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Impact of Pandemic Covid-19 on the internationalization processes of universities in the perspective of own research

Wpływ pandemii Covid-19 na procesy internacjonalizacji uczelni w perspektywie badań własnych

The COVID-19 pandemic has significantly affected management processes in higher education, with a particular impact on university internationalization processes around the world. This study analyzes the consequences of the pandemic on university internationalization strategies and activities, using a research framework that includes both quantitative methods. The main purpose of the article is to answer the questions of whether the technological tools that now dominate education will remain permanently, creating a new paradigm for teaching and learning, what challenges universities faced in internationalization during Covid-19, whether and how the Covid-19 pandemic affected the internationalization process of universities, whether the tools and procedures used during Covid-19 will contribute to the university's chances of internationalization?

Key words: internationalization of universities, university management, new reality

Pandemia Covid-19 w istotny sposób wpłynęła na procesy zarządzania w szkolnictwie wyższym, ze szczególnym uwzględnieniem procesów

internacjonalizacji uczelni. W niniejszym badaniu przeanalizowano konsekwencje pandemii dla strategii i działań uniwersytetów w zakresie internacjonalizacji, wykorzystując ramy badawcze obejmujące zastosowane metody ilościowe. Głównym celem artykułu jest odpowiedź na pytania: czy narzędzia technologiczne, które obecnie dominują w edukacji, pozostaną na stałe, tworząc nowy paradygmat nauczania i uczenia się, przed jakimi wyzwaniem stanęły uniwersytety w procesie internacjonalizacji w czasie Covid-19, czy i w jaki sposób pandemia Covid-19 wpłynęła na proces umiędzynarodowienia uczelni, czy narzędzia i procedury stosowane podczas pandemii Covid-19 przyczynią się do zwiększenia szans uczelni na internacjonalizację.

Słowa kluczowe: umiędzynarodowienie uczelni, zarządzanie uczelnią, nowa rzeczywistość

Introduction

In the era of globalization, internationalization has become a key element in the development strategy of universities around the world¹. That is why more and more educational institutions are intensively striving to create diverse, international academic communities² that allow students to be educated in an environment of diverse cultures, perspectives and experiences. Internationalizing universities is not only a matter of increasing the number of foreign students and academics³, but also of creating curricula that reflect global realities and challenges⁴. This is a multidimensional process, involving not only international exchanges and research, but also strategic partnerships, innovative teaching methods and many other activities. It is also noted that, internationalization

¹ Knight J., *Internationalization remodeled: Definition, approaches, and rationales*, «Journal of studies in international education» 2004, 8(1), 5–31.

² Altbach P.G., Knight J., *The internationalization of higher education: Motivations and realities*, «Journal of studies in international education» 2007, 11(3-4), 290–305.

³ Marginson S., *Higher education in East Asia and Singapore: rise of the Confucian model*, «Higher education» 2011, 61(5), 587–611.

⁴ Teichler U., *The changing debate on internationalisation of higher education*, «Higher education» 2004, 48(1), 5–26.

has the potential to revolutionize traditional education models⁵. Its effects can reach far beyond the walls of universities, affecting global communities, policies and economies⁶. Internationalization can also play an important role in creating more sustainable and inclusive academic communities, promoting equality, diversity and tolerance⁷.

It can therefore be concluded that globalization and digitalization play key roles in shaping the modern higher education landscape. This process of internationalizing universities, which previously relied mainly on the physical mobility of students and faculty, has begun to evolve toward increasing digital and cultural integration⁸. Before the COVID-19 pandemic came as a surprise, the education market was already experiencing change, but the pace of transformation was moderate⁹. The outbreak of the pandemic dramatically accelerated the process, introducing new challenges and opportunities¹⁰. Undeniably, remote education has become an extremely important tool, allowing universities to continue teaching during these difficult times¹¹. While technology has become a salutary bridge for education during the forced lockdown, it has also had to change its pace of development and face new challenges dictated by society's rapidly changing demands¹².

An analysis of the literature on the subject may indicate that the pandemic has ushered in a new era in the internationalization of universities, opening the door wider than before to a more globalized, accessible and diverse academic community¹³. The main purpose of the article is to answer the questions of whether the technological tools that now dominate

⁵ Hudzik J.K., Stohl M., *Modelling assessment of the outcomes and impacts of internationalisation* [in:] de Wit H. (ed.), *Measuring success in the internationalisation of higher education* (EAIE Occasional Paper 22) (9–21), European Association for International Education, 2009.

