

Where is the Macedonian Higher Education in 2025, and How Can It be Improved?

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Received: December 16, 2025 Accepted: February 26, 2026 Published: March 3, 2026

doi: 10.5296/ire.v14i1.23607

URL: <https://doi.org/10.5296/ire.v14i1.23607>

Abstract

This research focuses on the positioning of the Macedonian higher education in 2025 and its performance in a regional, Balkan context. The research draws from the overall problem of systemic decline in the Macedonian higher education subsector, as evidenced in the most obvious way by the absence of any state or private-not-for-profit Macedonian university in any of the high-profile international university rankings.

Therefore, the aim was to provide a regional perspective on the Macedonian higher education by constructing the Academic Ranking of Balkan Universities (ARBU) while using citation data from Google Scholar. The research employed a quantitative approach to determine how to evaluate the performance of the 28 Macedonian higher education institutions by benchmarking them with 151 public higher education institutions in the region, documenting how the universities in the region performed across academic fields and disciplines, and identifying the output of the top national researchers.

The ARBU findings showed that the Macedonian higher education is lagging in regional performance, with the largest Macedonian university - Ss. Cyril and Methodius - participating in a steadily pragmatic manner. This suggests that its role is more focused on maintaining stability rather than pursuing rapid progress or transformation. There was also no regional input with a mention of the Macedonian scholars in the top performance tier.

In summary, the research indicates that despite the current discontent, the Republic of North

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Macedonia is still acknowledged as having viable quality of higher education in the region but the system is beset with difficulty in research capacity, internationalization, and institutional governance. Without deliberate reform to these processes, Macedonian higher education will, literally, be uncompetitive in the region and further by 2025.

Keywords: Higher Education, University Rankings, Academic Ranking of Balkan Universities (ARBU), North Macedonia, Research Performance, Balkan Universities

1. Introduction – Theoretical Background of Education Rankings

The role of higher education in national development is increasingly gaining prominence in the 21st century as universities are much more than simply places of teaching and research, but an essential component of wider innovation, competitiveness, and societal development. In this regard, university rankings have become one of the most prominent and influential mechanisms for evaluating and comparing performance within national and regional systems. These rankings, as such powerful mechanisms, do more than describe: they impact student mobility, academic collaboration, institutional strategy, and public policy (Hazelkorn, 2015; Marginson, 2022).

The QS World University Rankings, the Times Higher Education (THE) World University Rankings, and the Academic Ranking of World Universities (ARWU) of Shanghai Jiao Tong University are three of the best-known international systems. Together they are sometimes called the “Big Three”, and these systems rank universities using comparative factors relating to indicators such as output and citations related to research, reputation, teaching, and internationalization (QS Quacquarelli Symonds, 2024; Times Higher Education, 2024; Shanghai Ranking Consultancy, 2024). Although the rankings of the Big Three are instrumental in the global discussions on higher education, their operationalization reflects the interests of large, research-intensive universities in Western or resource-rich systems and thus they have limited compatibility for smaller or transitioning economies.

Therefore, by using a comparative analysis of the “Big Three” ranking and the simplified framework of ARBU (Bojadziev, 2020; Bojadjiev et al., 2023), this paper attempts to answer the most central question: Where will the Macedonian higher education be in 2025, and how can it be improved?

2. Literature Review

The debate over the quality and global positioning of higher education institutions has intensified with the proliferation of ranking systems. Traditional global rankings such as QS, Times Higher Education (THE), and the Academic Ranking of World Universities (ARWU) dominate the discourse; yet, they often underrepresent smaller academic systems, such as those in the Balkans (QS Quacquarelli Symonds, 2024; Times Higher Education, 2024; Shanghai Ranking Consultancy, 2024). In this context, Bojadziev (2020) proposed the Academic

Ranking of Balkan Universities (ARBU), an initiative designed to capture regional realities more accurately by relying primarily on bibliometric data sourced from Google Scholar.

The advantages of using Google Scholar as a data source are explored in detail by Bojadjiev, Krlju, Pavlova, and Mileva (2024), who argue that its accessibility, wide coverage, and citation accuracy make it a valuable alternative to traditional bibliometric databases such as Scopus or Web of Science. Unlike subscription-based platforms, Google Scholar democratizes access, enabling institutions in developing academic environments to gain visibility and recognition. However, while its comprehensiveness supports broader inclusivity, challenges remain in standardization and potential duplication of records (Beel & Gipp, 2009; Howland et al., 2009).

