

A trend study on the impact of social media on advertisement

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CHRONICLE

Article history:

Received: October 29, 2018
Received in revised format: January 21, 2019
Accepted: February 8, 2019
Available online:
February 8, 2019

Keywords:

Social network
Word of Mouth
Advertisement
Social media
Data analysis

ABSTRACT

This paper presents a comprehensive scientometric study for the impact of social networks on advertisement. The study uses the Scopus database as a search engine to accomplish the survey. To better understand the evolution and identity of this category, the study covers 1216 most cited data over the period 1983-2019. Qualitative and quantitative data analysis techniques are applied to determine author distribution, country, individual and institutional-level productivity rankings. In terms of keywords, the study indicates that social media was jointly studied with gender and behavior and researchers from the United States maintained the highest rate of contribution. The survey also indicates that there were strong collaboration between the researchers from China and United States. Moreover, there were also remarkable collaborations between the researchers in United States from one side and other countries.

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1. Introduction

Social media is one of the primary methods for connecting people with each other and it helps people share their beliefs, ideas and even emotions (Belmonte-Jimenez, 1988; Stieglitz & Dang-Xuan, 2013). Social media advertising, or social media targeting, are advertisements served to users through social media platforms. This is a competitive advertisement plan (Bimpikis et al., 2016). It may also be used for selling products and services directly (Ramo & Prochaska, 2012; Ramo et al., 2014) although there are many challenges for online shopping (Guha et al., 2010). Social networks utilize users' information to serve highly relevant advertisements based on interactions within some specific platforms (Zubcsek & Sarvary, 2011). When a product or service is advertised through internet, it is necessary to detect target people by an appropriate tools (Aggarwal et al., 2014). Sun and Li (2014), for instance, used similarity-based community detection in social network of microblog. In many instances, when target market is aligned with the user demographics of a social platform, social advertising can provide huge increase in conversions and sales with lower cost of acquisition (Zhang et al., 2011, 2012a, b, 2015, 2016a,b). In

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terms of therapeutic goals, Facebook provides a forum for reporting personal experiences, asking questions, and receiving direct feedback for people from different issues such as the people who live with diabetes. However, promotional activities and personal data collection are also common, with no accountability for authenticity (Green et al., 2011; Månsson, 2011; Manderson et al., 2012). Word-of-mouth (WOM) advertisement can be encouraged through different publicity activities set up by companies, or by having opportunities to encourage consumer-to-consumer and consumer-to-marketer communications. Moreover as marketers are getting more interested in harnessing the power of WOM, for e-business and other net related activities, the effects of the different communications types on macro level marketing is becoming critical (Hansen & Lee, 2013; Mortazavi, 2014; Remschmidt et al., 2014; Gunasekaran et al., 2013). When a product is advertised on social media, it is important to be so effective that other people re-post the advertisement. Araujo et al. (2015) performed an investigation to find out what motivates consumers to re-tweet brand content by investigating the effect of information, emotion, and traceability on pass-along behavior.

This survey presents a survey on the effect of social media on advertisement. The study covers all peer reviewed articles published over the period 1983-2009 which are indexed in Scopus database. The study attempts to shed light on the most common keywords, the highly cited articles and other relevant information commonly used in the literature to survey on the effect of Social media on advertisement.

2. The most common keywords

Table 1 demonstrates some of the mostly cited references associated with advertising in social media. As we can observe from the results of Table 1, social networking, marketing and social media are three well recognized keywords used in the literature.

