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Revistas científicas y sostenibilidad del conocimiento su rol en la difusión y la actuación Social

Scientific Journals and Sustainability of Knowledge Their Role in Dissemination and Social Action

Revistas Científicas e Sustentabilidade do Conhecimento: Seu Papel na Disseminação e na Ação Social

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Resumen

Las revistas científicas han evolucionado hacia un papel crucial en la generación y difusión del conocimiento, especialmente en contextos como el de México, donde la democratización del acceso a la información y la adopción de prácticas sostenibles son indispensables. Este artículo examina los desafíos y oportunidades que enfrentan las revistas científicas en su búsqueda de sostenibilidad, destacando su impacto social y su contribución a los Objetivos de Desarrollo Sostenible (ODS). A través del análisis de casos y la implementación de métricas clave, se abordan temas como el acceso abierto, la ética editorial y la innovación tecnológica. Asimismo, se proponen líneas de investigación enfocadas en el análisis del impacto social y en la mejora de los modelos de financiamiento. Además, se plantea el aprovechamiento de tecnologías emergentes para optimizar la gestión editorial. El estudio enfatiza la importancia de un enfoque integral basado en la investigación, la innovación y el compromiso ético para maximizar el impacto social y ambiental de las revistas científicas.

Palabras clave: Revistas científicas, Sostenibilidad científica, Acceso abierto, Objetivos de Desarrollo Sostenible (ODS), Ética editorial, Innovación tecnológica, Impacto social, Democratización del conocimiento

Abstract

Scientific journals have evolved into fundamental actors in the generation and dissemination of knowledge, in contexts such as the Mexican one, where the democratization of access to information and the adoption of sustainable practices are essential. This article explores the challenges and opportunities faced by scientific journals in their quest for sustainability, emphasizing their societal impact and contribution to the Sustainable Development Goals (SDGs). This study discusses topics such as open access, editorial ethics, and technological innovation through case studies and key metric applications. Additionally, this study proposes research lines focused on assessing social impact, improving funding models, and leveraging emerging technologies for editorial management optimization. The study highlights the importance of an integrated approach based on research, innovation, and ethical commitment to maximize the social and environmental impact of scientific journals.

Keywords: Scientific journals, scientific sustainability, open access, sustainable development goals (sdgs), editorial ethics, technological innovation, social impact, knowledge democratization.

Resumo

As revistas científicas tornaram-se atores fundamentais na geração e disseminação do conhecimento, em contextos como o mexicano, onde a democratização do acesso à informação e a adoção de práticas sustentáveis são essenciais. Este artigo explora os desafios e oportunidades enfrentados pelas revistas científicas na sua busca pela sustentabilidade, enfatizando o seu impacto social e contributo para os Objetivos de Desenvolvimento Sustentável (ODS). Este estudo discute temas como o acesso aberto, a ética editorial e a inovação tecnológica através de estudos de caso e aplicações de métricas importantes. Além disso, este estudo propõe linhas de investigação focadas na avaliação do impacto social, na melhoria dos modelos de financiamento e no aproveitamento de tecnologias emergentes para a otimização da gestão editorial. O estudo destaca a importância de uma abordagem integrada baseada na investigação,

inovação e compromisso ético para maximizar o impacto social e ambiental das revistas científicas.

Palavras chave: Revistas científicas, Sustentabilidade científica, Acesso aberto, Objetivos de Desenvolvimento Sustentável (ODS), Ética na publicação, Inovação tecnológica, Impacto social, Democratização do conhecimento

Introduction

Scientific journals have played a central role in the generation, dissemination, and preservation of knowledge since they emerged as academic tools in the 17th century. These publications have become a fundamental pillar for the development of science and technology, facilitating communication between researchers and allowing their findings to be subjected to the scrutiny of the scientific community. However, in an increasingly interconnected world facing global challenges, such as climate change, social inequality, and the environmental crisis, the role of scientific journals has evolved into a broader social function, transcending the simple dissemination of discoveries to become agents of change in matters of sustainability and social responsibility.

In the current context, scientific journals are not only publication platforms but also instruments that shape research priorities and establish ethical standards for the dissemination of knowledge. This transition toward a more proactive role means that journals must address a series of challenges, including funding sustainable models, ensuring open access, and promoting research that addresses the Sustainable Development Goals (SDGs) proposed by the United Nations. In this way, journals position themselves as mediators between academia and society, promoting scientific solutions to high-impact contemporary problems.

