Bibliometric analysis of scientific production in the Scopus database of a Peruvian private university

Análisis bibliométrico de la producción científica en la base de datos Scopus de una universidad privada peruana

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Abstract

The objective of this research was to analyze the scientific production in the Scopus database of a Peruvian private university. The research was bibliometric and retrospective, where the scientific production of the Universidad Andina del Cusco (UAC) was described through the analysis of the documents published and registered in Scopus. According to the results, 56 documents indexed in Scopus were located, being the authors with the most publications Núñez-Del Prado, M. (56 documents and an H-Index of 8) and Ojeda, Eliana (25 documents and an H-Index of 15). Regarding the characteristics of the documents, it was found that most of the journals where they were published were foreign, original articles predominated and in English, there was a greater participation of researchers with affiliation to the UAC as co-authors and in the majority of research works did not declare receiving funding. On the other hand, it was found that more documents were published in the area of Medicine and Computer Science. Finally, it was concluded that in recent years the scientific production of the UAC in Scopus has increased significantly, however, compared to the most competitive Peruvian universities, it is still limited and insufficient, so it is necessary to foster institutional policies that promote the publication of research carried out by the university community (teachers, students and researchers) in high-impact scientific journals, preferably indexed in Scopus.

Key Words: Bibliometrics, scientific production, Scopus, scientific research, university.

Resumen

El objetivo de la presente investigación fue analizar la producción científica en la base de datos Scopus de una universidad privada peruana. La investigación fue de tipo bibliométrica y retrospectiva, donde se describió la producción científica de la Universidad Andina del Cusco (UAC) a través del análisis de los documentos publicados y registrados en Scopus. De acuerdo a los resultados, se ubicaron 56 documentos indizados en Scopus, siendo los autores con más publicaciones Núñez-Del Prado, M. (56 documentos y un Índice H de 8) y Ojeda, Eliana (25 documentos y un Índice H de 15). En cuanto a las características de los documentos, se halló que la mayor parte de las revistas donde se publicaron fueron extranjeras, predominaron los artículos originales y en idioma inglés, hubo una mayor participación de los investigadores con filiación a la UAC como coautores y en la mayoría de trabajos de investigación no se declaró recibir financiamiento. Por otro lado, se encontró que se publicaron más documentos en el área de Medicina y Ciencias de la Computación. Finalmente, se concluyó que en los últimos años la producción científica de la UAC en Scopus se ha incrementado significativamente, sin embargo, en comparación con las universidades peruanas más competitivas, aún es limitada e insuficiente, por lo que es necesario fomentar políticas institucionales que promuevan la publicación de las investigaciones realizadas por la comunidad universitaria (docentes, estudiantes e investigadores) en revistas científicas de alto impacto e indexadas preferentemente en Scopus.

Palabras clave: Bibliometría, producción científica, Scopus, investigación científica, universidad.

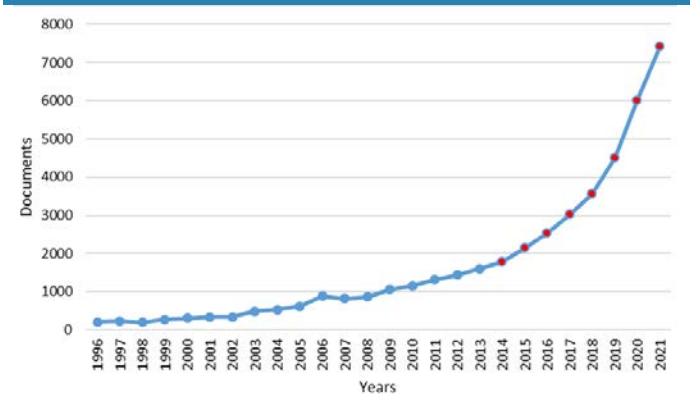
Introduction

Currently, scientific production is one of the activities inherent to academic and social work[1], since it plays an important role in the progress of a country through the generation of new knowledge, the development of technologies, as well as the solution to problems that affect society[2]. It is conceptualized as the evidence of scientific knowledge generated, which allows visualizing research as a product of the academic and scientific activity of researchers translated into publications[3]. In Peru, the University Law 30220[4] considers scientific production as an essential and mandatory task that must be addressed by the university community (teachers, students and graduates), so universities must promote a research culture[5].

However, the scientific production of an institution can be measured based on the number of publications in scientific journals, since it allows evaluating the scope of its contributions to the development of new knowledge[6], however, it is necessary that these journals comply with quality and impact indicators[7] and must be indexed in recognized, important and demanding databases, such as Scopus[8]. The aforementioned database combines a comprehensive citation and abstract database with data and linked academic literature in a wide variety of disciplines and currently indexes more than 25,000 journals, all of which were rigorously vetted and selected by an independent review board[9]. Likewise, in several countries it is considered to elaborate the international and national rankings of the institutions[10].

