

1 **Let us talk about something: The Evolution of e-WOM from** 2 **the Past to the Future**

3 **Abstract**

4 Because e-WOM is one of the useful digital marketing elements for any organization, a better
5 understanding of its process will help individuals take more advantage of this concept. e-WOM
6 enables individuals to form relationships with firms, brands, and other customers, which leads to
7 benefits for both consumers and companies. It plays a significant role in a firm's performance.
8 The present study implements a different approach to reviewing by combining two bibliometric
9 methods, multidimensional scaling analysis (MDS) and hierarchical cluster analysis (HCA), via
10 Bibexcel software to have a deeper investigation of the process. Considering the 468 journal
11 papers on e-WOM allowed us to study the intellectual streams and significant perceptions
12 underpinning e-WOM. By dividing the study timeframe into three periods, we realized that there
13 have always been three main concepts in this field: consumer behavior, sales, and the tourism
14 and hotel industry. Further, by proposing a framework, we have expanded these concepts
15 accompanied by the role of artificial intelligence and robots in the process of e-WOM.
16 Consequently, new concepts "r-WOM", "automated user engagement", and "smart selling" are
17 introduced and demonstrated as a consequence of using technology-based tools in the process of
18 e-WOM. Finally, the future scope of this field has been designed. We contribute to the literature
19 by offering theoretical and managerial implications.

20 **Keywords:** e-WOM; Multidimensional Scaling Analysis; Hierarchical Cluster Analysis;
21 Bibliometric; r-WOM

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26

27 **1. Introduction**

28 In the digital era, businesses face competition not only in the marketplace but also in the
29 market space, and there has been a shift of paradigm in business models to emphasize these two
30 markets instantaneously (Lee et al., 2022; Verma & Yadav, 2021). Before the spread of the
31 Internet, consumers shared their product or service experiences through personal oral
32 communication (Yang et al., 2012), but the fast development of technological progression has
33 provided many opportunities for consumers to interact with firms and other consumers through
34 multiple channels like social media, which helps consumers to create electronic word of mouth
35 (e-WOM) (Ai et al., 2022; Lai et al., 2022; Lee et al., 2022; Ngarmwongnoi et al., 2020). In
36 other words, word of mouth (WOM) and traditional discussions about products or services with
37 others have expanded into e-WOM forms such as electronic bulletins, newsgroups, blogs, online
38 discussion forums, reviews, and networking sites (Hussain et al., 2020). The WOM connections
39 originally pointed to the interactions between customers about a brand (Abbas et al., 2020), and
40 e-WOM is defined as “the dynamic and ongoing information exchange process between
41 potential, actual, or former consumers regarding a product, service, brand, or company, which is
42 available to a multitude of individuals and institutions via the Internet” (Ismagilova et al., 2020,
43 p.1). The social desire of consumers makes them share their opinions, pieces of knowledge, and
44 favorites with others in their network, which affects traditional marketing (Ngarmwongnoi et al.,
45 2020; Singh et al., 2022). e-WOM is fruitful for both consumers and companies. Consumers
46 apply it at all three phases of the purchase process: pre-purchase, during the purchase, and post-
47 purchase, to acquire suitable information, share ideas, and present feedback. Besides that,
48 companies use e-WOM to engage customers, build an online presence, absorb consumers’ views,
49 impact intentions, and gain revenue (Halim et al., 2022; Muritala et al., 2020). e-WOM can not
50 only be evaluated as a significant foundation of information affecting consumer behavior (Halim
51 et al., 2022; Ismagilova et al., 2020; Li et al., 2022) but can also be considered as an influential
52 communication tool that has facilitated the transfer of power from firms to consumers (Reyes-
53 Menendez et al., 2020). It can be concluded that while companies’ advertising can be perceived
54 as deceptive, consumers see e-WOM as more influential and trustworthy because of its unbiased
55 views and sharing of real experiences (Ai et al., 2022; Ngarmwongnoi et al., 2020; Singh et al.,

56 2022). Therefore, firms can try to take advantage of its benefits by developing appropriate
57 strategies (Ai et al., 2022; Rosario et al., 2020).

58 Due to the advancement and important developments in e-commerce as well as its constantly
59 growing necessity (Hussain et al., 2020; Verma & Yadav, 2021), e-WOM has become attractive
60 for both practitioners and researchers in the scope of digital marketing (Halim et al., 2022; Lai et
61 al., 2022; Zhang et al., 2022). To strengthen understanding of e-WOM literature, earlier
62 academics tried to study e-WOM from diverse viewpoints. Huete-Alcocer (2017) reviewed the
63 related literature, examining the influence of traditional WOM and e-WOM in the consumer
64 behavior domain and weighing the main differences between the two types of communications.
65 Mishra & Satish (2016) carried out a systematic review to summarize existing literature in the e-
66 WOM field and identify future research. They concentrated on concepts such as loyalty, decision
67 making, information adoption, etc. as the main areas of e-WOM. Rosario et al. (2020), applying
68 a systematic review of 1,050 publications, offered a framework that explained different phases of
69 e-WOM from two main perspectives, namely, marketers and consumers. Donthu et al. (2021)
70 acknowledged that one of the most complete studies that has been done so far in this field is the
71 Rosario et al. (2020) article. However, so far, no attention has been paid to the presence of
72 technology in this process.

73 Researchers have investigated the literature, using bibliometrics, and introduced new signs of
74 progress in this area (Abbas et al., 2020; Donthu et al., 2021; King et al., 2014; Muritala et al.,
75 2020; Yang et al., 2012). By studying the literature, we find that little attention has been paid to
76 the emergence of technology in the process. Despite this, Muritala et al. (2020) have recognized
77 the main themes, such as artificial intelligence, machine learning, deep learning, and artificial
78 neural networks in the future of e-WOM and Verma & Yadav (2021) have presented emergent
79 topics and future trends, such as machine learning, artificial intelligence, etc., but it should be
80 noted that they only mentioned the presentation of these concepts in the future of the process and
81 they did not mention the consequences of these concepts on consumer behavior or company
82 performance.

83 In summary, academics have understood that there is incomplete and disjointed literature
84 obtainable on consumers' e-WOM and there is a need to study the dissemination of e-WOM from
85 precise viewpoints systematically (Rosario et al., 2020; Hussain et al., 2020; Muritala et al.,

86 2020; Redditt et al., 2022; Reyes-Menendez et al., 2020). Furthermore, because of the fast pace
87 of changes in the business environment and technological improvements, on which the literature
88 is growing, it is very significant to follow recent changes for conducting future research (Rosario
89 et al., 2020; Muritala et al., 2020; Verma & Yadav, 2021; Yeo et al., 2022). For example, due to
90 the change in consumer behavior caused by technological growth, the role of important elements,
91 such as robots as recommender systems, in this process has been ignored (Kim et al., 2022).
92 However, by analyzing previous studies (Bhaiswar et al., 2021; Donthu et al., 2021; Verma &
93 Yadav, 2021), it is necessary to track such phenomena as e-WOM continuously and holistically
94 because of the aforementioned reasons: lack of attention to technological advances and
95 dissemination of the knowledge scope.

96 To overcome this literature gap and remove fragmentation, the current study proposes: (1) to
97 provide a holistic performance analysis (quantitative and qualitative) by using 468 articles
98 published from 2003 to 2021, in 2-, 3-, and 4-star-rated journals in the Quality List Report from
99 the ABS list (Association of Business Schools Academic Journal Quality) and new analysis
100 methods, (2) to use science mapping (conceptual and intellectual structures) by dividing the
101 timeframe into three periods: 2003-2011, 2012-2016 and 2017-2021, for a deeper study of each
102 period and a better understanding of trends over time, and (3) to develop a comprehensive
103 conceptual framework of the e-WOM research domain through bibliometric analysis by focusing
104 on the future of e-WOM with the emphasis on technology

105 Like other academic papers that seek to define the scope and cognitive and intellectual
106 structures in their field of study (Akbari et al., 2021; Foroudi et al., 2020; López-Robles et al.,
107 2019; Sánchez-Pérez et al., 2021), the present study aims to contribute to the e-WOM field in
108 various ways. This study aims to expand the understanding of the research field by mapping the
109 field of e-WOM. It also aims to classify the knowledge base of e-WOM and its intellectual
110 structure, which can be useful for business researchers, managers, marketers, and politicians.
111 Identifying research areas and examining how the intellectual base develops over time provide a
112 regular and accurate look at new researchers and scholars in this field. The study also aims to
113 guide organizations, managers, marketers, and policymakers who increase their awareness of
114 emerging issues while allowing them to translate the knowledge gained about e-WOM into ideal
115 strategies.

116 Reviewing the literature of the highly cited papers and recent studies, a conceptual framework
117 of the e-WOM with three important perspectives (consumer, firm, and technology), antecedents,
118 moderator variables, contextual variables, conditional variables, consequences, and the nature of
119 e-WOM and r-WOM is presented. The antecedents from the consumer perspective include
120 factors such as: consumer personality; a sense of community belonging, customer satisfaction,
121 need for social interaction, searching, etc., and from the firm perspective encompasses activities
122 such as content marketing, social media marketing, and personalization which trigger the e-
123 WOM; machine-learning; big data; social media from technology perspectives with argument
124 quality and source credibility are the conditional variables. Contextual variables embrace the
125 industry, competition, business model, market characteristics, etc. Also, consequences are
126 investigated from two sides: purchase decision making, consumer satisfaction, consumer
127 judgment, consumer adoption, consumer trust, etc. from a consumer perspective, and sales
128 growth, customer value, and firm performance from a firm perspective.

129 Following this research, managers need to switch from traditional marketing methods in their
130 business to digital channels, such as social media, because it offers better flexibility to target
131 consumers in terms of valuable, personal, and relevant content. Managers need to pay attention
132 to using social media and producing relevant brand-related content to engage with consumers
133 and strengthen the brand. They can create enjoyable, functional, and social content to motivate
134 brand and consumer interactions. Marketers and professionals should not ignore collective power
135 and note that collective power has a special effect on all digital marketing processes. Collective
136 power has great potential for use as a marketing tool to generate favorable e-WOM responses.
137 Marketers and managers can create good content by carefully considering population-based
138 features. Marketers need to develop tactics and promotions related to artificial intelligence
139 technologies to help customers deliver personalized real-time advice when they need it.
140 Decision-makers, managers, and organizations need to consider this well to meet the needs of
141 their audiences. Politicians can also use this type of content in their campaigns to defeat
142 competitors.

143

144 The paper is organized as follows: first, we provide an overview of e-WOM, then concentrate
145 on the research methodology; section three represents the results; the next section contains a
146 discussion of the conceptual framework; section five presents the conclusion of the paper;

147 section six includes the theoretical and practical implications, and finally, encompasses the
148 limitations and future directions.

149 **2. Emergence of e-WOM**

150 Marketing is the process by which a company creates value for the customer and establishes a
151 strong relationship with customers and in return receives value from the customer (Armstrong et
152 al., 2014). Marketing is essential for businesses because it helps companies introduce their
153 products and services to customers and persuade them to invest in those products (Fairbank,
154 2008). In the information era, people are faced with a large amount of information and
155 advertising, so they do not have enough time to review this large amount of information and
156 prefer to receive information in a concise and sifted way and through friends and relatives
157 (Warrington, 2002). In WOM marketing, people who are not affiliated with the company that
158 produces the goods or services communicate with each other about goods and services. This
159 communication includes face-to-face conversations in person or by telephone, e-mail, or other
160 communication channels (Warrington, 2002). People rely more on WOM information than on
161 sources such as radio and television to buy goods or services (Cakim, 2009). There are two types
162 of WOM communication, both of which spread rapidly and play a major role in customer
163 attitudes. These two types of communication are both positive (praise for the product) and
164 negative (criticize the product) (Halim et al., 2022; Roy et al., 2022; Hennig-Thurau et al., 2004).

165 With the advent of the Internet, businesses have had the opportunity to reach more audiences.
166 In the mid-1990s, Internet advertising became a popular form of marketing. This method of
167 marketing became known as e-marketing (Fairbank, 2008). With the advent of e-marketing,
168 marketers have found that WOM marketing can be done on the Internet with a variety of
169 Internet-based platforms. In this way, e-WOM emerged (Eaton, 2006). The advent of the Internet
170 has made word-of-mouth communication, an old communication medium, the newest marketing
171 medium for accessing online users (Roy et al., 2022). Therefore, customers and marketers share
172 their experiences online and help customers to make informed decisions in online shopping
173 (Erkan & Evans, 2018; Roy et al., 2020; 2022). Therefore, companies have to spend significantly
174 to produce and manage eWOM as a marketing tool to sell the product. Due to the evolution of

175 the digital distribution of products and services, there is a growing relevance for e-WOM owing
176 to the transformation (Meenakshy & Srivastava, 2022).

177 e-WOM has been shaped by increasing usage of the Internet and varies importantly from
178 WOM in two dimensions: (1) the numbers of people who communicate (e-WOM encompasses
179 many-to-many communication among users) (Gretzel & Yoo, 2008), and (2) the speed of
180 communication (e-WOM is faster than WOM) (Cantallops & Salvi, 2014). On the Internet, not
181 only can firms make relationships with their customers, but also the customers can share their
182 opinions, ideas, experiences, and information with a vast community of other customers
183 (Dellarocas, 2003). Litvin et al. (2008) define e-WOM as “all informal communications directed
184 at consumers through Internet-based technology related to the usage or characteristics of
185 particular goods and services, or their sellers”(p.459). Rosario et al. (2020) stated that there is no
186 unified definition of e-WOM in the literature. It is referred to as concepts such as user generated
187 content, online reviews, buzz, consumer-to-consumer knowledge sharing (Rosario et al., 2020),
188 online recommendations, or online opinions (Cantallops & Salvi, 2014). For example, some
189 authors had introduced online consumer reviews and ratings as e-WOM forms (Filieri, 2015;
190 Gretzel & Yoo, 2008). The definition’s variety depends on the way that e-WOM is mentioned,
191 such as platforms, activities, or data collection methods (Rosario et al., 2020). In connection with
192 understanding the e-WOM mechanism, academics have tried to recognize the antecedents and
193 consequences of e-WOM. Investigating recent systematic reviews or bibliometric analysis
194 studies reveals the main themes in this scope. Table 1 demonstrates the recently published
195 articles with details.

196 **[Insert Table 1 here]**

197 **3. Methodology**

198 A bibliometric review is conducted to answer the research questions. The bibliometric
199 analysis evaluates extensions in the knowledge of a given subject by using mathematical, and
200 statistical ways (Akbari et al., 2021) and by examining an entire set of research in a specific area
201 from a quantitative and qualitative perspective (Kumar et al., 2020). In particular, through its
202 deep approach to prior literature, the bibliometric research method authorizes scholars to get

203 insights into the research field (Foroudi et al., 2021). However, the bibliometric review has
204 preferable advantages to perform this study. First, according to scholars (Daim et al., 2006;
205 Ruggeri et al., 2019; Yin et al., 2020), it avoids ignoring valuable content and enables the
206 analysis of a large body of literature. Also, mapping the scope and structure of the domain by
207 network analysis of previous works, recognizing the most credible research, and detecting key
208 research clusters in a more precise and objective manner is considerable (Bouyssou & Marchant,
209 2011; Fahimnia et al., 2015). Moreover, due to the time-specified nature of papers, bibliometric
210 analysis can reveal conceptual evolution through tracking the interactive relationships between
211 subjects in sequential time slices (Merigó et al., 2018; Yin et al., 2020). Maseda et al. (2021)
212 claimed that science mapping procedures are one of the key pivots of the literature review,
213 Therefore, in this study, bibliometric analysis is conducted to explore all aspects that were
214 previously identified, to indicate the related publications and existing trends, as well as to
215 discover new directions for future research. The process of the bibliometric review that will
216 guide this study will be discussed in the next section.

217 **3.1. Review Questions**

218 The literature review was carried out through a defined research question (Christofi et al.,
219 2019), and the search strategy was determined to identify and extract relevant articles (Leonidou
220 et al., 2020; Sengers et al., 2019). Based on the discussions mentioned in the introduction, which
221 include: a) the importance of the topic, b) rapid changes in the business environment, c) rapid
222 technology growth, d) neglect of some important aspects of e-WOM in previous studies, and e)
223 the need for a comprehensive review of the topic, the questions of the present study were posed
224 as follows: “What are the factors that affect e-WOM? How do technologies affect e-WOM?
225 What are the consequences of e-WOM? And what will be the future of e-WOM?”