⁶ Naidoo V., *International education: A tertiary-level industry update* "Journal of Research in International Education" 2006, 5(3), 323–345.

⁷ Lee J.J., Rice C., *Welcome to America? International student perceptions of discrimination*, «Higher Education» 2007, 53, 381–409.

⁸ De Wit H., *Trends, issues and challenges in internationalisation of higher education*, Centre for Higher Education Internationalisation, 2011.

⁹ Altbach P.G., Knight J., *The internationalization of higher education: Motivations and realities*, "Journal of studies in international education" 2007, 11(3-4), 290–305.

¹⁰ Marinoni G., Van't Land, H., Jensen T., *The impact of Covid-19 on higher education around the world. IAU Global Survey Report*, 2020.

¹¹ Hodges C., Moore S., Lockee B., Trust T., Bond A., *The difference between emergency remote teaching and online learning*, «Educause review», 2020, 27, 1–12.

¹² Bozkurt A., Sharma R.C., *Emergency remote teaching in a time of global crisis due to CoronaVirus pandemic* «Asian Journal of Distance Education» 2020.

¹³ Wilkins S., Juusola K., *The COVID-19 pandemic and international higher education: towards an agenda for research and practice*, «Higher Education Research & Development» 2020, 1–14.

education will remain in place, creating a new paradigm for teaching and learning, what challenges universities faced in internationalization during Covid-19, whether and how the Covid-19 pandemic affected the internationalization process of universities, whether the tools and procedures used during Covid-19 will contribute to the university's chances of internationalization?

Literature review

Internationalization of universities, as a concept and process, is now a significant force shaping the direction of higher education around the world¹⁴. In a globalized world where borders are increasingly permeable, internationalization of universities is a necessity, not a luxury. Internationalization of a university refers to the process of integrating international, intercultural and global dimensions into the goals, functions (teaching, research and service) and delivery of education¹⁵. This phenomenon takes various forms, including student exchange programs, inter-institutional partnerships, international research programs, and offering degree programs in foreign languages. The internationalization of education has many benefits. For students, studying in an international context can offer a number of benefits, such as developing cross-cultural competence, understanding global issues, and gaining life and work experience¹⁶. Universities also benefit from internationalization by forming partnerships with universities abroad, they can gain new perspectives, which leads to innovations in teaching and research. In addition, attracting international students helps increase diversity on campus, which in turn contributes to a rich academic environment. Despite its many benefits, internationalizing universities is not without its challenges. Cultural differences, language barriers, visa issues and the costs associated with living abroad can present obstacles for students who want to study abroad.

¹⁴ Altbach P.G., Knight J., *The internationalization of higher education: Motivations and realities*, "Journal of studies in international education" 2007, 11(3-4), 290–305.

¹⁵ Knight J., *Internationalization remodeled: Definition, approaches, and rationales*, "Journal of studies in international education" 2004, 8(1), 5–31.

¹⁶ Deardorff D.K., *Identification and assessment of intercultural competence as a student outcome of internationalization*, "Journal of studies in international education" 2006, 10(3), 241–266.

Internationalization of higher education institutions is gaining increasing importance in the context of increasing globalization and mobility¹⁷. As David Coulby and Evanthia Evans point out, internationalization is crucial to preparing students for life and work in a globalized world¹⁸. In his work on the internationalization of higher education and global mobility, F. Maringe presents various models of internationalization. These include internationalization «at home» and internationalization «abroad»¹⁹. Bo Göransson and Claes Brundenius point out the growing role of internationalization in the context of the changing role of universities. They cite examples from different parts of the world, showing different experiences and challenges²⁰. Philip G. Altbach and Jane Knight analyze the various motivations behind internationalization, from economic to social and cultural issues²¹. They also emphasize that internationalization is not a one-way process and that different regions of the world experience the process in different ways.

Internationalization is not only a matter of student and faculty mobility, but also related challenges, such as ensuring the quality of education, creating appropriate policies and strategies, as well as taking cultural aspects into account²². This is an area that still requires intensive research and analysis. For universities, one of the main challenges is to provide quality education for international students, which may require additional resources and support. In some cases, there may also be a danger that internationalization becomes a business rather than an educational process²³.

The main goal of internationalizing universities is to build a globally competent workforce²⁴. This is achieved by building cross-cultural

¹⁷ Maringe F., *Internationalisation of Higher Education and Global Mobility*, Oxford Studies in Comparative Education, 2014.

