

## An Accounting Information Systems Perspective On Data Analytics And Big Data During 2015-2020

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**Abstract:** Accounting information systems are responsible for providing information that constitutes raw material for decision making in terms of investment, payments to suppliers, payroll, income, among others. The analysis of such information becomes a cornerstone in the positioning strategies through productivity and competitiveness of any organization. When this analysis is applied to large volumes of information, there are Big Data tools that facilitate the grouping of data according to its source or nature. This paper will describe the most influential accounting information systems in the analysis of large volumes of data that affect the decision making of companies in different sectors of the economy during the period between 2015 and 2020.

**Keywords:** Accounting information system, Data analytics, Big Data.

### 1. Introduction

In the development of economic activity in any organization, essential information is produced for the analysis and operation of the same. In accounting, the movements of assets and liabilities constitute a series of strategies for the correct use of resources. It is important to emphasize that both accounting and accounting systems are the result of a historical journey and overcoming in the application of tools and instruments of management to assist in the management of resources in the organization (Barrios, 2017).

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Currently, companies face the challenge of analyzing large volumes of information by applying Big Data techniques to achieve a real approach to a thorough study of market needs. This research will determine the importance of the analysis of data derived from accounting information systems by reviewing the studies conducted on these topics during the period 2015-2020, which will be an important input for decision making in any organization.

### 2. General Objective

To analyze the impact of accounting information systems and Big Data techniques through a review of scientific articles published in journals indexed in Scopus database in the period 2015-2020.

### 3. Accounting information systems.

Understanding the accounting information systems determines the accuracy and efficiency of the information derived from the analysis of the data provided by the application of tools that management uses to measure the performance of its resources through the implementation of organizational strategies in search of profitability and positioning of each company. The analysis of such information is processed through techniques established not only by the organization but also by a whole conglomerate of experiences shared at different moments in history, i.e., such systems are fed by the results of each economic activity in the immediately preceding period.

Thanks to research and the effort to achieve a larger and larger market share, companies are experimenting with different strategies for this purpose, which has led to the development of more and more new tools for the organization of large amounts of information such as the techniques proposed in Big Data, which organizes such data in such a way that information systems will be more efficient in their analysis.

Information systems are an integrated and coordinated set of people and material resources and procedures that capture and process data to transform it into information, which is stored in databases for efficient decision making (Barrios, 2017).

**3.1 Review of the scientific production of the variable Accounting Information Systems.**

After analyzing the information provided by the Scopus database, there is evidence of a low production of scientific papers published in high impact journals that handle the variable Accounting Information Systems in the period 2015-2020 where a total of 3 research papers are listed in Table 1.

**Table 1.** Papers related to the variable Accounting Information Systems

Title	Author(s)	Year of Publication	Country of Publication	Citations
Electronic accounting information systems in the provision of cash budgeting and supply chain management	Koshan, H.M.	2019	Iraq	0
Influence of the Accounting Information Systems and internal auditory in fraud financial reports	Mulyani, S., Kasim, E., Yadiati, W., Umar, H.	2019	Indonesia	3
Effect of the Risk Management in the quality of the Accounting information systems: Integration, Adaptability, and usability of the dimensions	Meiryani, M., Siagian, P., Yadiati, W., Warganegara, D.L.	2018	Indonesia	0

Source: Own elaboration 2021, based on data provided by SCOPUS.

It is worth noting that, in the papers registered in the previous chart, the objective is the application of tools that are designed through the accounting information systems, with the purpose of optimizing the use of resources in the different areas of knowledge, which shows that the decision making of each organization is based precisely on the analysis of the information provided by the application of these management tools.

**4. Big Data in the organization.**

Data analysis through Big Data techniques significantly helps in the selection, organization and processing of information to ensure efficient decision making in any organization. For McKinsey Global Institute, "Big Data refers to data sets whose size is beyond the capabilities of typical database software tools to capture, store, manage and analyze". (Aguilar, 2013).

Equally important to the organization is the origin or source of the data. It is known by theory that there are three main types of data that help to classify the information in a first instance (Structured, Semi-structured and Unstructured Data) and that are defined according to the format in which the data is captured. This is why it is vital for the company to clearly define an objective in the first instance in order to properly select the source from which the data necessary for subsequent analysis and application of measures will come from. The subsequent analysis of each group of data results in valuable information for decision making as it defines even sufficient input to forecast possible results after an investment, consumer responses to marketing strategies and even variation in prices of products and/or services in the market.

