Global Academic Rankings. A Challenge or a Chance to Portuguese Higher Education Institutions

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Abstract In the era of the globalization and internationalization of higher education, there has been an international trend for global university rankings. World university rankings, which reflect the global competition of universities and depict their relative statuses, have attracted the attention of many universities. Global rankings considered to be one of the mechanisms—and not the only one and far to be perfect—for evaluating higher education, even if they are a crucial tool for comparing and measuring the accomplishments of Higher Education Institutions (HEIs) by specific metrics. The Times Higher Education—World University (THE-WU) and Times Higher Education—Impact Ranking (THE-IR) methodologies and the rankings were analyzed, as well as the Portuguese Higher Education Institutions under the framework of these both rankings. As a major result, it is possible to see that there are advantages for HEIs to be part of a ranking such as THE-WU or THE-IR if they want to promote themselves. Admission in a ranking will be both a challenge and a chance for the promotion of HEIs, which should always be considered while bearing in mind the limitations they present (e.g., lack of justification of the weightings of the 4 SDGs and the possible double counting of a publication in SDG 17 and another selected SDG, both in THE-IR.

Keywords Global Academic Rankings · Higher Education · Portuguese Higher Education Institutions · World University Ranking · Times Higher Education Impact Ranking · THE-WU · THE-IR

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1 Introduction

Global Academic Rankings exist for a long time and are having a greater impact on higher education institutions (HEIs). International university rankings are growing and becoming more specialized by focusing on research performance or institutional reputation. According to Hou and Jacob (2017, p. 29) "…world university rankings, (…), are considered by many to be a means of representing academic excellence and increasing prominence of HEIs in both local and global contexts".

Hazelkorn (2014) states that in order to gain more awareness and funding from various stakeholders, universities actively pursue higher rankings and engage in global ranking initiatives. As a result, international rankings are frequently seen as a tool of agenda setting (Lo, 2011) with soft power and an essential element of [the] status culture of higher education competitiveness (Marginson, 2014). Higher ranked HEIs typically benefit from greater visibility and opportunity both domestically and internationally (Hou and Jacob, 2017).

To increase their status in the most important global rankings, numerous higher education institutions all around the world are working to become "world-class" schools (Salmi, 2009). However, there is debate over the impact of these rankings on higher education (De Wit, 2017).

The methodological frameworks and metrics of the rankings are frequently criticized (Federkeil et al., 2012), nevertheless, many continue to use them as a tool for determining the degree of internationalization at specific higher education institutions (Hou & Jacob, 2017).

The main of this paper is to make a reflection on global academic rankings and understand the importance and impact they might have in HEIs, especially on the Portuguese institutions. It's relevant to comprehend if the participation in a ranking is seen as a challenge or a chance to HEIs.

This chapter presents the following sections: History and importance of University Rankings; Higher Education Major Global Rankings; Methodology; The Portuguese Higher Education Institutions versus the World University Ranking and the Times Higher Education Impact Ranking, and Final Considerations.

2 History and Importance of University Rankings

2.1 Brief University Ranking History

The United States Bureau of Education commissioner started releasing an annual report of statistics in 1870. Every year, the volume of data grew, and it progressively shifted toward a ranking by separating out a few universities. The Association of American Universities (MU) encouraged the bureau to create a classification once more in 1910 despite the fact that this process was discontinued in 1890. For a variety of reasons, Kendric Charles Babcock's classification scheme was unsuccessful as a

stratification and never progressed into an actual ranking (Stuart, 1995). This author also mentioned that the first true ranking, American Men of Science, based on the identification of famous scientists and the institutions from which they had received degrees or at which they were employed, was published in 1910 by psychologist James McKeen Cattell.

A period of high academic standards during the middle of the 1980s and the 1990s was marked by a focus on undergraduate education and some consideration of student outcomes. Initially, graduate student applications, state legislators, federal agencies, and higher education academics made up the audience for these rankings (Stuart, 1995).

Grewal et al. (2008) stated that nearly a century after they were first used, rankings achieved widespread acceptance in 1983 when U.S. News issued its first rankings of undergraduate academic quality based on a survey of university presidents. In 1987, U.S. News introduced the multidimensional system that is still in use today, combining more objective criteria with evaluations made by academic leaders of similar schools. The top 25 national universities and top 25 national colleges were ranked in the first U.S. News university ranking issue. The top 50 universities were included to U.S. News' rankings of the nation's universities in 1998. Three categories—national doctoral universities, regional master's universities, and colleges—were established by U.S. News for the 2004 ranking. The most recent edition—the 2006 issue—ranks 104 national liberal arts schools and 120 national doctorate universities.

In reality, every year since it started ranking schools and institutions, U.S. News has revised its methodology. U.S. News increased the weight for its graduation variable four times between 1991 and 1995. It added Alumni Satisfaction to its approach in 1993 and Value-Added in 1996. When scores were rounded off in 1997 to the nearest whole number, national universities had an average improvement of one full rank over their 1996 results. As a result of the adjustments U.S. News makes to its methodology each year, the rankings themselves vary, which generates news coverage, boosts magazine sales, and keeps college presidents, employees, alumni, students, and faculty wondering, "How did we do this year?" (Machung, 1998).

The four broad elements that make up the USN ranking are faculty resources, selectivity, placement, and reputation. Rankings have undergone minor alterations, but their fundamental structure has not changed. Selectivity (25%), placement (20%), faculty resources (15%), and reputation account for the remaining 40% of a school's final score. The score for each school is standardized to create the ranking. Then, these scores are weighted, added up, and rescaled so that the top institution receives a score of 100 and the other schools receive a portion of that score (USN, 2005).

Mentioning several authors Espeland and Sauder (2007) refer that since the late 1970s, a huge variety of quantitative performance indicators have proliferated, with rankings being only one example. Rankings are one example of the numerous attempts being made to control public institutions and increase public access to them (Espeland & Sauder, 2007).

Rankings provide a generalized account for interpreting behavior and defending judgments inside schools, and they assist to organize the "stock of knowledge" that

participants frequently employ. In general, rankings are reactive because they alter how people view events (Schutz, 1970 cited by Espeland & Sauder, 2007).

