

REVIEW

Analysis of the Accounting Scientific Production Applied to Businesses and Economy of Scopus

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Abstract:

Due to the proliferation of scientific production, bibliometric science is used as a tool for the quantification, grouping and evolutionary evaluation of all documented information. The purpose of this research is to provide a detailed analysis of the composition of the Scopus platform, during the period 2012-2016, regarding publications related to Accounting. A relationship between qualitative variables of articles applied to companies and the economy is explained and analyzed. The results show a decrease in the amount of publications over the years of the study. The United Kingdom is exhibited as the country with the highest number of articles and an outstanding application of a theoretical, bibliographic and perceptions approach. Journals stipulate different approaches in their studies; however, General Accounting leads these approaches. Based on this information, further research on specific accounting application issues is recommended, not just related to general accounting, and that these publications are in English in line with global trends.

Keywords: Accounting, bibliometrics, general accounting, scientific production, Scopus.

Introduction

"Scientific knowledge transcends facts, discards facts, produces new facts, and explains them"(p. 11) [1]. From the 19th century onwards, the appreciation of the first explorations and investigative observations emerged. During that time there were hardships and lack of necessary materials and equipment for the elaboration and writing of new documents that would work as support for future

studies [2]. This context led to the emergence of institutions dedicated to expanding scientific knowledge [3].

The socialist and cultural oppression in Europe opened evolutionary movements in the literary and investigative fields [4], giving rise to authors who migrated from this oppression and sought prominence in academic journals. Migrant authors promoted their knowledge and intellect in other countries causing a great advance in the investigative field [5].

With the birth of new scientists and new scientific ideas, it begins to collect documentation to generate more studies [3]. It is evident that science generates new information and when it is produced it becomes scientific research. In general, a study of this nature is reflected in a scientific article. Published articles suit, corner, and fulfill several needs; one of them is the academic aspect, in this area, a narrow view between scientific knowledge and science is presented [6]. Scientific evaluation emerged as Statistical Bibliography in this context. Later, a new term for this process of scientific quantification appeared, addressing the year of 1934, with the name by which it is identified until today, "bibliometrics" [7].

Bibliometrics is a discipline that allows the quantification of all academic published articles through the application of various statistical and mathematical methods and procedures, allowing the aggregation of criteria, tactics, patterns, guidelines, among others, of the scientific publications that have been disseminated in journals of global impact [8]. Depending on the scientific doctrine to which it is applied, the nature and field of study will be analyzed and studied, using as a guide the bibliometric laws and mathematical and statistical methods [9].

Indicators are the best instruments for the quantification and measurement of scientific production [10]. These indicators are diverse and work with qualitative and quantitative data according to the diversity, plurality and complexity of each work, focusing mainly on the criteria of the authors Pérez Reyes and Martínez Rodríguez [11]. Spanish authors, González, Moya and Hernández [12] have found and focused their study on a medical-scientific terminology with a social focus and focusing on indicators such as: production, consumption, circulation, dispersion and repercussion. On the other hand, the authors Maltrás, Quintanilla and Vidal [13] divide these indicators into production, quality and collaboration, coinciding with the previous authors, who are mainly concerned with quality to value the scientific production of science.

Currently, all universities worldwide are going through high evaluation regimes to accredit their educational activity. These accreditation processes are carried out through an appropriate classification and the corresponding position is defined when performing the assessment by checking whether each university complies with the requirements established by the evaluators, presenting themselves as a reference that accredits and testifies to their quality [14].

One of the most popular platforms worldwide, which serves to store scientific publications, is Scopus. This library externalizes many scientific publications by offering research with general approaches in distinctive areas [15]. Also the Institute for Scientific Information [ISI] is the entity in charge of issuing annually the factor of impact corresponding to the evaluation of scientific journals presented in the JCR (Journal Citation Reports) [16], being a very useful tool when evaluating the investigative significance and influence worldwide, it infers the number of bibliographic citations of other authors in its calculation [17].

With the examination and study of the articles, the most substantial aspects of what has been scientifically written on accounting topics will be presented.