¹⁸ Coulby D., Evans E., *Internationalizing Higher Education: Critical Explorations of Pedagogy and Policy*, Comparative Education Research Centre, University of Hong Kong, 2004.

¹⁹ Maringe F., *Internationalisation of Higher Education and Global Mobility*, Oxford Studies in Comparative Education, 2014.

²⁰ Göransson B., Brundenius C., *Universities in Transition: The Changing Role and Challenges for Academic Institutions*, Springer Science+Business Media, 2011.

²¹ Altbach P.G., Knight J., *The internationalization of higher education: Motivations and realities*, "Journal of studies in international education" 2007, 11(3-4), 290–305.

²² Deardorff D.K., de Wit H., Heyl, J.D., *The SAGE Handbook of International Higher Education*, SAGE, 2012.

²³ De Wit H., *Trends, issues and challenges in internationalisation of higher education*, Centre for Higher Education Internationalisation, 2011.

²⁴ Altbach P.G., Knight J., *The internationalization of higher education: Motivations and realities*, "Journal of studies in international education" 2007, 11(3-4), 290–305.

knowledge and skills in students. Other goals may include attracting international students whose tuition fees can contribute to the university's budget, or developing an international reputation to attract research funding²⁵. Internationalization of universities takes many forms, depending on the goals and resources of the institution. Some of these methods include:

- Student and teacher exchanges: universities often form partnerships with foreign institutions to allow their students and academics to experience working or studying in another country²⁶;
- International programs: Universities may offer degree programs that specifically focus on international issues, such as global health, international relations or international business. Often these programs are taught in a language other than the student's native tongue to prepare students for work in an international context²⁷;
- Admitting international students: By attracting students from other countries, universities can increase their cultural diversity and offer all students the opportunity to learn from a diverse group of people²⁸.

The internationalization of higher education has multiple implications. For students, it can mean better preparation for the global economy, more opportunities to learn other languages, and greater cultural and global understanding. For universities, it can bring additional sources of funding, more diversity on campus, and the opportunity to innovate in teaching and research through international partnerships²⁹. The impact of the COVID-19 pandemic on the internationalization process of universities is a multi-faceted topic that has become the subject of study in academic ranks around the world. The impact is complex and has many aspects that require deeper analysis.

²⁵ Knight J., *Updated definition of internationalization*, "International higher education" 2003, (33), 2–3.

²⁶ Kehm B.M., Teichler U., *Research on internationalisation in higher education*, "Journal of Studies in International Education" 2007, 11(3-4), 260–273.

²⁷ Deardorff D.K., de Wit H., Heyl, J.D., *The SAGE Handbook of International Higher Education*, SAGE, 2012.

²⁸ Chen T.M., Barnett G.A., *Research on International Student Flows From a Macro Perspective: A Network Analysis of 1985, 1989 and 1995*, «Journal of Studies in International Education» 2000, 4(3), 124–149.

²⁹ De Wit H., Merckx G., *The history of internationalization of higher education*, [in:] Deardorff D.K., de Wit H., Heyl J.D., Adams T. (eds.), *The SAGE Handbook of International Higher Education*, 2012, 43–59.

The most important are changes related to the international mobility of students and academics. Scott³⁰ and Knight³¹ note that travel restrictions caused by the pandemic have forced universities to find alternatives to traditional student exchanges. Many institutions have turned to remote learning, often using new technologies to allow students to continue their studies³². Reports from UNESCO and the British Council³³ indicate that the pandemic has accelerated a trend of digitization of education that began before the pandemic arrived. However, the introduction of online learning on a massive scale required a change in perspective on the internationalization process, with traditional physical mobility being applied to virtual mobility³⁴. Another important aspect of COVID-19's impact on internationalization concerns international cooperation in research. According to articles by F. Huang³⁵ and S. Marginson³⁶, the pandemic has accelerated an already existing trend toward increased international collaboration in research, particularly in fields related to medicine and public health. Despite these developments, there are also challenges and limitations. W. Watermeyer and his team³⁷ point out that the process of digital transformation is not evenly spread across the globe, which could increase global inequalities in access to education. Finally, as L. Rumbley³⁸ notes, there are still many unknowns about the long-term impact of COVID-19 on internationalization, which requires further research.