226 **3.2. Data Source and the Search Strategy**

227 For the identification of proper sources, five criteria were considered for this stage in the
228 following order based on Lim et al. (2021): (1) search engine, (2) search period, (3) search
229 keyword, (4) document type, and (5) source quality and relevance. First, in terms of the search
230 engine, bibliographical data in this study were collected from the Web of Science Core

231 Collection, which is considered one of the most comprehensive databases for scientometrics
232 studies and has been used across a wide range of such studies (Akbari et al., 2020; Ruggeri et al.,
233 2019; Sánchez-Pérez et al., 2020; Zhu et al., 2020). It also encompasses characteristically the
234 most outstanding articles (Thomas & Tee, 2021). Furthermore, Lunn & Horrach (2020) found
235 the Web of Science (WoS) as the most influential database among scholars. Second, in terms of
236 the search period, the timeframe was set from 2003 to April 30, 2021, to ensure that all relevant
237 and novel papers had the opportunity to be covered in this systematic review. Third, choosing a
238 research query started with a screening of the fundamental papers about “e*-WOM”, or “e*
239 WOM”, or “electronic word of mouth”, or “e-word of mouth”, or “electronic-WOM”, or “online
240 word of mouth”, or “digital WOM”, or “digital-word of mouth”, or “online-WOM”. Therefore,
241 the authors searched for resources with the above-mentioned keywords in the title, abstracts, and
242 keywords. By searching these keywords in the topic section, 1695 records were found.

243 Next and in the fourth stage, in terms of source type, the review considers only articles
244 published in English language journals. Lim et al. (2021) mention that other document types,
245 such as books and book chapters, conference papers, industry reports, and working papers rarely
246 contribute to scholarly development. After applying the filter of “Article”, the number of records
247 was 1471 and after using the “English language” filter, the number of articles reached 1442. The
248 most important WoS categories retrieved for these articles that cover more than 10 articles are as
249 follows: Business (613), Hospitality Leisure Sport Tourism (263), Management (269),
250 Communication (94), Psychology Multidisciplinary (57), Operations Research Management
251 Science (48), Psychology Experimental (44), Economics (42), Social Science Interdisciplinary
252 (17), Psychology Applied (15), Psychology Social (14), and Sociology (13).

253 In the end, in terms of source quality and relevance, the review considers trilateral criteria,
254 whereby articles are deemed to be “high quality” and “relevant” if they are published in journals
255 that are: (1) indexed and (2) ranked “4*” or “4” or “3” or “2” (3) in the Association of Business
256 Schools (ABS) journal ranking list. We chose ABS Journal Rankings because it provides an
257 extensive interdisciplinary list that is verified based on peer reviews, consensus, and citations,
258 which in turn provides a valid guide to verify source quality and relevance (Talaoui &
259 Kohtamäki, 2020). This high-quality standard reduced our sources to 468 articles from 39

260 journals. More details related to the list of these journals and their rank have been illustrated in
261 Table 2.

262 **[Insert Table 2 here]**

263 **3.3. Analytical Methods**

264 In this study, we evaluated 32,225 citations (1097 in 2003-2011; 7902 in 2012-2016; and
265 23,226 in 2017-2021) from 468 e-WOM-related articles (68 in 2003-2011; 142 in 2012-2016;
266 and 258 in 2017-2021) (see Figure 1). As illustrated in Figure 1, we split the data into three
267 distinct periods based on breakpoints to provide a longitudinal outlook of the literature and
268 ensure enough depth in our study. This technique has also been used in previous research
269 (Chabowski et al., 2011; Samiee & Chabowski, 2012). Figure 1 illustrates those total citations
270 have increased consistently per year. Furthermore, the average citation per item was 68.86 in the
271 period. The average citation per item is used as an indicator of research quality per published
272 item (Groneberg-Kloft et al., 2009). Based on Chabowski et al. (2011), the considerable growth
273 in this index (16.13 in 2003-2011; 55.64 in 2012-2016; and 90.02 in 2017-2021) shows that
274 scholars' interest in e-WOM has grown a lot and it is helpful to study these three periods
275 separately.

276 **[Insert Figure 1 here]**

277 After having gathered the documents and determined the research path in three periods, we
278 used citation frequency to determine the highly cited articles. Considering other research studies
279 (Foroudi et al., 2021; Samiee & Chabowski, 2012) and in an attempt to recognize the intellectual
280 structure of e-WOM, the most widely referenced publications are considered the most influential
281 in e-WOM. This work helps us to develop a co-citation matrix for further analysis of this
282 research, namely MDS and HCA. Not only is co-citation the greatest broadly used technique for
283 citation-based analysis (Maseda et al., 2021), but also usage of MDS and HCA simultaneously
284 increases methodological rigor and reduces systematic bias (Chabowski et al., 2011). In the
285 following sections, we offer a detailed overview of these three techniques that we used in this
286 study.

287 **3.3.1 Citation analysis (CA)**

288 Basic bibliometric studies use citation analysis of a study field. Depending on the selected
289 unit of analysis, diverse aspects of a research arena can be analyzed. Citation analysis allows
290 scholars to comprehend the level of activity in a specific field and the appropriate journals,
291 disclose the research performance of researchers, as well as identify new guidelines for future
292 study (Chabowski et al., 2013; 2018; Ferreira et al., 2016). The most common citation analysis
293 units include documents, authors, journals, institutions, cited references, and countries. This
294 analysis is based on the assumption that the authors cite publications that they consider
295 significant (Dzikowski, 2018). Thus, citations are a measure of effectiveness (Van Raan, 2003).

296 **3.3.2 Co-citation analysis (CCA)** – CCA was used to find the subdomains of e-WOM. After
297 gathering papers from the WoS, the data was moved to Bibexcel to run a complete structure used
298 for CCA. Using Bibexcel software, 30 highly cited articles for each of the three periods 2003-
299 2011; 2012-2016; 2017-2021 were selected and a co-citation matrix, MDS, was mapped for
300 additional analysis. MDS lets academics organize the academic structure of the study field
301 precisely. Similarly, the co-citation matrix is the basis for MDS analysis and reflects the
302 influences among documents in a specified field (Chabowski, 2017; Zha et al., 2020; 2021). The
303 current study uses MDS as an inclusive analysis to assess citation data and explicitly current
304 bibliometric data (Chabowski, 2017; Foroudi et al., 2020).

305

306 **3.3.3 Multi-Dimensional Scaling (MDS)**

307 MDS is a method that helps academics to gain quantitative estimations of “sameness”
308 amongst groups of objects. Generally, MDS points to a set of statistical techniques which are
309 presented as a “map” and applied for decreasing the complexity of a data set, allowing the visual
310 understanding of the fundamental structures of relationships (Akarsu et al., 2020; Chabowski et
311 al., 2013; Zha et al., 2020; 2021). MDS is a general technique to plot a limited metric space in a
312 low Euclidean space in a way that keeps the pair of distances well (Adams et al., 2020). This
313 analysis uses co-citation value as a pointer of familiarity amongst highly cited publications. Co-
314 citation data as relational data let scholars empirically determine and figure out the social
315 network attributes of an intellectual structure (Chabowski et al., 2011). MDS presents the

316 harmonies and differences among papers. Here, IBM SPSS for Windows v26 was used to
317 perform the analysis.

318 **3.3.4 Hierarchal Cluster Analysis (HCA)**

319 To augment the accuracy of the research, Hierarchal Cluster Analysis (HCA) was applied.
320 HCA performs as a quantitative method for the classification of the subgroups and scientific
321 currents under review according to the similarity of the items (Akbari et al., 2021; Foroudi et al.,
322 2020). The outcome of the HCA is a “dendrogram” which presents both the clusters and their
323 variables and also how they relate (Janssens, 2007). Applying IBM SPSS for Windows v26,
324 *Ward’s method* was used to determine clusters in HCA for more explainable consequences (Yari
325 et al., 2020). It repeats combining the neighboring pair of clusters and adjoining their likeness so
326 long as the entire data is qualified to a single cluster. By categorizing similar items to classify
327 alike characteristics, cluster analysis has broad usage (Vijith & Dodge-Wan, 2020). In this study,
328 HCA was adopted since it works on any item in any cluster. In the current study, by the
329 application of MDS and HCA simultaneously, and using interval co-citation data rather than
330 another form of data that has significant informant bias (Burt, 1980), we reduce systematic bias
331 and increase methodological rigor. Figure 2 presents the research design for this study:

332 **[Insert Figure 2 here]**

333 **4. Results**

334 This section is divided into descriptive and thematic analyses to answer the questions and
335 achieve the research objectives. The first part uses total citations (TC) as a unit of measurement
336 to identify the most influential articles (Merigó et al., 2015). The second part is dedicated to the
337 study of emerging themes and their analysis, which includes two analyses of MDS and HCA.

338 **4.1. Discussion of descriptive analysis**

339 In this section, citations have been used to identify influential articles. This descriptive
340 analysis was performed in line with similar studies (Baima et al., 2020; Christofi et al., 2017;
341 Jain et al., 2022; Leonidou et al., 2020), and data were retrieved from WoS, a leading citation

342 database. Table 3 provides an overview of the characteristics of the ten most cited articles. The
343 article “Electronic word-of-mouth in hospitality and tourism management” (Litvin et al., 2008) is
344 the most cited in the collection, with 1255 citations. Kozinets et al. (2010) are the authors of the
345 second most-cited document “Networked narratives: Understanding word-of-mouth marketing in
346 online communities”, accounting for 846 citations. The third most cited paper (Park et al., 2007),
347 “The effect of online consumer reviews on consumer purchasing intention: The moderating role
348 of involvement”, has 834 citations.

349 **[Insert Table 3 here]**

350 **4.2. Discussion of thematic analysis**

351 The thematic analysis seeks to reveal emerging themes in research questions through the
352 analysis of qualitative data (Braun & Clarke, 2012). This analysis is a systematic process and is
353 created by a careful reading of articles (Jain et al., 2022). In this section, we explore MDS and
354 HCA results and whether they associate with the co-citation analysis for a single period
355 separately. It helps us to conduct research into the longitudinal foundation. This evaluation
356 displays the complementary character of applying MDS and HCA together in one bibliometric
357 study, as the accuracy of MDS permits academics to differentiate between research groups and
358 their main equals to demonstrate the topics capturing extra focused consideration. For the time
359 being, HCA offers concise generalizations based on research potentials not easily seen in MDS.
360 Hence, the concurrent comparison of the two methods discloses a well-versed viewpoint for
361 scholars not conceivable with a single method.

362 First, we point to the essence of e-WOM throughout 2003-2011 in Figures 3 and 4. Second,
363 the outcomes of 2012-2016 are presented in Figures 5 and 6. Finally, as mentioned in Figures 7
364 and 8, we extend our findings for 2017-2021. Lastly, a comparative summary of the MDS and
365 HCA outcomes analyses the significant likenesses and notable dissimilarities between both
366 methods. This delivers an extensive foundation on which to expand future research opportunities
367 in the following discussion section.

368 ***4.2.1. Intellectual structure of e-WOM (2003-2011)***

369 An evaluation of Figures 3 and 4 shows thirteen groups in the MDS and five clusters in the
370 HCA, which highlight three common research topics from 2003 to 2011. First, research related
371 to dissatisfied consumers and consumption experiences (Cluster 1 and Group 11) provides an
372 identical understanding of its importance to WOM research. Furthermore, the HCA and MDS
373 results during this early period examined the strength of weak ties and the role of market maven
374 (Cluster 4 and Group 1) confirming the importance of considering WOM effects. The second
375 topic involves the movement from WOM to e-WOM. However, the HCA approves the overall
376 importance of WOM and e-WOM that causes exchange in customer value (Cluster 2), but the
377 exact details of this topic are noteworthy in the MDS results, which have three themes: (1)
378 Different roles in WOM (Group 2) and WOM impacts on product evaluations (Group 4), (2)
379 Impacts of WOM/e-WOM on purchase decisions (Group 3), WOM vs e-WOM (Group 6), the
380 effect of WOM/e-WOM on sales (Group 8), and WOM/e-WOM impacts on consumer attitude
381 (Group 13), (3), e-WOM building blocks (Group 5), e-WOM and online conversation (Group 9),
382 and e-WOM effect on online retailing (Group 12). Finally, three interrelated research groups and
383 two clusters complete the third topic of this section: the outstanding role of e-WOM in the
384 recommendation of intangible products, which are difficult to evaluate before their consumption.
385 The MDS map displays a study clique emphasizing the important role of e-WOM in Amazon for
386 sales of books (Group 7) and a related research group focusing on e-WOM for movie
387 recommendations (Group 10). These results are supported by the importance of e-WOM in the
388 tourism and hospitality industry (Cluster 3) in the HCA. In addition, there is one cluster in the
389 HCA results which does not exist in the MDS, namely, resonance marketing (Cluster 5).

390 **[Insert Figure 3 here]**

391 **[Insert Figure 4 here]**

392 ***4.2.2. Intellectual structure of e-WOM (2012-2016)***

393 The evaluation of Figures 5 and 6 shows eleven groups in MDS and four clusters in HCA,
394 highlighting five research topics from 2012 to 2016. First, the MDS analysis (Groups 1, 6, 7, and
395 8) is consistent with the HCA analysis (Cluster 3) because both indicate that user statistics and
396 opinions online on websites affect the attitude and intention of consumers to buy the desired

397 product. Second, consumers are more interested in Internet-based feedback mechanisms than
398 marketers' information (Cluster 2), which results in the popularity of this type of marketing on
399 consumers' intent to buy, sellers' revenue and performance, and increased sales (Cluster 4 in
400 HCA and Groups 3, 4, 5, 6, 7, and 8 in MDS). The third is the issue of trust and confidence in the
401 accuracy of positive and negative comments sent by anonymous individuals, which can be seen
402 in both MDS and HCA analysis (Cluster 1 in HCA and Groups 10 and 11 in MDS). The fourth
403 and fifth issues are important issues that were mentioned in the MDS analysis studies but were
404 not mentioned in the HCA. One is the discussion of the effectiveness of the identity of the
405 commenters and the effect of the information provided by them on the sales and growth of
406 products (Group 2) and the other is the understanding of the motivations of commentators about
407 the product (Group 9).

408 **[Insert Figure 5 here]**

409 **[Insert Figure 6 here]**

410 ***4.2.3. Intellectual structure of e-WOM (2017-2021)***

411 As presented in Figures 7 and 8, three common research topics have been impressing e-WOM
412 studies from 2017 to 2021. First, seven linked groups were specified in the MDS outcomes
413 which entirely highlighted the e-WOM process, which has two themes: (1) e-WOM black box
414 (Group 1), connected with e-WOM practices at Amazon.com (Group 4), also motivations of e-
415 WOM (Group 5) as well as social communication (Group 6) and e-WOM persuasion impacts on
416 judgment (Group 7); (2) e-WOM characteristic impacts on sales (Group 2), related with the role
417 of product in e-WOM (Group 3). In consequence, the research topic in the HCA outcomes
418 designates one cluster regarding the e-WOM black box (Cluster 7), e-WOM effects on consumer
419 judgment (Cluster 2), social communications (Cluster 3), and effects of social media (Cluster 4)
420 connected with theme 1 in the MDS. From this, we can elicit that the mechanism of e-WOM has
421 four sides, which consider its entity, motivations, e-WOM impacts, and contexts. The second
422 topic in 2017-2021 describes consumer behavior in the hotel industry (Group 8) and the
423 challenges and opportunities of e-WOM in tourism (Group 9). e-WOM in the hotel industry
424 (Cluster 5) confirms the importance of e-WOM in the tourism and hotel industry, but the precise

425 attributes of the process exist in the MDS. The next comparative detections through 2017-2021
426 accentuate the markedly analogous findings between MDS and HCA. In this period, the next
427 four interrelated study cliques appear in the MDS, and the results represent e-WOM impacts on
428 consumer adoption (Group 10), dual-process theory (Group 11), e-WOM structure (Group 12),
429 and e-WOM building blocks (Group 13). This topic is supported by one cluster demonstrating e-
430 WOM determinants' effects on consumer behavior (Cluster 1) by way of a composed notion. In
431 addition, there is one cluster in the HCA results which does not exist in the MDS: business
432 models and e-WOM (Cluster 6).

433 **[Insert Figure 7 here]**

434 **[Insert Figure 8 here]**

435 In summary, at the end of this section, by reviewing the three periods, the main topics and areas
436 of interest to researchers are identified. In addition, one of the main tasks of bibliometrics is to
437 extract the main variables in a scientific field (Lim et al., 2021). In this article, by examining
438 previous documents, many of these variables have been identified and shown in the form of
439 antecedents and consequences of the e-WOM (See Table 4).

440 **[Insert Table 4 here]**

441 **5. Discussion**

442 The discussion has three sections. First, we consider the foundations of e-WOM by analyzing the
443 visualized aspects, MDS outputs, and HCA outcomes illustrated in the previous section. Overall,
444 these three evaluations offer the underpinnings for future research topics. The second part
445 explains the relationship between previous literature and future research scope. Consequently,
446 the third part gives a general summary of developing the topic of e-WOM in a research area.
447 This is completed by presenting the e-WOM-specific research typology and formerly connecting
448 existing research to forthcoming research opportunities.

449 **5.1. The Past and Present of e-WOM**

450 In this section, we detail three periods of research areas that are derived from the above
451 section. e-WOM might be advancing in completely new areas, which have not yet been
452 discovered. Such expansions in research may not be meaningfully contingent on the preceding e-
453 WOM literature. Moreover, research theme proposals desire to mature the scopes in which
454 academics are presently paying attention, instead of working as substitutes. Therefore, MDS and
455 HCA results can help to recognize future research potential.