Hypotheses that contribute to the explanation of the qualities that intervene in the study of bibliometrics will be verified. It will serve as an instrument for the new generators of knowledge when reporting on detailed topics that have been written about and the aspects that need to be deepened.

Methodology

The article explores, with a qualitative approach, the publications referring to the accounting sciences applied to business and economy in the Scopus platform between 2012 and 2016.



Figure 1. Flow diagram of the methodology used

From Scopus' publications the articles will be studied, leaving aside press publications, reviews, session documents, editorials and notes. In order to obtain the information and to simplify the study, several filters were used: two of the ten areas presented by Scopus were used, these are: 1) Business Administration and Accounting, and 2) Economy, Econometrics and Finance. These areas were chosen because they are the most influential topics in accounting science [18], in articles in Spanish, English and Portuguese. Once the filters were applied, 252 results were obtained, working with 247 data, excluding journals with repeated statements or references with insufficient information to be included in the study.

The generable database includes variables such as: name of the published article, year of publication, writing language, type of accounting, scope, period of research, author or authors, country of origin of the first author, gender of the authors, name of the journal where the article was published, and the quartile to which it belongs, area of study, name of the promoter university or institution, country where the university is located, and ranking of the promoter institution.

The articles were further classified by approach and scope, as described in Tables 1 and 2.

Table 1. Description of the approaches of the articles.

Scope	Description
Academic	All documents containing interviews, questionnaires, examinations, qualitative evaluations and perceptions of students of higher academic institutions were categorized.
Business	Correspond to articles that applied studies to the employees of an institution. Different accounting evaluations were used directed to: accounting area, financial statements, growth indexes, financial valuations, among others.
Collective	This area relates the actions of several authors or organizations in the preparation of the article.
Cultural	This group classifies the articles that have studied social chances over time.
International	Articles that have compared different situations between countries.
Governmental	Articles that analyze laws, policies, regimes, decrees, impositions of imposed politicians and their affectations and influences with the accounting development.
National	Studies applied to the whole country or exclusively to one or several cities.
General	All the articles that do not have any specification of the place where the study was applied or the territorial limitations where they were carried out are detailed within this scope.
Historical	Articles that were responsible for the collection of information over the years, evolution and effects at present.
Financial	Articles regarding the financial evolution.

Source: Done by the author based on the Scopus database 2012-2016.

In order to determine the focus of the articles, 19 different criteria were proposed; they are described below:

Table 2. Description of the scope of the investigation

Approach	Description
Outsourcing Alliance	This group includes the studies applied to companies that made their organization available to another.
Bibliometric analysis	Articles that summarize academic research by other authors.
Theoretical and bibliographic analysis.	It corresponds to the articles that detail only particularities such as: history environments, descriptions of the authors, and important study data.
Academic applications	It includes articles related to academic procedures or assessments.
Organizational behavior	Studies based on the activities and attitudes of employees and employers within the company in to prove if this helps business performance.
Environmental guidelines	For this category, all the articles that have norms, policies, instructions, and precepts, among others, were included, focused mainly on biodiversity and its adaptability to the environment and the participants who intervene, studying the behaviors that reside in their actions.
Accounting Ethics	It refers to studies focused on the organizational aspect that is applied in the company and how the guiding principles influence the way by which companies are related to employees.
Accounting evaluation	It is focused on the analysis of financial management.
Budgetary management	Articles referring to the budget procedures, audits, and analysis are included in these criteria.
Accounting tools	Articles that refer to instruments used for the development of research and studies.
Government taxation	Referring to the accounting policies that the government inflicts on its people.
Limitations of accounting regulations	They detail articles that investigate the limitations of accounting regulations.
Logistics	Accounting detail of all the required processes for monitoring products, predicting the collection and evaluation of data in a statistical way.
Accounting Perceptions	These are all the opinions and judgments that participants have in order to identify different variables, attitudes and opinions within various accounting topics.
Reengineering of accounting processes	Articles, which help in the implementation of a new accounting system.

