

# **Relationship Of Innovation, Internet Usage, Open Data, And Legal Framework With The Effectiveness Of Open Government In Latin American Countries**

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## **Abstract**

This paper consists of a documentary review of the production and publication of research papers on the study of the relationship between innovation, internet use, open data, and the legal framework with the effectiveness of open government in Latin America. Thus, the purpose of the bibliometric analysis proposed in this paper lies in knowing the main characteristics of the volume of publications registered in the Scopus database, during the period 2015-2020 in Latin American countries, achieving the identification of 62 publications. The information provided by the referred platform was organized through tables and figures, categorizing the information by year of publication, country of origin, area of knowledge, and type of publication. Once these characteristics were described, a qualitative analysis was made of the position of different authors concerning the proposed subject matter. Among the main findings of this research, it was found that Brazil, with 25 publications, was the Latin American country with the highest production. The area of knowledge that made the greatest contribution to the construction of bibliographic material referring to the study of the relationship between the variables analyzed (innovation, use of the Internet, open data, legal framework, and effectiveness of open government) was computer science, with 40 published documents. Finally, the type of publication that was most used during the analysis period was the conference proceedings, which accounted for 50% of the total scientific production.

**Keywords:** Open government, innovation, legal framework, efficiency, open data, Latin America.

## **1. Introduction**

Open government is a concept that seeks to achieve transparency in the actions carried out by any government, to provide citizens with accurate information on what is being done in public administration, thus giving rise to active participation in government management. In addition, through open government, the materialization of innovation in public administration is proposed, especially in developing countries such as those in Latin America, to avoid authoritarian governments and acts of corruption within the government administration. And to achieve transparency (or lack thereof) in the actions carried out by the State, the concept of open data was included, which constitutes the information to which all individuals have access, so it is organized in formats without legal restriction, and that can increase the value-added by third parties. Most of this type of information is published in electronic pages and databases, so the Internet becomes a necessary tool for access to this information, being the Information and Communication Technologies (ICT) the means through which citizens can establish a direct communication that allows them to have social control. Therefore, it is necessary to guarantee access to these services for all citizens in the different nations, so that everyone has the possibility of playing an active role in the accountability of public management.

This governance model would allow Latin American countries to avoid actions that go against the development of the communities, since being transparent processes (those exercised by the corresponding public administration), there would be a follow-up of the government plans implemented by the State. For Ramírez Aluja (2010), open government has found a way to consolidate itself in governments through the legal-normative scaffolding, so it constitutes the future of public administration by achieving convergence between social and regulatory aspects.

The concept of open government is often confused with digital or electronic government and, although they are related, they have different objectives. Thus, the open government aims to promote transparency in public action, monitoring how resources are used within the territory of a country; and, on the other hand, there is digital or electronic government, which seeks the implementation of ICTs in public administration. And these actions, although they allow having easier access to information, are not the ultimate goal of this governance reference. It can be pointed out that open government represents the future of public action, allowing citizens to exercise an active role in surveillance, which leads to transparency in public management.

Therefore, it is important to know in terms of bibliographic resources, the current state of research on the relationship between innovation, internet use, open data, and legal framework with the effectiveness of open government in Latin American countries. And therefore, the study proposes the development of a bibliometric analysis of the scientific production registered in the Scopus database, during the period 2015-2020, from which the following

research question can be answered: How has been the production and publication of research papers related to the study of the relationship of innovation, internet use, open data and legal framework with the effectiveness of open government in Latin America, during the period 2015-2020?

## 2. General Objective

To analyze from a bibliometric and bibliographic perspective, the production of high-impact research papers on the relationship between innovation, internet use, open data, and legal framework with the effectiveness of open government in Latin American countries, during the period 2015-2020.

## 3. Methodology

The methodological strategy implemented in the current study consisted of a quantitative analysis of the information provided by Scopus, under a bibliometric approach, on the scientific production regarding the relationship between innovation, internet use, open data, and legal framework with the effectiveness of open government, in the case study of reference. Also, from a qualitative perspective, examples of some research papers published in the area of the study mentioned above were reviewed, with a bibliographic approach, to describe the position of different authors on the proposed topic. The search was carried out through the tool provided by Scopus, and the parameters referenced in Table 1 were established.

