PERFORMANCES OF THE BRAZILIAN UNIVERSITIES IN THE "U-MULTIRANK" IN THE PERIOD 2017-2020

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ARTIGO

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ABSTRACT: The present paper makes an evaluation of the performances of the Brazilian Universities in the "U-Multirank", in the range from 2017 to 2020. The "U-Multirank" is a multidimensional academic ranking created in Europe, presenting results since 2014. It gives a new multidimensional approach that has the goal of showing the weakness and strengths of each University, using five Dimensions. In this way, it does not classify Institutions in a single ranking. This model is very important in Brazil nowadays, because it is the model that Capes is using to prepare the new evaluation of the post-graduate system in Brazil. Of course there will be adaptations, but a general study of this ranking is important to give an idea of its future use. Only 20 Brazilian Universities are listed in this ranking in 2020. It is a small number, but it is significant in regional terms, since South America has only 35 Universities listed.

Keywords: Academic rankings, Higher Education Evaluation, Multidimensional rankings, U-Multirank, Education.

DESEMPENHO DAS UNIVERSIDADES BRASILEIRAS NO "U-MULTIRANK" NO PERÍODO 2017-2020

RESUMO: O presente artigo faz uma avaliação do desempenho das universidades brasileiras no "U-Multirank", no período de 2017 a 2020. O "U-Multirank" é um ranking acadêmico multidimensional criado na Europa, apresentando resultados desde 2014. Ele dá uma nova abordagem multidimensional que tem o objetivo de mostrar os pontos fortes e fracos de cada Universidade, usando cinco dimensões. Dessa forma, ele não classifica as Instituições em um único ranking. Esse ranking é muito importante no Brasil hoje, porque é o modelo que a Capes está usando para preparar a nova avaliação da pós-graduação no Brasil. Claro que haverá adaptações, mas um estudo geral deste ranking é importante para dar uma ideia de seu uso futuro. Apenas 20 Universidades brasileiras estão listadas neste ranking em 2020. É um número pequeno, mas é significativo em termos regionais, uma vez que a América do Sul possui apenas 35 Universidades listadas.

Palavras-Chave: Rankings acadêmicos, Avaliação da Educação Superior, Rankings multidimensionais, U-Multirank, Educação.

DESEMPEÑO DE LAS UNIVERSIDADES BRASILEÑAS EN EL "U-MULTIRANK" EN EL PERÍODO 2017-2020

RESÚMEN: El presente trabajo hace una evaluación del desempeño de las Universidades brasileñas en el "U-Multirank", de 2017 a 2020. El "U-Multirank" es un ranking académico multidimensional creado en Europa, presentando resultados desde 2014. Tiene un nuevo enfoque multidimensional que tiene como objetivo mostrar las debilidades y fortalezas de cada Universidad, utilizando cinco Dimensiones. De esta forma, no clasifica las Instituciones en uno solo ranking. Este modelo es muy importante en Brasil hoy en día, porque es el modelo que está utilizando Capes para preparar la nueva evaluación del sistema de posgrado en Brasil. Por supuesto que habrá adaptaciones, pero un estudio general de este ranking es importante para dar una idea de su uso futuro. Solo 20 universidades brasileñas figuran en este ranking en 2020. Es un número pequeño, pero es significativo en términos regionales, ya que América del Sur tiene solo 35 universidades en la lista.

Palabras clave: Rankings académicos, Evaluación de la educación superior, Rankings multidimensionales, U-Multirank, Educación.

INTRODUCTION

Academic international rankings are receiving increasing attention from scholars, students and general public in the last years (ECCLES, 2002; CALDERÓN; FRANÇA; GONÇALVES, 2017; CALDERÓN; FRANÇA, 2018a, 2018b; DILL; SOO, 2005; GANGA-CONTRERAS ET AL., 2020). They appeared first in the beginning of the 21st century. Their results are always reasons for debate, but most of the Academic Institutions in the world tries to get better positions and they usually make loudly divulgations when they get good results.

Those debates give more visibility to these rankings, increasing even more the interest from all sides. There are many researches appearing in the literature in this field in the last two decades, which can be considered now a field of research, like WEBSTER, 2001; VAN RAAN, 2005; LIU; CHENG, 2005; AGUILLO et. al., 2006; MARGINSON; VAN DER WENDE, 2007; BILLAUT; BOUYSSOU; VINKE, 2010; AGUILLO ET. AL., 2010; THÉRY, 2010; SHIN; TOUTKOUSHIAN, 2011; SHIN; TOUTKOUSHIAN; TEICHLER, 2011; BERNHARD, 2012; MOURA; MOURA, 2013; SORZ et. al., 2015; STACK, 2016; HERTING, 2016; GONÇALVES; CALDERÓN, 2017; LLOYD; ORDORIKA; RODRIGUEZ-GÓMES, 2011; DRESCH, 2018; ANDRIOLA; ARAÚJO, 2018; ROTHEN; SANTANA, 2018.

The first ranking to appear was the "Academic Ranking of World Universities (ARWU) (http://www.shanghairanking.com/ARWU2020.html), also known as "Shanghai Ranking", which was created in 2003 (CALDERÓN; FRANÇA, 2018b). It was made to support the Chinese government in selecting Universities to send Chinese students abroad and to compare the level of the top Chinese Universities with the best Universities in the world.

After that, other international rankings appeared. The "Webometrics Ranking of World Universities" (http://www.webometrics.info/en; AGUILLO; ORTEGA; FERNANDEZ, 2008) appeared in 2004, as well as the ranking "THE-QS", which would be divided in "Times Higher Education World University Rankings", known as "THE" (https://www.timeshighereducation.com/world-university-rankings) and "QS World University Rankings", known as "QS" (https://www.topuniversities.com/university-rankings) in 2010. In the sequence several other countries created regional or national rankings (SHIN; TOUTKOUSHIAN, 2011; RIGHETTI, 2015 and 2019).

