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EVALUATION FOREVER – EXAMPLES OF PUBLICATIONS IN ENGINEERING DISCIPLINES

EWALUACJA BEZ KOŃCA – NA PRZYKŁADACH PUBLIKACJI W DYSCYPLINACH INŻYNIERYJNYCH

Summary: The article presents the issues of evaluation of researchers in Poland. The work related to the evaluation of the achievements of the achievements becomes particularly important, especially in the period just before the evaluation of the institution. Depositing of publication data takes place in the systems intended for evaluation in Poland: POL-on (PBN). The presented aspects of evaluation are related to the first criterion, i.e. the publication (criterion 1). For engineering sciences, the contribution is 50%. The assessment took place within the discipline/s declared by the employees of individual units. Publishing the results of research work is the responsibility of every person employed in a research or research and teaching position. The article presents examples related to the assessment of the publications in the field of occupational health and safety and broadly understood electrical engineering. The journals in the article are assigned engineering disciplines, including environmental engineering, mining and energy.

Keywords: evaluation, evaluation of scientific achievements, science communication, POL-on, SEDN, PBN, engineering disciplines, publishing activity

Streszczenie: Artykuł dotyczy zagadnień ewaluacji pracowników naukowych. Prace związane z oceną dorobku nabierają szczególnego znaczenia zwłaszcza w okresie tuż przed ewaluacją instytucji. Deponowanie danych publikacyjnych odbywa się w systemach mających służyć ewaluacji w Polsce: system POL-on (baza PBN). Zaprezentowane aspekty ewaluacji są związane z pierwszym kryterium tj. publikacyjnym (kryterium 1). Dla nauk inżynierskich wkład wynosi 50%. Ocena odbywała się w ramach dyscyplin/ny deklarowanej przez pracowników poszczególnych jednostek. Publikowanie wyników prac badawczych jest obowiązkiem każdej osoby zatrudnionej na etacie badawczym, czy też badawczo dydaktycznym. Zaprezentowane przykłady związane są z oceną dorobku publikacyjnego z zakresu BHP i szeroko pojętej inżynierii elektrycznej. Czasopisma przywoływane w artykule mają przypisane dyscypliny inżynierskie, w tym inżynierię środowiska, górnictwo i energetykę.

Słowa kluczowe: ewaluacja, ocena dorobku naukowego, komunikacja naukowa, POL-on, SEDN, PBN, dyscypliny inżynierskie, aktywność publikacyjna

Introduction

Evaluation of the scientific achievements takes place cyclically in the scientific institutions within the frames of the assessment of scientific achievements of the researcher. In the all-national scale, the evaluation of the achievements in period of 2017–2021 was performed in 2022. For the first time, the evaluation of scientific establishments was carried out within the frames of scientific disciplines and included publication activity, impact on the society and financial issues. It has been adopted for the needs of the present paper that the publication aspect is most important for the persons who are conducting the studies. The mentioned aspect induced many emotions, mainly due to the changes in the lists of periodicals in the years 2019–2021. Publishing was the element of assessment within Criterion I i.e. scientific level of the conducted activity, measured by the quality of publications within parametric evaluation and the number of patents [1]. Depending on the field of scientific disciplines in respect of engineering and technical sciences, and in the field of agricultural sciences, publishing gave 50-% contribution to

evaluation. In the case of Criterion II – financial effects of the research and developmental work – 35%, a Criterion III – the effect of scientific activity on functioning of the society and economy (expert assessment) gave 15%.

Evaluation in 2022

For the first time, in the assessment, there were considered the publication slots (slot – a measure of the single author's participation in a given work) of the authors (formal limitation is maximum 4 slots per one person) where one slot corresponded to a single-author publication (100%), or participation in the publications of many authors. The definition "publication slots" is referred to authorship (of article, chapter in monograph, conference materials), editing (monographs), translations and editorial elaborations. The publishing activity was evaluated in a different way and the reference point included disciplines and lists of periodicals, conference materials and publications. In the assessment of the scores for the period of 2019–2021, the list announced by MEiN (Ministry of Education and Science) in De-

ember 2021 was utilized [1]. It was possible to obtain 20–200 scores for the authorship of the paper from the mentioned above list. It was announced many times, and by this, guaranteed (to the journals and also, the authors) that the mentioned periodicals would not lose their so-far existing score evaluation in the successive lists. Moreover, they might change their position in the discussed list, i.e. in evaluation, after having increased the number of scores in the MEIN list.