Accounting risk	These are the articles that study the instability of a company through accounting standards.
Accounting information system	For this group all the various systematic mechanisms that facilitate the information process for decision making were chosen.
Drop-shipment transactions	All articles that consider the of the accounting of a sale.
Accounting treatment	Articles referring to the evaluation, identification and delegation of the accounts at the time of accounting.

Source: Done by the author based on the Scopus database 2012-2016.

With the tabulated information the author proceeded to extract the frequency, performed variable crossings and hypothesis tests by the Pearson chi-square method, mainly done with IBM SPSS Statistics v24 software.

Results

The results are divided into two sections: a) Descriptive analysis and b) Inferential Analysis.

A) Descriptive Analysis

Exploratory studies were used on the validity of an event and its respective interpretation is exposed with the use of criteria that support it [19].

Table 3. Participation of journals by country and year

Country	Year of Publication					General Total
	2012	2013	2014	2015	2016	
United Kingdom	15,97%	12,50%	5,56%	5,56%	5,56%	45,14%
Accounting, Auditing and Accountability Journal	7,64%	4,17%	2,08%	2,78%	2,78%	19,44%
Accounting Education	0,69%	1,39%	1,39%	2,78%	1,39%	7,64%
United States	5,56%	4,17%	3,47%	3,47%	4,17%	20,83%
Accounting History	3,47%	2,78%			2,08%	8,33%
Critical Perspectives on Accounting			2,78%	1,39%	2,08%	6,25%
Ukraine	1,39%	2,78%	4,17%	5,56%	2,78%	16,67%
Actual Problems of Economics	1,39%	1,39%	2,08%	1,39%	0,69%	6,94%
Economic Annals-XXI			1,39%	2,78%	0,69%	4,86%
Romania		1,39%	1,39%	1,39%	2,08%	6,25%
Journal of Applied Economic Sciences		0,69%	0,69%	0,69%	0,69%	2,78%
Quality - Access to Success		0,69%	0,69%		0,69%	2,08%
Netherlands	1,39%		0,69%	2,78%	0,69%	5,56%
Journal of Business Ethics				0,69%	0,69%	1,39%
Journal of Cleaner Production	0,69%			0,69%		1,39%
Venezuela	0,69%			2,08%	2,78%	5,56%

Espacios	0,69%	2,08%	2,08%	4,86%
European Research Studies Journal			0,69%	0,69%

Source: Done by the author based on the Scopus database 2012-2016.

Table 3 shows the top 5 countries that publish accounting topics and includes the 2 most representative journals. The publications have a close relationship with the place of dissemination, the largest publications are those made in developed countries [20]. United Kingdom and the United States are mentioned, among the 18 countries with the highest income, determined by their high nominal GDP per capita, and expressed in the list presented by the World Bank [21]. These countries have high and better resources for investment in universities and research, which allows them to achieve the best rankings in the Webometrics classification, United States has the best university and the first in the United Kingdom occupies the seventh position, according to this indicator [22]. These publications also had the best tools and intellectual resources for the development of a greater diversity of valuable topics for scientific and research advance, which contribute not only to the country, but also to the development of knowledge in a universal sense [23].

Table 4. Number of publications according to the type of accounting, classified by year

Type of accounting	Year of publication					General Total
	2012	2013	2014	2015	2016	
General Accounting	12.55%	12.55%	6.88%	17.00%	14.17%	63.15%
Financial Accounting	2.83%	3.64%	3.24%	1.21%	0.81%	11.73%
Cost Accounting	0.40%	0.40%	2.83%	0.81%	0.81%	5.25%
Management Accounting	0.81%	2.83%	0.81%		0.81%	5.26%
Government Accounting	3.24%		0.40%		0.81%	4.45%
Social Accounting	0.40%			0.81%	1.62%	2.83%
Managerial Accounting		0.40%	0.81%	0.40%	0.40%	2.01%
Environmental Accounting	0.40%		0.40%	0.81%		1.61%
International Accounting	1.21%					1.21%
Information Systems Accounting				0.40%	0.40%	0.80%
Advanced Accounting					0.40%	0.40%
Intellectual capital Accounting	0.40%					0.40%
Biodiversity Accounting		0.40%				0.40%
Tax Accounting		0.40%				0.40%
General Total	22.24%	20.62%	15.37%	21.44%	20.23%	99.9%

Source: Done by the author based on the Scopus database 2012-2016.