### 3.1 Methodological design

In the following spaces, the elements of the methodological design of the research reported here are presented in Table 1.

	Phase	Description	Classification
Phase 1	Data collection	A total of 62 publications were identified through the Scopus virtual page search tool.	Published papers whose study variables are related to the relationship between innovation, internet use, open data, and legal framework with

			the effectiveness of open government Research papers published during the Period 2015-2020. Limited to Latin American countries. Without distinction of the area of knowledge. Without distinction of the type of publication.
<b>Phase 2</b>	Construction of analysis material	The information identified in the previous phase was organized. The classification was made through graphs, figures, and tables based on data provided by Scopus.	Word Co-occurrence. Year of publication. Country of origin of the publication. Area of knowledge. Type of publication.
<b>Phase 3</b>	Drafting of conclusions and final document	After the analysis was carried out in the previous phase, the conclusions were drawn and the final document was prepared.	

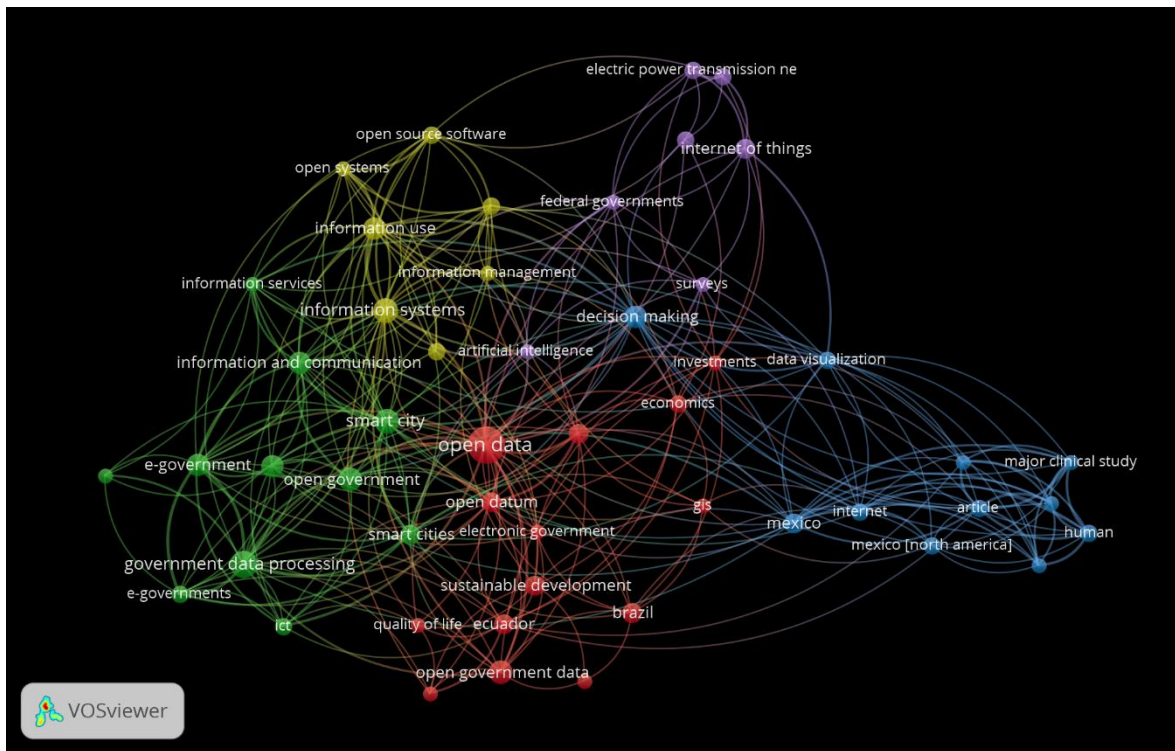
**Table 1.** Methodological design.

