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The Influence of Global Trends in Scientific Publishing on National Regulations in the Republic of Moldova and on Dissemination of Academic Findings



Abstract: - The paper examines how global shifts in scientific publishing, driven by technological advancements and the transition toward open access, have impacted national regulations and the dissemination of research in Moldova. The study employs a mixed-methods approach, combining a review of global trends with an in-depth analysis of Moldovan regulations from 2008 to 2024, as well as bibliometric data from Web of Science, Scopus, and a National Bibliometric Instrument. Key findings reveal a significant increase in open access publications, enhanced accountability in science, and improved international collaboration, demonstrating the effectiveness of regulatory reforms in elevating the global visibility of Moldovan research. However, challenges remain, including issues related to funding, infrastructure limitations, and concerns regarding the quality of open-access resources. The paper concludes by emphasizing the necessity for ongoing efforts to address these challenges and to foster a more robust open science ecosystem in Moldova.

Keywords— open access, academic publishing, global trends, Republic of Moldova, regulatory framework, research findings dissemination.

I. INTRODUCTION

Over the past few years, academic publishing has experienced significant transformations driven by rapid technological advancements and evolving paradigms in knowledge dissemination. The global landscape of research communication has been reshaped by key trends, including the rise of open access publishing, the implementation of more rigorous quality control measures, and the increasing prevalence of international collaboration. These developments have fundamentally altered how research findings are shared, accessed, and valued worldwide. For the Republic of Moldova, these shifts present both opportunities and challenges in its efforts to enhance academic discourse and increase the international visibility of its research outputs.

This study explores the critical intersection of global trends in scientific publishing and Moldova's evolving regulatory framework. It examines the normative acts adopted between 2008 and 2024, which reflect a strategic alignment with international best practices. The analysis focuses on how these regulatory changes have impacted the dissemination of academic findings within the country. As Moldova navigates the dynamic landscape of scholarly communication, significant progress is evident in its transition toward open access models, improved peer review processes, and adherence to rigorous ethical standards. These efforts are essential for enhancing the integrity and accessibility of research in Moldova.

The study posits that the integration of global trends in scientific publishing has influenced national regulations in Moldova, resulting in significant changes in the dissemination of academic research. It aims to highlight the ongoing efforts of Moldovan public authorities to establish effective regulatory frameworks that foster an environment conducive to high-quality research and scholarship. These frameworks prioritize principles such as Open Science, collaboration, and accountability. The heightened emphasis on transparency within the scientific community represents a crucial step toward enhancing Moldova's contribution to the global academic landscape.

II. LITERATURE REVIEW

The transition to digital formats represents a significant shift in the landscape of academic publishing. The emergence of digital technologies has optimized the submission, peer review, and dissemination processes, thereby facilitating faster publication cycles [1]. Additionally, the rise of digital platforms, such as open access mega-journals, has improved access to and visibility of publications. However, this shift has also introduced challenges

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in maintaining quality standards [2]. Consequently, the digital transition necessitates that traditional publishers adapt to this new environment, striking a balance between integrating digital tools and upholding established practices.

Thus, the impact of global trends in scholarly publishing on national regulations and the dissemination of scholarly output is a complex phenomenon influenced by the interplay between evolving publishing practices and the regulatory, cultural, and institutional frameworks present in each country. The key elements that shape these dynamics include open access (OA), improved quality control and evaluation, and international collaborations.

One of the most notable trends in academic publishing is the shift towards open access. This increase in open access, along with the choice between print and online media, significantly influences how research findings are disseminated, affecting accessibility, readership, and the overall impact of academic work [3].

Moreover, the concentration of influence within a limited number of countries and institutions, primarily in the Global North, exacerbates existing inequities [4]. The use of English as the lingua franca in scholarly publishing [5] advantages English-speaking researchers, while those from non-English-speaking countries face significant challenges due to language and cultural barriers [6]. Additionally, they struggle to meet global publication standards while remaining committed to local knowledge production. Researchers from peripheral countries often encounter not only obstacles to publication but also difficulties in having their contributions acknowledged and integrated into the dominant scientific discourse. Efforts to address these inequalities, such as the establishment of multilingual publishing platforms and region-specific indexes, have yet to gain substantial traction.

Open access publishing may offer a viable solution to these inequalities. By removing financial barriers, open access enhances the global accessibility of research findings, thereby promoting their utilization by institutions and individuals with limited resources. The adoption of open access has been shown to increase institutional visibility and scholarly impact, as evidenced by examples from the Middle East and North Africa region [7]. However, open access models often impose substantial publication fees, which can impede participation for researchers from low-income countries [8].

Furthermore, the adoption of OA is influenced by institutional policies and the requirements established by funding bodies. In Europe and emerging economies, OA is increasingly recognized as a means to enhance citation impact and research visibility [9], [10]. However, disciplinary and institutional disparities limit the full potential of OA [11]. High publication fees can also prevent authors from underfunded regions from participating [8], disproportionately affecting those from low-income areas. Additionally, some institutions and researchers encounter challenges in complying with OA mandates due to infrastructural and financial constraints, highlighting the unequal advantages of this publishing model [11].

The transition to open science, characterized by transparency and collaboration, represents a convergence of global trends and national regulations. The implementation of national policies that support these initiatives has the potential to enhance scientific inclusion and reduce inequalities.

Scientific publications serve as the cornerstone of scholarly research, facilitating the dissemination of knowledge, the rigorous evaluation of scientific contributions, and the collective advancement of understanding within society. Recent technological advancements and shifts in scholarly norms have necessitated the adoption of new methods for quality assurance, peer review, and transparency.

Inadequate quality control and peer review of scientific publications compromise research integrity, leading to the dissemination of substandard or fraudulent research. This situation undermines public trust in scientific discourse, creating challenges for responsible researchers and eroding confidence in academic publishing [12]. Beltrão et al. [13] highlight that insufficient quality control results in an increased incidence of plagiarism, particularly self-plagiarism, which further undermines research integrity. This erosion of trust in scientific publications ultimately diminishes public confidence in research findings and the credibility of academic institutions. Consequently, there is a global push for more rigorous quality control in scientific publishing, including stricter peer review processes, ethical guidelines, and the use of bibliometric indicators to assess impact.

Technological advancements play a crucial role in redefining quality assurance mechanisms within scientific publishing. Tools that utilize machine learning and natural language processing are being integrated to enhance editorial processes and identify inconsistencies. McIntosh [14] emphasizes the effectiveness of these technologies in minimizing human errors and expediting decision-making in the publishing process. Furthermore, plagiarism detection software has become an essential resource in the fight against academic dishonesty, aiding in the preservation of scientific integrity. Beltrão et al. [13] demonstrated that systematic checks for plagiarism, including self-plagiarism, are important for upholding ethical standards and ensuring the quality of publications.

Plagiarism and misconduct continue to pose significant challenges in the field of science. Masic [15] emphasizes the importance of promoting ethical practices to uphold research credibility. Despite technological advancements, it is essential to address the cultural and structural factors that contribute to these issues. Establishing clear guidelines regarding authorship, ethical reporting, and transparency can help reduce instances of misconduct. Furthermore, collaboration between institutions and publishers is essential for maintaining ethical standards and ensuring that the principles of honesty and accountability in research are upheld.

