

## University and Society: A study on its evolution

Universidad y sociedad: Un estudio sobre su evolución

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### ABSTRACT

The relationship between the University and society takes place in various forms such as: curricular projects, academic programs and linkages (Malagón-Plata, 2006). From a social perspective, the university-society linkage is promoted to improve the quality of life of the community. The purpose of this article is to analyze the thematic evolution of universities and their links with society from a global context. A bibliometric analysis measuring the scientific performance of publications will be carried out. The Web of Science scientific document search platform was chosen to study the evolution of the thematic field by looking at 64 documents based on the keywords "University AND link to Society". The use of SciMAT software was used to visualize the central and basic themes of this study. The main conclusion determined five central themes around the evolution of research on the University and Link to Society which are: sustainability, science, innovation, information and Higher Education.

**Keywords:** University, Society, Bibliometrics, SciMAT

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## RESUMEN

La relación entre Universidad y sociedad suceden de diversas formas como: proyectos curriculares, programas académicos y vinculaciones (Malagón-Plata, 2006). Desde una perspectiva social la vinculación universidad – sociedad se impulsa para mejorar la calidad de vida de la comunidad. El presente artículo tiene como objetivo realizar un análisis sobre la evolución temática de las universidades y la vinculación con la sociedad desde un contexto global. Se realizará un análisis bibliométrico que mida el rendimiento científico de las publicaciones. Se escogió la plataforma de búsqueda de documentos científicos Web of Science para estudiar la evolución del campo temático atendiendo los 64 documentos basados en las palabras claves “University AND link to Society”. Con el uso del software SciMAT se pretende visualizar los temas centrales y básicos de este estudio. La principal conclusión determinó cinco temáticas centrales en torno a la evolución de las investigaciones sobre la Universidad y la Vinculación con la Sociedad que son: sustentabilidad, ciencia, innovación, información y Educación Superior.

**Palabras clave:** Universidad, Sociedad, Bibliometría, SciMAT

## INTRODUCTION

Research plays a major role within the construction processes of the diverse societies around the world, it is evident the importance that is developed by linking research with society (Collins & Evans, 2017). As a result of this link, the expansion of actor networks is generated, which contribute to the incorporation of knowledge at a local and transdisciplinary level improving activities related to research.

In the mid-1990s and under the criticism of the binding "deficit" models in the framework of science and society, a bidirectional approach was sought to address the relationship between communication and trust between the two. This era was marked by a "crisis of confidence in science" that required a social negotiation between science and society. According to this proposal, a negotiation was needed between parties representing science and society; facts that generated greater confusion in the general public.

For the following years, 2002 and 2003, it was proposed to break this paradigm that separated research from the real problems of society. The action was taken through research, with citizen participation being one of the solutions to rebuild social trust in science. Currently, the way of understanding the relationship between science and society is being institutionalized through broader frameworks such as responsible innovation and research. Social contexts participate within scientific activities that allows developing new potentials and expectations (Alvial, 2019).

The current challenge facing universities in Ecuador and the world is to forge links between the community, business and the university. Among the old trends, there were relationships from the outside in. However, the globalized evolution is moving in the opposite direction. The university currently operates in an open and proactive manner, increasing the desire for change within subnational territories (Ramirez, 2013).

For Ramírez (2013), the forms of linkage encompass the possibility of knowledge generation, being the most important contribution of the universities of a country, articulating the cooperation of the collective intellect represented by local governments, popular actors, non-governmental organizations, technology parks, etc. As the university work is separated from the social sectors, the need for rapprochement with the business sector is created, generating new knowledge in favor of science (Chávez Cruz, 2016).

However, within the university field, an important element is the figure of the trainer as a facilitator within the educational systems. Training should be aimed at facilitating learning and going beyond the informative action, contributing to the development of professional competencies. One of the main tasks of the educator should be oriented to build scenarios that make learning rewarding, obtaining greater results in the link with the surrounding society (Aurelia et al., 2017).

However, the linkage with society is the result of the substantive function of higher education, which is the dynamization of research and teaching processes. The university offers individuals the ability to solve problems within social and productive sectors having as a tool the communication between institutions and the different actors that are part of society (Brito et al., 2017). The modern university must seek strategic options on the different forms of linkage playing the driving role towards change (Sánchez-Barrioluengo, 2014).

Therefore, the aim of this article is to analyze the thematic evolution of universities and their links with society from a global context. A bibliometric analysis will be carried out to measure the scientific output of publications. In addition to studying the evolution of the thematic field according to how society has evolved. For this purpose, all the articles dealing with the topic of study have been extracted from the Web of Science (WOS) platform from 2006 to 2020. The SciMAT software will be used to perform the analysis with the purpose of evaluating and analyzing the performance and scientific production of the research field, as well as detecting the most outstanding topics based on the analysis of co-occurrence of keywords through scientific maps and their longitudinal evolution.

