

# MENDIVE



## REVISTA DE EDUCACIÓN

*Translated from the original in Spanish*

### Evolution of Higher Education Scientific Journals in El Salvador from 2000 to 2018

### Evolución de las revistas científicas de Educación Superior en El Salvador desde 2000 a 2018

### Evolução das revistas científicas do ensino superior em El Salvador de 2000 a 2018

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#### ABSTRACT

The publications of scientific journals of the Higher Education Institutions of El Salvador are a relatively new field; this category has very defined and demanding editorial criteria that are needed to enter international databases or repositories of a scientific-academic nature. The objective of the article was to carry out a comparative-evolutionary study on the journals that communicate science from the Higher Education institutions of El Salvador. The research that served as a basis was of a mixed type, using the survey and interviews with editors and researchers as methods; there were 13

Higher Education Institutions and 16 journals that were considered in the study in three geographical areas of the country: West, Center and East. They were revised according to the parameters of the Regional Online Information System for Scientific Journals of Latin America, the Caribbean, Spain and Portugal (LATINDEX). The main findings were that, of 16 journals, two are located in national repositories; ten indexed internationally, and four hosted only on its institutional website. Regarding the criteria of scientific rigor in the peer review process, it was found that five journals have not yet incorporated it into their editorial management to improve, publish or reject articles. It was concluded that it would be appropriate to create a national structure within Higher Education that monitors the quality with which science communicates from its institutions, in order to gain visibility and credibility at the regional and international level in terms of the scientific production of Salvadorian universities.

**Keywords:** science communication; editorial criteria; university scientific journals.

#### RESUMEN

Las publicaciones de revistas científicas de las Instituciones de Educación Superior de El Salvador son un campo relativamente nuevo. Esta categoría tiene criterios editoriales muy definidos y exigentes que se necesitan para ingresar a bases de datos o repositorios internacionales de carácter científico-académico. El objetivo del artículo fue efectuar un estudio comparativo-evolutivo sobre las revistas que comunican ciencia desde las instituciones de Educación Superior de El Salvador. La investigación que le sirvió de base fue de tipo mixto, empleando como métodos la encuesta y entrevistas a editores e investigadores; fueron 13 Instituciones de Educación Superior y 16 revistas que se tomaron en cuenta en el estudio en tres zonas geográficas del país: Occidente, Centro y Oriente. Se revisaron según los parámetros del Sistema Regional de

Información en Línea para Revistas Científicas de América Latina, el Caribe, España y Portugal (LATINDEX). Los hallazgos principales fueron que, de 16 revistas dos se ubican en repositorios nacionales, diez indexadas internacionalmente y cuatro alojadas solo en su página web institucional. En cuanto a los criterios de rigurosidad científica en el proceso de arbitraje por pares se encontró que cinco revistas no lo tienen aún incorporado a su gestión editorial para mejorar, publicar o rechazar artículos. Se pudo concluir que sería apropiado crear una estructura nacional dentro de Educación Superior que monitoree la calidad con que se comunica la ciencia desde sus instituciones, a fin de ganar en visibilidad y credibilidad a nivel regional e internacional en cuanto a la producción científica de las universidades salvadoreñas.

**Palabras clave:** comunicación de la ciencia; criterios editoriales; revistas científicas universitarias.

## RESUMO

As publicações de revistas científicas das Instituições de Ensino Superior de El Salvador são um campo relativamente novo. Esta categoria possui critérios editoriais muito definidos e exigentes, necessários para o acesso a bases de dados ou repositórios internacionais de natureza científico-acadêmica. O objetivo do artigo foi realizar um estudo comparativo-evolutivo sobre as revistas que comunicam ciência das instituições de Ensino Superior de El Salvador. A pesquisa que serviu de base foi de tipo misto, utilizando como métodos o survey e as entrevistas com editores e pesquisadores; Foram 13 Instituições de Ensino Superior e 16 periódicos considerados no estudo em três áreas geográficas do país: Oeste, Centro e Leste. Foram revisados de acordo com os parâmetros do Sistema Regional de Informação Online para Revistas Científicas da América Latina, Caribe, Espanha e Portugal (LATINDEX). As principais conclusões foram que, de 16 periódicos, dois estão localizados em

repositórios nacionais, dez são indexados internacionalmente e quatro estão hospedados apenas em seu site institucional. Em relação aos critérios de rigor científico no processo de revisão por pares, constatou-se que cinco periódicos ainda não o incorporaram em sua gestão editorial para aprimorar, publicar ou rejeitar artigos. Concluiu-se que seria oportuno criar uma estrutura nacional no âmbito do Ensino Superior que monitorizasse a qualidade com que a ciência se comunica nas suas instituições, de forma a ganhar visibilidade e credibilidade a nível regional e internacional ao nível da produção científica das universidades. Salvadorenhas.