456 The expansion of e-WOM investigation by the MDS outcomes as shown in Figure 9 is
457 obtainable to offer specific visions into the development of its theoretical foundations over time.
458 Also, as presented in Figure 10, these outcomes with a longitudinal analysis based on the
459 totalized HCA results were summarized. With the focus of these two figures, future trends can be
460 predicted.

461 **[Insert Figure 9 here]**

462 **[Insert Figure 10 here]**

463 According to the co-citation map outcomes from 2003 to 2011, the progress starts with e-
464 WOM evolution (Bickart & Schindler, 2001; Dellarocas, 2003; Hennig-Thurau et al., 2004)
465 which emphasizes the e-WOM mechanism (Bickart & Schindle, 2001; Gruen et al., 2006).
466 Inspiring the framework of Christofi et al. (2021), Zha et al. (2022), Foroudi et al. (2020), and
467 Lim et al. (2021), any mechanism has antecedents, decisions, and consequences. The same thing
468 applies to e-WOM and the mechanism encompasses those three main elements. From 2012 to
469 2016, the e-WOM channel (Bickart & Schindler, 2001; Dellarocas, 2003; Park et al., 2007) has a
470 clear presentation that is related to social media in 2017-2021 (Cheung & Thadani, 2012;
471 Chevalier & Mayzlin, 2006b; Hennig-Thurau et al., 2004; Kaplan & Haenlein, 2010, King et al.,
472 2014; Podsakoff et al., 2003). It indicates the significant role of social media in the e-WOM
473 process. On the other hand, as is obvious in the investigation of this field's intellectual structure
474 growth, three topics are integral to e-WOM and provide a basis for future research opportunities:
475 "consumer behavior" (Berger, 2014; Cantalops & Salvi, 2014; Cheung & Thadani, 2012; Chu &
476 Kim, 2011; Hennig-Thurau et al., 2004; Park & Lee, 2008), "e-WOM and its impact on sales"
477 (Chevalier & Mayzlin, 2006; Dellarocas et al., 2007; Godes & Mayzlin, 2004; Li & Hitt, 2008;

478 Liu, 2006), and the “Hotel and Tourism industry” (Gretzel & Yoo, 2008; Litvin et al., 2008;
479 Sparks & Browning, 2011; Vermeulen & Seegers, 2009; Ye et al., 2009). A summary of these
480 dimensions, derived from the MDS and HCA, is given in Figure 11. It is worth noting that the
481 lines represent the relationships between the concepts in different periods. Material similarity
482 among periods was founded on analogous topics recognized in each research group and cluster.
483 In addition, effective inputs and outputs were identified in the e-WOM framework.

484 **[Insert Figure 11 here]**

485 **5.2. Past and future linkages**

486 Although progress in any scientific arena is logically entirely or partially reliant on previous
487 studies, e-WOM might be advancing in completely new areas, which have not yet been
488 discovered. Such expansions in research may not be meaningfully contingent on the preceding e-
489 WOM literature. In addition, bibliometrics is a databased and objective method, completely
490 dependent on the content published. Consequently, suggestions are partly taken from the nascent
491 plot provided by the data, so researchers should review the results as well as recent studies to
492 identify current research opportunities and appropriate strategies for knowledge development.
493 Our analyses of the e-WOM are revealing of this interdependency. However, among the
494 theoretical issues in a particular knowledge structure, it is concluded that such a perspective in e-
495 WOM should provide possible future guidelines for investigation. Therefore, by studying recent
496 articles (Inversini et al., 2020; Kim et al., 2022; Li et al., 2022; Mariani et al., 2022; Verma et al.,
497 2021; Verma & Yadav, 2021; Williams et al., 2020, 2022) in this field, new concepts and current
498 issues are identified, which by comparing them with the results obtained from previous studies,
499 expanding or updating some of the concepts and variables, a better understanding of the process
500 is achieved (see Figures 12, 13).

501 **[Insert Figure 12 here]**

502 **[Insert Figure 13 here]**

503 **5.3. The Future of e-WOM**

504 However, due to the advancement of technology and the emergence of new tools in the field
505 of e-WOM, it is predicted that the concepts will be changed. Using other research (Akbari et al.,
506 2021; Chabowski et al., 2011; Foroudi et al., 2020), a comprehensive framework for future
507 researchers is created by reviewing the literature on highly cited documents and recent studies.
508 According to previous studies and the investigation of changes in the environment, future trends
509 through three perspectives of consumers, firms, and technology with newly identified variables
510 can be seen in the following conceptual framework, which is shown in Figure 13.

511 For a better understanding and coherence of the results of previous literature and recent
512 studies, a conceptual framework is provided in which elements are organized in the form of
513 antecedents, consequences, moderators, and contextual and conditional variables from the three
514 mentioned perspectives. By reviewing the previous works, some of these elements have been
515 extracted from the literature of which “consumer behavior” and “sales” were the most
516 permanent. It can be said that consumer behavior and consequently sales, as the e-WOM’s
517 outcomes, will always be changing because of the dynamics and complexity of today's world and
518 must be constantly examined, so these concepts are an integral part of all marketing concepts. As
519 a result, they have a special place in our conceptual framework, but in different forms. On the
520 other hand, owing to the advent of artificial intelligence (AI) and novel socio-technological
521 trends, new tools have emerged in the e-WOM process that is redesigning the WOM-creating
522 scenery. As we have seen before, with the advent of the Internet, the structure of WOM
523 underwent changes as a result of the easier and wider distribution of content on social media or
524 other virtual spaces, and the concept of e-WOM was created; now, this structure will undergo
525 more changes due to the presence of AI. The higher processing speed of big data, greater
526 distribution of this data at wider levels, and faster and more accurate data analysis are all results
527 of AI. We anticipate that technological tools and big data will heavily influence the future of e-
528 WOM, which is why we have included the robotic-WOM (r-WOM) concept within the
529 conceptual framework. Because of all the above, consumer behavior will also change, and their
530 engagement may happen automatically. Thus, the term “*automated user engagement*” is
531 embedded in the framework to indicate. As a result of automating user engagement, sales also
532 become smarter. In addition, the role of crowd power and its impact on the e-WOM process,
533 which has received less attention in the literature, is highlighted.

534 These elements are included in six categories of antecedents (including consumer side, firm
535 side; digital marketing activities), focal concepts (including e-WOM and r-WOM), contextual
536 variables (including the core of e-WOM), moderator (including crowd power), e-WOM
537 consequences (including consumer behaviors, automated user engagement, firm outcomes, and
538 smart selling) and conditional variables (including machine learning and big data). Each is
539 described below:

540 *Consumer Side*

541 Previous studies have identified some antecedents as motivational factors in the e-WOM
542 process from the consumer perspective, such as a sense of community belonging; customer
543 satisfaction (Liu, 2006); failure and recovery; helping companies; helping other vacationers;
544 customer dissatisfaction; social identity; pre-purchase expectations (Cantalops & Salvi, 2014);
545 self-enhancement; consumer psychographics; altruism; the need for social interaction; searching;
546 evaluation efforts, risk reduction, and social leisure activity; internet experience; information
547 seeking; problem-solving (Hennig-Thurau et al., 2004; King et al., 2014; Litvin et al., 2008).

548 *Firm Side:*

549 *Digital Marketing Activities*

550 Digital marketing has become an essential section of every business. The way firms can
551 promote their propositions to customers has been changed by the growing advent of digital
552 marketing (Bala & Verma, 2018; Kaur, 2017; Krishnaprabha & Tarunika, 2020). The internet is
553 the best way for digital marketing activities to attract and engage customers (Bala & Verma,
554 2018; Kaur, 2017; Pandey et al., 2020). Digital marketing is the application of state-of-the-art
555 technologies or means to distribute cohesive, succinct, and measurable communication to make a
556 desirable relationship with customers (Pandey et al., 2020). Digital marketing activities refer to
557 the actions that empower marketers to compile the right product and the right consumers at the
558 right time among the digital channels (Chaffey & Smith, 2013; Fuaddah et al., 2022; Mok Kim
559 Man & Yang, 2022).

560 Social media marketing, email marketing, content marketing, search engine optimization
561 (Kaur, 2017), social media optimization, and social media influencer marketing (Bala & Verma,
562 2018; Vrontis et al., 2021) are the most related digital marketing activities. This article has three
563 components: social media marketing, digital content marketing, and personalization which can
564 affect e-WOM.

565 Social media is defined as Internet-based platforms that purpose to allow audience
566 communications such as generating and distributing information and making conversations (Ali
567 et al., 2022; Chaudhri et al., 2021; Dunu & Uzochukwu, 2015; León et al., 2021; Park et al.,
568 2020). Through social media, which empowers two-way communications (Chun & Lee, 2022;
569 Golan et al., 2021; Jiang & Park, 2022; Li et al., 2021; Zollo et al., 2020), firms are searching for
570 new ways to make relationships with their customers to achieve benefits such as loyalty, values,
571 etc (Agarwal et al., 2022; Belitski & Rejeb, 2022; Krishnaprabha & Tarunika, 2020), so social
572 media marketing can enable firms to take many advantages from digital channels by enabling
573 conversations, networking and community building (Gonçalves et al., 2022; Krishnaprabha &
574 Tarunika, 2020; Nemati & Weber, 2022). It refers to a tool of online interactions through which
575 people distribute and share information with others regardless of their locations (Hanaysha,
576 2017; Santos et al., 2022). On the other hand, academics have understood that impressive social
577 media strategies require appropriate content for customers (Czarnecka et al., 2022; Dash, 2022;
578 Pandey et al., 2020; Recuero-Virto & Valilla-Arróspide, 2022). The effect of content on
579 consumer behavior, such as engagement, brand attachment, etc., is confirmed by Dash (2022),
580 Hollebeek & Macky (2019), and Vrontis et al. (2021) at various levels and situations (Mathew &
581 Soliman, 2021). Therefore, digital content marketing is defined as generating and disseminating
582 relevant, compelling, and timely content to engage customers at a suitable point in their purchase
583 processes, such that it enables them to turn to a business building outcome (Holliman & Rowley,
584 2014; Lopes et al., 2022; Mathew & Soliman, 2021; Santos et al., 2022; Wang et al., 2019).
585 Alternatively, with power shifting from companies to customers, the upcoming opportunities of
586 digital marketing stand in personalization (Krishnaprabha & Tarunika, 2020; Liu & Mattila,
587 2017; Ravindar et al., 2022; Schweidel et al., 2022), because the improvement in customers'
588 total commitment to a brand or firm by personalization has a significant role in firms'
589 performance (Chatterjee et al., 2022; Kalaignanam et al., 2018; Liu et al., 2019). Personalization

590 is significant for firms to concentrate on the customer experience for improving digital marketing
591 attempts by being confident that the customers feel that there is an emotional attachment between
592 advertisements, social media posts, content, or campaigns with them (Anshari et al., 2019; Kim,
593 2002; Loebbecke et al., 2022). Personalization is totally related to a process in which content will
594 fit with the recognized wishes or needs of a specific customer (Bedi et al., 2022; Garaus et al.,
595 2021; Tiihonen & Felfernig, 2017). All these activities can prompt the e-WOM process.

596 *e-WOM*

597 e-WOM occurs in the form of a comment, like, rating, video, review, tweet, image, and blog
598 posts that customers or non-customers feed back about a product or service (Baker et al., 2020;
599 Donthu et al., 2021; Laor, 2022). Advances in technology and social media have facilitated the
600 rapid development of e-WOM among Internet users worldwide to spread information without
601 considering place and time (Duh, 2021; Lee & Youn, 2009; Zhang et al., 2021). Thus, due to the
602 higher credibility of e-WOM compared to a traditional advertisement, the majority of customers
603 refer to online reviews before decision-making (Donthu et al., 2021; Duh, 2021; Thaothampitak
604 & Wongsuwatt, 2022). e-WOM is defined as any helpful or adverse report made by current or
605 earlier users on the Internet regarding a brand, a product, or a service (Cheung et al., 2008;
606 Hennig-Thurau et al., 2004; Leung et al., 2013; Shabbirhusain & Varshney, 2022; Srivastava &
607 Sivaramakrishnan, 2020).

608 Concerning the results of former studies, e-WOM contents result from an individual's
609 motivation toward a phenomenon or stimulus that would be positive or negative (Duong & Liaw,
610 2022; Gvili & Levy, 2018; Roy et al., 2022). According to Fine et al. (2017), consumption
611 experiences (positive or negative) affect e-WOM. Also, the significance of self-enhancement,
612 economic incentives, social benefits, and altruism on the customers' intentions to post positive e-
613 WOM is highlighted in prior studies; conversely, bad experiences or emotions, such as
614 dissatisfaction, anger, vengeance, and frustration, lead to negative e-WOM to warn others (Roy
615 et al., 2022; Sohaib et al., 2019; Tatari et al., 2022). However, it must be considered that negative
616 e-WOM travels much faster than positive e-WOM (Donthu et al., 2021).

617 *r-WOM*

618 Because of increased human-machine interactions, development in robotics and AI has
619 permitted machines to perform increasingly multifaceted functions (Ashfaq et al., 2020; Borghi
620 & Mariani, 2021; Kaasinen et al., 2022). Robots can emulate human behavior attentively and
621 perform the same tasks as they do (Krakowski et al., 2022; Vrontis et al., 2021). Because of this,
622 even though individuals frequently collect information from others, the advent of “big data”
623 results in the accessibility and efficacy of a novel source of information known as algorithms
624 (Logg et al., 2019; Mendes & Mattiuzzo, 2022). These AI algorithms, which can separately
625 create language outcomes and offer future opportunities for new communications shaped by non-
626 human AI tools, can aid client decision-making (Maedche et al., 2019; Mendes & Mattiuzzo,
627 2022; Williams et al., 2020). We call these communications “r-WOM”. In this article, r-WOM is
628 referred to as the eminent source of information (Williams et al., 2020) provided by AI-based
629 recommendations (Longoni & Cian, 2020) that can be disseminated by virtual assistant platforms
630 like chatbots (Bustard et al., 2019). After sharing content, r-WOM can obtain extra context-based
631 information from the clients’ earlier communications such as patterns, sensor data from private
632 devices, and contact/support relationships, which personalizes content to a superior scale than e-
633 WOM (Moshontz et al., 2021; Zhang et al., 2021). The difference between r-WOM and e-
634 WOM/WOM is that in the former, the content is created and distributed by virtual assistants,
635 machines, or robots, but in the latter two humans do everything. The next difference is in the
636 amount of distributed content, which in WOM is limited to a few people, in e-WOM is
637 transferred from one source to many individuals, but in r-WOM is conveyed from many sources
638 to many individuals (Williams et al., 2020). Longoni & Cian (2020) stated that the r-WOM
639 impact emerges from consumers’ different perceptions of AI and human recommenders in
640 evaluating feature value and creating recommendations.

641 Chatbots are a good example of these robotic algorithms. “A chatbot is a machine
642 conversation system [that] interacts with human users via natural conversational language”
643 (Ashfaq et al., 2020, p.4). Chatbots are mostly text-based conversational mediators, which make
644 dialogs with users. These are robotic programs applied to interact with humans through a text
645 conversation. Chatbots apply natural language to communicate with users and respond to their
646 inquiries functionally. Companies use such virtual mediators as representatives to create
647 customer satisfaction and offer entertaining/informational value (Ashfaq et al., 2020; Chen et al.,

648 2022; Lim et al., 2022). The main feature of a chatbot is to enable information interchange
649 among humans and robots which varies from the constrained dialog (responding just by selecting
650 predetermined lines) to the unconstrained dialog (responding freely by inputting natural language
651 lines themselves) (Gupta & Chen, 2022; Wan, 2022; Zhang et al., 2020). Personalized mediation
652 according to comprehending human characteristics and behaviors, formulating strategies based
653 on users' cognitive and emotional moods, and persuading users to communicate are the main
654 functions of chatbots (Chen et al., 2022; Zhang et al., 2021, 2020). Using chatbots to carry out
655 the above-mentioned functions is one of the talented scopes to construct lucrative and practical
656 user engagement. In short, instead of spending time with financial advisers, agencies,
657 matchmakers, etc., this r-WOM can be used for involvement, engagement, and final decision-
658 making (Siri, LinkedIn, Netflix, etc.).

659 In the literature, some factors have been introduced as contextual variables as follows:
660 competition, business model, service quality, market characteristics, platform (Cheung &
661 Thadani, 2012), and some industries such as Tourism (Gretzel & Yoo, 2008), Hotels (Sparks &
662 Browning, 2011), Film (Liu, 2006), and Amazon (Chevalier & Mayzlin, 2006; Li & Hitt, 2008).