**Source:** Own elaboration (2022).

## 4. Results

### 4.1 Co-occurrence of words

The co-occurrence of keywords within the framework of the publications identified in the Scopus database is presented in Figure 1.



**Figure 1.** Word co-occurrence.

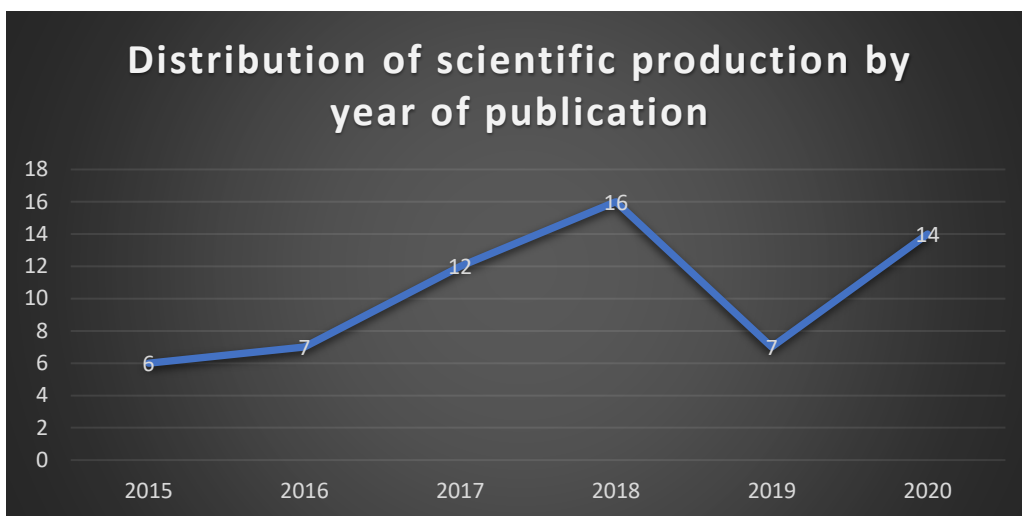
**Source:** Own elaboration (2022), based on data provided by Scopus.

As can be seen from the information in Figure 1, the keyword most used in the research identified in this study was open data. Open data is an important pillar of open government since it deals with the information provided by the public administration, without any restriction, which can be used by any citizen and even third parties can add value to the information contained in the formats, thus achieving transparency in government actions. These data are, for the most part, the ones used in the State's accountability processes. There are keywords such as smart city, digital government, information systems, and information management, which refer to the close relationship between open government and digital government. This relationship is so since in both governance models the use of ICTs is necessary for easy access to information. In the case of the smart city concept, it should be noted that to be considered as such, most of the processes must be digitized and access to information on government actions or plans carried out in the country must be guaranteed. Finally, there are keywords such as decision making, information systems, and artificial intelligence, which are the innovations that are being carried out in the governmental models that allow digitizing all their processes, and that their professionals acquire technological

skills that streamline the processes offering better quality in their services, allowing decongesting the public management.

#### 4.2 Distribution of scientific production by year of publication

The distribution of scientific production, according to the year of publication and taking into account the period from 2015 to 2020, has been displayed in Figure 2.