In the scope of those discussions, a different concept appeared in Europe and a multidimensional ranking was proposed (VAN VUGHT; ZIEGELE, 2012). From this first idea, the "U-Multirank" was created (https://www.umultirank.org/). It measures the performance of Academic Institutions in five Dimensions: (1) Teaching and Learning, (2) Research, (3) Knowledge Transfer, (4) International Orientation and (5) Regional Engagement. Each Dimension is evaluated using several Indicators. Based on that, the user can evaluate the Universities in each Indicator or grouped in families, focusing in the most important aspects for each user.

The larger number of Indicators used by the "U-Multirank" gives a more complete view of the Universities, but generates the problem of lack of data. This is particular true for non-Europeans Universities, in particular for Latin American countries. A large portion of data comes from questionnaires collected from the Universities, and many of them do not report regularly those information. This point will also be analyzed here regarding the Brazilian Universities listed in this ranking.

In South America, this ranking is still not much popular and there are only 35 Universities listed in the version 2020: 3 from Argentina, 20 from Brazil, 6 from Chile, 3 from Colombia, 2 from Ecuador and 1 from Peru. It gives a strong regional leadership to Brazil in this ranking, besides the small number of Brazilian Universities listed in the ranking.

THE "U-MULTIRANK"

The first idea of a multi-dimensional ranking appeared in 2008 (VAN VUGHT; ZIEGELE, 2012). After that, the European Commission decided to develop a multidimensional academic ranking system. After some preliminary tests, the first complete set of results appeared in

May 2014. This ranking was developed and implemented by the European Commission, using a consortium organized by the Centre for Higher Education (CHE), in Germany; the Center for Higher Education Policy Studies (CHEPS) at the University of Twente (Netherlands), the Centre for Science and Technology Studies (CWTS) from Leiden University (Netherlands) and The Foundation for Knowledge and Development (Fundación CYD) (Spain). This project is headed by Dr. Frans van Vught (CHEPS) and Dr. Frank Ziegele (CHE). It is still a recent ranking, but it is increasing in popularity. The 2020 version included 1,788 Universities from 92 countries, which means about 5,000 faculty members and more than 11,400 programmes in 28 subject areas. (https://www.umultirank.org/about/u-multirank/frequently-asked-questions/)

As already explained, "U-Multirank" does not make a general classification of Universities, but classify them only in each specific performance Indicators, which are grouped in five Dimensions. It shows the strengths and weaknesses of each University, in each Indicator and Dimension. The user can elaborate its own ranking, choosing the Dimensions and Indicators that are more important for their needs.

The "U-Multirank" classifies the Universities in five performance groups for each Indicator: A (Very good), B (Good), C (Average), D (Below average) and E (Weak). This reduces accuracy problems by grouping the grades, leaving these problems only to the border lines between the performance groups.

The data used by "U-Multirank" to classify the academic Institutions come from information provided by questionnaires submitted by the Institutions and open source databases, like bibliometric and international patent databases, etc. It also uses surveys answered by approximately 145,000 students. That information can be found at: https://www.umultirank.org/export/sites/default/press-media/documents/IR-2020-questionnaire_display-version.pdf and https://www.umultirank.org/export /sites/default/press-media/documents/UMR_Studifragebogen_2020_english.pdf.

As expected, the information coming from Universities and students are not always available, since some of them do not reply the questionnaires. There is also the problem of low reliability and accuracy in those data. This is a weak point for this ranking, but it is not so crucial, because its goal is not to make a general classification, and the users can benefit from the information available and just neglect the missing ones.

Figure 1 shows the classical graphical view used to express the results given by the "U-Multirank" (https://www.umultirank.org/). The five Dimensions are showed in the circle: Teaching and Learning (green), Research (pink), Knowledge Transfer (blue), International Orientation (orange) and Regional Engagement (purple). Each Dimension is composed by the Indicators that are showed as slices of the circle. For the Dimension Teaching & Learning: 1- Bachelor graduation rate, 2- Masters graduation rate, 3 - Graduating on time (bachelors), 4 - Graduating on time (masters). For the Dimension Research: 5 - External research income, 6 - Research publications (size-normalized), 7 - Art related output, 8 - Citation rate, 9 - Top cited publications, 10 - Interdisciplinary publications, 11 - Post-doc positions. For the Dimension Knowledge Transfer: 12 - Income from private sources, 13 - Co-publications with industrial partners, 14 - Patents awarded (size-normalized), 15 - Industry co-patents, 16 - Spin-offs, 17 - Publications cited in patents, 18 - Income from continuous professional development. For the Dimension International Orientation: 19 - Foreign language bachelor programmes, 20 - Foreign language master programmes, 21 - Student mobility, 22 - International academic staff, 23 - International doctorate degrees, 24 - International joint publications. For the Dimension Regional Engagement: 25 - Bachelor graduates working in the region, 26 - Student internships in the region, 27 - Regional joint publications, 28 - Income from regional sources, 29 - Master graduates working in the region. More information is available in the Indicator book of "U-Multirank" (https://www.umultirank.org/export/sites/default/press-media/documents/Indicator-Book-2020.pdf), including details about the calculations to obtain the grades. It is noted that not all the 36 Indicators used in the 2020 version of the ranking are included in the graphical format. It is missing: Research publications (absolute numbers), Strategic research partnerships, Professional publications, Open Access Publications, Patents awarded (absolute numbers), Graduate companies, Regional Publications with Industrial Partners.
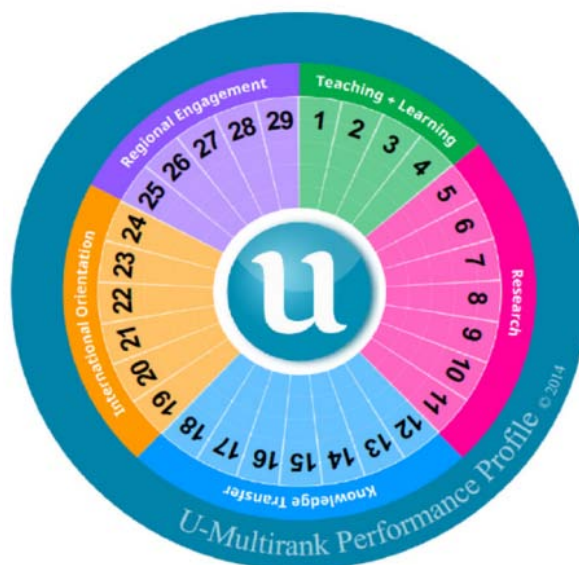
Figure 1 - Classical graphical view used to express the results of the "U-Multirank" (https://www.umultirank.org/).