Although it seems that university officials occasionally criticize publicly released rankings, it is obvious that they view these rankings as open performance scorecards (Grewal et al., 2008).

When setting objectives, reviewing performance, assessing peers, admitting students, hiring teachers, distributing scholarships, conducting placement polls, implementing new initiatives, and developing budgets, administrators take rankings into account (Espeland & Sauder, 2007). Espeland and Sauder (2007) also refer that rankings are designed to reduce complex information; they represent judgments that render a substantial quantity of additional information—often qualitative knowledge that is difficult to translate into this form—inapplicable. Respondents frequently criticized rankings for oversimplifying school quality and omitting crucial elements including cost, social climate, teaching, scholarship, and location.

2.2   Importance of Rankings in Higher Education

According to Merisotis (2002)higher education institutions, enterprises, students, parents, and governments now have a greater stake in the "status" of certain universities, colleges, and other higher education entities due to the massification of higher education and its increasingly market-based orientation around the world. Over the past 20 years, higher education league tables and rankings have come from a variety of sources, including government agencies, professional organizations, and the private, media-based sector. Rankings, which classify universities according to criteria and dimensions considered relevant, have gained importance in the last decade (Cabello et al., 2019).

Higher education academic rankings are becoming increasingly common and well-known on the international, national, and local scenes, which makes their influence on institutional governance at universities and, more broadly, on the transnational governance of this level of education, unquestionable (Thiengo et al., 2018).

Rankings begin by providing a quick and straightforward comparison of national production and educational achievement across international borders. Second, rankings have developed into a crucial instrument for assessing quality and educational achievement by bringing attention to the traits and accomplishments of the world's top universities. This holds true for both countries and higher education institutions. Third, rankings are frequently understood as a measure of a country's global competitiveness due to the significance of higher education for social and economic progress and prosperity, especially in these challenging circumstances (Hazelkorn, 2019). Still according to the author, academics use rankings to enhance their own reputation and professional status, politicians frequently use rankings as a benchmark of their nation's strength and economic aspirations, universities use them to

help set and define targets that map their performance against various metrics, and students use them to aid in their decision-making about where to study.

Ranking position has a significant effect on an HEI's reputation because it can either increase domestic support for funding for higher education or, in the opposite scenario, contribute to (or even create) serious difficulties and anxiety within its most prestigious institutions. The institution may become a more desirable partner, place to study or work internationally, attracting and keeping research talent and financial resources for the partner university. Furthermore, it can facilitate the interchange of good governance practices by providing insightful comparisons with worldwide counterparts on a range of topics (Axel-Berg, 2018).

All Higher Education Institutions (HEIs) are impacted by the rankings because they draw attention to reputational inequalities, including those that were previously shielded by history, mission, or governance. Whether well positioned or not, with an international or regional focus, the HEI is constantly challenged to either maintain the position already attained or to achieve better placements, which prompts reflection on institutional policies and tangible or potential benefits for the core activities of the institutions (Cabello et al., 2019).

Hazelkorn (2013) refer that according to experts in higher education, rankings help institutions develop, preserve, or improve their reputation and profile on the national and international academic scene; they are used by high-achieving students to choose institutions, particularly for postgraduate studies; they have an impact on stakeholders' decisions regarding funding, sponsorship, and employee hiring; and they offer a variety of other advantages and benefits. Higher education rankings also encourage discussion on the caliber and effectiveness of colleges, and they have had a significant impact on society and the internationalization of institutions.

From the standpoint of public policy, academic rankings can inform nations about the relative performance of their higher education institutions on particular indicators, encouraging the allocation of resources to enhance those measured aspects that are interesting or important to the nation's progress and development. Rankings make an effort to condense institutional performance into a narrow range of criteria that are intended to evaluate the quality of institutions (Ganga-Contreras & Rodríguez-Ponce, 2018).

3   Higher Education Major Global Rankings

3.1   Major Global Rankings

According to the International Association of Universities, there are more than 16,000 HEIs in the world (IAU). With certain exceptions, rankings, however, often only disclose data for a small portion of this amount (e.g., QS publishes data for 700, and webometrics for over 2,000 HEIs). In spite of this, the media, university leaders,

other HE stakeholders, and politicians frequently highlight the accomplishments of the top 100. This corresponds to less than 1% of HEI globally (Hazelkorn, 2013).

The Shanghai Jiao Tong Academic Ranking of World Universities, which was released in 2003, and the Times Higher Education-QS University Ranking, which was released in 2004, both posed challenges to the perception of the reputation and excellence of European universities, particularly when compared to the goals of the Lisbon Strategy. The *Exzellenzinitiative* (Initiative for Excellence) was introduced by the German government a year later in June 2005. This was followed by a French Senate report that claimed its researchers were underutilized in favor of English-speaking institutions. A conference defending a new ranking by the EU was held in 2008 under the auspices of the French presidency of the European Commission. The European Union's document expresses the need to improve the performance and international competitiveness of European higher education institutions and raise the general quality of all levels of education and training within the EU (Hazelkorn, 2019).

Table 1 summarizes several global classifications.

The question then arises as to what the rankings measure. The rankings, despite the criticisms, are popular, apparently due to their simplicity. By analyzing them generically, it can be seen that they compare HEIs based on different criteria and indicators that are aggregated and translated into a score that is assigned to the institutions. Thus, the scores are listed according to a ranking table. This process ignores the fact that HEIs are complex organizations, grounded in very different national contexts, underpinned by different value systems, meeting the needs of demographically, ethnically and culturally diverse populations and responding to complex and challenging political-economic environments.

Hazelkorn (2019) has systematized what rankings measure and what they do not measure. According to this author rankings measure quantity and intensity as a proxy for quality, research, publications, student and faculty characteristics, internationalization and reputation. On the other hand, rankings do not measure the quality of research or teaching, impact of research on teaching, technology transfer or impact, regional or civic engagement and students experience.