**Figure 2.** Distribution of scientific production by year of publication.

**Source:** Own elaboration (2022), based on data provided by Scopus.

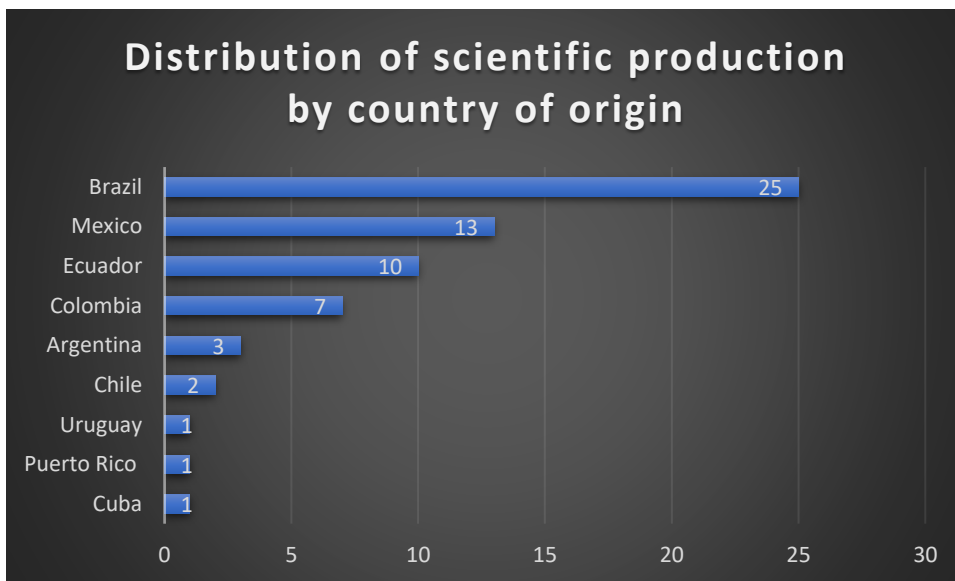
It is identified that 2018 is the year with the highest number of publications registered in Scopus, presenting 18 documents. Among the latter is the “Mediating role of ICT in the development of open government” (Alderete, 2018). The main objective of this document is to examine the mediating role of ICTs in the relationship between socioeconomic conditions and open government. In this study, 125 countries were analyzed to determine the relationship between the socio-economic conditions of the country and its level of ICT development. It was found that the stronger the economy, the greater the development of ICT and the adaptation of government to the digital era, which is related to higher levels of implementation of open government, thus confirming the mediating role of ICT in the implementation of open government.

On the other hand, 2020 is the year with the second-highest number of registered documents, presenting 14 publications, among which is the paper entitled “Motivational aspects for voluntary participation in open government platforms: A look from the users' perspective” (Alves Lima-Júnior et al., 2020). This document aims to identify motivational aspects that encourage citizens to use open government electronic platforms, so 67 interviews were

conducted with frequent users of these platforms, and 18 aspects related to technological, altruistic, and affective factors were identified. In the affective factors, social improvement, search for solutions, transparency, and accountability stand out.

### 4.3 Distribution of scientific production by country of origin

Figure 3 shows the distribution of scientific production according to the nationality of the authors.

