

Paper Mills: A New Challenge to Academic Integrity in the Context of the Sustainable Development Goals

Daria Kizilova,
Student of Berdiansk State Pedagogical University

Anzhelika Shulzhenko,
PhD in Philology, Associate Professor of the Department of Social Communications,
Berdiansk State Pedagogical University

Abstract

In this article we would like to discuss one of the important issues in the field of scientific work, specifically the issue of academic integrity. We consider this issue to be one of the ways with which it will be possible to achieve the Sustainable Development Goals. We have considered the mechanisms of work of paper mills (factories of scientific publications), determined danger of existence and widespread functioning of such structures for the scientific community. Also in this work possible measures to counteract this phenomenon are identified.

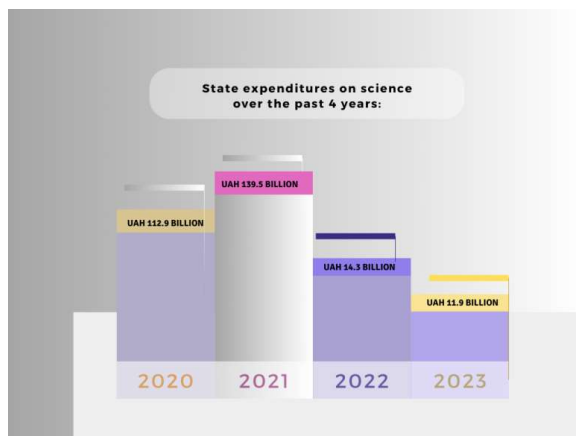
Keywords: Paper mills, plagiarism, science, academic integrity, measures

JEL Classification: B40; A11

DOI: 10.52244/c.2024.11.10

Introduction

Every year, hundreds and thousands of scientific materials are published in the world: from student theses to candidate or doctoral dissertations, from articles to reviews and collections of scientific papers. Just imagine, the Scopus database constantly indexes about 20 thousand scientific publications on a wide variety of topics. As of April 2023, the top three in terms of the number of publications among educational institutions in Ukraine were Taras Shevchenko National University of Kyiv (24,098), V. N. Karazin Kharkiv National University (12,916) and Ivan Franko National University of Lviv (9,300) (Ranking of universities...). The numbers are impressive and there are growing every year. The state allocates significant funds for research, including in educational institutions at all levels. In particular, in the same 2023, according to Ukrainian Ministry of Finance, UAH 11.9 billion was provided for the development of science (Ministry of Finance...).



The graph shows the funding of scientific and scientific-technical activities of Ukrainian researchers in recent years – from 2020 to 2023 (Ministry of Finance..., Budget of the ministry..., Ministry of Finance: The state budget...).

Compared to other years, funding for science has obviously decreased, but the number of studies, on the contrary, is growing.

In stark contrast to all these reports is the fact that scientific publication factories exist.

It is also impossible to hide the fact that these factories are quite common: their websites and advertising offers can be found by browsing sites with educational materials or simply typing the phrase "buy a scientific article" in the browser.

IFLScience is a popular British resource specializing in publishing articles about science and for science. It is part of the LabX Media Group, which covers a variety of industries, from research to analytics.

According to IFLScience journalists, recently the products of scientific publication factories have become more and more numerous. In 2023, a record number of scientific papers – about 10,000 – were withdrawn.

And this is only the part that managed to find.

It turned out that the largest number of violators of academic integrity is in countries such as Saudi Arabia, Pakistan, Russia and China. These countries have held the lead in terms of the highest rates of recalls over the past 20 years (Mawle, 2023).

Russell Mawle, one of the authors of IFLScience, notes that the most common signs of commissioned articles are invalid references to sources (inactive or referring to completely irrelevant materials), as well as illogical construction of texts (Mawle, 2023).

How does this topic relate to the United Nations Sustainable Development Goals? Violation of academic integrity, and especially the use of the services of scientific publication factories, at the same time contradicts such goals of sustainable development as:

- reducing inequality in countries and between countries. The inequality here is that most institutions evaluate the work of their scientists at the same level, although some of them can use the services of such factories. Thus, equality is violated: different efforts are made, but they are evaluated in the same way;
- decent work and economic growth. Academic integrity and its violation can also be called one of the issues of decent work. As for economic growth, it is also under threat, because, for example, the state or institution allocates certain funds for scientific research, and in the end, the work itself is commissioned. Accordingly, the quality of scientific work and the expediency of using the funds provided are in doubt;
- responsible consumption. The reader must clearly understand what products he or she consumes and treat him accordingly.

