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SECTION 4. Computer science, computer engineering and automation.

SEVERAL CHARACTERISTICS OF EXISTING AUTOMATED SYSTEMS ACCORDING TO SURVEY OF RUSSIAN SCIENTISTS PUBLISHING ACTIVITY

Abstract: The paper conducted a review of existing automated systems that provide additional features when working with systems of citation analysis in the field of publication activity of Russian scientists. As a result of the review were identified 2 groups. The first group includes automated systems, aimed at the optimization of the list of publications, citations, scientometric indicators of any one of citation. Automated systems of the second group allows not only optimize the list of publications and quotations but also aggregate the results from several quotation systems. Highlighted the shortcomings of the existing automated systems. It is proposed to develop an automated software system, devoid of deficiencies identified.

Key words: analysis of the publication activity, scientometric indicators.

Language: English

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For a number of years the publishing activity of scientific community increases in a number of developing countries (Brazil, Iran, China, Turkey and others) [1, c. 15]. In turn Russia at the domestic level attempts to increase the percent of Russian authors' publications in the global fund of scientific publications.

Despite these attempts different statistics of Russian scientists publishing activity can be observed in different quotation systems [2;3;4;5]. On the basis of presented statistic they make analyses and build different estimations of publishing activity. There are both optimistic and pessimistic estimations. Together with the assessment of scientific community publishing activity on All-Russian level it's necessary to estimate it in each higher educational establishment individually including Orenburg State University. From the abovementioned it's followed that from certainty, consistency and completeness of presented facts depend the results of the next analyses and estimations. In this case under certainty understands the belonging of the publication or quotation to its author, under consistency it's understood the absence of publishing copies o quotations and under completeness it's meant the list of all author's works.

Consequently an analytical review of currently developed automated systems that provide additional opportunities to work with the systems of quotation, in order to obtain reliable, consistent and complete information for further analysis of publication activity is relevant and timely task.

By detailed survey of quotation systems [2;3;4;5] following conclusions were made. Resource [2] doesn't reflect the broad picture of authors' publishing activity because it doesn't have any excess to a lot of foreign publications, has some defects by calculating of quotations and doesn't include the majority of works till 2000. Resources [3] and [4] don't reflect the most of publications in Russian. Resource [5] uses facts only from published sources and doesn't allow to do the search result by specific author in convenient for viewing and analyzing way. Besides that none of the resources registers the majority of educational and methodical works.

For correction purposes contained in quotation systems different scientists tried to create automated systems providing additional opportunities to work with quotation system. These include following scientists: Kiduk Yang, Lokman I. Meho, F.M. Couto, A. Baneyx, P. Jacsó and others.



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The existing automated systems were divided in 2 groups.

The first group of automated systems is focused on optimization of publication list, quotations and scientometrical factors from one of quotation systems. To the first group belong automated systems examined in works [6;7].

In work of P. Jacsó [6] experiments by Chirsh index computation [8] and another scientometrical indexes from Google Scholar by means of automated system «Publish or Perish» are described. Automated system «Publish or Perish» allows user to correct total lists of publications given in convenient way. It simplifies the search and removal of copies and gives the dynamic sorting by many characteristics and instant conversion of factors. The program generates 18 scientometrical factors from Google Scholar. «Publish or Perish» has a lot of

variants and export formats including CSV format which is widely used to export and import of copies taken from a lot of spreadsheets and data bases. Besides that this system allows to estimate the scale of mistakes in the publication list given by Google Scholar. However even after the correction and updating of lists, they can't be completely true because a lot of doubtful resources can be stood as a source of publication. The developed program also can't show the difference between main records and records taken from quotation lists. There are also some similar references on the same article. There are also correct quotations which refer to absent in system publication just because a magazine or issue wasn't worked out or the publication was missed by mistake in processing. The example of duplicated publications is shown on figure 1.