663 *Core of e-WOM*

664 Many customers decide whether or not to consume a service and purchase a product based on
665 other consumers' viewpoints and feedback (Czarnecka et al., 2022; Güneş & Toğay, 2022;
666 Jiménez-Castillo & Sánchez-Fernández, 2019). The core of e-WOM communication generally is
667 about a brand, product, service, or company that affects other customers' judgment (Haverila et
668 al., 2022; Javed & Awan, 2022; Jeong & Koo, 2015). In reality, any statement made by
669 preceding, actual, and potential consumers about an experience of a product, service, or firm
670 builds the customer's interaction (Haverila et al., 2022; Hennig-Thurau et al., 2004; Seo et al.,
671 2020). Therefore, it can be claimed that user-generated e-WOM has now turned into a powerful
672 and popular tool to explain neutral, positive, negative, and/or objective and subjective
673 information (Filieri et al., 2018; Garg & Pandey, 2020; Lee & Youn, 2009). In addition, other
674 studies have supported e-WOM as a vital prerequisite to gaining comprehensive and credible
675 information about companies, products, or services that is usually not provided by the companies
676 on public forums (Chen et al., 2020; Verma & Dewani, 2021; Yusuf & Busalim, 2018). With the

677 global advancement of the internet and social media, it is easier for customers with diverse
678 beliefs to review opinions before decision-making about a brand, firm, or product (Donthu et al.,
679 2021).

680 *Crowd Power*

681 The recent developments in technology have led to more online participation from people,
682 with companies gaining more opportunities to get the crowd more connected and engaged in
683 company-related activities (Djelassi & Decoopman, 2013; Saad & Yaacob, 2021; Naeem &
684 Ozuem, 2021). These technological developments, alongside expanded collaborative tools such
685 as platforms and social networks, have accelerated the usage of crowd power (Al-Omoush et al.,
686 2021; Mladenow et al., 2014). Looking at this evolution, today the crowd is the major promoter
687 of brands, and they use their influence to promote or discredit a firm in a matter of moments
688 (Martínez-Navalón et al., 2021; Steils et al., 2021; Vásquez-Ordóñez et al., 2022). Therefore, by
689 removing the organization's boundaries and changing the value creation process from centralized
690 to decentralized, and from closed to open, many companies have been starting to utilize the
691 crowd potential in their business challenges (Alharbi et al., 2022; Moslehi et al., 2022; Yin et al.,
692 2020). Prior scholars have identified influential factors that motivate the crowd. For example,
693 Mahavarpour et al. (2021) stated the outstanding role of user-generated content as a case of e-
694 WOM on user engagement. Moreover, Lacan & Desmet (2017) emphasized the role of
695 philanthropic, economic, networking, and social utility motivations on crowd campaigns'
696 success with the foundation of the crowd's shared values. Crowd power is widely accepted as a
697 critical factor in building marketing strategies and communications to attract favorable e-
698 WOM outcomes (Alwash et al., 2021; Lu et al., 2022).

699 *Consumer Behaviors*

700 According to the model process, in which each phenomenon has outputs, e-WOM outcomes
701 are classified from two perspectives: the consumer point of view and the firm point of view. e-
702 WOM outcomes observed in the literature from the consumer perspective include: purchase
703 decision making (Bansal & Voyer, 2000; Gretzel & Yoo, 2008; Hennig-Thurau & Walsh, 2003);
704 consumer satisfaction (Cantallops & Salvi, 2014); consumer judgment (Lee & Youn, 2009;

705 Podsakoff et al., 2003); consumer adoption; consumer trust; consumer experiences; brand
706 awareness; loyalty, product acceptance, risk reduction; brand comparison; perceived
707 trustworthiness/credibility; intention (Litvin et al., 2008; Park & Lee, 2008; Cantallops & Salvi,
708 2014); learning (King et al., 2014), and consumer consideration (Vermeulen & Seegers, 2009).

709 *Automated User Engagement*

710 Technology-based tools can efficiently advance consumer behaviors (Bae et al., 2022;
711 Krishnaprabha & Tarunika, 2020; Olan et al., 2022). Since user engagement, which mirrors
712 customer connections with focal themes like brands, offerings, or firms, has obtained many
713 managers' attention, automated interactions can help massively to engage users (Akinsola et al.,
714 2022; Hollebeek et al., 2021). Since engagement is defined as “*a state, which occurs by virtue of*
715 *interactive customer experiences with a focal agent/object*” (Brodie et al., 2011, p.252), it can be
716 concluded that automated user engagement is referred to as “*users' degree of engagement with a*
717 *brand, product or firm automatically via technology-based tools*”. Sundar et al. (2016) stated
718 that users sensed a superior feeling of conversations in the live chat conditions with chatbots
719 compared with the circumstances containing a lower degree of interactions. Also, the presence of
720 a chat agent increases the perceived interactivity of the site. So understanding the determinants
721 of engagement can help design interventions that optimize engagement (Marikyan et al., 2022;
722 Nelson et al., 2016; Rhim et al., 2022). Huang & Rust (2021) propose a framework that suggests
723 clues on how to apply various AI-based algorithms to engage users grounded on the essence of
724 the service task. They claim that mechanical services should be achieved typically by mechanical
725 AI (similar to robotic process automation), thinking services by thinking AI (similar to machine
726 learning/deep learning), or human intelligence, and feeling services are best aided by human
727 intelligence. Xiao & Kumar (2021) argue about the impacts of employee/customer adoption of
728 robots, which affects customer engagement directly.

729 *Firm Outcomes*

730 The outputs considered in the literature from the firm's point of view are as follows: sales
731 (Chevalier & Mayzlin, 2006; Godes & Mayzlin, 2004); customer value; firm performance;
732 quality control and new procedures; revenue management; price premium; generating loyalty;

733 online reputation comparison; customer interactions; response and recovery, focus on target
734 communication; and marketing strategies (Cantalops & Salvi, 2014).

735 *Smart Selling*

736 Given the growth of r-WOM, scholars have demonstrated how interactions and
737 algorithmically generated content have been used for sales goals, a process named “smart
738 selling”. As emphasized by Williams et al. (2020), by addressing the algorithmic WOM in the
739 sales mechanism through attacking competitors or decreasing demand, this concept itself could
740 provide thoughtful insights for sales managers. Due to the deep influence of e-WOM on
741 consumers' markets simultaneously with the parallel-path effects of r-WOM on consumer
742 engagement and purchase intentions, the markets are more competitive and smarter (Ludwig et
743 al., 2013; Mariani & Borghi, 2021). Furthermore, the findings of Williams et al. (2020) and
744 Buhalis & Sinarta (2019) reveal that customers increasingly expect real-time answers to their
745 demands. So using new technologies such as r-WOM can assist firms in enhancing their
746 competitive value, as well as encouraging the substitution of manually generated responses
747 (Buhalis & Sinarta, 2019; Foroudi et al., 2021). According to Long et al. (2021), the influence of
748 WOM on purchase and return decisions is regulated by robot reviews, as the combination of
749 robot reviews and human reviews could affect customer behaviors and emotions. As result,
750 technology assistance can affect sales smartly.

751 Reviewing the literature, it can be said that the argument quality and source credibility are
752 variables that affect the acceptance of information (Cheung et al., 2008, 2009), especially in e-
753 WOM. As a result, in our framework, along with machine learning and big data, they are
754 introduced as conditional variables.

755 *Machine Learning and Big Data*

756 Companies have to thoroughly investigate the e-WOM for figuring out the moods,
757 gratification, and needs of their customers, but this function takes a lot of time. Technological
758 disruptions such as AI and big data analytics have suggested digital alternatives for absorbing
759 and preserving the customer. Among the program-based algorithms, automating, learning, and
760 creating market intelligence are the features of AI. In other words, in the age of big data, one title

761 which has achieved attention is machine learning (Aakash & Guptas Aggarwal, 2020). To
762 explain big data, we have to mention the 5Vs as characteristics: volume, valence, velocity, value,
763 and veracity of data (Mariani, 2020). Since monitoring consumer behavior and identifying their
764 needs using big data are essential for new marketing (Kim et al., 2019), applying machine
765 learning is also vital for exploiting this amount of data. On the other hand, for identifying the
766 subjects that come out of the possibly large amounts of communications that are created by users
767 about brands, machine learning methods have exposed countless potential to make unstructured
768 data organized (Vermeer et al., 2019). Technologies such as machine learning, deep learning,
769 and natural language processing have fostered machines to exert big data (Verma et al., 2021). In
770 comparison to traditional methods of handy content analysis, machine learning methods for
771 textual data waste less time and are less labor-intensive. They also provide extra information,
772 such as semantics, structures, sequences, and context around related words (Luo & Xu, 2019).
773 As prominent parts of AI, machine learning and natural language processing can offer pertinent
774 and immediate recommendations. They are applied to engage users in discussions robotically
775 (Ashfaq et al., 2020). Machine learning algorithms based on big data have reinforced the
776 formation of AI systems that have abilities to discover and appraise the patterns in text or audio
777 autonomically (Williams et al., 2020). Moreover, AI tools can appraise communications with
778 outputs to separately assess customer engagement with content and plan upcoming outcomes
779 (Ashfaq et al., 2020). Mariani (2020) recommends that academics are progressively alert about
780 big data lines to retrieve, collect, analyze, report, and visualize these data.

781 **6. Implication**

782 This study, by drawing from a range of literature – including business, hospitality and
783 tourism, management, communication, psychology, economics, and social science – improves
784 insights into e-WOM. Furthermore, it establishes a framework that theorizes about the future
785 concepts of e-WOM. In addition, the results of this study provide actionable guidelines for
786 managers and decision-makers in better managing social communications to protect online
787 communities. In the following sections, we offer some theoretical and managerial implications.

788

789 **6.1. Theoretical Implications**

790 Concerning the theoretical side, this study facilitates a better understanding of important
791 concepts and influential factors associated with the future desires of users in the e-WOM sector.
792 First, this study highlights the position of digital marketing activities (digital content marketing,
793 personalization, and social media marketing) as triggers in the e-WOM formation process. This
794 research contributes to the belief in extant literature that social media can be used to connect
795 directly to customers (Donthu et al., 2021); also, consumer decisions would largely be influenced
796 by social media content (Sann et al., 2020), and social media proposes a multidirectional
797 communication pattern to facilitate consumer engagement in brand-related-WOM (Zhou et al.,
798 2021).

799 In addition, it is viewed as one of the few studies to represent the significance of r-WOM in
800 this scope and explore its effects on automated user engagement as a consumer behavior
801 construct. Based on Bustard et al. (2019), we explained that r-WOM can be disseminated by
802 virtual assistant platforms like chatbots. In general, it can be argued that r-WOM can create extra
803 context-based information from the clients' earlier communications such as patterns, sensor data
804 from private devices, and contact/supporter relations, which personalizes content to a more
805 superior scale than e-WOM (Williams et al., 2020). Further, although there have been many
806 previous studies investigating e-WOM in various contexts, comprising tourism and hospitality
807 (Assaker & O'Connor, 2021; Bhandari et al., 2021; Park, Hyun, & Thavisay, 2021; Ruiz-Mafe et
808 al., 2020; Cantallops et al., 2020), it is one of the first attempts to extend the literature by
809 incorporating two vital variables – r-WOM and automated user engagement – to investigate the
810 impact of marketing activities on e-WOM, ultimately consumer behavior and sales. The findings
811 highlight the importance of assessing automated user engagement in e-WOM, which mirrors
812 customer connections with focal themes like brands, offerings, or firms.

813 On the other hand, it has been observed that the usage of crowds is becoming more and more
814 popular in many fields (Robert & Romero, 2015) and this orientation has stimulated the scheme
815 of recommender systems planned to exploit the advantages of large collaborative behaviors.
816 Despite the verifiable importance of crowd power in different studies (Alwash et al., 2021;
817 Martínez-Navalón et al., 2021; Yin et al., 2020), in e-WOM literature inadequate theoretical and

818 empirical research has not yet been carried out on crowd power and its influential elements on
819 consumer evaluation. The findings of this study, by exploring influential factors including crowd
820 perception, crowd emotion, crowd experience, recommendation of crowds, credibility, expertise,
821 relationship, and trust, reinforce the literature on crowd power toward e-WOM.

822 This study has also considered the consequences of big data and machine learning. Our study
823 is one of the few to consider the role of these concepts in e-WOM. So far, no integrated studies
824 have been carried out on the role of big data, and consequently machine learning, in various
825 industries (Mariani, 2020; Stylos & Zwiendelaar, 2019; Zhao et al., 2019). Hence, our research
826 exposes a more extensive understanding than preceding research and also advances the literature
827 in the field. In addition, even though several past studies have used the meta-analysis
828 (Ismagilova et al., 2020) or bibliometric methods (Abbas et al., 2020; Muritala et al., 2020;
829 Verma & Yadav, 2021) as systematic literature reviews, not only the use of the MDS and HCA
830 methods but also the division of the years under study into three periods and highlighting
831 important concepts in each period that has been used less in research'. By linking the intellectual
832 structures and expanded dimensions in three separate periods in e-WOM literature, our study
833 provides original visions and theoretical contributions by proposing a comprehensive conceptual
834 framework.

835 **6.2. Managerial Implications**

836 Given the growth of the e-WOM topic, this study provides actionable guidelines regarding the
837 antecedents and consequences of a favorable e-WOM for digital marketing practitioners and
838 marketing managers that lead to better management of e-WOM practices. The findings of this
839 study offer managerial contributions for decision-makers and digital marketers who wish to
840 understand the complete relationship between a favorable e-WOM and the factors in its
841 antecedents (i.e., digital content marketing, personalization, social media content marketing,
842 crowd power, AI technologies, etc.) from the firm, consumer, and technology perspectives. We
843 continue this section with a discussion of the most important managerial implications that could
844 suggest future approaches for researchers and practitioners in e-WOM research.

845 At first, our study's framework indicates that the e-WOM sector's future depends on the
846 perception of digital marketing activities (digital content marketing, personalization, social
847 media content marketing) which result in user engagement or more sales as a valuable and
848 effective tool. According to this research, companies that apply the traditional methods of
849 marketing need to change to digital channels, like social media, which can deliver meaningfully
850 superior flexibility to target consumers in terms of valuable, personalized, and relevant content.
851 Firms could use social media and offer suitable brand-related content to engage their consumers
852 and strengthen their brands among e-WOM, and in addition, to take advantage of their long-term
853 brand building. They can create hedonic, functional, and social content to motivate brand-
854 consumer interactions. Furthermore, by integrating social media attempts into all organizational
855 functions such as e-commerce or sales, firms can place customers near the content that increases
856 their purchase intention. Managers and practitioners should pay attention to the product
857 characteristics in terms of the extent of consumer involvement with it (high/low involvement)
858 and produce appropriate content.

859 Second, to emphasize the synergy in digital content design, marketers and professionals
860 should not neglect crowd power and should be aware that this collective power has a special
861 effect on all digital marketing processes. The findings recommend that crowd power has great
862 potential to be used as a marketing tool to generate favorable responses in the e-WOM context.
863 Related to this topic, first and foremost, this study shows that by carefully considering crowd
864 base characteristics, such as emotions, relationships, trust, credibility, and expertise of the crowd,
865 collective recommendations that are exchanged between individuals, crowd wisdom, diversity of
866 experiences, and diversity of ideas, managers could be able to create desirable contents and
867 trigger conversations between the crowd. So, managers must continually assess the strength of
868 their crowd communities and engage them in brand-related activities. Brands that benefit from
869 strong crowd communities can leverage marketing strategies like e-WOM crowdsourcing
870 campaigns.

871 In addition, the present article will permit marketing managers to develop their promotion
872 tactics and actions, dependent on AI technologies, to aid customers in providing real-time
873 personalized recommendations that they require. Besides this, as the usage of AI capabilities,
874 machine learning, and natural language processing algorithms in marketing is increasing

875 (Mustak, Salminen, Plé, & Wirtz, 2021), and audiences are seeking ever more attention for more
876 real-time reactions from companies, r-WOM may be seen as a credible source of information for
877 consumers and users and is encouraged to be bold as an alternative for manual responses by a
878 human. Decision-makers, managers, and organizations should consider this issue well to meet
879 their audience's needs. Our framework is visionary for managers who want to conduct the
880 extraordinary technology-enabled occasions that are rising in today's marketplace.
881 Algorithmically generated content and conversations can be used in many fields such as
882 marketing, politics, etc. Politicians can use these types of content in their campaigns for
883 defeating rivals. They increase the usage of robots in a community on social media to pretend
884 superior sociability or interrupt a rival's communicational strategies (Feezell et al., 2021;
885 Howard et al., 2018; Marchal et al., 2021). Political hashtags made by robots are one form of
886 algorithmic content. Robots enable humans to administer their private information consumption,
887 advertisement usability, and discover romantic matches on social media. Also, marketers could
888 designate practical segmentation, targeting, and positioning strategies in the case of robotic
889 recommendations according to the audiences' interests and tastes

890 Lastly, given this intensifying tendency towards user engagement, integration of AI,
891 principally the presence of chatbots to intercede in the firms-customers interactions, may be
892 considered an important facilitator in accelerating the engagement process, ultimately sales
893 growth. Thus, with the robotic-systems emergence as a section of marketing, it is conceivable to
894 visualize contexts where real-time recommendations to customers will become a dominant
895 competitive advantage for the firm, organizations, managers, or marketers. We should not miss
896 the fact that a company can use both human-based interactions (e-WOM) by sales participants
897 and its customers and robot-based interactions (r-WOM). It seems that e-WOM may not be
898 replaced by r-WOM completely (Longoni & Cian, 2020); although in some cases customers may
899 resist robotic recommendations or interactions, these two are complementary. However, because
900 r-WOM may be used to deceive users in the form of fake programmed accounts as a means of
901 providing promotional materials, managers and practitioners should be able to maintain their
902 organization's social responsibility in this regard. In addition, new identity verification systems
903 are required to protect users' security and privacy. Managers, organizations, and users should
904 also be aware of algorithmic barriers that may arise during the process.