Unfortunately, it is not the first time when the principles of evaluation are changed; they are repeatedly changed during the parametric assessment. The evaluation was prolonged from the planned range of 2017–2020 by 2021 (due to Covid-19 pandemic). The earlier evaluation, conducted in 2017, concerned the period of 2013–2016 [2].

What were the duties of the person whose publication achievements were evaluated?

- introduction and supplementation of the data in ORCID system – in certain units, the indication of individual ORCID identifier by the researcher was carried out together with the submitting of declaration, authorizing the given unit to indicate the achievements of the mentioned researcher. In September 2021, the duty of joining ORCID with PBN (POL-on system) was withdrawn [3]. It occurred at the moment when the researchers in many units possessed already ORCID identifiers. In the opinion of the authors of the present paper, it is helpful in the identification of the publishing achievements. The majority of the recognised international publishers suggest indication, and some of them, even require indication of the author's identifier during submitting his paper (e.g. Wiley, IEEE, and Springer).
- introduction of the publishing data and their verification in PBN base (POL-on system) - sometimes in the cooperation with library employees or information centres.
- indication of discipline, submitting the declaration about classification as N, authorization of the institution to indicate the publication – at least participation in the mentioned publication (article, chapter in monograph).
- In each of the assessed institutions, the work on verification of publishing data in PBN base was carried out in respect of correctness and completeness of the data in publishing records, i.e. bibliographic information on the publication, the referrer links, DOI identifier, introduction of data of the authors' affiliation, verification of the correctness of the data on the journal. During the mentioned work, many changes occurred in POL-on system, and by this, in SEDN system (System of Scientific Achievement Assessment) which was accessible in DEMO version in 2020 [4]. RTM (ready to manufacture) version of SEDN based upon the data introduced to POL-on, i.e. publication in PBN, was accessible in January 2022 [5]. In the evaluation, there was considered the recent list of periodicals and conferences materials, announced by the Minister of Education and Science for the years 2019–2021. The similar situation is in the case of list of publishing houses, the scores acknowledged for publishing of monographs, or chapter in the monograph are dependent on the category of

the publishing office and the ascribed amount of scores (level 1 = 80 scores (36 publishing hoses), level 2 = 200 scores (779 publishing houses) [6]. Monographs outside the mentioned list obtain 20 scores and chapter – 5 scores. It is, of course at the situation when there is the only one author; if there are many authors, the scores are divided in every case. The varying scores of the journals constitute one aspect (Electrotechnical Review in 2019 = 20 points; in 2020 = 20 points, in 2021 (February) = 20 points, in 2021 (December) = 70 points. Another aspect concerns disciplines ascribed to the periodicals. Thus, Electrotechnical Review has the following ascribed disciplines: automation, electronic and electrical engineering, technical information science and telecommunication, biomedical engineering, land engineering and transport, material engineering, mechanical engineering, environment engineering, mining and energetics; "Bioelectromagnetics" publication (100 scores in the lists of 2019–2021) has the following disciplines ascribed: automation, electronic and electrical engineering, biomedical engineering, pharmaceutical sciences, medical sciences, biological sciences, and physical sciences. Another example (from BHP range) is International Journal of Occupational Safety and Ergonomic (40 scores in the list of 2019–2021) has the following disciplines ascribed: biomedical engineering, land engineering and transport, mechanical engineering, environmental engineering, mining and energetics, pharmaceutical sciences, medical sciences, forestry sciences, sciences on safety and science on management and quality.

The narration concerning publishing in the periodicals in the so-called declared discipline and the planned, limited to 20-% publication in periodicals outside the discipline, was changing. Finally, the suggestion of such limitation was not maintained. According to the record in guide to evaluation, we can read: *As a result of the comments obtained within the frames of public consultations concerning the draft regulation in the matter of evaluating the quality of scientific activity, the discussed above limit was removed from the final version of the regulation; it concerned the admission of the articles published in the journals which in the list of the periodicals had another discipline than the evaluated one. The achievements should, however, have the thematic relationship with the scientific studies conducted within the frames of a given discipline* [7].

