# Social CRM and Big Data technology: a bibliometric study

**Abstract**
*Organizations see the use of social media as a predictor of their customers' needs and desires as essential. This work seeks to understand how Big Data technology has been studied with Social CRM approach, through bibliometric study. The results, based on Science Direct database papers showed 19 papers that are related to both themes together. There were analyzed the focus of each paper and their main results. After this analysis, it could be pointed out a lack of applied studies and also how to improve effectiveness in organizations. This paper instigates new surveys and empirical researches.*

**Keywords:** *Social CRM*, *Big Data*, Bibliometric.

## 1 Introduction

The use of the Internet changed the way to analyze, understand and transform all the data available to all of us. This huge volume of data could be used to organizations and managers and some technology could help how to connect to it all the time, such as Big Data. The Big Data technology contributes, substantially, to targeting the most effective strategies in order to increase organizational competitiveness [1].

Also, the technology Customer Relationship Management (CRM) has become an important flow of marketing research in recent decades, the concept has evolved as a technological solution to a strategic approach that cares about creating shareholder value [2]. The emergence of social media has challenged the traditional notion of customer relationship management (CRM), which led to the emergence of Social CRM [3].

The process of understanding the evolution of science and their results is fundamental to society and a bibliometric approach [4] could promote discussion about Big Data and Social CRM.

This paper aims to analyze how Big Data technology has been used in order to expand the capacity of Social CRM. The study consists of a bibliometric review demonstrating the existing studies that relate the two themes, specifically what they are, what is the focus of the research and what relationship and application in organizations.

This type of paper is important because it makes possible to propose a new perspective to future research [5].

This paper presents a bibliometric analysis of the published articles in Web of Science database between the year 1945 to Abril 2020.

The paper's structure is introduction, concepts, methodology, results and conclusions followed by references.

## 2 Concepts

### 2.1 Big Data

Big Data is the term used to describe the large volume of digital data produced by human activity, managing it using conventional data analysis tools becomes complex. The main characteristics of Big Data technology are: volume (large volume of data), speed (speed of capture, discovery or analysis of data), variety (related to the wide variety of data), veracity (based on data quality) and value [6, 7].

Big Data represents one of the great advances of the 21$^{st}$ century [8] because it allows the processing of large volumes of data, which can lead to increased efficiency in companies that work with large amounts of data, and provide a better experience for consumers. Big Data allows you to work with mathematical algorithms in social media that can help drive people to do better business on products or services they are looking for, and offer suggestions for future acquisitions [8].

The online environment provides a wide range of information that can be used by anyone. For example, it can be used to improve the relationship between consumer and business, giving the consumer information about product and service and to the business information about the client's interests to be used in marketing campaigns [8].

One of the aspects to be considered about how to use Big Data technology is to overcome several barriers, as organizational culture. Brynjolfsson and McAfee [9] investigated management practices related to technological aspects considering 330 publicly traded companies in North America and found that many of them were not prepared to absorb the leverage of large volumes of data as a way to improve organizational performance. The barriers range from developing new employee skills in upgrading IT infrastructure to instilling new management practices or a new organizational culture across the organization [7].

The challenges are related to organization's values, norms, processes, strategy, and structure. First-level managers have a strong influence because they select the strategy and design the organization in a structure based on how they perceive and understand organizational values and norms. Also, there are problems of lack understanding of how large data can improve their business operations and this could affect organizational resistance in Big Data's use [10].

Big Data analysis requires development in information technology (IT) infrastructure, which requires investments in hardware and software to analyze large data in real time [7], and the use of it could be the most important tool of competitive advantage in the 21$^{st}$ century. Big Data has the potential to provide better customer experience, improve internal efficiency, and improve the profitability and competitiveness of organizations in all sectors [7].

Big Data has proven to be very useful in supply chain efficiency by optimizing the timing and positioning of promotions, extending consumer engagement with a given site, increasing customer retention rates and improving service interactions [11]. Using Big Data and social media information on marketing context may be a mix of technology and environment that will transform the actual scenario to an innovative and competitive marketing action [8, 12].

## 2.2 Social CRM

The Social Customer Relationship Management (Social CRM) has been defined as a corporate strategy, using social media tools and information to improve traditional CRM activities.

According to Greenberg [13] Social CRM is "a philosophy and a business strategy, supported by a technology platform, business rules, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial

value in a trusted and transparent business environment" and could be considered a corporate strategy to link business processes and social media [14].

Social CRM aims to involve the online information about consumers and enterprises about customers and new consumers to plan and solve problems related to customer services, sales and marketing [15, 16].

The use of social media in CRM planning and activities could develop manager's capabilities to create an alignment between company strategy and consumer needs [17].

The Social CRM use is an innovative strategy with competitive advantage focus. By adopting Social CRM planning, execution, and continuous evaluation systems, companies are connected with consumers and new prospects with a real time vision of the market [14].

Facebook and Instagram are examples of social networking sites that could be used as tools of customer relationship management. Creating experiences on social media platforms the company could achieve brand loyalty and reduce marketing expenses [18].