At the institutional level, global rankings are becoming an increasingly influential factor in shaping research strategies and resource allocation. Universities and funding bodies tend to favour outputs that enhance their global reputation, which can lead to the marginalization of locally relevant research [16]. Furthermore, the economic model underpinning the scientific publishing industry has faced criticism due to its monopolistic tendencies, with a small number of large publishers controlling a significant share of the market. This concentration has raised concerns about the commercialization of scholarly knowledge, as evidenced by the fact that the profit margins of commercial publishers are comparable to those in the technology sector [5].

Proposed reforms to the publishing system emphasize transparency, inclusivity, and accountability. Suggested solutions include the establishment of funded public repositories, the utilization of alternative metrics that capture the social impact of research, and the promotion of multilingual publishing [5], [8]. These approaches aim to decentralize influence in scholarly publishing and distribute access to knowledge more equitably.

Furthermore, the practice of peer review has undergone a transformation due to global trends. Alternative models that emphasize technical validity simplify the review process; however, this may compromise quality standards [2], [17].

At the same time, traditional peer-review methods have faced criticism for their shortcomings, including a lack of transparency, potential subjectivity, and low efficiency. In this context, Post-Publication Peer Review (PPPR) has been proposed as a flexible model that facilitates the ongoing evaluation of published work. Unlike traditional peer review, which is limited to the pre-publication stage, PPPR encourages dialogue and continuous assessment within the scientific community [18] emphasizes that PPPR enhances scientific integrity by extending accountability to published works, allowing for the correction of errors and omissions through an iterative process. Consequently, this approach ensures that scientific results are consistently subjected to constructive criticism, fostering a culture of improvement and accountability.

Nevertheless, traditional peer review remains an essential tool for ensuring rigor, with numerous researchers emphasizing its importance even as new models emerge [19]. The coexistence of traditional and alternative assessment methodologies reflects a broader effort to reconcile the demand for efficiency and accessibility with the need for thorough quality control in scholarly communication.

The use of Journal Impact Factor (JIF), a prominent bibliometric tool, significantly influences the development of national publishing and regulatory practices. Although originally designed to assess the quality of academic journals, the JIF has evolved into a benchmark for evaluating the output of individual researchers and the performance of academic institutions. This shift has resulted in a preference for high-impact, English-language journals. Such limitations have drawn criticism, particularly regarding the JIF's inability to account for disciplinary differences and the uneven distribution of prestigious journals. The dominance of the JIF has fostered a publishing culture that prioritizes visibility, often at the expense of other important factors such as quality and social relevance. For instance, researchers from resource-limited contexts frequently encounter challenges in publishing in high-impact journals [20], [21], [22].

International collaboration and standardization represent a significant movement that influences scientific publishing. There is an increasing emphasis on international collaboration in research and the implementation of standardized practices across various disciplines, which reflects a notable transformation in the academic landscape. This trend is propelled by the necessity for diverse expertise to address global challenges and the demand for coherent practices that promote cross-border cooperation. Shih [23] emphasizes the necessity of fostering international research collaboration that adheres to high integrity standards, particularly in the context of geopolitical tensions. The author highlights the importance of global dialogue to establish responsibility and authority in upholding scientific principles and implementing standardized publishing practices. International collaboration has become essential to academic research, underscoring the significance of certain bibliometric indicators for evaluating research performance and informing policy and funding decisions [24].

International collaboration is an important element of scholarly publishing, as it has been shown to enhance the impact of research papers and increase their global visibility [25]. To promote international co-authorship and encourage participation in the global scholarly community, countries such as Spain and China have implemented

targeted strategies [26], [27]. The increasing trend of international collaboration underscores the substantial influence of global partnerships on the dynamics of scientific output. Co-authored papers are often cited more frequently and receive greater recognition [19].

While global trends offer significant advantages, regional disparities persist. The underdeveloped infrastructure and insufficient funding in developing countries impede the adoption of these trends [11]. This situation underscores the need for tailored policies designed to bridge the gaps in access and participation.

National policies are significantly influenced by global trends. For instance, as of 2019, Poland has implemented policies that encourage publication in high-impact journals by offering funding based on publication metrics [16]. However, in countries with limited resources, such pressures can result in unintended consequences, such as a rise in publications in predatory journals [22]. This situation underscores the tension between national priorities and global standards.

In national contexts, global trends significantly influence the development of publication policies. For example, Moldova has implemented reforms aimed at more broadly integrating OA and enhancing the standards of peer review [28]. Furthermore, the Moldovan government and public authorities have taken steps to reform the national regulatory framework concerning the evaluation, classification, and monitoring of Moldovan journals. Similarly, Kazakhstan has adopted reforms to improve research output by engaging with international frameworks such as the Bologna Process [29]. To increase the visibility of research, Romania has enacted policies that prioritize publication in high-impact journals indexed in databases like Web of Science and Scopus [30]. However, this strategy may marginalize local journals that focus on national or regional topics. This dynamic highlights the inherent conflict between global demands and local relevance. In contrast, Latin America offers a compelling example through the Scientific Electronic Library Online (SciELO) initiative, which promotes regional collaboration and open access [10]. This initiative has enhanced the visibility of Latin American research and fostered interregional collaboration, yet it has also revealed tensions between quantity and quality in publication. These examples underscore the necessity for national policies to strike a balance between alignment with global standards and addressing local needs. By tackling these challenges, policies can facilitate the dissemination of high-quality research and enhance integration into the global discourse.

III. METHODOLOGY

This study employs a comprehensive mixed-methods approach to analyse the influence of global trends in scientific publishing on national regulations and the dissemination of academic findings in the Republic of Moldova. The methodology consists of the following key components:

A review of the existing literature on global trends in scientific publishing was conducted. This review offers a theoretical framework for understanding the current landscape and highlights relevant case studies and best practices from various countries.

This analysis focuses on identifying key policies that reflect the integration of global trends into national regulations governing academic publishing. Documents from the Ministry of Education and Research, the National Agency for Quality Assurance in Education and Research (ANACEC), and the National Agency for Research and Development (NARD) were examined to understand the evolution of the regulatory framework. An in-depth analysis of regulatory documents adopted in Moldova between 2008 and 2024, related to the evaluation and monitoring of Moldovan academic serial publications, was conducted.

Through this methodology, the study aims to provide a comprehensive understanding of how global trends in scientific publishing influence national regulations in Moldova and shape the dissemination of academic findings. The insights gained will contribute to the development of recommendations for policymakers and stakeholders to promote a robust and effective academic publishing system in the country.

IV. RESULTS AND DISCUSSIONS

4.1 *Impact of Global Trends on National Regulation Related to Scientific Publishing*

In our research, we initially examined national regulations related to academic publishing activities, specifically focusing on Moldovan scientific journals.