Results							
Papers:	1000	Cites/paper:	199.58	h-index:	216	AWCR:	7925.90
Citations:	199584	Cites/author:	150661.54	g-index:	396	AW-index:	89.03
Years:	130	Papers/author:	653.98	hc-index:	79	AWCRpA:	5855.38
Cites/year:	1535.26	Authors/paper:	2.04	hI-index:	136.42		
				hI,norm:	190		
Cites	Per year	Rank	Authors	Title	Year	Publication	
✓ 2809	112.36	381	MV Berry	Quantal Phase Factors Accompanyin...	1984	Proceedings of the Royal Society of L..	
✓ 2809	112.36	402	MV Berry	Quantal Phase Factors Accompanyin...	1984	Proceedings of the Royal Society of L..	
✓ 2642	91.10	382	D Marr, E Hildreth	Theory of Edge Detection - all 9 vers...	1980	Proceedings of the Royal Society of L..	
✓ 2642	91.10	403	D Marr, E Hildreth	Theory of Edge Detection - all 9 vers...	1980	Proceedings of the Royal Society of L..	
✓ 2421	46.56	383	JD Eshelby	The Determination of the Elastic Fiel...	1957	Proceedings of the Royal Society of L..	
✓ 2421	46.56	404	JD Eshelby	The Determination of the Elastic Fiel...	1957	Proceedings of the Royal Society of L..	
✓ 1890	78.75	384	D Deutsch	Quantum theory, the Church-Turing ...	1985	Proceedings of the Royal Society of L..	
✓ 1890	78.75	405	D Deutsch	Quantum theory, the Church-Turing ...	1985	Proceedings of the Royal Society of L..	
✓ 1859	21.13	385	AA Griffith	The Phenomena of Rupture and Flo...	1921	... Transactions of the Royal Society o.	
✓ 1859	21.13	406	AA Griffith	The Phenomena of Rupture and Flo...	1921	... Transactions of the Royal Society o.	
✓ 1688	56.27	386	SJ Gould, RC Lewontin	The Spandrels of San Marco and the...	1979	Proceedings of the Royal Society of L..	
✓ 1688	56.27	407	SJ Gould, RC Lewontin	The Spandrels of San Marco and the...	1979	Proceedings of the Royal Society of L..	
✓ 1444	38.00	387	KL Johnson, K Kend...	Surface Energy and the Contact of ...	1971	Proceedings of the Royal Society of L..	
✓ 1444	38.00	408	KL Johnson, K Kend...	Surface Energy and the Contact of ...	1971	Proceedings of the Royal Society of L..	
✓ 1399	19.70	388	AV Hill	The Heat of Shortening and the Dyn...	1938	Proceedings of the Royal Society of L..	
✓ 1399	19.70	409	AV Hill	The Heat of Shortening and the Dyn...	1938	Proceedings of the Royal Society of L..	

Figure 1 – Duplicated publications in automated system «Publish or Perish».

Automated systems of the second group allows not only optimize the list of publications and quotations but also aggregate the results from several quotation systems. Program resources examined in works [9;10] can be related to the second group.

In work A. Baneyx [9] the data taken from Google Scholar and Web of Science is shown. To

search suitable publications automated systems «Publish or Perish» and «CleanPoP» were used.

On figure 2 are shown the indexes taken by the search in Web of Science and Google Scholar using «CleanPoP» program in 2008 for scientists with high scientometrical characteristics.

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DOMAINS	AUTHORS	NB of ARTICLES		NB of CITATIONS		H-INDEX	
		ISI WoS	GS/CP	ISI WoS	GS/CP	ISI WoS	GS/CP
Economy	J. J. L	169	498	3137	14460	31	49
Economy	J. T	132	462	5920	29315	49	68
Geography	R. Br	17	103	189	526	7	9
Geography	R. Bo	5	98	8	776	2	12
History	P. R	25	72	8	619	1	10
History	F. B	22	196	16	3680	2	25
Philosophy	R. G ¹	96	202	304	2316	10	13
Sociology and Philosophy	J. H	133	607	687	34664	11	61
Sociology	P. B	196	604	1770	49229	22	81
Sociology	N. L	96	320	597	6697	13	33
Sociology	B. L	95	462	532	18661	15	43
Sociology	W. B	26	185	240	3475	7	16

Figure 2 - Characteristics taken on the base of data from Web of Science and Google Scholar.

