the factors examined, the perceived quality has the strongest influence on the choice of institution, and the perceived behaviour control has the greatest influence on the intention to study abroad. The expected benefits of studying abroad have a positive and meaningful impact on the intention to study abroad (TUNG et al. 2021). In TUNG's study, he points out that Vietnamese students are aware of the advantages and disadvantages of studying abroad even before studying abroad. This perception influences behavioural intentions. Prospects for future career/immigration to the host country included motivational factors related to career, lifestyle, living situation, immigration, and better future career prospects in the host country.

The geographical location of the sending country has been examined to demonstrate the significant impact of the intention to study abroad on the target dimension, except for the dimensions of eWOM, cultural awareness, perceived quality, and institution choice. Students from Asia have the lowest confidence in the value of their degree in their country of origin. Students from Asia are most influenced by the dependence on people around, and these students believe they will study where their friends' study. Language can be a major barrier for international students, and studying in a place where their friends' study can provide language support. Friends can help overcome language difficulties, communicate with local authorities, and navigate the university system, which can make it easier for international students from Asia to integrate into a foreign country. Although most Asian countries face the problem of net student outflow to Western countries, a trend of regionalization or horizontal mobility of students is emerging within the region.

In the case of Europe, the value of perceived behaviour control is lower, for students from countries belonging to these continents, the quality of life after graduation, the social network acquired during graduation, the career prospects of the student returning to their home country or even the high income after graduation are less important. European students are the least likely to think that a university degree abroad helps them to do what they want. It has been proven that students from South America are most interested in studying abroad and have the greatest desire to study abroad.

I have empirically demonstrated that if the student's father had a higher education degree, the intention to study abroad is higher, i.e. students whose father had a higher education degree expected him to study abroad and were

more interested in studying abroad. If the student's father did not have a higher education degree, then the role of choosing an institution is higher, i.e. the university should have a good reputation, provide good practical training, and be a high-quality institution. In the case of first-generation graduates (i.e. students whose father or mother has neither a higher education degree) nor a first-generation student, the choice of institution is more important than in the case of non-first-generation students, where there is a strong difference.

It is also worth pointing out that the role of willingness to study abroad and the choice of institution in the English-language literature has not been extensively researched so far. Thus, my thesis may be the first to present a validated scale of studying and choosing institutions abroad.

In my dissertation, the examination of language differences is formulated as a kind of limitation in students' decisions about choosing institutions and their intentions to study abroad. Obviously, the greater the difference between two languages, the more challenging it can be for an individual to move to a certain country, even for a shorter period. Although it is true that English is almost universally the language of instruction today, it is obviously not indifferent from the point of view of students' quality of life how much energy they can invest in acquiring the necessary language skills to navigate in everyday life. In certain fields of study (above all medical education), acceptable knowledge of the language of the host country is also a condition for continuing studies. As such, language differences can be seen as a significant cost factor in decision-making processes about moving abroad. Language proximity can be seen as a proxy for this portability. The closer the language is linguistically (greater proximity), the easier it is to apply source country language skills in the destination country, and it may take less effort to learn the language of the host country (ISPHORDING – OTTEN 2014). It is expected that students are more likely to move to countries closer to languages, as mobility costs may then be lower in terms of effort required to learn a new language. Inbound students are usually required to attend language courses shortly after arrival in the host country, which can be a significant language challenge.

Connectivity factors, including language, contribute to higher rates of student mobility, but studies have not explicitly defined the role of language proximity. Further analysis of the role of language proximity is important, as language is also vital for the academic, social, and economic integration of international students. Language proximity can facilitate international student mobility, while language distance can hinder it. Language distance between countries can have a close relationship with cultural distance in the broader sense, and language distance as a variable can capture not only the purely

linguistic effect, but also the influence of cultural and historical relations between countries (OVCHINNIKOVA et al. 2022).

My research had no scope and thus does not shed light on international academic mobility. It is a well-documented fact that international academic mobility has played an important role in the rapid development of science on a global scale or in the globalization of science. Studies also show that international academic mobility contributes to the development of national research systems. At the same time, we can observe the rise of regionalisation in both higher education and science. The role of international academic mobility in this deserves further analysis.

Research on international student mobility takes place against the backdrop of a changing global background. The rise of nationalism, the politicization of science, censorship of knowledge, and the emphasis on national security have led to tighter controls on global mobility. Travel related to technological advances, increasing environmental awareness, the COVID-19 pandemic and the resulting travel restrictions, virtual mobility and "remote internationalization" are more important than ever.

This research has similar limitations as any cross-sectional research. The transformation of intentions into behaviours in the study is worth further research.

5. NEW SCIENTIFIC RESULTS

1. Within the framework of bibliometric analysis, I plotted a map of the international scientific elaboration of the topic, developed a network of global scientific cooperation, and prepared a keyword network of publications published in the field of international student mobility.
2. I explored international student mobility through an interdisciplinary approach through network analysis, which provided an opportunity for an in-depth analysis of the relationship structure between the interacting systems. The application of this method of analysis to the study of international student mobility has brought a new and deeper understanding of the dynamics behind students' choice of country.
3. I developed a model suitable for measuring the motivations of the intention to study abroad and choosing institutions – including eWOM, cultural awareness, low institutional trust of the sending country, perceived quality, dependence on people around, perceived behaviour control as explanatory dimensions – which I validated based on the data of a questionnaire survey conducted among foreign students studying in Hungary.
4. I found that the dependence on people around has a weak influence on the decisions of international students studying in Hungary regarding their decision to study abroad and choose institutions. Statistically, I have shown that the dependence on people around is significantly more important for men than women, so men's university enrolment is more strongly influenced by their friends and international alumni. I have proved that the intention to study abroad does not influence the institution choice. I proved that the cultural awareness of foreign students studying in Hungary and their attraction to life and culture abroad have a weak positive effect on their intention to study abroad. I have shown that eWOM, student opinions and online evaluations have an impact on institution choice. I have verified that the choice of institutions of foreign students is positively influenced by the perceived quality, which includes the quality accommodation available, leisure activities and appropriate information.
5. I have empirically proved that in the case of foreign students studying in Hungary, the elements constituting the perceived behaviour control, i.e. higher living standards and better career opportunities after graduation, have a weak positive effect on the intention to study abroad and have a rather weak but positive effect on the institution choice. I have empirically

proven that students from South America have the highest intention to study abroad. For students from Africa and Asia, the criteria for choosing an institution are of greater importance. I empirically demonstrated that the intention to study abroad was stronger for students whose fathers had a higher education. If the student's father did not have a higher education, the role of institution choice is higher in this case. For first-generation graduates (i.e. students whose father or mother have no higher education degree), the choice of institution is more important than for non-first-generation students, in which case there is a strong difference.

6. PUBLICATIONS

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