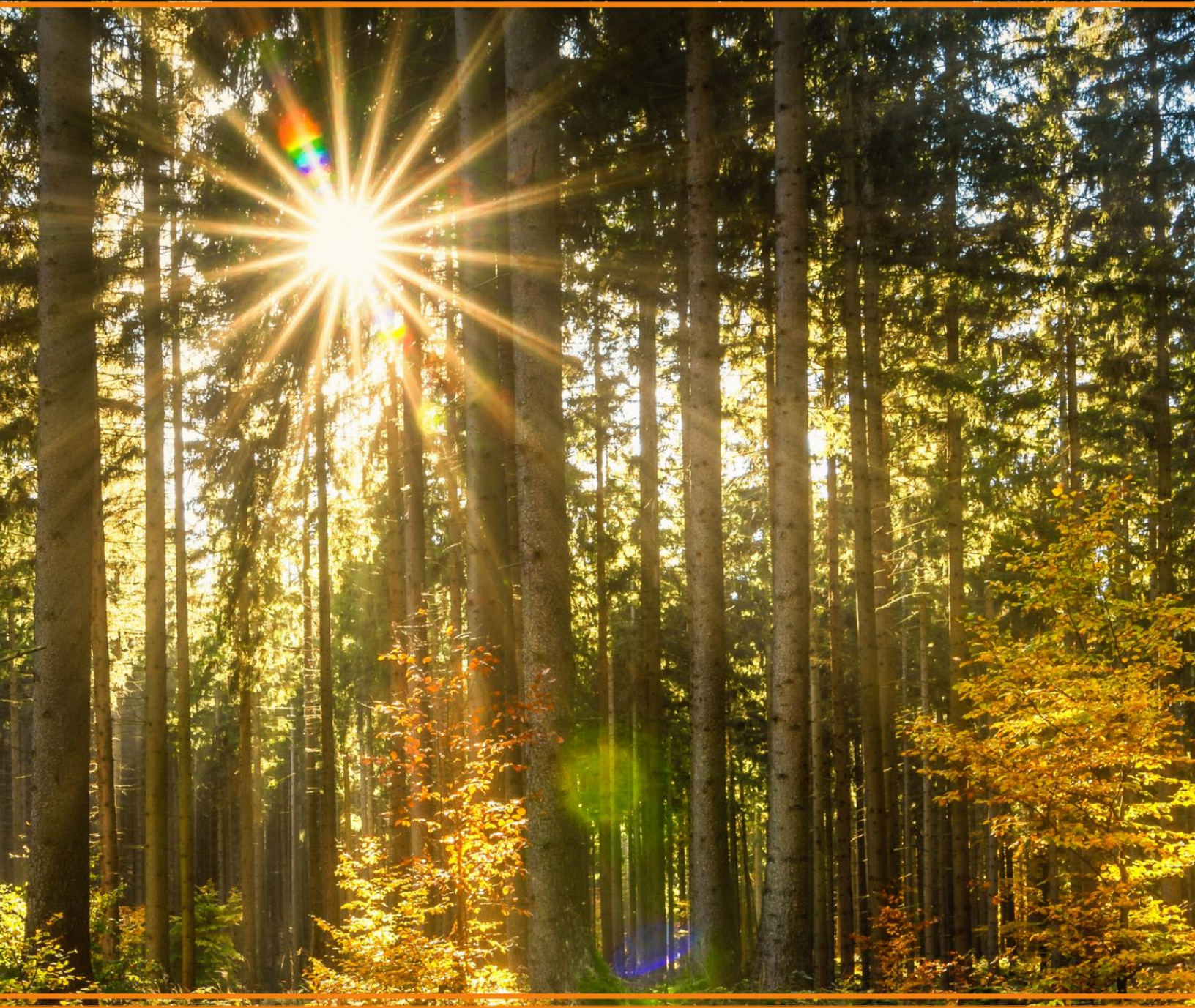
OPEN ACCESS ANALYSIS OF SCIENTIFIC PAPER PUBLISHING OF PFNS IN THE PERIOD 2018-2020.



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Open Access analysis of scientific paper publishing of PFNS in the period 2018-2020.

-Report

By: Dr. Dejan Beuković, assistant professor

Novi Sad - Serbia, December 2021.

Introduction

Performing an OA analysis seems like an interesting and not very difficult job, if there is a person in the position of Research data manager in the institution you represent. Then, for the needs of such work, data from the existing database would be filtered by adequate software. Based on these data, a report with conclusions could be easily drawn. However, if you have a list of the author's references by year, which are available only in the word processing program, then this job is quite complicated. The first step is to figure out how to approach such a challenge. After brainstorming, the only idea that could lead to an ultimately positive outcome, based on a methodology called "In a makeshift manne" (improvisation).

Data were typed in excel, then tags were added for each entry that included: year, category, publishers, DOAJ listing, requires APC, commercial publishers, OA publishing, embargo, copyright owner, Publisher deposit conditions. The procedure involved manually checking each entry and adding the mentioned tags. The main source of information was the Sherpa Romeo service (https://v2.sherpa.ac.uk/) and DOAJ (https://doaj.org/). However, there were situations when the journal in which the scientific paper was published was not on the Sherpa Romeo list. This meant going to the site of the journal and patiently searching for the necessary information. Sometimes some information could not be found or was not clearly defined (especially when during searches on the less influential journal sites), in that case the result was named: "no data'' or ''unknown". Systematization of such collected data took a while. Creating an infographic requires a manual approach also, using programs like MS Excel.