The evolution of the Regulation on the evaluation, classification and monitoring of scientific journals (hereinafter referred to as the Regulation), adopted in the Republic of Moldova, reflects ongoing efforts to align with international standards and ensure the quality of academic publications. Since 2008, several editions of the Regulation have been approved, each introducing significant updates and improvements.

The first edition of the Regulation was approved by the Joint Decision of the Supreme Council for Science and Technological Development of the Academy of Sciences of Moldova (SCSTD of ASM) and the National Council for Accreditation and Attestation (NCAA) [31]. This document established the framework for the evaluation and classification process of scientific journals in the country. The key elements outlined in this initial edition of the Regulation were as follows:

- **Categories of journals (A, B, C).** The classification of journals into three distinct categories serves to differentiate them based on quality, impact, and scope. Category A represents high-impact or top-tier journals, while Categories B and C reflect lower levels of impact or specialization. This classification assists researchers and institutions in identifying suitable publication venues and ensures that quality varies among journals.
- **Anonymous Peer Review.** By mandating that all scientific articles undergo anonymous peer review, the regulation established a standard for quality assurance in scientific publishing. This process ensures that the research published is critically evaluated by experts in the field, thereby enhancing the credibility and reliability of the articles.
- **ISSN requirement.** Mandating that journals possess an International Standard Serial Number (ISSN) demonstrates a commitment to maintaining a formal and recognizable identity for publications. The ISSN facilitates easier cataloguing and referencing of journals in libraries and databases worldwide.
- **Article summaries in Romanian and an internationally recognized language.** Requiring summaries in both Romanian and a widely spoken international language (such as English, French, or German) enhances accessibility and ensures that research can reach a broader audience. This practice promotes multilingualism in academia and enables non-Romanian-speaking researchers to engage with the research.
- **Indexing in international resources.** The requirement for journals to be indexed in international resources, databases, or catalogues reflects an intention to enhance the visibility and academic standing of Moldovan journals. Indexing in prominent databases can lead to increased readership and citations, thereby amplifying the overall impact of the published research.
- **Regular publication.** A commitment to the consistent publication of journals ensures the timely dissemination of research findings, which is critical in rapidly evolving fields. Consistency in publication helps establish the journal's reliability and reputation within the academic community.
- **Dedicated website.** Requiring journals to maintain a dedicated website enhances the accessibility of published content. A website serves as a central platform for hosting articles, submission guidelines, and other relevant information, facilitating easy access for researchers, authors, and readers.
- **The presence of authors from abroad.** This criterion encourages contributions from international researchers, promoting diversity in research perspectives and enhancing collaboration. Such practices can elevate the journal's status and foster a more inclusive scientific community.

Overall, the stipulations outlined in the 2008 Regulation aimed to enhance the quality, visibility, and international recognition of scientific journals in Moldova. This initiative promotes excellence in academic publishing and aligns with global best practices.

The amendments to the Regulation approved in 2011 [32] introduced significant measures designed to strengthen ethical standards and accountability in academic publishing. Below are some specific enhancements:

- **Declaration of responsibility.** The introduction of a requirement for authors to submit a declaration of responsibility highlights a commitment to accountability in academic publishing. This requirement ensures that authors recognize their ethical obligations concerning originality and proper citation practices.
- **Penalties for plagiarism.** The stipulation that a publication's status will be suspended for a period of six months to one year in cases of published plagiarized materials underscores a strong stance against academic dishonesty. This measure is likely intended to deter plagiarism, promote ethical research practices, and protect the integrity of the scientific community.

These amendments represent a progressive approach to enhancing the ethical standards, structural quality, and operational consistency of national journals in Moldova. They demonstrate a commitment to cultivating a rigorous academic publishing environment that prioritizes integrity, high-quality research practices, and the reliable dissemination of scientific knowledge. By strengthening accountability measures, improving peer review processes, and standardizing article formats, these regulations seek to elevate the standards of scientific publishing in the country and align with international norms.

The amendments to the Regulation approved in 2012 [33] introduced significant enhancements to the structure, review process, and publication frequency of scientific articles:

- **Principal elements of a scientific article.** By outlining the essential components of a scientific article – including the abstract, keywords, introduction, methodology, results and discussion, conclusions, and bibliography – these amendments help standardize the structure of articles. Such standardization facilitates clearer communication of research findings and ensures that authors present their work comprehensively and coherently.
- **Double anonymous Peer Review.** Transitioning to a double anonymous peer review process – where both reviewers and authors remain anonymous – enhances the objectivity of the evaluation process. This method aims to minimize biases against authors based on their identity or affiliation, thereby strengthening the overall quality and fairness of the review.
- **Minimum publication frequency.** The requirement for journals to publish at least two issues per year promotes the regular dissemination of research. This mandate ensures consistent academic output, which is essential for maintaining journal credibility and providing researchers with timely opportunities to publish their findings.

The 2012 amendments to the Regulation represent a significant step toward enhancing the quality, structure, and credibility of scientific publications in Moldova. By standardizing the format of articles, implementing a double-anonymous peer review process, and ensuring regular publication, the regulation aims to improve the integrity and reputation of Moldovan scientific journals. These changes are designed to foster an environment of rigorous academic standards, encourage better research practices, and contribute to the international visibility and impact of Moldovan scientific literature.

The amendments to the Regulation on the evaluation, classification, and monitoring of Moldovan scientific journals approved in 2015 [34], introduced several significant measures aimed at enhancing the quality, accountability, and international visibility of scientific publishing in Moldova. Below are the key additions:

- **Obligatory platform for indexing – National Bibliometric Instrument (IBN).** Designating the National Bibliometric Instrument as a mandatory platform for indexing Moldovan scientific journals guarantees that all recognized journals are indexed in a centralized database. This initiative enhances the visibility of these publications and facilitates access to research outputs for scholars and institutions. Indexing through the IBN can provide a standardized metric for evaluating journal performance, enabling researchers and institutions to assess the impact of journals based on consistent bibliometric data.
- **Limitation to 3 scientific domains per journal.** Limitation to three scientific domains per journal. Restricting each journal to three scientific domains promotes specialization and facilitates a more focused editorial policy. This approach can result in higher-quality publications, as the journal can concentrate on specific areas of expertise. By mandating that article reviewers are specialists in the relevant domain, this regulation ensures that the peer review process is conducted by qualified individuals who are well-versed in the specific field of study. This enhances the rigor and quality of the peer review, ultimately leading to more reliable publications.
- **Presence of international members in the editorial board.** Enhancing Credibility and Reach: Including international members on the editorial board can significantly improve the journal's credibility and reputation. This inclusion signals a commitment to global standards in academic publishing and helps attract submissions from a broader range of authors, thereby enhancing the diversity of published research. International editorial board members can introduce best practices from various academic cultures, fostering collaboration and improving the overall quality of the journal.
- **New Journal Category – B+.** The introduction of a new category (B+) addresses a gap in the previous classification system. This addition allows for a more nuanced differentiation in quality and impact among journals. It assists authors in better identifying suitable journals for their work and guides researchers in selecting appropriate serials for publication. Furthermore, it provides an incentive for journals to enhance their standards in order to achieve this higher classification, fostering a competitive environment that encourages quality improvement.
- **The list of databases, directories, and catalogues expanded.** Registering journals in these listed resources results in additional evaluation scores. By broadening these lists, the regulation aims to enhance the visibility and accessibility of Moldovan research journals at both international and national levels. Inclusion in more databases can facilitate a wider dissemination of research findings.
- **Insufficient points leading to non-recognition.** Establishing that a journal's serial publication will not attain recognized scientific journal status if it fails to achieve sufficient points introduces strict performance metrics. This encourages journals to meet high-quality standards and uphold rigorous publication practices. This

measure promotes accountability among journals and underscores the importance of adhering to evaluation criteria, ultimately enhancing the overall quality of scientific literature produced in Moldova.