905 At the end of this section, it must be considered that our proposed framework can provide
906 managers and decision-makers with more effective e-WOM trends forecasting, thereby enabling
907 strategists of this domain to improve their digital marketing planning, especially content
908 marketing and user engagement that influence the desired outcomes of e-WOM.

909 **7. Limitation and Future Directions**

910 Like any other study, this research has some limitations that we must acknowledge for the
911 direction of future research. Christofi et al. (2021) use the term ‘tri-axial’ including theory,
912 context, and methodology to signify that future research is positioned along these axes.
913 Concerning the results of the present study, we suggest fruitful areas for further advance of
914 future e-WOM research based on the following three axes.

915 **7.1. Axis 1: Theory**

916 Some theory-related issues were examined during this study. In addition, according to
917 previous studies and the investigation of the environmental changes, we identified future trends
918 of e-WOM (see Figure 12), which provide different types of opportunities for future research
919 (Table 5). First of all, our conceptual framework remains at the stage of the theoretical model.
920 Even though theoretical grounds lead to the development of the propositions, future researchers
921 could apply empirically validating such propositions to offer more evidence to the framework.
922 For instance, in the digital marketing activities theme, future researchers can explore the
923 strategies of firms to generate and distribute personalized content on social media with its
924 influence on e-WOM. Hence, we suggest the following research proposition:

925 **Proposition 1.** Firms' strategies influence generating and distributing personalized content on
926 social media to make e-WOM.

927 Furthermore, it would be valuable to examine the role of personalization in the e-WOM
928 process or identify activities that would help firms to engage customers to empower e-WOM
929 (Mathew & Soliman, 2021). In addition, we proposed a model that focuses on the main
930 relationship between r-WOM and e-WOM. For making further contributions to the literature, the
931 following areas may suggest opportunities for future research directions, for example, from a

932 social communication perspective, how r-WOM can change the consumer's habits, activities,
933 and attitudes. Therefore, we pose the following research propositions:

934 **Proposition 2.** r-WOM positively affects consumers' habits, activities, and attitudes towards
935 products/services.

936 **Proposition 3.** There is a significant relationship between the persuasive effects of r-WOM and
937 consumer behavior.

938 Furthermore, regarding literature themes, future research should focus more on the challenges
939 of the term "trust" in r-WOM (Logg et al., 2019). Therefore, our next research proposition is
940 formulated as:

941 **Proposition 4.** Consumers' perceptions affect their willingness to "trust" r-WOM.

942 What is more, two other considerable themes in the technology perspective in our framework
943 for the future of e-WOM were big data and machine learning, as few scholars have conducted
944 research on these concepts and their effects on e-WOM (Mariani, 2020). Consequently, new
945 directions of studies may try to investigate the new methods for exploiting big data and machine
946 learning techniques in e-WOM as the following propositions:

947 **Proposition 5.** Big data is positively associated with the evolution of e-WOM.

948 **Proposition 6.** Machine learning techniques are positively associated with the evolution of e-
949 WOM.

950 According to the results of consumer behavior in the future outcomes of e-WOM, there is
951 limited research on automated brand engagements as regards the key elements and procedures to
952 increase automated user engagement in the e-WOM process (Hollebeek et al., 2021). Thus,
953 future research could further investigate either of the factors that influence automated
954 engagement in e-WOM. Furthermore, by considering the literature themes, future scholars could
955 focus more on the ways marketing could boost the logical quality of e-WOM (Verma & Dewani,
956 2021). We, therefore, propose the following research propositions:

957 **Proposition 7.** The greater the robust guidelines on the factors that boost the logic quality of
958 e-WOM, the better the performance obtained by e-WOM contents.

959 **Proposition 8.** There is a significant relationship between critical aspects of e-WOM and
960 e-WOM credibility.

961 **Proposition 9.** Consumer-related variables influence e-WOM adoption.

962 Another top issue in our framework related to the consumer perspective is crowd power.
963 Looking forward, it would be imperative to explore how the wisdom of the crowd could serve as
964 a potential factor in reinforcing e-WOM (Ghezzi et al., 2018; Jong & Lindsen, 2021). Hence, we
965 suggest the following research proposition:

966 **Proposition 10.** Appropriate marketing strategies positively affect gaining advantages from the
967 crowd power in e-WOM.

968 **Proposition 11.** Motivational factors influence the crowd to share information in the e-WOM
969 context.

970 Finally, based on the firms' perspective, another interesting research study would be smart
971 selling, which needs more comparative studies to test whether r-WOM may replace WOM/e-
972 WOM in customers' shopping behavior (Williams et al., 2020). Accordingly, we formulated our
973 final research proposition as follows:

974 **Proposition 12.** The more firms use r-WOM techniques, the higher will be a replacement for
975 WOM/e-WOM in customers' shopping behavior.

976 To complete the knowledge development process in e-WOM literature, the more commonly
977 suggested future directions in the form of research questions are given in Table 5.

978 **[Insert Table 5 here]**

979

980 **7.2. Axis 2: Context**

981 First, the majority of papers in this review focus on the film, tourism, and hotel industries, as
982 well as the Amazon platform. So, it seems that it does not reflect the diversity and condition of
983 all consumer goods industries. Thus, further research is needed to generalize the conclusions of
984 the reviewed studies to other industries. Second, theoretical findings that are tested in different
985 geographical contexts are much more robust. We encourage other researchers to empirically
986 examine our research framework in different geographical, social, institutional, and economic
987 conditions and compare the results. Third, various relationship contexts suggest different levels
988 of opportunity for research directions. Importantly, a limited number of studies have investigated
989 the e-WOM effects in the B2B context, and most of the studies focus on the B2C context. As
990 such, it is valuable to examine the relationship between e-WOM and benefit-seeking behaviors in
991 the B2B context.

992 **7.3. Axis 3: Methodology**

993 One of the limitations of the research in this section is regarding keywords because all
994 bibliographic analyses performed in this research, including citation and co-citation analysis, are
995 based on the keyword search strategy. By changing the keywords, the most cited articles, as well
996 as co-citation articles and MDS and HCA analysis, will change, so the bibliometric results would
997 be different. In this research, only WoS has been used as a database, and it is suggested that in
998 future research, other databases such as Google Scholar and Scopus or the integration of data
999 from this database be used. To be more precise in this field, we propose applying other methods,
1000 such as exploratory factor analysis (EFA), which would be fruitful. In addition, Bibexcel
1001 software was used in this research to analyze co-citation articles, which is recommended to
1002 achieve a broad understanding of the field of academic research; various visual software such as
1003 Pajek can be used.

1004 **8. Conclusion**

1005 This systematic literature review (bibliometric) of e-WOM presents a particular understanding
1006 of the existing situation of e-WOM and offers novel trends for upcoming research. According to
1007 the analysis of HCA and MDS, comparative demonstrations were considered within three

1008 periods. Using the MDS method, in the first period (2003-2011) 13 research groups, in the
1009 second period (2012-2016) 11 research groups, and in the third period (2017-2021) 13 research
1010 groups were identified. To confirm these research groups, using the HCA method, five clusters in
1011 the first period, four clusters in the second period, and seven clusters in the third period were
1012 identified. By investigating these two methods and comparing all three periods, the main topics
1013 in the e-WOM field were identified. Comparing the trends in the periods, we found that the three
1014 topics have always been an interest of researchers: “Consumer behavior”, “Sales” and “Tourism
1015 and Hospitality industry”. Although future avenues are mostly founded on past research, several
1016 factors may assist in determining the academic path of a scientist. Scholarly studies are
1017 administered by the accessibility of the researcher’s works, which can affect the topics followed
1018 and how programs are planned and executed. Therefore, many areas may be neglected and some
1019 others may attract more attention and continue to be followed. Consequently, due to the lack of
1020 attention to the technology-based tools as a research gap, a conceptual framework has been
1021 proposed in which the three topics extracted from the literature are expanded. This framework
1022 refers to the advancement of artificial intelligence (big data and machine learning) and the
1023 emergence of robots in the e-WOM process. As a result of this perspective, new concepts are
1024 introduced in this process. “r-WOM” that is referred to the usage of robots such as chatbots to
1025 make personalized content for consumers. “Automated user engagement” is an expanded form of
1026 “consumer behavior” as a result of using robots, machine learning, and big data. Also, with the
1027 advent of technology-based tools, “smart selling” is introduced as a representative of “sales”.
1028 Digital marketing activities like digital content marketing, social media marketing, and
1029 personalization are presented as antecedents of the process. In addition, the moderator role of a
1030 crowd is highlighted because of its power.

1031 The introduction of such notions as r-WOM, chatbots, algorithms, automated user
1032 engagement, machine learning, and big data will continue to have a deep impression on
1033 advancing e-WOM insights. It should be said that bibliometrics focuses more on the part of a
1034 scientific field rather than the future. Therefore, even though the elements, clusters, and research
1035 groups we have recognized show the topics of e-WOM, some components may receive less
1036 attention, and as mentioned, bibliometrics provides the areas in which researchers have done the
1037 most work. Taken together, our results disclose the actual important effects of AI sources on e-

1038 WOM. Consequently, this should offer a foundation on which studies on e-WOM can progress,
1039 including many of the subjects covered in this article, for the scope's future development.

1040

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Table 1. Recent literature review

Author(s), Publication, Year	Title	Description	Database and Analysis	Sample Size and the studied years	Findings	Limitations and future suggestions
Donthu et al. (2021)	Mapping the electronic word-of-mouth (e-WOM) research: A systematic review and bibliometric analysis	A review to analyze electronic word of mouth	Database: Scopus Analysis: Performance analysis, bibliometric coupling, co-accuracy analysis, analysis of the methodology	634 articles for performance analysis- 350 articles for thematic and methodological analysis	The prominent topics in the field include negative word of mouth, consumer behavior and trust, word of mouth in social networks, online reviews, and ratings, brand loyalty, social media, service failure and service recovery, corporate social responsibility, user-generated content and viral marketing, service quality, and services marketing. There are four primary topics in the field's current research: determinants of e-WOM, e-WOM in the hospitality industry, cognitive aspects of e-WOM, and service failure and recovery.	Studies that do not explicitly mention eWOM may be omitted. Future studies may expand search metrics by including synonyms for eWOM and the use of netnographic data. The database used in this study was Scopus. Future researchers may use other databases to analyze the bibliography of articles on eWOM.
Verma & Yadav (2021)	Past, present, and future of e-WOM	Investigating the past, present, and future of e-WOM	Database: Scopus Analysis: Performance analysis, co-citation analysis,	1896 articles from 2000 to 2020	Recommender systems, data mining (artificial intelligence and machine learning), semantics and sentiment analysis are emergent topics	Existing studies focus on the most common words for analysis. Rare words, however, may reflect emerging customer preferences and may be very useful in developing a new marketing model.

						Emerging techniques such as natural language processing, deep learning, and machine learning have opened up new dimensions to eWOM research. There are also other intelligent techniques (such as rule extractors, evolutionary calculations, formal conceptual analysis, fuzzy rule-based systems) that are coming soon that can be exploited in the near future.
Reyes-Menendez et al. (2020)	Understanding online consumer behavior and e-WOM strategies for sustainable business management in the Tourism Industry	Obtaining further insights into online consumer behavior through social networking sites and online reviews sites to help tourism businesses develop sustainably e-WOM strategies.	Database: Web of Science Analysis: Systematic review	135 relevant articles from 2010 to 2018	Identified the relevance of the impact of e-WOM strategies on the tourism industry, diversification, and specialization of content are the present trends	The limitations of this research are related to the sources of articles, the limited number of analyzed studies, and the number of previous studies. Future studies should seek to expand a deeper understanding of some of the aspects offered, such as data resources for eWOM approaches or the development of these websites. Other imaginable lines of development may be a quantitative analysis of information flow and online customer performance.
Abbas et al. (2020)	Bibliometric analysis of global research trends on electronic word of mouth using Scopus	Assessing global research patterns in the e-WOM field	Database: Scopus Analysis: Performance analysis,	710 e-WOM articles from different journals from 2008 to 2018.	Discussed several newly researched areas with e-WOM, such as sentiment analysis and perceived value, which could be potential hot topics for future	It is suggested that several databases such as Scopus and WoS be used in future studies. Also, for better generalization, more scientific publications should be

	database		authorships co-occurrences of keywords		studies.	included in future research over a longer study period. Future research should provide an innovative classification tool to further examine work trends and developments. In this study, only one VOSviewer program is used, which suggests that other specific bibliometric analysis tools be used for future studies.
Muritala et al. (2020)	A bibliometric analysis of online reviews research in Tourism and Hospitality	Identifying the most prolific journals, foundational works, and major research themes in the research area. Analyzing some dimensions of their network structure and the thematic evolution of the research area.	Database: Scopus Analysis: performance analysis, co-citation analysis, co-occurrence analysis	632 journals from 2005 to 2019.	Identifying motives and consequences of e-WOM.	Authors sometimes add arbitrary keywords to their articles that do not reflect the content of the article, so it affects the accuracy of the prepared maps. It is also recommended that bibliographic analysis be performed with a combination of databases.
Rosario et al. (2020)	Conceptualizing the electronic word-of-mouth process: What we know and need to know about e-WOM creation, exposure, and evaluation	Conceptualizing three distinct stages in the e-WOM process: e-WOM creation, e-WOM exposure, and e-WOM evaluation through two perspectives of consumers and	Database: Business Source Premier, Google Scholar, JSTOR) Analysis: Systematic review	1,050 academic publications on e-WOM published between 1996 and 2019	The conceptual framework according to the motivation, opportunity, ability theory, displays three stages of e-WOM with details	-

		marketers				
Ismagilova et al. (2020)	The effect of electronic word of mouth communications on intention to buy: A Meta-Analysis	Synthesize findings from previous studies by employing weight and meta-analysis to reconcile conflicting evidence and draw a big picture of e-WOM factors influencing consumers' intention to buy.	Database: Scopus, Web of Science, and EBSCO Analysis: Meta-Analysis	590 articles published between 2000 and 2017	Identified best (e.g. argument quality, valence, e-WOM usefulness, trust in message), promising (e.g. e-WOM credibility, emotional trust, attitude towards website) and least effective (e.g. volume, existing e-WOM, source credibility) predictors of intention to buy in e-WOM research.	At the data collection stage, not all published studies on e-WOM communications provided sufficient data, so these studies were not included in this study. The studies in this study were collected only from the Web of Science, Scopus, and EBSCO databases, which limits the number of studies available for meta-analysis. Future research should use a wider range of databases. In addition, this study was unable to perform a meta-analysis on modulators affecting purchasing intent in eWOM communications (due to the insufficient number of studies on modulator effects). Future research with a wider range of studies should address this issue.
Ismagilova et al. (2021)	A meta-analysis of the factors affecting e-WOM providing behavior	Findings from existing studies on e-WOM by employing meta-analysis, which will help to reconcile conflicting findings of factors affecting consumers' intention to engage in e-WOM	Database: Scopus, Web of Science, and EBSCO Analysis: Meta-Analysis	590 published between 2000 and 2017	Factors affecting e-WOM providing behavior were divided into four groups: personal conditions, social conditions, perceptual conditions, and consumption-based conditions. The results of the meta-analysis showed that out of 20 identified	At the data collection stage, not all published studies on e-WOM communications provided sufficient data, so these studies were not included in this study. Scopus, Web of Science, and EBSCO databases were also used, so a wider range of databases could be used. Can be used in future research. Also, this

		communications.			relationships, 16 were found to be significant (opinion seeking, information usefulness, trust in web e-WOM services, economic incentive, customer satisfaction, loyalty, brand attitude, altruism, affective commitment, normative commitment, opinion leadership, self-enhancement, information influence, tie strength, homophile, and community identity).	research has considered only quantitative studies and has eliminated qualitative studies. Therefore, future studies can be combined. This study did not consider the analysis of moderator variables due to the insufficient number of studies on moderating effects.
Bore et al. (2017)	A systematic literature review on e-WOM in the hotel industry: Current trends and suggestions for future research	A systematic review for recognizing the emergent themes in the e-WOM scope	Database: Emerald, Sage, Science Direct and EBSCO Analysis: Systematic review	456 articles from 2000 to 2015	Eight research themes: (1) motivations for contributing to e-WOM, (2) motivations for reading e-WOM, (3) platforms used to facilitate e-WOM, (4) big data analytics and e-WOM, (5) impact of e-WOM on consumer behavior, (6) impact on hotel performance, (7) hotel responses to e-WOM, and (8) consumer cultural differences.	In this study, only English language journals based on the ABS list have been used, so future studies can focus on international sources. In addition, only 3 * and 4 * journals in the ABS list were used in this article, resulting in a manageable number of credible articles, but some quality research outside of this was excluded. Finally, since different keyword searches may affect the findings, future researchers may be able to analyze the literature from other perspectives by searching for more comprehensive keywords.
Sann et al.	Review papers on e-	By conducting content	Database: Web	110 research	Organizing the articles into	Future research can use the big data

(2016)	WOM: prospects for hospitality industry	analysis approach, all research papers were systematically reviewed and analyzed which generates 18 significant topical issues.	of Science, Science Direct, and Google Scholar. Analysis: A systematic review, content analysis	articles published in 18 refereed journals for the period of 2004 to 2018	three main categories: hotel operations perspective, consumer perspective, general issues of e-WOM	analysis approach to gain insight into online consumer behavior. It is also recommended to use emerging techniques such as the data mining approach, natural language processing approach, or other machine learning analytical techniques to predict stronger consumer behavior.
Mishra and Satish (2016)	E-WOM: extant research review and future research avenues	A systematic review and meet the two objectives: (1) summarize the extant literature in the e-WOM domain and (2) identify a few areas for future research.	Database:- Analysis: Systematic review	Journals that are listed either under grade 4 or grade 3 from the marketing and information management areas.	Technological breakthroughs and inventions and innovations of smart devices, smartphones, tablets, and new ways of communication, such as instant messaging apps on smartphones are the new trends and events that will have an impact on how consumers and marketers will deal with e-WOM.	Although there is a vast amount of research on the various dimensions and aspects of eWOM, it has more potential for future research due to the emergence of new technological advances, the advent of smart devices, and increased Internet access worldwide.