Regarding the analyzed criteria, the results of the report should indicate the current situation and raise the issue of a final solution for monitoring the scientific production of PFNS. In order to avoid the previously described methodology in a future analysis.

1. Quality of scientific papers

According to the Rulebook on Categorization and Ranking of Scientific Journals, Minister of Education, Science and Technological Development of the Republic of Serbia, the following elements have been defined that are taken into consideration during the categorization of scientific journals. The International Scientific Journal is a journal referenced in the International Citation Databases Journal Citation Report (JCR) and Web of Science (WoS). An international journal, may be a journal of a foreign or publisher from the Republic of Serbia. The National Scientific Journal is a journal that is not referenced in international databases. A national scientific journal can be a journal of a domestic or foreign publisher. A scientific journal of a domestic publisher is considered periodical a publication of a publisher based in the territory of the Republic of Serbia that meets the requirements for editing scientific journals (Rulebook on Categorization and Ranking of Scientific Journals).

Scientific journals are ranked within individual scientific fields, according to the formed main scientific committees, i.e. additional fields within which bibliometric analysis is performed. Scientific journals of domestic publishers are subjected to qualitative and bibliometric analysis, which is the basis for ranking journals and which includes the following indicators of bibliometric quality:

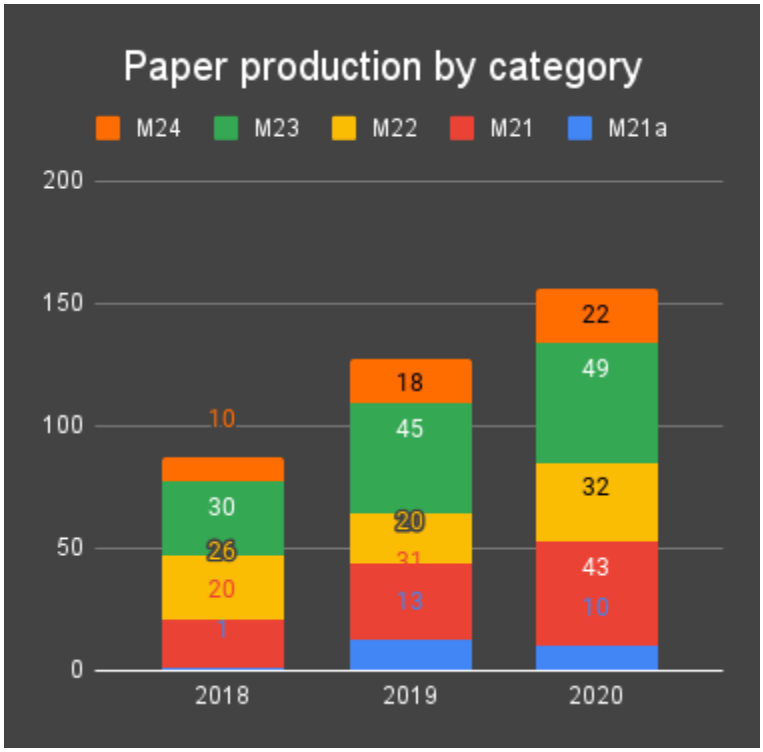
- total number of citations in WoS and SCOPUS (or impact factor two (hereinafter: IF2) and five (hereinafter: IF5), share of papers in world languages,
- share of foreign authors,
- share of newspaper references,
- share of references in foreign languages,
- the share of foreign reviewers and other indicators of bibliometric quality related to the equipment of the article,
- transparency of editing, etc.

The analysis in this report implied that the journals would be classified into the following categories depending on quality and impact. In accordance with the names of the categories, explanations are given below, which unequivocally indicate what is meant in terms of quality for a given category:

- **M21a** - The International Scientific Journal of Outstanding Values is a journal that according to IF2, ie IF5, is ranked in the JCR in its field of science among the top 10% of scientific journals.
- **M21** – The Top International Scientific Journal is a journal that according to IF2, ie IF5, is ranked in the JCR in its field of science between the first 10% and 30% of the journal.
- **M22** – The Prominent International Scientific Journal is a journal that according to IF2, ie IF5, is ranked in the JCR in its field of science between the first 30% and 60% of the journal.

- **M23** – The International Scientific Journal is a journal that according to IF2, i.e. IF5, it is not ranked among the top 60% of journals in its field of science.
- **M24** – The National Journal of International Importance is a scientific journal which, according to bibliometric indicators of the National Database of Scientific Journals in its field of science, is in the top 10%.

The category of international journals is determined on the basis of the influence achieved in the JCR, on the basis of references in WoS, and journals that refer to WoS, but have not yet achieved the impact factor are categorized as M24.