The increase of mobile technology, the number of users and new online social media tools and interactions put Social CRM research in a spotlight as a competitive strategy technology [19]. In this new scenario, organizations need to move to understand how Social CRM is a viable and profitable investment [14].

## 3 Methodology

The aim of this study was to understand the interrelationship between Big Data and Social CRM, and a bibliometric approach used. The method used was a bibliometric analysis that is technique to quantitatively examine papers and library science examining the publication dispersed pattern, authors, journals, institutions, countries and research study area [4]. It was used the software VosViewer® to refine the information obtained from Web of Science (Main Collection) using the terms "Social CRM" and "Big Data" considering the broad support of software for retrieving the metadata of interest: abstract, cited references, times cited, authors, institutions and countries and all database from 1945 to April 2020.

The search result to the Web of Science database targeted with the terms 'Social CRM' AND 'BIG DATA' returned 19 publications and the filter was applied to only on papers (Table 1).

**Table 1**: Papers information

| Year | Number of papers | Countries |
|------|------------------|-----------|
| 2013 | 1 | USA |
| 2015 | 4 | USA (2), Austria, England |
| 2016 | 2 | Spain, Switzerland |
| 2017 | 6 | USA (2), France, England, Netherlands, Morocco |
| 2018 | 3 | Italy, China (2) |
| 2019 | 1 | China |
| 2020 | 2 | France, Brazil |

Source: Prepared by the authors from the Web of Science

## 4 Results about Social CRM and Big Data

The data presented in Table 1 show that publications using the two concepts started from 2013, presented 4 publications in 2015 and with a higher percentage of research in 2017 with 6 publications. The analysis of publications by country shows that the theme has been addressed, mostly, in Europe, being 2 publications in England, 2 in France, one in Spain, one in Switzerland, one in the Netherlands and one in Italy, representing 8 publications. Because it is consolidated in a single country, the United States appears as the main ranking having presented 5 publications, the analysis allows to demonstrate the research gaps in Brazil, since, until the present research presented only one study developed in the country.

Another analysis developed from the information extracted from the base was the cluster study (Fig.1).
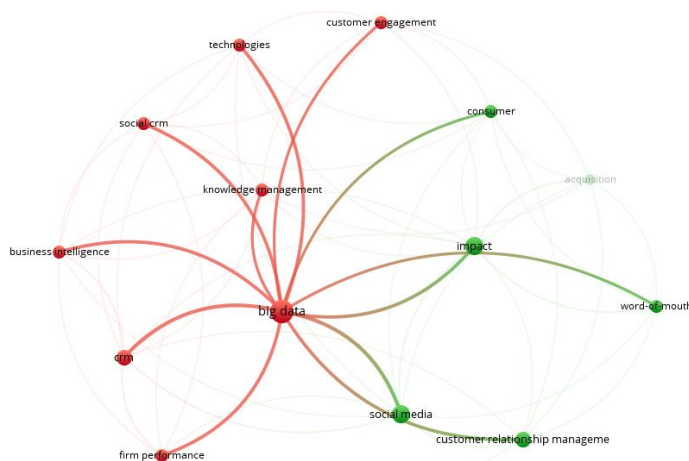


**Figure 1**: *Cluster Social CRM* e *Big data Source:* Web of Science

Cluster analysis demonstrates an emphasis on two areas defined by different colors, green emphasizes the perspective of social media with direction to customer management, Social CRM, red represents the optics of analysis tools, Big Data being the main demonstrated in this case. There is a strong relationship between Social CRM and Big Data, it is also related to social media and customer relationship management.

Studies on the concepts are less widespread and direct them to be developed in Brazil, from the perspective of empirical studies, which demonstrates a research gap.

### 4.1 Relationship between Social CRM and Big Data

To meet the objective proposed in this study, the main ideas of the papers regarding the two themes Social CRM and Big Data and the number of citations were analyzed (Table 2).

**Table 2**: Social CRM and Big Data Papers

| Author | Focus | Citations |
|--------|-------|-----------|
| Santos, Begnini and Carvalho [20] | Analysis of the scientific production of publications on dynamic capabilities in | 0 |

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| | advertising activity, anchored in creativity and knowledge, demonstrating a trend towards qualitative publications focused on social media and Big Data. | |
| Chiang [21] | Seeks to establish markets that are valuable to discover customer knowledge from data-driven CRM systems, focusing on business growth. | 0 |

| | | |
|---|---|---|
| De Caigny, Coussement and De Bock [22] | The study validates a model for predicting customer life events by comparing models that depend on aggregated data, refined transaction of data, and their combination. The research merely understands only a portion of potential CRM applications by directing them to understand how to target customers who are able to experience life-specific events, suggests investigating conversion rates for different offerings. | 0 |
| Zerbino, Aloini, Dulmin and Mininno [23] | It seeks to discover the potential of Big Data in the critical success factors of Customer Relationship Management (CRM). They highlight Big Data as a facilitator of projects such as CRM by integrating the benefits in the adoption of new technologies. | 10 |
| Chan, Fong, Law and Fong [3] | Analysis of the scientific production of publications on the emergence of social media that challenge the traditional notion of customer relationship management (CRM) which led to the emergence of Social CRM. They highlight a trend of adoption in a qualitative research method. | 3 |
| Chang [24] | Describes the development, management implications, and analysis of the social network analytics approaches to running Big Data Analytics. It emphasizes the processing of Big Data for analysis of social networks can be equivalent to CRM, ERP and MIS. | 10 |

