

# Research Productivity of Sri Lankan Universities in the International Ranking Systems and Mandatory Contribution of Librarians

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## ABSTRACT

The objective of this study is to investigate the research productivity of the Sri Lankan state universities depicted in reputed international university ranking systems during 2015-2020 and to identify the areas that can be used to develop the research productivity of the state universities. Research-related scores of the Sri Lankan state universities from 2015-2020 in four ranking systems (THE, QS, SIR, and URAP) were analysed. The study established that the research productivity, impact, and collaboration are the major aspects considered by the ranking systems. Only a few universities are ranked and the scores have a considerable scope to be improved. Several recommendations are made on how the university librarians can support the improvement of research-related rankings. This is the first study on research productivity scores of Sri Lankan state universities based on international ranking systems. Hence the findings will be useful for the university policymakers in Sri Lanka as well in other countries with similar educational contexts.

**Keywords:** Research productivity; University ranking system; State universities; Research report

## 1. INTRODUCTION

Sri Lankan university system consists of state universities and private degree-awarding institutions, and the state system includes 15 universities, controlled by the University Grants Commission (UGC) and five universities that exist under different Ministries. Research productivity is a key measure of a university's excellence, improvement in quality, prestige, and value<sup>1</sup> and the Sri Lankan universities are keen on ranking<sup>2</sup>; yet related studies on ranking or research productivity are rare.

## 2. OBJECTIVE AND METHODOLOGY

The objective of this study is to fill this gap by investigating the research productivity of Sri Lankan state universities as depicted in reputed international university ranking systems during 2015-2020, and to identify the areas that the university librarians can support to strengthen which in turn will develop the research productivity of the state universities. Four Research Questions were formulated to underpin the study:

- RQ1: What are the world university ranking systems that consider research for ranking?
- RQ2: What percentages are assigned to each component related to research in the ranking?
- RQ3: What are the research-related scores of the Sri Lankan state universities in the ranking systems?
- RQ4: How can the university librarians contribute to improve the research productivity?

International university ranking systems identified through literature and websites were shortlisted using three criteria; (1) availability of "research" as a ranking indicator; (2) inclusion of Sri Lanka in the ranking lists; and (3) availability of data for the period considered for the survey (2015-2020). The shortlisted systems were further analysed to identify the research-related scores of the Sri Lankan universities.

## 3. LITERATURE REVIEW

Several initiatives have been taken to promote research at state universities, e.g. provision of a research allowance (35 % of the basic salary) to the faculty, establishment of the Division of Research, and International Co-operation (DRIC), and the consortium of libraries increasing access to scholarly literature<sup>3</sup>. Yet, limited attention is given to the research output of academics and there is no proper mechanism to appreciate the research performance or to encourage potential researchers<sup>4</sup>. University ranking is considered as a measure of quality<sup>6,7</sup>, and the effectiveness<sup>8</sup> as well as the research performance of the universities<sup>9</sup>. The research support services offered by the university libraries<sup>10-11</sup> help increase the research productivity of the universities.

## 4. FINDINGS

### 4.1 Research Component in the Ranking Systems

Based on the literature<sup>12-13</sup> and the websites, 17 international university ranking methods were identified (Appendix I). Four systems which satisfied the above-mentioned three criteria were short listed; Times Higher Education World University

**Table 1. Main criteria used in university ranking**

Method	Main Components of the system	The percentage assigned for each component
THE	1. Teaching (and learning environment)	30
	2. Research (Volume, Income, and reputation)	30
	3. Citations (Research influence)	30
	4. International outlook (staff, students, research):	7.5
	5. Industry income (knowledge transfer)	2.5
QS	1. Academic Reputation	40
	2. Employer Reputation	10
	3. Citations per faculty	20
	4. Faculty/Student Ratio	20
	5. International Faculty Ratio	5
	6. International Student Ratio	5
SIR	1. Research	50
	2. Innovation	30
	3. Societal	20
URAP	1. Article	21
	2. Citation	21
	3. Total Document	10
	4. Article Impact Total	18
	5. Citation Impact Total	15
	6. International Collaboration	15

Sources<sup>12-15</sup>

Ranking<sup>14</sup> (THE), QS-World University Ranking<sup>15</sup> (QS), SCImago institutional ranking<sup>16</sup> (SIR), and the university ranking by academic performance<sup>17</sup> (URAP). Webometric ranking was excluded as criterion 3 was not satisfied by the official website.