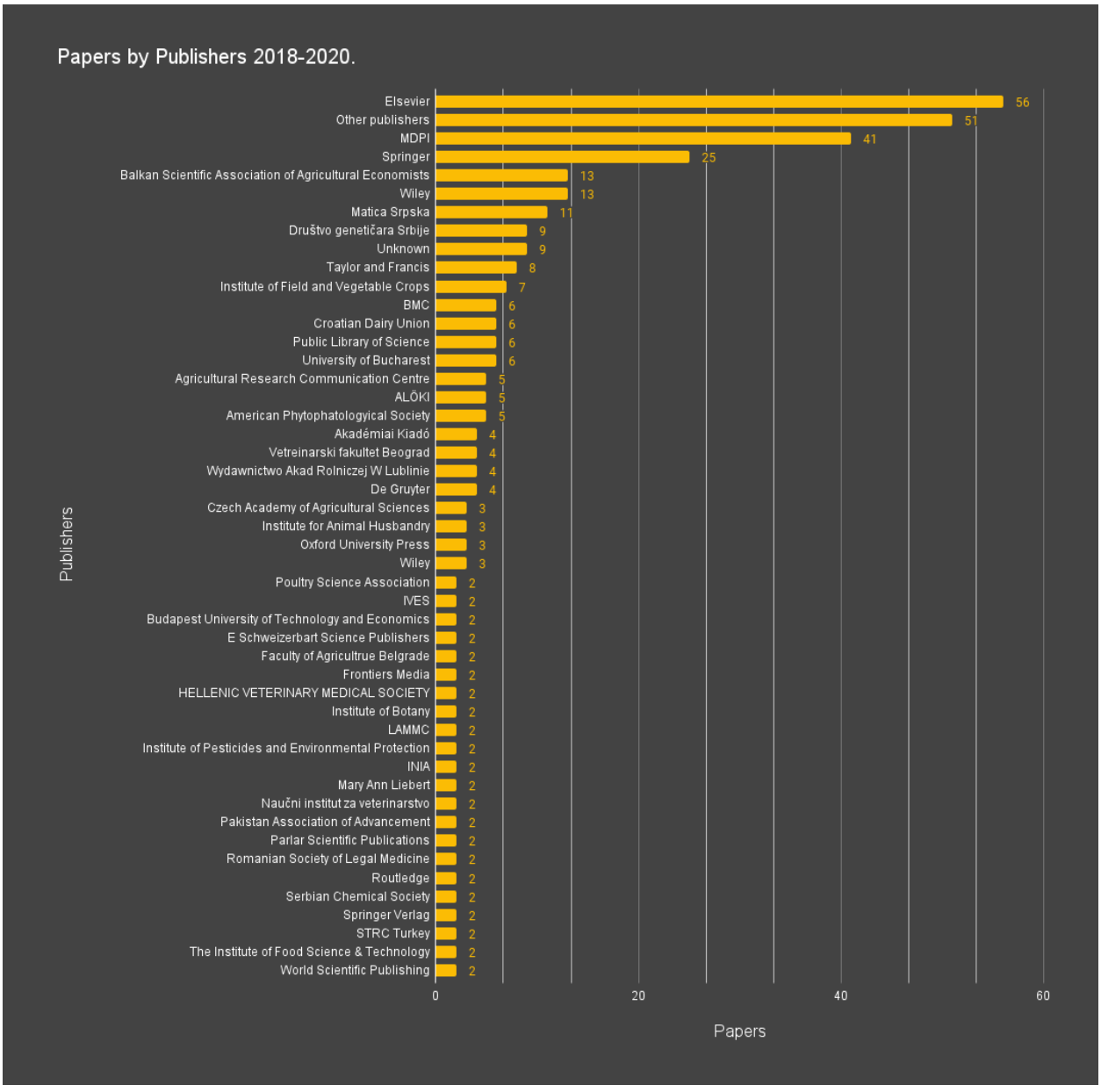


Graph 1.1 Paper production at PFNS with a class of journals by years.

The results of the analysis of scientific production at PFNS show an increase during the observed three-year period. All categories follow the gap except in the category M22 in 2019 and in the category M21a in 2020 (Graph 1.1) It can also be seen that scientific production is growing from year to year during the observed period.

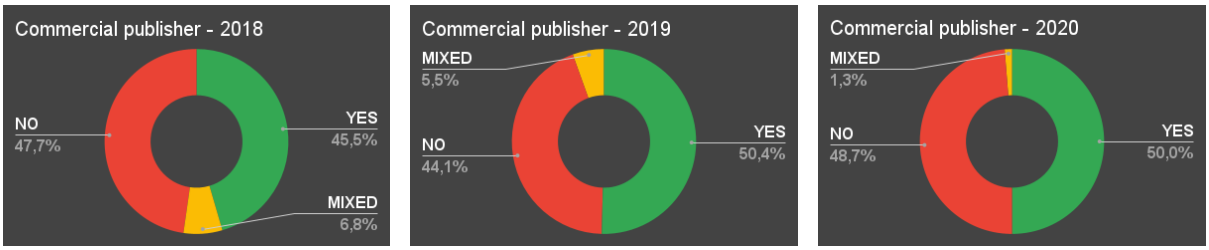
2. Publishers

An analysis of published scientific papers by PFNS researchers was performed, depending on the publisher under which the journals were published. Based on that, categorization was performed in the period from 2018-2020. years. Based on the results, publishers are grouped under the names "Other publishers" if one entry was recorded in the specified period. If the publication appears two or more times, the names of the publishers are listed. It was also noticed that in some cases it was not possible to determine the name of the publisher where the journal published, in that case they were marked as "Unknown".



Graph 2.1. Name of publisher, in the period 2018-2020. years

The first four publishers that make up almost 50% of all publishers recorded in the analysis are: Elsevier (15.8%), other publishers (14.4%), MDPI (11.6%), and Springer (7.11%) (Graph 2.1.).



Graph 2.2. Name of publisher, in the period 2018-2020. years

Analyzing the results related to the share of commercial or non-commercial publishers, the classification of published scientific production in that sense was performed. Sherpa Romeo's service served as a source of information within the mentioned analysis. Non-commercial publishers are mostly professional associations, while in cases when associations hire a commercial co-publisher for analysis, they are categorized as "MIXED". The results shown in the Graph 2.2 indicate equal representation in this regard. However, since 2019. and by 2020, over 50% are non-commercial publishers.