3.2 The World University Ranking and the Times Higher Education Impact Ranking

Although the Times Higher Education World University Ranking (THE-WU) and the Times Higher Education Impact Ranking (THE-IR) are university rankings they have differences in terms of methodology and objectives that need to be noted. The various rankings are analyzed below, considering 2022 as the period of analysis.

Table 1 Global rankings

Global rankings	Origin date	Website
World's Best Colleges and Universities (US News Rankings)	Since **1983**	https://www.usnews.com/rankings
Academic Ranking of World Universities (ARWU) (Shanghai Jiao Tong University)	First published in June **2003** by the Center for World-Class Universities	https://www.shanghairanking.com/rankings/arwu/2022
Times Higher Education World University Rankings (THE-WUR)	Since **2004**	https://www.timeshighereducation.com/world-university-rankings
Webometrics Ranking of World Universities/ (Spanish National Research Council)	Started in **2004** and published twice a year	https://www.webometrics.info/en
QS World University Ranking	Launched in **2004** with annual publication	https://www.qs.com/rankings/
Performance Ranking of Scientific Papers for Research Universities/NTU Rankings	It was first published in **2007** by Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT) on an annual basis	http://nturanking.csti.tw/
Leiden Ranking (Center for Science & Technology Studies, University of Leiden)	First edition was produced in **2007**	https://www.leidenranking.com/
SCImago Institutions Rankings	Since **2009**	https://www.scimagoir.com/
Round University Ranking	Since **2010**	https://roundranking.com/
U-Multirank (European Commission)	First U-Multirank ranking was the **2014** edition	https://www.umultirank.org/
Times Higher Education Impact Ranking (THE-IR)	First edition in **2019**	https://www.timeshighereducation.com/impactrankings

Source Own elaboration

The Times Higher Education World University Rankings 2022 are the largest and most diversified university rankings to date, including more than 1,600 universities from 99 nations and territories. According to THE-WU website the performance of an institution in four areas—teaching, research, knowledge transfer, and international outlook—is measured by the table's 13 meticulously calibrated performance indicators. Over 108 million citations from over 14.4 million research publications were analyzed for this year's ranking, which also includes survey responses from nearly 22,000 global experts. Overall, more than 2,100 institutions provided them with more than 430,000 datapoints. This year's league table, which is relied upon by students, professors, governments, and industry professionals everywhere,

shows how the Covid-19 pandemic has started to change the performance of higher education around the world.

Considering what is mentioned in the THE-IR website the Times Higher Education Impact Rankings are world performance charts that compare universities to the Sustainable Development Goals of the United Nations (SDGs). To enable thorough and impartial comparison across four major areas—research, stewardship, outreach, and teaching—we employ precisely calibrated indicators.

The fourth edition of the 2022 Impact Rankings features 1,406 universities from 106 countries and regions in the overall rating.

Higher education institutions submit their data for analysis according to the criteria measured by each ranking.

The Times Higher Education World University Rankings 2022 Methodology. There are five categories under which the performance metrics are broken down: teaching (learning environment), research (volume, income, and reputation), citations (research influence), international outlook (staff, students, and research), and industry income (knowledge transfer) (Table 2).

Table 2 Areas and performance indicators for THE-WU Ranking

Areas	Total (%)	Performance indicators	Weight (%)
Teaching | learning environment	**30**	Reputation Survey—Teaching Academic Staff-to-Student Ratio Doctorates Awarded/Undergraduate Degrees Awarded Doctorates Awarded/Academic Staff Institutional Income/Academic Staff	15.00 4.50 2.25 6.00 2.25
Research | volume, income, and reputation	**30**	Reputation Survey—Research Research Income/Academic Staff Publications/Staff (Academic Staff + Research Staff)	18.00 6.00 6.00
Citations | research influence	**30**	Field Weighted Citation Impact	30.00
International outlook | staff, students and research	**7.5**	Proportion of International Students Proportion of International Academic Staff International co-authorship (International Publications/Publications Total)	2.50 2.50 2.50
Industry income |knowledge transfer	**2.5**	Research income from industry & commerce/Academic Staff	2.50
		Total	**100**

Source Made by the authors, based on information obtained in https://www.timeshighereducation.com/world-university-rankings/world-university-rankings-2022-methodology

Here the subject tables use the same set of 13 performance indicators as the overall World University Rankings and combine their scores with those under the same five criteria: teaching; research; citations; international outlook; and industry income.

In the context of this ranking, the questions are adjusted in accordance with the subject in order to more accurately reflect the culture of research on each topic, reflecting various publishing habits. As an example, the editors give less weight to citations in articles in the arts and humanities, because the range of results extends significantly beyond periodicals reviewed by peers. As a result, the weight given to "citations: Influence of Research" is reduced by half, dropping from 30% in the overall classification to only 15% for the arts and humanities. Other research indicators, such as the Academic Reputation Inquiry, are given more weight. Likewise, they have increased the weighting assigned to the research influence in those fields where the vast majority of research outputs are published in journal articles and where there is a high degree of confidence in the strength of citation data (up to 35% for the physical, life sciences, psychology, and the clinical and health tables).

The Times Higher Education Impact Rankings 2022 Methodology. This ranking employs a complex technique made up of a variety of measures and composite indicators. The purpose of this ranking is to measure the contribution of universities against each of the 17 Sustainable Development Goals under the Agenda 2030 of the United Nations. "The methodology consists of a micro level (scores for each SDG) and a macro-level (creation of an overall score)" (Bautista-Puig et al., 2022, p. 215). Each SDG strives to capture the contribution of universities in four broad categories at the micro level: research, teaching, stewardship (universities serving as custodians of major resources, including both physical and human resources), and outreach (work that universities undertake with their local, regional, national and international communities). Each SDG is given a set of measurements in order to achieve this. Based on the characteristics and goals of each statistic, these metrics are divided into three groups: research metrics, continuous metrics, and evidence metrics (Table 1). While continuous and evidential metrics are produced from institutional data voluntarily and directly submitted by the HEIs to the ranking publisher, research metrics are derived from an external product (Scopus).