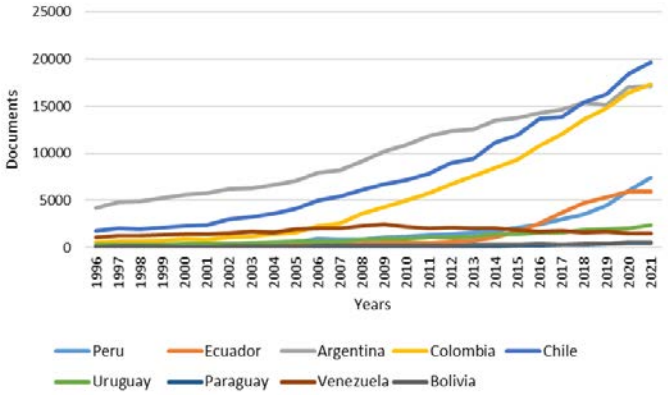
According to Scimago Journal & Country Rank[11], scientific production in Peru within the Scopus database has been experiencing sustained and significant growth since 2014, the year in which University Law 30220 was enacted[4], since in 2021 a total of 7,420 documents were reported (Figure 1).

Figure 1. Peruvian scientific production in the Scopus database



However, the number of documents published in Peru is still notably lower compared to the most competitive South American countries such as Brazil (100,085 documents), Chile (19,638 documents), Colombia (17,281 documents) and Argentina (17,130 documents)[12,13] (Figure 2). Reality that can be attributed to the limited economic investment assigned by governments to research and that is evidenced, specifically, in the remuneration of research professors, the implementation of laboratories, subsidies to research projects, among other actions[14,15].

Figure 2. South American scientific production in Scopus in recent years



In Peru, research has not yet been carried out that has investigated the scientific production in the Scopus database in a university in the Peruvian Andes, so it is desired to explore the reality in which it is located so that, based on the findings, the university authorities of the UAC can design policies that promote greater participation of teachers, researchers and students in scientific production, which will also improve the

visibility and impact of the university. Therefore, the general objective of this research was to analyze the scientific production in the Scopus database of a private Peruvian university.

Materials and methods

Project

The research was characterized by being bibliometric and retrospective[16], where the scientific production of the UAC was described through the analysis of the documents published and registered from the year 2006 (year in which the first document was published) until the month of August of the year 2022 in the Scopus database. This database was selected due to its relevance, scope and advantages[17]. In addition, it has a wide and multidisciplinary coverage of journals, standardized impact registration and bibliometric tools that allow more efficient filtering and analysis[18].

Procedure

To retrieve the information found in Scopus, a search was made by affiliation «Universidad Andina del Cusco» whose affiliation identifier is 60112686. Subsequently, the database was downloaded according to the chosen variables: author, H-Index, document title, year of publication, title of the source, type of document, language, area of knowledge and corresponding author. It is necessary to indicate that authors who did not have affiliation with the university were excluded. On the other hand, information was obtained from the Scimago Journal & Country Rank corresponding to the year 2021 to determine the quartile of the journals, as well as the country of origin. To perform the statistical analysis, it was necessary to use the Microsoft Excel program, in which the data was summarized and the figures were prepared for a better interpretation.

Ethical aspects

In the present investigation, there was a minimal risk, since no intervention was carried out and data from patients or biological samples were not obtained. Likewise, the information obtained is of public access, for which the authorization of an Institutional Ethics Committee was dispensed with. Finally, the authors guarantee the confidentiality of the information obtained, which will not be used for purposes other than the objectives expressed in advance.

Results

In total, 56 documents indexed in Scopus with UAC affiliation were identified, which demonstrates the limited scientific production. This university is 38 years old, however, the first document was indexed in 2006. Between 2007 and 2012 no articles were published in journals indexed to Scopus. Subsequently, from 2013 to 2019, production was very limited, but in 2020 there was a significant increase and would be explained by the greater presence of research teachers, as well as inter-institutional work. On the other hand, in 2021 there was a setback and it would be caused by the restrictive measures associated with the COVID-19 pandemic that would not have allowed some research to be carried out, however, so far in 2022 they have already exceeded the maximum annual scientific production. recorded in previous years (Figure 3).