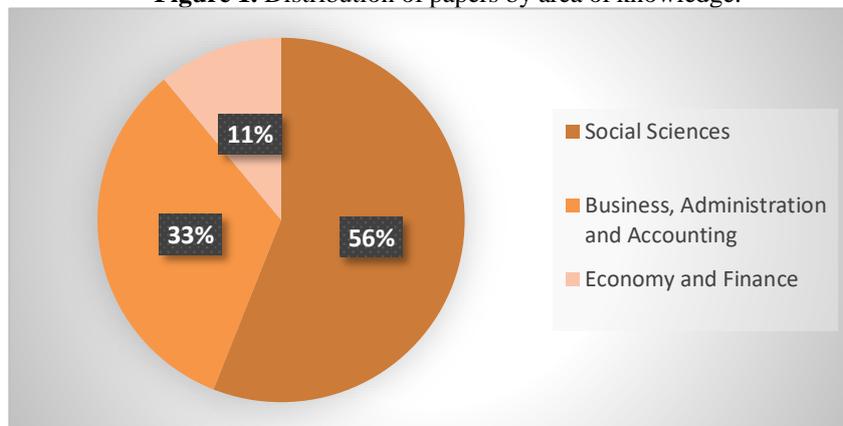
**4.1 Review of the scientific production of the Big Data variable in the organization.**

Currently, Big Data is a topic that has been widely studied and is the main subject of much research worldwide. The production of scientific articles involving this variable reaches high numbers, regardless of the area of knowledge where it is focused. However, for the present study the production of research papers

published in journals indexed in the Scopus database on Big Data in the organization has been analyzed, yielding a total of 8 articles from 2015 to 2020.

#### 4.1.1 Distribution of papers by area of knowledge.

**Figure 1.** Distribution of papers by area of knowledge.



Source: Own elaboration 2021, based on data provided by SCOPUS

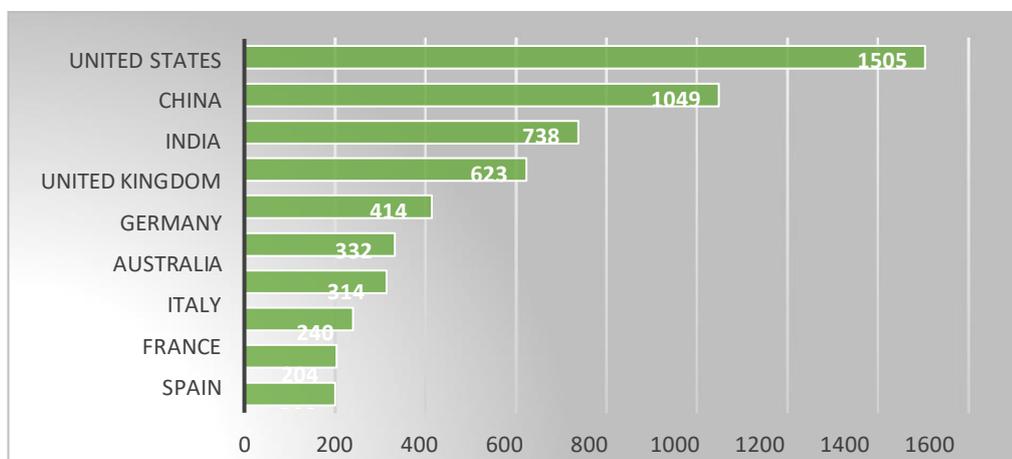
Taking into account that the study of the variable is limited only to those that have a direct relationship with the different areas of the organization, the general area resulting from this first analysis is, of course, administration, but within this area there are sub-areas that after analyzing this result it is worth highlighting.

Social sciences, whose main object of study is the administrative approach, have the highest representation of the production of scientific papers with the variable Big Data in the organization, sociological studies and human talent management are part of the related papers in this first part. Business, Administration and Accounting and Economics and Finance with 33% and 11% respectively, complete the totality of the studies carried out during the aforementioned period.

