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Chapter 9
Bibliometrics and Science Mapping of Digital Marketing

Marcelo León-Castro, Homero Rodríguez-Insuasti, Néstor Montalván-Burbano, and José Avelino Victor

Abstract This research paper focuses on marketing areas and specifically in the field of digital marketing. Marketing and other commercial endeavors are of the utmost importance for both companies and professionals in this field. The current research aims to determine how influencers persuade internauts in their consumption initiatives. Bibliometrics and science mapping are at the core of this study, and the yielded metrics highlight details that empower strategies and tactics in digital marketing. Thoroughly designed messages delivered by influencers can increase the visualization of companies enhancing their brands and positioning their products above the competence. Researchers can also use the positioning strategies presented here to promote the visibility and impact of their publications, a use that has not been explored yet.

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9.1 Introduction

The emergence of the first personal computers along with the Internet did a significant change not only on people's lifestyles but also in the economy of the countries. The first documents on network interaction appeared at the end of the 50s. Internet, as it is known now, is established in the 80s. In the 90s, the World Wide Web or www was introduced and with it, the web 1.0 which was characterized by being a static web, of individual intelligence, with outdated tools, and no interaction [1]. After a while, web 2.0 emerged. Dale Dougherty named this web as the social network in a conference in 2004 (Web 2.0, 2019) and it was characterized for being a dynamic web, with a collective intelligence, and full of social interaction [1] And this latest, impacted society and the business world up to now [2].

Thanks to the features mentioned above, the web 2.0 gave birth to social media (SM) or the social networks. Every day, more and more people share or seek information about a product or service, which has transformed the way people interact [3]. Social platforms have not only become a means of communication, but they have become an important part of the strategies of marketing in terms of promotion and online advertising. The social network has proven to be very efficient promoting products online. This type of marketing has become even bigger with the creation of active advertisements by the concerned parties [4–6].

Thanks to the emergence of social networks (SN), a new type of communication has emerged along all media [2]. The so-called influential people or independent sponsor models certain public behaviors through blog comments, tweets, and social networks in general. Although there are divided opinions about the true role of the influencers [7], for some people an influencer needs to have a large number of followers, a smartphone and an account on some social network. However, influencers are not famous people but ordinary people who have endeavored to share fresh and interesting content that entertains or educate other people [8].

This research paper justifies its interest and importance in marketing areas, specifically in the field of digital marketing. Firstly, because this issue is of the utmost importance for both, companies and marketing professionals. The results can help to determine the characteristics and the way the influencers intervene in the purchases as well as to maximize the strategies and tactics in digital marketing campaigns. Secondly, through the image and the message conveyed by the influencer, companies can offer a positive image on their new brands and products, or do a repositioning job. Third, the results will help potential researchers as a guide to lead them to issues that have not yet been explored. Regarding this, results can help them in their intention to publish a high-impact journal. Fourth, this issue is among the priorities of the Marketing Science Institute (MSI) 2018–2020 as referring to it as "the cocooning landscape martech (marketing and technology) and advertising."

In light of the ideas expressed above, this literature review work tries to provide answers to the following questions:

A1: Which journals are citing works concerning influencer?

A2: Which journals and authors are the most prominent at co-citations?

A3: What has been the development of these investigations over time?
A4: Which countries have been interested in influencer issues?

9.2 Methodology

9.2.1 Bibliometrics and Science Mapping

Bibliometric analysis is a set of tools that uses quantitative approaches and aims to examine and measure text and information [9, 10]. These analyzes allow obtaining additional information of the literature reviews, so that the information can be considered as a complement to the research [11, 12]. In order to do so, it is necessary to establish publications profiles on a theme, detect trends within a scientific branch, evaluate scientific activities that act as a guide to know the status of a research [13, 14]. Among the most commonly used bibliometric techniques are the co-citations, co-words, co-occurrence of keywords, and co-authorship analysis [15, 16]. In this work, the co-citations analysis was considered. The co-citations follow this method. When two publications are cited in a third publication, and this latest one cites both; the higher number of citations proves the relationship between two publications [15, 17]. This can serve as a theoretical and empirical foundation for various studies [18]. For a better understanding of the co-citations, the bibliometric analysis was complemented with science mapping since they allow to reveal the intellectual structure of the field of study and its dynamics [19, 20]. Consequently, the study of the academic field requires an accurate analysis of literature, a process that consists of four steps.

