Word of Mouth Marketing: A Scientometric Analysis

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ABSTRACT

This paper examines the importance, evolution, and intellectual structure of the Word of Mouth Marketing (WOMM) field over the past years. Firstly, this study uses a citation analysis to investigate 528 WOMM papers. Secondly, an SAP algorithm mapped the evolution of the topic. Finally, a cluster analysis was implemented to identify the WOMM knowledge structure. This research in WOMM distinguishes between three important emerging subfields, such as relationship and social media marketing, as well as the WOMM theory. Marketers are currently using electronic Word of Mouth (eWOM) due to the explosive growth of social media sites.

Keywords: Word of Mouth Marketing, Citation analysis, Intellectual structure, Relationship marketing.

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INTRODUCTION

Word of Mouth Marketing (WOMM) campaigns have become more critical for companies due to the strong influence of social media and social interactions among customers.[1] Additionally, WOMM is an increasingly important area in marketing and has received considerable attention in recent years.[2] However, the literature remains scattered because WOMM has evolved by embracing theories from other fields such as diffusion of innovations[3] and relationship marketing.[4] For example, some studies have tried to present a general overview of the topic, without focussing on specific subtopics of WOMM. Compared to other fields with similar maturity, research in this topic needs to be carried out to understand the various emerging subfields in order to propose any future action routes. Mazzarol *et al.*[5] stipulate the need for further research, "Little research, however, has addressed antecedents of WOM when considering WOM as a focal construct". Therefore, there has been no systematic investigation of the general subfields of WOMM.

This research aims to identify the importance, evolution, and emerging subfields in WOMM using scientometric techniques. The importance of the topic was identified using the traditional metrics such as production per year, the impact factor of more productive journals, and a co-author network of researchers using the bibliometrix R package.[6] The new improvement of the Tree of Science (ToS) algorithm is performed (SAP) to understand the evolution of the topic.[7] Finally, we identified the subfields applying a modularity algorithm in the citation network.[8] Citation analysis is a widely used scientometric technique to map and identify patterns through the links created by the references of a paper.[9] The citation network was made up of 528 papers and 34.448 references from 2001 to 2019 searched in the Web of Science.

The results of the citation analysis showed three subfields of the WOMM. The first one highlights the connection with Relationship Marketing. The second shows the importance of online social media marketing (SMM) in brand development for a company. The third relates to the triggers, such as the structure of the social network, the incentives, and the strength of the link. From these approaches, researchers can expand the WOMM and deepen the different concepts. Additionally, the methodology was used to determine quantitatively both the clusters and the topics of each perspective using text mining. This type of methodology is recommended to carry out an exploratory analysis of research topics and quickly locate researchers in the concepts they are going to investigate.

Hereinafter, this paper is organized as follows. The next section introduces the main reviews related to the topic. Then, the methodology is explained in section three. Section four of this paper will show the results and, finally, the conclusions and future research.

MATERIALS AND METHODS

This paper used a three-step methodological approach to identify the importance, evolution, and subfields of WOMM. A well literature review is performed through several processes. This type of quantitative methodology makes it possible to identify objective elements of the field of study; however, it is important to apply qualitative techniques when integrating concepts within each subfield.[10] Each step is described in detail below. Figure 1 summarizes the general process of the systematic review.

Step 1: Scientometric analysis - bibliometrix

The search was performed in 2020 on the indexed Web of Science (WoS) database in the main collection between 2001 and 2019. In the case of this study, the following words were used for the search: "marketing" in the title and "word mouth" in the topic. In this sense, the results showed 528 documents that had the word marketing in the title and word of mouth in topic, abstract, and keywords. Because the analyses were performed using graph theory, it was not necessary to filter the documents by type of publication, language, journal, category, or relevant topics. The graph theory selects the most important articles according to their position on the network based on the scientometric indicators. It is for this reason that it is necessary to have all the documents found in the search.

For this analysis we use the R tool, specifically, the bibliometrix package,[6] which has been used for studies that require scientific mapping.[11] For scientific mapping, the five bibliometric methods suggested by Zupic and Čater:[12] Citation analysis, Co-word analysis, Co-citation analysis, Co-author analysis, Bibliographic coupling analysis were applied.

Step 2: Tree of Science – SAP

To map the evolution of WOMM, we applied a new version of the Tree of Science (ToS) algorithm called SAP. [7] SAP creates a citation network with the cited papers and then applies graph metrics to identify the most relevant and important papers. SAP represents the results in three groups: roots, trunk, and leaves. Roots are the seminals; the trunk has the papers that represent the link between the seminals and the new academic literature. Papers located in the leaves show the most recent advances in the topic. The old algorithm (ToS) is widely used among researchers in diverse topics; such as, neuromarketing,[13] corporate social responsibility,[14] Marketing,[15] and Economy.[16]

Step 3: Citation analysis

In order to identify the different perspectives, a citation analysis was carried out. Citation analysis is widely used in the scientific literature to identify subfields.[17] First a network was created with the references of each of the 528 articles, then the articles with a similarity greater than 95% were identified by means of the Jaro–Winkler algorithm.[18] Subsequently, articles of little relevance were deleted, only one citation and those which had no citations in the network. Finally, the articles disconnected to the giant component were eliminated. The final citation network consists of 4514 articles. These results, based on quantitative analysis, show the different emerging subfields of the WOMM and their deep relationships from the application of the clustering algorithm.[8] Therefore, the patterns become visible and help to understand the nature of this field.

