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## ASPECTS OF SUSTAINABILITY ASSESSMENT IN PUBLIC ORGANIZATIONS: THE CASE OF EIGHT UNIVERSITIES IN EUROPE

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**Abstract:** Sustainability is the ability to develop without depleting natural resources for future generations. In European universities, especially in English-speaking countries, students have been able to participate since 1970 in addressing some functions of sustainability: reinvention, reduction, reuse/replenishment/repeat, redesign, recycling, rethinking, repair, reconditioning, remanufacturing, recovery, rejection, refusal, registration, reuse, composting, return and recovery. The paper aims to present the identification of indicators such as: academic prestige, reputation among employees, the number of citations related to the number of teaching staff, the share of teaching staff from abroad and the share of foreign students and their impact on knowledge and universities. 8 sustainable universities in Europe were selected for evaluation in 2023. The research methodology consists of the qualitative and quantitative evaluation of the sustainability reports, the selected rankings and some answers obtained based on a short interview. The assessment of implications for sustainable development was carried out by consulting public reports for 8 international universities. The results show that internationalization, sustainable development, and research are among the main areas that can contribute to improving a university's position in international rankings. The limitations of the research refer to the number of selected universities and the lack of transparency of the university rankings.

**Keywords:** sustainable development, students, efficiency, Europe, sustainable universities.

### 1. INTRODUCTION

The concept of sustainability represents the possibility of an organization to develop without depleting natural resources for the future and jeopardizing the opportunities of future generations [1-4]. The imprint of university sustainability is an aspect increasingly addressed at the level of universities. Achieving established sustainable development objectives becomes a proprietary activity [3].

Therefore, this concept is based on the functions of sustainability: reinvent, reduce, reuse-refill-repeat, redesign, recycle, rethink, repair, refurbish, remanufacture, recover, reject, refuse, record, reuse, compost, return and restore [5-6].

Universities have complex sustainability activities and support efforts through education and research. The educational system in Europe

is currently undergoing a transformation process, where the roles of European universities are being rethought [7-10]. Some of them have already invested in campus lighting and purchased energy-efficient electronics, offering digital lecture notes to save paper and other activities to reduce their environmental impact. The objectives and goals of sustainability are starting to be present in more and more universities.

Nowadays, universities, as public organizations named Higher Education Institutions (HEIs), are uniquely positioned to be drivers of sustainability due to their vast resources, research capabilities, and ability to educate future generations. The most important and frequent measures taken for sustainable universities development are presented in the following (synthesis from [1-10]):

- Education for Sustainability - Integrating sustainability principles throughout the curriculum, from core courses to extracurricular activities, empowers students to become responsible stewards of the environment. This can include incorporating case studies that highlight the environmental and social impacts of business decisions, or offering courses on renewable energy, sustainable agriculture, and climate changes
- Research for Sustainability - Universities are essential to the advancement of sustainability research in all fields of study. This can include studies on climate change-related social equality concerns, sustainable construction materials, and renewable energy technology. Universities may inform and assist in the development of sustainable solutions by producing new knowledge.
- Operations for Sustainability - Universities can significantly reduce their environmental footprint by implementing sustainable practices in their operations. This may entail taking steps to minimize trash production, use recycled materials, and use less energy and water. Universities can invest in energy-efficient buildings, utilize renewable energy sources like solar or wind power, and promote sustainable transportation options like cycling and public transit.
- Campus Engagement - By involving professors, staff, and students in sustainability activities, universities may promote a culture of sustainability. This can involve creating sustainability committees, organizing green events, and promoting sustainable behaviors on campus. Encouraging students to participate in sustainability projects allows them to gain practical experience and develop leadership skills.

These four measures are interconnected and form a comprehensive approach to sustainability in universities. By integrating these practices into their core mission, universities can prepare future generations to address the challenges of the 21<sup>st</sup> century and create a more sustainable future.

The university concern about sustainable development is a general movement all over the world. The “University Network for Sustainable Development” was established by the United Nations Institute for Training and Research (UNITAR) as “a platform about learning, exchanging, and partnering to be Sustainable Development Goals (SDG) learners today and SDG leaders tomorrow!” Furthermore, “the Network allows universities joining to be informed about other universities’ achievements on SDGs learning activities, to create partnerships among one another, as well as with UNITAR, while improving their educational system with exclusive access to official UN learning material, documentation and resources around SDGs and Sustainable Development”. The created access for students and faculties (teaching and research staff) is meant to support and spread good practices of SDG in the universities all over the world (<https://unitar.org/ny/universities>). This is an example of solidarity and a strong community of practices developed with respect to the SDG [11, 12, 15, 16].