9.2.2 Source of Information

The first step is an exhaustive search in the Clarivate Analytics Web of Science Core Collection database (formerly Thomson Reuters) considered one of the most used database for research purposes, and a wide source of scientific journals [21]. The information search was carried out in July 2019, using the descriptors “influencer”, “ewom”, “youtube *”, “instagram”, “facebook”. This allows us to obtain all papers in which the descriptors are interacting. The period of examination is open until 2019.

9.2.3 Exclusion

The second step was to define criteria for proceeding to an exclusion of the documents. In this way, it was possible to ensure the quality of information analyzed. Books, book chapters, reports, and conference proceedings were excluded due to the variability

in their respective peer review processes. Only scientific articles were used, as these are subject to rigorous and blind peer reviews. Also, they are considered as a certified source of information [22]. 166 articles were obtained as a result. Among this number, 4 articles that are not written in English were eliminated. The final information data consists of 162 articles.

9.2.4 Data Cleaning

The third step includes data-debugging. The information obtained includes hundreds of data from different variables such as authors, countries, and institutions. For this reason, it was necessary to preprocess the data with the intention of minimizing possible errors [12, 16]. For this purpose, the file was converted to txt format to eliminate repeated information. In the case of authors, the repeated information was debugged by taking into account the existence of a same author written in different wording (e.g., "kaler, j" and "kaler, j."). In the case of countries, adjustments were made as Scotland appears as UK.

9.2.5 Software Selection for Bibliometric Analysis

The data obtained and preprocessed from the database obtained have been processed in Microsoft Excel software for the realization of two-dimensional tables and graphs. The co-citation and co-author analyzes were used by the Vosviewer 1.6.10 software developed by the Center for Science and Technology Studies (CWRS), of the University of Leiden (Netherlands). This software allows the extraction of terms for the construction, exploration, and graphic representation of two-dimensional distance maps or commonly known as science mapping [19, 20].

9.3 Analysis of Results

9.3.1 Performance Analysis

The topic related to influencers seems to show a growing interest within the academic world. It exhibits 162 related articles, 95 academic journals, 419 authors, and 7100 reference authors. These results are shown in Fig. 9.1, taking into account the period between 1986 and 2019.

Decade 80s (1980–1989). Although the established interval was between 1980 and 1989, the first record that we have of when the term influencer appears in the work entitled "New Product adoption by the buying organization: Who are the real

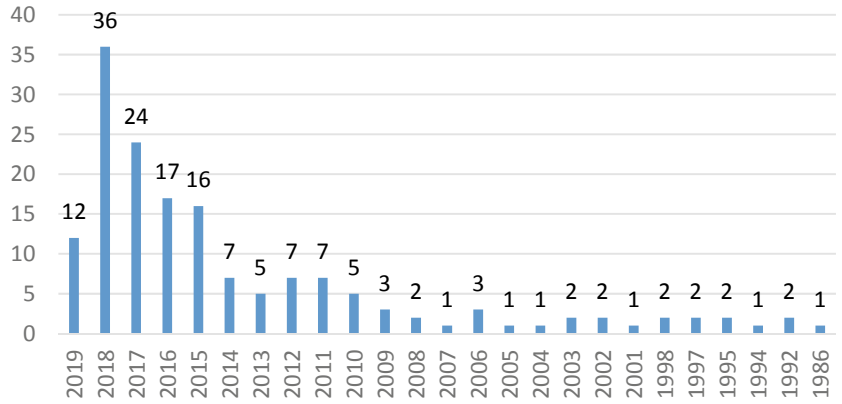

Fig. 9.1 Sources of information 1986–2019 (*Source* Web of Science)

influencers?" [31], whose roles and its influence on the members of a purchasing center are explored based on organizational behavior.