3. Publishing in journals familiar and indexed in DOAJ

About DOAJ

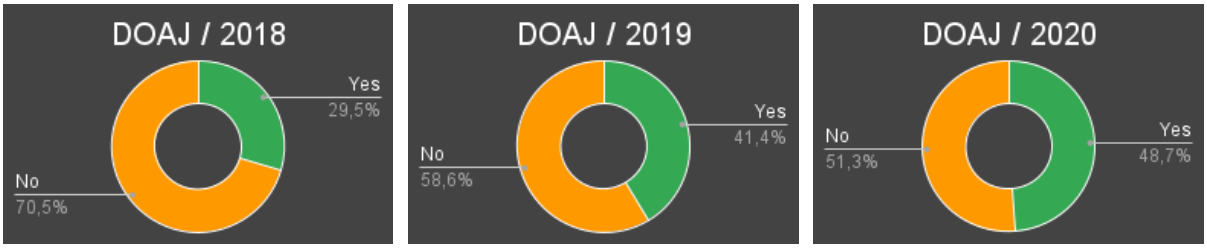
The DOAJ (Directory of Open Access Journals) was launched in 2003 with 300 open access journals. Today, this independent database contains over 16 500 peer-reviewed open access journals covering all areas of science, technology, medicine, social sciences, arts and humanities. Open access journals from all countries and in all languages are welcome to apply for inclusion. It is financially supported by many libraries, publishers and other like-minded organizations. Supporting DOAJ demonstrates a firm commitment to open access and the infrastructure that supports it. DOAJ is a co-author to the Principles of Transparency and Best Practice in Scholarly Publishing that provide the basis of the DOAJ basic criteria for inclusion.

Why is DOAJ important for OA

DOAJ indexes and promotes quality, peer-reviewed open access journals from around the world. We see open access as the only truly sustainable model for the future of scholarly

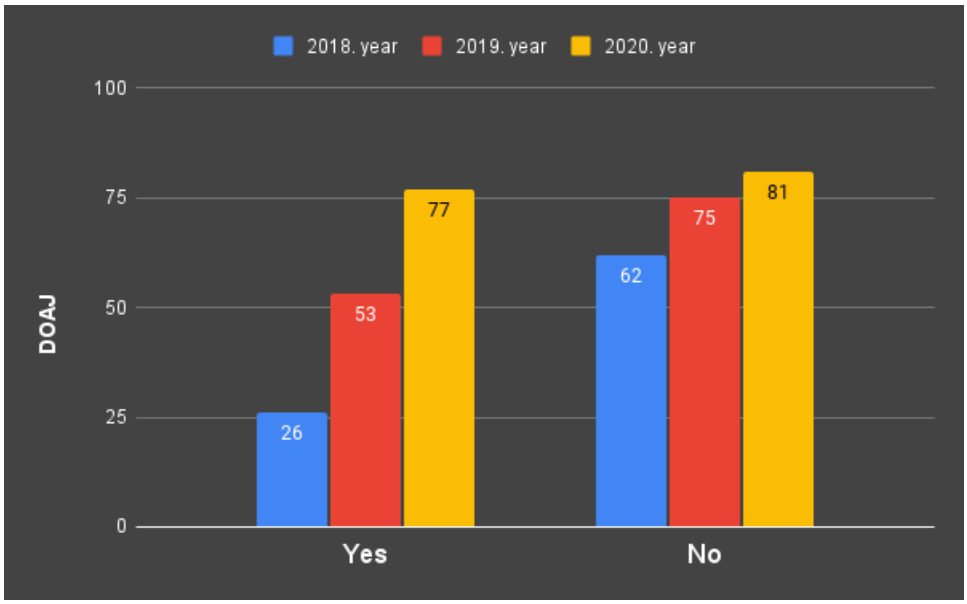
publishing. The analysis of the status of OA on PFNS started from the assumption that determining the representation of journals indexed in DOAJ in which research with PFNS is published could provide answers to the extent to which the institution and its employees are essentially oriented towards OA.

All entries were analyzed for the period 2018-2020, according to the journal / publisher, by checking the presence in the DOAJ journal database https://doaj.org/search/journals



Graphs 3.1. Percent of DOAJ indexed journals, with published papers

Based on the presented results of the analysis, it can be noticed that during 2018, out of the total number of journals in which the results with PFNS are published, 29.5% of journals were recorded in the DOAJ database. Significantly better situation was in 2019, when 41.4% of journals were in the DOAJ database. In 2020, the trend increased to 48.8% of DOAJ journals (Graph 3.1). Therefore, pointing out this fact would open the question with the aim of the lower limit being 50% of the journals indexed in DOAJ. This trend could be expected in cases when the quantity of scientific production would increase. It is very possible that the decline in the number of publications would have a negative impact on the significant decline in the number of journals present in DOAJ. Such an example was recorded in 2018 (Graph 3.2).

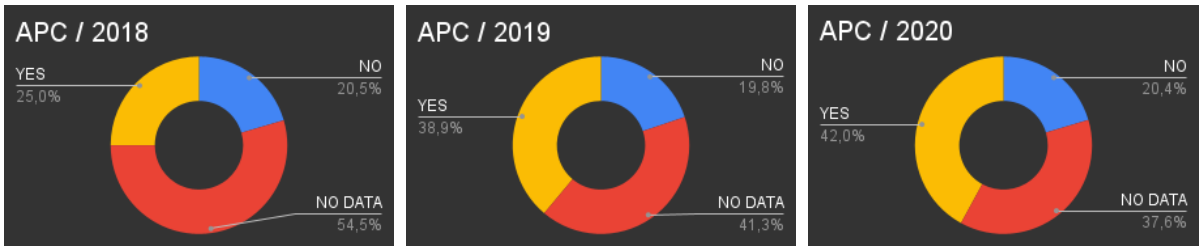


Graphs 3.2. Graph: Published papers in journals indexed in DOAJ in the period 2018-2020.