Main body

So, what do scientific publication factories do and what kind of services do they provide?

Scientific publication factories, or so-called "paper mills", are "enterprises" that have the services of writing manuscripts, buying co-authorship or buying references to other articles. The clients of such fraudulent organizations are students, graduate students, educators or any other persons engaged in research activities (Nazarovets, 2022: 4).

They function due to the fact that the indicator of the effectiveness of the work of either an educational institution or a scientist directly is the number of works published by him or her, without focusing on the quality of materials.

One of the important reasons why these factories still exist is that there are no penalties at the legislative level that could prevent the forgery of scientific papers. The only thing for which the workers of the "paper mills" can be prosecuted is the proven fact of plagiarism.

The very work of the employees of the "paper mills" is undemanding: similar or identical images, texts without reliable references to sources, copied from many unrelated studies, or absolute duplication of materials.

A separate challenge in the activities of such fraudsters is the use of artificial intelligence technologies and neural networks, which is becoming more and more common today. Higher education institutions approve provisions on the use of AI in study, teaching and research activities at academic councils.

In the article "Application of Artificial Intelligence in Writing Scientific Papers", M. Grom discusses this issue in detail. New technologies now mean both new opportunities and new risks of violation of academic integrity.

For example, ChatGPT offers a large-scale search for sources of necessary information on a topic, a relatively high-quality translation, and can even draw certain conclusions. But, in contrast, working with artificial intelligence requires a thorough verification of all data, especially analytical data. And, most importantly, this source does not ensure the scientific novelty of the study: only the information that has already been made public by someone is offered, and not always with the indication of authorship (Grom, 2023: 37–41).

However, how exactly do the activities of factories cause harm? And to whom at the first? The first victims of fraudsters are ordinary users. Often, the products of scientific publication factories appear on the pages of journals, scientific or any other periodicals, collections, almanacs, monographs, and remain in editorial databases even after they are withdrawn. Moreover, the works are distributed in the public domain of the Internet, where they are available to anyone.

It is worth noting that the average user rarely or completely does not pay attention to the source of information.

As a result, these factories have the opportunity to manipulate public opinion and influence public sentiment. When a publisher and a publication factory come to an agreement on the publication of a particular scientific paper, the latter send even more similar manuscripts, littering the publisher's databases.

"Entrepreneurs" also cause significant damage to scientific communication in general. According to the Analytical Center of Borys Grinchenko Kyiv University, the fact is that fraudsters use empty ORCID identifiers (unique author identification codes) and non-academic email addresses for greater reliability, which also clogs scientific communication and complicates searches.

The state also suffers losses. Relying on the funding provided, it expects an increase not only in the productivity of scientific institutions, but also in the development of science and research as such. Accordingly, the allocated funds are directed not to a high-quality study of the problem, but to pay for fake works or, in the end, remain with unscrupulous scientists.

As a result, such to say, the reputation of the scientific work of the institution, the reputation of the edition and the reputation of the country as a whole are at risk.

So, what measures should be taken to prevent the functioning of scientific publication factories? Which ones are available now?

First of all, the financial aspects of research projects are controlled by the State Tax Service and the Ministry of Economic Development of Ukraine or any other country in which scientist works (it obviously depends on local laws system).

Scopus regularly stops indexing entire edition due to suspicions of cooperation with scientific publication factories.

Plan S is an initiative designed to reduce the popularity of fraudulent services. It stipulates that those researches that were realized at the expense of taxpayers should be published only in open-access sources and editions. Such an algorithm will further contribute to the prevention of discrimination in the scientific space.

The initiative was launched on September 4, 2018. The authors are 12 European countries and the European Research Council.