Figure 3. Scientific production in Scopus of the UAC

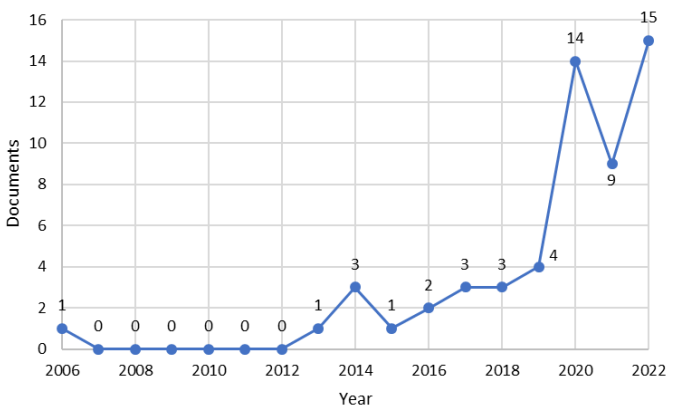


Table 1 shows the 10 authors affiliated with the UAC with the greatest scientific production in Scopus and their respective H-Index. Among them are Núñez-Del Prado, M. (56 documents and an H-Index of 8), Ojeda, Eliana (25 documents and an H-Index of 15), Rivas, Lornel (11 documents and an H-Index of 3), Ramos-Meza, Carlos (8 documents and an H-Index of 3) and Villamonte-Calanche, W. (8 documents and an H-Index of 3). It is necessary to mention that the previously mentioned authors have been recognized as research professors by the National Council of Science, Technology and Technological Innovation – (CONCYTEC).

Table 1. Authors affiliated with the UAC with the highest production in Scopus

Autor name	n	*h*-index
Núñez-Del Prado, M.	56	8
Ojeda, Eliana	25	15
Rivas, Lornel	11	3
Ramos-Meza, Carlos	8	3
Villamonte-Calanche, W.	8	3
Sovero, Karim	5	2
Ganvini, Cristhian	4	1
Quispe-Quispe, Yadyra	4	2
Velásquez, Lucio	4	2
Mamani, E. Y.	3	2
Alfaro, Crayla	2	1

According to Table 2, the journals indexed in Scopus where they were published most frequently were Revista Peruana de Medicina Experimental y Salud Publica (5), Climacteric (3), Menopause (3), Applied Sciences Switzerland (2) and CEUR Workshop. Proceedings (2). It is also observed that 80% of the journals where they were published most frequently are

foreign and only 20% are Peruvian. Likewise, it can be seen that half of them are located between quartiles 1 and 2, which denotes that they are of high impact and visibility.

Table 2. Journals indexed in Scopus with the highest publication frequency of the UAC

Source title	n	Country	Quartile
Revista Peruana de Medicina Experimental y Salud Publica	5	Peru	Q3
Climacteric	3	United Kingdom	Q2
Menopause	3	United States	Q1
Applied Sciences Switzerland	2	Switzerland	Q2
CEUR Workshop Proceedings	2	United States	Does not apply
High Altitude Medicine and Biology	2	United States	Q2
Revista del Cuerpo Medico Hospital Nacional Almanzor Aguinaga	2	Peru	Without quartile
Advances in Intelligent Systems and Computing	1	Germany	Q4
Cancer Research	1	United States	Q1
Cogency	1	Chile	Q4

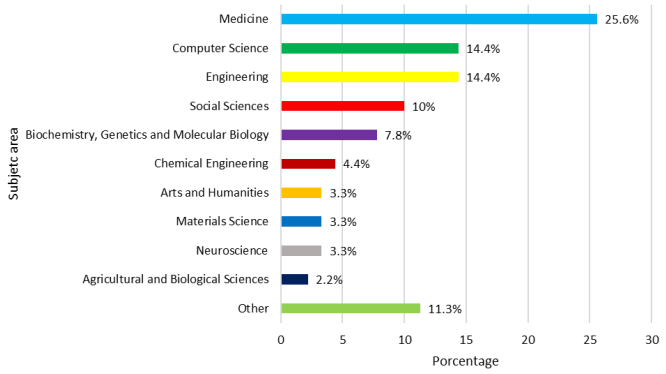
Table 3 describes the characteristics of the documents indexed in Scopus. It can be seen that most of the documents were original articles (69.6%) followed by conference paper (16.1%), letters to the editor (7.1%), review articles (3.6%), books (1.8%) and book chapters (1.8%). Regarding language, 78.6% were documents published in English and 21.4% in Spanish, which is consistent, since most of the journals where they were published were foreign and only accepted documents in English. Regarding authorship, 66.1% were co-authors and 33.9% main authors. Finally, it can be seen that 85.7% of the research works carried out and published did not declare having any funding, while 14.3% did receive some economic subsidy so that they can be carried out.