Table 4 shows that it has been written about 14 types of accounting for 5 years. The results show that a greater percentage has been written about General Accounting in 2015. Within this type of accounting, articles dealing with the application of accounting programs, resolution of conflicts with the application of general accounting methods, accounting implementation to institutions, and interviews and perceptions of people as members of a business organization can be identified.

Table 5. Number of publications according to the approach and the journal quartile

Approach	Quartile				Total
	Q1	Q2	Q3	Q4	
Theoretical and bibliographic analysis	9.31%	4.05%	4.86%	1.21%	19.43%
Accounting perceptions	3.24%	2.43%	2.83%	3.24%	11.74%
Accounting tools	1.62%	3.64%	2.83%	1.62%	9.71%
Accounting information system	0.81%	2.43%	2.02%	2.43%	7.69%
Bibliometric analysis	4.05%	0.40%	1.21%	0.81%	6.47%
Academic applications	0.81%	2.83%	2.43%	0.40%	6.47%
Limitations of accounting regulations	0.40%	0.81%	2.43%	1.21%	4.85%
Organizational behavior	2.02%		1.21%	0.81%	4.04%
Accounting evaluation	1.21%	0.81%	1.21%	0.81%	4.04%
Logistics	0.81%	1.21%	1.62%	0.40%	4.04%
Environmental guidelines	2.83%	0.40%	0.40%		3.63%
Budgetary management		0.81%	1.21%	1.62%	3.64%
Accounting treatment	0.40%	0.81%	2.02%		3.23%
Accounting Risk	0.81%		2.02%		2.83%
Accounting Ethics	1.21%	0.40%		0.81%	2.42%
Government Imposition	2.02%				2.02%
Accounting Process Reengineering	1.21%		0.40%		1.61%
Outsourcing Alliance	0.40%			0.40%	0.80%
Drop-shipping Transactions	0.40%		0.40%		0.80%
Academic	0.40%				0.40%
General Total	33.96%	21.03%	29.10%	15.77%	99.86%

Source: Done by the author based on the Scopus database 2012-2016.

These results illustrate 20 approaches to articles published according to their location in quartiles. Benavent, Valderrama, Castellano, Simó Meléndez, and Navarro Molina [24] state that a quartile gives authors the advantage of choosing and verifying the quality and position of a journal. There are different criteria for the division of these 4 positions and it also depends on the place of origin and the diffusion of information that the publication contributes in universal terms [25]. Table 5 reveals two approaches with more published articles: Theoretical and bibliographic analysis, and Accounting Perceptions, which have the largest number of articles published in journals defined in the first quartile (Q1). It can be highlighted that the most important journals are supported by prestigious institutions, which allow them to present higher quality documents, providing important contributions for future research [26].

Table 6. Number of publications according to the type of accounting, depending on the journal

Type of Accounting	Quartile				Total
	Q1	Q2	Q3	Q4	
General Accounting	41,03%	8,97%	0,00%	7,69%	57,69%
Accounting, Auditing and Accountability Journal	26,92%				26,92%
Accounting Education		8,97%			8,97%
Financial Accounting	2,56%	6,41%	5,13%		14,10%
Accounting Education		5,13%			5,13%
Economic Annals-XXI			2,56%		2,56%
Government Accounting	6,41%	2,56%	2,56%		11,54%
Accounting History	3,85%				3,85%
Journal of Accounting and Organizational Change			2,56%		2,56%
Social Accounting	7,69%			1,28%	8,97%
Accounting, Auditing and Accountability Journal	3,85%				2,56%
Accounting, Organizations and Society	1,28%				1,28%
Cost Accounting	1,28%	1,28%	1,28%	3,85%	7,69%
Actual Problems of Economics				2,56%	2,56%
International Economic Society				1,28%	1,28%

Source: Done by the author based on the Scopus database 2012-2016.