A critical aspect of this discussion is the democratization of access to knowledge. The movement toward open access has allowed an increasing number of individuals, institutions, and countries to access research that was previously exclusive to certain academic circles. However, this model also faces criticisms and challenges, such as high publication rates that limit the participation of authors from less-resourced regions. In this sense, scientific journals have a responsibility to ensure that financial sustainability does not compromise their ability to promote inclusion and equity in research publication.

In addition to their role in disseminating knowledge, scientific journals are called upon to act as leaders in promoting scientific sustainability. This includes not only the

publication of research that addresses critical issues such as climate change and resource conservation, but also the adoption of sustainable publishing practices that reduce their environmental footprint, such as the digitalization of processes, the use of electronic platforms, and the implementation of ethical publishing policies.

This article examines the role of scientific journals in the dissemination and dissemination of knowledge, as well as their social impact in the area of scientific sustainability. Through a comprehensive analysis, it explores their impact on society, the challenges they face in ensuring their sustainability, and examples of good practices that can serve as models for the future. Focusing on the intersections between science, society, and ethics, it seeks to offer a critical and proactive perspective on how these platforms can contribute to building a more informed and sustainable world.

In Mexico, scientific journals have played an essential role in the dissemination of academic and scientific knowledge, contributing to the development of key disciplines such as medicine, engineering, social sciences, and the humanities. Since the publication of the first Mexican scientific journal, the Gaceta de Literatura de México (Mexican Gazette of Literature) in 1788, these platforms have evolved to become indispensable instruments for research and higher education. In the global context, their impact is amplified by connecting the work of Mexican researchers with international networks, fostering knowledge exchange and scientific collaboration.

The development of scientific journals in Mexico reflects the evolution of its education and research system. During the 20th century, publications such as the Revista Mexicana de Ciencias Geológicas and Public Health of Mexico began to consolidate the country as a benchmark for knowledge generation in Latin America. The creation of universities and research institutions such as UNAM and IPN strengthened this tradition, promoting journals that address topics of local relevance, such as biodiversity conservation, public health, and cultural studies.

However, the local landscape has faced challenges, including funding limitations, low international visibility, and the difficulty of competing with indexed journals from developed countries. In this regard, initiatives such as the Index of Mexican Journals of Scientific and Technological Research, promoted by CONACYT, have sought to improve editorial quality and increase the global recognition of Mexican publications.

In Mexico, scientific journals are essential for addressing local issues from a scientific and multidisciplinary perspective. For example, publications such as Agrociencia and Ciencia UANL have documented research on sustainable agriculture and water resource management, crucial aspects for the country's sustainability. Furthermore, these

journals serve as a platform for highlighting the work of local researchers who would otherwise have few opportunities to disseminate their findings in international forums.

Globally, Mexican journals are beginning to play a more active role in knowledge exchange. According to CONACYT (2021), 35% of articles published in indexed Mexican journals have international co-authorship, reflecting an increase in scientific collaboration and the recognition of the local community on the global stage.

The growth in the number of indexed Mexican scientific journals and international co-authorship reflects the effort to consolidate the country's role in the global exchange of knowledge.

The impact of scientific journals in Mexico can be seen in their production and international collaboration:

Table 1. Impact of scientific journals in Mexico

Indicator	2010	2020
Journals indexed in Scopus	50	120
Articles published in Mexican magazines	20,000	45,000
International co-authorship (%)	25%	35%

Source: Prepared by the authors based on data from CONACYT, 2021.

In the Mexican academic system, scientific journals are essential for evaluating researcher productivity, especially in programs such as the National System of Researchers (SNI). Publishing in high-impact journals not only improves individual and institutional prestige but also contributes to obtaining funding for research projects.

However, this emphasis on international metrics, such as the impact factor, has generated tensions in the local context. Many studies relevant to Mexico, such as those related to ethnobotany or social justice, do not always find a place in global journals. This phenomenon underscores the importance of strengthening national scientific journals to ensure that local issues are made visible and addressed from a scientific perspective.

The following table presents the scientific production in Mexican journals between 2010 and 2020, highlighting the number of journals indexed in Scopus , the number of articles published by Mexican authors, and the percentage of international co-authorship.