According to this layout, each SDG is divided into many measurement groups. Always included in the first group, research metrics account for 27% of the total SDG score. Each SDG affects the remaining groups, which are made up of continuous and evidence metrics. Each SDG receives a final score (ranging from 0 to 100) at the end. Only four SDGs are weighted to create the total score at the macro-level. The remaining three SDGs were chosen based on the top three SDGs for each university (26% each), with the exception of SDG17, which is measured for all institutions (22% of the overall score) (Table 3).

For the evaluation of the Evidence Metrics, it is used a straightforward calculation method. When a metric calls for evidence, a set of questions are posed, and points are given based on the responses. When evidence is presented, THE determine if the evidence fully, partially, or inadequately addresses the question. This receives one, fifty percent, or no points, respectively. Higher Education Institutions receive a score

**Table 3** Areas and performance indicators for THE-IR

Metrics	Source	Score
Research (metrics that assess the impact and production of research)	Scopus	27%
Continuous (metrics that track data that fluctuate over time throughout a range)	Higher Education Institution	Variable
Evidence (Metrics that assess the availability of regulations or programs that demand supporting data)		3 points (max)

Source Made by the authors, based on information obtained in https://www.timeshighereducation.com/world-university-rankings/world-university-rankings-2022-methodology

of 0 for any metrics for which they are unable to provide data. Figure 1 presents the scheme for the evaluation of the evidence metrics.

Each SDG includes a number of distinct questions, therefore the range of scores may change. SDG 8's greatest possible score is 76.3, while SDG 4's highest possible score is 89.2, and its lowest possible score is 15 against 7.2 of SDG 8. Therefore, the scales are scored in order to get the overall rating, and the range for the totality of SDGs is 0–100. This influences the choice of the SDGs in which a university has excelled; hence, the three in which the scaled score for that university is highest were utilized. The university may not, however, be ranked first or have received the highest unscaled scores in all three of these categories.

To calculate the overall score the proportions of 22% for SDG 17 and 26% for each of the top three SDGs were assigned, as shown in Fig. 2.
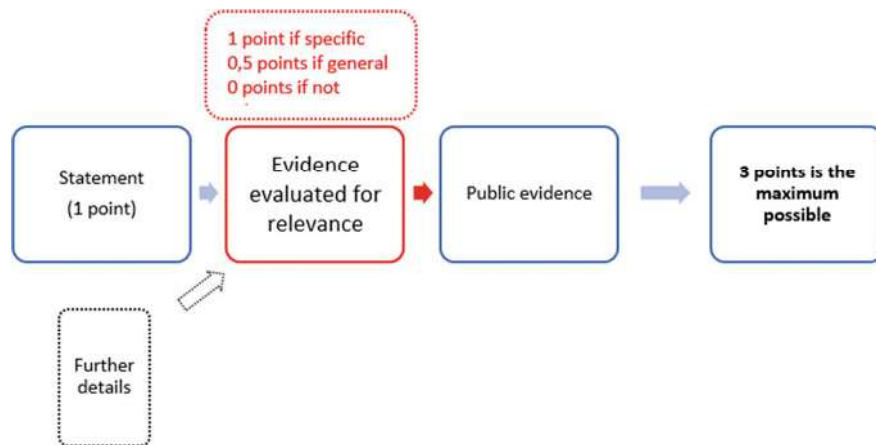
Fig. 1 Evaluation scheme of evidence metrics. *Source* Made by the authors, based on information obtained in https://www.timeshighereducation.com/world-university-rankings/world-university-rankings-2022-methodology

Fig. 2 Calculation of overall score. *Source* Made by the authors, based on information obtained in https://www.timeshighereducation.com/world-university-rankings/world-university-rankings-2022-methodology

The methodology used in this study will be presented in the next section, as well as the analysis of the Higher Education Institutions, in the light of the rankings presented in this section.

4 Methodology

The research is exploratory and documentary based on information from the THE ranking and on bibliography on the subject of higher education rankings. For this study, the institutions that have been represented in the THE Impact ranking in 2022 were selected. Thus, and to answer the research objective, the data presented in the THE World University Ranking was compared with the data of the THE Impact Ranking in this year regarding Portugal and the HEIs under analysis. Then, these institutions were analyzed, according to the indicators of both rankings.

Next, the literature and official documents of the institutions themselves were analyzed in order to identify possible political, social, and administrative factors determining the placement of the best HEIs in each of the selected indicators.

5 The Portuguese Higher Education Institutions Versus the World University Ranking and the Times Higher Education Impact Ranking

5.1 Results and Analysis

In 2022, the THE-WU ranking evaluated 2,112 universities in 99 countries and regions around the world and the THE-IR assessed 1,410 higher education institutions in 106 countries and regions. Universities submit their data for analysis according to the criteria measured by each ranking (Table 4).

Table 5 presents the Portuguese Higher Education Institutions that were analyzed by the ranking promoters in 2022, corresponding to around 0.7 and 0.9% of the total per each ranking, respectively.

As can be seen, the Portuguese HEIs registered in THE-WU do not correspond exactly to those in THE-IR; nor does there exist a correspondence between the

Table 4 Portuguese Higher Education Institutions in THE-WU and THE-IR

THE-WU		THE-IR	
HEIs	Score	HEIs	Score
Catholic University of Portugal	351–400	University of Coimbra	26
Nova University of Lisbon	401–500	University of Trás-os-Montes e Alto Douro	78
University of Porto	401–500	Nova University of Lisbon	101–200
University of Lisbon	501–600	University of Algarve	201–300
University of Beira Interior	601–800	University of Aveiro	201–300
University of Coimbra	601–800	University of Minho	201–300
ISCTE-University Institute of Lisbon	601–800	Catholic University of Portugal	301–400
University of Algarve	801–1000	University of Beira Interior	401–600
University of Aveiro	801–1000	ISCTE-University Institute of Lisbon	401–600
University of Minho	801–1000	Nursing School of Coimbra	401–600
University of Trás-o-Montes e Alto Douro	801–1000	Universidade Aberta	601–800
Polytechnic Institute of Porto	1001–1200	Escola Superior de Enfermagem do Porto	801–1000
Lusophone University of Humanities and Technologies	Reporter	Polytechnic Institute of Setúbal	801–1000
Polytechnic Institute of Setúbal	Reporter		