Furthermore, it is often known that colleges play a significant role in the growth of the areas where they are situated. Their relationship with residential, commercial, and industrial regions is synergistic. Technologies and information created in academic settings and applied to society have the power to sway people's decisions in favor of sustainability. These facts are because of the “university third mission” development that consists of a strong relationship and engagement of the university in the related community [3, 4, 18-20].

Universities are also essential in guaranteeing revolutionary innovation concerning regional sustainable development. Either community-based efforts or the inclusion of sustainable development in the curricula are used to accomplish this. Universities may also encourage teaching and learning throughout life, which may make it possible to pursue local sustainable development initiatives [18-20].

In this context, the paper is structured in three parts, as follows: the first part identifies the main indicators that matter for these charts, the second part presents and evaluates eight sustainable universities in Europe by identifying some

relevant indicators for sustainability, and the last part presents the main results and directions for strategic action.

## **2. THE RESEARCH METHODOLOGY**

The research methodology consists of the qualitative evaluation of sustainability reports and the selected rankings of some universities. The main objective of this research was tracking and exploring how eight universities in Europe have implemented educational programs aimed at the sustainable development of some performance indicators such as: academic prestige, reputation among employees, the number of citations compared to the number of teaching staff, the share of teaching staff from abroad and the share of local students. It was specified that most of the data were obtained from the database of international surveys, and the reported information is taken from the websites of the 8 universities. Next, the main activities of the 8 universities in Europe are presented following the functions of sustainability [15-25].

## **3. CHARACTERIZING THE MAIN INDICATORS FOR THE ANALYSIS**

### **3.1. General considerations**

In European universities, especially in English-speaking countries, students have been taught since 1970 the story of the functions of sustainability: reinvent, reduce, reuse – refill - repeat, redesign, recycle, rethink, repair, refurbish, remanufacture, recover, reject, refuse, record, reuse, compost, return and restore.

In this regard, the paper tries to give the identification of the important performance metrics as follows:

- Academic prestige,
- Reputation among employees,
- The number of citations compared to the number of teaching staff,
- The share of teaching staff from abroad and
- The share of local students.

This research evaluates the efforts of universities for sustainability and presence in international rankings through an alignment with environmental needs [13].

### **3.2. The involvement of European universities in sustainable development**

Each year, the UI Green Metric World University Ranking identifies the greenest universities. The categories included in the ranking are based on: How green the university is, how energy efficient it is, promoting recycling in the university, reducing water consumption, and limiting the use of personal vehicles.

European universities must play an important role in solving the problems, because they serve as a civic model of society's behavior.

They are urged to direct their academic and research activities towards the development of an objective awareness for students regarding the reality in which society is currently, but also new perspectives for the future. A university is called sustainable when it aims to educate citizens for sustainable development, encourages both students and teaching staff to make sustainability the number one priority.

Europe today has many of the world's greatest educational institutions. The QS World University Rankings 2020 list 381 European institutions as among the finest in the world, accounting for almost 38% of all universities [25]. People and Planet, a student campaign network, published its annual university rankings in 2021, measuring the environmental and social performance of 154 UK universities.

## **4. TOP EIGHT SUSTAINABLE UNIVERSITIES IN EUROPE**

This section presents the situations of the universities based on the existing public reports on the websites of the universities. The indicators presented in Figure 1 were calculated based on the registration reports in the most important international rankings. They were calculated as the arithmetic mean of five selected rankings.