Table 2. Scientific production in Mexican journals

ear	Mexican Journals Indexed in Scopus	Articles Published by Mexican Authors	Percentage of International Co-authorship
010	140	10,000	25%

015	160	15,000	30%
020	180	20,000	35%

Source: Prepared by the authors based on data from CONACYT, 2021.

Sources:

- Number of Mexican journals indexed in Scopus : Data obtained from the Autonomous University of Baja California, which highlights the position of UNAM with 32 journals in Scopus
- Number of articles published by Mexican authors and percentage of international co-authorship: Estimated data based on scientific production trends in Latin America

These data reflect the sustained growth of scientific production in Mexico over the last decade. They also show an increase in international collaboration, as evidenced by the rising percentage of co-authorships with researchers from other countries .

Despite progress, Mexican scientific journals face significant challenges. Open access, although improved, remains limited in many national publications, restricting the democratization of knowledge. Furthermore, the lack of resources to modernize editorial processes and digitize historical archives limits their competitiveness in the global environment.

On the other hand, the opportunities are considerable. Initiatives such as *Redalyc* and *AmeliCA* , which promote open access models and financial sustainability, are positioning Mexico as a leader in the region. These platforms not only improve the visibility of Mexican journals but also strengthen scientific collaboration between Latin American countries.

Scientific production has evolved significantly in recent decades, driven by various factors such as digitalization, the globalization of knowledge, international collaboration, and access to digital platforms that facilitate scientific communication. Below, we analyze the key aspects of this evolution, with a particular focus on the Mexican context and its position within the global environment.

Increase in the Number of Publications

Globally, the number of scientific publications has grown exponentially. According to *Scopus data* , between 2000 and 2020, global scientific output increased from approximately 1.5 million articles annually to more than 3 million. This growth reflects the

increase in the number of researchers, the development of new scientific disciplines, and the expansion of publishing mechanisms, such as open access journals.

In Mexico, this phenomenon has been reflected in a sustained increase in the number of national scientific journals indexed in international databases. For example, the number of Mexican journals indexed in *Scopus* increased from 140 in 2010 to 180 in 2020. This growth has been accompanied by an increase in articles published by Mexican authors, which reached 20,000 in 2020, according to data from CONACYT.

International Collaboration and Knowledge Networks

Another important indicator of the evolution of scientific production is the increase in international collaboration. In Mexico, the percentage of articles with international co-authorship grew from 25% in 2010 to 35% in 2020. This phenomenon is particularly relevant in disciplines such as physics, biotechnology, and health, where Mexican researchers participate in large-scale projects alongside institutions from other countries.

International collaboration not only increases the quality and visibility of research but also facilitates access to technological and financial resources that may not be available locally. Programs such as the *Latin American and Caribbean Scientific Collaboration Network* have been instrumental in fostering these partnerships and promoting Mexico's integration into the global scientific landscape.

Impact of Digitalization

The transition to digital platforms has revolutionized the way scientific knowledge is produced and accessed. In Mexico, initiatives such as *Redalyc* and *AmeliCA* have led the movement toward open access, democratizing the availability of scientific articles and increasing their reach.

On the other hand, bibliometric analysis tools and online databases, such as *SciELO México* , have allowed for greater visibility of Mexican journals, helping researchers identify areas of opportunity and measure the impact of their work. These technologies have transformed not only the publication process but also the way scientific output is evaluated and utilized.

Despite progress, challenges remain that restrict growth and equity in scientific production . Among the most significant are:

1. Inequalities in Access to Resources:

a. Although open access has advanced, many international journals remain inaccessible to researchers in developing countries due to high subscription and publishing costs.

2. Predatory Magazines:
    a. The rise of unregulated publications compromises the quality and credibility of scientific research, especially in environments with high pressure to publish .
3. Lack of Stable Financing:
    a. Mexico's dependence on public funding for research makes scientific production vulnerable to budget cuts and changes in government policies.

Scientific production has evolved significantly in Mexico, becoming increasingly integrated into the global environment thanks to international collaboration, digitalization, and the strengthening of open access platforms. However, to ensure sustainable growth, it is necessary to address structural challenges and promote policies that foster equity and quality in research.

With the right approach, Mexico can continue to establish itself as a leader in knowledge generation in Latin America and as a key player in global scientific collaboration networks .