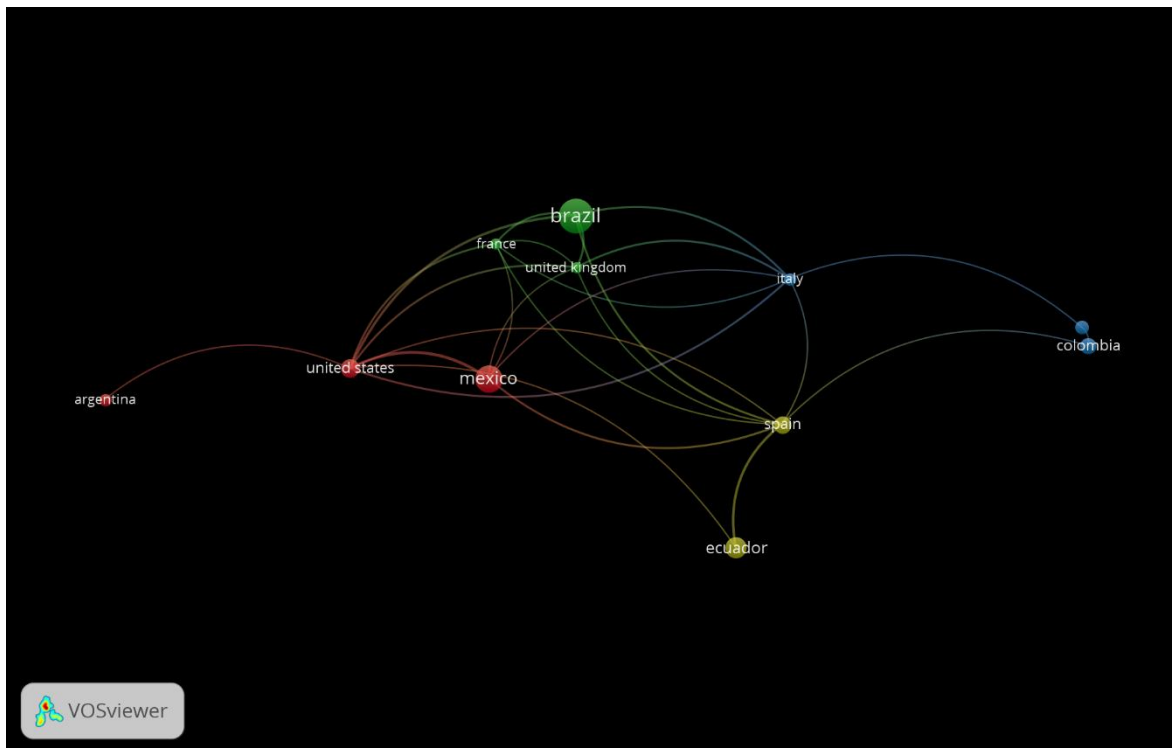


**Figure 3.** Distribution of scientific production by country of origin.

**Source:** Own elaboration (2022), based on data provided by Scopus.

In this opportunity, Brazil is the Latin American country with the largest contribution to research related to the variables under study during the period 2015-2020, presenting a total of 25 papers, among which is the title “Government open data in Brazil: a systematic review of its uses and problems” (De Oliveira & Silveira, 2018). This paper has as its main objective to find what initiatives are being carried out in Brazil, how open government data is used, what types of data are most used in studies, and what are the challenges to implementing open government data throughout the country. For this, a literature review was conducted, finding that there are not many research papers that try to evidence the models that the Brazilian government has adopted to implement open government. The areas with the most documents have to do with politicians and their spending, and also investments in education and the results of these investments. And it concludes with the need for more research to determine how the government implements this model at the federal level, in cities, and at the state level.

At this point, it should be noted that the production of scientific publications, when classified by country of origin, presents a special characteristic and that is the collaboration between authors with different affiliations to both public and private institutions; and these institutions can be from the same country or of different nationalities so that the production of an article co-authored by different authors from different countries of origin allows each of the countries to add up as a unit in the overall publications. This is best explained in Figure 4, which shows the flow of collaborative works from different countries.



**Figure 4.** Co-citations between countries.

**Source:** Own elaboration (2022), based on data provided by Scopus.

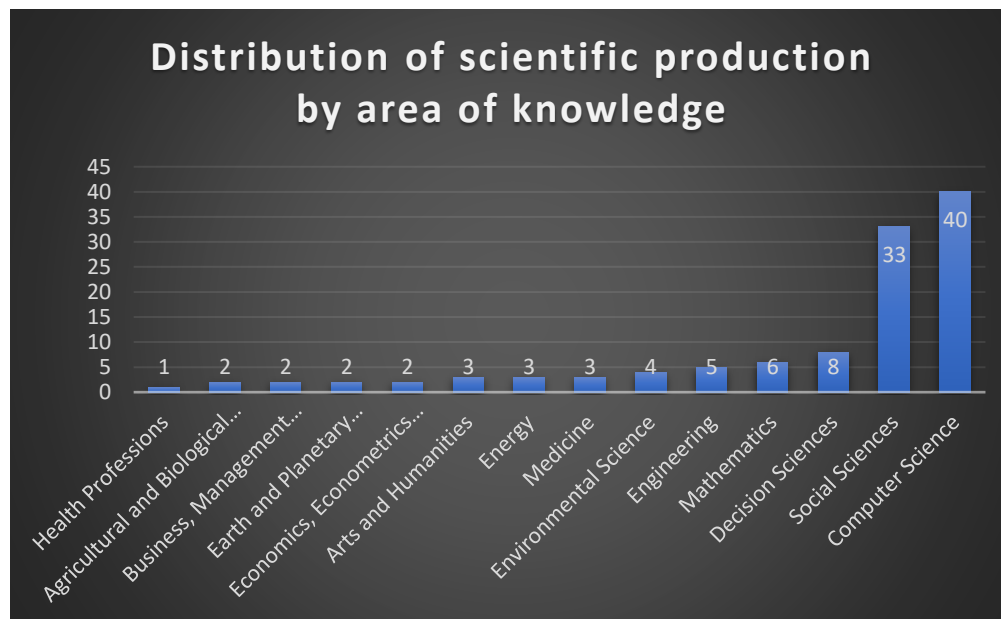
As mentioned above, Brazil is the country with the highest number of publications related to the variables under study, having publications in collaboration with authors from countries that do not belong to Latin America, such as the cases of France, the United Kingdom, and Italy, which shows the interest in knowing the current state of implementation of open government in Latin American countries. In the second place, Mexico was found with 13 documents, among which is the title “Toward a comparative model of open government data” (Sandoval-Almazan & Styryn, 2018). This document aims to present the first step to developing a comparative framework of OGD, so a comparative study was conducted between Mexico and Russia, and this country's comparison experience is considered to encourage the implementation of OGD worldwide since, after the Open Government