4. Article Processing Charge (APC)

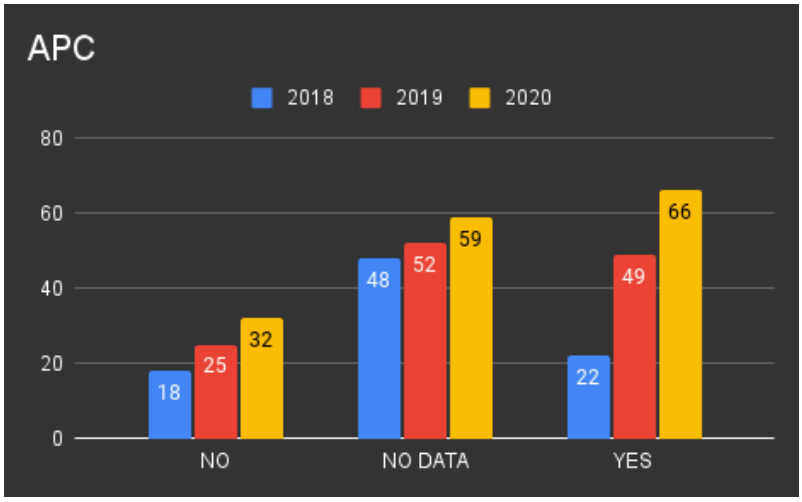
An article processing charge (APC), also known as a publication fee, is a fee which is sometimes charged to authors. Most commonly, it is involved in making a work available as open access (OA), in either a full OA journal or in a hybrid journal. This fee may be paid by the author, the author's institution, or their research funder. An article processing charge does not guarantee that the author retains copyright to the work, or that it will be made available under a Creative Commons license. Sometimes the APC is difficult to notice at first glance, because it is not highlighted on the official website or the explanation is very brief. According to some journals that strive to adopt all elements of open science, by finding other sources of funding, they manage to eliminate the APC. It is evident that certain influential and giant publishers have a very high fee. While on the other hand, some publishers give a high remuneration to the author that the results of the research will be published in a very short time. This approach often puts such publishers under a moratorium, or "gray zone", which damages the reputation of authors who publish research in such journals.

This analysis included determination of the pathway that requires the payment of a fee, (in addition to any normal publication fees that may be required) to make the article Open Access. It was marked with "YES". If the path is determined in the journal I don't require the payment of a fee, it was marked with "NO". In cases where the previous options were not explicitly stated, such entries are marked as "NO DATA".



Graph 4.1. APC in journals covered by the analysis

During 2018 and 2019. dominate journals whose data on the APC were not available. However, in 2020. the journals that charge the APC took over primate.

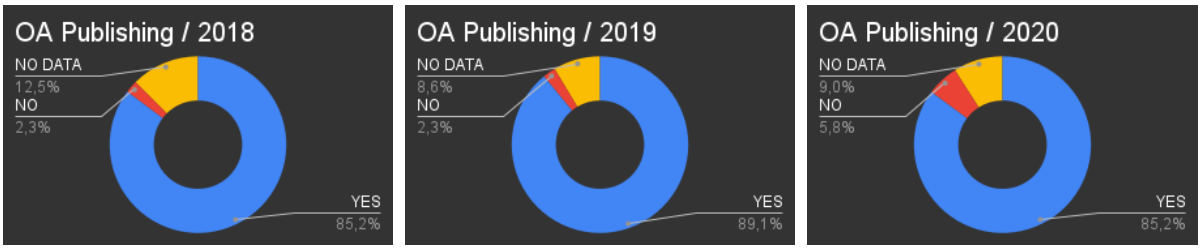


Graph 4.2. APC in journals covered by the analysis

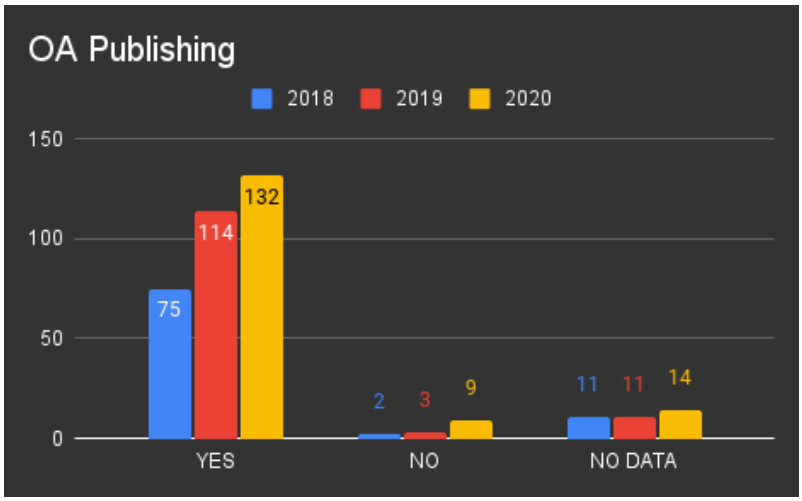
Observed by years, there is a trend of continuity in the share of journals that do not charge APC, it is around 20%. On the other hand, the trend of journals that point out that they have APC is on the rise, to the detriment of journals that do not explicitly provide this status ("NO DATA") (Graph 4.1). The results of the analysis indicate that in 2019. year was a quantitative increase in the number of publications in journals that charge fees (Graph 4.2).