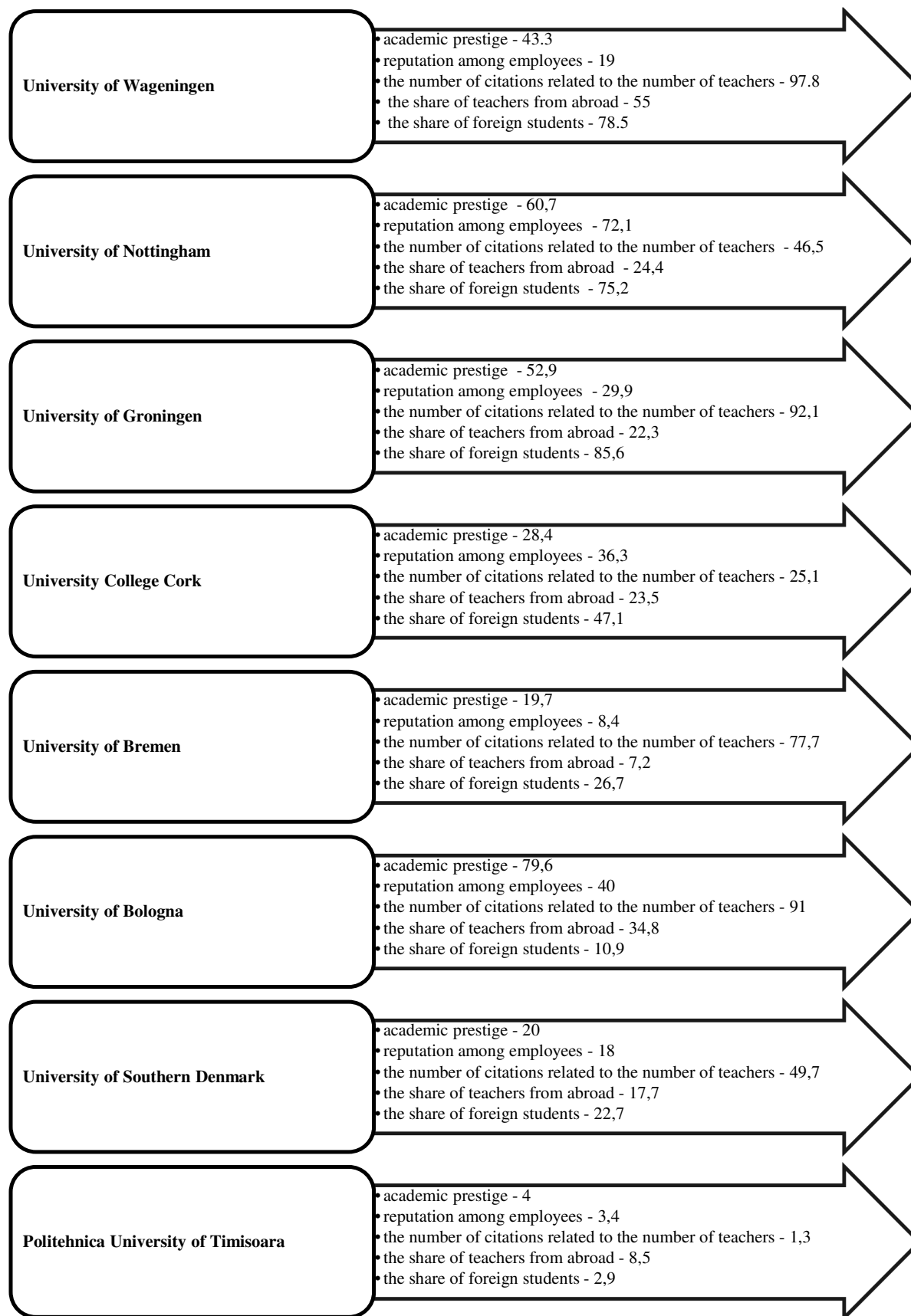


Fig. 1. Indicators Model, Top 8 Universities in Europe [18]

Wageningen University [11] is the first Dutch university to implement the European Credit Transfer System and has 6000 students from 100 countries. This mark is awarded by the European Commission and ensures the quality of the study programs. The university is a member of the “Euro League for Life Sciences” organization.

The University of Nottingham [12] was founded in 1881 and is a public university. It has a complex activity in the academic and research area, being in Nottingham, United Kingdom. The involvement in sustainability is supported by the activities carried out every year and the presence in the university rankings.

Founded in 1614, the University of Groningen [13] is one of the oldest universities in the Netherlands being in the "Top the Best Research Universities" in the country, for the innovative way of teaching and the personalized attention given to all students without exception.

University College Cork [14] is an Irish university that has 22,000 students from over 100 countries. The level of internationalization is high, and it is involved in sustainability, research and academic reputation. They offer safe places for learning and contribute to the improvement of society through sustainable practices.

University of Bremen [15] is a private English-language university located in Bremen, Germany. It offers bachelor's degree, master's degree, and Doctoral Degree in more than 40 programs in the fields of engineering, humanities, natural and social sciences. These centers touch upon the general subjects of the university from different scientific angles

The University of Bologna [16] is the oldest university in the Western world, pioneering the way for innovation with an ever-increasing catalog of cutting-edge research programs, a continuous and ever-expanding international vision, and a strong third mission. The University is actively involved in international collaborations and various research programs. It has created relationships with business and public/private organizations. It is also a hub for international networks, having international collaborations with most continents.