The main components used by the four selected systems and the percentages of the total score assigned to each component are depicted in Table 1. The sub-components of the research component, with the percentages assigned to each sub-component, and the sources used by the ranking bodies to gather data are depicted in Annexure II.

URAP assigns 100 per cent of the total scores for research-related components, while SIR assigns 80 per cent. THE assigns 62.5 per cent of the total scores for research while QS assigns 20 per cent, which is the least percentage assigned for research-related components by the selected ranking systems. THE, QS, and SIR use SCOPUS to gather research-related data while URAP uses Web of Science. SIR also uses PATSTAT and Unpaywall databases to obtain the patent and open access journal information respectively. The rankings systems use Ranks and Scores to indicate the status of universities; *lower* the numeric value that indicates the Overall Rank; better the

status of a university while *higher* the numeric value that indicates the scores of subcomponents, better the status of a university in that subcomponent. While the other three systems use both Rank and Scores, SIR only uses the Rank to indicate the status of a university. The different percentages assigned to research-related components by each system denote that, the significance placed on research in calculating the final Rank, by different ranking systems, varies.

## 4.2 Ranking of the Sri Lankan Universities

The following sections present the position of Sri Lanka within the four ranking systems by illustrating the overall rank and the research related scores in the World and Emerging / Asian contexts.

### 4.2.1 Times Higher Education Ranking

University of Colombo (UoC) appears in the world, emerging, and Asian ranking during 2017-2019, yet the overall rank in the world context has regressed in 2018 and remained unchanged. In the emerging and asian university contexts also, it has regressed continuously (Table 2) while the citations scores and international outlook of UoC have fluctuated across the whole period. In 2020, University of Peradeniya (UoP) has been ranked with a higher overall and Citations score than that of UoC.

### 4.2.2 Quacquerelli Symonds Ranking

In the world context, only UoC is ranked from 2016 to 2019 but with regression in 2018 and 2019. In 2020 no Sri Lankan university is ranked in the world context (Table 3). In the Asian context, also UoC has been the only Sri Lankan university listed from 2015 to 2019 with a fluctuation in the overall rank but it is absent in 2020. Although research productivity is measured by published papers per faculty, and citations per paper, world context scores for UoC are not available. This implies that UoC was included in the ranking not because of the research scores but because of other criteria. In the Asian context, scores of UoC for papers per faculty and citations per paper remain unchanged until 2019. In 2020 UoP and University of Jaffna (UoJ) has entered the Asian context with noticeable scores in citations per paper.

### 4.2.3 SCImago Institutions Ranking

The number of universities getting ranked has increased across the period, yet the overall score of all have regressed gradually. In the Asian context, all universities have managed to remain somewhat stable except University of Moratuwa (UoM) which has regressed sharply by 2020. Scores of research in the world context, has slight progress across the period except UoM which has regressed considerably, but in the Asian context, the scores of all universities have dropped significantly by 2020. Scores on innovation, in the world as well as in Asian contexts have regressed (Table 4).

### 4.2.4 University Ranking by Academic Performance

Only UoP is ranked in URAP continuously from 2014/2015. UoC has appeared in the 2014/2015 but not

**Table 2. Sri Lankan state universities in THE ranking– 2015-2020**

Year	University	Rank	Overall	Citations	International outlook	Research
Sri Lanka in the World Ranking						
2015	No Sri Lankan university is ranked					
2016	No Sri Lankan university is ranked					
2017	UoC	>800	8.3 - 18.5	11	37	6.8
2018	UoC	801-1000	15.6-21.4	12.9	38.2	7.9
2019	UoC	1001+	9.8 - 18.9	10.7	39.8	7.8
2020	UoP	401-500	38.8-42.3	100.0	43.3	7.6
	UoC	1000+	10.7-22.1	13.9	38.2	8.0
Sri Lanka in the emerging universities context						
2015	No Sri Lankan University is ranked					
2016	No Sri Lankan University is ranked					
2017	UoC	251-300	13.7-17.2	11	37	6.8
2018	UoC	301-350	15.0-17.9	12.9	38.6	7.9
2019	UoC	301-350	17.9-19.8	10.7	40.2	7.8
2020	UoP	91	35.2	100	43.8	7.6
2020	UoC	401-500	15.8-19.0	13.9	38.6	8.0
Sri Lanka in the Asian universities context						
2015	No Sri Lankan University is ranked					
2016	No Sri Lankan University is ranked					
2017	UoC	251+	<18.2	11	37	8.4
2018	UoC	301-350	13.6-17.6	12.9	38.2	9.8
2019	UoC	301-350	18.4-20.6	10.7	39.8	9.7
2020	UoP	69	43.7	100.0	43.3	9.5
	UoC	401+	13.2-19.5	13.9	38.2	10.0

Source: <https://www.timeshighereducation.com>

thereafter. The World as well as Asian ranking of UoP has fluctuated across the period until 2018/2019 but no scores were available for 2019/2020. Scores of articles, citations, and total documents have been fluctuating (Table 5).