INDIVIDUAL PERFORMANCES OF THE BRAZILIAN UNIVERSITIES IN 2020 BASED IN THE DIMENSIONS OF THE "U-MULTIRANK"

The next step of the current research is to make an individual study of the performances of the 20 Brazilian Universities listed in the 2020 version of the ranking, using the graphical classical form shown in Fig. 1. The goal is to have a first view regarding the Brazilian performances in 2020, to later complete the study for the period 2017-2020. This is a sequence of the research made by Morandin et al. (2020), which compared to results obtained in the "U-Multirank" with the results given by the Ranking Universitário Folha, in 2020. Figure 2 shows the results of those Universities.

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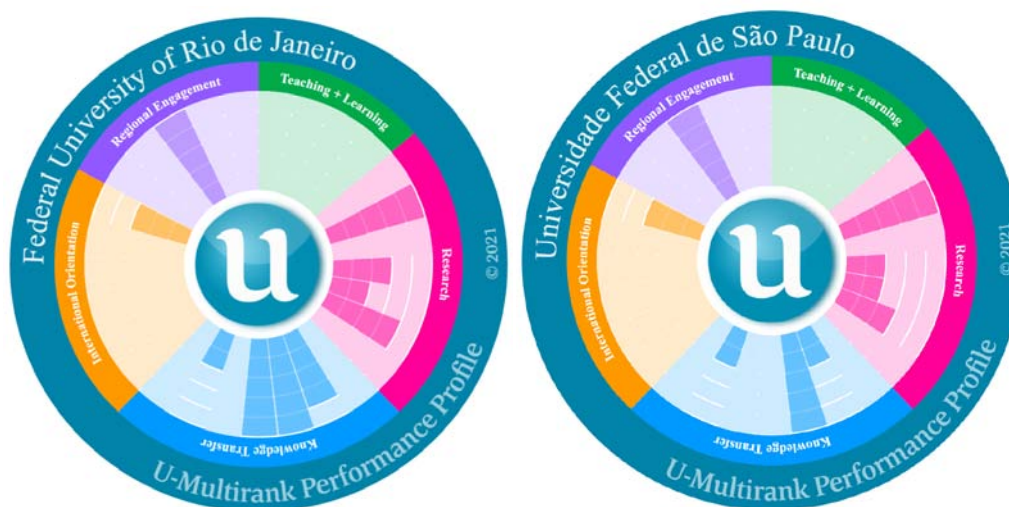
Figure 2 - Results of the 20 Brazilian Universities listed in the 2020 version of the ranking in the classical graphic form (https://www.umultirank.org/).

The Brazilian Academic Institutions listed in the 2020 version of the ranking, as obtained from the site "(https://www.umultirank.org/)", in February 18, 2020 are: Federal University of Rio de Janeiro, Federal University of São Paulo, State University of Maringá, Federal University of São Carlos, Federal University of Rio Grande do Sul, Federal University of Santa Catarina, Federal University of Minas Gerais, Fluminense Federal University, University of Campinas, Pontifical Catholic University of Rio Grande do Sul, Federal University of Ceará, Federal University of Pernambuco, University of

Brasília, Escola Superior de Propaganda e Marketing (ESPM), University of São Paulo, UNESP State University of São Paulo, Federal University of Paraná, Federal University of Viçosa, Rio de Janeiro State University and Federal University of Mato Grosso.

The first observation is the large amount of missing data, which are represented by the slices of the circles that have only light colors, which represents the Indicators with missing data. This is a frequent problem in the "U-Multirank" that must be addressed by the Brazilian Institutions that have the goal of improving positions in this ranking.

Looking first at the Teaching and Learning Dimension (green), it is observed that it is the Dimension with the largest number of missing data. Twelve Institutions do not have any data reported in this Dimension, four Institutions have two, two Institutions have one, one Institution has three (ESPM) and only one Institution (Federal University of Ceará) have all the data available. All data used in this Dimension comes from questionnaires reported by the Institutions, which explains why it has a large number of missing data. It means that, to improve positions in this Dimension, the first step to make is to report data. It is particularly noted that ESPM appeared in 2020 for the first time in this ranking, and it is already the second one in reporting data, which indicates a high interest of the Institution in this ranking. Looking at the performances of the Institutions that have a large number of data, we can see that Federal University of Ceará has good grades, 1 C, 2 B and 1 A. ESPM also has a good performance, with 1 C, 1 B and 1 A.

The next Dimension to be analyzed is Research, which has much more data available compared to Teaching and Learning. The reason is that the Indicators Research publications (size-normalized), Citation rate, Top cited publications and Interdisciplinary publications are obtained from open sources. Only the Indicators External research income, Art related output and Post-doc positions are dependent on reports from the Institutions.

A look at Fig. 2 shows that University of Campinas, Pontifical Catholic University of Rio Grande do Sul and Unesp have data available in six of the seven Indicators, a very good number. In the lower limit side, we see that there is one Institution that has data available in only three Indicators (Rio de Janeiro State University) and the other 16 have at least four Indicators with data available. Regarding the grades, Unesp (3 A, 1 B, 2 D) and University of Campinas (3 A, 1 B, 1 C, 1D) have the best performances in this Dimension. State University of Maringá, Federal University of São Carlos, Federal University of Pernambuco and University of São Paulo are the next ones, with 2 A each.