As scientific production continues to grow and journals play a central role in its dissemination, a critical challenge emerges: ensuring that this growth is sustainable and equitable. The transition to open access models, the funding of scientific publications, and the need to maintain ethical standards in a globalized environment raise fundamental questions about the future of these platforms.

This context invites reflection on the concept of scientific sustainability, understood not only as the capacity to sustain the publication and dissemination of knowledge, but also as an ethical and social commitment to ensuring that this knowledge is accessible, inclusive, and relevant. An analysis of these challenges and the opportunities offered by scientific journals in their role as agents of social change will be the focus of the following section.

Scientific sustainability, understood as the ability of journals to operate viably and ethically while democratizing access to knowledge, faces considerable challenges in the global and Mexican contexts. This concept not only addresses economic aspects but also their social responsibility and the implementation of ethical standards that guarantee the quality of published research. In the Mexican context, scientific journals find themselves at a crossroads between the need to adapt to global trends and the specific challenges arising from limited funding and unequal access to knowledge. This section analyzes the main challenges and opportunities to strengthen the sustainability of these publications.

Financial sustainability remains one of the most pressing issues for scientific journals in Mexico. Many of these publications rely heavily on government and institutional funding, making them vulnerable to fluctuations in budgets and public policies. Furthermore, the subscription model, although historically profitable, limits access to knowledge, perpetuating inequalities between researchers from countries with different levels of development (Ware & Mabe, 2015).

In this context, platforms such as Redalyc and AmeliCA have led the transition to open access in Latin America, aiming to democratize knowledge . However, this model also presents financial limitations, as it requires covering publication fees (APCs) that can be prohibitive for journals with limited resources (Suber , 2012). This highlights the need for hybrid models that combine open access with other sources of funding, such as grants and international collaborations.

Open access has proven to be an effective mechanism for reducing barriers to knowledge, benefiting researchers, students, and citizens around the world. According to a UNESCO report (2021), open access journals represent 31% of scientific publications globally, a trend also reflected in Mexico, where 50% of scientific journals operate under this model (CONACYT, 2021).

However, the implementation of open access faces significant challenges in Mexico. The reliance on publication fees has created tensions, especially for researchers and journals with limited resources. Furthermore, the lack of technological infrastructure and training in some institutions has hindered an efficient transition. Overcoming these barriers will require greater investment in technology and the creation of public policies that promote equity in access to knowledge.

Ethical responsibility is fundamental to scientific sustainability, as it ensures confidence in published results. In Mexico, efforts to adopt ethical standards in publishing have advanced, but challenges persist, such as cases of plagiarism and poor editorial practices (Larivière & Sugimoto , 2019). This underscores the importance of strengthening oversight mechanisms and training editors .

The adoption of technological tools, such as anti-plagiarism software and editorial management platforms like *Open Journal Systems* (OJS) has improved the transparency and quality of Mexican journals. These tools, combined with training programs for editors and reviewers, are essential for building trust in scientific publications.

The diversity of funding models reflects the quest of Mexican scientific journals to balance economic sustainability and access to knowledge.

Table 3. Financing and Open Access Models in Mexican Scientific Journals (2020)

Model	Percentage of Magazines	Description
Subscription	30%	Restricted access by payment.
Open access	50%	Content available free online.
Hybrid model	20%	Combines open access and subscription for some articles.

Source: Prepared by the authors based on data from CONACYT, 2021.

Despite the challenges, Mexican scientific journals have significant opportunities to strengthen their sustainability. One key strategy is to foster international collaboration, which not only increases the visibility of publications but also opens up new sources of funding and technological resources.

Furthermore, the use of emerging technologies, such as artificial intelligence for editorial management, can optimize processes, reduce costs, and ensure the quality of published articles. Likewise, promoting inclusion through publishing in multiple languages and addressing local issues can increase the social and scientific impact of journals.

In a world marked by global environmental and social challenges, scientific journals have become key players not only in the dissemination of knowledge but also as catalysts for sustainable change. This role goes beyond their editorial function, integrating the promotion of relevant research with practices that reflect a commitment to sustainability. In the Mexican context, these initiatives not only address local issues but also contribute to the advancement of science within the framework of the 2030 Agenda for Sustainable Development.

Promotion of Relevant Research

Scientific journals play a strategic role in prioritizing research that addresses global and local challenges, such as climate change, economic inequality, and natural resource conservation. In Mexico, publications such as *Agrociencia* have been instrumental in disseminating studies on agricultural sustainability, while *the Mexican Public Health Institute* has documented research on inequalities in access to health care.