The organization is currently facing important challenges as the market becomes increasingly globalized and in an accelerated way, which leads to a vertiginous growth of each and every one of its internal areas, and this can only be achieved in the face of trends that frame consumer behavior. In the past, sales, for example, were seen as a transaction where the relationship with the customer ended once the final product was in the customer's hands and the customer paid the price established by the company. However, today customer relationships are becoming more and more lasting, at least that is the desire of the organization through CRM, loyalty, after-sales services, fulfillment of guarantees, among other strategies and all that information meets the characteristics of Big Data; its sources, speed, volume, etc.

#### 4.1.2 Distribution of articles by country of origin.

**Figure 2.** Distribution of articles by country of origin.



Source: Own elaboration 2021; from data supplied by SCOPUS.

The Big data variable focused on studies concerning the different areas of the organization is analyzed, and it is observed that the country that produces the most scientific articles under said search parameter is the United States, which registers a total of 1,505 research papers published in journals. high impact indexed in Scopus database. Followed by two Asian powers such as China and India with 1,049 and 738 articles respectively, among which stands out “Big data analytics and firm performance: Effects of dynamic capabilities” (2017) whose main contribution is the verification of the contribution of the application of information systems with the effectiveness in the processes of a company using different study models proposed by the analysis of Big data focused on the organization. The delivery of the article related above can be measured by the number of citations it has had since its publication, a total of 452 that indicate that its results have served as input for the preparation or starting point for different research works.

The United Kingdom and Germany participate in the registry that shows the graph as the two European exponents with the highest publication of articles under the Big data variable focused on the organization, 623 and 414 jobs each reached between 2015 and 2020. It should be noted that the Figure 2 shows the top ten positions in terms of the ranking of countries with the most production where Indonesia closes with 200 articles published under the indicated variable, however, Table 2 shows the general count of the results of the search carried out in the database Scopus.

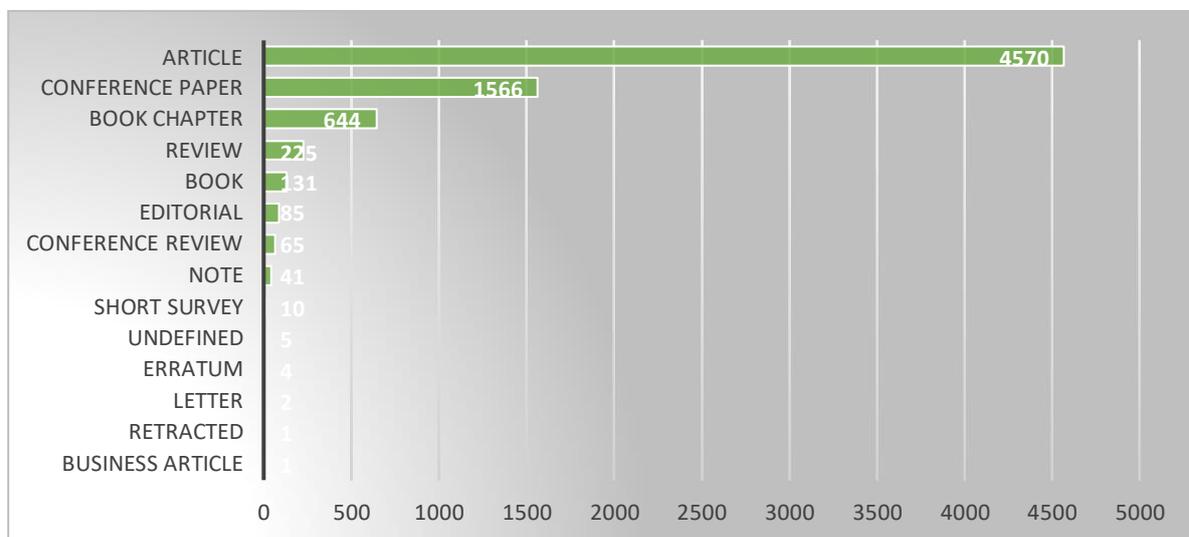
**Table 2.** Total distribution of articles by country of origin.