When considering further aspects of COVID-19's impact on the internationalization of universities, it is worth noting changes in academic and administrative culture. C. Leask and J. Lee³⁹ emphasize that the pandemic has prompted a rethinking of management practices that can be less bureaucratic and more flexible to accommodate the dynamics of

³⁰ Scott P., *Internationalisation of Higher Education and Global Mobility*, Oxford Studies in Comparative Education, 2020.

³¹ Knight J., *Rethinking Internationalization in Higher Education During a Pandemic*, Higher Education, 2021.

³² UNESCO, *Education: From disruption to recovery*, 2021.

³³ British Council, *The Future of Internationalization in Higher Education in a Post-Covid World*, 2023.

³⁴ UUK International, *International Graduate Outcomes*, 2022.

³⁵ Huang F., *The Impact of the COVID-19 Epidemic on the Internationalization of Universities in China*, Higher Education 2022.

³⁶ Marginson S., *International Research Collaboration After COVID-19: the End of Globalisation?*, 2023.

³⁷ Watermeyer R., Crick T., Knight C., Goodall J., *COVID-19 and digital disruption in UK universities: afflictions and affordances of emergency online migration*, Higher Education, 2022.

³⁸ Rumbley L., *COVID-19 and the Future of International Higher Education*, The European Association for International Education, 2023.

³⁹ Leask C., Lee J., *Adapting to a New Normal: COVID-19 and the Future of International Education*, «Journal of Studies in International Education» 2022.

the pandemic. Additionally, the acceleration of digitalization has brought with it the need to rethink pedagogical practices. According to E. Raposoi and P. Altbach⁴⁰, this requires new skills for faculty and other academics, but also opens up new opportunities for pedagogical innovation.

However, according to research by A. Whitsed and H. de Wit⁴¹, the challenges of digital didactics are only part of the picture. There are also questions about the vision of internationalization that universities are promoting in the post-COVID-19 world. The pandemic has forced universities to seriously rethink their place and role in society, both locally and globally. J. Menon⁴² notes that while many universities have opted for a digital-first strategy as a response to the pandemic, there are still many questions about how such a strategy will affect the nature and purpose of internationalization.

In the literature undertaking an analysis of the impact of COVID-19 on the internationalization of universities, attention is drawn to the changes that have occurred in intercultural education. According to K. Bista⁴³, the adaptation to online teaching has resulted in sharply reduced opportunities for cross-cultural interaction for international students. In this context, intercultural education needs to be rethought in order to continue to be effective in the new digital environment. A. Stromquist⁴⁴ emphasizes that the pandemic has demonstrated the relevance of public health to international higher education. This indicates the need to integrate public and global health issues into international education at the curricular, administrative and political levels. Regardless of these developments, there are also many questions about the future of internationalization. As J. Shin⁴⁵ notes, much depends on how the COVID-19 pandemic evolves and how institutions respond to its challenges. For example, if the pandemic persists for an extended period of time, it may require further adjustments to internationalization strategies, such as

⁴⁰ Raposoi E., Altbach P., *Digital Teaching and Learning in Higher Education: The Changing Pedagogical Landscape*, «International Journal of Higher Education» 2023.

⁴¹ Whitsed A., De Wit H., *The Digital Transformation of International Higher Education*, «Journal of Studies in International Education» 2023.

⁴² Menon J., *Reimagining Internationalisation After the Pandemic: Challenges and Opportunities*, Higher Education, 2022.

⁴³ Bista K., *The Impact of COVID-19 on International Students in the US*, «Journal of International Students» 2022.

⁴⁴ Stromquist A., *Higher Education and Health Crises: COVID-19 and Global Perspectives*, Higher Education, 2023.

⁴⁵ Shin J., *After the Storm: The Future of Internationalization in the Age of COVID-19*, Higher Education Policy, 2023.

greater involvement in regional, rather than global, partnerships. As E. Beerkens and M. Souto-Otero⁴⁶ point out, there is a need for further research on the impact of the pandemic on various aspects of internationalization, such as student mobility, research collaboration, digitalization and cross-cultural education.

In conclusion, COVID-19 has brought about fundamental changes in the internationalization process of universities. It has created many challenges, but has also opened up new opportunities for innovation. However, further research is needed to understand the full scope of these changes and their long-term effects.