Table 6 shows 5 types of accounting and includes the 2 most representative journals. Most of the journals expressed in Table 6 publish socio-economic, political, and financial issues related to accounting education [27], including the publication of perceptions of managers and administrators with the purpose of promoting ideas that serve as instrument for new writers [28]. There is a high diffusion of published articles regarding General Accounting and Quartile Q1.

B) Inferential analysis

The sample was analyzed using the statistical program SPSS v24, that allows describing the variables to be used and detecting possible relationships between them.

Hypothesis 1: research scope - first author gender relationship

Ho: Research scope is independent of the author gender.

H1: Research scope depends on the author's gender.

Level of significance = 0.05 (95%).

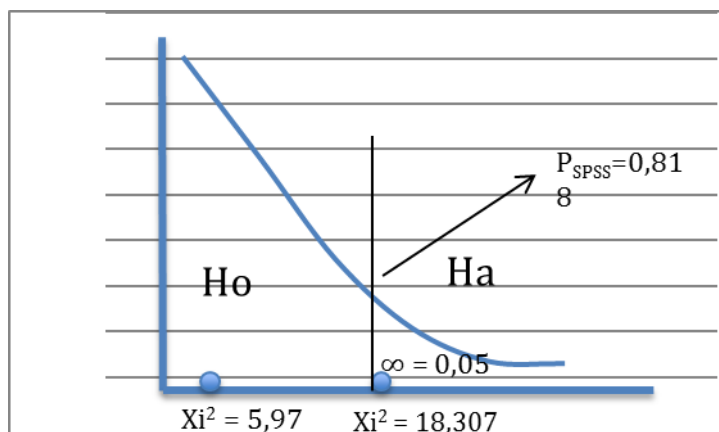


Figure 1. Gaussian Curve

Source: Done by the author based on the results provided by SPSS v24.

For the development of this hypothesis, 10 areas of research were presented that show in which field the study was carried out. Also, it was classified into two types of gender (male and female). When comparing the variables in the SPSS v24, it can be seen in Figure 1 that the value of $P = 0.818$ is higher than the level of significance of 0.05. Therefore, it is concluded that the null hypothesis is true, which defines that the research scope of the articles is independent of the gender of the first author. The Academic, Business and General scopes were written by both men and women. The General scope was written on a 12.70% by men and 9.35% by women. In the Academic field, it is observed an 11.82% of male writers and an 8.99% of female writers in their articles.

Hypothesis 2: research scope – journal’s country

H_0 : Research scope is independent from the journal’s country.

H_1 : Research scope depends on the journal’s country.

Level of significance = 0.05 (95%).

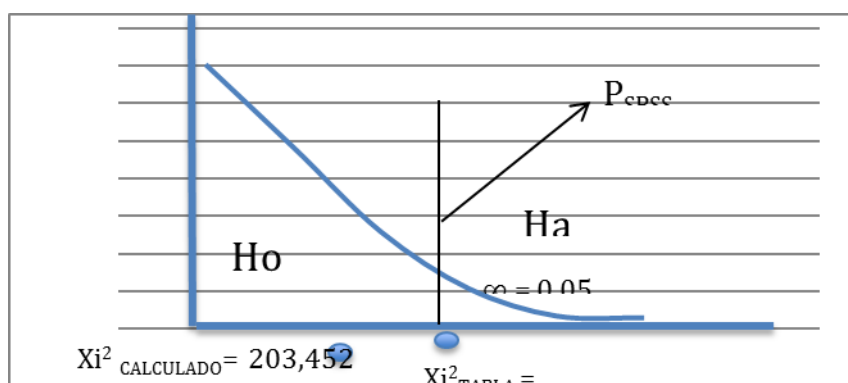


Figure 2. Gaussian Curve

Source: Done by the author based on the results provided by SPSS v24.

The 10 items raised in the research field and the countries in which the academic articles were carried out were used for the development of this hypothesis. Being the value of $P = 0.111$ higher than the level of significance of 0.05, it is concluded that the null hypothesis is true and defines that the research scope of the articles is independent of the country of the journal. This case shows that the countries with the largest hoarding of publications on the Scopus

platform are the United Kingdom and the United States. It is illustrated that the United Kingdom presents 125 articles focusing mainly on general, academic and cultural studies. A similar case can be found with the United States, which shows a total of 48 publications, where the main fields are the same as those in the United Kingdom.