Partnership (OGP) initiative, all governments have modified their legal regulations to adopt this governance model. Therefore, the reference document serves to encourage the implementation of open government in different countries.

#### 4.4 Distribution of scientific production by area of knowledge

Figure 5 shows how the production of scientific publications is distributed according to the area of knowledge through which the different research methodologies are executed.



**Figure 5.** Distribution of scientific production by area of knowledge.

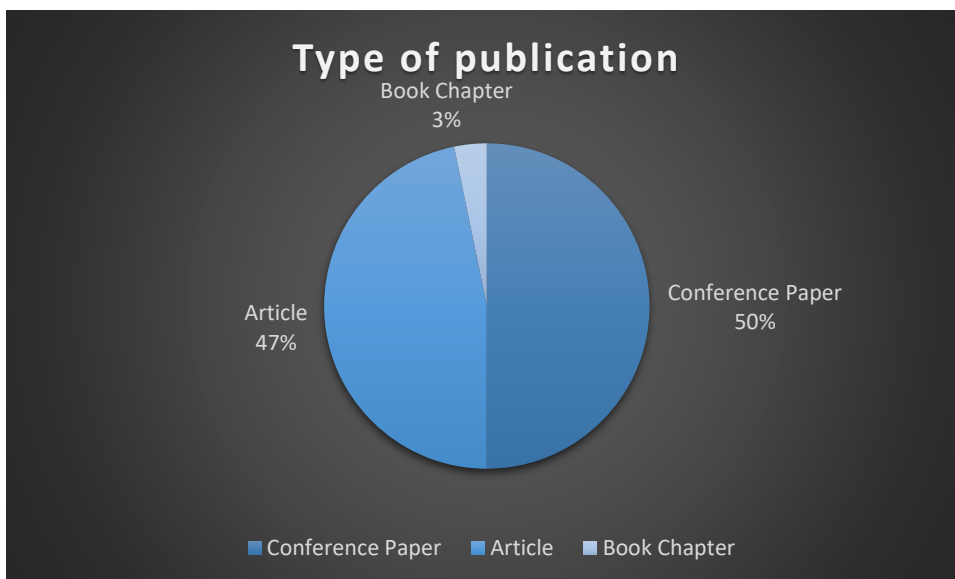
**Source:** Own elaboration (2022), based on data provided by Scopus.