Methodology

The relevance of the analysed issue and the possibility of maintaining continuity in the implementation of research and teaching processes in higher education institutions during the COVID-19 pandemic required the study of both secondary and primary sources. The exploration of secondary sources, which were reports, articles, legislation and Internet materials, formed the basis for the design and implementation of a descriptive and explanatory nomothetic survey. The purpose of the survey research was to learn about the experiences of managers of higher education institutions in the area of activities aimed at preserving research and teaching processes during the COVID-19 pandemic in Europe. Due to the type of information received, the research can be described as quantitative-qualitative. A diagnostic survey method with representation of the Computer Assisted Web Interview (CAWI) survey technique was used to obtain material from primary sources. The operational research tool with which the measurement was carried out was a questionnaire consisting of 11 core questions including 5 based on ordinal scales and 5 metric questions, which was uploaded to the Google platform. The measurement was piecemeal and deterministic with characteristics of representativeness for the surveyed population. The study included a sample, that is, a fragment of the population of the surveyed higher

⁴⁶ Beerkens E., Souto-Otero M., *COVID-19 and the Future of International Higher Education: A Critical Analysis*, "Studies in Higher Education" 2023.

education institutions from the European area, which in 2019-2021 were struggling with a crisis state, that is, the COVID-19 virus pandemic.

The selection of units for the survey was carried out in two stages. In the first stage, based on the size of the surveyed population of higher education institutions that operated in the European area in 2019-2021 and had the status of a higher education institution, a minimum sample size was determined, which included units that should be subject to the survey.

There are nearly 5,000 higher education institutions in Europe, we have 17.5 million university students, 1.35 million teachers working in the higher education sector and 1.17 million researchers. Of the total 2,725 recognized higher education institutions in Europe included in the uniRank database, 1,922 are public universities (i.e., officially affiliated or run by national, state or local governments), and 777 are private universities⁴⁷.

Thus, calculations were based on the fraction value of the two-point distribution assuming a fraction value of 0.7 for public units and 0.3 for non-public units with a random error of 5% and a confidence level of 0.95:

$$n_{min} = NP(\alpha^2 \cdot f(1-f)) / NP \cdot e^2 + \alpha^2 \cdot f(1-f)$$

where:

n_{min} – denotes the minimum sample size

N – the size of the study population

α – confidence level

f – size of the fraction

e – the size of the error

Using the above formula, the minimum size of the study sample was set at 289 units. Then, in the second stage, a non-random sampling method was used to select units for the sample by indicating the “type” under study and assuming that for each artificial unit – a university – there is at least one viable unit – a representative of the university authorities dealing with the area of university internationalization. Such university representatives from the Office of International Exchange were asked to participate in the survey. The technical implementation of the survey

⁴⁷ <https://www.4icu.org/Europe/>.

consisted of sending an email with an invitation to participate in the survey to 289 academic units. The content included a link redirecting to the survey page and an indication that the person filling out the questionnaire should be a representative of universities engaged in international activities in the area of student and academic exchange.

In the end, 291 universities participated in the study by completing the questionnaire. The collected material was archived in the form of an Exell sheet. Then, after verification and validation of the collected material, the structure of the survey sample was analyzed, and a comparative analysis of the collected sample material against the survey population was carried out using a non-parametric significance test χ^2 :

$$\chi^2 = \sum_{i=1}^r \frac{(n_i - np_i)^2}{np_i}$$

where:

p_i – the probability that the trait X takes a value belonging to the interval of the given class

np_i – units of the i-th interval assuming that the characteristic has a distribution consistent with the accepted hypothesis

For testing, we used a statistic with a distribution χ^2_{α} where $k = (r - 1)$, where k is the number of degrees of freedom, r is the number of class intervals and χ^2 is the empirical value of the accepted statistic. The analysis boiled down to comparing the theoretical and empirical value in the form $P(\chi^2 < \chi^2_{\alpha}) = \alpha$ where χ^2_{α} is the critical value from the tables of χ^2 distributions for $k = r - 1$ degrees of freedom and $p = \alpha$.

Table 1. Test of concordance of distributions from sample ($n=291$) and population ($N=2699$) – non-parametric test χ^2

Parameter	Sample size n	Population size N	χ^2 actual value	Theoretical χ^2 value	Test result $\chi^2 < \chi^2_{\alpha}$
Type of University (Founder)					
public	206	1922	0,025	3,841	concordance
private	85	777			

α – confidence level

Source: development on the basis of own research.