The main subfields were selected by applying the tipping point approach[19] and it represents the moment of great changes in a system. Figure 2 shows the total of clusters identified and the total of papers in each one. We applied a polynomial model to identify the tipping point from the second derivative of the model. According to this result, we selected the three biggest clusters in the graph as subfields of WOMM.

In addition, a text mining of the groupings with the titles of the articles was carried out to identify the theme of each perspective using the R wordcloud package.[20] In this case,
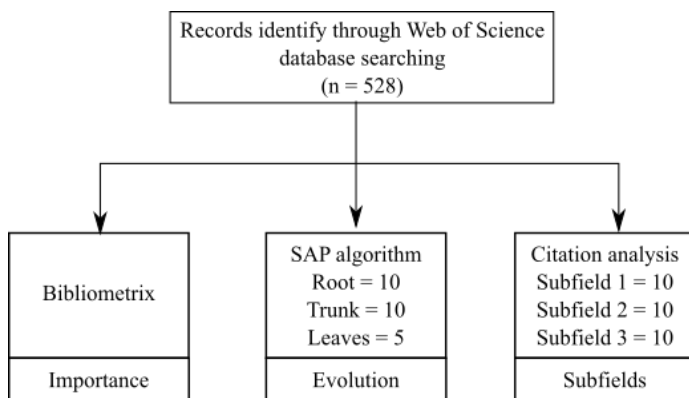

Figure 1: Study selection and analysis applied.
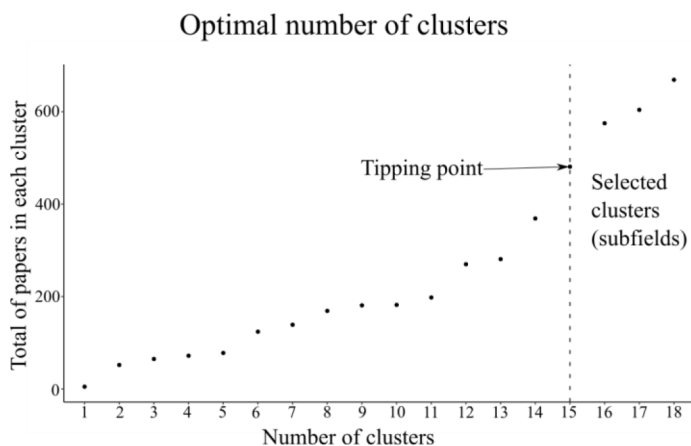

Optimal number of clusters

Figure 2: Optimal number of clusters selected using tipping point method.

words directly related to the search equation (WOMM) were eliminated, that is, words such as "market" and "wordofmouth" were eliminated because the purpose was to identify the topics within these areas. Once the articles to be researched were selected, the most important concepts of word-of-mouth marketing were analyzed in order to obtain an overview of the topic and show it chronologically. The results of the research are described below. The network with the different subfields is presented in Figure 3.

RESULTS

Importance

To carry out the analysis of the scientific production, the bibliometric methods presented by Zupic and Čater[12] were used: Citation analysis, Co-word analysis, Co-citation analysis, Co-author analysis, Bibliographic coupling analysis.

Figure 4 shows the history of publications on the subject in the WoS database, as well as the ten countries with the highest production. About the first element, there is an increase in the interest of the scientific community in this area; this is reflected in an annual growth rate of 26%; however, the last five years are the most productive, in this period, 63% of all records. Concerning the countries, the United States heads the list with 185 publications, representing 35% of the world production, demonstrating its dominance in the area. Other countries accompany the United States in the first positions of this list, like China and England; however, the first one has approximately one-third of the United States.

Among the most relevant authors in the area (based on the number of publications) are Xiaofran Yang, Andrew T. Stephen and Yong Liu, each with five papers, however, Yang from Chongqing University has an *h*-index of 30, which places him currently as one of the leading authors in the field. The hegemony of the United States and China, which is shown by the number of publications, is maintained in terms of linking researchers to universities in these countries (Table 1).