Decade 90s (1990–1999). There is a boost in the subject. It was identified nine research papers, which were referring in journals specialized in marketing, such as Journal of Marketing Research, Journal of Consumer Research and Business journals: Journal of Business Research, Strategic Management Journal and Journal of Business and Psychology. These documents address the role that the influencer plays in success or failure in an experiential asset [23], the performance of the entertainment services market [24] or the influence exercises have on performance, satisfaction and trust [25]. In this decade, we can mention the greater access to electronic devices, due to the reduction in prices of personal computers and a strong market Internet access by telephone lines.

Decade 00s (2000–2009). In the first decade of the new century, 16 works could have been noticed, that is to say, almost double than last decade. The trend of Academic Journals related to Marketing and Business is maintained.

Decade 10s (2010–2019). In the present decade, there is an accelerated increase in research works. From 2014 until almost the middle of this year, there were 12 research works registered.

9.3.2 Contributions by Country

In the same way, in this section we wanted to know which countries have been leading this type of work and to know which countries are in the top list regarding this subject. In Fig. 9.2, it can be noted that the United States has initiated the research work in this area and led this research work for a relatively short period of time, according

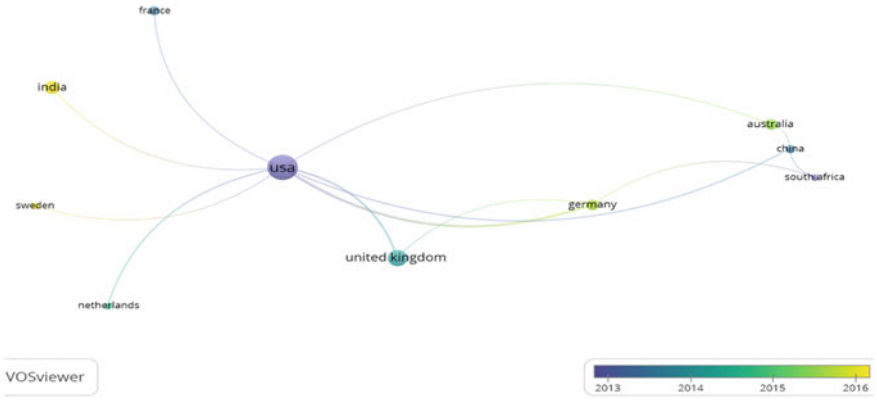

Fig. 9.2 Contributions by country (*Source* Web of Science)

to the results obtained. However, the investigations are currently been led by India, Sweden, Germany, and Australia.

9.3.3 Performance of Academic Journals

162 articles have been published in 95 academic journals. Table 9.1 shows academic journals that have three or more articles related to the subject. The Journal of Business Research, Public Relations Review, and International Journal of Advertising lead the findings.

Table 9.1 Most cited academic journals

Journal	Number of items
Journal of Business Research	9
Public Relations Review	7
International Journal of Advertising	5
Journal of Consumer Behavior	5
Journal of Marketing	5
European Journal of Marketing	4
Journal of Business Ethics	4
Journal of Marketing Research	4
International Journal of Bank Marketing	3
International Journal of Online Marketing	3
Journal of Advertising	3
Journal of Marketing Management	3

Source Web of Science

Table 9.2 Most cited Academic journals on business topics

Academic Journals	Quotations
Journal of Marketing	872
Journal of Service Research	374
Journal of Marketing Research	370
Internet Research	311
Journal of Business Research	282
Strategic Management Journal	242
Journal of Consumer Research	142
Journal of Business Ethics	132
Journal of Advertising Research	105
Journal of The Academy of Marketing Science	101
Public Relations Review	93
International Journal of Advertising	90
Mit Sloan Management Review	58
Industrial and Corporate Change	52
Journal of Product Innovation Management	43
International Business Review	42
International Journal of Electronic Commerce	37
Journal of Macromarketing	34
International Small Business Journal-Researching Entrepreneurship	31
European Journal of Marketing	29