Thus, to begin with, the null hypothesis (H0) was accepted about the lack of correspondence of the distribution of the variable – type of university – from the sample with the distribution characterizing the general population of universities operating in Europe, and the alternative hypothesis (H1) about the existence of such correspondence. The result of the analysis, the results of which are given in the table above (Table 1) is that the null hypothesis (H0) could not be confirmed. Thus, the hypothesis H1 about the existence of congruence of distributions is true, that is, the studied sample of universities participating in international exchanges is congruent with the general community of universities operating in 2022 in terms of the type of university by founder status.

The surveyed sample of $n=291$ units was dominated by public universities (70.8%) over non-public ones (29.2%). The largest group was made up of universities from Germany (22.7%), France (14.4%), the United Kingdom (10.3%) and Poland (7.9%). Women (82.4%) outnumbered men (17.5%) among respondents commenting on the University's activities during the COVID-19 pandemic. They were mainly aged 31-40 (34.7%) and 41-50 (35.7%). Respondents held a variety of positions at the Universities in that the predominant group were operational staff of International Exchange Offices (58.4%) and managers of International Exchange Offices (25.8%). The largest group was made up of those who had been in their positions for 1 to 5 years (43.3%) or with longer tenure, i.e. more than 10 years (34.7%).

After determining the characteristics of the surveyed sample, an analysis of the distributions of values from the core questions was carried out. Next, verification of hypotheses about the existence of relationships between variables from the core questions and metric questions was carried out wherever it was logically justified. To begin with, contingency tables were created containing ordered values of variables in the form of r rows and s columns. Then, using the χ^2 independence test, the hypothesis of the existence of stochastic independence of the selected random variables (H0) or the alternative hypothesis (H1) was verified each time:

$$\chi^2 = \sum_i^r \sum_j^s \frac{(n_{ij} - \tilde{n}_{ij})^2}{\tilde{n}_{ij}} : \chi_{(r-1) \cdot (s-1)}^2$$

where:

n_{ij} – empirical abundances from the table

\tilde{n}_{ij} – theoretical abundances

Verification of the test was based on the assumption that the distribution is right-skewed. The area of rejection depends on the adopted significance level α and is larger the larger α is. In general, it is assumed that $\alpha \leq 0.05$. If only $\chi^2_{emp} > \chi^2_{\alpha}$ then the null hypothesis (H0) is rejected in favor of the hypothesis (H1), which means that the pair of characteristics is interdependent. In addition, the analysis of the values obtained in the verification of the hypotheses was strengthened by reference to Cramer's V coefficient:

$$v = \sqrt{\frac{\chi^2}{n \cdot \min(r-1, k-1)}}$$

where:

V – Cramer's coefficient between two variables,

χ^2 – is the empirical value of the statistic obtained from the test dal pair of variables

n – the number of observations

r – the number of levels of one variable

k – the number of levels of the other variable

For each pair of selected variables, the above methodology was applied to determine the statistical significance of the relationship. If the potential relationship between the variables was statistically significant then the results could thus be taken as representative of the population as a whole.

Empirical results

During the COVID-19 pandemic, the activities undertaken by universities were dictated by the guidelines of state government regulations and the individual orders of university authorities. Three main ways in which universities conducted their activities during the pandemic are evident in the survey sample. First, some of the respondents admitted that their universities were open as usual, but measures were put in place to limit the spread of COVID-19 (35.4%). The second group of respondents indicated that their universities were completely closed and all classes on campus were halted (33.3%). And the third group indicated that the

university was partially open, but there were major disruptions (24.7%). A small number of respondents reported that their university was open as usual and no special measures were in effect due to the COVID-19 pandemic (4.1%).

When asked about the type of support provided by their country's government/ministry of education to their universities in the wake of the COVID-19 pandemic, re-survey participants most often indicated response options such as the ability to complete their education in a given academic year (37.8%), guidance on how to obtain missing credits in subjects required for progression/graduation (24.7%), and financial support (11.3%). One in ten survey participants admitted that their country's government/ministry of education did not provide any support (12.0%).