In Table 2, the ten most relevant journals are listed, the number of publications determines their importance; however, the classification and impact factor of each is related. Journal of Marketing, is the leader in this classification in relation to the number of publications, this magazine from the United States is recognized for developing and promoting high-impact knowledge in the area of marketing. Regarding impact, the Journal of the Academy of Marketing Science has the best indicator. As for the classification and distribution by areas in the database, 66% of the publications are categorized in Business Economics. The University of Maryland and University Groningen have the highest number of publications, 11 and 7, respectively.

Table 1: Most influential authors in WOMM research.

Author	Organizations	Country	Number of publications	Number of citations	Index *h*
Xiaofan Yang	Chongqing University	China	5	2.785	30
Andrew T. Stephen	University of Oxford	England	5	1.701	18
Yong Liu	University of Arizona	USA	5	476	9
Yuan Yan Tang	University of Macau	China	4	6224	39
Kumar P	Georgia State University	USA	4	4138	32
Lu-Xing Yang	Deakin University	Australia	4	1144	20
Martin Spann	University of Munich	Germany	4	1.296	17
Yingbo Wu	Chongqing University	China	4	254	9
Jie Zhang	University of Texas Arlington	USA	4	608	8

Table 2: Top 10 journals that publish in WOMM.

Journal	Number of publications	Quartil	Total citations 2018	Journal Impact Factor Trend 2018
Journal of Marketing	17	Q1	24.994	7,821
Journal of Business Research	14	Q1	23.613	4,028
European Journal of Marketing	12	Q3	7,137	1,716
Journal of the Academy of Marketing Science	11	Q1	11.493	9,360
Journal of Interactive Marketing	10	Q1	3.450	4,691
Decision Support Systems	9	Q1	9.734	3,847
Information Systems Research	9	Q2	7.491	2,457
Marketing Science	9	Q2	6.826	2,490
Asia Pacific Journal of Marketing and Logistics	7	Q4	944	1,276
International Journal of Advertising	7	Q3	1653	2,234

Figure 3 lists four bibliographical elements. The first one, the network of citations, which highlights the authors mostly referenced within the network,[21] in this sense, Judith A. Chevalier (Yale University), Thorsten Hennin-Thurau (University of Munster), David Godes (University of Maryland College Park) and Michael Trusov (University of Maryland College Park) are the most referenced; it should be noted that the last two, are part of the same institution. Also, none is part of the list of the ten authors with the highest number of publications on the subject.
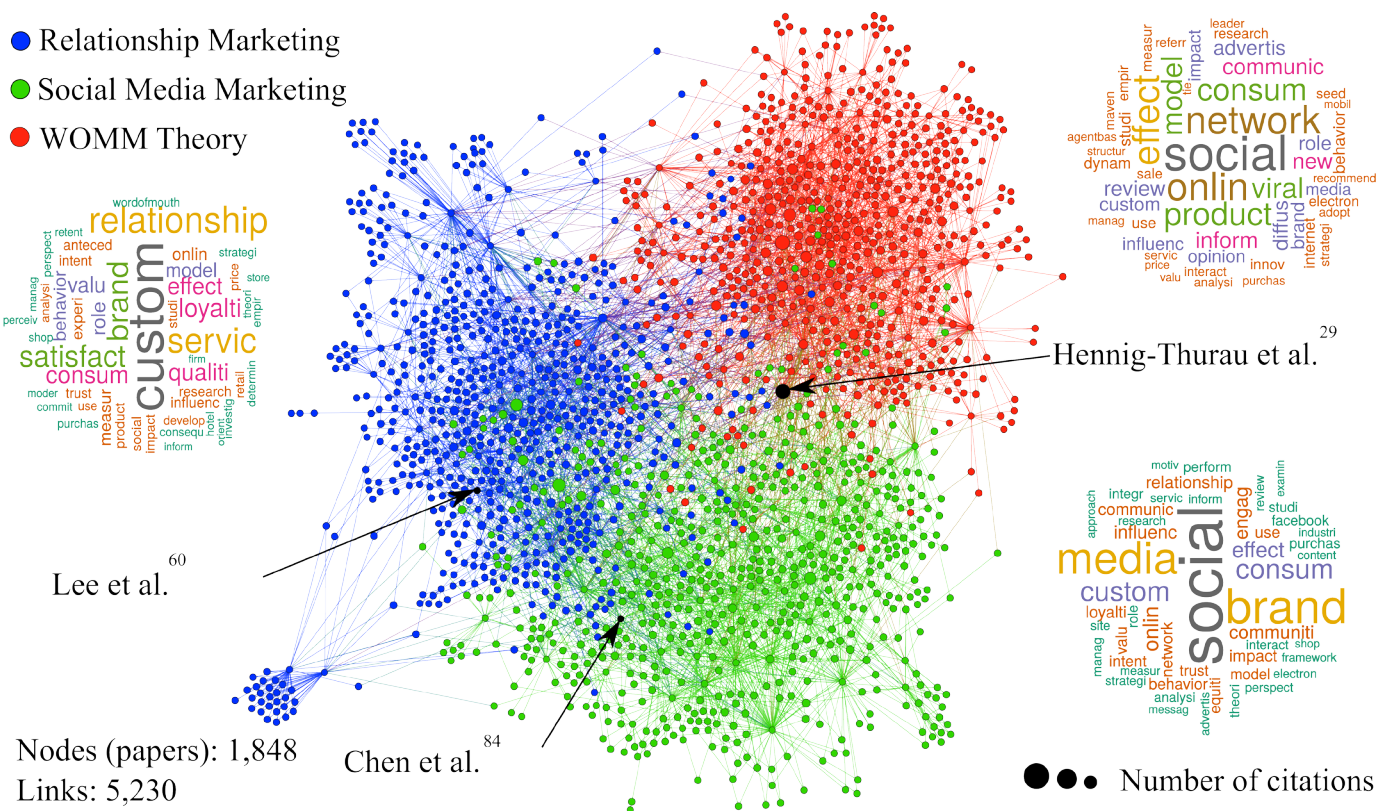
Figure 3: Citation network of WOMM.