Hypothesis 3. approach - type of accounting

Ho: The approach of the investigation is independent of the type of accounting.

H1: The approach of the investigation depends on the type of accounting.
Level of significance = 0.05 (95%).

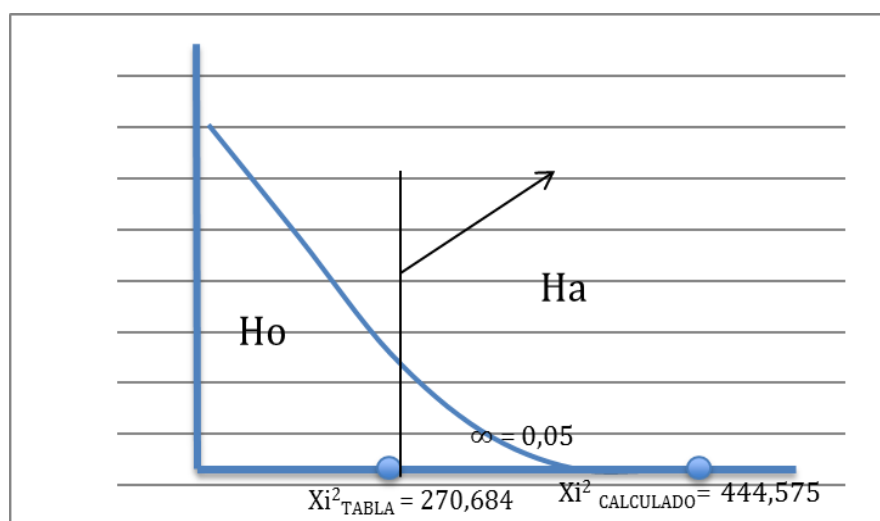


Figure 3. Gaussian Curve

Source: Done by the author based on the results provided by SPSS v24

This hypothesis is formulated with the use of 19 approaches and 14 types of accounting. When performing this procedure with a level of significance of 0.05, the null hypothesis is rejected, and the alternative hypothesis is accepted, showing the existence of a relationship between the article's approach and the type of accounting; where the probability is 0.00, which shows it is lower than the error level. A 19.43% of publications regarding the approach defined as theoretical and bibliographic analysis show a 11.74% that corresponds to accounting perceptions and a 7.69% correspond to Accounting Information Systems. In addition to that, all the mentioned approaches have publications made about General Accounting with a total of 15.79%, 10.12% and 4.05% correspondingly, being this accounting type the most widely used, as it represents a 63.16% of the total amount of the publications. This study, which was conducted in the SPSS shows that there exists a relationship between the approach and the type of accounting.

Hypothesis 4. use of central tendency statistics: mode

Ho: Q1 is the quartile most frequently used in this study.

H1: Q1 is the quartile used with less frequency in this study.