Plan S's authors aim is to implement these principles:

1. Unlimited Copyright. Each publication must be made public under the terms of the Creative Commons Attribution License CC BY;
2. Grant-making organizations should establish uniform criteria for services that meet the requirements of high-quality journals and open access platforms;

3. If such open environments have not yet been created, grantors undertake to organize, stimulate and support the open access information structure;
4. Scientists are exempt from paying for the publication of their materials in the public domain. Where possible, costs will be covered by foundations and universities. This is an opportunity for institutions with limited capacity;
5. All countries of the European Union will have standardized requirements for financial costs;
6. For transparency research institutions, universities and libraries will align their policies and strategies on open access;
7. All of the above principles apply to all types of scientific publications;
8. Research results will also be placed in open archives and repositories, thereby ensuring long-term preservation and the potential for editorial and publishing innovations;
9. The "hybrid" publishing model does not comply with these principles;
10. Foundations are responsible for adhering to these principles and are given the right to impose sanctions for their violation (Plan C and access...).

The clauses of the agreement will promote the transparency of scientific communication and facilitate the assessment of the quality of scientific papers.

By the way, donors and institutions also need to strengthen the motivation of scientists to do really high-quality scientific research (Nazarovets, 2022).

In addition to encouragement, it is also necessary to hold responsibility for falsification of works. Of course, the punishment should apply to the entire chain of production, ordering and disclosure of publications.

For example, in May 2023, COPE (Committee on Publication Ethics) and STM (Association of Scientific Publishers) organized a summit, the purpose of which was: "To come to a common effective multi-stakeholder plan to solve the problem of paper mills" (United2Act...).



As a result of the summit, a statement was formed in which the participants agreed on joint steps to counter the factories of scientific publications. Details is in the infographic.

Evaluation of the effectiveness of scientists and institutions should focus not only on number of scientific articles, but also on quality.

In the summer of 2022, an international Stakeholder Assembly consisting of about 350 universities and institutions from more than 40 countries, including Ukraine, signed an Agreement on Reforming Research Assessment.

The signatories of the agreement refuse to use Hirsch indices, as well as other indicators that do not reflect the quality of a particular study. The authors also propose not only the procedure for evaluation by experts, but also a certain mechanism for the selection of such persons.

Qualified evaluation of scientific papers is possible under the following conditions:

1. Observance of academic integrity;
2. Establishment of a proper procedure for expert evaluation of materials;
3. Separation of industries into "fast" and "slow" for fairness of assessment ("fast" industries are those in which new knowledge changes quite quickly and, accordingly, the results of research are relevant for a short time);
4. Avoid simple comparison of data – deepen the analysis of scientometric indicators [9].

Conclusions

Using the services of scientific publication factories is a deliberate violation of scientific ethics, depreciation of copyright and direct harm to scientific communication. Paper mills pose a threat not only to the research environment, but also to society and the country, therefore, it is necessary to take all measures to counteract their functioning, and thus contribute to the achievement of sustainable development goals.

References

Budget of the ministry of education and science for 2021: almost uah 140 billion for the development of education and science. 2020, December 17. <https://mon.gov.ua/>

Grom, M. O. 2023. Application of artificial intelligence in writing scientific papers. In the collection of materials of the All-Ukrainian Round Table "Academic Integrity: Legal Problems", Odesa, pp. 37–41.

Ministry of Finance: Almost UAH 12 billion has been allocated to finance science in 2023. The Ministry of Finance of Ukraine 2023, February 6
https://mof.gov.ua/uk/news/minfin_na_finansuvannia_nauki_u_2023_rotsi_spryamovano_maizhe_12_mlrd_griven-3825

Ministry of Finance: The state budget for 2022 provides UAH 2.1 billion more for the financing of science compared to 2021. Ministry of Finance of Ukraine.

Nazarovets S. (2022) How to protect yourself from the clutches of scientific publication factories? In the bulletin "Academic Integrity", Kyiv, Analytical Center of Borys Grinchenko Kyiv University, 4 p.

Plan C and access to scientific publications. science. <https://nauka.gov.ua/informational/plan-<unk>-and-access-to-scientific-publications/>

Ranking of universities according to Scopus indicators 2023. Ratings of higher education institutions. 2023, April 24. Osvita.ua <https://osvita.ua/vnz/rating/88976/>

Russell Mawle (2023) 10,000 Research Papers Were Retracted In 2023, Breaking Annual Records IFLScience <https://www.iflscience.com/10000-research-papers-were-retracted-in-2023-breaking-annual-records-72071>

The quality of scientific research will be assessed in a new way in Ukraine. <https://zn.ua/ukr/UKRAINE/v-ukrajini-po-novomu-otsinjuvatimut-jakist-naukovikh-doslidzen.html>

United2Act <https://united2act.org/>