Regarding the analysis in this section, it should be noted that computer science is the area of knowledge with the largest number of contributions through the theories that are framed in it, in the search for new knowledge on the relationship between innovation, internet use, open data and legal framework with the effectiveness of open government, presenting 40 papers. Among these, the paper entitled “Digital Hyper transparency: Leading e-government against privacy” was presented (Rodriguez-Hoyos et al., 2018). The main objective of this document is to determine how transparency can cause almost unlimited access to large amounts of information. This takes into account the emergence of hyper-transparent practices in Ecuador, which allows sensitive information of public employees to be openly disclosed under transparency laws. Therefore, transparency is a counterproductive element if it is not properly regulated, according to the text in reference. Finally, the authors present several mechanisms aimed at protecting citizens from such violations.

In second place is the area of social sciences, which reported 33 documents that were written following the guidelines of the topics related to the thematic addressed in this research report. Among the publications considered, the following can be identified: “Base of Brazilian legal norms: an open government data initiative” (De Martim et al., 2018). This document aims to determine the automatic transformations applied to the framework of federal laws to structure the information described in these documents, to prepare them for different types of automatic interpretations; therefore, platforms such as LexML and CoNLL-U are proposed to determine the automatic transformations applied to the framework of federal laws to structure the information described in these documents, to prepare them for different types of automatic interpretations, around the management of open government data.

#### 4.5 Type of publication

The following figure shows the distribution of bibliographic production according to the type of publication chosen by the authors (Figure 6).



**Figure 6.** Type of publication.

**Source:** Own elaboration (2022), based on data provided by Scopus.

As Figure 6 reports, within the different types of publications, 51% of the total number of papers identified through phase 1 of the methodological design, correspond to conference proceedings. Among the latter is the paper entitled “Empirical evidence of the impact of Colombian e-government programs on the local adoption of smart cities” (Maestre et al., 2018). The main objective of this paper is to examine a smart city ICT Adoption Maturity Model. The study addresses an initial assessment using public data from the ICT Ministry, as it is key for the transition to smart cities, and it is reported that the 15 main cities in

Colombia were studied. In conclusion, it was determined that a more specific study may reflect a reprioritization of attention and resources as cities aim to exploit new national programs on public Wi-Fi and open data.

In the second place, journal articles were found which represent 47% of the total number of documents identified in this study, among which is the one entitled “Accounting for citizens in explaining the effectiveness of open government” (Porumbescu et al., 2020). The main objective of this paper is to conduct a randomized survey experiment to demonstrate how the choice of benchmarks used to communicate government information around strengthens the relationship between public information disclosure and citizen participation providing new theoretical and practical insights into the open government.

## **5. Conclusions**

From the bibliometric analysis proposed and developed in this research, it is possible to determine that Brazil turned out to be the Latin American country with the highest number of bibliographic records, in the consideration of the Scopus database, during the study period (between 2015 and 2020), with a total of 25 documents. The scientific production related to the study of the relationship of innovation, internet use, open data, and legal framework with the effectiveness of open government, has presented a significant growth during the aforementioned period, moving from 6 publications, in 2015, to 14 units, in 2020; and, being 2018 the year with the highest number of publications (16 documents). In other words, the creation of bibliographic records was doubled in a period of 5 years, which is indicative of the importance that the internet and open data management have in the implementation of open government in the context of Latin American countries.

Open government is a governance model that seeks transparency in public actions, providing the conditions to prevent and avoid acts of corruption by state officials. This model is increasingly implemented in Latin American countries with the purpose of avoiding authoritarian governments or deviations of public resources, thus allowing citizens to play an active role in these functions, being participants in government plans and evaluators of their compliance and follow-up. The implementation of open government is widely related to the use of ICTs in public institutions since these make it possible to access information, which facilitates the implementation of open data, which is the information of government actions through formats without any legal restriction so that any citizen can have access to such information and use it as research material. All the above allows this article to conclude, by highlighting the importance of knowing the theory or bibliographic resources that seek to awaken the interest in Latin American countries to implement open government to generate transparency in the processes carried out in public management, using ICT and implementing open data in their accountability. That is why it highlights the need for studies such as the one presented here, which make a tour of those texts that address this issue, to give the reader

a broad view of the current status of the literature on the relationship of innovation, use of the Internet, open data and legal framework with the effectiveness of open government.

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