## 5. CONCLUSIONS AND RECOMMENDATIONS

Findings established that all ranking system studies use the research productivity/volume, citations, and international collaborations to measure research productivity. Only a few Sri Lankan universities are included in the Ranking lists. While they need to strive to improve their ranks and scores in the world, emerging, and Asian context, other Sri Lankan state universities must give serious thought to improving their research productivity.

University Librarians have a mandatory role to play in supporting their universities to achieve higher rankings in the global context, by increasing the annual research output and citations. Following are some recommendations that can be implemented by the librarians to increase the research productivity;

- raise awareness within the universities, about the ranking systems and the significance of research output and citations towards better ranking,
- educate the university community of the journals indexed by SCOPUS and Web of Science which feeds the data into the ranking systems, so that the volume of research published in them can be increased,
- organise training with the support of the authorities to promote high-quality research writing and publishing in indexed journals,
- provide unhindered access to information resources, research tools, and research data management,
- maintain a database of ongoing research in the university to supplement research instead of replication. To increase the citation scores the librarians must;
- raise awareness of the researchers on Bibliometrics and Almetrics, and their effect on increased citations,
- support researchers to market their research across various platforms, ethically and legally, so that the visibility of research is increased enabling more citations, and
- encourage researchers to develop their Research Identities across different platforms ie. ResearchGate, ORCID, etc. using their university affiliations.

With the available resources and skills of the librarians, a significant contribution can be made, yet they must augment their knowledge, skills and attitudes in providing better research support services to the researchers so that the research productivity of the Sri Lankan universities is enhanced elevating the universities to better global ranks.

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**Table 3. Sri Lankan state universities in QS ranking: 2015-2020**

Year	Rank	University	Papers per Faculty	Citations per paper
Sri Lanka in the World context				
2015	No Sri Lankan university is ranked			
2016	701+	UoC	Data not available within the Ranking System	
2017	701+	UoC		
2018	751-800	UoC		
2019	801-1000	UoC		
2020	No Sri Lankan university is ranked			
Sri Lanka in the Asian context				
2015	201-250	UoC	10.3	28.6
2016	151-160	UoC	10.3	28.6
2017	172	UoC	10.3	28.6
2018	156	UoC	10.3	28.6
2019	188	UoC	10.3	28.6
2020	198	UoP	7.3	57.4
	401-450	UoJ	-	71.9

Source: <https://www.topuniversities.com/university-rankings>

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**Table 4. Sri Lankan state universities in the SIR: 2015-2020**

Aspect	University	2015		2016		2017		2018		2019		2020	
		World	Asian	World	Asian	World	Asian	World	Asian	World	Asian	World	Asian
Overall	UoC	654	255	658	261	644	294	703	303	721	280	742	276
	UoP	625	226	653	256	632	282	672	272	731	290	758	292
	UoM	587	188	664	267	648	298	698	298	793	352	838	372
	UoR	Not Ranked		682	285	674	323	738	338	733	292	775	309
	UoK	Not Ranked						746	346	732	292	743	277
	USJP	Not Ranked						694	294	743	302	778	312
Research	UoC	448	189	448	203	446	202	437	200	408	155	410	276
	UoP	441	182	444	199	438	194	427	190	428	175	420	292
	UoM	452	193	454	209	446	202	435	198	480	227	487	372
	UoR	Not Ranked		472	227	469	225	456	219	401	148	415	309
	UoK	Not Ranked						454	217	415	162	409	277
	USJP	Not Ranked						458	221	434	181	422	312
Innovation	UoC	411	159	423	154	400	183	451	197	478	197	508	276
	UoP	391	140	423	154	398	181	429	175	469	188	513	292
	UoM	342	92	423	154	404	187	448	194	475	194	524	372
	UoR	Not Ranked		423	154	407	190	464	210	495	214	533	309
	UoK	Not Ranked						476	222	478	197	506	277
	USJP	Not Ranked						421	167	470	189	527	312