Building on these foundations, Bojadjiev, Mileva, Pavlova, and Krlju-Handjiski (2023) present ARBU as a pragmatic and regionally sensitive ranking system. They argue that global metrics emphasizing Nobel Prizes, endowment size, or reputation surveys inadequately capture the realities of Balkan universities. ARBU's methodology, which measures total citations and citations per professor, provides a transparent and quantifiable mechanism for regional comparison. Recent results show, however, that North Macedonia's flagship institution, Ss. Cyril and Methodius University in Skopje, continues to fall behind regional counterparts, raising concerns about systemic stagnation and research inefficiency.

Taken together, these studies highlight the importance of contextualized rankings. While Google Scholar offers methodological inclusivity, and ARBU introduces a tailored framework for Balkan universities, both approaches underscore the urgency of reform in the Macedonian higher education.

2.1 Assessing Quality in Higher Education (and Who Does It)

The quality of higher education is generally assessed across three fundamental dimensions:

1. **Research output and impact,**
2. **Teaching and learning performance,**
3. **Institutional mission and engagement with society and industry,** including patents and other forms of knowledge transfer.

Among the most prominent international ranking systems are the **QS World University Rankings**, the **Times Higher Education (THE) World University Rankings**, and the **Academic Ranking of World Universities (ARWU)** of Shanghai Jiao Tong University (QS Quacquarelli Symonds, 2024; Times Higher Education, 2024; Shanghai Ranking Consultancy, 2024).

In this context, it is important to note that the first author is a creator of a newly developed ranking system, called the **Academic Ranking of Balkan Universities (ARBU)**, with its methodology being first presented in his study "*The Advantages of Google Scholar Rankings*" (Bojadjiev, 2020).

Unlike the so-called "Big Three" rankings, **ARBU relies exclusively on the research dimension**. Since research output is widely recognized as the most critical determinant of

institutional quality, this approach is both legitimate and methodologically sound. Consequently, ARBU will serve as the principal source of analysis in this paper.

2.2 The Position of the Macedonian Higher Education According to the “Big Three”

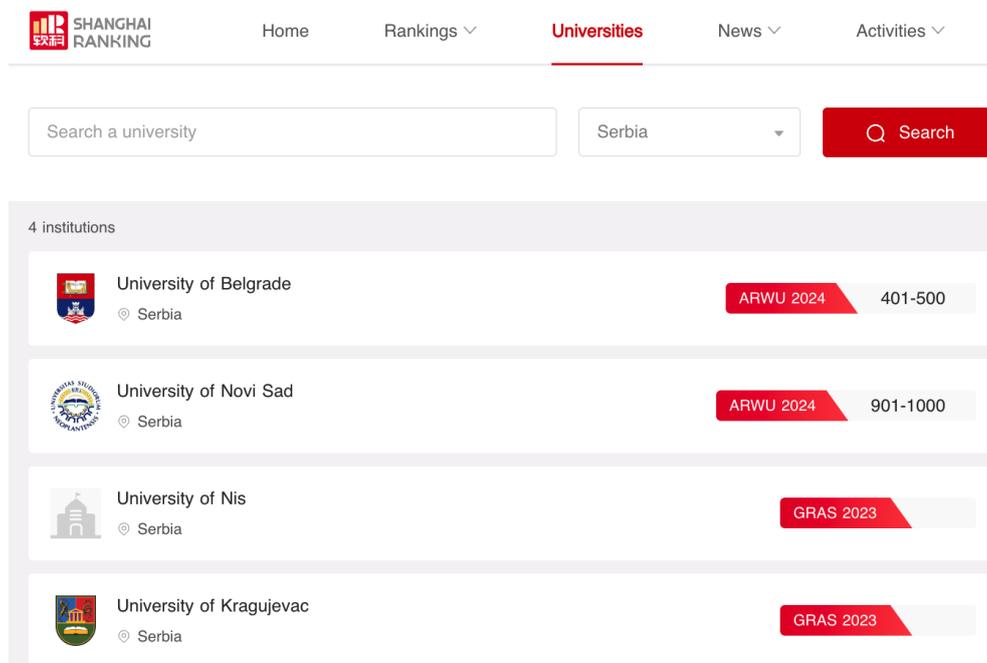
Higher education in the Republic of North Macedonia is currently in **systemic decline**. The country’s flagship institution, **Ss. Cyril and Methodius University in Skopje (UKIM)**, is now outperformed by universities that were once considered peripheral, such as **Kragujevac, Niš, Osijek, and Split**.