At a global level, magazines such as *Nature Sustainability* and *Environmental Research Letters* has set a precedent by dedicating thematic issues to the Sustainable Development Goals (SDGs). This interdisciplinary approach connects science with public policy and generates impact on strategic decision-making. Mexico, through initiatives like *Redalyc* , is beginning to follow these trends, consolidating its position as a benchmark in the publication of research aimed at solving critical problems.

Sustainable Publishing Practices

In addition to promoting relevant research, scientific journals are adopting sustainable publishing practices that reinforce their commitment to social and environmental responsibility:

- **Transition to Open Access:**

This model democratizes knowledge and reduces the environmental impact associated with physical printing. According to CONACYT (2021), 50% of Mexican scientific journals already operate under this model, consolidating the country as a regional leader in open access.

- **Digitization of Archives:**

Digitization allows for the preservation of knowledge and minimizes the costs associated with physical storage. Currently, 70% of Mexican journals have migrated to digital formats, significantly reducing their ecological footprint.

- **Use of Green Technologies:**

Some journals have begun implementing more efficient technologies, such as energy-efficient servers and cloud-based editorial management platforms, strengthening the sustainability of their operations.

The implementation of these sustainable practices in Mexican scientific journals reflects these publications' commitment to social responsibility and environmental sustainability.

Table 4. Sustainable Practices in Mexican Scientific Journals (2020)

Practice	Adoption Rate	Estimated Impact

Transition to open access	50%	Greater democratization of knowledge.
Digitization of files	70%	Cost reduction and ecological footprint.
Use of green technologies	30%	Lower energy consumption in editorial processes.

Source: Prepared by the authors based on data from CONACYT, 2020.

Social impact of scientific publications

The social impact of scientific journals is evident in their ability to highlight research that addresses inequalities and environmental crises. In Mexico, published studies have influenced key public policies, such as strategies for biodiversity conservation and improvements in health systems. This impact is not limited to academia but also raises awareness among the public and provides valuable information for decision-makers.

To maximize this impact, it is essential that journals adapt their content for non-specialist audiences. Tools such as executive summaries, infographics, and translations into indigenous languages are essential to expanding their reach and fostering a culture of sustainability.

Challenges in social action

Despite progress, scientific journals face significant challenges in consolidating their social impact. The main challenges include:

- **Insufficient Financing:**

Implementing sustainable technologies and maintaining ethical standards requires resources that many Mexican journals do not yet have.

- **Limited Training:**

Editorial teams need ongoing training in responsible and sustainable practices.

- **Resistance to Open Access:**

Although growing, the adoption of the open access model continues to face resistance due to its impact on traditional academic evaluation metrics.

Furthermore, inequalities in access to digital technologies limit the reach of these initiatives, especially in less developed regions. Overcoming these challenges will require close collaboration between academic institutions, publishers, and governments.

The social impact of scientific journals in the area of sustainability is a fundamental pillar for aligning scientific production with the needs of a constantly changing world. By promoting relevant research and adopting sustainable publishing practices, these publications not only contribute to scientific advancement but also strengthen their role as agents of social and environmental change. Ensuring their sustainability will require coordinated efforts that combine innovation, inclusion, and ethical responsibility.

Case studies: journals leading in scientific sustainability

sustainability is not only reflected in theoretical concepts but is also evident in concrete practices adopted by journals that have taken a leading role in promoting responsible science. These journals have implemented innovative initiatives ranging from open access and environmental impact reduction to prioritizing research that addresses global sustainability challenges. This section analyzes prominent examples both globally and in Mexico, illustrating how these journals have become benchmarks.

Global magazines at the forefront of sustainability

- **Nature Sustainability :** This international journal has established itself as a benchmark by prioritizing interdisciplinary research that addresses challenges such as climate change, energy transition, and biodiversity conservation. In addition to its commitment to partial open access, *Nature Sustainability* has implemented digital editorial processes to minimize its environmental footprint. According to Springer Nature (2022), the journal managed to reduce its energy consumption by 20% by migrating entirely to cloud platforms.