Considering Knowledge Transfer (blue), all the Institutions have at least three Indicators with data available out of the seven Indicators. University of Campinas is the only one to have data in all the seven Indicators. In this Dimension we have four Indicators coming from open sources: Co-publications with industrial partners, Patents awarded (size-normalized), Industry co-patents and Publications cited in patents. The Indicators Income from continuous professional development, Income from private sources and Spin-offs depend on reports from the Institutions. ESPM is the only one with 3 A, followed by five others with 2 A.

International Orientation (orange) is the fourth Dimension we will look in some detail. It has six Indicators. Only International joint publications comes from open sources. The other five are obtained from the Institution. They are: Foreign language bachelor programmes, Foreign language master programmes, Student mobility, International academic staff and International doctorate degrees. Twelve Institutions have only one Indicator with data available, which is the one based on open sources (International joint publications). It means that there is room for improvements in this Dimension just by reporting data. Four Universities have grades in all the six Indicators, meaning that they are making efforts to report data to get better positions in this ranking. They are: Unesp, University of São Paulo, State University of Campinas and State University of Maringá. There is only one A, given to Federal University of Ceará. The next best grades are B, received by University of São Paulo and University of Campinas, one for each of them.

Focusing now in the Dimension Regional Engagement (purple), we see that it has five Indicators. Only Regional joint publications is obtained from open sources. The others comes from the data given by the Institutions. They are: Bachelor graduates working in the region, Student internships in the region, Income from regional sources and Master graduates working in the region. There is also a large amount of missing data in this Dimension, with sixteen of the twenty Institutions having only

data for the Indicator obtained from open sources (Regional joint publications). It is a result of poor data report. ESPM has the best results, both in terms of data available (four Indicators with data) and performance (3 A and 1 B). The second one is Federal University of Rio Grande do Sul, with 2 A.

MEASURING THE AVAILABILITY OF DATA FOR BRAZILIAN INSTITUTIONS IN THE RANGE 2017-2020

Next, we take a more detailed look to the problem of missing data for Brazilian Institutions in the whole range of time studied (2017-2020). This point is very important, because missing data is one of the main reasons of lower positions in this ranking.

Figure 3 shows the amount of data available (in percentage) of all the 35 Indicators that were used in all the four years studied. They are: 1 - Bachelor graduation rate, 2 - Masters graduation rate, 3 - Graduating on time bachelors, 4 - Graduating on time masters, 5 - Citation rate, 6 - Research publications absolute numbers, 7 - Research publications size-normalized, 8 - External research income, 9 - Art-related output, 10 - Top-cited publications, 11 - Interdisciplinary publications, 12 – Post-doc positions, 13 - Strategic research partnerships, 14 - Professional publications, 15 - Co-publications with industrial partners, 16 - Income from private sources, 17 - Patents awarded absolute numbers, 18 - Patents awarded size-normalized, 19 - Industry co-patents, 20 - Spinoffs, 21 - Publications cited in patents, 22 - Income from continuous professional development, 23 - Graduate companies, 24 - Foreign language bachelor programmes, 25 - Foreign language master programmes, 26 - Student mobility, 27 - International academic staff, 28 - International joint publications, 29 - International doctorate degrees, 30 - Bachelor graduates working in the region, 31 - Master graduates working in the region, 32 - Student internships in the region, 33 - Regional joint publications, 34 - Income from regional sources, 35 - Strategic research partnerships in the region. The Indicators "Graduating on time (long first degree)", "Long first degree graduation rate", "Open Access Publications" and "Regional Publications with Industrial Partners" used in the year 2020 were not used in the other years studied, so they are not included in the present research. There is one line representing every year from 2017 to 2020. 2017 is represented by the blue line; 2018 by the red line; 2019 by the green line and 2020 by the purple line.

It is clear that the lines are very similar, with small improvements in some indicators in the years 2019 and 2020, in particular in the first two Indicators (1 - Bachelor graduation rate and 2 - Masters graduation rate) and in the Indicators 24 to 27 (24 - Foreign language bachelor programmes, 25 - Foreign language master programmes, 26 - Student mobility, 27 - International academic staff). It means that the availability of data is increasing, but it is still far from ideal. Note that only 12 indicators, of the 35 possible (34.29 %), have more the 90% of data available in at least one of the years. When studying the performances of the Brazilian Institution, we will concentrate on those 12 Indicators, to have an idea of the performances of those Institutions when the information is reported.
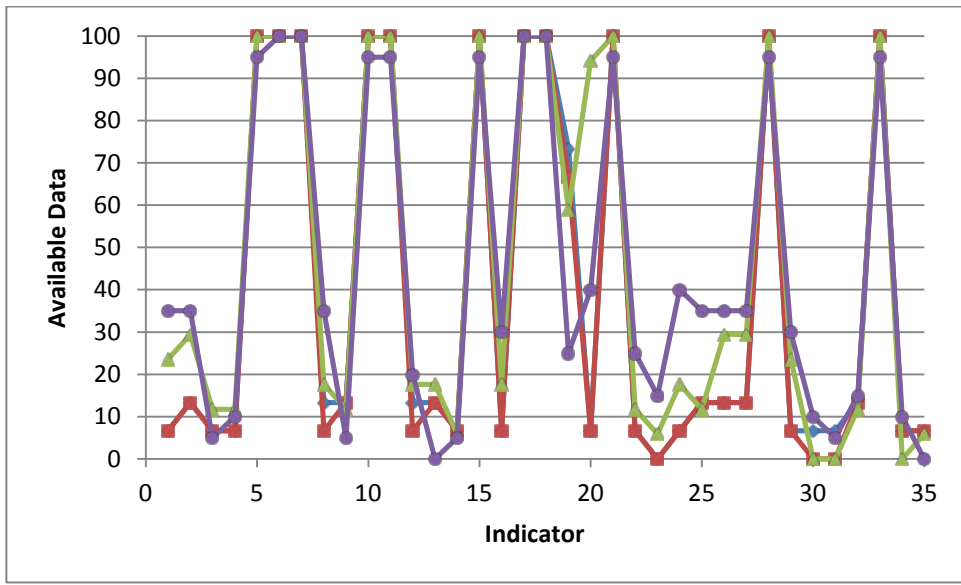
Figure 3 - Percentage of data available for all the Indicators used in the range 2017-2020: 2017 (blue), 2018 (red), 2019 (green) and 2020 (purple).