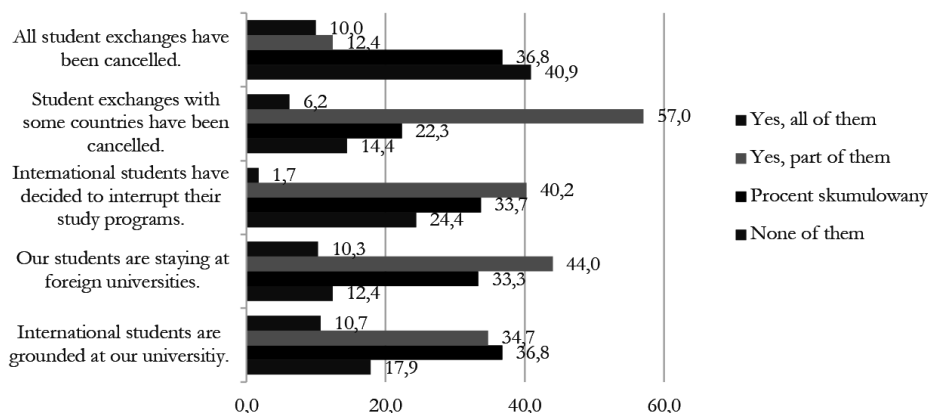
During the COVID-19 pandemic, an overwhelming majority (96.2%) of respondents admitted that universities ensured that equipment was available for them to communicate with students (and staff) to obtain and update information. Respondents indicated that the timing of the COVID-19 pandemic affected teaching and learning processes (71.5%). In most universities (87.3%), classroom teaching was replaced by distance learning. In some universities (44.0%), most classes were suspended, but universities were working to develop solutions to continue teaching, and in some universities (47.1%), most classes were suspended and no action was taken to resume teaching. There were negligible cases of total cancellation of teaching (4.4%).

The international activities of universities during the Covid-19 pandemic in the area of student and teacher exchange were hampered. Especially in terms of recruiting students for international exchange programs, as confirmed by more than 8 in 10 survey participants (85.6%). An analogous phenomenon of reluctance to take part in international exchange was seen in the case of university teachers, as confirmed by respondents (84.2%).

Analysing the results of the responses regarding international student mobility, respondents admitted that in only one in five universities, foreign students were grounded at a particular university and could not move from individual cases to all participating exchanges (82.1%). Similarly, students who were sent by universities had to stay there (87.6%). Some students (75.6%) decided to discontinue their study programs and return to their home countries. In the vast majority (85.6%), student exchanges with some countries were canceled during the COVID-19 pandemic.

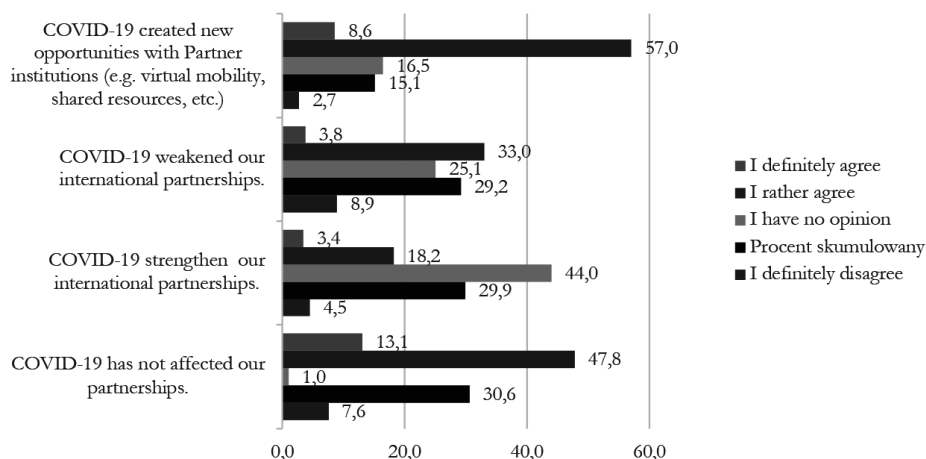
Much rarer (59.1%) were those cases in which all student exchanges at universities were halted.

Figure 1. Impact of COVID pandemic on international student mobility (in percent).



Source: Authors' compilation

Figure 2. Impact of COVID pandemic on international university cooperation (in percent).



Source: Authors' compilation

Respondents admitted that the COVID-19 pandemic also had an impact on the implementation of various activities in the area of international research. In the case of some (52.2%) or all (23.4%) universities

represented by the respondents, scientific and research conferences were canceled or postponed. Similarly, the issue concerned the cancellation of international trips (no more visiting professors, no foreign missions, etc.). As respondents admit, travel was suspended in some universities (49.8%) or in all universities (36.1%). Respondents optimistically admitted that in only a few cases (19.6%) scientific research projects were at risk of failure. Scientific research is no longer carried out at universities (42.6%).

According to the majority of respondents (60.9%), the duration of the COVID-19 pandemic did not affect the international relations of universities with their foreign partners, neither strengthening (34.4%) nor weakening (38.2%). According to the majority of respondents (65.6%), the COVID-19 pandemic has created new opportunities for cooperation with partner institutions (e.g. virtual mobility, shared resources, etc.).