The faster this reality is acknowledged; the sooner policymakers and stakeholders can undertake **meaningful reforms** to address the systemic challenges.

According to the **ARWU ranking** published by Shanghai Jiao Tong University, only **three universities from the former Yugoslavia** appear among the world’s top 1,000 institutions: the **University of Belgrade, the University of Zagreb, and the University of Ljubljana** (Shanghai Ranking Consultancy, 2024). In other global rankings, a total of ten universities from the former Yugoslavia are represented, but **none from North Macedonia**.

Furthermore, universities such as **Novi Sad** and **Niš** consistently appear in the **Global Ranking of Academic Subjects (GRAS)**. This indicates that at least in certain disciplines, these universities maintain a global top -1,000 standing (Shanghai Ranking Consultancy, 2024b).

Figure 1: Results of the Global Ranking of Academic Subjects (GRAS), 2024.ⁱ



Source: Shanghai Ranking Consultancy. (2024b)

From **Croatia**, the universities of **Zagreb, Rijeka, and Split** appear in the international rankings, while from **Slovenia**, the universities of **Ljubljana, Maribor, and Primorska** are represented.

2.3 What is ARBU – Academic Ranking of Balkan Universities?

The **Academic Ranking of Balkan Universities (ARBU)** methodology relies not only on its proprietary system but also integrates data from **Google Scholar rankings**. Further details are presented in the studies “*The Advantages of Google Scholar Rankings*” and “*Understanding University Rankings and the Need for an Academic Ranking of Balkan Universities.*”

The ARBU project began in **2001**, and it was **first** selected for support by the **Fund for Innovation and Technological Development (FITR)**, but ultimately it did not receive the funding, which significantly slowed its implementation. As mentioned before, in order to correct the imbalance, context-sensitive regional ranking structures were devised.

Academic Ranking of Balkan Universities (ARBU) is an instrument for all institutions in the Balkans, including North Macedonia, Serbia, Croatia, Slovenia, Bosnia and Herzegovina, Albania, Montenegro, and Kosovo. Whereas the “Big Three” take a multidimensional approach, ARBU is rooted in a citations-only methodology, based on Google Scholar, which is seen as most responsive to research visibility and impact (Bojadziev, 2020; Bojadjiev et al., 2023). This citation-data-only approach also allows ARBU to be open and comparable in contexts where bibliometric data is less well-represented in both Dutch and global contexts, as well as a credible method for evaluating research performance in developing academic systems.

ARBU has a significant relevance for North Macedonia. The absence of the country's universities from major world rankings means their current standing can only realistically be assessed based on regional comparisons.

Therefore, by using ARBU to situate the Macedonian higher education, it is possible to assess:

- a) the standing it expects to achieve in 2025, and
- b) the systemic barriers and opportunities for reform.

However, it is also important to acknowledge that university rankings, whether global or regional, represent a limited view of a university. They prioritize research output and productivity but marginalize quality of teaching, employability of graduates, and contributions to the wider society (Hazelkorn, 2015; Salmi, 2009). However, as already noted, rankings are an important evaluative lens, which reflect institutional performance and provide a catalyst for a systemic policy reform.

Therefore, this paper establishes the premise that the rankings are both reflections and drivers. By using comparative analysis with the “Big Three” ranking and the simplified framework of ARBU, it attempts to answer the most central question: Where is Macedonian higher education in 2025?

3. Methodology

3.1 Data Sources

The primary data source for this study is **Google Scholar**, which provides comprehensive coverage of academic publications and citations. Google Scholar was selected because it captures a wider range of regional research output than databases such as Scopus or Web of Science, which often underrepresent smaller or emerging academic systems. Data from Google Scholar were integrated into the **Academic Ranking of Balkan Universities (ARBU)**, a ranking system specifically designed for evaluating universities in the Balkan region (Bojadziev, 2020). Additional reference points were drawn from the leading international rankings—**QS World University Rankings**, **Times Higher Education (THE) World University Rankings**, and the **Academic Ranking of World Universities (ARWU)**—primarily for comparative purposes (QS Quacquarelli Symonds, 2024; Times Higher Education, 2024; Shanghai Ranking Consultancy, 2024).