Source Made by the authors, based on information obtained in https://www.timeshighereduc ation.com/world-university-rankings/2022/ and https://www.timeshighereducation.com/impactran kings#!/

Table 5 Results of Portuguese Higher Education Institutions in THE-WU

Rank	Name of HEI	No. of FTE students	No. of students per staff	International students (%)	Female:Male ratio	Overall	Teaching	Research	Citations	Industry income	International outlook
351–400	Catholic University of Portugal	11,233	22.8	21	59:41	44.1–46.0	19.0	14.5	98.3	36.6	62.0
401–500	NOVA University of Lisbon	20,396	17.9	21	51:49	40.9–44.0	25.3	29.5	70.4	49.7	63.6
601–800	University of Beira Interior	7,417	16.2	20	52:48	32.0–37.9	18.6	19.6	52.6	37.5	57.4
601–800	University of Coimbra	21,845	18.4	20	57:43	32.0–37.9	24.5	32.0	45.4	47.0	60.0
601–800	ISCTE-University Institute of Lisbon	9,118	23.0	15	51:49	32.0–37.9	27.8	28.8	39.6	40.8	53.8
801–1000	University of Algarve	8,264	13.7	21	57:43	27.2–31.9	17.4	16.1	40.3	36.1	68.1
801–1000	University of Aveiro	12,068	14.8	10	53:47	27.2–31.9	23.3	23.8	42.4	37.5	50.0
801–1000	University of Minho	19,246	19.0	15	55:45	27.2–31.9	24.0	22.8	38.6	52.3	57.1
801–1000	University of Trás-os-Montes and Alto Douro	6,687	11.5	6	57:43	27.2–31.9	20.6	28.1	33.6	34.8	43.4
Reporter	Polytechnic Institute of Setúbal	7,346	16.8	7	44:56	N/a	N/a	N/a	N/a	N/a	N/a

Source Made by the authors, based on information obtained in https://www.timeshighereducation.com/world-university-rankings/2022/

positions of the same institution in one ranking and in the other. In both there are 10 common HEIs that belong to the Portuguese university and polytechnic education system. As regards to these 10, the results of the rankings obtained in 2022 are presented in Tables 5 and 6.

Catholic University of Portugal is the best ranked in THE-WU, but is ranked 7th in THE-IR out of the 10 selected institutions. In last place in both rankings is the Polytechnic Institute of Setúbal. In THE-WU, regarding the "Teaching" pillar, the best ranked institution is ISCTE, with 27.8. Regarding "Research", the best ranked institution is the University of Coimbra with 32.0 points. In the "Citations" pillar, with 98.3 points, the Catholic University of Portugal is again the top ranked institution. In the area of "Industry Income" the University of Minho leads with 52.3. The University of Algarve leads the ranking in the "International Outlook" pillar with 68.1 points.

The five pillars that are the basis for the evaluation and classification of the institutions have different and sometimes quite distinct scores among Portuguese institutions. Table 7 shows the maximum and minimum values for each pillar and the respective institution.

From the 10 HEIs previously selected, the following information can be obtained. The Catholic University of Portugal manages to have the maximum score in the area of "Citations", but also manages to have the lowest value of all institutions in the area of "Research" with only 14.5 points. Nevertheless, it is the first Portuguese HEI in the ranking. The University of Algarve manages to have a similar situation to the previous one, but in the pillars of "International Outlook" with a maximum of 68.1 points and a minimum of 17.4 in the area of "Teaching". This institution is in 8th place among the Portuguese HEIs in the ranking. Curiously, the University of Trás-os-Montes e Alto Douro, among the Portuguese HEIs, has the lowest values in the areas of "Citations", "Industrial Income" and "International Outlook", and is in 11th position among the Portuguese HEIs.

Table 8 presents the statistical values of some key elements of each HEI, namely the number of FTE students, the number of students per staff, the percentage of international students, and the Female:Male ratio.

As for the statistical elements, the University of Coimbra stands out with 21.845 FTE students, as the maximum value among the 10 Portuguese HEIs and 6.687 for the University of Trás-os-Montes e Alto Douro. As for the number of students per staff, the maximum number is 23.0 for ISCTE—University Institute of Lisbon and 11.5 for the University of Trás-os-Montes e Alto Douro. Between 20 and 21% of international students are the Universities of Beira Interior and Coimbra and the Universities Catholic of Portugal, NOVA of Lisbon, and Algarve. With the lowest value of 6%, it is once again the University of Trás-os-Montes e Alto Douro. As for the Female:Male ratio, the HEIs with the most balanced figures are NOVA University of Lisbon and ISCTE-University Institute of Lisbon with 51:49. With the exception of Polytechnic Institute of Setúbal with a ratio of 44:56, all the other Portuguese HEIs have a ratio in which the number of women in the institution exceeds the number of men.

Table 6 Results of Portuguese Higher Education Institutions in THE-IR

Rank	Name	SDG	Best scores by rank	Overall
26	University of Coimbra	9	99.9	94.1
		2	85.6	
		11	85.5	
		17	92.6	
78	University of Trás-os-Montes and Alto Douro	15	95.1	89.9
		2	82.0	
		6	79.0	
		17	83.1–90.6	
101–200	NOVA University of Lisbon	9	90.8	82.1–88.5
		5	73.0	
		16	71.3–78.4	
		17	92.4	
201–300	University of Algarve	5	70.5	76.9–82.0
		16	79.5	
		7	70.6	
		17	70.3–76.6	
201–300	University of Aveiro	11	69.2–78.6	76.9–82.0
		1	75.5	
		13	69.8	
		17	76.7–83.0	
201–300	University of Minho	9	98.0	76.9–82.0
		5	59.6–65.9	
		4	67.7–73.1	
		17	58.8–70.2	
301–400	Catholic University of Portugal	16	90.2	72.0–76.7
		11	60.1–68.9	
		3	53.3–63.6	
		17	58.8–70.2	
401–600	University of Beira Interior	3	73.9–79.6	65.0–71.9
		12	54.0–64.2	
		11	60.1–68.9	
		17	76.7–83.0	
401–600	ISCTE-University Institute of Lisbon	10	62.5–72.5	65.0–71.9
		4	58.1–61.9	
		5	53.5–59.5	
		17	70.3–76.6	