Table 2. List of extracted journals and ABS rank

No.	Source Title	ABS Rank	Numbers	No.	Source Title	ABS Rank	Numbers
1	Journal of Business Research	3	42	21	International Journal of Market Research	2	8
2	International Journal of Advertising	2	33	22	Management Science	4*	7
3	International Journal of Hospitality Management	3	30	23	Electronic Markets	2	6
4	Decision Support Systems	3	27	24	Journal of Business Ethics	3	6
5	International Journal of Contemporary Hospitality Management	3	24	25	Marketing Letters	3	6
6	Electronic Commerce Research and Applications	2	24	26	Qualitative Market Research	2	6
7	Journal of Retailing and Consumers Services	2	24	27	Technological Forecasting and Social Change	3	6
8	Tourism Management	4	22	28	Journal of Marketing Theory and Practice	2	6
9	International Journal of Electronic Commerce	3	21	29	MIS Quarterly	4*	5
10	Journal of Interactive Marketing	3	15	30	Expert Systems with Applications	3	5
11	Current Issues in Tourism	2	13	31	Journal of Marketing	4*	5
12	European Journal of Marketing	3	13	32	International Journal of Research in Marketing	4	5
13	Journal of Management Information Systems	4	12	33	Journal of Marketing Management	2	5
14	Journal of Travel Research	4	12	34	Journal of Service Research	4	5
15	Journal of Services Marketing	2	11	35	Tourism Analysis	2	4
16	Journal of Advertising Research	3	11	36	Business Horizons	2	3
17	Journal of Consumer Behavior	2	10	37	International Journal of Tourism Research	2	3
18	Marketing Science	4*	10	38	Journal of Advertising	3	3
19	Journal of Marketing Research	4*	9	39	Journal of Retailing	4	3
Total			468				

Table 3. The most cited documents

Row	Documents	Source Title	Motivations	Theories	Type of article	Total citations
1	Litvin et al. (2008)	Tourism Management	Describe eWOM as a potentially cost-effective means of marketing hospitality and tourism and present the emerging technical and ethical issues that marketers face in trying to harness emerging eWOM technologies.	Theory of allocentric and psychometricity	Review	1255
2	Park et al. (2007)	International Journal of Electronic Commerce	Online consumer reviews are important in deciding whether to buy or sell a product. This paper uses the elaboration likelihood model to explain how the level of engagement with a product moderate these relations.	Purchasing intention	Empirical	846
3	Kozinets et al. (2010)	Journal of Marketing	Internet access, achievement, and transparency have empowered marketers interested in influencing and monitoring WOM. This research offers a theory that integrates these developments into the WOM world.	WOM theory	Empirical	834
4	Forman et al. (2008)	Information Systems Research	In an online community, the disclosure of descriptive identity information by consumers is used to supplement or replace product information when making purchasing decisions and evaluating the usefulness of online reviews.	Social identity theory	Empirical	806
5	Chu & Kim, (2011)	International Journal of Advertising	Considering the social and general characteristics of social networking sites, this study examines how social networking agents relate to eWOM transmitted through online social networking sites.	Social Networks	Empirical	771
6	Sparks & Browning (2011)	Tourism Management	This study examines the role of four key factors: the purpose of the study (nuclear or interpersonal); the overall capacity of a set of studies (positive or negative); numerical rankings produced by the consumer are not provided with the written text, which affects the perception of consumer trust and choice.	Choice theory	Conceptual	733

7	Brown et al. (2007)	Journal of Interactive Marketing	Previous research has provided little evidence of how online social connections are formed. This study provides evidence that the flow of information between participants in online networks may be different than in an offline context.	Face-to-face WOM transmission	Empirical	731
8	Vermeulen & Seegers (2009)	Tourism Management	This article examines three key elements in online surveys (capacity valency, reviewer expertise, and hotel brand familiarity) by providing an empirical study of the impact of online hotel reviews on consumer decision-making.	Consideration set theory	Empirical	680
9	Ye et al. (2009)	International Journal of Hospitality Management	Since the study of various aspects of word of mouth online, its impact on hotel sales has remained largely unknown in the existing literature; this study was conducted to empirically investigate the impact of online consumer opinions on hotel room sales.	Decision-making	Empirical	640
10	Duan et al. (2008)	Journal of Retailing	One aspect of the WOM effect is the existence of a positive feedback mechanism between WOM and retail, so the present study defines this process through a dynamic simultaneous equation system, which explains the effect of online WOM as both a pioneer and a result of retail sales.	Decision-making	Empirical	590

Table 4. e-WOM antecedents and consequences

Variables	Type	Consumer Side	Firm Side	References
Community belonging	Antecedents	✓		Liu, 2006
Customer satisfaction		✓		
Failure and recovery		✓		Cantalops & Salvi, 2014
Helping companies		✓		Cantalops & Salvi, 2014, King et al., 2014
Helping other vacationers		✓		
Customer dissatisfaction		✓		Cantalops & Salvi, 2014
Social identity		✓		
Pre-purchase expectations		✓		
Self-enhancement			✓	

Consumer psychographics		✓		
Altruism		✓		Hennig-Thurau et al., 2004, Litvin et al., 2008, King et al., 2014
The need for social interaction		✓		
Searching		✓		Hennig-Thurau et al., 2004, King et al., 2014
Evaluation efforts		✓		Hennig-Thurau et al., 2004
Risk reduction		✓		
Social leisure activity		✓		Hennig-Thurau et al., 2004, King et al., 2014
Internet experience		✓		
Information seeking		✓		Hennig-Thurau et al., 2004
Problem-solving		✓		
Self-interest		✓		
Reciprocation		✓		Litvin et al., 2008
Competition	Contextual		✓	
Business model			✓	
Service quality		✓	✓	Cheung & Thadani, 2012
Market characteristics			✓	
Platform			✓	
Industry(tourism)			✓	Gretzel & Yoo, 2008
Industry(hotel)			✓	Sparks & Browning, 2011
Industry(film)			✓	Liu, 2006
Industry(Amazon)			✓	Chevalier & Mayzlin, 2006 , Li & Hitt, 2008
Sales	Consequences		✓	Chevalier & Mayzlin, 2006, Godes & Mayzlin, 2004
Customer value		✓	✓	Cantalops & Salvi, 2014, King et al., 2014
Firm performance			✓	
Quality control and new procedures			✓	
Revenue management			✓	
Price premium			✓	
Generating loyalty		✓		
Online reputation comparison		✓		
Customer interactions		✓		Cantalops & Salvi, 2014
Response and recovery			✓	
Focus on target communication			✓	
Marketing strategies			✓	
Brand awareness		✓		
Decision-making process		✓		
Product acceptance		✓		
Risk reduction		✓		
Perceived trustworthiness/credibility		✓		King et al., 2014, Cantalops & Salvi, 2014
Brand comparison		✓		Cantalops & Salvi, 2014
Intention		✓		Park et al., 2007, Park & Lee, 2008, Sparks & Browning, 2011
Consideration		✓		Gupta & Harris, 2010, Vermeulen & Seegers, 2009
Attitude toward the product		✓		Lee & Lee, 2009
Information adoption decisions		✓		Filieri & McLeay, 2014
Argument quality	Conditional	✓		
Credibility			✓	Cheung et al., 2008, 2009

Table 5. Research questions for future directions

Themes	Research Questions	References
<i>Digital Marketing Activities</i>	<ul style="list-style-type: none"> ✓ What are the strategies of firms to generate and distribute personalized content on social media to make e-WOM? ✓ What is the future role of personalization in the e-WOM process? ✓ What are the disadvantages of digital marketing activities for customers and their effects on e-WOM? 	Adopted by Fuaddah et al., 2022; Mathew & Soliman, 2021; Mok Kim Man & Yang, 2022
<i>r-WOM</i>	<ul style="list-style-type: none"> ✓ What are the persuasive effects of r-WOM on consumer behavior? ✓ What are the challenges of the term “trust” in r-WOM? ✓ What are the negative effects of r-WOM on consumer behavior? ✓ How can r-WOM form the consumer’s habits, activities, and attitudes? ✓ What are the challenges of r-WOM content designing in different industries? 	Adopted by Logg et al., 2019; Mendes & Mattiuzzo, 2022; Thaothampitak & Wongsuwatt, 2022
<i>e-WOM</i>	<ul style="list-style-type: none"> ✓ What are robust guidelines on the factors that boost the logic quality of the e-WOM contents? ✓ What are critical aspects which can influence e-WOM credibility? ✓ What are consumer-related variables which can influence e-WOM? 	Adopted by Verma & Dewani, (2020); Duong & Liaw (2022); Roy et al. (2022)
<i>Core of e-WOM</i>	<ul style="list-style-type: none"> ✓ What are the appropriate marketing strategies to be closer to the focal objectives of e-WOM to business favorable goals? ✓ How can focal objectives be segmented based on text mining of e-WOM data? ✓ What is the creative best operation for a brand or firm to manage e-WOM on social networks? 	Adopted by Czarnecka et al., 2022; Donthu et al., 2021; Güneş & Toğay, 2022
<i>Crowd Power</i>	<ul style="list-style-type: none"> ✓ Which fields of application and under which conditions can provide the greatest advantages from the crowd power in e-WOM? ✓ What are the motivational factors that influence the crowd to share information in the e-WOM context? 	Adopted by Jong & Lindsen, 2021; Ghezzi et al., 2018; Saad & Yaacob, 2021
<i>Automated User Engagement</i>	<ul style="list-style-type: none"> ✓ How can companies increase automated user engagement in the e-WOM process? ✓ What is the negative outcome of automated engagement in e-WOM? ✓ What are the factors that influence automated engagement in e-WOM? ✓ Which elements are suitable for engagement measurement in e-WOM? 	Adopted by Akinsola et al., 2022; Hollebeek et al., 2021; Olan et al., 2022
<i>Smart Selling</i>	<ul style="list-style-type: none"> ✓ What are the extent and the contexts to which r-WOM may replace for WOM/e-WOM in customers' shopping behavior? ✓ What is the impact of algorithmic WOM on online opinion leaders who have a great effect on consumer decision-making? 	Adopted by Mariani et al., 2022; Williams et al., 2020
<i>Big Data</i> <i>Machine Learning</i>	<ul style="list-style-type: none"> ✓ What would be the new methods for exploiting big data in e-WOM? ✓ Which research methods are more effective for big data and machine learning? ✓ Despite the real-time creation of data, what actions are useful for the challenge of generalization? 	Adopted by Aakash & Gupta Aggarwal, 2020; Mariani, 2020; Verma et al., 2021

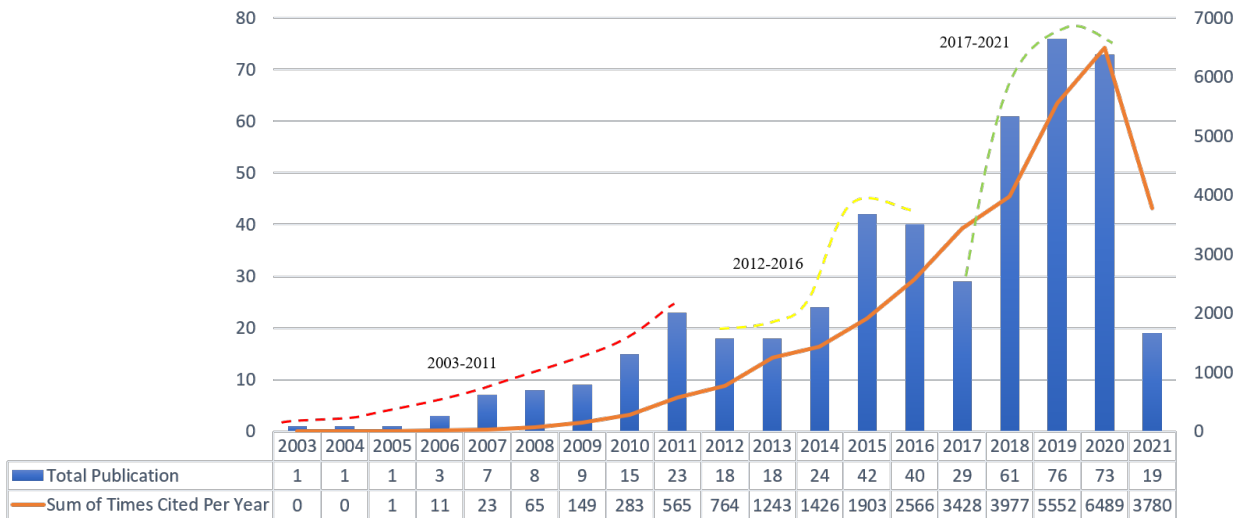


Figure 1. Trends of year-wise publication and citation on the topic of e-WOM

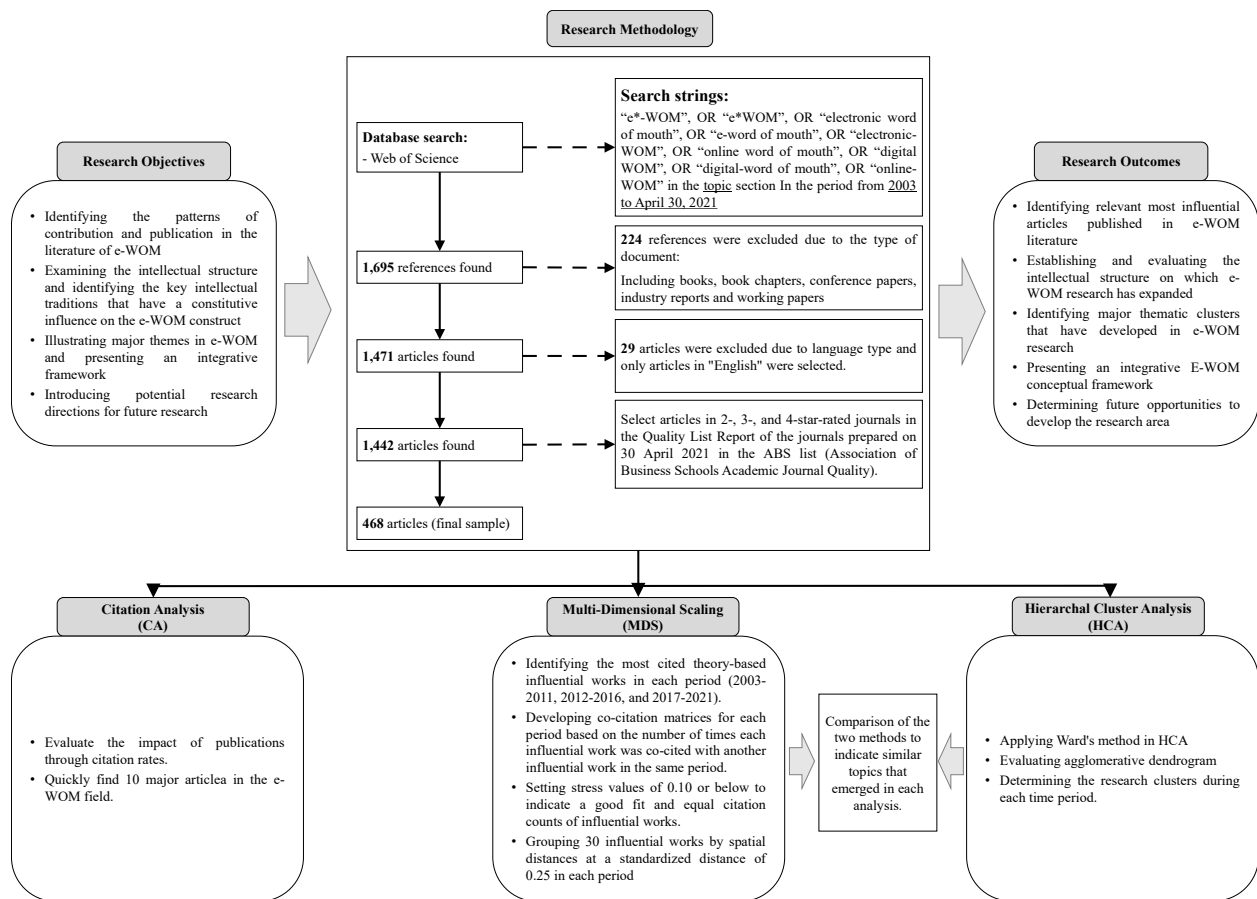


Figure 2. Research design (authors' representation)