**Palavras-chave:** comunicação científica; critérios editoriais; revistas científicas universitárias.

## INTRODUCTION

Scientific journals are one of the main channels of communication and dissemination of research results for Higher Education Institutions (IES), as well as that their researchers publish in journals of high impact and proven quality. Journals obtain recognition, to a large extent, for their editorial excellence and management, mainly by the academic community, by incorporating content that guarantees the scientific rigor of published articles (Miguel, 2011).

"It can be said that the research culminates when it is published in a scientific journal; only then will it be known by the academic community, its results will be discussed and its contribution will be part of universal scientific knowledge" (Castellano, 2014).

Considering these statements, it is necessary to know in what conditions of quality in form and content are currently the scientific

journals of El Salvador and if they have evolved according to international editorial criteria or remain the same since their creation from the years 2000 to 2018, the proposed time for conduct research. In this sense, it is pertinent to carry out a review and analysis of how Salvadoran scientific research journals are considering the demands of indexing, both in their design and in the quality of the published articles and the editorial process, which is not easy to keep in time.

To publish it is necessary that the formulation of the research be carried out with great clarity, from the conception of the idea and throughout the entire process in a systematic way and, consequently, writing the publication article will be facilitated (Rodríguez, 2016).

The importance of a scientific publication in the current academic world has become synonymous with rigor, quality and seriousness in its editorial management, which translates into the prestige of the researcher who publishes and in the journals that accept their articles. Likewise, the commitment of researchers contributes to the collective construction of scientific knowledge, self-criticism and self-demand, before submitting it to the editorial process of the journals and accepting the verdict of the editorial committees, content reviewers and the observations that are made from the magazine before concluding the aforementioned process.

On the other hand, skills are developed such as: performing information searches, ease of synthesis of knowledge, ability to clearly and coherently order ideas, critical analysis of the data obtained and those transferred to professional practice (Cáceres, 2014). This author explains that scientific publications promote continuing education, contribute to the training of authors and readers, and enrich academic research discussions in national and international settings.

We consider it important to know the quality and visibility of scientific journals for researchers, institutional authorities, publishers and librarians. Researchers are interested in knowing which are the ideal journals to present their results; institutional authorities are interested in financially supporting a quality journal that contributes to the accreditation and academic prestige of the institution; For those responsible for publishing the journal, it means improving competitiveness and visibility, specifically in the scientific community, and providing a better scenario to attract high-quality scientific research, and for librarians, it means selecting the best journals for cataloging as serious and reliable literature. .

In the last two decades, the HEIs of El Salvador have been developing some types of publications of a scientific nature, with the aim of disseminating the results of research by teachers and students. The authorities of study centers take up this dissemination resource more seriously when allocating the budget for publication in print format, improving editorial processes and dissemination, more as a measure of compliance to be accredited by the Ministry of Education than by conviction.

These demands of the governing institution of education in the country to carry out more impact research, with better scientific criteria that joins the scientific publication, closes the circle of the dissemination of research. In addition, each year it requests information on the research and scientific dissemination that the HEIs support as part of the continuous improvement of the duty of every institution and this form of evaluation and control has led them to the commitment to these substantive elements of the universities and don't just focus on teaching.

The HEIs of El Salvador have grown in infrastructure and the number of students that make them visible as consolidated educational institutions; this study aims to find out if they have also grown in the area of scientific research and dissemination, and

to better understand the quantitative and qualitative quality of the scientific production they generate.

Currently, it has been considered important to support its dissemination with a budget, as an intrinsic part of the research, so that the results do not remain only as technical reports and are known to the authorities and their authors, but are available to the local university community.