5. OA Publishing

One of the elements that was included in the analysis of the scientific publications at PFNS, was related to the question, do pathways in journals include open access publishing (OAP). The methodology included checking each individual reference and the journal of published paper. The source for this information was the Sherpa service (https://v2.sherpa.ac.uk/). If the publication info was not present at Sherpa service, then a direct check of the journal (publisher's) page was performed. If each version of an article contains one or more pathways through which the article can be published in open access, it is named with “YES”. Sometimes it can depend on factors such as funders, publisher requirements, or the availability of the article. The journals that haven’t pathway that includes OAP, were marked “NO”. If information about this question wasn’t available, it was marked “NO DATA”. The results (Graph 5.1) showed that journals published during the period 2018/2019. in 85,2-89,1 percent contains one or more pathways through which the article can be published in OA. Journals which are not defined or don’t have pathways through which the article can be made OA are in sum less than 15% (Graph 5.1). Since the data on the OA pathway or some other option did not refer to each individual scientific paper, it was not possible to obtain information of this kind. The OA publishing tag actually represents the OA potential of the journal in which PFNS authors have published scientific productions. Therefore, the results of the analysis should be viewed in this light.



Graph 5.1. OA publishing in journals covered by the analysis



Graph 5.2. OA publishing in journals covered by the analysis

In quantitative terms, observing the results (Graph 5.2), it can be seen the absolute dominance of journals, which define at least one pathway, by which the results could have the status of OA. Over the years, there is a growing trend that is more intense in favor of OA. This situation is a good basis to continue with a similar trend in the future.

6. Embargo

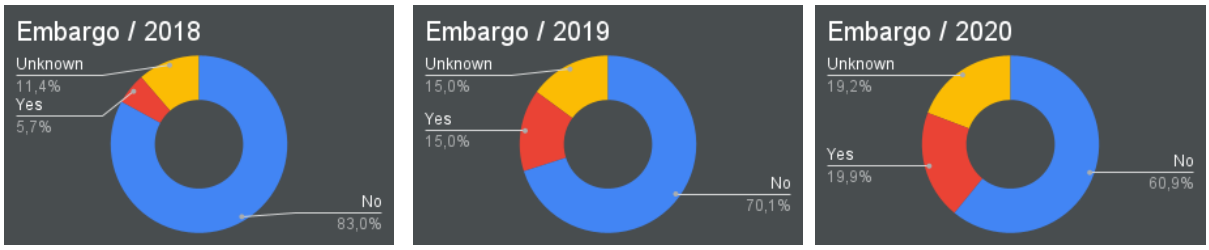
In academic publishing, an embargo is a period during which access to academic journals is not allowed to users who have not paid for access (or have access through their institution). The purpose of this is to ensure publishers have revenue to support their activities.

Various types exist:

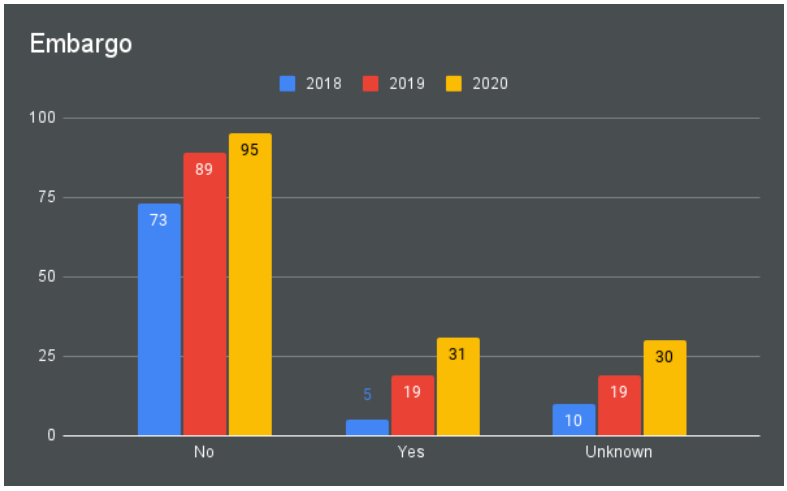
- A “moving wall” is a fixed period of months or years.
- A fixed date is a particular time point that does not change.
- A current year (or other period) is setting a time point on Jan. 1 of the current year, so that all material earlier than that is available. Although fixed during the year, it will change each

year. The embargo that the pathway requires. Unless stated otherwise, the embargo starts on the date of publication.

In this analysis conducted in journals, with "Yes" marked are references / journals if they had the only pathway that requires the embargo. Unless stated otherwise, the embargo starts on the date of publication. If journals don't require embargo, or have alternative pathway that don't require the embargo, the journal has been marked "No". In cases where information could not be identified that would define the journal in terms of the pathway that requires the embargo it is marked „Unknown".



Graph 6.1. Embargo publishing in journals covered by years %



Graph 6.2. Embargo publishing in journals covered by the analysis

Based on the results of the analysis, it can be seen that the share of journals by years that decisively state that they have an embargo ("YES") is low but on the rise. Thus, in 2018. it was 5.7%, in 2019. it will increase to 15% in 2020. it was almost 20%. (Graph 1; Graph 2) However, these results should be accepted with caution, as some journals have multiple paths. Among which there are alternative paths (pathways that don't require the embargo). And in the analysis, the mark "NO" was added as a feature, although in an individual case it was not possible to determine which path was used to process a specific scientific paper. Over the years, it could be concluded that the increasing trend of journals that eliminate alternative paths or have only embargo paths.