Source Web of Science

9.3.4 Analysis of the Citations

In the field of business research, three marked groups of journals could be established as the most cited (see Table 9.2). In the first place, the Journal of Marketing (872) equals to 22.9% of the total citations and secondly, the Journal of Service Research (374) and Journal of Marketing Research (370) with a total percentage of 19.5%. Finally, there is a third group consisting of Internet Research, Journal of Business Research and Strategic Management Journal with a percentage of 21.9%.

9.3.5 Bibliographic Links of Academic Journals

It shows the intertextual relationship between publications. This allows current trends and research information be obtained [12]. For this purpose, the Vosviewer program was used. It shows 84 academic journals that display 833 relationships between them in nine color-differentiated clusters (shown in Fig. 9.3).

- Business Area (Red Cluster): Grouped by 24 journals of the business areas. The most noticeable are: Journal of Business Ethics, International Journal of Bank Marketing and the Journal of Product Innovation Management.
- Marketing and Services Area (Green cluster): Consist of 12 journal related to the marketing and services area.
- Consumer Behavior and Marketing Area (Blue Cluster): Consist of 11 journals, among the most important research is the Journal of Consumer Behavior.
- Marketing and Administration Area (Yellow cluster): Consist of 10 journals. Journal of Marketing, Journal of Marketing Research and Business Horizons are highlighted by number of their contributions.
- Marketing, Business and Market Research Area (Purple Cluster): Consist of 9 journals. Within this division are considered International Journal of Advertising, International Journal of Electronic Commerce and Marketing Intelligence & Planning.
- Entrepreneurship Area (Light blue cluster): Consist of 7 journals. The most important are the Industrial Marketing Management, Emerging Markets from a Multidisciplinary Perspective: Challenges, Opportunities and Research Agenda and Entrepreneurship.
- Business and Marketing Area (Orange Cluster): It shows a new combination between the mentioned areas, distinguishing the importance of these two fields of knowledge. The journals that are within this cluster are Journal of Business Research, Journal of Social Marketing and Construction Management and Economics.
- Marketing and Finance Area (Brown Cluster): Consist of 3 journals: International Journal of Online Marketing, Journal of Financial Services Marketing.
- Advertising and Retail Area (Violet Cluster): Consist of 3 journals: Journal of Advertising Research, Journal of Retailing and Psychology & Marketing.

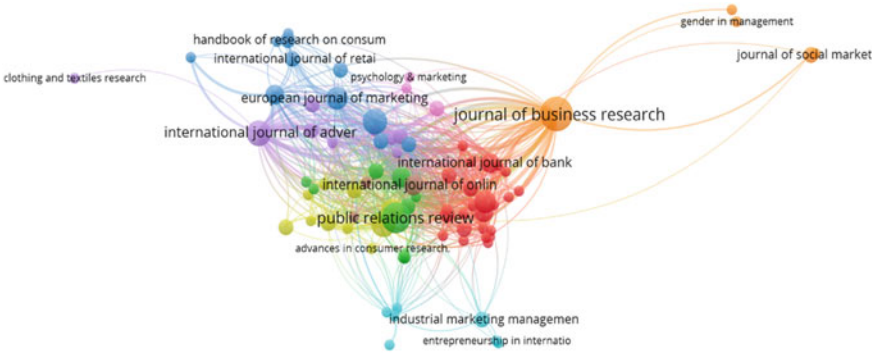

Fig. 9.3 Analysis of the citation (*Source* Web of Science)

9.3.6 *Co-citation Network of Authors*

The approach of authors' co-citation allows analyzing the connections between the authors and how this intellectual structure is organized. The results showed a total of 7100 references, which was established as a parameter in the creation of the bibliometric map (the reference authors are cited at least 10 times). We obtained 46 authors. The objective of using this amount was to facilitate the visualization of the data. This type of association was already been done in other works [26–28].