The authors recognize the need to close the research cycle through publication when they state that "It can be said that research ends when it is published in a scientific journal; only then will it be known by the academic community, its results will be discussed and its contribution will be part of universal scientific knowledge" (Cáceres, 2014). The journals obtain recognition in quality and editorial management for the contents that guarantee the scientific rigor of the published articles (Miguel, 2011).

Publishing scientific journals is one of the challenges that the editorial management of this type of format entails, with well-defined criteria in structure and content to be able to enter the portals and repositories that host regional and world scientific journals. In this sense, the constant changes that have been generated with the arrival of the internet also become demands for all those involved in the publication process: directors, editors, designers, content, grammar and style reviewers and, of course, researchers.

"Academic publication, both of books and scientific journals, has not been exempt from all these transformations. Magazines, known by their English name *journals*, play a central role in popular science. Thousands of journals (in all areas of science) are produced around the world. They constitute a fundamental tool for the dissemination of knowledge among institutions, researchers, students and the interested population" (Gómez & Gallo, 2016). Scientific journals have been the famous means of researchers

to publicize their results, since, as is popularly stated in academia: "research that is not public, does not exist."

Among the criteria for validating the quality of the content of the articles and a control measure, it can be considered that "The review of works by experts (which) was gaining importance until it became a key tool for the progress of science, recognized by the experts as a good method to impose a uniform scientific standard, and guarantee the quality of published research" (Guirdanino, E (S / F). They are called refereed journals, in the publication policies or standards that identify each journal and this gives you the quality assurance that every researcher should seek to publish.

Among the 33 criteria that have been taken as a measurement parameter of LATINDEX, one is that all journals have as quality input the *International Standard Serial Number : ISSN* (*International Standard Serial Number*), which It is an international number that allows a collection to be uniquely identified, avoiding work and possible errors when the title or pertinent bibliographic information is transcribed when they are currently printed journals; But there is also the E-ISSN for digital magazines that must be visibly displayed on the cover within the quality and criteria of format and presentation.

Rossell points out that as publications move from print to digital they undergo great transformations in the fundamental nature of dissemination and communication among readers, in terms of the flexibility and global reach of electronic formats, where there are no political, cultural and geographical borders; it becomes a social process that indicates that numerous actors and readers participate. All these changes require those responsible for scientific publication to be constantly attentive to what happens in this regard; this implies continually updating and growing in line with international requirements in the form and content of what is published and how it is published.

This implies that "although there is an important migration to digital format, it does not necessarily represent an opening to access content" (Gómez *et al.*, 2016), because not all journals are available online in open access, there are bases of data that they charge to users for reading or downloading the articles.

In this sense, Abadal (2016), cited in Gómez, G. & Gallo, M., says that "Open access to knowledge and electronic publication bring clear benefits for the scientific community, academic publications, as well as for the society in general. The scientific community is probably the most benefited, since it contributes to a notable improvement in the functioning of communication between them, since the use and impact of the contents is increased, the quality of the research is improved and costs can be significantly reduced."

In addition, the changes generated by technology also change the ways of presenting information. Gómez, G. & Gallo, M. (2016) assures that "Today, researchers around the world want to publish the findings of their research in journals that have the best impact factor indexes, which refers to the times the articles are cited and the views of the magazines". And this marks the route that these changes must follow to offer better platforms to authors, given their interest in publishing in the one that offers them the best conditions to expose their work.

All of these leads researchers to search for peer-reviewed and indexed journals to publish their research results, which must be of methodological quality and supported by reliable bibliography. According to Oxhorn, Philip (2015) "Much of the increase in original scientific research in the region in recent years has been generated by the increasing professionalization of Latin American universities. More and more professors have doctoral degrees, at the same time that they are under pressure to publish in peer-reviewed journals", as a requirement to complete their studies.

On the other hand, printed magazines are leaving these formats and entering the electronic world or reducing the number of copies, because the scope of dissemination is greater in the electronic format. Currently, academics prefer to have their reference material in an electronic device that has the possibility of allowing them to consult it anywhere and at any time.

With these approaches, it was determined that this study gives us a general overview of the scientific journals that are being published in El Salvador, as well as what those responsible are doing to sustain them and improve their presentation and content in the face of the new technological times that have come to transform and demand substantial changes in the processes. Hence, the objective of the article was to carry out a comparative-evolutionary study on the journals that communicate science from the Higher Education institutions of El Salvador.