7. CC Licence

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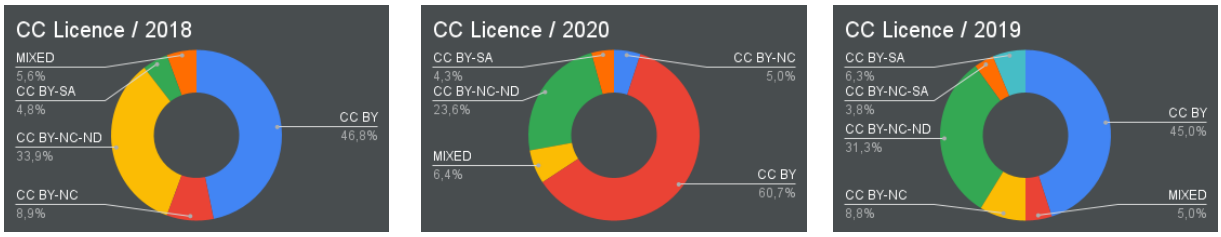
The analysis of scientific production at PFNS was performed by checking the journal and the licensing policy of publishing. The analysis included checking the journal via the Sherpa Romeo service (https://v2.sherpa.ac.uk/). The following CC licenses have been identified: CC BY; CC BY-NC; CC BY-NC-ND; CC BY-SA; CC BY-NC-SA. Under the label „MIXED are recorded journals that also allow the use of multiple licenses from the CC BY family (CC BY, CC BY-NC, CC BY-NC-ND).

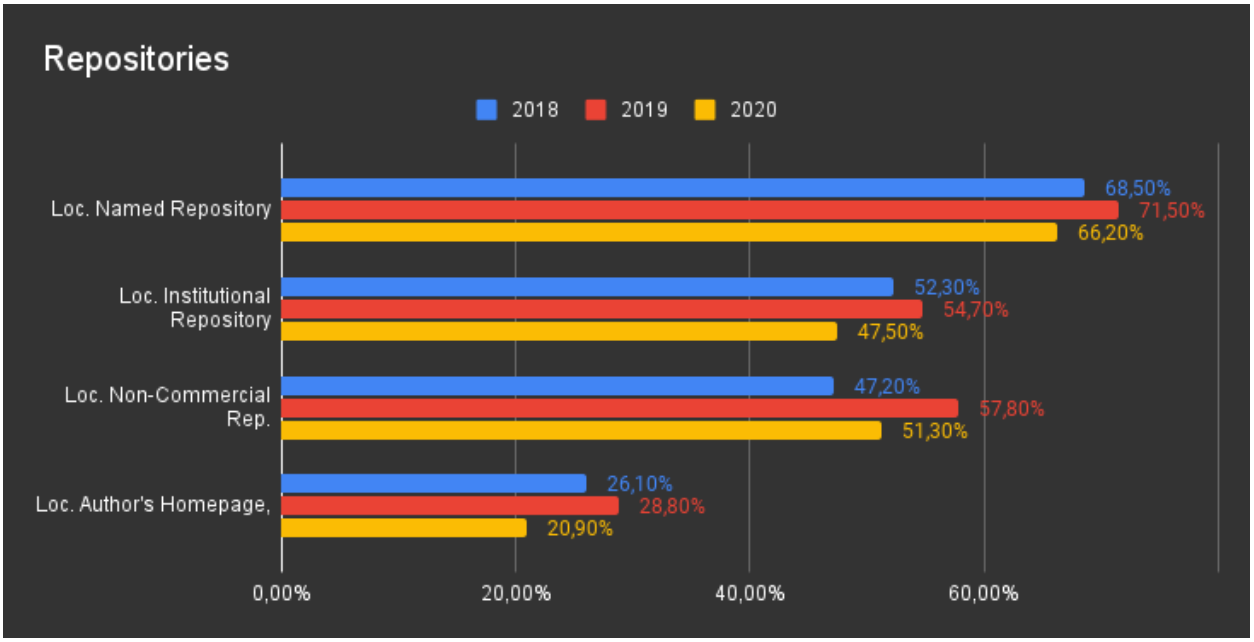


Graph 7.1. License in journals covered by the analysis

Based on the presented results, it can be concluded that during the analyzed years, the use of CC BI licenses dominates. According to the observed years, in 2018, 46.8% was recorded, in 2019 a big jump to 50.7% and then in 2020 there was a decline to 45% (Graph 7.1). The next most represented license was CC BY NC-ND. In 2018, it was represented by 33.9%, then in 2019 it dropped to 23.6%, and in 2020 there was a jump to 31.3%. Other licenses or combinations of licenses are below 10% (Graph 7.1).

8. Repositories

The repository analysis included the websites on which the pathway allows the article version to be available. This includes self-archiving and publisher-deposit locations, including the website of the journal. Based on data from the Sherpa Romeo service, the possibility of availability of scientific publications within: Named Repository, Institutional Repository, Non-Commercial Rep., Author's Homepage was checked. The results of the analysis are shown in the (Graph 8.1).