These amendments collectively aim to strengthen the framework for scientific publishing in Moldova by enhancing indexing practices, promoting specialization, ensuring qualified peer review, and improving international collaboration. By introducing new categories and performance metrics, the Regulation fosters a climate of quality and accountability that can elevate the standards and visibility of Moldovan scientific journals within the global academic community. Ultimately, these changes seek to align Moldovan journals with international best practices in scholarly publishing, thereby enhancing their credibility and impact.

The new edition of the Regulation was approved in 2018 by the National Agency for Quality Assurance in Education and Research (ANACEC), formerly known as the NCAA [35]. It represents significant progress toward enhancing the visibility, credibility, and standardization of scientific publications in Moldova:

- **New Journal Category - A+.** The introduction of a new classification for journals establishes a category for those recognized for their international impact. Type A+ journals are those ranked in the Web of Science (WoS) database and possess an impact factor. This change underscores the significance of international recognition and citation metrics in evaluating the quality of journals.
- **Including DOIs for articles.** Requiring that articles have a Digital Object Identifier (DOI) enhances their accessibility and traceability. A DOI provides a permanent and unique link to digital content, facilitating easier citation and retrieval of articles in online databases. By promoting the use of DOIs, journals increase their visibility in the digital landscape, making it simpler for researchers to find, reference, and share scientific work. This practice also aligns Moldovan journals with international standards for scholarly publishing.
- **Editor-in-Chief and Editorial Board qualifications.** Mandating that the Editor-in-Chief and at least two members of the Editorial Board have publications indexed in reputable databases such as Scopus or Web of Science ensures that the journal's leadership possesses recognized expertise and experience within the academic community. This requirement enhances the journal's credibility and prestige, as it reflects the quality of oversight and the scholarly background of those involved in the publication process. Consequently, it is likely to improve the quality of peer review and editorial decisions.
- **Authors should possess an ORCID.** Requiring authors to have an Open Researcher and Contributor ID (ORCID) helps uniquely identify researchers and ensures proper attribution for their work. ORCID provides a persistent identifier that links researchers to their publications and grants, thereby enhancing accuracy in authorship recognition. This practice contributes to improved research management by offering a standardized approach to author identification, which can be particularly beneficial in collaborative research environments.
- **Articles should be classified using established systems (UDC, JEL, MSC or Other).** Requiring articles to adhere to classification systems such as Universal Decimal Classification (UDC), Journal of Economic Literature (JEL) classification, or Mathematics Subject Classification (MSC) promotes organization and categorization of research outputs. This classification facilitates easier searching and discovery of articles by subject matter, enabling researchers to find relevant publications in their fields more efficiently. Additionally, it contributes to the systematic organization of knowledge within journal archives and databases.

These amendments demonstrate a commitment to enhancing the quality and global integration of scientific publishing in Moldova. By standardizing identification practices through DOIs and ORCID, ensuring qualified editorial leadership, and promoting systematic classification of articles, these changes aim to align Moldovan journals with international best practices. This focus on quality, accessibility, and credibility is expected to enhance the reputation of Moldovan scientific literature and contribute to the development of a robust academic publishing environment. Ultimately, these regulations encourage more effective research dissemination and facilitate greater engagement with the global scholarly community.

The amendments to the Regulation on the evaluation, classification, and monitoring of Moldovan scientific journals, approved by ANACEC in 2023 [36], reflect a progressive approach to modernizing scholarly publishing practices, enhancing accessibility, and promoting transparency in academic publishing. Below are some key elements of these amendments:

- **Encouragement to use academic editorial platforms (OJS or similar).** Encouraging journals to adopt academic editorial platforms, such as Open Journal Systems (OJS), provides a structured and efficient approach to managing the editorial process. These platforms facilitate online submission, peer review, and publication, thereby streamlining operations and enhancing overall workflow. Utilizing such systems can also improve the accessibility of journal content, as many are designed to optimize the user experience for both authors and readers. This can lead to increased visibility for published articles and greater engagement within the academia.

- **All articles publish Creative Commons License.** Requiring that all articles adhere to this licensing model promotes open access to scholarly work. This approach allows authors to retain copyright while permitting broad distribution and use of their work, fostering an environment of sharing and collaboration. By making research freely accessible, this practice enhances the visibility of articles and can potentially lead to greater citations and impact within the academic community. It aligns with global trends advocating for open access to research findings.
- **Individual web pages for articles (unique URLs).** Assigning unique URLs to each article ensures that every publication has a permanent and easily locatable address on the internet. This facilitates easier referencing, sharing, and discovery of research articles by readers and researchers. Unique URLs support proper citation practices, making it simpler for authors to link back to their work and for others to find and cite articles accurately.
- **Specification of the roles of authors in the articles.** This practice enhances clarity regarding the contributions, responsibilities, and areas of expertise of authors. It promotes transparency and ensures that readers understand each author's contribution to the presented research. By clearly delineating the roles of authors, this amendment helps ensure that all contributors receive appropriate recognition for their work, which is particularly important in collaborative research settings.

The 2023 amendments represent a significant shift toward improving the quality and accessibility of scientific publishing in Moldova. By encouraging the use of academic editorial platforms, promoting open access licensing, ensuring unique URLs for articles, and clarifying the roles of authors, these changes aim to modernize the publishing process and enhance the overall integrity of scientific literature. These improvements not only facilitate the broader dissemination of research findings but also promote transparency and accountability within the scholarly publishing landscape. Ultimately, these measures can help elevate Moldovan scientific journals on the international stage, fostering greater collaboration and engagement within the global academic community.

These cumulative amendments to the Regulation illustrate Moldova's commitment to enhancing the quality, integrity, and international visibility of its scientific publications. By emphasizing ethical standards, publication structure, and modern publishing technologies, the regulations seek to cultivate a robust academic publishing environment that aligns with global best practices. These initiatives aim to improve the reputation and impact of Moldovan scientific literature within the global academia.

4.2 The Impact of Global Trends and National Regulations on Academic Publishing

Moldovan regulations increasingly emphasize the inclusion of articles in open access, as well as indexing in open access repositories and directories (such as Zenodo and DOAJ) or institutional archiving systems. As a result, many traditional Moldovan journals have adopted an open access model, making their articles freely available to foster greater readership and citation. This transition not only enhances the visibility of Moldovan research but also supports national researchers in meeting international standards.