The University of Southern Denmark is a larger university that has 27,000 students and over 3,200 employees. It owns 6 fields and offers teaching and research to students, develops partnerships with public and state companies.

Politehnica University of Timisoara (UPT) [26] was founded in 1920 and has 10 faculties. It started with its first engineering specialization of mine and currently reaches prestigious national and international coverage and has become an advanced research university. It gets involved in the concepts of sustainability, develops projects in green energy, adequate conditions for students and ensures the framework for academic performance.

## 5. RESULTS

### 5.1. Debate on the research results

This section presents the main interpretations in 2017, Wageningen University was declared the greenest university based on the adoption and implementation of circular economy principles in its activities. The university is actively involved in sustainability concerns, and among these are “healthy food and living environment”, “quality education” and “equal opportunities”.

In the last five years, it has been proven that the University of Nottingham has implemented the principles of sustainability and is becoming a pioneer of university sustainability. The campus stands out for its generous green spaces and a carbon neutral laboratory in the field of chemistry.

The University of Groningen presents advanced measures of involvement in sustainable development. This university has a department, the Green Office, to address sustainability. There is a solid network of courses and implications in education for sustainability.

UCC [14] has complex activities for sustainability. There is also a committee made up of students and teaching staff that works for sustainable university development.

The University of Bremen is recognized as having the Campus Verde label by the German Federal Ministry of Education and Research (BMBF) for its commitment to sustainability. The University has implemented a series of

sustainability goals related to energy, society, academic development, reputation, equal opportunities, partnerships and academic innovation. It runs several research projects related to this topic, including its Sustainability Research Centre, which focuses on developing green solutions for the future.

The University of Bologna has a rich tradition in the field of activity, having a history of 1000 years. For this university, sustainable development is important, it includes a series of disciplines related to sustainable agriculture, resource economy and other directions. It implements a series of measures to support green behavior for employees and students.

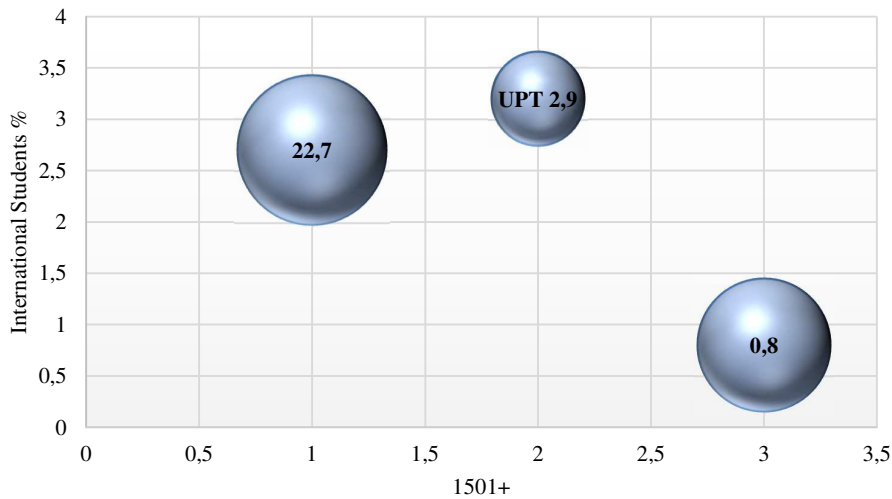
The University of Southern Denmark implements some of the 17 sustainable development goals. The Climate Center tackles the newest challenges and develops activities for students and those interested.

UPT [26] is present in many of the international rankings for sustainability. Development of