By comparing the respondents' knowledge and opinions on the functioning of their universities during the COVID-19 pandemic in the area of internationalization with the type of university depending on the founder in the form of testing existing potential dependencies, it turns out that regardless of whether the surveyed universities were public or private, they struggled with the same problems (Table 2).

Moreover, the biggest challenges for the university were to stabilize its activities in accordance with dynamically changing government regulations, e.g. recognition of vaccinations, restrictions on mobility and the provision of protection centers. In the functional area, the biggest challenge was the computerization of teaching as a safeguard for the continuity of the educational process with the provision of multilingual learning platforms, encouraging and training employees in distance learning, creating or expanding online courses, providing equipment for students to connect and switching to remote communication with students. Universities also struggled with the problem of maintaining the continuity of international mobility due to the reduction in the number of students participating in programs due to cancellations and resignations during exchanges, which resulted in financial problems related to the maintenance of programs, the operation of international service offices and the retention of employees. Additionally, there were numerous cases of mental stress and panic among students, university employees and office staff, which had to be brought under control.

Table 2. Hypothesis testing

	Type of University (Founder) public/private		
	Chi-Square Value	P-Value	V-Cramer
H1: General impact of the COVID-19 pandemic on the functioning of universities	1,929	0,749	0,081
H2: The impact of the COVID_19 pandemic on the availability of communication equipment	0,672	0,412	0,048
H3: The impact of the COVID-19 pandemic on teaching and learning processes	0,985	0,912	0,058
H4: The impact of the COVID-19 pandemic on the introduction of distance learning	1,089	0,896	0,061
H5: The impact of the COVID-19 pandemic on international student recruitment outcomes	1,881	0,758	0,080
H6: The impact of the COVID-19 pandemic on international teacher recruitment outcomes	2,415	0,660	0,091
H7: The impact of the COVID-19 pandemic on international students dropping out of their studies	1,008	0,799	0,059
H8: Impact of the COVID-19 pandemic on cancellations of student exchanges between certain countries	3,518	0,318	0,110
H9: The impact of the COVID-19 pandemic on the postponement or cancellation of scientific and research conferences	1,800	0,615	0,079
H10: The impact of the COVID-19 pandemic on the postponement or cancellation of visiting professors' travel	1,194	0,550	0,064
H11: The impact of the COVID-19 pandemic on stopping the implementation of scientific research	2,455	0,483	0,092
H12: Impact of the COVID-19 pandemic on international cooperation	1,609	0,807	0,704
H13: The impact of the COVID-19 pandemic on creating new opportunities for international cooperation	1,847	0,764	0,80
H14: Academic mobility will decrease after the COVID-19 pandemic	0,674	0,954	0,048
H15: After the COVID-19 pandemic, there will be an increase in interest in educating foreign students using distance learning techniques.	2,760	0,599	0,097

a $\alpha=0,05$

Source: own calculations in SPSS.

The Covid-19 pandemic, as an unforeseen event, had, in addition to a number of negative implications already mentioned, also positive

consequences, which should constitute an important source of knowledge and support in the future activities of international departments. In particular, the appreciation of digital communication possibilities, which resulted in an accelerated course in acquiring digital knowledge and skills. Learning to use a variety of software both in the implementation of classes and in the circulation of documents has meant that hybridization will allow in the future to more intensively combine online and offline activities, develop new ways of internationalization and increase the flexibility of study and work processes.

Conclusions

The COVID-19 pandemic, which swept the world at the beginning of the 21st century, had a profound impact on the functioning of various sectors of society, including the academic community. Universities that acted as research universities, for which internationalization processes were an important element of their quality policy, had to confront new realities, and the process of internationalization of universities became an important area of analysis and action. Research conducted so far indicates that the Covid-19 pandemic has had a major impact on management processes at universities. At that time, it became important to take care of processes related to the quality of education, which resulted in the significant implementation of modern forms and tools of education. The increasing importance of university internationalization processes, observed for several years, has not slowed down, contrary to expectations. The most difficult period for universities in the area of internationalization was the first period of the pandemic, in which migration was limited, but later virtual mobilities were introduced, which revolutionized the existing internationalization processes. The research results clearly indicate that the COVID-19 pandemic has created new opportunities for cooperation with external stakeholders, including foreign partner universities.

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