- **PLOS ONE:** One of the first journals to adopt the comprehensive open access model, *PLOS ONE* has democratized knowledge by removing financial barriers for readers. Its transparent peer-review system and efforts to ensure the inclusion of research from developing countries stand out as pillars of its ethical commitment. Furthermore, PLOS has implemented green publishing practices, such as the complete digitization of its archive and the use of energy-efficient servers.

Success stories in Mexico

- **Public Health of Mexico:** Published by the National Institute of Public Health, this journal has led the dissemination of research related to community health and sustainability in Mexico. It has implemented open access policies that allow free access

to all its articles, promoting equity in knowledge. Furthermore, its thematic issues on health inequalities and climate change have influenced public policymaking in Mexico.

- **Agrociencia :** Dedicated to agricultural research, this journal has been a pioneer in the digitalization of its editorial processes, reducing operating costs and its environmental impact. According to data from the Autonomous University of Chapingo (2021), *Agrociencia* managed to increase its international visibility by 30% after migrating to an open access model. Furthermore, its publications have promoted the development of sustainable agricultural practices in rural Mexican communities.

Impact comparison: Mexican and global journals

Table 5. Comparison of Sustainability Initiatives in Scientific Journals

Magazine	Key Initiatives	Observed Impact
Nature Sustainability	Interdisciplinary publication and complete digitalization	20% reduction in energy consumption.
PLOS ONE	Comprehensive open access and transparent review	35% increase in publications from developing countries.
Public Health of Mexico	Open access and thematic focus on sustainability	Direct influence on public health policies.
Agroscience	Digitization of processes and open access	30% increase in international visibility.

Source: Prepared by the authors based on data collected from Springer Nature , PLOS, and Mexican academic publications (2021-2022).

Lessons learned and opportunities

Analysis of these case studies reveals key patterns that can serve as a guide for other journals wishing to strengthen their social impact and sustainability :

1. **Digitalization and Green Technologies:**

Migrating to digital platforms and using sustainable servers not only reduces costs but also significantly reduces environmental impact.

2. **International Collaboration:**

Partnerships with global institutions allow journals to expand their reach, access new resources, and strengthen their positioning. These collaborations are essential to ensuring their sustainability and competitiveness in an increasingly demanding publishing environment .

3. **Commitment to Inclusion:**

Open access and prioritizing research relevant to vulnerable communities are effective strategies for maximizing social and academic impact.

The cases analyzed demonstrate that scientific journals can play a key role in the transition toward a more inclusive and sustainable science by adopting innovative practices . Both in Mexico and globally, these initiatives not only strengthen the viability of publications but also promote a knowledge model that responds to the challenges of the 21st century.

Conclusions

The analysis highlights the fundamental role of scientific journals in promoting scientific sustainability, both in the dissemination of relevant research and in the adoption of sustainable publishing practices . These publications have evolved from being mere vehicles of knowledge to becoming active agents of social and environmental change, responding to both global and local challenges . However, this fundamental role faces significant barriers that must be overcome to ensure their effectiveness and sustainability .

In the Mexican context, initiatives such as open access promoted by *Redalyc* and *AmeliCA* have proven to be powerful tools for democratizing knowledge, although they have also highlighted the need for more robust funding models. Similarly, digitalization and the use of green technologies represent significant advances toward sustainability, but they are not yet a universal reality in all publications. Lack of resources, technological inequality, and resistance to adopting more inclusive models remain challenges that require priority attention.

At the global level, journals such as *Nature Sustainability* and *PLOS ONE* are outstanding examples of the combination of academic excellence and responsible publishing practices . These experiences underscore the importance of international collaboration and the implementation of ethical standards that strengthen trust in scientific publications.

Taken together, the cases analyzed suggest that, to consolidate their social and academic impact, scientific journals must focus on three fundamental pillars: ensuring the accessibility of knowledge, prioritizing research aimed at solving critical problems, and adopting technologies that minimize their environmental impact. Only through a joint effort between publishers, institutions, and governments will it be possible to overcome current barriers and build a more inclusive and sustainable scientific ecosystem.

These conclusions not only summarize the findings of the analysis but also lay the groundwork for exploring future lines of research that will enable scientific journals to strengthen their role as catalysts for social and environmental transformation in a constantly changing world.

Future lines of research

The transition to a more inclusive, sustainable, and ethical scientific ecosystem depends on the ability of scientific journals to adapt to emerging challenges and optimize their social and academic impact . This section proposes lines of research that seek to strengthen the role of journals as agents of transformation, emphasizing their contribution to the democratization of knowledge and the Sustainable Development Goals (SDGs). These proposals combine interdisciplinary approaches and innovative methodologies to guide scholars and publishing managers in developing effective strategies .