Table 6 (continued)

Rank	Name	SDG	Best scores by rank	Overall
801–1000	Polytechnic Institute of Setúbal	4	58.1–61.9	50.3–57.2
		5	48.4–53.4	
		3	41.5–53.2	
		17	50.2–58.7	

Source Made by the authors, based on information obtained in https://www.timeshighereducation.com/impactrankings#!/

Table 7 Maximum and minimum results of Portuguese Higher Education Institutions in THE-WU per area

Rank	Name of HEI	Overall	Teaching	Research	Citations	Industry income	International outlook
351–400	Catholic University of Portugal	44.1–46.0	19.0	14.5	98.3	36.6	62.0
601–800	University of Coimbra	32.0–37.9	24.5	32.0	45.4	47.0	60.0
601–800	ISCTE-University Institute of Lisbon	32.0–37.9	27.8	28.8	39.6	40.8	53.8
801–1000	University of Algarve	27.2–31.9	17.4	16.1	40.3	36.1	68.1
801–1000	University of Minho	27.2–31.9	24.0	22.8	38.6	52.3	57.1
801–1000	University of Trás-os-Montes and Alto Douro	27.2–31.9	20.6	28.1	33.6	34.8	43.4

Source Made by the authors, based on information obtained in https://www.timeshighereducation.com/world-university-rankings/2022/

THE-IR has to do with assessing the HEIs' impact on the 17 United Nations Sustainable Development Goals. Analyzing Table 7 that presents the Portuguese HEIs that had their application for this ranking approved, it can be seen that the best classified HEIs are the University of Coimbra, which is in 26th position in the ranking with a global score of 94.1 points and the University of Trás-os-Montes e Alto Douro, in 78th position with a score of 89.9.

As a result of the rules established by the editors of THE-IR, only SDG 17 (Partnerships for the Goals) is mandatory for all applicant HEIs. Thus, the remaining 3 SDGs per institution are variable. The sustainability focus of the University of Coimbra is on promoting zero hunger (SDG 2), industry, innovation and infrastructure (SDG 9) and sustainable cities and communities (SDG 11). The University of Trás-os-Montes e Alto Douro focuses its sustainability needs on zero hunger (SDG 2), clean water and sanitation (SDG 6), and life on land (SDG 15). NOVA University of Lisbon intends to present itself as sustainable in the areas of gender equality

Table 8 Key Statistics of Portuguese Higher Education Institutions in THE-WU

Rank	Name of HEI	No. of FTE students[1]	No. of students per staff	International students (%)	Female:Male ratio	Overall
351–400	Catholic University of Portugal	11,233	22.8	21	59:41	44.1–46.0
401–500	NOVA University of Lisbon	20,396	17.9	21	51:49	40.9–44.0
601–800	University of Beira Interior	7,417	16.2	20	52:48	32.0–37.9
601–800	University of Coimbra	21,845	18.4	20	57:43	32.0–37.9
601–800	ISCTE-University Institute of Lisbon	9,118	23.0	15	51:49	32.0–37.9
801–1000	University of Algarve	8,264	13.7	21	57:43	27.2–31.9
801–1000	University of Aveiro	12,068	14.8	10	53:47	27.2–31.9
801–1000	University of Minho	19,246	19.0	15	55:45	27.2–31.9
801–1000	University of Trás-os-Montes and Alto Douro	6,687	11.5	6	57:43	27.2–31.9
Reporter	Polytechnic Institute of Setúbal	7,346	16.8	7	44:56	N/a

Source Made by the authors, based on information obtained in https://www.timeshighereducation.com/world-university-rankings/2022/

(SDG 5), industry, innovation, and infrastructure (SDG 9), and peace, justice, and strong institutions (SDG 16). The only difference between the University of Algarve and NOVA University of Lisbon is to focus on affordable and clean energy (SDG 7) instead of industry, innovation, and infrastructure (SDG 9). The University of Minho, in relation to NOVA University of Lisbon, instead of focusing on peace, justice, and strong institutions (SDG 16), focuses on quality education (SDG 4). The University of Aveiro is sustainable in no poverty (SDG 1), sustainable cities and communities (SDG 11), and climate action (SDG 13). Catholic University of Portugal shows to be sustainable in the following areas: good health and well-being (SDG 3), sustainable cities and communities (SDG 11), and peace, justice, and strong institutions (SDG 16). University of Beira Interior only differs in relation to Catholic University of

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[1] FTE student: At the tertiary level, an individual is considered full-time if he or she is taking a course load or educational program considered requiring at least 75 per cent of a full-time commitment of time and resources. Additionally, it is expected that the student will remain in the program for the entire year (Education at a Glance, OECD, Paris, 2002, Glossary).

Portugal in SDG 16 since it shows to be sustainable in SDG 12 regarding responsible consumption and production. ISCTE-University Institute of Lisbon and Polytechnic Institute of Setúbal show to be more sustainable in quality education (SDG 4) and gender equality (SDG 5), differing in SDG 10 reduced inequalities and in SDG 3 good health and well-being, respectively.

Having presented the THE-WU and THE-IR rankings, the results and the analysis of the Portuguese HEIs in these rankings, are going to be discuss in the next section.

5.2 Discussion

It is through accreditation, control, and quality assurance processes, in addition to the certification that an educational institution presents acceptable standards, that there is a need for the creation of supranational accreditation systems. Among several national structures associated with these processes, the Agency for Assessment and Accreditation of Higher Education (A3ES) emerges in Portugal, by force of the Decree-Law No. 369/2007, of 5 of November, created with the purpose of promoting and ensuring the quality of higher education, as well as monitoring the development of the systems associated to quality assurance. The Agency's mission is to ensure the quality of higher education in Portugal, through the assessment and accreditation of higher education institutions and their study cycles, as well as performing the functions inherent to the insertion of Portugal in the European higher education quality assurance system.