Table 3. Characteristics of the documents indexed in Scopus with affiliation from the UAC

Characteristics	n= 56	%
Document type		
Original article	39	69.6
Conference paper	9	16.1
Letter	4	7.1
Review	2	3.6
Book	1	1.8
Book Chapter	1	1.8
Language		
English	44	78.6
Spanish	12	21.4
Authorship		
Correspondent	19	33.9
Co-author	37	66.1
Financing		
Funded by an institution	8	14.3
Does not clarify financing	48	85.7

According to figure 4, the main thematic areas linked to the documents published in Scopus were Medicine (25.6%), Computer Science (14.4%), Engineering (14.4%), Social Sciences (10 %) and Biochemistry, Genetics and Molecular Biology (7.8%). As can be seen, documents in Medicine were published mostly at the UAC, which coincides with the presence of a significant number of research professors in the aforementioned area of knowledge.

Figure 4. Subject areas where more documents are published



Discussion

In Peru, since the enactment of University Law 30220[4] in 2014, a sustained growth of the scientific production of the universities has been observed, however, there are some in which, despite the benefits that it implies for their institutional growth and visibility, it is not managed, invested or promoted adequately. scientific research. For this reason, in the present investigation we sought to analyze the scientific production in the Scopus database of a Peruvian private university.

According to the review carried out, it was found that the UAC has 56 documents indexed in the Scopus database, which were mainly original articles, conference paper, letters to the editor, review articles, books and book chapters. The foregoing allows us to affirm that the scientific production in the aforementioned university is limited despite having almost 4 decades of institutional creation and it is due to the fact that for many years the teachers and researchers carried out parallel academic and administrative tasks, which generated an overload of work., there was also no bonus for research professors, the university community was rarely trained on scientific research and writing, and the translation of articles was not financed, nor were the processing charges when they were sent to high-impact journals. On the other hand, in terms of student scientific production, it was due to the absence of research hotbeds and the fact that formative research was not promoted from the first cycles.

The result described in the present investigation coincides with what was reported in a study carried out in Peru, whose objective was to compare the scientific production of Peruvian

teachers from two universities (Universidad César Vallejo and Pontificia Universidad Católica del Perú) and its conclusions indicate that the production scientific knowledge was very limited, which affected the educational environment, since they were not fulfilling their role as trainers or contributing positively to the development of the country[19]. However, it differs from what was found in a study also carried out in Peru, where they evaluated the scientific production of the University de San Martín de Porres between the period 1995 and 2020 and concluded that there were 880 documents indexed in Scopus, a superlative amount compared to what was found at the UAC, which would be explained by the presence of consolidated research teams, the number of research professors recognized by CONCYTEC and the university itself, as well as the investment they made to encourage and increase scientific production[3].

When analyzing the scientific production of the UAC with reference to the enactment of University Law 30220, there was no significant increase until 2020, which could be explained because on that date more research professors recognized by CONCYTEC and by the same university, whose academic load was reduced so that they could dedicate themselves exclusively to research. In addition, the university dedicated more economic resources to finance the expenses associated with the scientific production of teachers, researchers and students. Regarding the characteristics of the publications, it was determined that the majority of the documents were original articles (69.6%), which coincides with what was reported in two studies carried out in a private Peruvian university[3,8]. On the other hand, it was determined that the language in which they were published was mostly English and would have reason to be because it is considered the lingua franca of the scientific community, in addition, articles published in English have wide dissemination and impact[20] and because about 80% of the specialized journals that are indexed in Scopus are published in that language[21].

Another interesting finding indicates that the majority of researchers who published fulfilled the role of co-authors, which highlights the need to further develop their research skills so that they can lead research teams and link up with researchers from other universities, both Peruvian and foreign. Finally, it was found that few investigations were carried out and published under the financing of external institutions, so it is necessary that university authorities motivate researchers to apply for the different calls that are made so that their investigations are financed by institutions such as the National Fund for Scientific, Technological and Technological Innovation Development (FONDECYT), PROCIENCIA, the United States Agency for Development (USAID), among others.

Conclusion

In the present investigation it was concluded that the scientific production of the UAC in Scopus is low, since they only have 56 documents indexed in said database and despite the fact that in the last 3 years it has increased significantly, it is limited and insufficient in comparison to other more competitive Peruvian universities. For this reason, it is necessary for university authorities to develop institutional policies that promote the financing and publication of research carried out by the university community (teachers, students and researchers) in high-impact scientific journals preferably indexed in Scopus, Web of Science or Scielo. On the other hand, a research culture must be promoted in the university based on the development of research skills and research hotbeds must be implemented to increase the quantity and quality of publications.

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