The second, the network of collaboration between authors, shows close cooperation Xiaofan Yang, Yuang Yan Tang, Lu-XIng Yang, Yingbo Wu, and Pengden Li, the first four are the list of the ten most relevant authors (Table 2) shows that the collaboration between authors generates growth in their productivity and visibility.[22]

The third, the word co-current network, shows the interconnection between the words present in the Keywords plus of all the documents in the net. Two main groups were identified; the first and largest refers to terms such as WOM, Impact, Performance, Online, Social media, which shows the connection between WOM and virtual platforms and channels. The second group, with terms such as satisfaction, loyalty, quality, and trust, which are considered background or triggers for WOM.

Finally, the fourth relates to the network of collaboration between countries; in this case, the United States and China are the ones that present a healthy relationship in terms of working together. However, the connection between the United States and the United Kingdom is also essential. Collaborative work between researchers in these countries is beneficial to them both. These networks generate an increase in production, as shown in Figure 5.

Evolution of WOMM using SAP algorithm

An evolution of WOMM is presented in this section using the SAP algorithm in three stages according to the tree analogy, root, trunk, and leaves. The first part presents the seminal articles (roots), the second one the structural studies (trunk), and, finally, the current literature (leaves).

WOMM started with the investigations of Rogers[23] and Bass,[24] who established the first bases of the diffusion of innovations. Rogers[23] proposed that the diffusion of a product or an idea is through a specific public depending on the stage in the whole process. The public, divided into groups, was called each by its respective name: innovators, early adopters, early majority, late majority, and laggards. Bass[24] identified a growth model for new product launching; he studied the sales of color television sets during a period of time and proposed a mathematical model merging early majority and laggards as imitators highlighting the social influence. The connections among customers (social influence) emerged as a relevant element in this topic; for example, Brown and Reingen[25] studied the influence of weak and strong relationships in WOM processes. A weak relationship has a low frequency of interactions, low time spent together, and low affection between parties (contrary to strong ties).[26] According to Brown and Reingen,[25] weak ties perform better when they are linking two groups of different people, but strong ties display better outcomes when there is a one-one relationship.
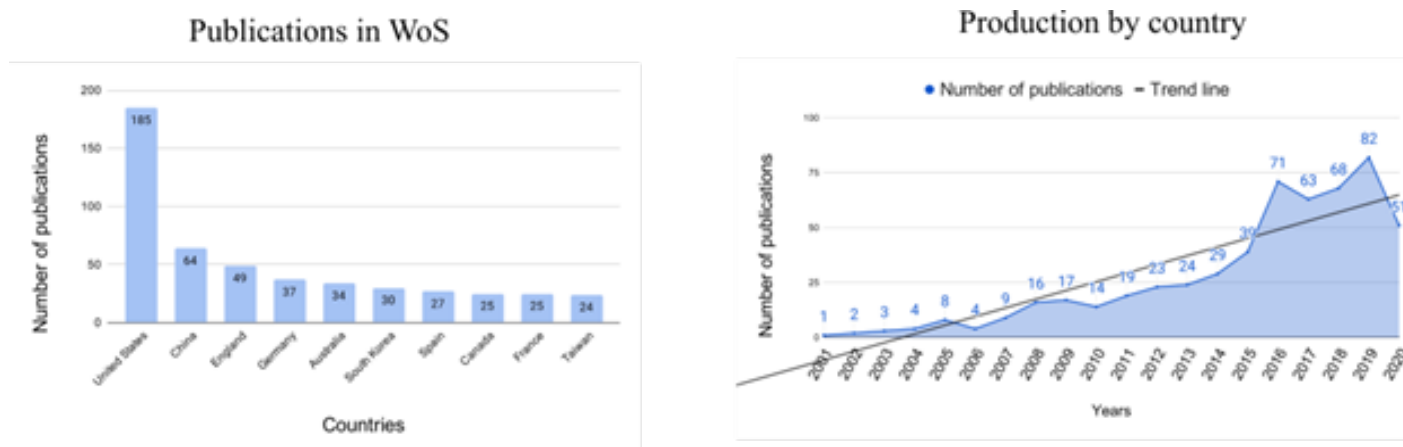
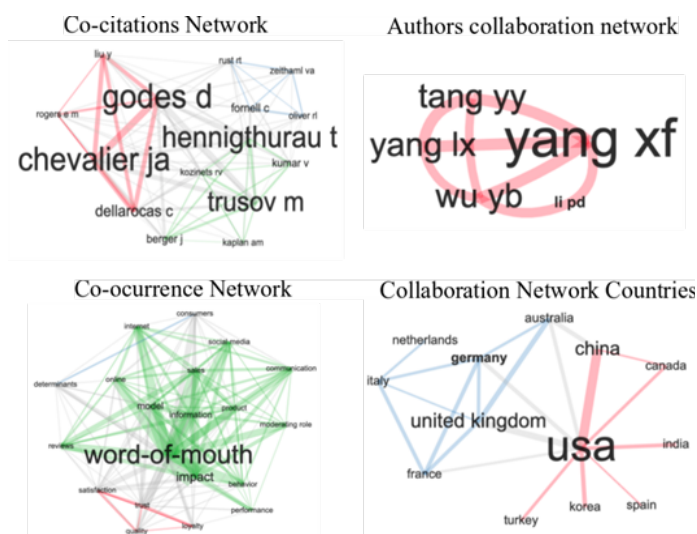**Figure 4:** Scientific production with countries.