The ARBU methodology evaluates three key indicators:

1. **Total number of professors**, serving as a baseline measure of institutional size,
2. **Total citations**, reflecting the overall impact of research output,
3. **Citations per professor**, a normalized indicator used to measure research efficiency and productivity.

By combining absolute and relative measures, the methodology ensures that both scale (total impact) and efficiency (impact per staff member) are captured in the analysis.

3.2 Analytical Approach

The analysis followed a multi-step procedure:

1. **Regional benchmarking** – Universities from seven Balkan countries (Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Albania, Kosovo, and North Macedonia) were evaluated to determine their relative standing in terms of research output.
2. **National ranking** – Macedonian universities were ranked internally according to ARBU indicators, enabling identification of national leaders and lagging institutions.
3. **Disciplinary breakdown** – Data were disaggregated by academic fields (Medical Sciences, Natural Sciences, Engineering, Agriculture, Humanities, Social Sciences, and Economics/Business) to highlight sectoral strengths and weaknesses.
4. **Individual researcher evaluation** – The top 25 Macedonian scholars were ranked based on citation counts and field contributions, and their position was compared with leading researchers across the Balkan region.

3.3 Limitations

While the exclusive use of bibliometric indicators enhances **objectivity, transparency, and replicability**, it also introduces limitations. The ARBU model does not account for teaching

quality, student satisfaction, graduate employability, or broader societal engagement, which are essential dimensions of university performance. Furthermore, citation practices vary by discipline, which may advantage fields with higher publication and citation frequencies (e.g., Medical Sciences, Engineering) over others. Despite these limitations, the methodology provides a **credible, quantifiable, and comparable measure** of institutional research performance, offering a reliable foundation for policy reform and institutional improvement.

4. Results

4.1 Regional Positioning – ARBU 2025 Results

As of **30 June 2025**, ARBU has evaluated **151 universities** from **Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Albania, Kosovo, and North Macedonia**.

The findings clearly show that the **Macedonian higher education institutions lag in scientific output**.

Namely, according to ARBU, the **University “Ss. Cyril and Methodius” in Skopje (UKIM)**, which was ranked **11th in the region in 2024**, has now fallen down, taking the **12th place in the region in 2025**.

Figure 2. **Official ranking of the University “Ss. Cyril and Methodius” in Skopje (UKIM) in 2024 according to ARBU**



HOME

1	University of Zagreb - Croatia		6336	4292348	677.45
2	University of Belgrade - Serbia		2951	2129532	721.63
3	University of Ljubljana		1217	1840811	1512.58
4	University of Split - Croatia		1128	1575050	1396.32
5	Jožef Stefan International Postgraduate School		394	1043837	2649.33
6	University of Rijeka - Croatia		1257	609800	485.12
7	University of Maribor		504	554508	1100.21
8	University of Novi Sad		1030	485102	470.97
9	University of Sarajevo		1953	435335	222.91
10	University of Osijek - Croatia		1064	410751	386.04
11	Ss. Cyril and Methodius University - Skopje		968	341852	353.15
12	University of Niš		742	330685	445.67
13	University of Kragujevac		313	329293	1052.05

What is particularly concerning is that **ahead of UKIM** are:

- **4 universities from Croatia:** Zagreb, Split, Rijeka, Osijek,
- **3 universities from Serbia:** Belgrade, Novi Sad, Kragujevac,
- **3 universities from Slovenia:** Ljubljana, Maribor, Jožef Stefan International Postgraduate School,
- **1 university from Bosnia and Herzegovina:** Sarajevo.