## MATERIALS AND METHODS

It is a descriptive mixed type study, since only emphasis has been placed on describing the evolution and transformation of scientific journals from Salvadoran universities and their editorial process, with the aim of seeking indexing and their transition from print to digital. It seeks to know the quality in its content and form during the period from 2000 to 2018. The analysis was carried out based on the absolute frequencies for the description of the results. It is necessary to clarify that there are three journals that emerged in the late 1990s that are also in the study due to the permanence they have had to date (Figure 1); Surveys and interviews with editors and researchers were used to deepen the aspects defined above. The results were tabulated in the Excel program.

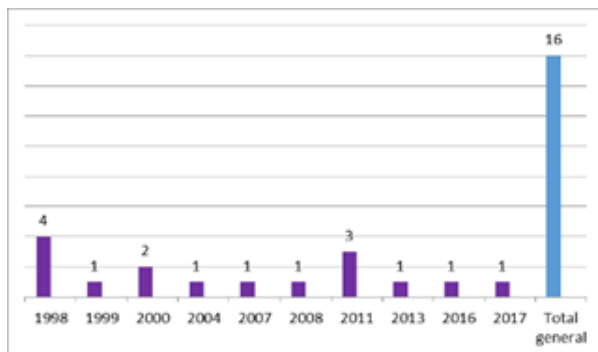
Among the partial objectives was to know how many of the 16 analyzed journals are indexed and how the future of research and

publication of Salvadoran researchers is envisioned. This study is the result of the Diploma in Scientific Research developed online, taught by the Research Directorate of the Vice-Rector's Office for Research and Social Projection of the Evangelical University of El Salvador to its teachers.

The study was carried out in the HEIs of El Salvador that publish research through the format of printed and digital scientific journals. Within the study variables, the following were taken as a basis: the classification by disciplinary specialty of the journals; editorial criteria for the form and content of the magazines; identify indexed journals; year of publication; institutional or external authors; periodicity; what kind of articles do they publish; arbitration process; achievements and difficulties in the transition from print to digital; indexed in LATINDEX (figure 2); achievements; difficulties; challenges.

## RESULTS

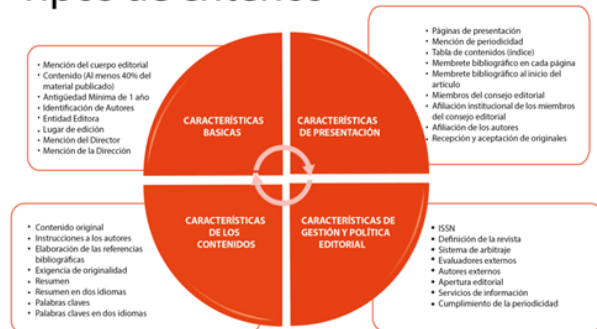
In figure 1, it was taken up from 1998 because they are still being published as of the date of the study. No magazine was created in 2018, which is why it is shown until 2017, the last year in which a magazine of this nature has been created. The date on which the first issue was published stands out because it is a criterion to see the permanence and changes that have suffered throughout this period.



**Fig. 1-** Year of publication of the scientific journals of the 13 HEIs reviewed

Figure 2 shows the 33 criteria that LATINDEX evaluates to accept a scientific journal, highlighting that with the digitization of these, these criteria have been increased to 36, but the study only considers the previous 33 for printed journals.