Figure 5: Co-citation, co-authorship, co-occurrence, and collaboration network analyses.

This part of the tree (root) explains WOMM from an offline perspective showing the main actors (for example, innovators) and the social influence (weak and strong ties) in WOM. Next, an online perspective is presented by WOM (eWOM).

Dellarocas[27] shows a digitalization of WOM thanks to the emergence of the Internet and companies such as eBay that permits the customers to share their opinions of a product on a web site. The study highlights the importance of understanding this type of WOM because it could change the strategy of a company. Consequently, Godes and Mayzlin[28] examined the main challenges of eWOM. How does the data are gathered? How can these conversations be measured? And how other exogenous variables could be measured?. In this vein, eWOM presents a cost-effective opportunity for marketers to measure WOM using Internet data. For example, Henning-Thurau[29]

listed these four reasons why customers engage in eWOM: the desire for socialization, economic rewards, the concern of others, and to enhance their own self-worth. Liu[30] proposes that WOM is activated by the number of reviews and not by their content. Additionally, the number of stars plays a major influence in sales, and customers are more prone to read reviews than statistics.[31] Moreover, reviewers with more experience have a stronger influence on increasing the WOM of a product.[32] As a result of the emerging importance of eWOM, Kaplan and Haenlein[33] proposed a theoretical framework for Social Media Marketing. The roots of WOMM present an evolution of the concept, starting from offline concepts such as WOM actors, and social influence ending with eWOM.

In this section, structural papers (trunk) are explained, and three main topics have emerged: triggers, long term effects, and Consumer-Generated Media (CGM) of WOMM. Triggers of WOMM refers to the elements that accelerate the WOM process; for example, tie strength, WOM actors, and network structure. According to De Bruyn and Lilien,[34] the strength of the relationship influences WOM in the awareness stage, but demographic similarity has a negative impact on the whole decision-making process. Highly influential customers (WOM actors) play a key role in seeding strategies, such as selecting the best customers or non-customers who will start the diffusion process. In this vein, Hinz *et al.*[35] studied the effect of choosing people with different network features. They suggest that WOM actors with a high number of friends have greater reach but a lower influence on their colleagues; moreover, valence (positive or negative intensity of a conversation) shows less impact than the number of conversations (volume).[36] Social influence or social network structure is the personal social network, the connections among friends of clients that shape the decision-making process; if more friends of a person use a specific product, this

Table 3: Summary of selected papers in relationship marketing subarea.