Graph 8.1. Repositories in journals covered by the analysis

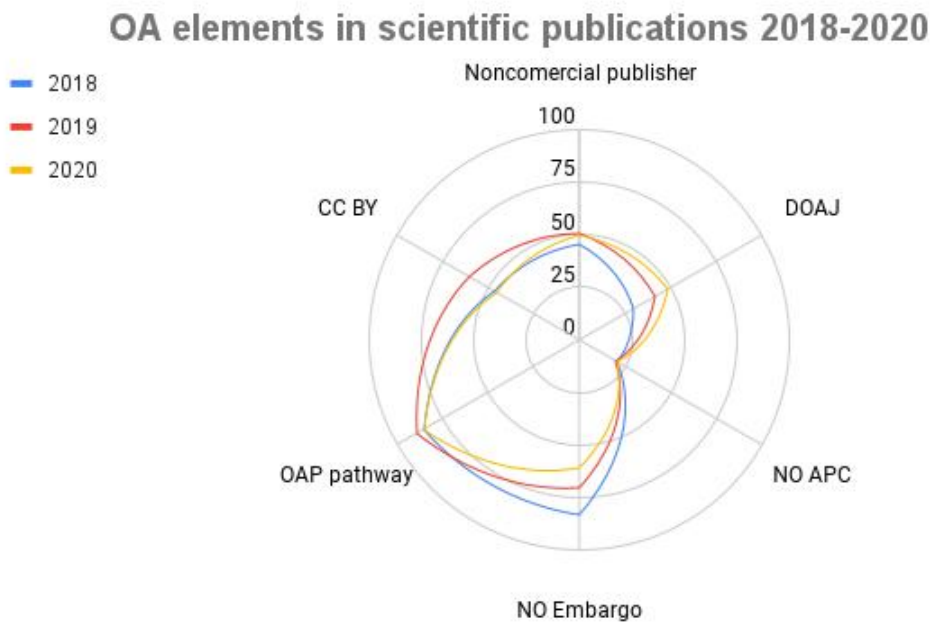
Based on the presented data, the following trend can be determined. The highest percentage of journals define the possibility of depositing in the Named Repository, 66.2-71.5% depending on the year (Graph 8.1). These are usually repositories that are associated with the publisher of the journal. Then Institutional Repository 47.5-54.7%, and Non-Commercial Rep 47.2-57.8% depending on the year (Graph 8.1). At the lowest level, archiving on the author's homepage was enabled at 20.9-28.8% depending on the year.

The results of this analysis can only indicate the possibility of the above options available for the authors. However, the realization of the mentioned possibilities could not be determined, especially the one related to Non-Commercial Rep. and archiving on the author's page. The only sure thing is that depositing in the Named Repository probably the only one realized. While the possibility of keeping in the Institutional Repository is definitely not realized, because the PFNS does not have an official Institutional Repository.

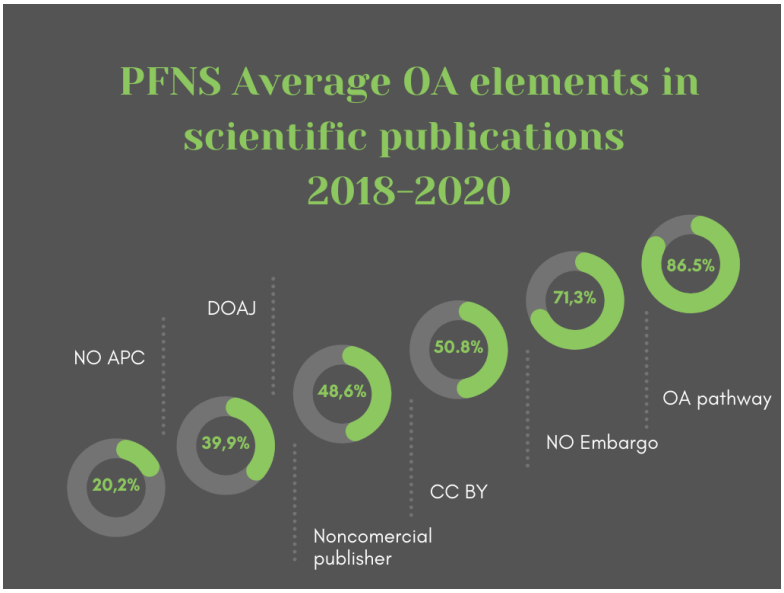
9. Conclusions

Considering the parameters that could determine the assessment of OA on PFNS, the following elements were taken as parameters of the analysis. OA pathway, CC BY, NO Embargo, Noncommercial publisher, DOAJ, NO APC. The results added by years when the analyzed parameters are combined (Graph 9.1), show how much the deviation is in relation to the ideal model. It can be noticed that the weaknesses of OA on PFNS, according to the presented analysis, are in a large number of publications in journals that charge APC and absence from DOAJ. When it comes to CC BC licenses and the share of Non-commercial publishers in publishing scientific productions, the situation is satisfactory. The elements with the best position

are the absence or indefiniteness of the embargo and the existence of one or more OP paths in the journals. Deviations can be noticed according to the observed years, but they are not significant (Graph 9.1).



Graph 9.1. Repositories in journals covered by the analysis



Graph 9.2. Repositories in journals covered by the analysis

The evaluation of the elements of OA, present in the publication of scientific production can be defined as follows.

- The biggest minus is the absence of an official institutional repository. This can be solved by using the Institutional repository of University of Novi Sad, https://open.uns.ac.rs/. However, using this option does not solve the ultimate goal of timeliness and motivation of the author to feed the Institutional Repository. This type of work requires constant education and highlighting the benefits not only for the authors but also for the institution they represent.

- The small share of journals does not require APC. This is very difficult to avoid, especially with giant publishers, who own reputable journals. The expectation is that the current situation will be maintained and difficult to change.

- Round 40

- The share of non-commercial publishers is close to 50%, which is optimistic. This group of publishers should be targeted.

- Nearly 40% of DOAJ journals may be associated with a high share of APC journals, as well as with commercial publishing.

- Representation of CC BY license is about 50%, which is a positive result that contributes to OA and OP.

- NO embargo and OA pathway are positive and hopeful elements, but work needs to be done to place the content in an adequate repository in terms of increasing visibility