Next, Fig 4 shows the evolution of the total data available for Brazilian Institutions in the years 2017-2020. It shows that we have reached a value of 44.71% in the years 2019 and 2020, compared to a minimum of 38.48% in 2018. It means stabilization in this number in the last two years, with some improvements compared to previous years, but this value is still not good enough to give good positions for our Universities.
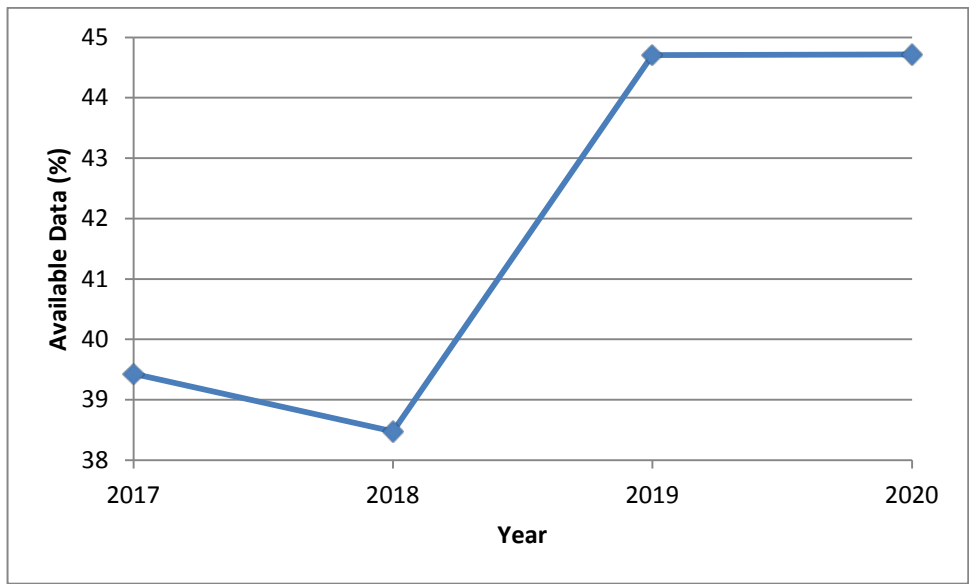
Figure 4 Evolution of the data available for Brazilian Institutions in the years 2017-2020.

To have a better idea of the overall problem of missing data, we observed that, for all 1788 academic Institutions listed in the 2020 version of the ranking, we have 39.84% missing data, 5.70% data that were considered "not applicable" and 54.46% of available data. It means that the Brazilian Institutions are about 10% below the world average, in terms of available data.

Another comparison that can be made is with European countries, since "U-Multiranking" was created in Europe. We can observe that, for the 79 Spanish Educational Institutions evaluated by the "U-Multirank" in the 2020 edition, 86.15% of the data is available. Spain is a good choice for

comparison, because it has a large number of Institutions listed in the ranking in 2020. Therefore, Brazilian Institutions are about 40% below Spanish Institutions.

A more general comparison can be made with a larger number of European Universities. Considering the top 300 best performers in Europe in 2020, in terms of average of the Dimensions, we can see that they have 85.72% of data available, 10.20% of missing data and 4.08% data that were considered as "not applicable". This is of course some kind of upper limit, since it has the best performers in Europe, where this ranking was created. So, Brazilian Institutions are about 40% below the best 300 European Universities.

Therefore, looking at those numbers, we can see that we have a long way to go to reach good values of data available. The good side is that we see that the Brazilian Universities can increase their positions in this ranking just by reporting data more frequently and accurately.

INDIVIDUAL PERFORMANCES OF THE BRAZILIAN UNIVERSITIES BASED IN THE INDICATORS WITH MORE THAN 90% OF DATA REPORTED

Next, we made a study of the performances of the Brazilian Universities that are listed in the four years analyzed in the present research (2017-2020), using only the Indicators with more than 90% of data available. Those indicators are: Citation rate, Research publications (absolute numbers), Research publications (size-normalized), Top-cited publications, Interdisciplinary publications, Co-publications with industrial partners, Patents awarded (absolute numbers), Patents awarded (size-normalized), Spinoffs, Publications cited in patents, International joint publications and Regional joint publications.

The first problem that appears is how to make a general classification of academic Institutions using the "U-Multirank", which was not created for that. Even if it is not its main goal, the "U-Multiranking" prepares general classifications when asked. As an example, when we asked for a general classification of the Brazilian Universities in the 2020 version using only the Indicators that have more than 90% of data reported, it gives the list showed in Table 1.

Table 1 - General classification of the Brazilian Universities in 2020, as given by "U-Multirank", using only Indicators with more than 90% of data available.