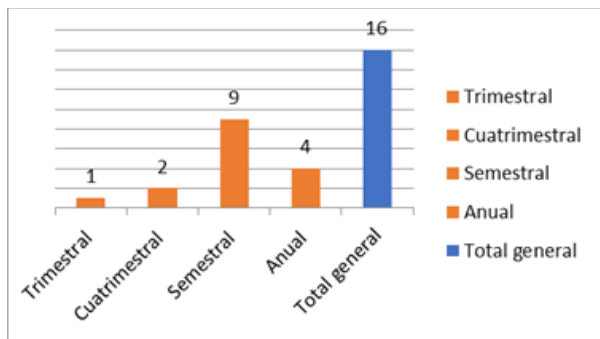
## Tipos de criterios



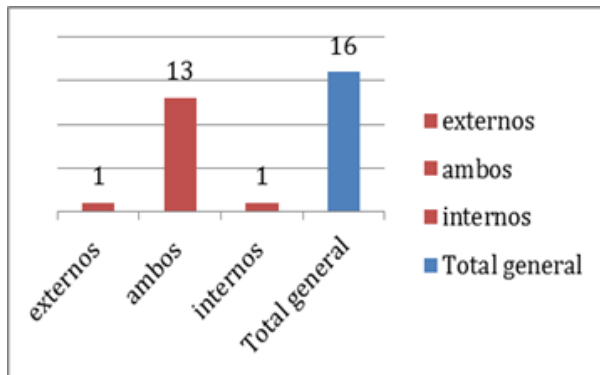
**Fig. 2-** Quality criteria required by LATINDEX (33 in total)

*Note:* Image taken from the presentation by Hernández Aracely (2018), LATINDEX representative in El Salvador.

The periodicity of the published numbers was considered (figure 3). This determines in some way the productivity of the researchers and the editorial processes of the journal, which are also related to the origin of the authors (figure 4); We found that only one university does not accept articles from external authors (they only publish institutional authors), in the other 15 journals under study they do accept articles, both internal and external.



**Fig. 3-** Periodicity of 16 scientific journals analyzed from HEIs



**Fig. 4-** Origin of researchers who publish in the different journals of the HEIs of El Salvador

As we can see in Table 1, only seven journals, of the 16 analyzed, are in the LATINDEX system; These are the ones that meet the 33 basic criteria that every scientific journal must meet to enter the world of international indexing, which is considered a springboard to be admitted by other platforms with more criteria to evaluate. The journal with the most achievements of this type currently in the study is *Police and Public Security*, hosted on seven indexing sites; this shows that editorial management is important for the visibility of the journal. All 16 are on their own website, four of them only in PDF format, because they are migrating to the *Open Journal Systems (OJS)* system, open source software for journal management, or to the hypertext document system (HTML).

**Table 1-** Platforms in which the journals of Salvadoran HEIs are indexed

Indexing sites	No. of magazines
LATINDEX	7
CAMJOL	6
EBSCO	1
REDICCES	8
DIALNET	1
REBID	2
DOAJ	1
MIAR	1
CORC	1
Academic google	1
P. Web institutional	16

Three institutions that are not universities, but have the category of Specialized Higher Institutes, were taken into account (table 2); these are: the Academy of Public Safety; the Business Foundation for Educational Development (FEPADE) and the ITCA-FEPADE Specialized Technical School in Engineering. Of the 16 institutions, four are located in the West of the country, one in the East and eight in San Salvador.

On the other hand, we can observe that in table 2 the topics or disciplines that each of the journals and institutions publish are located, these fluctuate between seven multidisciplinary and nine with disciplinary specialty topics.

**Table 2-** Details of the name of the IES, name of the journal and disciplinary specialty

IES	Magazine name	Specialty
1.Academy of Public Safety	<i>Police and Public Safety</i>	Criminal, police, prospective, intelligence studies, labor law, violence, crime / social sciences, administrati



		on of justice, health, education and history.
2. Business Foundation for Educational Development (FEP ADE)	<i>Pedagogical AB-sé-FEPADE</i>	Pedagogy and education
3. Central American Technological Institute (ITCA)	<i>Technology Magazine</i>	technology, education, civil engineering
4. Gerardo Barrios University (UGB)	<i>Millennium III</i>	Multidisciplinary
5. University of Sonsonate (USO)	<i>Integration</i>	Multidisciplinary
6. University Doctor José Matías Delgado (UJMD)	<i>Akademus</i>	Multidisciplinary
7. University Don Bosco (UDB)	<i>Scientist</i>	Multidisciplinary
8. Universidad Evangélica de El Salvador (UEES)	<i>Create Science</i>	Areas of health medicine, nursing, nutrition and dietetics, dentistry, clinical psychology
9. Evangelical University of El Salvador (UEES)	<i>Science, Culture and CC areas. SS, Humanities, CC.EE e Society</i>	Engineering
10. Francisco Gavidia University (UFG)	<i>Reality and Reflection</i>	Multidisciplinary
11. Pedagogical University of El Salvador (UPES)	<i>U-Perspective</i>	Education
12. Technological University El Salvador (UTEC)	<i>Koot</i>	Museology and anthropology
13. Technological University El Salvador (UTEC)	<i>Environments</i>	Multidisciplinary
14. Centro American University (UCA)	<i>Social Sciences and</i>	Social sciences and humanities approach to