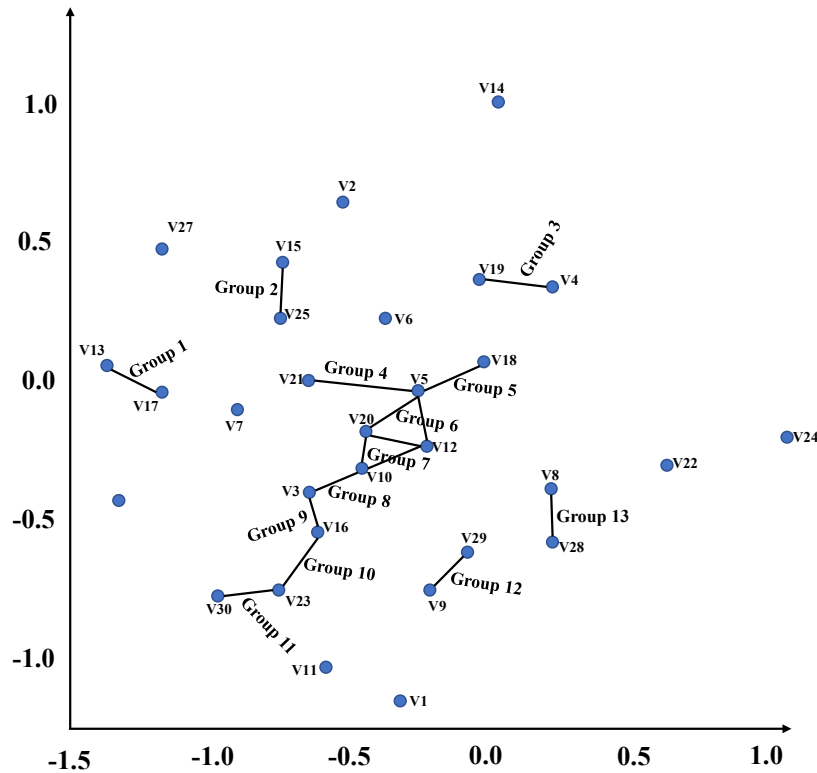


Figure 3. Intellectual structure by MDS (2003-2011)

V1= Anderson (1998); V2= Anderson & Gerbing (1988); V3= Gilly et al. (1998); V4= Bansal & Voyer (2000); V5= Bickart & Schindler (2001); V6= Bone (1995); V7= Brown & Reingen (1987); V8= Brown et al. (2007); V9= Chatterjee (2001); V10= Chevalier & Mayzlin (2006); V11= Clemons et al. (2006); V12= Dellarocas (2003); V13= Feick & Price (1987); V14= Fornell & Larcker (1981); V15= Gilly et al. (1998); V16= Godes & Mayzli (2004); V17= Granovetter (1973); V18=Gruen et al. (2006); V19= Hennig-Thurau & Walsh (2003); V20= Hennig-Thurau et al. (2004); V21= Herr et al. (1991); V22= Litvin et al. (2008); V23= Liu (2006); V24= Pan et al. (2007); V25= Phelps et al. (2004); V26= Richins (1983); V27= Rogers (1995); V28= Sen & Lerman (2007); V29= Senecal & Nantel (2004); V30= Sundaram et al. (1998). Group 1 (V13 & V17): Market Maven and WOM; Group 2 (V15 & V25): WOM and Dyadic Role of Consumers; Group 3 (V4 & V19): WOM/e-WOM and Purchase Decisions Making; Group 4 (V21 & V5): WOM and Product Credibility; Group 5 (V18 & V5): E-WOM Building Block; **Group 6 (V12 , V5 & V20): e-WOM evolution; Group 7 (V12 , V10 & V20): e-WOM and Amazon; Group 8 (V3 & V10): WOM/e-WOM and Sales;** Group 9 (V3 & V16): E-WOM and Online Conversation; Group 10 (V23 & V16): E-WOM and Movie Recommendation; Group 11 (V23 & V30): WOM and Consumption Experiences; Group 12 (V29 & V9): E-WOM and Online Retailing channel; Group 13 (V28 & V8): WOM/e-WOM and Consumer behavior.

**Note: The bold groups and the italic clusters show the Research Cliques.*

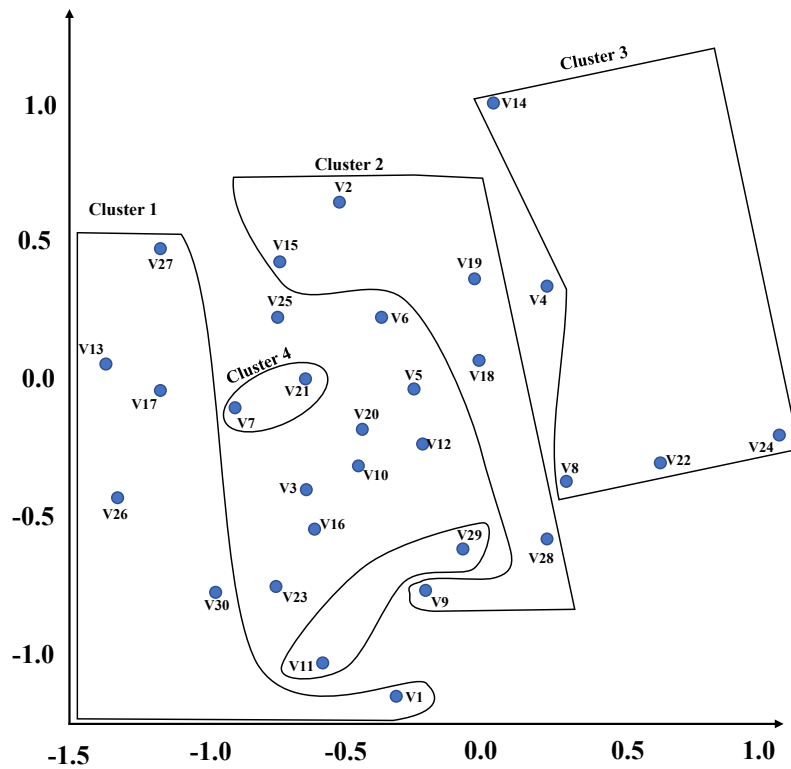


Figure 4. Intellectual structure by HCA (2003-2011)

Cluster 1 (V1, V13, V17, V26, V27 & V30): WOM and Customer Satisfaction; Cluster 2 (V2, V9, V15, V18, V19 & V28): E-WOM and Exchange on Customer Value; Cluster 3 (V8, V14, V22 & V24): E-WOM in Tourism and Hospitality Industry; Cluster 4 (V7 & V21): Social Ties and WOM; Cluster 5 (V11 & V29) Resonance Marketing.

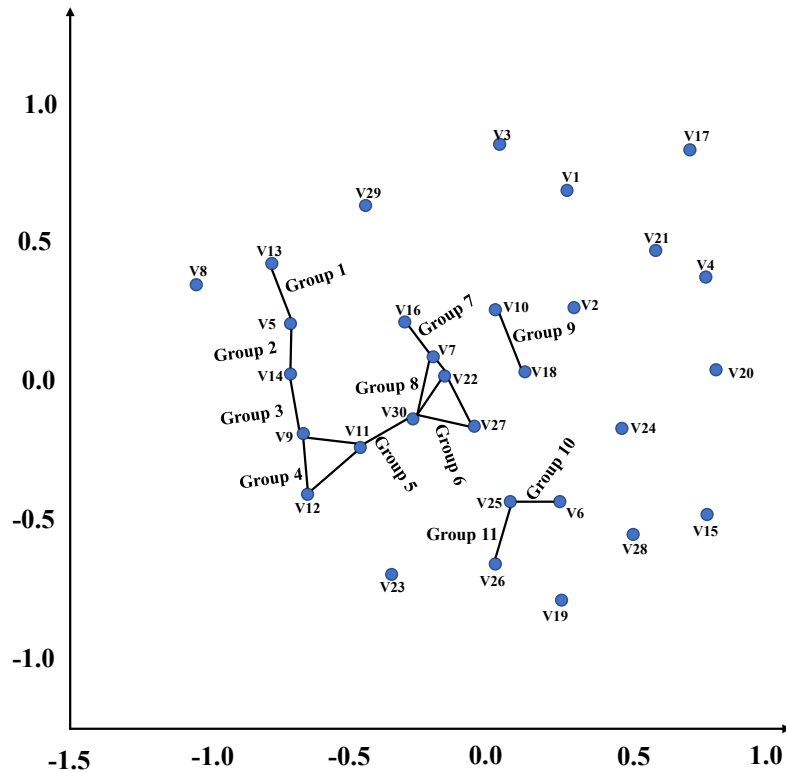


Figure 5. Intellectual structure by MDS (2012- 2016)

V1= Arndt (1967); V2 = Bickart & Schindler (2001); V3= Brown & Reingen (1987); V4 = Brown et al. (2007); V5 = Chen & Xie (2008); V6 = Cheung et al. (2009); V7= Chevalier & Mayzlin (2006); V8 = Chintagunta et al. (2010); V9 = Clemons et al. (2006); V10 = Dellarocas (2003); V11= Dellarocas et al. (2007); V12= Duan et al. (2008a); V13 = Duan et al. (2008b); V14= Forman et al. (2008); V15= Fornell & Larcker (1981); V16 = Godes & Mayzlin (2004); V17 = Gruen et al. (2006); V18 = Hennig-Thurau et al. (2004); V19 = Herr et al. (1991); V20 = Lee & Youn (2009); V21 = Litvin et al. (2008); V22 = Liu (2006); V23 = Susan & David (2010); V24 = Park & Lee (2009); V25 = Park et al. (2007); V26 = Sen & Lerman (2007); V27 = Senecal & Nantel (2004); V28 = Sussman & Siegal (2003); V29 = Trusov et al. (2009); V30 = Zhu & Zhang (2010), Group 1 (V13 & V5): Complementarity of Consumer and Seller Evaluation, Group 2 (V14 & V5): Identity of the Commenters, Group 3 (V9 & V14): Growth Rate and Sales of Online Products, Group 4 (V11, V12 & V9): **Office Performance and Revenue**, Group 5 (V11 & V30): Sales Growth in the Entertainment Industry, Group 6 (V27, V30 & V7): **Comment Statistics**, Group 7 (V7 & V16): Buy Offline Based on Online Information, Group 8 (V30, V7 & V22): **Consumers' Decisions**, Group 9 (V18 & V10): Motivations to Provide Feedback, Group 10 (V6 & V25): e-WOM Validity, Group 11 (V25 & V26): Consumers' Trust.

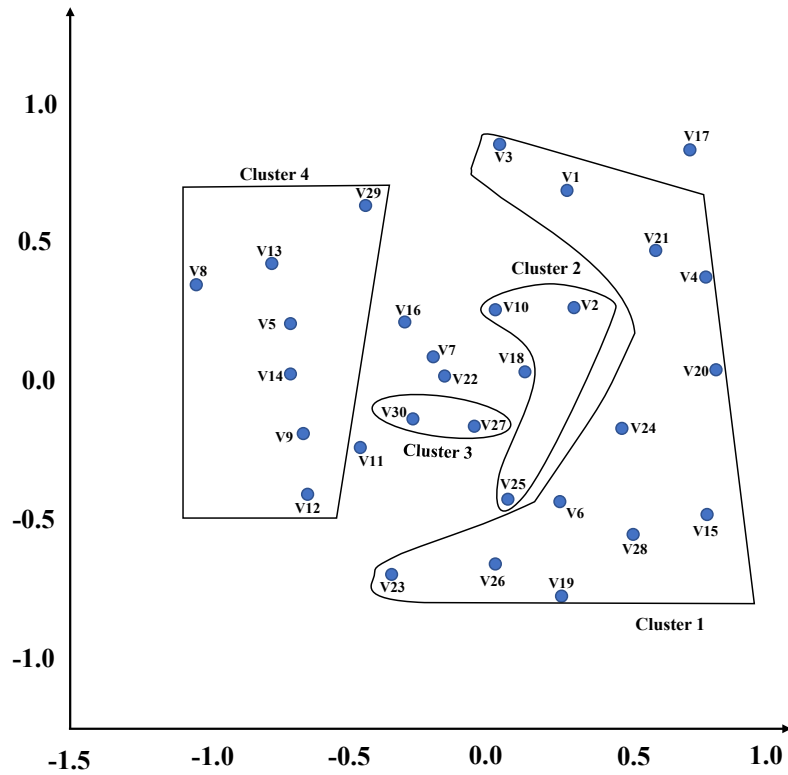


Figure 6. Intellectual structure by HCA (2012- 2016)

Cluster 1 (V1, V3, V21, V4, V20, V24, V15, V28, V6, V26, V19 & V23): WOM as a Consumer-dominated Marketing Channel, Cluster 2 (V10, V25 & V2): Internet-based Response Mechanisms, Cluster 3 (V30 & V27): Online Users 'Opinions, Cluster 4 (V12, V13, V9, V14, V5, V29 & V8): E-WOM Black Box.

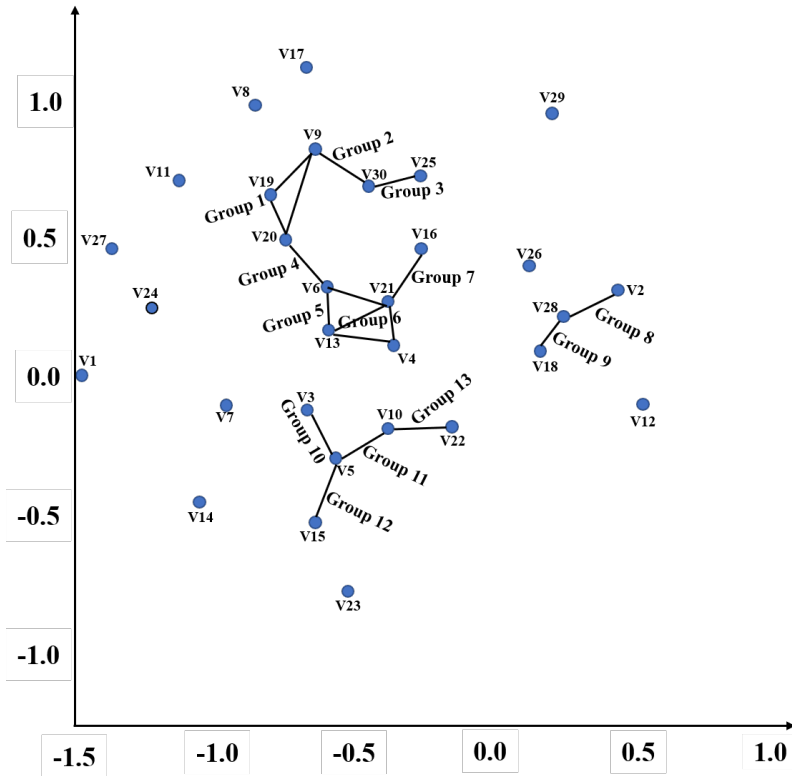


Figure 7. Intellectual structure by MDS (2017–2021)