The increased emphasis reflects a national commitment to align with international best practices. An analysis of scholarly articles by Moldovan researchers indexed in the Scopus and Web of Science databases indicates a growing shift toward open access publishing in both databases, with the share of articles published in open access rising from 14-15% in 2008 to approximately 50% in recent years (Fig. 1).

This demonstrates substantial growth in the adoption of open access practices by Moldovan researchers. We believe that this is due to global trends that have influenced national regulations and institutional policies promoting open access.

The introduction of mandatory indexing for national open access journals in the IBN (National Bibliometric Instrument) serves as a concrete example of this adaptation. This requirement is especially emphasized for journals that receive public funding.

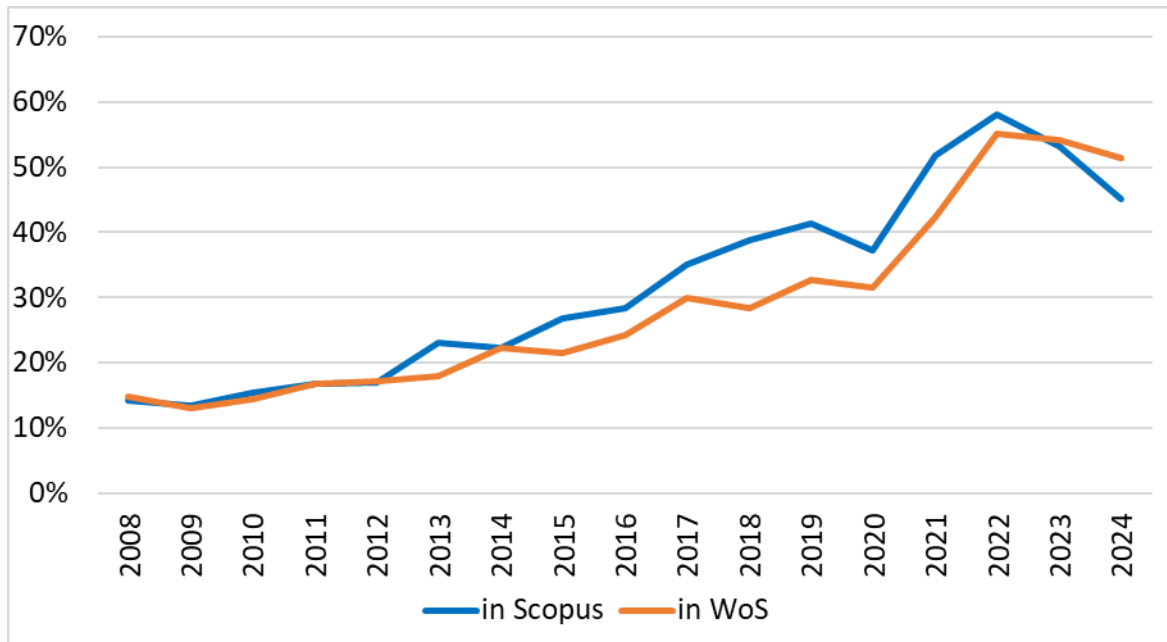


Fig. 1. Share of papers of Moldovan authors published in open access
 Source: Scopus / Web of Science databases. Data retrieved/verified on December 15, 2024

Amendments to the Regulation on the evaluation, classification, and monitoring of Moldovan scientific journals, approved in 2015, expanded the list of databases, directories, and catalogues in which journals can be registered to receive additional evaluation scores. This list, along with other catalogues, includes the Directory of Open Access Journals (DOAJ). DOAJ is a curated online directory that indexes and provides access to high-quality, open-access, peer-reviewed journals. It is a vital resource for researchers, librarians, and anyone seeking reliable, freely available scholarly literature.

According to data extracted from IBN (Fig. 2), 49 Moldovan journals have been registered in the DOAJ since 2008.

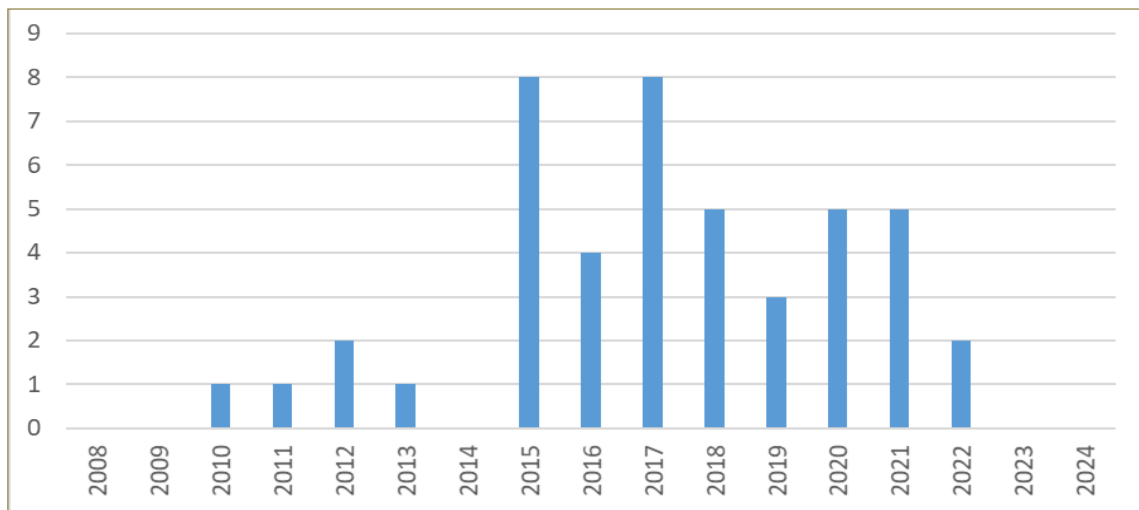


Fig. 2. Registration of Moldovan journals in DOAJ
 Source: National Bibliometric Instrument (IBN) - https://ibn.idsi.md/ro/Graph_Stacked?type=revisteDoaj. Data retrieved/verified on December 15, 2024

The initial years (2008-2014) demonstrate minimal registration, indicating a slow initial adoption of open access publishing among Moldovan journals. There is no consistent upward trend; years with no registrations are interspersed with years that see only a few new registrations. The data reveals peaks in 2015 and 2017, suggesting the influence of the 2015 amendments to the Regulation promoting DOAJ registration. In the subsequent years, there was a decline in registrations, as the majority of journals had already been registered. As of December 2024, there are 34 Moldovan journals indexed in DOAJ (<https://doaj.org/>), which represents 81% of all recognized scientific journals in Moldova for that year.

Despite these initiatives, Țurcan et al. [37] identified several barriers that hinder the widespread adoption of open science in Moldova. These barriers include institutional challenges, a lack of infrastructure, limited funding for open access initiatives, and concerns regarding the quality and reliability of openly accessible resources. Additionally, a study conducted by Țurcan et al. [38] indicates that while there is a growing awareness of the importance of open science, the overall readiness for its implementation remains inconsistent across various sectors of the scientific community in the Republic of Moldova.