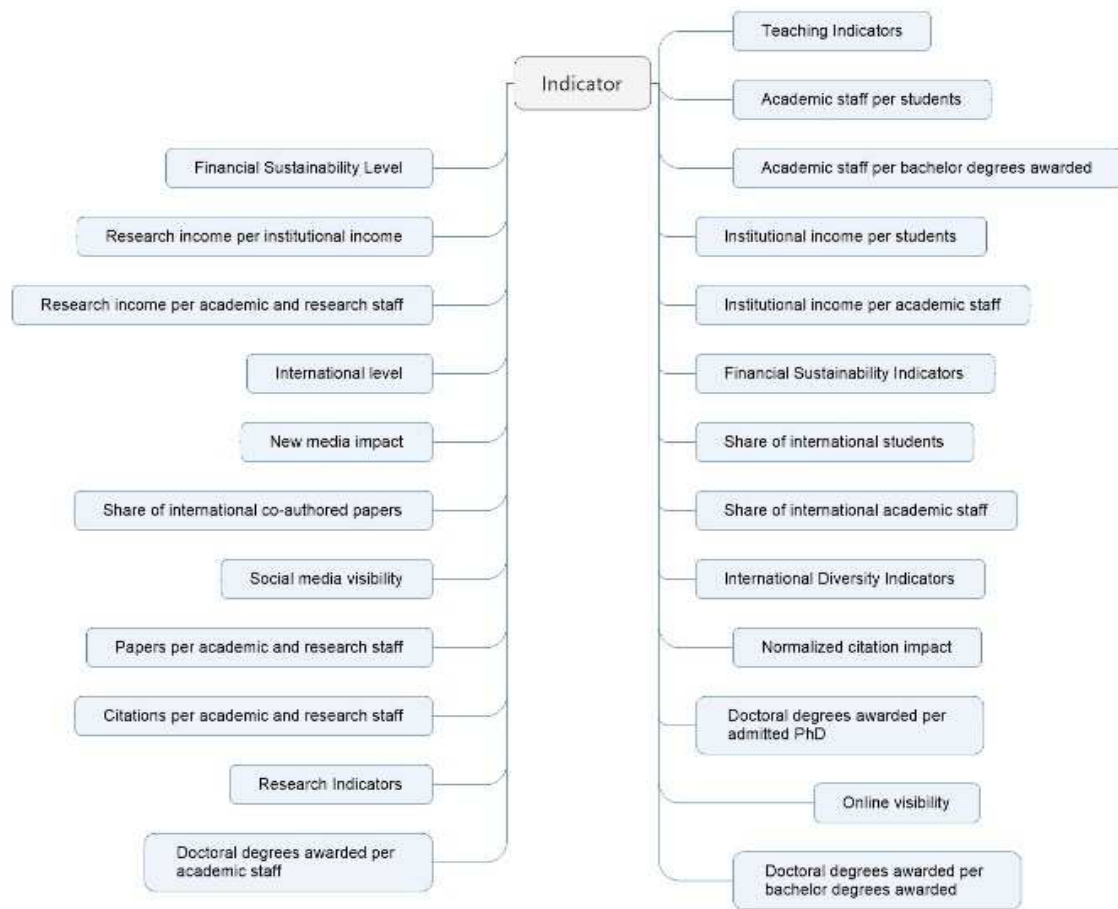
activities and partnerships to improve the quality of education and students' lives. The university constantly adopts measures for sustainable development and provides professional training at the university level through bachelor's, doctorate, master's and postgraduate programs.

**5.2. Development of a conceptual model for UPT: the share of foreign students**

In the following, arguments are presented that were the basis of the development of a conceptual model relative to the internationalization activity of UPT. The concrete data on which the model is based was taken from the UPT Rector's Report from 2023 and reflects the global concern of the academic community for increasing the visibility of the university. UPT has cooperation agreements with international institutions totaling over 300 Erasmus+ and 100 cooperation framework agreements with entities of interest.



**Fig. 2.** Indicators Model – International Students, Politehnica University of Timisoara.



**Fig. 3:** Mapping important indicators for positioning in university rankings (a selection)

The internationalization indicator is a priority for UPT summing up collaborative relationships with universities from all continents. It annually hosts students from all over the world who want to learn from the culture and technical university experience [10]. The conceptual model for UPT is shown in Figure 2. Among the most important indicators used in international reports, the mapping in the following figure can be consolidated, Figure 3. The evaluated indicators were selected through an evaluation of the most important international rankings. They were mapped and presented in current research. The indicators exist in the definition of the university's position in the international rankings and are taken over in the form defined by these international positioning bodies.

Through a face-to-face interview of 20 entities interested in international rankings, data were collected regarding the options regarding

the importance of indicators and the awareness of their importance for the university. In Table 1 we presented the results obtained after evaluating the level of knowledge of the indicators. Many of the indicators obtained a value below the average of three. Some indicators show an above average level of knowledge.

It was desired to find out the existence of a relationship between the level of awareness of international rankings and the selected indicators. I chose the linear regression analysis. We identified a significant positive relationship between these factors. The more a person is concerned with international rankings, the more informed he is about the various indicators. The result may indicate that the more a person is aware of international rankings, the more they might be inclined to become more informed, Table 2.