Source: <https://www.scimagoir.com/>

Table 5. Ranking of Sri Lankan universities in URAP: 2015-2020

Year	University	World Ranking	Asian Ranking	Category	Articles	Citations	Total Documents	Article Impact Total	Citation Impact Total	Inter. Coll.	Total
2014/2015	UoP	1462	454	B+	15.39	31.92	9.01	21.05	28.19	37.14	142.71
	UoC	1760	573	B	6.59	17.7	8.16	13.19	13.21	19.1	77.95
2015/2016	UoP	1361	417	B+	20.68	63.18	10.43	24	32.87	39.13	190.28
2016/2017	UoP	1296	388	B+	31.01	63.26	13.14	45.23	45.42	45.1	243.16
2017/2018	UoP	1334	416	B+	37.26	63.81	14.95	54.31	46.29	45.17	261.79
2018/2019	UoP	1070	314	B+	23.69	49.96	12.14	37.67	45.86	29.75	199.07
2019/2020	UoP	1123	Not available		21.02	50.45	15.68	31.46	47.49	56.85	222.96

Source<sup>15</sup>

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## CONTRIBUTOR

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**Appendix I**  
**International university ranking methods**

Ranking system	Responsible organisation	Year started
1. Academic Ranking of World Universities (ARWU)	ShanghaiRanking Consultancy	2003
2. Webometric Ranking	Cybermetric Lab of the Spanish National Research Council	2004
3. Times Higher Education and Quacquerelli Symonds Ranking System	Times Higher Education and Quacquerelli Symonds Ltd	2004
4. CWTS Leiden Ranking	Leiden University Centre for Science and Technology	2008
5. SCImago Institutions Ranking (SIR)	SCImago Lab	2009
6. Mapping Scientific Excellence		2009
7. Times Higher Education World University Ranking (THE-WUR)	Times Higher Education	2010
8. Quacquerelli Symonds World University Ranking (QS-WUR)	Quacquerelli Symonds	2010
9. University Ranking by Academic Performance (URAP)	Informatics Institute of the Middle East Technical University, Turkey	2010
10. Round University Ranking (RUR)	Round University Ranking Agency	2010
11. Green Metric University Ranking	Universitas Indonesia	2010
12. Youth Incorporated Global University Rankings	Youth Incorporated. A leading youth magazine in Mumbai	2012
13. Nature Index	Springer Nature Ltd.	2012
14. U-Multirank	An independent European consortium	2014
15. US News and World Report: Best Global Universities	U.S. News & World Report L.P.	2014
16. Reuters Top 100: The World's Most Innovative Universities	Reuters	2015
17. UniRank	IREG Observatory on Academic Ranking and Excellence.	2017

**Appendix II**  
**Sub components related to the research component**

Ranking Method	Main Criteria	Sub-components	The percentage assigned for each subcomponent	Data Source
	Research (Volume, Income, and Reputation)	Reputation survey	18	Surveying a sample of academics randomly selected by Elsevier.
		Research income	6	Self-submitted data
		Research Productivity	6	SOPUS
THE	Citations (Research influence)	Citations	30	Elsevier (FWCI) score
	International outlook (staff, students, research)	The proportion of international to domestic students ratio: 2.5%		Self-submitted data
		The proportion of international to domestic staff ratio: 2.5%		Self-submitted data
		Research - International collaboration:	2.5	SCOPUS
Total		62.5		
QS	Citations	Citations per faculty	20	SCOPUS
	Total		20	
SIR	Research	Normalized Impact (NI)	13	SCOPUS
		Excellence with Leadership (EwL)	8	
		Output (O)	8	
		Scientific Leadership (L)	5	
		Not Own Journals (NotOJ)	3	
		Own Journals (OJ)	3	
		Excellence (Exc)	2	
		High-Quality Publications (Q1)	2	
		International Collaboration (IC)	2	
	Open Access (OA)	2	Unpaywall database	
	Innovation	Innovative Knowledge (IK)	10	PATSTAT
		Patents (PT)	10	
		Technological Impact (TI)	10	
Total		80		
URAP	Article	Current Scientific Productivity	21	InCites based on Web of Science
	Citation	Research Impact	21	
	Total Document	Scientific Productivity	10	
	Article Impact Total (AIT)	Research Quality	18	
	Citation Impact Total (CIT)	Research Quality	15	
	International Collaboration (IC)	International Acceptance	15	
Total		100		

Sources<sup>12-17</sup>