V1= Berger (2014); V2= Cantalops & Salv (2014); V3= Cheung et al. (2008); V4= Cheung & Thadani (2012); V5= M. Cheung et al. (2009); V6= Chevalier & Mayzlin (2006); V7= Chu & Kim (2011); V8= Dellarocas et al. (2007); V9= Duan et al. (2008a); V10= Fornell & Larcker (1981); V11= Godes & Mayzlin (2004); V12= Gretzel & Yoo (2008); V13= Hennig-Thurau et al. (2004); V14= Kaplan & Haenlein (2010); V15= King et al. (2014);V16= Lee & Youn, (2009); V17= Li & Hitt (2008); V18= Litvin et al. (2008); V19= Liu (2006); V20= Mudambi & Schuff (2010); V21= Park & Lee (2008); V22= Park et al. (2007); V23= Podsakoff et al. (2003); V24= Rosario et al. (2016); V25= Sen & Lerman (2007); V26= Sparks & Browning (2011); V27= Trusov et al. (2009); V28= Vermeulen & Seegers (2009); V29= Ye et al. (2009); V30= Zhu & Zhang (2010). **Group 1 (V9,V19 &V20): E-WOM Black Box;** **Group 2 (V9 &V30): Characteristics Impacts on Sales;** **Group 3 (V30 & V25): Role of Product in e-WOM;** **Group 4 (V20 & V6): E-WOM Practices at Amazon.com;** **Group 5 (V6 & V13,V21): Motivations of e-WOM;** **Group 6 (V4, V13 & V21): Social Communication;** **Group 7 (V21 & V16): E-WOM Persuasion Impacts on Judgement;** **Group 8 (V2 & V28); Consumer Behavior in Hotel Industry;** **Group 9 (V28 & V18): Challenges and Opportunities of e-WOM in Tourism;** **Group 10 (V3 & V5): E-WOM and Consumer Adoption;** **Group 11 (V5 &V10): Dual Process Theory;** **Group 12 (V5 & V15): E-WOM Structure;** **Group 13 (V10 & V22): E-WOM Building Block.**

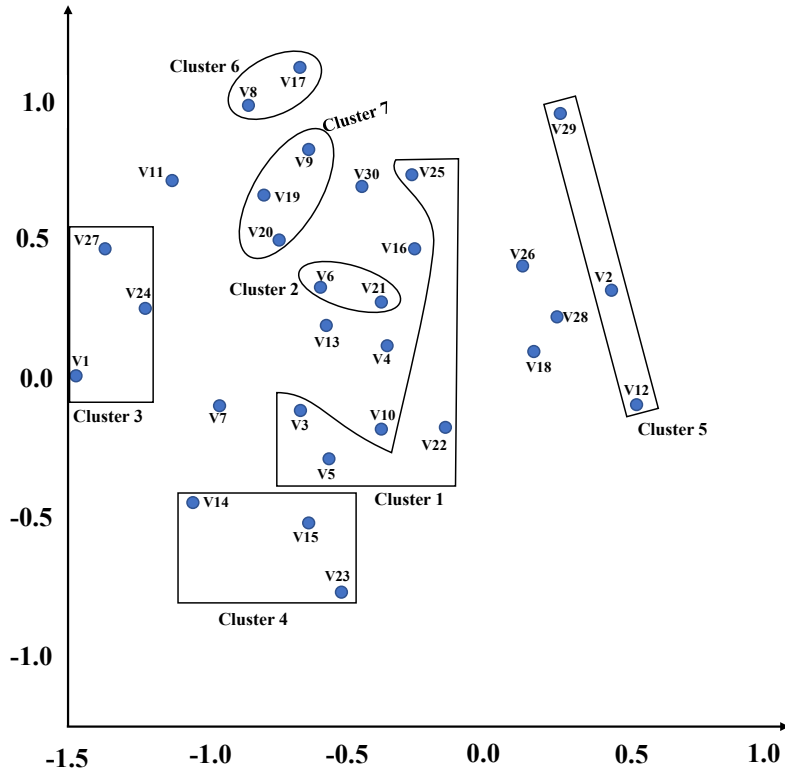


Figure 8. Intellectual structure by HCA (2017–2021)

Cluster 1 (V3, V5, V22 & V25): e-WOM Determinants Effects on Consumer Behavior; Cluster 2 (V6 & V21): e-WOM Effects on Consumer Judgement; Cluster 3 (V27, V24 & V1): Social Communications; Cluster 4 (V14, V15 & V23): Effects of Social Media; Cluster 5 (V29, V12 & V2): E-WOM in Hotel industry; Cluster 6 (V17 & V8): Business Models & e-WOM; Cluster 7 (V9, V20 & V19): E-WOM Black Box.

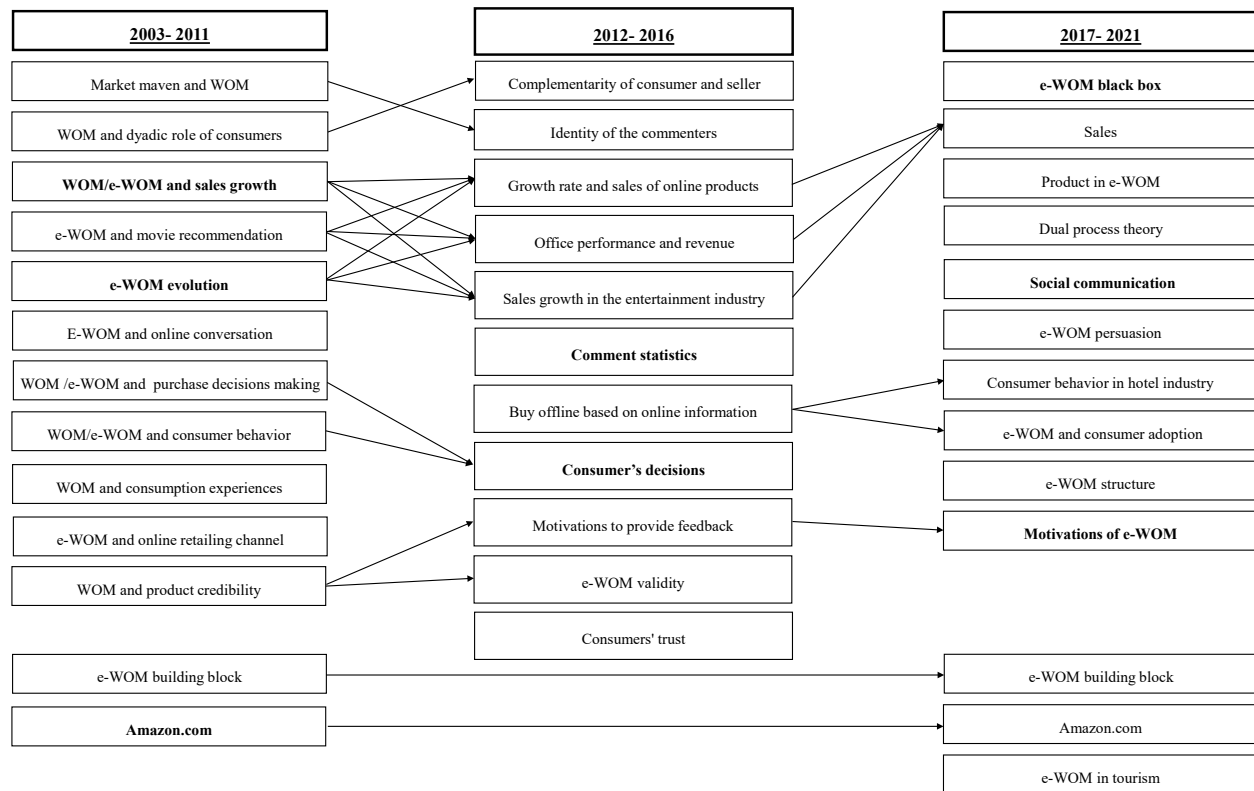


Figure 9. E-WOM intellectual structure expansion by MDS

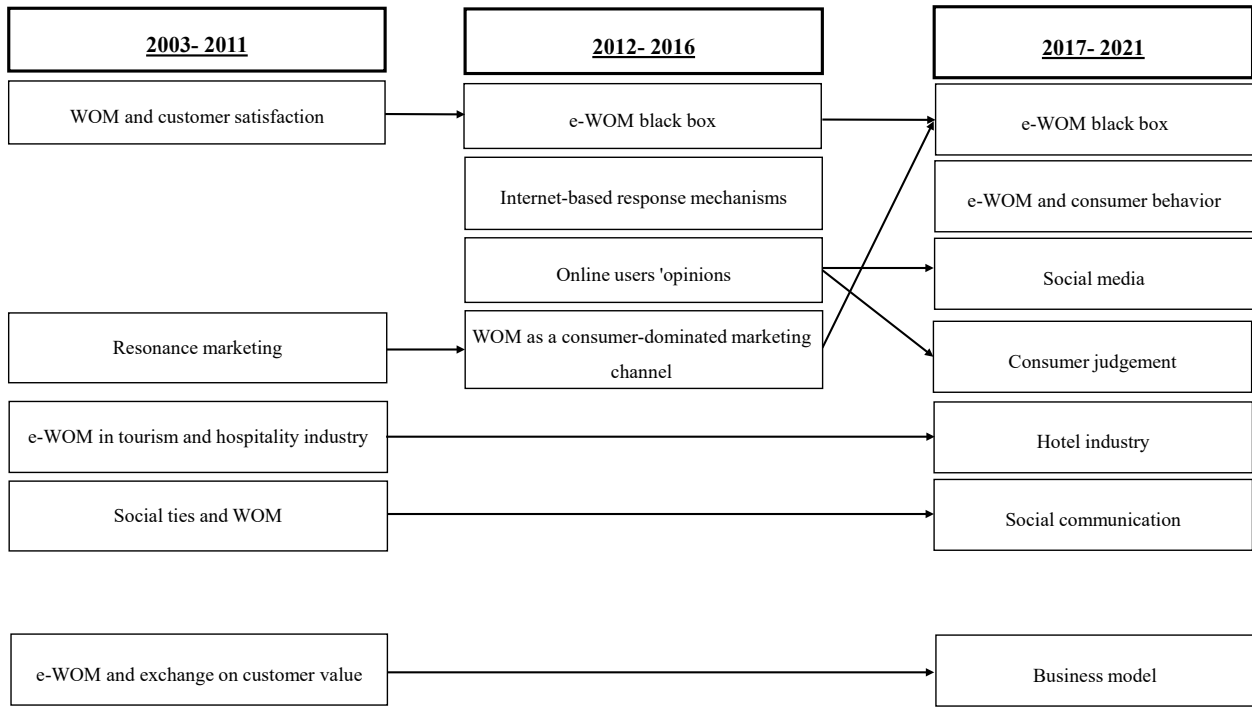


Figure 10. E-WOM intellectual structure expansion by HCA

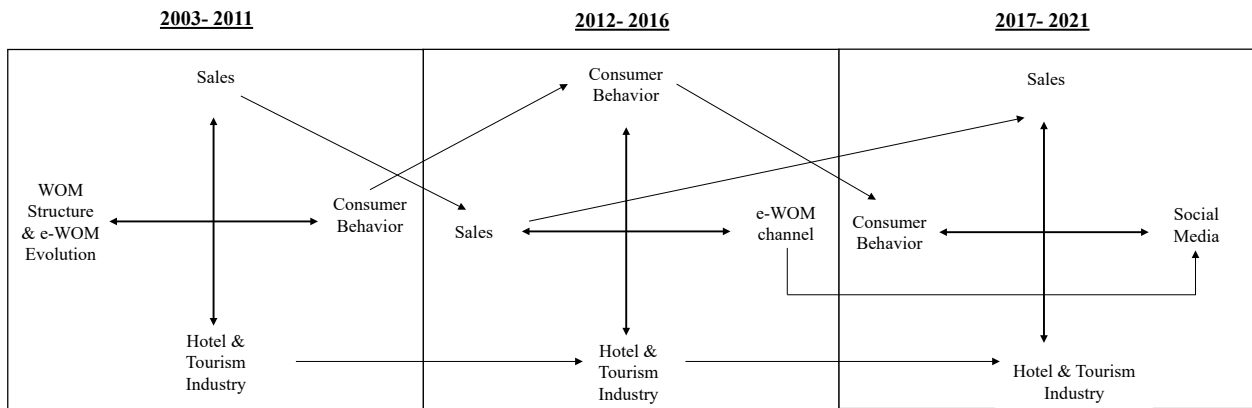


Figure 11. Co-citation map of dimensions expansion

Notes: The lines indicate content similarity.

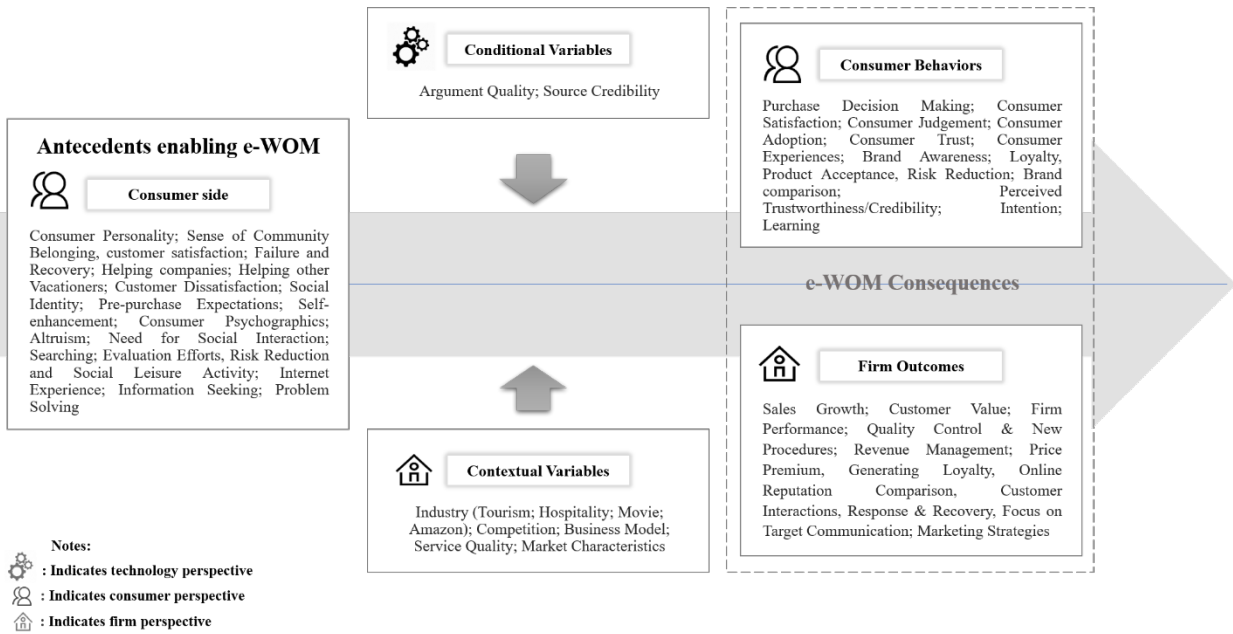


Figure 12. Past trends of e-WOM

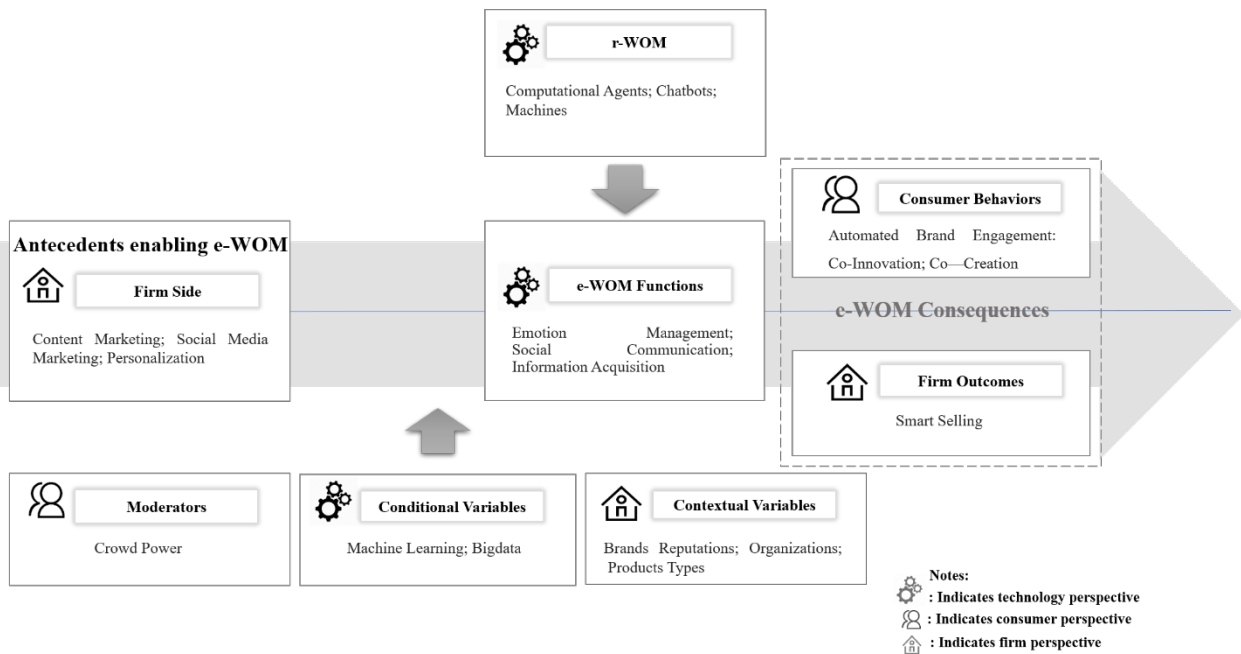


Figure 13. The e-WOM conceptual framework for future trends