According to Leung et al. (2017), the sizes of the nodes show the number of citations of the articles [28]. The width of the lines, the strength of the co-appointment links. The link and the proximity show the relationship between two co-appointments. The color of the nodes indicates the group to which the article belongs. Additionally, in each node only the name of the first author is labeled.

In Fig. 9.4, seven clusters were formed. The first group consists of 12 authors and the most relevant is Hennig-thurau (21 citations). In group two, there are 11 authors and the most outstanding is Bagozzi (31 citations). In group three, there are 7 authors and the most notable is Fornell (24 citations). In group four, there are 5 authors and Moschis (15 citations). Group five is comprised by 4 authors, being Berger the most

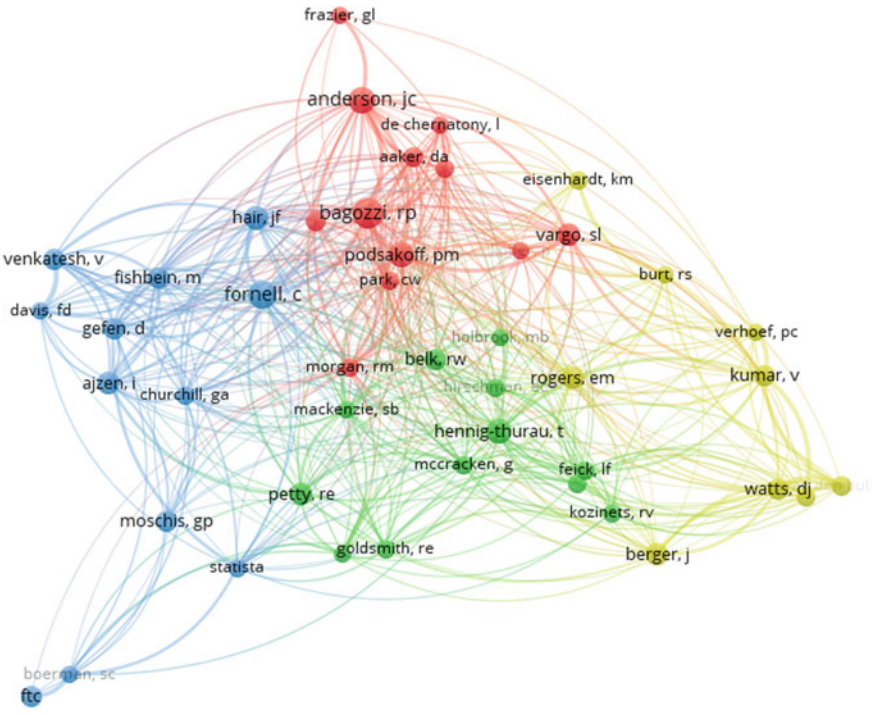

Fig. 9.4 Reference author co-citation network (*Source* Web of Science)

important with 16 citations, and finally groups six and seven with three authors each one, where Anderson stands out (23 citations).

9.3.6.1 Analysis of Co-citation Network of Academic Journals

To try to identify the most important sources of publication and determine how they are related to each other, this analysis is performed using scientific journals that have at least 20 or more citations. In the perspective of Chandra (2018), it is easy to identify five groups of citations from scientific journals (see Fig. 9.5) that are very broad and diverse [29]:

i. Consumer Behavior—Advertising (Journal of Consumer Behavior, Young Consumer, Journal of Advertising, International Advertising, Journal of Consumer Psychology; red circles).
ii. Administration—Marketing (Academy Management Journal, Administrative Science Quarterly, Academy of Management Review, Harvard Business Review, International Marketing Review, Journal of Marketing, Journal of International Marketing, Journal of the Academy of Marketing Science; green circles).
iii. Computer Science—Marketing (Computer in Human Behavior, European Journal of Marketing, International Journal of Electronics and Communications, Internet Research, International Journal of Bank Marketing, celestial circles).
iv. Marketing—Administration (Journal of Business Research, Industrial Marketing Management, Journal of Business Ethics, Journal of Business & Industrial Marketing; yellow circles).
v. Marketing (Journal of Marketing Research, Journal of Retailing, International Journal of Research in Marketing; purple circles).

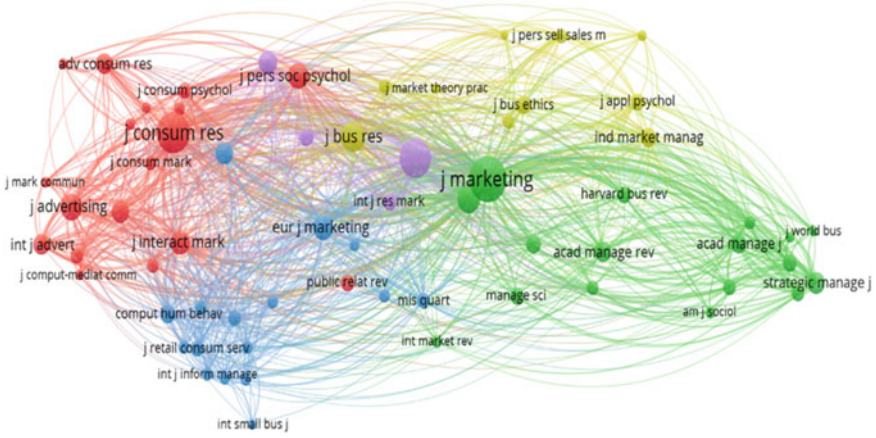

Fig. 9.5 Academic journals co-citation network (*Source* Web of Science)

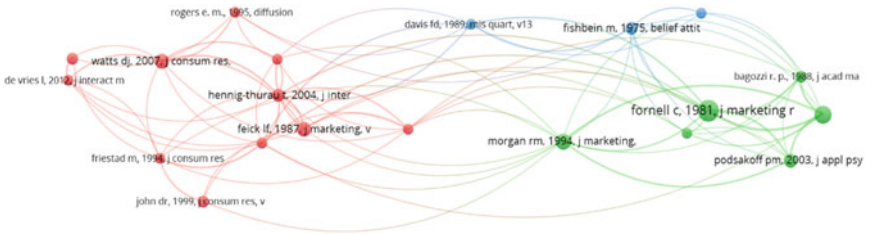

Fig. 9.6 Co-quotes based on the author (*Source* Web of Science)

9.3.6.2 Analysis of Co-citation Based on the Author

In order to carry out this work, authors' names were classified along with the years of publication as well as the name of the journals. For this process, it was used the option of references cited in the Vosviewer program and a process similar to the one used by [14]. These authors cited at least 20 publications. Although in this case, a minimum number of 6 citations were used in a cited reference. The logic behind this was that a larger reference amount resulted in a smaller number of associated relationships. Following this process, three groups could be obtained. In the first group, it was possible to identify: consumer-marketing research (Watts, Friestad, McCracken, John, Feick, Arndt; red circles). In the second group, marketing-psychology (Fornell, Morgan, Bagozzi, Anderson, Podsakoff; green circles), and in the third group: various studies (Davis, Fishbein, Glaser, blue circles) (Fig. 9.6).

9.4 Conclusion

Bibliometric methods are a very powerful tool, that allows quantitative confirmation of the categories, which are subjectively derived in published reviews, the exploration of new research scenarios as well as the identifying of the categories studied [12]. The results obtained from this bibliometric analysis open a window that will help researchers in digital marketing areas to understand the evolution and history of academic works. It also allows the changes in the different co-cited academic groups, the frequency of citations in different journals of research and the countries that are most interested in this subject.