Table 1

Knowledge on ranking indicators	
Indicator	Mean
Teaching Indicators	3.11
Academic staff per students	3.18
Academic staff per bachelor's degrees awarded	2.98
Doctoral degrees awarded per academic staff	2.87
Online visibility	3.32
Research Indicators	3.98
Citations per academic and research staff	4.11
Doctoral degrees awarded per admitted PhD	3.78
Citation impact	4.03
Number of papers	3.66
Social media visibility	3.72
International Diversity Indicators	3.56
Share of international academic staff	3.23
Share of international students	3.11
Share of international co-authored papers	3.78
New media impact	3.75
Financial Sustainability Level	4.14
Research income per academic and research staff	3.78
Research income per institutional income	3.95
Brand	2.66
Reputation	2.98
Society implication	2.78

Table 2

Regression analysis international concern rankings and international indicators

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.008	2.511		4.595	.000
	Indicators	3.523	.659	.289	5.323	.000

Dependent Variable: Awareness of international ranking

6. CONCLUSIONS

In recent times, cities/communities have been pursuing collaborations with universities because of their power to expedite the resolution of intricate problems, thus augmenting the transformational ability required to accomplish sustainable development. Partnerships between cities/communities and universities that center on increasing capacity for sustainability transformations, for example, may support

faculty and students in gaining the knowledge and experience necessary to test creative interventions for sustainable solutions, infuse governmental institutions with energy and resources, and create an environment that encourages innovation and adaptability.

Consequently, empowerment is attained in universities and society through collaboration for sustainable development has become a common practice of higher education institutions.

Following the conducted research, it can be observed that the presence in the international rankings becomes a priority for many universities. The financing of universities based on a national meta-ranking contributes to increasing the interest of universities for being in a good position in the international ranking. Some international rankings are more attractive, and others are less attractive.

This degree of attractiveness is given by considering the rankings in the national meta-rankings and obtaining financing. The evaluation of the indicators presented in this paper shows that involvement in sustainability and research are important and contribute to increasing attractiveness among international and national candidates.

Sustainability is addressed in many universities, and their implications differ from one entity to another. This fact is also since sustainability reporting is a voluntary action for most organizations. From the evaluated universities, a different and incomplete involvement in sustainable development can be observed.

Involvement in the reporting of some indicators is a voluntary activity for universities. Most universities choose to get involved in this international reporting. Many of the data used in the international rankings are collected automatically by the beneficiaries of the rankings, and the interested parties are invited to contribute to the validation of the data. The importance of the indicators and the weight of each indicator are often not known.

The innovative part of the study consists in the fact that qualitative evaluations of the selected universities are not carried out until now, in the current version of the study.



The research limitations refer to the number of selected universities and the subjectivity of the sustainability reports published by them. In the following research, other universities will be considered.

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## ASPECTE ALE EVALUĂRII DURABILITĂȚII ÎN ORGANIZAȚIILE PUBLICE: CAZUL A OPT UNIVERSITĂȚI DIN EUROPA

Sustenabilitatea reprezintă posibilitatea de a se dezvolta fără a epuiza resursele naturale pentru viitoarele generații. În universitățile europene, în special în țările vorbitoare de limbă engleză, studenții au putut participa încă din anul 1970 la abordarea unor funcții ale sustenabilității: reinventare, reducere, reutilizare/reumplere/repetare, reproiectare, reciclare, regândire, reparare, recondiționare, remanufacturare, recuperare, respingere, refuzarea, înregistrarea, reutilizarea, compostarea, returnarea și refacerea. Lucrarea își propune să prezinte identificarea unor indicatori precum: prestigiul academic, reputația în rândul angajaților, numărul de citări legate de numărul de cadre didactice, ponderea personalului didactic din străinătate și ponderea studenților străini și a impactului acestora asupra cunoașterii și universităților. Au fost selectate pentru evaluare 8 universități sustenabile din Europa în anul 2023. Metodologia cercetării constă în evaluarea calitativă și cantitativă a rapoartelor de sustenabilitate, a clasamentelor selectate și a unor răspunsuri obținute în baza unui scurt interviu. Evaluarea implicațiilor în dezvoltarea durabilă a fost realizată prin consultarea rapoartelor publice pentru 8 universități internaționale. Rezultatele arată că internaționalizarea, dezvoltarea durabilă și cercetarea se numără printre principalele domenii care pot contribui la îmbunătățirea poziției unei universități în clasamentele internaționale. Limitările cercetării se referă la numărul de universități selectate și la lipsa de transparență a clasamentului universităților.

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