COUNTRY	DOCUMENTS	COUNTRY	DOCUMENTS	COUNTRY	DOCUMENTS
United States	1505	Ukraine	27	Zimbabwe	3
China	1049	Hungary	25	Costa Rica	2
India	738	Egypt	22	Jamaica	2
United Kingdom	623	Slovenia	22	Kyrgyzstan	2
Germany	414	Chile	21	Myanmar	2
Australia	332	Jordan	21	Puerto Rico	2
Italy	314	Israel	20	Yemen	2
France	240	Oman	20	Armenia	1
Spain	204	Colombia	18	Belarus	1
Indonesia	200	Estonia	17	Bhutan	1
Malaysia	195	Lebanon	17	Bosnia and Herzegovina	1
South Korea	185	Cyprus	16	Chad	1
Russian Federation	177	Bangladesh	15	Cote d'Ivoire	1
Canada	176	Croatia	15	Grenada	1
Netherlands	163	Philippines	14	Guatemala	1
Hong Kong	135	Bulgaria	12	Libyan Arab Jamahiriya	1
Brazil	129	Ghana	12	Monaco	1
Portugal	107	Macao	12	Mongolia	1
Taiwan	106	Qatar	12	Montenegro	1
Norway	104	Serbia	12	Niger	1
South Africa	102	Algeria	10	Papua New Guinea	1
Japan	100	Argentina	10	Senegal	1
Poland	98	Brunei Darussalam	9	Venezuela	1
Finland	97	Iraq	9	Zambia	1
Sweden	97	Liechtenstein	9		
Greece	89	Kenya	8		
Turkey	86	Luxembourg	8		
Switzerland	80	Ecuador	7		
Saudi Arabia	78	Kazakhstan	7		
Iran	77	Peru	7		
Pakistan	73	Sri Lanka	7		
Denmark	70	Kuwait	6		
United Arab Emirates	69	Bahrain	5		
New Zealand	64	Latvia	5		
Romania	62	Namibia	5		
Belgium	61	Albania	4		
Austria	58	Azerbaijan	4		
Czech Republic	58	Malawi	4		
Ireland	56	Mauritius	4		
Singapore	56	North Macedonia	4		
Morocco	54	Botswana	3		
Thailand	52	Cuba	3		
Viet Nam	36	Ethiopia	3		
Tunisia	33	Iceland	3		
Mexico	32	Malta	3		
Nigeria	32	Nepal	3		
Slovakia	31	Tanzania	3		
Lithuania	29	Uganda	3		

Source: Own elaboration 2021; from data supplied by SCOPUS.

#### 4.1.3 Distribution of articles by type of publication.

**Figure 3.** Distribution of articles by type of publication.



Source: Own elaboration 2021; from data supplied by SCOPUS

It is important for the purposes of the analysis of this study, to know what type of publication predominates in the total production of research works under the Big data variable in the organization since not only these publications correspond to a journal article, therefore it is detailed in Figure 3 the different categories through which it is published in high impact journals.

It is evident that most research works correspond to articles in scientific journals where a total of 4,570 units were published, distributed in the different countries mentioned in the previous point. Followed by conference papers and book chapters with 1,566 and 644 respectively.

An important participation of books and magazines whose central theme is the study of Big data oriented to the organization stands out, within which it is worth highlighting the book "Process mining: Data science in action" (van der Aalst, 2016) with a total of 829 citations, shows the reader effective tools in process mining to complement the study of data in areas of the organization such as production, commercial, among others. It offers the possibility of knowing the state of the art in process mining, which significantly helps in the study of different collection techniques and subsequent analysis of large amounts of information.

## 5. Conclusion

Decision making in any company will always be motivated by the need identified in the market and this is known thanks to several tools used by management, for example, a market study. When this market turns out to be of large proportions, the necessary tools for the capture, analysis and implementation of strategies have to be in accordance with Big Data techniques, due to the volume of information and the inability of conventional software to support large amounts of data. The accounting area does not escape the use of such techniques, since from the purchasing process to sales pricing, there are multiple variables that cannot be left to chance or to the speculation of the board of directors. The interpretation of the data collected in each investigation and its subsequent analysis produces the information as the main input for the creation of strategies and decision making in a company.

Accounting information systems are not only fed with historical information from different economic exercises carried out by the company, but also with information of essential importance for the economic sustainability of the organization, and as mentioned above, more and more companies are facing the challenge of covering large areas, not only geographically but also psychosocially in consumer behavior, and in the same proportion will be the volume of information to be processed. From this arises the need to apply Big Data techniques to the study of data from different areas of interest.

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