Even though there are more objective and standardized tools for quality assessment, such as ISO 9001:2015, from the perspective of system quality management, the European Foundation for Quality Management (EFQM) or the Common Assessment Framework (CAF), the rankings continue to be widely used by HEIs as a way of presenting themselves and their qualification's quality in international terms. Although they can be criticized in terms of the criteria they present, the evidence required for validation, and the weightings chosen by the editors, the rankings continue to be quite popular among HEIs from the most varied countries, as can be seen by the number of HEIs registered both in THE-WU and in THE-IR.

It is highlighted again that THE-IR is the first ranking worldwide, which values the contribution of HEIs to the SDGs, in an attempt to measure Sustainable Development. However, as stated, it is not absent of criticism.

The analysis indicated discrepancies in the weight distribution and their suitability to the research measures employed, which may jeopardize their alignment with the anticipated contributions to the SDGs. On the other side, the lack of a methodological design that results in a reliable categorization structure increases unfavorable effects including getting inconsistent results, making less wise decisions, and sometimes engaging in opportunism (Bautista-Puig et al., 2022).

The facts presented justify that it is not possible to repeat the final assessment of each SDG and that the final scores and ranking positions should be interpreted under this circumstance. The condition of a minimum data provision to be integrated into

the ranking cannot be an admissible option, since the 2030 Agenda has an integrative and one-size-fits-all nature. Thus, it might be useful to consider increasing the number of mandatory SDGs in order to provide greater stability and consistency in future editions of this Impact Ranking. Another option could be to make it mandatory to submit an application where all 17 SDGs are considered. HEIs would then present the evidence they had and all SDGs would be assessed, making the comparability between institutions congruent in the respective SDGs.

It is difficult to understand how HEIs can be compared and ranked when the SDGs submitted are completely different, with the exception of SDG 17. Another question is how institutions that submit the minimum application can be compared with others that submit an application with more SDGs.

According to Bautista-Puig et al. (2022) each of the four SDGs has been given a weight, but these weights are arbitrary and not formally justified. It is unjustified for SDG17 to have a higher weight in the final score because it is a more general and contentious goal. These arbitrary weights violate Berlin Principle 9 of the Berlin Principles on Ranking Higher Education Institutions, which specifies that make the weights assigned to distinct indicators [if applied] conspicuous and limit changes to them. Other issues raised by the authors refer that given the wide variety of results for the four SDGs taken into consideration, it is unclear how the overall score is determined. Another contention point is introduced by the variety of measures used to assess each SDG. The score for each SDG combines metrics measuring "the sustainability of the university as a whole institution" and indicators measuring "research on topics related to the sustainable development objectives." Furthermore, just because one university conducts research on subjects connected to those objectives does not mean that the researchers there are necessarily aiding in the implementation of the SDGs or doing sustainable work.

Data ranges for a significant number of universities are included in the final scores. While the use of ranges is generally a good idea to reduce the use of inflexible scores and to tolerate margins of data error, using ranges that are too wide can have other unintended consequences. Bautista-Puig et al. (2022) give the example of the THE-IR's 2021 edition that reveals 103 universities with an overall score of 9.2–36.4, which the authors consider that makes the indicated value useless.

With the exception of SDG 17, all the other SDGs include an indicator related to productivity namely Publications, which, according to Iskandaryan (2020), are tailored to each SDG using topic-based surveys in Scopus.

Each SDG (from 1 to 16) includes a productivity indicator (referred to as Publications in Table 1), which is tailored in each SDG by using topic-based queries in Scopus (Iskandaryan, 2020). Although this strategy is topic-sensitive and indicates a significant effort, Armitage et al. (2020) defend that using Scopus queries could spark debate because various query strategies can change the final national rankings. It should be noted that SDG17 includes both this indicator and all publications, despite of the topic, therefore as a result, it can be possible for the same publication to be measured against at least two SDGs (Bautista-Puig et al., 2022). Additionally, these authors refer to the size of the university is not taken into account to normalize this indicator.

Beyond research measures, inconsistencies revealed provide additional insights that reinforce Gadd's work (2022), demonstrating that the absence of a reliable ranking system (methodological design) may have unfavorable effects (unrealistic results, incorrect decision-making, and opportunistic behaviors).

The application to the THE-IR is voluntary-based so all applicants are admitted if they correspond to the minimum required for admission. On the other hand, not all applicants are admitted to the THE-WU since the criteria for admission are based on performance. Therefore, several HEIs might not correspond to the minimum standards.

Gadd (2021) enumerates the four main problems concerning the construction of global academic rankings, on which THE-WU is included, namely:

- the indicators they choose are a weak substitute for the topic they are trying to assess (for instance, using staff-to-student ratios as a substitute for teaching effectiveness).
- they are not evaluating topics that are fundamental of the work produced by all universities (societal impacts are not captured at all).
- they greatly favor the global north in their choice of data sources.
- they frequently conduct poor reputation-based opinion surveys. The worst part is that they use arbitrary weightings to combine the indicators, meaning that even a small change might have a big effect on a university's ranking.

THE-WU among other rankings, including Academic Ranking of World Universities (ARWU) and QS World University Ranking, believe that they can identify the "top" universities (despite using different methods for reaching their different conclusions). However, none of these well-known rankings specifically state what their "best" universities are supposed to be top at, considering the wide global existing variety of higher education institutions. The 'top' universities are, in reality, mostly distinguished by their age, size, richness, English-speaking institution, emphasis on research, and geographic location, especially in the global north (Gadd, 2021).

Considering the universe of Portuguese HEIs, 99, according to information from the Direção-Geral do Ensino Superior,[2] there are really very few those that are present in both rankings.

The challenge to integrate these academic rankings seems to be enormous for Portuguese HEIs. The reduced number of Portuguese institutions in the THE-WU and THE-IR rankings leads to an understanding that it seems to be more of an opportunity than a challenge to present themselves in a competitive way in the international market. When the participation of Portuguese HEIs in both rankings is verified, it is not clear whether or not there was any alignment between the two applications. Considering the data presented by the rankings, the participation of the HEIs in only one of these rankings does not allow us to assess whether the application was presented to the other or whether, if it was, it was not approved.