In this section, we answer the questions proposed at the beginning of this research in an attempt to contribute to the subject about influencers in digital media.

The development of this research also concludes that this topic had a very slow start during the first 23 years; from 2010, the statistics show a gradual increase until the 2015 when the topic about influencers has a quick access in the last four years.

Finally, it shows the main countries that have worked on this subject, as well as the countries that today show a greater interest in this area. For instance, in Europe

we have Sweden and Germany. In Oceania Australia and in the Asian continent, we see India.

Currently, the American continent does not have any representation according to the works found in the Web of Science, although the USA was the first country to initiate this type of research work. Lastly, it is important for Latin American countries to increase research on how influencers get their messages across to their followers. For companies, this form of communication can help them to be more efficient in their communication campaigns and to know the reactions of their followers to these campaigns.

References

1. Suárez, C.: Web 1.0 vs Web 2.0. 20 Junio 2013. [Online]. Available: https://comunidad.iebschool.com/habladigital/2013/06/20/web-1-0-vs-web-2-0/. Accessed 24 junio 2019
2. Rodríguez, H., Macías, J., Montalván, N., Garzozi, R.: Influence of social networks from cellphones to choose restaurants, Salinas—2016. In: Advances in Intelligent Systems and Computing (2018)
3. Arora, A., Bansal, S., Kandpal, C., Aswani, R., Dwivedi, Y.: Measuring social media influencer index-insights from facebook, Twitter and Instagram. J. Retail. Consumer Services **49**, 86–101 (2019)
4. Sokolova, K., Kefi, H.: Instagram and YouTube bloggers promote it, why should I buy? How credibility and parasocial interaction influence purchase intentions. J. Retail. Consumer Services (2019)
5. Guarda, T., Augusto, M.F., León, M., Pérez, H., Torres, W., Orozco, W., Bacilio, J.: Marketing knowledge management model. In: International Conference on Information Technology and Systems ICITS18, La Libertad (2018)
6. Guarda, J.T., Augusto, M.F., Leon, M., Villao, D., Mazon, L., Estrada, Y.S.: Inexpensive marketing tools for SMEs. In: International Conference on Information Theoretic Security (2018)
7. Freberg, K., Graham, K., McGaughey, K., Freberg, L.A.: Who are the social media influencers? A study of public perceptions of personality. Public Relations Rev. **37**(1), 90–92 (2011)
8. Neal, M.: Instagram influencers: The effects of sponsorship on follower engagement with fitness Instagram celebrities, pp. 1–59 (2017)
9. Merigó, J.M., Mas-Tur, A., Roig-Tierno, N., Ribeiro-Soriano, D.: A bibliometric overview of the journal of business research between 1973 and 2014. J. Bus. Res. **68**(12), 2645–2653 (2015)
10. Abdi, A., Idris, N., Alguliyev, R.M., Aliguliyev, R.M.: Bibliometric analysis of IP&M journal. J. Scientometric Res. **7**(1), 54–62 (2018)
11. Keathley-Herring, H., Van Aken, E., Gonzalez-Aleu, F., Deschamps, F., Letens, G., Orlandini, P.C.: Assessing the maturity of a research area: bibliometric review and proposed framework. Scientometrics **109**(2), 927–951 (2016)
12. Zupic, I., Čater, T.: Bibliometric methods in management and organization. Organ. Res. Methods **13**(8), 429–472 (2015)
13. Rey-Martí, A., Ribeiro-Soriano, D., Palacios-Marqués, D.: A bibliometric analysis of social entrepreneurship. J. Bus. Res. **69**(5), 1651–1655 (2016)
14. Carrión-Mero, P., Montalván-Burbano, N., Paz-Salas, N., Morante-Carballo, F.: Volcanic Geomorphology: a review of worldwide research. Geosciences **10**(9), 347 (2020)
15. Van Eck, N.J., Waltman, L.: Visualizing bibliometric networks. In: Measuring Scholarly Impact. Springer, Cham, pp. 285–320 (2014)
16. Montalván-Burbano, N., Pérez-Valls, M., Plaza-Úbeda, J.: Analysis of scientific production on organizational innovation. Cogent Bus. Manage. **7**(1) (2020)