Compared to 2024, when both Niš and **Kragujevac** were ranked behind UKIM, the situation has now changed - **Kragujevac has advanced and overtaken UKIM.**

Table 1. **UKIM loses the battle with Kragujevac**

University	2024 Citations	2025 Citations
Kragujevac	329,923	398,854
Skopje (UKIM)	341,852	396,854

Top 12 Universities in the Balkans According to ARBU 2025

Table 2. Top 12 Universities by ARBU (2025)

Rank	University	No. of Professors	Total Citations	Citations per Professor
1	University of Zagreb	6,336	4,292,348	677
2	University of Belgrade	2,951	2,129,532	722
3	University of Ljubljana	1,217	1,840,811	1,513
4	University of Split	1,128	1,575,050	1,396
5	Jožef Stefan International Postgraduate School	394	1,043,837	2,649
6	University of Rijeka	1,255	603,941	481
7	University of Maribor	504	554,508	1,100
8	University of Novi Sad	1,030	485,102	470
9	University of Sarajevo	1,953	435,335	222
10	University of Osijek	1,064	410,751	386
11	University of Kragujevac	329	398,854	1,212
12	Ss. Cyril and Methodius University, Skopje (UKIM)	1,112	369,854	213

As the data clearly shows, the universities of **Zagreb, Belgrade, and Ljubljana** are “**leading the race.**”

UKIM not only fails to improve its ranking but is in fact **losing ground** to its regional competitors, reflecting a **systemic lag in scientific output and publication capacity**. Even more troubling, the **University of Kragujevac is almost four times more efficient**, achieving **1,212 citations per professor**, compared to UKIM's significantly lower performance.

The challenge for North Macedonia is that, instead of accelerating, its flagship university – **UKIM** - is **decelerating**. Rather than improving, it is falling further behind. All but three universities recorded double-digit growth in citations. Alarmingly, UKIM is among the exceptions. Even more concerning, the other two are in fact the region's strongest institutions, namely:

- The **University of Zagreb**, which nonetheless holds **first place overall**, and
- The **Jožef Stefan International Postgraduate School**, which is by far the **most efficient research facility** in the region, with **2,649 citations per professor**.

This comparison highlights that **UKIM is not only stagnating but steadily losing ground** to its regional counterparts.ⁱⁱ

Table 3. Growth of citations

Rank	Name of the university	Total Citations 2024	2025	/
1	University of Zagreb	4,292,348	4,619,105	7.61%
2	University of Belgrade	2,129,532	2,490,515	16.95%
3	University of Ljubljana	1,840,811	2,082,950	13.15%
4	University of Split	1,575,050	1,810,012	14.92%
5	Jožef Stefan	1,043,847	1,143,404	9.54%
6	University of Rijeka	603,941	667,801	10.57%
7	University of Maribor	554,508	615,908	11.07%
8	University of Novi Sad	485,102	547,214	12.80%
9	University of Sarajevo	435,335	492,884	13.22%
10	University of Osijek	410,751	470,925	14.65%
11	University Kragujevac	329,923	398,854	20.89%
12	UKIM	341,852	369,854	8.19%

In 2024, the University “Ss. Cyril and Methodius” in Skopje (UKIM) demonstrated a significantly lower citation impact compared to its regional counterparts:

- **12.5 times fewer citations** than the University of Zagreb,
- **6.3 times fewer citations** than the University of Belgrade,
- **5.4 times fewer citations** than the University of Ljubljana.

In 2025, the situation remains virtually unchanged, as shown below.

Table 4. Leading Regional Universities’ number of citations versus UKIM (2024&2025)

City / University	2024	2025
Zagreb	12.56	12.49
Belgrade	6.23	6.73
Ljubljana	5.38	5.63
Sarajevo	1.27	1.33
Skopje (UKIM)	1	1

It is evident that every major university in the former Yugoslavia is outperforming UKIM. Even Sarajevo, with a multiplier of 1.3, surpasses Skopje, while Zagreb leads with nearly 13 times more citations than UKIM.

4.3 ARBU National Ranking of Universities

4.3.1 Macedonian Universities in the ARBU Framework

The table below presents the **national ranking of universities in the Republic of North Macedonia**, as evaluated by **ARBU 2025**. One can see the dominance of UKIM which has more citations than all the other combined.