	Citation rate	Research publications (absolute numbers)	Research publications (size-normalized)	Top cited publications	Interdisciplinary publications	Co-publications with industrial partners	Patents awarded (absolute numbers)	Patents awarded (size-normalized)	Spin-offs	Publications cited in patents	International joint publications	Regional joint publications
Federal University of Rio de Janeiro	C	B	A	D	B	B	D	A	-	D	C	A
Federal University of São Carlos	D	B	A	D	A	D	D	A	-	D	D	B
University of São Paulo	C	A	A	D	B	D	D	D	A	D	C	C
Federal University of São Paulo	D	B	A	D	C	D	D	A	-	D	C	A
UNESP State University of São Paulo	D	A	A	D	B	D	D	D	A	D	D	C
State University of Maringá	D	B	A	D	A	D	E	E	A	D	D	D

Federal University of Rio Grande do Sul	D	B	A	D	B	D	C	A	-	D	C	C
Federal University of Santa Catarina	C	B	A	D	B	D	C	A	-	D	C	D
Federal University of Minas Gerais	D	B	A	D	B	D	C	A	-	D	D	C
Federal University of Pernambuco	D	B	A	D	A	D	D	C	-	D	D	B
Fluminense Federal University	D	B	A	D	B	D	E	E	-	D	D	A
State University of Campinas	C	A	A	D	B	D	D	D	D	D	C	D
Pontifical Catholic University of Rio Grande do Sul	C	C	D	D	C	B	E	E	-	B	C	A
University of Brasília	D	B	A	D	C	D	E	E	-	D	C	B
Federal University of Ceará	D	B	C	D	A	D	E	E	-	D	D	B
Federal University of Paraná	D	B	A	D	B	D	E	E	-	D	D	C
Federal University of Viçosa	D	B	A	D	B	C	E	E	-	D	D	D
Rio de Janeiro State University	D	B	-	D	B	D	E	E	-	D	C	A
Federal University of Mato Grosso	D	B	D	D	A	D	E	E	-	D	D	D
ESPM	x	D	D	x	x	x	E	E	A	x	x	x

To generate this classification, "U-Multirank" makes a criterion similar to an "Olympic Medals Table". The best performers are the Universities that obtained the highest number of grades A. Scores B and below are considered only for tiebreakers. Then, the first one is Federal University of Rio de Janeiro, because it has 3 A, 3 B, 2 C and 3 D, against 3 A, 2 B and 6 D from Federal University of São Carlos, which takes the second place in this form of making a general classification. Other positions use the same rule.

This is a questionable form to make a general classification, because it does not look at the whole performances in all Indicators. Besides that, there is also the problem of giving different weights for each Dimension, because Dimensions with more Indicators will dominate the global evaluation. A good example for debate is the second and third place of this list. Using the criterions defined by "U-Multirank", Federal University of São Carlos is in second place, with 3 A, 2 B and 6 D grades. University of São Paulo is in third place, with 3 A, 1 B, 3 C and 5 D. If we make a "table points", assuming a correspondence like A = 5, B = 4, C = 3, D = 2 and E = 1, University of São Carlos would have 35 points in total, while University of São Paulo would have 38 points, a better general performances. Therefore, the order of positions in the ranking would be inverted and University of São Paulo would be in the second place. Of course there is potential for much more problems of this type.

There are many options to solve this problem. In the present paper we use a different form to classify the Universities as a whole. We make first the averages of Indicators inside each Dimension, and then we calculate a global average using the values coming from each Dimension. It

gives equal weight for each Dimension, independent of the number of Indicators, and do not give almost the same importance to grades B or E, as done by the "U-Multirank".

We will now study the performances of each individual Brazilian Institution in every year. To measure the general performance of each Institution, we will use the average of the Dimensions as a parameter to classify the Universities, instead of the standard "Olympic Medals Table" used by the "U-Multirank" of considering only the number of A. Tables 2 to 5 show the performances of each Brazilian University for every year in the range 2017-2020. It is showed the average of all the Indicators, the average of the Indicators of each Dimension and the average of the Dimensions, using all the data available.

In the year 2017, showed in Table 2, there is a clear advantage of São Paulo State University (UNESP), with an average of 2.81 points, against 1.56 of Federal University of Mato Grosso, the second place. After that all the Universities are below the mark of 1.0 point and they are very close to each other. Note that only 0.32 points separates the third from the last place. Unesp leads in all Dimensions, but two Dimensions deserves to be mentioned: "Teaching and Learning", with 3.25 points in a Dimension where only Unesp and Federal University of Mato Grosso (2.00 points) have reported data; and "Regional Engagement", where Unesp reached a very high score of 4.00, against 1.17 of the second place, also the Federal University of Mato Grosso. The reasons for those results needs to be better studied, but it is important to remember that Unesp increased very much the number of campus in the last decades by absorbing smaller private academic Institutions in many cities in São Paulo state.

Table 2 - Performances of Brazilian Universities in 2017

University	Average of Indicators	Teaching and Learning	Research	Knowledge Transfer	International Orientation	Regional Engagement	Average of Dimensions
São Paulo State University	2.74	3.25	3.10	1.89	1.83	4.00	2.81
Federal University of Mato Grosso	1.62	2.00	2.70	0.75	1.17	1.17	1.56
Federal University of Rio de Janeiro	1.14	0.00	1.70	1.67	0.50	0.83	0.94
Federal University of São Paulo	1.11	0.00	1.60	1.78	0.33	0.83	0.91
University of São Paulo	1.09	0.00	1.80	1.44	0.50	0.67	0.88
State University of Campinas	1.06	0.00	1.80	1.67	0.33	0.33	0.83
Federal University of Minas Gerais	1.03	0.00	1.60	1.67	0.33	0.50	0.82
Federal University of Santa Catarina	1.03	0.00	1.70	1.67	0.33	0.33	0.81
Federal University of Rio Grande do Sul	1.00	0.00	1.60	1.56	0.33	0.50	0.80
Federal University of São Carlos - UFSCAR	0.91	0.00	1.60	1.11	0.33	0.67	0.74
Federal University of Pernambuco	0.89	0.00	1.60	1.00	0.33	0.67	0.72
University of Brasília - UNB	0.86	0.00	1.40	1.00	0.50	0.67	0.71
Fluminense Federal University	0.82	0.00	1.40	0.88	0.33	0.83	0.69
Federal University of Ceará - UFC	0.79	0.00	1.50	0.75	0.33	0.67	0.65
Federal University of Paraná	0.76	0.00	1.40	0.88	0.33	0.50	0.62