Another important issue addressed in national regulations pertains to the use of DOIs that significantly enhance the accessibility, discoverability, and citation tracking of research findings, thereby increasing the impact of academic research. The Regulation introduced this indicator as an important criterion for articles in 2018. Today, we can observe the effects of this measure. According to data extracted from IBN, the share of articles with DOIs rose dramatically from 2% prior to the amendment to 73% in 2024 (Fig. 3), indicating that a large majority of articles are now properly identified with DOIs.

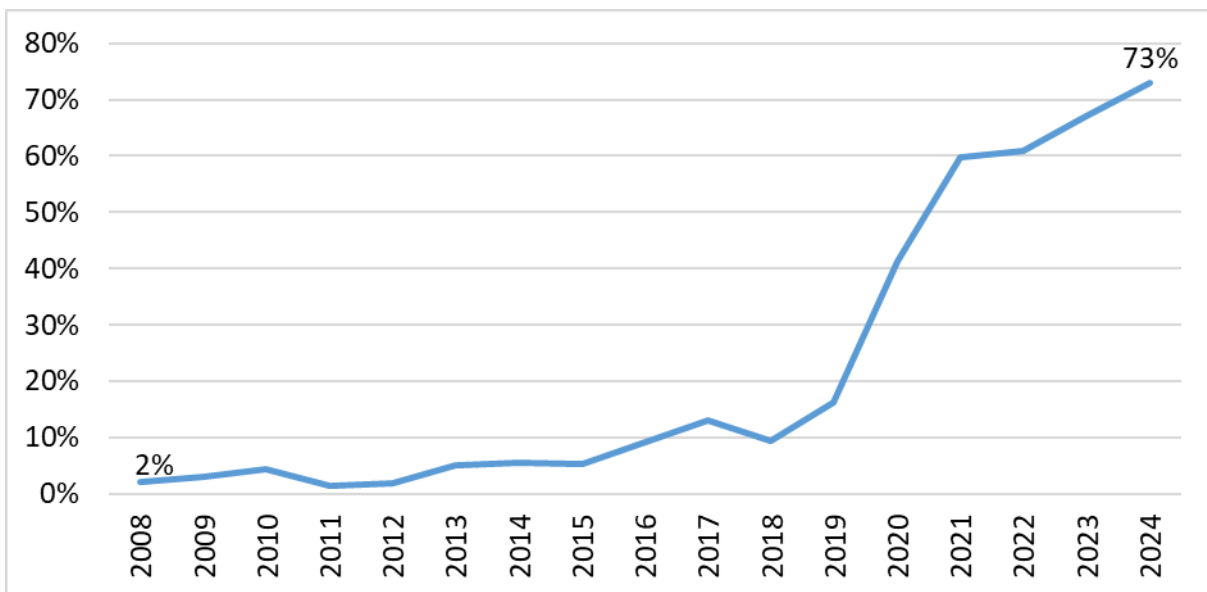


Fig. 3. Share of articles with DOIs in Moldovan journals

Source: National Bibliometric Instrument - <https://ibn.idsi.md/>. Data retrieved/verified on December 15, 2024

The effectiveness of this regulation is demonstrated by a significant increase in the adoption of DOIs. Consequently, this measure has successfully promoted more standardized publishing practices while enhancing the visibility and accessibility of research articles.

Moldovan regulations have also become more detailed in their assessment of journal quality, introducing stricter criteria for peer review, which now includes international reviewers. Additionally, clearer ethical guidelines have been established to address issues such as plagiarism and other forms of misconduct. The use of bibliometric indicators, including the Web of Science impact factor as a criterion for entry into the A+ category, has been implemented to measure journal success. Moldovan journals are placing a strong emphasis on quality control through rigorous peer review processes, adherence to ethical standards, and the enhancement of editorial practices. These initiatives, aimed at combating predatory publishing practices, have become essential for protecting the integrity of academic research.

The data presented in Fig. 4 illustrate the distribution of Moldovan scientific journals across categories (A, B+, B, C, Other) from 2008 to 2024. From the data presented, we observe that the journal evaluation process began in 2009, the year following the approval of the Regulation on the evaluation, classification, and monitoring of scientific journals in the Republic of Moldova.

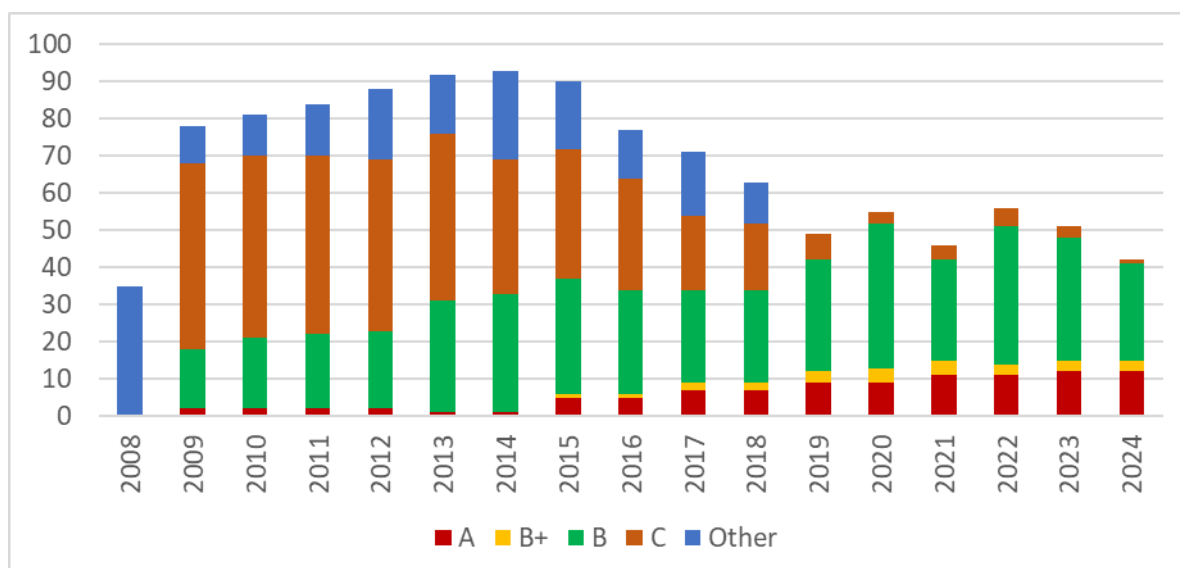


Fig. 4. Distribution of Moldovan scientific journals by category

Source: National Bibliometric Instrument - https://ibn.idsi.md/ro/Graph_Stacked?type=categoriiReviste. Data retrieved/verified on December 15, 2024

According to the insights, the total number of registered journals in the IBN has decreased since 2015, when new evaluation criteria were introduced. Simultaneously, it is evident that these criteria have positively impacted the quality of journals, as the number of category “C” journals dropped significantly from 50 in 2009 to just 1 in 2024. In contrast, the number of category “A” journals increased from 2 in 2009 to 12 in 2024. In summary, the introduction of stricter evaluation criteria has enhanced the overall quality of Moldovan journals.