In work Kiduk Yang [10] the quotations searched in Scopus, Google Scholar and Web of Science are compared. Automated system «CiteSearch» is presented. It analyses combined data from several quotation systems based on quality measurements.

It's mentioned that more complete analyses of quotations can help to keep and identify more accurate any differences in scientometrical characteristics analyses and give independent evaluation. The architecture of this system is shown on figure 3.

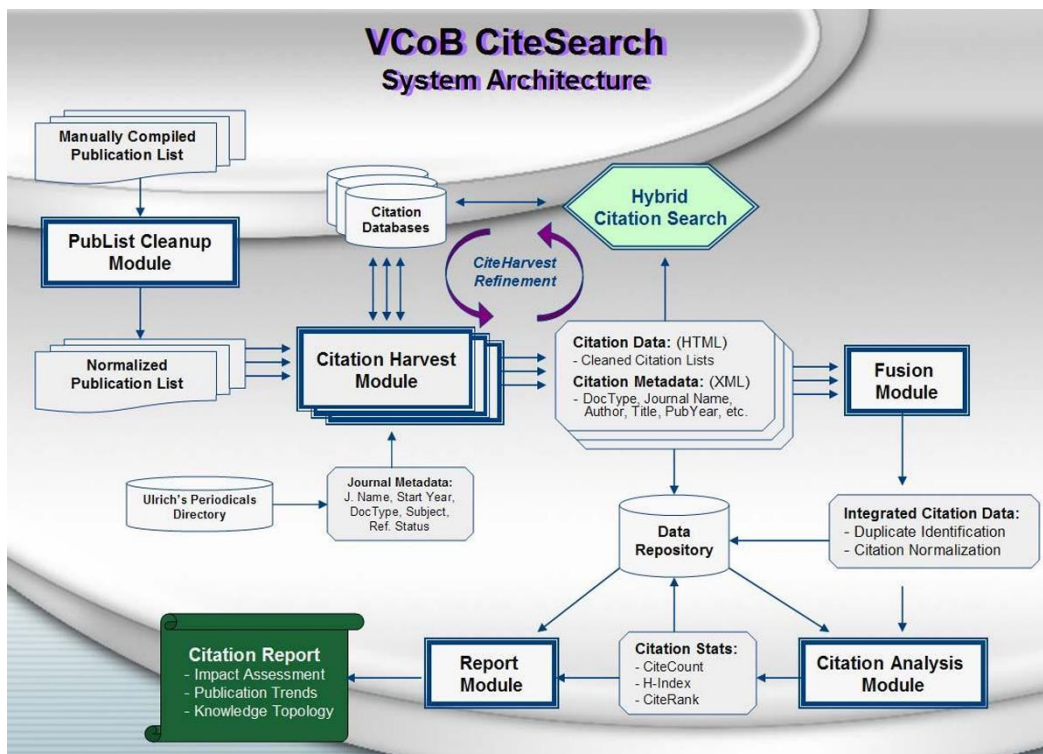


Figure 3 – The architecture of automated system «CiteSearch».

«CiteSearch» allows to accomplish automatically following actions:
 - to search both by author and the title;

- to get and combine the results from both types of search;
 - to delete repeating records;

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- to export the results into spreadsheet.

As the result there were marked following features based on analyses of currently developed automated systems providing additional opportunities on analyses of publishing activity with the help of quotation systems:

- by analyzing of publishing activity educational and methodological publications of authors that can influence scientometrical characteristics and following analyses of publishing activity are not used a lot;

- At the moment no one automated system based on data from one of quotation system gives the full picture of publishing activity of Russian scientists and organizations;

- Currently there is no software that can analyze and aggregate the results from different quotation systems taking into account Russian quotation index;

- There is no complex approach considering all abovementioned components to monitor publishing activity of authors of Russian scientific organizations.

To correct all the defects found by reviewing of automated systems providing additional opportunities in work with quotation systems it's offered to develop an automated program system possessing following advantages:

- the opportunity to accumulate data about the publishing activity of Russian scientists from different quotation systems considering Russian scientific quotation index;

- to maintain own database of scientific organization including educational and methodological works;

- the opportunity to analyze the further cumulative data.

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