Paper	Out degree	Journal	Quartile	h-index Journal	Authors	h-index* Author
Lee *et al.*[49]	14	Tourism Economics	Q1	0.61	Minwoo Lee	6
					Miyoung Jeong	24
					Linda J. Shea	---
Matikiti *et al.*[50]	14	African Journal of Economic and Management Studies	Q2	0.29	Rosemary Matikiti	5
					Mercy Mpinganjira	16
					Mornay Roberts-Lombard	16
Frempong *et al.*[51]	11	Journal of Cleaner Production	Q1	1.89	Joseph Frempong	---
					Junwu Chai	---
					Enock Mintah Ampaw	---
					Dennis Owusu Amofah	---
					Kwame Wadei Ansong	---
Chauke and Duh[52]	10	Journal of Food Products Marketing	Q2	0.48	Difference Xitshembhiso Chauke	---
					Helen Inseng Duh	---
Grappi *et al.*[53]	8	Management International Review	Q1	1.04	Silvia Grappi	20
					Simona Romani	24
					Richard P. Bagozzi	120
Caliskan and Esmer[54]	8	Maritime Policy and Management	Q1	1.32	Aylin Caliskan	5
					Soner Esmer	12
Mbango *et al.*[55]	21	Cogent Social Sciences	Q3	0.21	Phineas Mbango	---
					William Mmatli	
Ngona and Ntale[56]	19	Cogent Business and Management	Q2	0.3	Phineas Mbango	---
					William Mmatli	---
					Gertrud Buchenrieder	24
Lee *et al.*[57]	28	Journal of Business Research	Q1	1.87	Liane W.Y. Lee	2
					Yiming Tang	---
					Leslie S.C. Yip	---
					Piyush Sharma	30
Jiang *et al.*[58]	29	Journal of Business Research	Q1	1.87	Kai Jiang	---
					Sherriff Ting Luk	23
					Silvio kwong Cardinali	11

person has more probabilities to use it in the future. Risselada *et al.*[37] studied this phenomenon, and they propose that social influence decreases over time, opposite of newer adoptions. The investigations above show the key elements that activate WOM sales. In the next paragraph, the impact of WOMM in the long term is presented.

Traditional marketing activities (for example, promotion and direct marketing) have a direct effect on sales in the short term; however, WOMM activities are less expensive but without an immediate effect. This is important because one of the challenges for firms is to measure these types of activities in the long term. For example, Villanueva *et al.*[38] show that WOM clients add twice the value to the firm than clients acquired through traditional marketing. These results were confirmed by Trusov *et al.*,[39] they discovered that WOMM has a higher

impact in the long term. Both studies were performed using vector autoregression (VAR) models to measure the impact of WOMM in the long term.

eWOM is created through customers who generate online content such as posts or comments on web pages; this is known as User Generated Content (UGC). UGC influences satisfaction, awareness of products,[40] and sales when there is an interaction with traditional advertising.[41] However, TV promotion only explains 5% of WOM sales.[42] In this vein, Yadav *et al.*[43] propose a framework to conceptualize eWOM to explain the influence and importance of eWOM in firms. According to this rationality, WOM has become eWOM because of the easier interaction with technology like smartphones, and the straightforwardness of measuring with statistical techniques such as VAR models.

Table 4: Antecedents and consequences of WOM.

Antecedents of positive WOM		
WOM influence	**Paper**	**Source of WOM items**
Satisfaction → pWOM	Chauke and Duh[59]	Wu *et al.*[65]
	Mbango *et al.*[60]	Baker *et al.*[66]
Quality → pWOM	Caliskan and Esmer[61]	Lam *et al.*[67]
Commitment → pWOM	Matikiti *et al.*[63]	Purnasari and Yuliando[68]
Trust → pWOM	Lee *et al.*[57]	Baumann *et al.*[69]
Co-creation → pWOM	Frempong *et al.*[70]	Frempong *et al.*[70]
Emotions (gratitud and relief) → pWOM	Grappi *et al.*[71]	Romani *et al.*[72]
Relationship Marketing → pWOM	Ngoma and Ntale[73]	Lang[74]
Antecedents of negative WOM		
WOM influence	**Paper**	**Source of WOM items**
Perceived Fairness → nWOM	Lee *et al.*[75]	Noone,[76] Blodgett *et al.*[77]
Consequences of positive WOM		
WOM influence	Paper	Source of WOM items
pWOM → Brand Preference	Jian *et al.*[78]	Peck and Wiggins[79]
pWOM → Loyalty	Ngoma and Ntale[73]	Lang[74]

The final section of the evolution (leaves) presents the new further steps of WOMM. For example, Borah *et al.*[44] show that marketing activities performed in real-time during or before an external event (for example, the Super Bowl) in social media (Improvised Marketing Intervention – IMI) have greater virality impact. Berger *et al.*[45] highlight the need to understand the text generated by customers in online platforms to unit tribes. Appel *et al.*[46] describe the emerging trends of social media. For example, they show that social media started with sharing text, later images and videos, and the future will be augmented reality, and companies such as Snapchat use filters to superimpose real-time video on people's faces. In the same line, Sheth[47] exposes the exponential growth of social media in international marketing and presents it as a WOM tool. Facebook, Youtube, and Whatsapp have more than a billion followers, which is almost equal to the entire population of China, and so are rapidly becoming social media platforms for the new nation. Finally, Alcañiz *et al.*[48] show the implications of virtual reality in the consumer experience. To summarize, this part of the tree (leaves) shows some future research topics in WOMM.