This research contributes to the academic scientific community as it is the first article that studies the relationship between the University and the society from its beginnings through bibliometrics. The main conclusion was that the thematic evolution is centered on 17 themes, the most outstanding of which are: sustainability, information, business and higher education. Therefore, this article is divided into three parts, the first section corresponds to the methodology used in this work, the second section details the results obtained from the 64 documents downloaded and the last section presents the discussions and conclusions based on the results of the study.

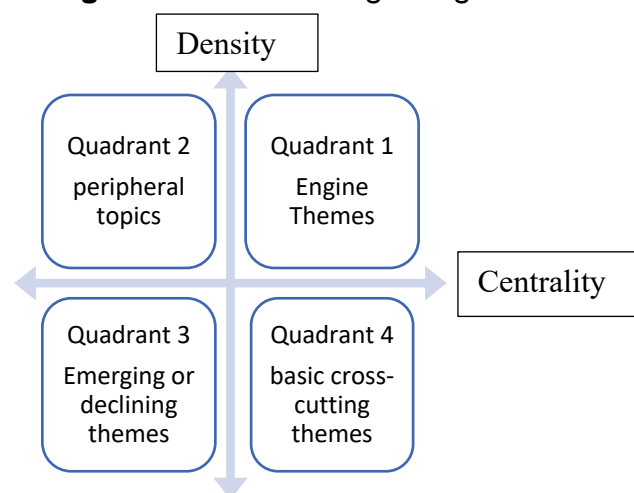
## **MATERIALS AND METHODS**

Bibliometrics as a science makes it possible to quantitatively evaluate the literary production of a subject or disciplinary field. (Camps, 2007). In this bibliometric study, the W.O.S. database platform was used, chosen mainly for being the most used in the

academic scientific field for research articles and for its high quality index and production of some 18,000 impact journals (Guerra-Martin, 2020). The search for information was conducted in October 2021 using the term "University AND link to Society". The following search inclusion and exclusion terms were considered: a) all periods except 2021, b) type of publication: articles, c) subject areas: business, economic and management.

To analyze the longitudinal thematic evolution, the Scimat software, designed by the SECABA group, was used to visualize the conceptual structure of a specific scientific field through scientific maps (Borner et al., 2003, Cobo et al., 2012). SciMAT is based on four phases detailed below: a) Detection of the topic through keywords to obtain a co-occurrence map; b) Visualization of the topic with strategic diagrams or longitudinal evolution; c) Identification of the thematic areas by classifying them into driving topics, specialized topics, emerging and basic topics; d) Analyzing their performance according to the number of documents, number of citations and the H index. For this study, the strategic diagram obtained in the only research period is shown. Scimat analyzes bibliometric studies by co-occurrence of keywords, co-authorships and journals. The purpose of the software is to show through the strategic diagram (Figure 1) which topics are found in each of the four quadrants: driving, specialized, emerging and basic topics, in order to determine possible research gaps and future lines of research. Due to the number of study documents (64), a single study period was determined, the chronological arc being from 2006 - 2020.

**Figure 1** SciMAT Strategic Diagram



## RESULTS

The search of the W.O.S. main collection yielded 64 documents, 90% of which are research articles. All the downloaded documents are open access. The first article on the subject corresponds to the year 2006 entitled: "A meeting of minds: interdisciplinary research in the health sciences in Canada". The authors Hall et al. (2014) refer to the

participation of universities and their relationship with society focused on the area of health.