In the year 2018, showed in Table 3, there is again a clear advantage of São Paulo State University (UNESP), although its score has decreased from 2.81 points in 2017 to 2.49 points in 2018. It still has a good advantage over the second place, again Federal University of Mato Grosso, which has an average of Dimensions of 1.57 points, just 0.01 ahead of its result in 2017. Once again, after the two first places, all the Universities are below the mark of 1.0 point and they are very close to each other,

with only 0.29 points of difference between the third and the last position. Unesp leads again in all Dimensions, with emphasis in the same two Dimensions: "Teaching and Learning", again with 3.25 points in a Dimension where only Unesp and Federal University of Mato Grosso (2.00 points) have reported data, as happened in 2017; and "Regional Engagement", where Unesp had a large decrease, from 4.00 in 2017 to 2.50 in 2018, while Federal University of Mato Grosso increased from 1.17 to 1.33. This is the main factor of the reduction in the difference between the top two Brazilian Universities.

Table 3 - Performances of Brazilian Universities in 2018

University	Average of Indicators	Teaching and Learning	Research	Knowledge Transfer	International Orientation	Regional Engagement	Average of Dimensions
São Paulo State University	2.46	3.25	3.00	1.89	1.83	2.50	2.49
Federal University of Mato Grosso	1.62	2.00	2.60	0.75	1.17	1.33	1.57
State University of Campinas	1.11	0.00	1.80	1.67	0.50	0.50	0.89
Federal University of São Paulo	1.09	0.00	1.60	1.67	0.33	0.83	0.89
Federal University of Rio Grande do Sul	1.09	0.00	1.70	1.56	0.33	0.83	0.88
Federal University of Minas Gerais	1.06	0.00	1.60	1.44	0.50	0.83	0.88
Federal University of Santa Catarina	1.09	0.00	1.70	1.67	0.50	0.50	0.87
University of São Paulo	1.06	0.00	1.90	1.22	0.50	0.67	0.86
Federal University of São Carlos - UFSCAR	0.94	0.00	1.70	1.11	0.33	0.67	0.76
Federal University of Pernambuco	0.91	0.00	1.60	1.00	0.33	0.83	0.75
Federal University of Rio de Janeiro	0.89	0.00	1.30	1.56	0.50	0.17	0.70
Federal University of Ceará - UFC	0.82	0.00	1.50	0.75	0.33	0.83	0.68
University of Brasília - UNB	0.82	0.00	1.50	0.75	0.50	0.67	0.68
Federal University of Paraná	0.79	0.00	1.50	0.75	0.33	0.67	0.65
Fluminense Federal University	0.74	0.00	1.40	0.75	0.33	0.50	0.60

In the year 2019, showed in Table 4, we notice an increase in the data reported, in particular in the "Teaching and Learning" Dimension. We have now five Institutions with data available in this Dimension, not only two. All those five Universities have average grades above 1.00 points now. This fact also changes the order of the top performers. UNESP São Paulo State University is still the first, but know it has an average of 2.42 points, a decrease of 0.07 with respect to 2018. The second place is now State University of Campinas, with an average of 2.05 points, just 0.01 points ahead of the third place, Federal University of Ceará. University of São Paulo takes fourth place, with 1.85 points. Federal University of Mato Grosso decreased its position to fifth place, now with 1.27 points, 0.30 points below its results in 2018. Federal University of São Paulo, with 1.04 points, completes the list of Brazilian Universities above 1.00 points, in sixth place.

Unesp no longer leads in all Dimensions. It leads alone only in "Regional Engagement" and shares the first place with State University of Campinas in "Teaching and Learning". Besides this shared first place with Unesp, State University of Campinas also leads in "Research" and "Knowledge Transfer". "International Orientation" is leaded by Federal University of Ceará.

So, the more emphasis the Brazilian Universities are given in reporting data, the more diverse are the results among them, and there is no more a concentration of first places in the different Dimensions in only one University.

Table 4 - Performances of Brazilian Universities in 2019

University	Average of Indicators	Teaching and Learning	Research	Knowledge Transfer	International Orientation	Regional Engagement	Average of Dimensions
UNESP - São Paulo State University	2.34	3.50	2.60	2.00	1.83	2.17	2.42
State University of Campinas	2.26	2.00	2.80	3.44	1.67	0.33	2.05
Federal University of Ceará - UFC	1.88	3.50	1.80	1.38	2.00	1.50	2.04
University of São Paulo	1.97	2.00	2.70	2.22	1.83	0.50	1.85
Federal University of Mato Grosso	1.35	1.50	2.20	1.00	1.33	0.33	1.27
Federal University of São Paulo	1.29	0.00	1.70	2.33	0.33	0.83	1.04
Federal University of Rio Grande do Sul	1.11	0.00	1.40	2.11	0.50	0.50	0.90
Federal University of Santa Catarina	1.11	0.00	1.60	2.00	0.50	0.33	0.89
Federal University of Minas Gerais	1.09	0.00	1.50	2.00	0.33	0.50	0.87
Federal University of São Carlos - UFSCAR	1.00	0.00	1.40	1.67	0.33	0.67	0.81
Federal	0.97	0.00	1.50	1.33	0.50	0.67	0.80

University	Average of Indicators	Teaching and Learning	Research	Knowledge Transfer	International Orientation	Regional Engagement	Average of Dimensions
University of Pernambuco							
Fluminense Federal University	0.94	0.00	1.70	1.00	0.33	0.83	0.77
Rio de Janeiro State University	0.88	0.00	1.60	0.75	0.50	0.83	0.74
University of Brasília - UNB	0.85	0.00	1.30	1.13	0.50	0.67	0.72
Federal University of Rio de Janeiro	0.89	0.00	1.20	1.67	0.50	0.17	0.71
Federal University of Paraná	0.82	0.00	1.30	1.25	0.33	0.50	0.68
Federal University of Viçosa	0.76	0.00	1.20	1.25	0.33	0.33	0.62

In the year 2020, showed in Table 5, we notice the continuation of the increase in the data reported, in particular in the "Teaching and Learning" Dimension, which have now eight Institutions with data available. It increased also the number of Brazilian Universities having average grades above 1.00 points, which now reaches the number eight.