	<i>Humanities</i>	analysis of the Central American reality
15. Centro American University (UCA)	<i>Business Reality</i>	Marketing, finance and business legislation.
16. University of El Salvador (UES)	<i>Minerva</i>	Multidisciplinary

As can be seen in the previous tables, the development achieved by the Salvadoran Higher Education Institutions in the communication of the science that is generated, associated with the professional training processes from their campus, is still insufficient, especially that carried out in the magazines sponsored by them, if the visibility of their publications is considered. At present, the indexing of the journal in mainstream databases is considered one of the fundamental requirements to enhance its visibility, an issue that must be prioritized by Salvadoran Higher Education.

## DISCUSSION

Our results coincide with Gómez, G. & Gallo, M (2016) in that "Directors, editors, proofreaders, designers and all those involved in an editorial team are faced with the need to learn and develop new skills that allow them allow venturing into the new modalities involved in the publication and dissemination of science in the face of the so-called 'digital revolution'".

This statement is reflected in the constant changes that the scientific journals of the HEIs of El Salvador have had to adopt to evolve in form and content, in parallel with the training and self-taught learning that are taking place in those responsible for the publications. "In the country there is no training that accredits us as editors, all of us who are entering this trade are from different disciplines and the same research activities



have led us to see the need to have a serious means of dissemination and this is how we have been striving for the quality of the magazines" says AL Ramírez (2018), coordinator of the *Akademus* magazine at the José Matías Delgado University. In addition, to gradually comply with the criteria required by indexing and make the leap from print to digital, which were adopted since the eighties, according to Thomson (2016), cited in Gómez (2016).

It was not until the second decade of the twentieth century that El Salvador began and retakes this urgency to be in the forefront of scientific research in digital format and to get to know new terms such as open access, impact factor, OJS, arbitration, among others, in a self-taught way and in the last five years some trainings by LATINDEX and LAMJOL through the Consortium of Libraries of El Salvador and the recent Network of Academic-Scientific Publishers (still in formation); 10 of the institutions under study are part of this network that emerged in 2017, with the aim of training, standardizing criteria and lowering costs in collective scientific and cultural dissemination activities.

On the other hand, in relation to the quality of the articles, it is established that "The quality of the journals is mainly defined by compliance with a set of editorial guidelines, presentation and content management that guarantee the scientific rigor of the articles published in them, and therefore, contribute to their prestige "[Cardinali (2001), cited in Miguel (2011)]. What is positive in the case of Salvadoran journals is that they allow authors from outside their institution, including reviewers and multidisciplinary editorial teams, which is how the quality of their content and national and international visibility increases since, out of 16 journals under study, two are in national repositories, 10 are indexed and four are in the indexing process, hosted only on their institutional web pages and in PDF format.

A case of evolution in the edition of scientific journals is the *Crea Ciencia* Magazine, according to Rivera (2018). The magazine of the Evangelical University of El Salvador in 2004 was multidisciplinary, it obtained its ISSN number in 2007, it included an abstract in English alongside Spanish, and in 2009 it specialized in the areas of health. In addition, it worked to gradually comply with the LATINDEX criteria, establishing the editorial publication standards and showing substantial and structural changes in the presentation of research results, through the Publications Department. It went from PDF to HTML, which contributed to its indexing and improvement in form and content, that is, in the quality of the magazine; In 2017, the number of copies was cut from 500 to 300, and currently 100 are printed because it is indexed and in the institutional repository, where it can be consulted openly and at no cost. Until 2018 it was found available with the OJS system through CAMJOL, which also provides the Digital Objective Identifier (DOI) number for each article; all these transformations have been necessary to continue in force.

The units of analysis help us to conclude that the people responsible for the publications of scientific journals are committed to improving the quality of form, content and editorial management; it was found that in some cases it is more due to the demands of the Ministry of Education than to the conviction of projecting itself through scientific dissemination. Some journal directors express that the researchers still do not understand the importance of the publication article, as much as the complete investigation and present it in a specific format to publish, according to Paz (2018), head of a university journal, "... the publication is made only in digital format, due to cost control recommendations by the finance unit to facilitate its socialization to a wider audience"; but, on the other hand, it points out that "... there is an institutional interest in publication, but there is no conscious commitment by researchers to

improve the writing of articles and follow the editorial processes that are established".