Intellectual structure: subfields

This section explains in detail each subfield found in WOMM. The first subfield shows the connection between relationship marketing and WOMM. The second subfield presents the

importance of social media in WOMM. The final subfield examines the main concepts of WOMM.

Trend 1: Relationship Marketing

This cluster is related to Relationship Marketing (RM), which includes seminal papers and a clear connection with WOMM. Seminal papers explain the bases of RM generated through satisfaction,[49] quality,[50] and commitment.[51] Next, the cluster presents a more recent view with the antecedents of WOM (Table 3). We will focus on papers with high out degrees and the last three years. Out degree refers to the number of citations to other papers inside the cluster. Six out of ten papers are in quartile 1, and only one paper is quartile 3; these results show the importance of the topic in relation to RM. Additionally, authors have *h*-index between 0 and 120, reflecting the renewed interest in RM and WOMM among new researchers and the support of the top ones.

Table 4 shows the antecedents and consequences of WOMM. According to these results, satisfaction plays a significant role as an antecedent of WOMM.[55,58] Both studies present a significant and high correlation between the two variables in different contexts. In accordance with satisfaction, the quality of the product activates pWOM in customers.[57] This is in line with satisfaction because firms should take care about the quality of their products and the satisfaction of their clients to create WOM. Commitment describes the strong feeling to maintain a relationship;[62] for example, when a company has difficulties with their customers and, even if it is necessary to lose money, it is preferable to maintain the good relationships with the clients. In this vein, Matikiti *et al.*[53] show how efforts to recover satisfaction will influence commitment, and it will positively affect WOM. Trust also influences WOM.[60] Trust refers to the process of weighing the opportunities of the firm to behave opportunistically with the client.[63] If the client can forecast the actions of the company, trust is greater between the two players and will influence the client to recommend the product.

Another variable found to influence WOM was co-creation. Co-creation refers to the interactions among individuals in order to create, evolve, and re-define things.[64] If the firm lets customers participate in the development of the products, these actions will influence a positive WOM. Grappi *et al.*[56] evaluated the role of emotions (gratitude and relief) in WOM when a company decided to relocate the activities back to the home country. They concluded that gratitude and relief from customers of the home-country increase positive commentaries. To summarize, the components of RM (commitment, trust, reciprocity, communication, and relationship satisfaction) foster positive WOM.[59] However, if clients perceive negative fairness, it will create negative WOM comments.[52]

The other view is to analyze how positive WOM (pWOM) influences other variables. In this vein, this research found brand preference and loyalty as outcomes of pWOM. Jiang *et al.*[61] show the positive relationship between brand preference and pWOM, arguing that recommendations are considered unbiased, fair, and not exaggerated. Ngoma and Ntale[59] reported that pWOM influences loyalty; therefore if acquaintances of the client talk positively about the company, the client will increase her/his loyalty. Therefore, this subfield highlights the importance of satisfaction,[65] quality,[66] and commitment[67] in WOM processes.

Trend 2: Social Media Marketing

Approach 2 was defined as Social Media Marketing (SMM). It focuses on the study of the impact of SMM strategies on the brand and their influence on consumer behavior and perceptions of brand equity, brand loyalty, consumer–brand engagement, brand knowledge, and WOM.

One of the most representative classic articles in this perspective is that of Kaplan and Haenlein.[33] They suggest that the success of SMM campaigns depends on the messages, specifically highlighting attributes such as attractive, humble, simple, and honest. De Vries *et al.*[77] add that messages should be vivid and interactive and that both negative and positive brand feedback should be shared. However, the lack of an overall strategy for this type of campaign makes it difficult to implement and succeed. In response, Chang *et al.*[78] propose a general framework for carrying out SMM; this macro includes different areas of the company and shows SMM not only as an advertising channel but also as a way to connect the organization with its stakeholders.

Various researchers have undertaken studies to determine the impact of SMM activities on consumers, their behavior, and perceptions. Godey *et al.*[79] studied the influence of SMM on the creation of Brand Equity and consumer behavior towards a brand, managing to determine that these activities can positively affect Brand Equity, especially two of its main dimensions, being awareness and brand image. SMM's actions also have a significant impact on brand loyalty,[80] and on brand love.[81] However, as suggested by Wang *et al.*[82] the efforts that companies make at SMM generate attachment and consumer preference, but it is not demonstrated that they increase in consumer commitment.

The literature analyzed shows interest in the background and consequences of the use of SMM in different sectors. For example, Wang *et al.*[82] explored the use of social networks in international Business to Business (B2B) SMEs and found that SMM activities positively influence export performance. Likewise, Eid *et al.*[83] studied how small restaurants manage social networks, identifying that using these communication tools in a few cases is employed strategically, for example, to

monitor competitors and their customers, and most of the time, they are used to attract traffic to the restaurant.