Inclusion in Scopus and Web of Science significantly enhances a journal's visibility to a global audience of researchers, academics, and institutions. This increased visibility leads to higher citation counts and a greater impact factor, thereby elevating the journal's reputation and prestige. Being indexed in these databases improves the journal's ranking across various metrics and strengthens its standing within the academic community. This, in turn, enhances the journal's competitiveness and attracts higher-quality submissions. Furthermore, indexing serves as a mark of quality assurance. The rigorous selection criteria employed by Scopus and Web of Science confer greater credibility upon the journal and foster trust among readers and authors. Consequently, Moldovan journals indexed in one or both of these prestigious databases are classified as “A” category journals.

The Fig. 5 shows the share of Moldovan evaluated and classified journals indexed in the Scopus and Web of Science databases from 2009 to 2024. A steady increase in the number of journals indexed in both databases is observed, indicating a rise in the international visibility and recognition of Moldovan journals.

There is a clear upward trend in the percentage of Moldovan journals indexed in Scopus and/or the Web of Science, indicating improved international visibility and recognition of Moldovan research. The percentage of Moldovan journals indexed in Scopus consistently exceeds that of those indexed in the Web of Science, suggesting that the latter has more rigorous indexing criteria. A notable acceleration in the growth rate has been observed since 2017, attributed to increased efforts to enhance journal quality and targeted initiatives aimed at promoting international indexing.

Collaborations with international databases and indexing services, such as Scopus and Web of Science, are becoming increasingly vital for Moldovan journals. These partnerships facilitate a broader reach and ensure that Moldovan research is integrated into the global discourse. As a result, many journals are actively pursuing inclusion in recognized indexing services, which enhances their credibility and visibility on the international stage. Additionally, the introduction of a mandatory database for scientific journals aims to assist in identifying reputable platforms for publication. This initiative is important, given the growing number of journals and the need for researchers to differentiate between credible and predatory publishing options.

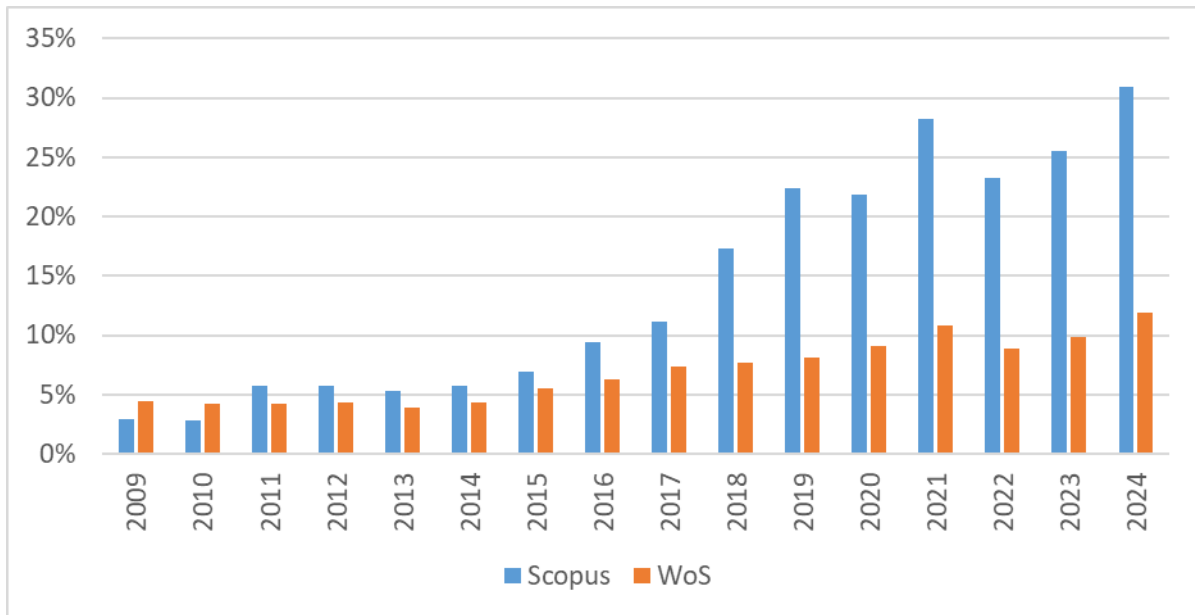


Fig. 5. The share of Moldovan classified journals indexed in Scopus and Web of Science databases

Source: Calculated by authors based on data retrieved from National Bibliometric Instrument - <https://ibn.idsi.md/ro/registru>. Data retrieved/verified on December 15, 2024

The productivity of researchers, defined as the number of published scientific works per researcher, is significant because it provides a quantitative measure of a researcher's output and contribution to their field. A higher number of publications generally indicates greater research activity and potentially a more substantial impact on the scientific community. Productivity is often an important factor in evaluating researchers for promotions, tenure, and grant applications, as it helps institutions assess the performance and potential of their researchers. Analysing productivity can also reveal the efficiency of research support systems, infrastructure, and policies. Low productivity may indicate systemic issues that require attention. However, it is essential to remember that quantity alone does not equate to quality.

Even though funding agencies and institutions often use productivity metrics to assess the effectiveness of research programs and individual researchers, high productivity can indicate an efficient use of resources and justify further funding.

The Fig. 6 illustrates the productivity of Moldovan authors (publications per researcher) based on data from Scopus and Web of Science for the years 2008 to 2024.

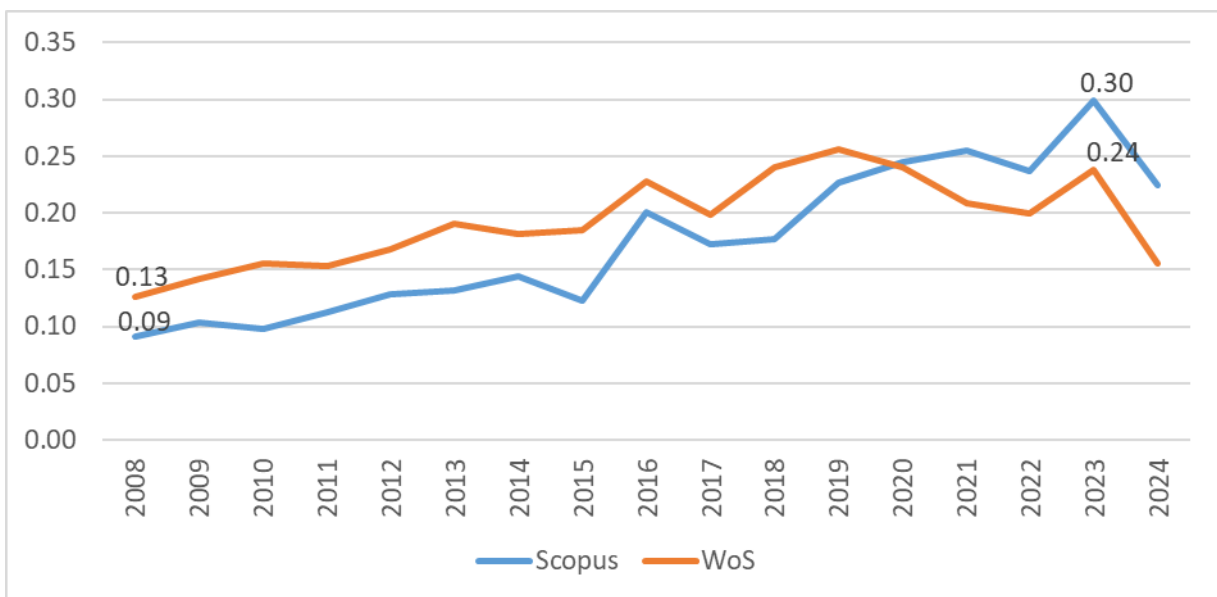


Fig. 6. Productivity of authors from the Republic of Moldova (works per researcher)