It is noteworthy that research articles have adopted the structure of the IMRYD format (Introduction, Methodology, Results and Discussion) in the body of the text, after the abstract and keywords, with sources consulted following the format requested by the journal, that are vital in publishing. Trainings on this topic have been carried out for editors and researchers, on the importance of copyright and the correct way to cite, and not only research articles are published but journals have other sections such as case studies, good practices, essays, editorials, research advances, opinion articles and historical chronicles.

The editors of the journals indexed in LATINDEX and CAMJOL explain that at the beginning they published the complete investigations as a final report of the investigation with little filter and, little by little, they were changing to a research article, according to international structure and modifying the norms of publication of the journal at the same time, forming the editorial teams and national and international reviewers, actions that substantially helped to improve the quality of the content of the journals.

In relation to the peer review or arbitration process, it is necessary that every research journal establishes having the exchange files managed by the journal director, between reviewer-editor and editor-author, since an exact history must be kept of dates of receipt, revisions and acceptance of the article. It was found that five journals do not have this arbitration process; they recognize the importance of doing it in the medium term and this is one of the greatest challenges and difficulties expressed by directors.

Those responsible for 10 journals say that the greatest achievement is having made the leap from print to the OJS system and the 16

agree that the greatest achievement is permanence despite the difficulties, from budgeting to completing the number of articles for the new issue to be published and, above all, deal with the authors when indicating the observations of their work, especially those of the same institution.

Another achievement in which 10 of the institutions coincide is being part of the Network of Academic-Scientific Editorials of El Salvador Exlibris, an organization in formation and that is laying the foundations to establish itself, which aspires to sign common agreements between the institutions represented through editorial departments, as well as connecting with other similar networks in Latin America.

They state that the greatest challenge is to maintain the scientific rigor of the publication, increase the number of indexes and guarantee the arbitration process by strengthening it with national and international reviewers and increasing the budget with greater emphasis on training.

To conclude, and as stated (Miguel, 2011), "A problem that stems from the poor quality of the region's journals has been (and in some cases continues to be) their difficulty in being included in international databases. Thus, for example, several authors have criticized for years the limited presence of Latin American journals in the databases of the Web of Science (WOS), Thomson Reuters: Science Citation Index (SCI), Social Science Citation Index (SSCI) and Arts and Humanities Citation Index (A & HCI), better known as [Institute for scientific information] "the bases of the ISI", Sancho, 1992; Krauskopf and Vera, 1995; Fernández, 1998. (2011), cited in Miguel (2011). Undoubtedly, this hinders the dissemination of regional scientific production in the international context of science".

With this statement it challenges us as a country and region to continue in this

constant evolution of improvement in the quality and scientific rigor of publications, but consequently it means that for this we need to raise the scientific level of research and editorial management, which derives an increase in the budget assigned to these areas of the HEIs; Another important way is the transfer of experiences between peers, being an ideal vehicle for training and updating the networks of academic publishers and the standardization of processes and good publishing practices.

It coincides with Agudelo (2011), cited in Mariano Mauro (nd) in the importance of strict compliance with the rules or editorial policies understood as "The set of decisions and definitions on the role, orientation, content and form, which configure the characteristics own and identifiable of a scientific journal, as well as its publication, circulation and visibility".

It is here that each of the scientific journals reviewed in the study of the HEIs of El Salvador is working, some before others, rethinking and analyzing the editorial processes and internal and external changes that mark the route to raise the quality of their studies formats and contents consciously and with the commitment to continue in this process of training and constant changes in the academic and scientific world.

On the other hand, it is important the constant training or postgraduate studies of researchers who, consequently, will acquire scientific expertise, at the same time the institutional commitment to allocate budgets to appropriately develop research, dissemination and transfer of new knowledge, accompanied by economic incentives and academic recognition that benefit researchers, institutions and make the country visible in the scientific world.

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Author declares not to have any conflicts of interest.

#### Authors' Contribution:

The author has participated in the writing of the work and analysis of the documents.



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