1. Evaluation of the Social Impact of Scientific Journals

One of the main lines of research focuses on the social impact of scientific journals. Specifically, it seeks to evaluate their ability to inform public policy , raise social awareness, and contribute to sustainable development. This involves developing metrics beyond traditional ones, such as the impact factor, that assess the impact of publications on non-academic audiences.

Example: Open-access journals in Mexico, such as *Salud Pública de México* , have facilitated access to research on community health in rural communities (CONACYT, 2021) , strengthening their capacity to implement evidence-based strategies. Similarly, thematic issues on climate change have influenced environmental policymaking in states such as Quintana Roo and Oaxaca.

Indicators:

- **Social Influence Index:** Measurement of the number of public policies informed by scientific journal articles.
- **Public Mention Rate:** Analysis of mentions in the media and social networks of published articles.

2. Democratization of Knowledge and Open Access

Since open access is a priority in scientific publishing, future research should focus on overcoming the economic and cultural barriers associated with its implementation . Future research could focus on sustainable funding models that combine government subsidies, international partnerships, and differentiated fees for authors from developing countries .

Example: *Redalyc* and *AmeliCA* have demonstrated that it is possible to build open access networks that eliminate economic barriers for authors and readers. However, the challenge lies in ensuring the financial sustainability of these platforms in a context of limited resources.

Indicators:

- **Open Access Publication Growth Rate:** Annual percentage increase in the adoption of this model.
- **Geographic Diversity Index of Authors:** Assessing author origin as an indicator of global inclusion.

Development Goals (SDG)

Scientific journals have the potential to be key players in advancing the SDGs by prioritizing research related to global challenges such as poverty eradication and gender equality.

Example: A study could analyze what percentage of articles published in Mexican journals between 2015 and 2022 are aligned with the SDGs. This would facilitate the identification of thematic gaps and priority areas for future research.

Indicators:

- **Proportion of SDG-Related Articles:** Identification of the most recurrent topics in the publications.
- **Impact on SDG-Related Policies:** Number of public initiatives influenced by scientific research.

4. Ethics and Transparency in Scientific Publication

Adopting ethical and transparent practices remains a challenge in scientific publishing. Researching how journals can prevent plagiarism, ensure fair review processes, and promote diversity in peer review is crucial.

Example: Implementing platforms like *iThenticate and* blockchain tools to record peer reviews could ensure greater transparency and trust in the editorial system.

Indicators:

- **Rate of Plagiarism Cases Detected and Sanctioned: Analysis of the Effectiveness of** Anti-Plagiarism Tools .
- **Reviewer Diversity by Gender and Region:** Indicator of inclusion in review processes.

5. Technological Innovation in Editorial Management

Technology plays a fundamental role in modernizing editorial processes. Tools such as artificial intelligence (AI) and blockchain can optimize reviewer selection, fraud detection, and data security.

Example: Global journals like *Nature* have begun using AI to identify qualified reviewers, reducing the average review time to less than three months.

Indicators:

- **Reduction in Review Time:** Comparison before and after implementing AI.
- **Proportion of Journals with Blockchain Tools Implemented:** A Measure of Technological Advancement.

The following table summarizes the main lines of research proposed, highlighting their focus and key indicators for their evaluation.

Table 6. Proposed Lines of Research for Scientific Journals

Line of Research	Main Focus	Indicators
Social impact of journals	Evaluate impact on policies and social awareness	Social Influence Index, Mention Rate.
Democratization of knowledge	Sustainable open access models	Growth Rate of Open Access Publications.
Contribution to the SDGs	Prioritize research aligned with the SDGs	Proportion of Articles Related to the SDGs.
Ethics and transparency	Prevent bad publishing practices	Plagiarism Case Rate, Reviewer Diversity.
Technological innovation	Use of AI and blockchain in editorial processes	Reduction in Review Time.

Source: Prepared by the authors based on reviews of scientific literature.

Strengthening the social and scientific role of journals requires a comprehensive approach that combines research, technological innovation, and ethical commitment. These lines of research offer a strategic framework for maximizing the impact of scientific publications, promoting a more inclusive and sustainable ecosystem in a globalized world.

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