**Figure 2** Years of publication

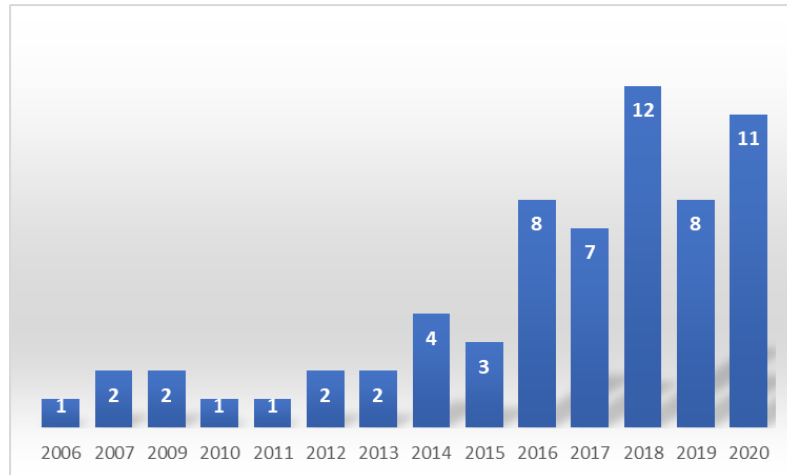
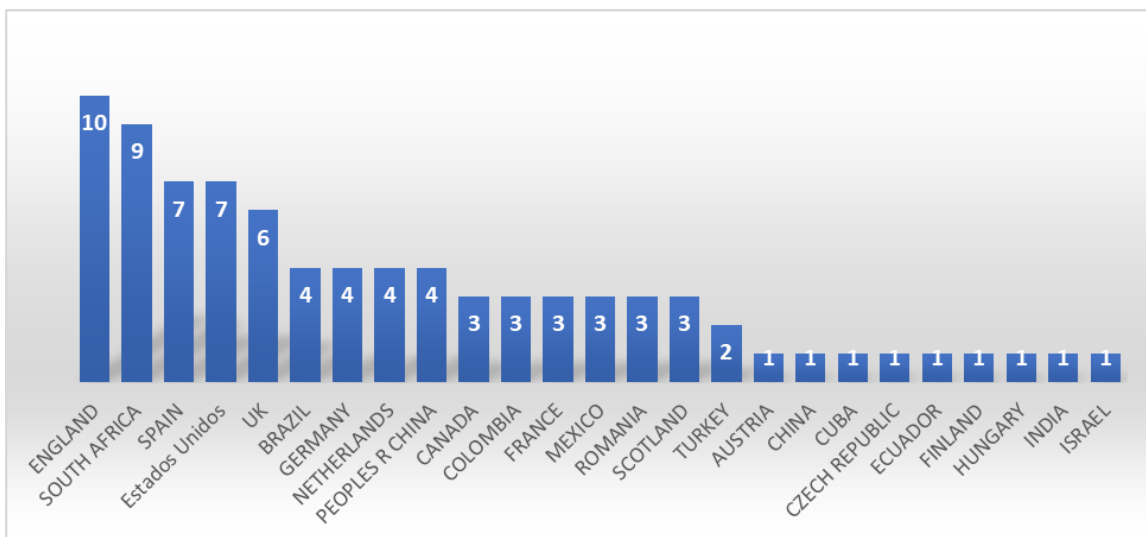


Figure 2 shows the evolution of publications related to the University and its relationship with society. Although the first article appears in 2006, it is not until 2014 that the subject arises interest in the academic scientific field. Reaching the year 2020 with 11 publications. In the last five years of study (2015-2020) research has been developed highlighting the relevance of educational institutions, the profile of society and the urban environment.

**Figure 3** Countries with the highest number of publications



Out of 42 countries that have presented research related to the subject, the top 25 stand out (Figure 3), with the countries of England, South Africa, Spain and the United

States having the highest scientific contribution. Ecuador is at No. 21 in research related to the University and Society. The United Kingdom was the first European country that articulated within its public policies to reward universities that incorporate linkage activities as a mission in the late 1970s. But it was not until 2014 that a socioeconomic impact was generated between the university and academic research. (Bas, 2017).

**Table I** *Most cited articles*

Article	Authors	Magazine	Year	Subpoenas
Articulating the "three missions" in Spanish Universities	Sanchez-Barrioluengo, M.	Research Policy	2014	66
Social distance between residents and international tourists-implications for international business	Sinkovics, RR.; Pens, E.	International Business Review	2009	55
Integrated reporting in UK higher education institutions	Hassan, A.; Adhikariparajuli, M.; Elamer, A.	Sustainability accounting Management and Policy Journal	2019	25
A conceptual synthesis of organisational transformation: How to diagnose, and navigate, pathways for sustainability at universities?	Baker-Shelley, A.; Van Zeijl-Rozema, A.; Martens, P.	Journal of Cleaner Production	2017	25
A co-creation centre for University-Industry collaboration- a framework for concept development	Huntelin, M.; Nenonen, S.	8th Nordic conference of construction economics and Organization	2015	10

The article with the highest number of citations (Table I), entitled: "Articulating the "three missions in Spanish Universities, 2014" refers to the reflection of the "one size fits all" model that links the contribution of universities as centers of excellence, research and society.

### Evolution of the subject matter

With the use of SciMAT software, we determined the topics related to the study theme. After normalizing the keywords into singular, plural and from the same context, we

obtained 313 keywords. Defining a single study period (2006-2020) to improve the visualization of the themes in the strategic diagram.