For evaluation, the data collected in PBN base, with the utilization of SEDN system will be taken into consideration.

The example of the record fragment with the publishing achievement is given below.

Tytuł czasopisma	Przegląd Elektrotechniczny
ISSN	0033-2097
eISSN	2449-9544
Liczba punktów zgodna z wykazem	14

Fig. 1. View in the SEDN base – a fragment of publishing record – article from Electric Engineering Review of 2018 – score assessment for Electric Engineering Review according to the list of January 2017 (in evaluation for the years 2017-18) = 14 points

Tytuł czasopisma	Przegląd Elektrotechniczny
ISSN	0033-2097
eISSN	-
Liczba punktów zgodna z wykazem	20

Fig. 2. View in the SEDN base – a fragment of publishing record – article from *Electric Engineering Review of 2019 – score assessment according to the list of December 2019 = 20 points*

Tytuł czasopisma	Przegląd Elektrotechniczny
ISSN	0033-2097
eISSN	-
Liczba punktów zgodna z wykazem	70

Fig. 3. View in the SEDN base – a fragment of publishing record – article from *Electric Engineering Review of 2019 – score assessment according to MEiN list of 21 December 2021 = 70 points*

Unfortunately, the evaluation consisted not only in calculation of scores for publications. The scientific unit could obtain negative scores when the authors:

- indicated the discipline, delivered the declaration on classifying as N but did not authorize the unit to indicate any of the publications (-3 slots);
- indicated the discipline but did not submit the declaration on classification to N number (-6 slots);
- did not submit the declaration on the represented disciplines (-6 slots).

In the situation of the death of the author who did not meet the formalities of declaration on discipline/publication, the directors (managers) of the given entity could submit such declaration.

Calculation of the points/slots

The publishing slots appeared as a new, unknown earlier element in the parametrical procedure for the year 2017–21. They were the measure of unitary participation of the author. One author = one slot. In the case of publication developed by many authors, the share in the slot and the number of scores per one author was dependent on the number of all authors, co-authors from the subject/discipline and score value of a given publication. Many institutions made the calculator available in order to calculate the participation in the slot and in score number falling on the representatives of discipline, for a given institution [8]. It is worthy to remind that the multi-author publications in the periodicals evaluated above 100 points gave just 100 points to each of the authors from different institutions. The below given table (Tab. 1) shows the example of calculations for different variants of the share of the particular authors in the publication.

Why it is worthy to speak about evaluation as the continuous process when assuming the stability in respect of the principle of assessment criteria. It is worthy, irrespectively of the evaluation, to publish the results of the studies, being the element of the scientific achievements, without waiting until the last moment to the end of the year, preceding the successive evaluation. The publishing process may be prolonged and from few months it may last for a year. The evaluation covered only the materials published until 31 December 2021. Therefore, the publications already submitted to printing, even possessing DOI, having the index in bases as *Article in Press* (Scopus) *Early Access* (Web of Science) were not taken into consideration.

Publishing in cooperation with other authors from other unit had a special meaning for the mother institution. The assessment of the achievements was performed on the grounds of the results within the frames of a given discipline which was declared in a given research/academic unit. Evaluation work resulted in ascribing category (A+, A, B+, B, C) to the unit what will be translated into the level of financing.

Table 1. Simulation of calculations for different variants of the authors' shares in the publication

Articles from periodicals (2019–2021)	Total number of scores for article (Pc)	Number of all authors (m)	Number of researchers from a discipline (k)	Number of scores for discipline	Share of slot for discipline	Number of slot falling on one researcher from discipline	Share of slot falling on one researcher from discipline
Article from journal from the list 2019–2021	200	3	2	200	1	100	0,5
	140	3	2	140	1	70	0,5
	100	3	2	100	1	50	0,5
	70	3	2	57,1547607	0,816496581	58,57738033	0,40824829
	40	3	2	32,6598632	0,816496581	16,32993162	0,40824829
	20	3	2	13,3333333	0,666666667	6,666666667	0,333333333
Article from journal outside the list	5	3	2	3,33333333	0,666666667	1,666666667	0,333333333