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| Haenlein [25] | Describes the origins of CRM and presents insights based on recent years that challenge traditional concepts in relation to management in the customer relationship. | 5 |
| El Fazziki, Ennaji, Sadiq, Benslimane and [26] | They highlight social media as a means for people to communicate and share personal knowledge and experiences. They highlight Social CRM as an important tool to support marketing strategies, but require analytical techniques to transform the large volume of "Big Data" data into actionable insights. | 0 |
| Bashir, Papamichail and Malik [27] | They emphasize the use of social media in the processes of developing new products. They suggest that social media should be considered an informal source to understand customer preferences, market trends, competitor movement and product feedback, therefore contribute little to new product development processes. | 16 |
| Pridmore and Hamalainen [28] | The limitations in the use of social media data, in contrast to the use of Big Data defend traditional forms of segmentation and classification as more effective. | 7 |
| Kunz Aksoy, Bart, Heinonen, Kabadayi, Ordenes et al. [29] | Sustainability argument in data-driven customer engagement requires a dynamic and interactive process in generating value and organizational ability to capture and pass on value to customers. | 29 |
| Liu, Burns and Hou [30] | They emphasize the use of Big Data content on social media with great potential in brand management, but highlight the obstacles in using Big Data to answer brand management questions. | 29 |
| Orenga-Rogla and Chalmeta [31] | Demonstrates methodology that helps companies implement Social CRM, such as performance measurement system, business processes or Social CRM computing system. | 13 |

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| Wieneke and Lehrer [32] | Study related to dynamic resources with emphasis on the absorption capacity (ACAP) on average and large companies in Switzerland and Germany demonstrating processes and contingent factors (physical, human and organizational resources) that support ACAP in companies. | 7 |
| Torre-Batista, Villar-Rodriguez, Gil-Lopez and Del Ser [33] | Two complementary use cases are presented, demonstrating the potential in the use of open data in the commercial domain to then propose a solution based on the synergy of Big Data and semantic technologies. | 2 |
| Maklan, Peppard and Klaus [34] | It seeks to examine the dilemma between the growing importance of investments in new information technologies in marketing practices in relation to the questioning of profitability related to marketing initiatives. | 8 |
| Phillips-Wren and Hoskisson [35] | From a case study, they seek to identify management challenges in creating a data-driven organization as a way to incorporate Big Data into decision making. | 28 |
| O'Brien, Sampson and Winship [36] | The study emphasizes how new forms of large-scale administrative data can produce econometric measurements in urban science. The emphasis is on the use of a large volume of data, although they addressed CRM, interaction with Social CRM was not perceived. | 38 |
| Malthouse, Haenlein, Skiera, Wege and Zhang [37] | It examines the need for CRM to adapt to the rise of social media. They highlight pitfalls that include the lack of organizational control over the dissemination of messages to large volume of unstructured data (Big Data), data security and privacy, ROI measurement in social media marketing initiatives, among others. | 201 |

Source: The authors (2020)

Social CRM represents managing your relationship with your customers in a way that maximizes the value of life between them and the company. Social media allows consumers to filter the advertising and Social CRM messages they are subject to, allows them to do price searches anywhere they are through mobile devices, and position themselves against brands or products with negative or positive messages [37].

The bibliometric presented portrays few studies related to the theme developed in the last seven years. The study by Malthouse et al. [37] is more relevant to the theme because it contains the largest number of citations, partly because it is the oldest, but mainly because of the relevance of the study in demonstrating the importance of tools in organizational management.

Big Data is a technology with great ability to transform aspects of Social CRM representing a source of competitive advantage for companies. Allows the knowledge of customer information to be converted into value for the organizational business, seeking to improve customer satisfaction, understand its profile and consumption intentions and identify new opportunities [21, 31].

## 5 Conclusion

From the bibliometric study on Big Data and Social CRM, we can observe the current studies about it and figure out the lack of discussion or new approach suggested by them.

We found papers, concentrated in the last seven years, which confirms the current search for solutions of these technologies in the face of the strategic need of organization in the context of social networks.

It is not sought, from a bibliometric analysis, to exhaust the subject, but to point out the studies that addressed the theme and more relevant citations instigating new studies and gaps.

It is suggested to advance the bibliometric studies on Social CRM with emphasis on the cultural characteristic of online consumers. Also, it could be suggested an empirical study to find out how Social CRM can influence the various value objectives (to explore ways to quantify this influence and translate them into management recommendations) as pointed out by one study described [37].

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