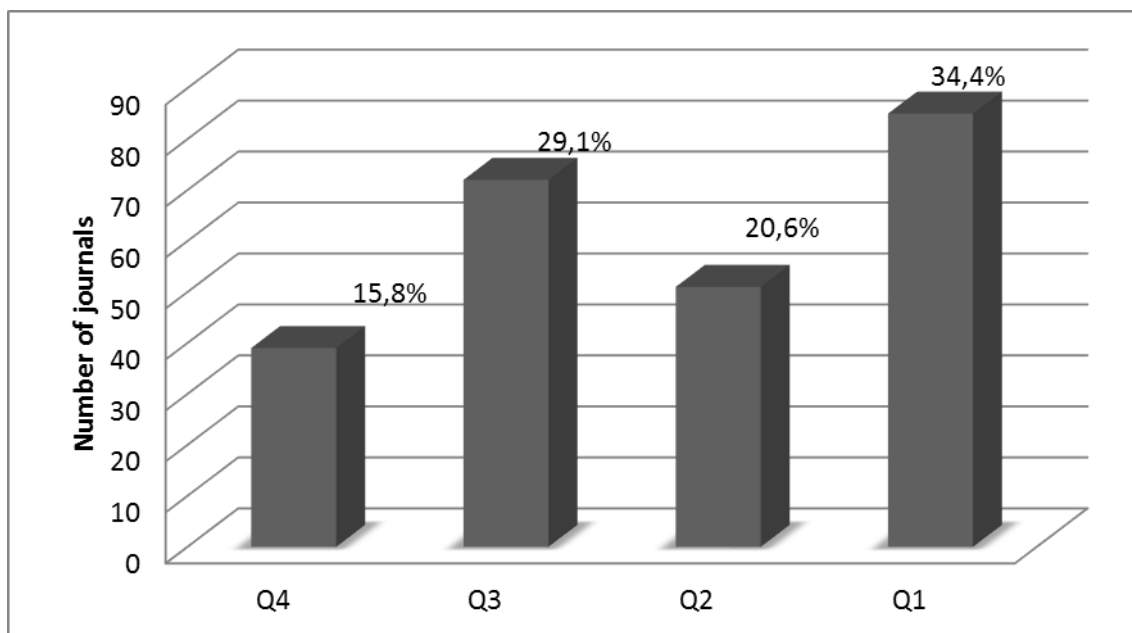


Figure 4. Position of the journal's quartile.

Source: Done by the author based on the results provided by SPSS v24.

In this hypothesis, the quartile of journals is used. It has been classified into 4 variables that show the positioning of the journals. When tabulating the information, it is observed that 34.4% of the journals are in quartile 1, being this the largest number in this position. Therefore, the null hypothesis is demonstrated to be true, which states that the Q1 is the most used quartile within the quartiles of the journal. Coming back to the hypothesis established at the beginning of this study, it is now possible to affirm that the authors who publish more articles in this kind of journals have a better prestige and quality.

Discussion

In a world of vertiginous advances, globalization of information has allowed greater access to research that has revolutionized different concepts, theories, methods and models of scientific accounting production applied to business and economics. This has provided a reference framework that allows research in the knowledge society to have a broader purpose such as inducing people to reflect more deeply on the importance and role of accounting research in the life of societies, organizations and people. Information plays a preponderant role due to its transcendental importance in the development of knowledge. It must have validation through the application of a scientific method that allows creating the conditions so that obtained conclusions are based on evidence and not on assumptions or apparent knowledge. In this regard, bibliometrics provides a qualitative analysis of academic literature [29].

In 2012 publications reached a 22.27% while in 2016 they reached a 20.24%, which shows a decrease of 2.02%. This reflects an average variation of 1.42%, which is closely related to the place of dissemination, where most of publications are those generally made in developed countries (the United States with 12% and the United Kingdom with 15%). Developing countries depend on the science produced in first world countries, they should protect their resources, protected

by the precepts of endogenous and sustainable development, and resort to knowledge of different types [30]. Topics related to general accounting cover 63.16% of the total percentage of publications, where its highest quartile (Q1) has a theoretical and bibliographic approach. Journals tend to publish mostly socio-economic, political, and financial issues aligned with accounting education. On the other hand, the remaining three quartiles cover 66% of the publications [8]. Male researchers reached a 53.38% of publications, concluding in addition that women maintain an important participation in publications, reaching 46.62%. This shows that there is gender equality in the publication of scientific journals.

Hypotheses point out that the author's gender is independent of the research scope and that a country is not focused on writing about a specific scope. They also show that the research approach does not have a direct relationship with the type of accounting and that most of articles that have been written about accounting issues were published in a Q1 journal.

Conclusions

Scientific production related to Accounting in the Scopus database did not grow rapidly between 2012 and 2016. It was observed that developed countries such as the United States and the United Kingdom predominate with respect to accounting research, mainly referring to general accounting with a review approach theoretical and bibliographic. Gender equality was fulfilled, no significant difference was observed between male and female authors.

The analysis of the relationships between variables also showed that the research approach does not have a direct relationship with the type of accounting and that most of the articles that have been written on accounting issues were published in a high-impact journal (Q1).

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