The screenshot shows the top navigation bar with the 'polon 2.0' logo and 'Polska Bibliografia Naukowa' text. A search bar contains the word 'Wyszukaj'. Below the navigation, there are dropdown menus for 'Dodaj' and 'Profil Autora'. A sidebar on the left contains several action buttons: 'EDYTUJ' (blue), 'USUŃ' (red), 'DODAJ OŚWIADCZ...' (green), 'CYTUJ' (blue), 'OBSERWUJ' (blue), and 'DYSKUSJA' (blue). Below these are menu items: 'Dane podstawowe', 'Autorzy i redaktorzy', and 'Źródło'. The main content area shows the 'Źródło' section with a 'ZMIEN' button. Below this is a table with the following data:

Tytuł:	Przegląd Elektrotechniczny
ISSN:	0033-2097
eISSN:	2449-9544
Strona internetowa:	http://red.pe.org.pl

Fig. 4. View of a fragment of publishing record in PBN (POL-on system) base without icon of MNiSW/MEiN (access www: 19.09.2021)

The screenshot shows the 'Źródło' section with a 'ZMIEN' button. Below this is a table with the following data:

Tytuł:	Przegląd Elektrotechniczny 
ISSN:	0033-2097
Strona internetowa:	http://pe.org.pl/

Fig. 5. View of a fragment of publishing record in PBN (POL-on system) base with icon of MNiSW/MEiN (access www: 2.10. 2022)

Summing up

The introduction of successive changes in the principles of each evaluation, during its course, without the appropriate preparation of the persons whose achievement is assessed (within the frames of a given discipline) as well as of the persons who verify the published data in PBN, may result in the errors and by this, inadequate evaluation of the achievement and underestimated assessment. It may be a result of time pressure, system errors and the changes introduced in POL-on system, including e.g. addition of new functionalities in PB or loss of the data as a result of migration. It happened that the particular institutions lost the publishing data and were forced, apart from the continuous verification, to introduce the data again. The process of evaluation is still subjected to discussions and we still do not know what will be the new principles of evaluation and will the parametric assessment look like. Logical reference or assumption,

ing the meaning of only highly scored publications, may not find coverage in reality. It is also worthy, in the future, to take care of the process of evaluation as the pretext to develop high quality publications. It should be not only the search for highly scored periodical or editorial house of monographs [9]. In the frames of evaluation of the following disciplines: environmental engineering, mining and energetics, 42 academic and research establishments were assessed. None of the evaluated units received category A+; 13 obtained category , 23 – category B+, 5 – category B and 2 obtained category C [10].

The information given below illustrates evaluation in the period of 2017–2021 in figures [11].

List of evaluated entities	291
Number of persons evaluated in SEDN	117 855
Number of publications	707 862
Number of protection rights	12 138
Number of artistic achievements	53 903

Number of research projects	27 556
Number of entries with the sums of income from commercialisation	16 002
Number of entries with the sums of incomes from research services at the order	155 867
Number of descriptions of the impact	2 659

In the list of the scientific periodicals dating back to December 2021, from among 32701 journals, 1813 were Polish scored magazines (2019–2021) which were considered in the evaluation [12]. The common activities were undertaken by scientific environments, including those ones resembling the meaning and role of Electrical Engineering Review in the engineering environment (PE publications indexed in Scopus in 1969–1984, since 2005, and WoS CC, 2007–2012 and since 2018), being published since 1919. All this mentioned above activity has contributed to rise of scoring evaluation in the list of periodicals. Owing to this fact, the articles from 2019–2021, considered in the assessment, obtained 70 points instead of 20. We all would like to know what will be changed in the successive parametrical assessment, whether the slots will remain, perhaps new parameters will appear, or maybe, we will come back to the earlier systems of evaluation.... Again, as previously, we do not know the new guidelines. The first year of publishing (2022) which will be subjected to evaluation has already passed, and the scientific environment builds the successive assessment on the so-far known rules which, in the next variety may be changed. "It is not known what will they consist in, or even in what direction they will go" [13].

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