Table 5. National Rank of Macedonian Universities (ARBU 2025)

National Rank	ARBU Rank	University	No. of Professors	Total Citations	Citations per Professor
1	11	Ss. Cyril and Methodius	968	341,852	353
2	22	University Goce Delcev – Štip	507	109,063	215
3	33	South East European University (SEEU)	167	46,486	278
4	38	University St. Kliment Ohridski – Bitola	261	28,475	109
5	29	University of Tetovo	309	27,786	89
6	60	International Balkan University	111	10,532	95
7	61	University American College Skopje (UACS)	68	9,686	142
8	71	International Vision University	37	5,156	139
9	78	Mother Teresa University	70	4,198	60
10	88	University of Information Science and Technology “St. Paul the Apostle” (UIST)	17	3,168	186
11	113	University Skopje (Ex-UTMS)	9	1,236	137
12	117	European University	3	1,092	364
13	127	AUE FON	11	569	52
14	130	International Slavic University	15	312	21
15	136	Europe Prima – Skopje	1	119	119
16	139	BAS (Business Academy Smilevski)	6	47	8
17	–	Integrated Business Faculty – Skopje	3	18	6
18	146	MIT University – Skopje	3	4	1
19	151	International University of Struga	0	0	0

4.3.2. Efficiency Ranking of Macedonian Universities When measuring efficiency in terms of citations per professor, the ranking order changes significantly.

Table 6. Efficiency of Macedonian Universities (Citations per Professor)

Rank	University	No. of Professors	Total Citations	Rank Coefficient
1	Macedonian Academy of Sciences and Arts	33	49,697	1,506
2	Ss. Cyril and Methodius University – Skopje	1,000	396,854	397
3	South East European University	170	53,739	316
4	European University Skopje	4	1165	291
5	University Goce Delcev Stip	525	124,329	237
6	UIST St. Paul the Apostle	18	3,264	181
7	University American College Skopje	70	11,781	168
8	University of Tourism and Management	10	1397	140
9	Europe Prima University	1	122	122
10	University St. Kliment Ohridski – Bitola	272	32,764	120
11	International Balkan University – Skopje	131	14,017	107
12	University of Tetovo, North Macedonia	316	32,374	102
13	International Vision University	33	3,119	95
14	Mother Teresa University	76	5,155	68
15	AUE FON University	11	603	55
16	International Slavic University	23	503	22

4.3.3 Macedonian Universities' Ranking by Academic Field

The following section outlines how universities in the Republic of North Macedonia perform across different academic fields:

1. Medical Sciences

Rank	University	No. of Professors	Total Citations
1	Ss. Cyril and Methodius University – Skopje	256	175,861
2	University Goce Delcev – Štip	156	51,632
3	South East European University (SEEU)	3	14,506

2. Natural Sciences

Rank	University	No. of Professors	Total Citations
1	Ss. Cyril and Methodius University – Skopje	69	41,188
2	University Goce Delcev – Štip	37	24,405
3	University of Tetovo	27	7,951

3. Humanities and Arts

Rank	University	No. of Professors	Total Citations
1	University Goce Delcev – Štip	103	6,867
2	Ss. Cyril and Methodius University – Skopje	112	5,878
3	University of Tetovo	73	5,379

4. Social Sciences

Rank	University	No. of Professors	Total Citations
1	Ss. Cyril and Methodius University – Skopje	67	15,572
2	South East European University (SEEU)	42	3,935
3	University American College – Skopje (UACS)	9	3,909
4	University St. Kliment Ohridski – Bitola	37	3,347

5. Agriculture and Forestry

Rank	University	No. of Professors	Total Citations
1	Ss. Cyril and Methodius University – Skopje	53	10,811
2	University Goce Delcev – Štip	16	5,236
3	University St. Kliment Ohridski – Bitola	10	1,097

6. Engineering

Rank	University	No. of Professors	Total Citations
1	Ss. Cyril and Methodius University – Skopje	354	132,860
2	University Goce Delcev – Štip	82	17,946
3	University St. Kliment Ohridski – Bitola	59	10,290

7. Economy, Business and Organizational Sciences

Rank	University	No. of Professors	Total Citations
1	South East European University (SEEU)	50	23,250
2	Ss. Cyril and Methodius University – Skopje	89	14,684
3	University Goce Delcev – Štip	43	10,175

5. Results: Macedonian Researchers

5.1 Researchers' Ranking in the National Context

The **leading 25 Macedonian researchers** are presented in the following table:

Table 7. **Leading Macedonian Researchers**

#	Professor Name	University	Field of Interest	Index	Citations
1	Saško Kedev	UKIM	Medical Sciences	100	38,541
2	Ljupčo Kocarev	UKIM	Engineering & Technology	64.69	24,932
3	Marija Vavlukis	UKIM	Medical Sciences	62.54	24,104
4	Todor Arsov	UGD	Medical Sciences	49.76	19,178
5	Lidija Poposka	UKIM	Medical Sciences	46.43	17,895
6	Naser Durmishi	SEEU	Medical Sciences	40.59	15,644
7	Trajče Stafilov	UKIM	Natural Sciences	31.46	12,125
8	Veland Ramadani	SEEU	Economics	29.51	11,373
9	Irena Mitevaska	UKIM	Medical Sciences	28.94	11,154