17. Small, H.: Co-citation in the scientific literature: A new measure of the relationship between two documents. J. Am. Soc. Inf. Sci. **24**(4), 265–326 (1973)
18. Hsiao, C.H., Yang, C.: The intellectual development of the technology acceptance model: A co-citation analysis. Int. J. Inf. Manage. **31**(2), 128–136 (2011)
19. van Eck, N.J., Waltman, L.: Software survey: VOSviewer, a computer program for bibliometric mapping. Scientometrics pp. 523–538 (2010)
20 Herrera-Franco, G., Montalván-Burbano, N., Carrión-Mero, P., Apolo-Masache, B., Jaya-Montalvo, M.: Research trends in geotourism: a bibliometric analysis using the scopus database **10**(10), 379 (2020)
21. Bartol, T., Budimir, G., Juznic, P., Stopar, K.: Mapping and classification of agriculture in Web of Science: Other subject categories and research fields may benefit. Scientometrics, pp. 979–996 (2016)
22. Ramos-Rodríguez, A.-R., Ruíz-Navarro, J.: Changes in the intellectual structure of strategic management research: a bibliometric study of the strategic management journal, 1980–2000. Strategic Manage. J. pp. 981–1004 (2004)
23. Reddy, S.K., Swaminathan,V., Motley, C.M.: Exploring the determinants of broadway show success. J. Market. Res. pp. 370–383 (1998)
24. Eliashberg, J., Shugan, S.M.: Film critics: Influencers or predictors? J. Market. pp. 68–78 (1997)
25. Scheer, L.K., Stern, L.W.: The effect of influence type and performance outcomes on attitude toward the influencer. J. Market. Res. pp. 128–142, (1992)
26. Galvagno, M.: The intellectual structure of the anti-consumption and consumer resistance field: An author co-citation analysis. Eur. J. Mark. **45**(11/12), 1688–1701 (2011)
27. Kraus, S., Filser, M., Eggers, F., Hills, G.E., Hultman, C.M.: The entrepreneurial marketing domain: a citation and co-citation analysis. J. Res. Market. Entrepreneurship **14**(1), 6–26 (2012)
28. Leung, X.Y., Sun, J., Bai, B.: Bibliometrics of social media research: A co-citation and co-word analysis. Int. J. Hospitality Manage. **66**, 35–45 (2017)
29. Chandra, Y.: Mapping the evolution of entrepreneurship as a field of research (1990–2013): A scientometric analysis. PLoS ONE **13**(1), 1–24 (2018)
30. Historia de Internet. 15 junio 2019. [Online]. Available: https://es.wikipedia.org/wiki/Historia_de_Internet. Accessed 24 junio 2019
31. Web 2.0. 9 junio 2019. [Online]. Available: https://es.wikipedia.org/wiki/Web_2.0. Accessed 24 junio 2019
32. Ramos, J.: Marketing de contenidos. Guía Práctica, XinXii (2017)
33. Rodrigues, S.P., Van Eck, N.J., Waltman, L., Jansen, F.W.: Mapping patient safety: a large-scale literature review using bibliometric visualisation techniques. BMJ Open **4**(3), 1–8 (2014)
34. Peters, K., Chen, Y., Kaplan, A.M., Ognibeni, B., Pauwels, K.: Social media metrics - A framework and guidelines for managing social media. J. Interactive Market. **27**(4), 281–298 (2013)
35. Berkowitz, M.: New product adoption by the buying organization: Who are the real influencers? Industrial Market. Manage. pp. 33–43 (1986)