**Figure 4** Strategic Diagram Period 2006-2020

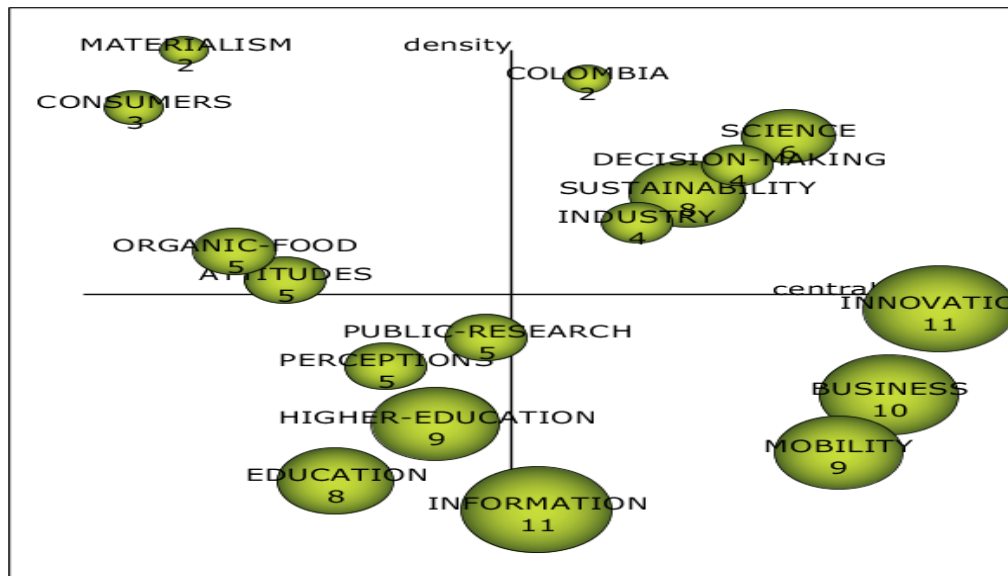


Figure 4 shows the 17 topics that have generated interest in the academic scientific community that relate the University and the Linkage with Society during the study period. The size of the spheres depends on the number of research papers raised in each of the four quadrants. The driving or novelty topics that have generated the most research are related to sustainability and science (8 and 6 papers respectively). The peripheral themes, i.e., containing themes that are highly developed but distant from the others, are centered on skills and organic food. Emerging themes are related to education, information and public policy. The core themes are related to research dedicated to innovation and business.

Higher Education Institutions (HEIs), are key to economic development by regenerating and transforming regions (Arbo and Benneworth, 2007), due to the three essential missions of all HEIs: teaching, research and knowledge transfer (Calafell et al., 2014).

As regards the link with society, in its early stages it was known as social assistance, which was based on the care of susceptible groups with related professions, then it was extended with public interest projects. Nowadays it is known as social management of knowledge integrating development and empowerment of knowledge. (Cisneros & Talledo, 2020).. This article shows that in recent years of study it is related to the transfer of knowledge from academia to society.

This is why the role of the University as a social institution arises from the transformations in the structure and functioning of its related environment (Youtie and Shapira, 2008; Wittrock, 1993), as a producer, generator and transformer of knowledge (Goddard, et al. 2012).

The most relevant topic of this study is information related to knowledge transfer and the triple helix model whose approach integrates University, Government and Business. This research in the same way as the study conducted by Calafell et al.(2014) (von Feigenblatt, 2015) highlights that this integration aims to boost economic progress.

## CONCLUSIONS

The University is one of the most important institutions of the Society ( Romero-Hurtado and Colina-Andrade, 2016), *its evolution is reflected in the economic and cultural development, as well as in the transformation of society* (Sanchez-Barrioluengo, 2014).. Although at present, the University is focused on professional training rather than on the transformation and construction of scientific knowledge ( Tarazona, 2004).

Therefore, the concept of transformation of the university is to involve it in social life, through a participatory and committed action that seeks the common good. (Romero-Hurtado & Colina-Andrade, 2016).

The present research concludes that although the relationship between linkage and University arises from the 80s. In the scientific academic field the interest is reflected from the year 2006. There are five central themes in the evolution of research on universities and the linkage with society in a general context: sustainability, science, innovation, information and higher education.

The relationship between University and Society is covered by a framework called Transfer (Calafell et al., 2014) that leads to the transmission of knowledge and knowledge adapting to social changes while maintaining its ethical and human essence. The university deserves a change that establishes its relevance in society. (Romero-Hurtado & Colina-Andrade, 2016)..

The limitations of the present study are based on the filtering and filtering of the data by choosing a single scientific documentation platform. As well as the area of knowledge, having selected the areas of economics and business.

Future lines of research can be carried out at the regional or country level, to learn about the evolution of this topic, but in a particular context, looking for similarities or differences between Latin American and Anglo-Saxon universities. Also, to know what are the external and internal factors that influence an assertive link between public and private universities and the community.

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