Source: Calculated by authors based on data retrieved from Scopus / Web of Science, National Bureau of Statistics of the Republic of Moldova - <https://statistica.gov.md/>. Data retrieved/verified on December 15, 2024

A general positive trend is evident, with productivity increasing by 2 to 3 times, depending on the database. This suggests an enhancement in efficiency or output per researcher over time. The data for the final year (2024) reflects lower numbers, as the year is not yet ended and the data are still being finalized.

The national regulations also indicate a clear push for increased international collaboration, as evidenced by the requirement for journals to include international authors and reviewers, particularly in higher-ranked publications. The alignment with international citation styles and the broader adoption of global best practices further reflects this trend.

According to the data presented in Fig. 7, the proportion of authors from abroad contributing to scientific articles indexed in IBN has increased from approximately 24% in 2008 to around 40% in recent years, with peaks in 2017 and 2018 at 47% and 48%, respectively. This growth coincided with a heightened emphasis on the importance of international collaboration in national regulations.

This reflects the growing international collaboration in Moldovan research, which enhances the quality and impact of publications.

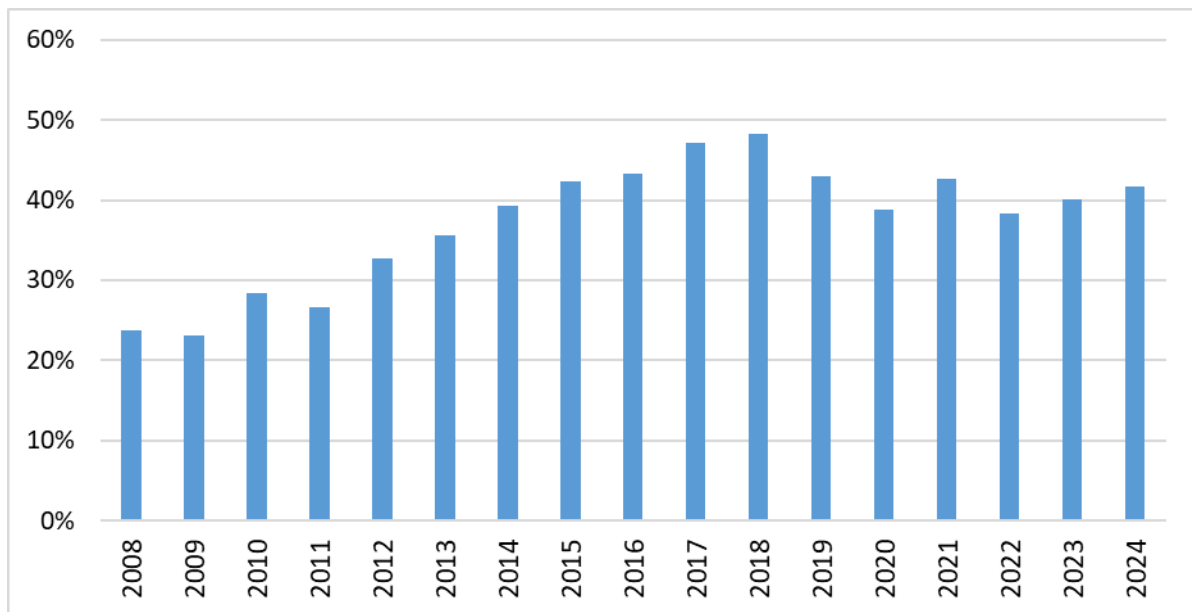


Fig. 7. Share of authors from abroad in Moldovan scientific journals

Source: Calculated by authors based on data retrieved from National Bibliometric Instrument - https://ibn.idsi.md/ro/Graph_Statistics?type=map&by=authors. Data retrieved/verified on December 15, 2024

In summary, the data presented in the article illustrate a clear upward trend in several key indicators of academic publishing in Moldova. These improvements suggest significant progress in research quality, international visibility, and the adoption of modern practices. The efforts made by Moldovan public authorities to impose quality classification criteria on journals enhance the reputation of Moldovan research and ensure that it meets the global standards expected in academia.

V. CONCLUSIONS

This study examined the influence of global trends in scientific publishing on national regulations and the dissemination of research findings in the Republic of Moldova. Our analysis revealed a significant impact of these global trends, particularly the rise of open access, on Moldova's regulatory framework and scholarly publishing practices. The adoption of open access publishing, as evidenced by the increasing percentage of open access articles in major databases such as Scopus and Web of Science, reflects a positive response to national policies promoting open access. Additionally, the widespread implementation of Digital Object Identifiers (DOIs), mandated by national regulations, has significantly enhanced the discoverability and searchability of Moldovan research outputs.

However, the transition to open science in Moldova is not without its challenges. Although the number of Moldovan journals indexed in international databases such as Scopus and Web of Science has increased, indicating improved international visibility, the overall number of Moldovan scientific journals indexed in IBN has decreased due to stricter evaluation criteria. This suggests a trade-off between quantity and quality, with a current emphasis on promoting higher-quality publications rather than merely increasing the number of published works. Additional challenges include inconsistencies in the implementation of open access initiatives, ongoing concerns regarding

the quality and reliability of open access resources, and the necessity for increased financial support to enhance infrastructure and research capacity.

The concentration of influence among a limited number of countries and institutions, primarily in the Global North, along with the dominance of English as the lingua franca in scholarly publishing, continues to pose significant barriers for Moldovan researchers. This highlights the ongoing need to promote multilingual publishing and ensure equitable access to resources. Furthermore, the concentration of publishing power within a small number of large publishers raises concerns about the commercialization of scholarly knowledge, highlighting the necessity to advocate for more equitable and transparent practices within the publishing ecosystem.

Despite these challenges, the Moldovan government's proactive measures to reform its national regulatory framework, particularly through the implementation of stricter evaluation criteria and the adoption of international standards, demonstrate a strong commitment to enhancing the quality and international visibility of Moldovan scientific publications. Continued efforts to tackle the identified challenges, such as securing more substantial funding, improving infrastructure, promoting international collaboration, and fostering a culture of open science, are essential for ensuring Moldova's ongoing integration into the global academic community. Further research should focus on a more comprehensive analysis of the specific challenges faced by researchers across different disciplines and the effectiveness of various interventions designed to address these issues.

VI. ACKNOWLEDGEMENT

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