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[2] Portuguese Higher Education in Numbers: https://www.dges.gov.pt/pt/pagina/ensino-superior-em-numeros?plid=371.

Although the year 2022 was evaluated, the fact is that in the case of THE-IR there is no consistency on the part of HEIs in the presentation of SDGs from one year to another. This fact leads to the fact that in different years the SDGs are different and their position in the ranking may vary radically. As an example, ISCTE-University Institute of Lisbon, which has been presented in this ranking since 2019, and not exactly with the same SDGs (except for SDG 17), appears in 2019 and 2021 in position 201–300, in 2020 in position 301–400 and in 2022 in position 401–600. Upon reflection, the analysis of the positions of HEIs in the rankings should be made taking into account the observations already presented and the criticisms of the various authors.

Although there is a widespread concern about sustainability, the several stakeholders (leaders, faculty, staff, students, and external stakeholders), according to the results obtained in the study by Aleixo et al. (2018) suggest that, although they are aware of the concept of sustainability, they are not familiar with the concept of sustainable higher education institutions. The integration of Portuguese HEIs in Education for Sustainable Development (ESD) varies considerably and some of these institutions are already looking more into the SDGs to develop a Sustainable Development culture (Aleixo et al., 2020). To these authors (2020, p. 348) "Sustainability is a new political agenda, but it is also crucial for all institutions to fulfill their responsibility to promote proactive dynamics between institutions, agents and individuals". This study offers insight into how the SDGs have been implemented in HEIs and emphasizes how urgent curriculum reform is for a sustainable society. The SDGs and the 2030 Agenda provide a framework for HEIs to collaborate on curricula and other Sustainable Development-related projects.

A study carried out by Farinha et al. (2019) showed that universities implemented sustainability through actions that were often not exclusive to a single institution. The authors analyzed one hundred and thirty-nine documents from fourteen universities, concerning the period 2005–2014, for a better understanding of the progress regarding ESD implementation in Portuguese public universities and to find the main commitments and practices. In the period 2004–2015 it could seem that HEIs would not be committed to sustainability, however, the implementation of sustainable actions in public universities was found in the documentation. Nevertheless, results demonstrate that the movement has advanced at the university level, with positive examples and projects at some Portuguese universities, despite the lack of sufficient national combined ESD strategies or policies. Currently, and with greater awareness of the need for greater sustainability at various levels, HEIs have adopted practices and measures leading to greater sustainability regardless of the area (economic, environmental, or social), converging toward an effective contribution to the 2030 Agenda and the SDGs.

These facts could be enhancing factors for the promotion of the HEIs themselves regarding their sustainability, and the admission in a ranking can make the difference at the time of being chosen by a stakeholder (student, employer, etc.). The promotion of HEI may be the reason why they apply for the rankings. Rankings are therefore, an opportunity and also a challenge for HEIs, and the Portuguese HEIs were no exception.

6   Final Considerations

Although independent, the THE-WU and THE-IR rankings should be complementary given the current and general sustainability needs of organizations, and HEIs are no exception. Increasingly, this sustainability factor is something students look for when selecting a higher education institution. Environmental, as well as social and economic issues are more pressing and it is urgent to find a path that leads to a legacy of quality for the following generations, leaving no one behind.

Both rankings are subject to criticism that should be seen in their respective contexts.

Although the rankings have limitations such as those presented in this work, they are an essential tool for HEIs to present themselves and demonstrate some of their characteristics and capacities to attract more and better students and to retain or keep the best talent. Employers, parents, society, and other stakeholders are also increasingly awake and aware of realities such as the planet's sustainability, of which HEIs are part, having an increasingly relevant role in preparing future generations and modernizing and updating current ones.

Universities are much more than what the rankings show, but not participating in them could be harmful to the HEIs since they are the most visible mirror and an advertising medium already quite rooted at a global level. It is through the rankings that the most varied stakeholders (students, employers, entrepreneurs, society in general, among others) seek information about the institutions.

Several Portuguese HEIs already participate in the rankings and what can be seen, especially in the THE-IR, is that the ranking seems more like a promotional and marketing channel than an effective presentation of the sustainability they seem to have. The weights assigned to the defined criteria are not justified, nor is the reason why only 4 SDGs are presented, with SDG 17 being the only mandatory objective common to all HEIs in the ranking. It is also not fully justified how the comparison is made between HEIs that present SDGs that are completely different from each other. The fact that there are scientific publications addressing the topic of the SDGs is counted for the definition of the HEI ranking, and may be counted twice (in SDG 17 and in another specific SDG), biasing the data. On the other hand, the fact that the publication relates to a particular SDG is not in itself a guarantee of any contribution to the SDG in question or to the sustainability of the HEI.

There is no justification for the key statistics of the HEIs presented by THE-WU, which makes it impossible to know for what purposes they are mentioned and the possible influence on the institution's position in the ranking.

From all the analysis carried out, and due to the fact that HEIs are much more than what the rankings reflect, these should be seen within the scope of the very contexts of promotion and not in terms of the quality of the courses and training they offer, the quality of the teaching staff, research practices, technology transfer to society and added value achieved, excellence of research centers, real contribution to sustainable development through student training and development actions for the society in which it is inserted, among others. To assess the quality of higher education and the

respective institutions there are other more consistent and more congruent tools that allow the quality assessment in the various dimensions that define the three pillars of higher education (teaching, research and extension). To measure the true quality of HEIs we can use tools such as the EFQM, ISO 9001:2015 or even the CAF, and institutions such as A3ES in Portugal that will give a real image of what the real institution is and of its valences and activities.

Having said this, we can finally conclude that there are advantages for HEIs to be part of a ranking such as THE-WU or THE-IR if they want to promote themselves and if they consider that the effort invested in the preparation of the application has a return in terms of an increase in the number of students, better teaching staff, retention and attraction of internationally renowned researchers, etc. Consequently, which should always be considered while bearing in mind the limitations they present, the admission in a ranking will be both a challenge and a chance for the promotion of HEIs.

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