Finally, managing relationships with customers through SMM achieves an increase in customers' adherence, which can lead to repurchase behavior and a positive WOM, which in the long run will be reflected in the acquisition of new customers and increased sales.[84]

According to this perspective, the SMM is important for the generation of the WOM. However, it is necessary to clarify that according to the results of the text mining and the analysis, this type of campaign is oriented towards the generation of the brand of the company, but not necessarily towards the creation of sales.[85]

Trend 3: WOMM Theory

This cluster deals with the elements that activate WOM from a social networking perspective focusing on viral marketing (see Figure 3). The articles focus on identifying WOM triggers and actors. For example, in the case of the activators, the structure of the network can be found,[29] incentives,[86] and tie strength.[87] To identify the actors of WOM some researchers propose the best-connected people[35] or more sophisticated algorithms.[88] The effects of the social network structure on the WOM processes could be better studied due to the emergence of the Internet,[89] the data of the calls by cell phones,[90] and simulations.[91] Additionally, viral marketing, such as a type of WOMM has also had an important development in recent years, and this generates a positioning of these concepts within the perspective of greater size.[92]

The first study that showed the importance of social structure was Arndt,[93] where he investigated the recommendation process in a residential complex for 16 days. The results of this experiment showed that housewives well integrated into a social structure adopted the product faster than residents away from the network. Although this study was conducted in an offline environment, Henning-Thurau *et al.*[29] confirmed these findings from a sample of online consumers, confirming that the desire for social interaction is a motivator to generate positive comments and recommendations for a product. Also, the influence of the social network structure was analyzed from simulations using various types of networks (free scale, small world, and random) and then contrasting the results with a real viral marketing campaign.[94]

An important issue within the structure of the social network is the strength of the links. In this regard, an interesting finding was that of De Bruyn *et al.*,[34] where they analyzed the influence of the quality of relationships on the motivation to resend an email. The findings of this research showed that the strength of the link facilitates the awareness to open and forward mail. Addressing this, Chiu *et al.*[95] analyze this

phenomenon from a questionnaire to tourists confirming the influence on the eWOM and adding the importance of involvement to improve the recommendation process. However, Pescher and Spann[96] showed that the strength of the bond had a negative influence at the time of deciding to refer, although this may be related to the degree of familiarity of the person to whom it is referring because a relationship of greater kinship, for example from father to son, can generate an intention of protection and caution when referring a product.[97-100]

CONCLUSION

Mainly this article is intended to show a scientometric review on the subject of WOMM, showing a chronological evolution and its different perspectives using Tree of Science and analysis of citations. Figure 3 shows the perspectives of the topic from a citation analysis, and from data mining, the subfields are presented. This analysis allowed us to identify three subfields of the WOMM: relationship marketing, social media marketing, and WOM theory. The results showed an important connection in each of the clusters allowing a clear approach to this area of knowledge.

The relationship marketing subfield represents 14.82% of the total perspectives generated. This cluster shows the importance of customer relationships to generate WOM. Satisfaction is the key player to start connections with clients. Trust and commitment represent the next steps to create a WOM effect. In conclusion, relationship marketing plays a significant role in influencing clients to start talking about the firm.

According to the results of the social media marketing subfield, the importance of activities in online social networks, such as Facebook and Twitter, generate the eWOM. In this sense, it is important to point out that the impact of these strategies is oriented towards brand generation, as shown in Figure 3. Regarding the use of WOMM, the aforementioned authors show different activities that can be developed to improve their campaigns and, in the end, social media marketing can impact both external and internal communications.

The last subfield identified represents the WOMM theory. This subfield shows the triggers that activate WOMM, such as the social network structure; WOM actors such as influencers, opinion, and revenue leaders; and the quality of the relationships.

With regard to the use of WOM marketing, the aforementioned authors suggest and conclude that in order to establish recommendation flows among consumers it is necessary to know their behavior, as this greatly affects their choices. On the other hand, it is necessary to bear in mind that the sowing of promotional campaigns on the product can generate a great acceptance for it, and therefore the company can begin to generate more income surpassing even competing products. It is for this reason that by means of the WOM, one arrives at the conclusion that the consumers base their choices depending on the publicity, and the relations to which it faces daily, which benefits directly to the company.

However, one of the limitations faced by the research was that only an indexed "Web of Science" (WoS) database was used where articles could be found on the sheets, which were totally disconnected from the main subject of the research. Therefore, for later studies, it could be done with other databases. Another limitation of the research was that cluster analysis was carried out without taking into account the time variable. Moreover, further work needs to be done to establish the different statistical techniques used in each research of the subfields. Although the results were accurate, future research could address this issue to improve methodology and results.

Finally, emerging companies should focus on implementing WOMM strategies before any other, because as discussed, it is a tool that will give them an incentive to improve more and more, to innovate and drive them to provide a service which can be pleasing to their customers, which will lead them to create the recommendation flows that can later generate the company a growing revenue, and recognition in the commercial market.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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