10	Rubin Gulaboski	UGD	Natural Sciences	19.66	7,577
11	Dijana Plaseska-Karanfilska	MANU	Medical Sciences	19.20	7,400
12	Robert Hristovski	UKIM	Social Sciences	18.42	7,099
13	Kimet Jusufi	DUT	Natural Sciences	17.39	6,702
14	Georgi M. Dimirovski	UKIM	Engineering & Technology	13.52	5,211
15	Marina Stefova	UKIM	Natural Sciences	13.02	5,018
16	Zan Mitrev	UGD	Medical Sciences	12.74	4,910
17	Marjan Gušev	UKIM	Engineering & Technology	11.56	4,455
18	Leonid Greev	UKIM	Engineering & Technology	11.33	4,367
19	Vladimir Trajkovik	UKIM	Engineering & Technology	11.28	4,347
20	Eftim Zdravevski	UKIM	Engineering & Technology	10.99	4,236
21	Hristijan Gjoreski	UKIM	Engineering & Technology	10.21	3,935
22	Gligor Dimitrov	UGD	Medical Sciences	10.12	3,900
23	Anita Grozdanov	UKIM	Engineering & Technology	9.98	3,846
24	Igor Spiroski	UKIM	Medical Sciences	9.74	3,754
25	Biljana Bauer	UKIM	Medical Sciences	9.65	3,719

5.1.1 Institutional Contribution of the Researchers

Out of the **top 25 Macedonian researchers, UKIM accounts for 16 professors, producing 60% of the total research output.** The other key institutions are MANU, UGD, and SEEU.

Table 8. Institutional Contribution of Top 25 Researchers

University	Citations	Participation	Professors
UKIM	153,807	60%	16
MANU	32,332	13%	2
UGD	35,566	14%	4
SEEU	27,017	11%	2
DUT	6,701	3%	1
Total	255,423	100%	25

5.1.2 Dominant Scientific Fields

An analysis of the research fields reveals the **absolute dominance of Medical Sciences**, which accounts for nearly **60% of total citations**, followed by **Engineering (21.7%)**.

Table 9. Structure of Research Output by Field

Field	Citations	% of Total
Medical Sciences	150,199	58.80%
Engineering & Technology	55,329	21.66%
Economics	11,373	4.45%
Social Sciences	7,099	2.78%
Natural Sciences	31,422	12.30%
Total	255,422	100%

5.2 Macedonian Researchers in the Regional Context

Unfortunately, there isn't any single researcher from the Republic of North Macedonia ranked in the TOP 25 in the region.

Table 10: Top 25 Researchers in the region (Ex-Yugoslavia + Albania)

#	Professor Name	University	Field of Interest	Citation Points	Citations
1	Marko Mikuz	Jožef Stefan Institute	Natural Sciences	100	270,339
2	Ivica Puljak	University of Split – Croatia	Engineering & Technology	91.92	248,496
3	Nikola Godinovic	University of Split – Croatia	Engineering & Technology	90.03	243,386
4	Marko Kovac	University of Split – Croatia	Natural Sciences	73.62	199,024
5	Mihajlo Jakovljevic, MD, Ph.D., MAE	University of Kragujevac	Economics	53.51	144,658
6	Gani Bajraktari	University of Pristina	Medical Sciences	44.90	121,382
7	Petar Seferovic	University of Belgrade – Serbia	Medical Sciences	44.37	119,949
8	Tomislav Ševa	University of Zagreb – Croatia	Natural Sciences	42.30	114,353
9	Željko Reiner	University of Zagreb – Croatia	Medical Sciences	39.93	107,946
10	Ozren Polašek	University of Split – Croatia	Medical Sciences	39.15	105,838
11	Mirko Planinic	University of Zagreb – Croatia	Natural Sciences	39.05	105,567
12	Shpëtim Hasallari	University of Applied Sciences, Ferizaj	Economics	32.70	88,401
13	Mile Dželalija	University of Split – Croatia	Natural Sciences	32.05	86,644
14	Toni Ščulac	University of Split – Croatia	Natural Sciences	31.54	85,265