It is also observed the appearance of three Institutions that were not listed in the previous years: ESPM (Escola Superior de Propaganda e Marketing), Pontifical Catholic University of Rio Grande do Sul and State University of Maringá. All of them are well positioned in the ranking, with ESPM taking the first place, Pontifical Catholic University of Rio Grande do Sul sixth and State University of Maringá the seventh position. It is a result of large efforts of those Institution in reporting data to "U-Multirank". ESPM is not an University, but a much smaller Academic Institution, which means that deeper studies needs to be done to understating the effects of the size of the Institution in the position it takes in the ranking.

Just after ESPM, that has 2.82 points as an average for the Dimensions; the second place again belongs to State University of Campinas, with 2.05 points, the same score received in 2019. It is now the leader among the largest Brazilian Universities. The third place belongs again to Federal University of Ceará, just 0.02 points behind State University of Campinas. Crossing the line of 2.00 points, we have University of São Paulo in fourth place, with an average score of 1.85. UNESP São Paulo State University dropped to fifth place, due to the increase of the grades of the other Institutions and its own losses, reaching now an average grade of 1.76, a large drop of 0.66 points compared to 2019.

Completing the group of Institutions with averages above 1.00 points, we have Pontifical Catholic University of Rio Grande do Sul, with 1.75 points; State University of Maringá, with 1.73 points and Federal University of Rio de Janeiro, with 1.03 points.

The new entrant ESPM leads the Dimensions Knowledge Transfer and Regional Engagement, while University of Campinas leads again in Research and shares the leadership with University of São Paulo in International Orientation. Teaching and Learning is now leaded by Federal University of Ceará.

Table 5 - Performances of Brazilian Universities in 2020

University	Average of Indicators	Teaching and Learning	Research	Knowledge Transfer	International Orientation	Regional Engagement	Average of Dimensions
ESPM	2.81	2.75	2.29	3.67	1.60	3.80	2.82
University of Campinas	2.20	2.00	2.90	2.67	2.33	0.33	2.05

Federal University of Ceará - UFC	1.85	3.75	1.90	1.00	2.00	1.50	2.03
University of São Paulo	1.94	1.75	2.40	2.25	2.33	0.50	1.85
UNESP - São Paulo State University	2.00	0.75	2.80	2.75	2.00	0.50	1.76
Pontifical Catholic University of Rio Grande do Sul	1.88	1.00	2.10	2.50	1.50	1.67	1.75
State University of Maringá	1.76	1.50	2.00	1.63	1.67	1.83	1.73
Federal University of Rio de Janeiro	1.26	0.00	1.80	2.00	0.50	0.83	1.03
Federal University of Mato Grosso	0.97	1.50	1.50	0.75	0.67	0.33	0.95
Federal University of Rio Grande do Sul	1.14	0.00	1.70	1.89	0.50	0.50	0.92
Universidade Federal de Santa Catarina	1.14	0.00	1.80	1.89	0.50	0.33	0.90
Federal University of Minas Gerais	1.09	0.00	1.70	1.78	0.33	0.50	0.86
Universidade Federal de São Paulo	1.03	0.00	1.60	1.38	0.50	0.83	0.86
Federal University of São Carlos - UFSCAR	1.03	0.00	1.80	1.38	0.33	0.67	0.84
Federal University of Pernambuco	0.97	0.00	1.80	1.13	0.33	0.67	0.79
Universidade Federal Fluminense - UFF	0.88	0.00	1.70	0.75	0.33	0.83	0.72
University of Brasília - UNB	0.85	0.00	1.60	0.75	0.50	0.67	0.70
Federal University of Paraná	0.82	0.00	1.70	0.75	0.33	0.50	0.66
Rio de Janeiro State University	0.76	0.00	1.20	0.75	0.50	0.83	0.66
Federal University of Viçosa	0.82	0.00	1.70	0.88	0.33	0.33	0.65

CONCLUSIONS

The present study made an evaluation of the performances of the Brazilian Universities in the "U-Multirank", in the range from 2017 to 2020. "U-Multirank" is a multidimensional academic ranking that is very important in Brazil nowadays, because it is the inspiration of the new method to be used to evaluate the post-graduate system in Brazil, by Capes.

It was observed that this ranking is not very popular in Brazil, with only 20 Brazilian Institutions listed in this ranking. The same is true for South America, which has only 35 Universities listed. Efforts should be done to improve those reports, since this ranking is increasing in popularity in the world.

Another important aspect of the ranking is that it does not have any Indicator based in "reputation" surveys, like other popular rankings, as "QS" and "THE", therefore its results are all based in very objective Indicators. A negative point is that there is a large number of Indicators that are based on questionnaires that must be sent by the Institutions, and many of them do not make regular reports. Therefore, lack of data is a common problem in this ranking.

Brazilian Institutions increased the percentages of data available from a minimum of 38.48% in 2018 to 44.71% in the years 2019 and 2020. It is an increase, but the numbers are still below the world average of 54.46% in 2020, the average of the Spanish Institutions (86.15%) and the average of the best 300 performers in Europe (85.72%), both also measured in 2020.

When looking at individual performances, we see that São Paulo State University (UNESP) leaded the ranking in 2017 and 2018, but lost many positions after that. The year 2019 was marked by an increase in data reported and new Brazilian Institutions appearing in this ranking, which shows that this ranking is growing in importance in Brazil. This fact makes the leadership in the dimensions to be more divided among Institutions, so increasing the equilibrium among the best Brazilian performers. 2020 confirmed this tendency.

Of course this is just a first study, but those aspects are important and deserve to be better studied.

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