15	Samo Stanic	University of Nova Gorica	Natural Sciences	30.14	81,480
16	Sven Gotovac	University of Split – Croatia	Engineering & Technology	29.14	78,777
17	Nikola Poljak	University of Zagreb – Croatia	Natural Sciences	28.55	77,182
18	Linda Vicković	University of Split – Croatia	Engineering & Technology	26.80	72,451
19	Milena Ilić	University of Kragujevac	Medical Sciences	26.29	71,072
20	Olja Đorđić	University of Banja Luka	Natural Sciences	25.50	68,936
21	Mario Škerija	University of Zagreb – Croatia	Medical Sciences	24.51	66,260
22	Silva Tafaj	University of Medicine of Tirana	Medical Sciences	23.13	62,529
23	Eleonora Dubljanin	University of Belgrade – Serbia	Medical Sciences	22.67	61,286
24	Irena M. Ilić	University of Belgrade – Serbia	Medical Sciences	21.51	58,150
25	Danilo Zavrtanik	University of Nova Gorica	Natural Sciences	20.73	56,041

The following list presents the structure of researchers by country:

Table 11. Structure of researchers by country

Croatia	Serbia	Slovenia	Kosovo	Albania	Bosnia
13	5	3	2	1	1
52%	20%	12%	8%	4%	4%

We should mention the rather sad fact that the Republic of North Macedonia is the only country without a researcher ranked in the TOP 25 in the region.

This list also indicated the dramatic lagging of the Macedonian higher education system, with

an outline of the following:

- 1) All 25 leading Macedonian researchers have generated 255,423 citations, which is less than the first single researcher in the region with 270, 733 citations,
- 2) The best Macedonian researcher is ranked #38,
- 3) We have only 4 Macedonian researchers ranked in the TOP 100: Kedev #38, Kocarev #64, Vavlukis #68 and Arsov #94. They are true role models; the most important representatives of the Macedonian research community.

6. Conclusions

The study is based on the new model for measurement of the academic performance, named ARBU. It is very practical approach, based on a single dimension – research and citations according to Google Scholar.

It can't be compared to the BIG 3 which use mostly three dimensions and many subdimensions. The three dimensions are: research, teach and social impact.

The results of this study enable us to conclude that the structure and performance of the Macedonian higher education in 2025 reveal several defining patterns:

- **Macedonian higher education lags behind the regional universities. The best Macedonian university, UKIM is now ranked 12th which is a drop down for one spot.**
- **The difference between UKIM and the leading universities is**
- **UKIM is losing ground compared to the universities, previously considered provincial, like Kragujevac, Nish, Novi Sad and Split.**
- **In the national context, Ss. Cyril and Methodius University – Skopje (UKIM) leads in five academic fields: *Medical Sciences, Natural Sciences, Social Sciences, Agriculture and Forestry, and Engineering.***
- **University Goce Delcev – Štip holds the leading position in *Humanities and Arts.* and South East European University (SEEU) dominates in *Economy, Business, and Organizational Sciences.***
- The discrepancy between UKIM and other regional universities is actually huge, and it is a good illustration of discrepancy between Macedonian and Balkan universities. University of Zagreb has not 12,5 % BUT 12,49 times more citations than UKIM.
- Similarly, universities of Belgrade, Ljubljana and Split have multiplications of 6,73; 5,63 and 4,89 compared to UKIM.
- Universities of Maribor, Novi Sad, Sarajevo and Osijek, have advantage of multiplications of 1,67 to 1,27 and they should be considered an achievable and realistic target for the next five years for UKIM.

- **Concerning the researchers, the situation is similar. Unfortunately, Macedonia doesn't have any researcher in the TOP 25 in the region.**
- Leading Macedonian researchers, combined, have 255, 423 citations, which is less than the leading regional researcher with 270, 399.
- We are the only country in the region, which doesn't have a researcher in the TOP 25. The youngest country Kosovo has not one, but two researchers in this group.

We can conclude that this paper provides a good and practical situational analysis about the positions of the universities and researchers within Macedonia and within the region.

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Acknowledgments

Not Applicable.

Funding

Not Applicable.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Macrothink Institute.

The journal's policies adhere to the Core Practices established by the Committee on

Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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