Table 1

The most popular keywords used in studies associated with advertising in social media

Terms	Frequency	Terms	Frequency
social networking (online)	453	middle aged	49
Marketing	345	information dissemination	48
social media	208	behavioral research	44
Internet	193	priority journal	44
social network	182	economic and social effects	43
Human	176	artificial intelligence	42
Female	140	online systems	41
Male	137	targeted advertising	41
Humans	133	influence maximizations	40
Adult	127	patient selection	40
social networks	120	information systems	39
Commerce	107	world wide web	39
Article	105	Aged	37
Advertising	103	health promotion	36
Adolescent	88	Forecasting	35
on-line social networks	84	Algorithms	34
advertising as topic	72	Twitter	34
young adult	66	public health	33
social networking	63	viral marketing	33
data mining	59	budget control	32
Facebook	59	controlled study	32
united states	55	major clinical study	32
Advertising	54	Economics	30
online advertising	53	learning systems	30

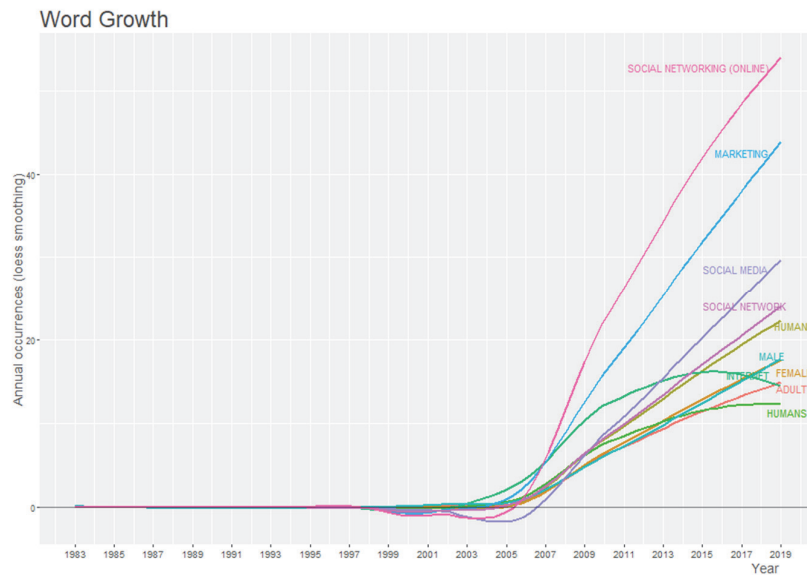
3. Contributions of countries

Our survey demonstrates that countries from different continents have maintained the most contribution in the field of advertising and social media and it is not focused on a specific geographic area. Table 2 shows details of our survey.

Table 2

The summary of the contributions of different countries

Country	Total Citations	Average Article Citations	Country	Total Citations	Average Article Citations
USA	3917	16.884	POLAND	14	4.667
ISRAEL	982	327.333	EGYPT	13	4.333
UNITED KINGDOM	656	20.5	KUWAIT	13	6.5
AUSTRALIA	595	18.03	SLOVAKIA	10	2
CHINA	476	5.667	BAHRAIN	9	9
TAIWAN	342	10.688	MALAYSIA	8	1.6
GERMANY	310	11.071	CZECH REPUBLIC	7	2.333
KOREA	249	8.893	PAKISTAN	7	3.5
BELGIUM	232	17.846	ROMANIA	5	1
SPAIN	228	3.931	THAILAND	5	1
INDIA	213	7.1	IRELAND	4	4
CANADA	182	12.133	ARGENTINA	2	1
BRAZIL	128	7.529	JAPAN	2	0.4
AUSTRIA	126	31.5	SOUTH AFRICA	2	2
NETHERLANDS	112	10.182	TRINIDAD AND TO-	2	0.667
ITALY	102	7.846	COLOMBIA	1	0.5
HONG KONG	99	6.6	ESTONIA	1	1
SINGAPORE	85	8.5	HUNGARY	1	1
PORTUGAL	69	17.25	JORDAN	1	1
MEXICO	54	6.75	MOROCCO	1	1
FRANCE	51	2.684	NORWAY	1	1
NEW ZEALAND	39	7.8	QATAR	1	1
CROATIA	32	6.4	SLOVENIA	1	1
GREECE	30	7.5	TURKEY	1	0.2
SWEDEN	26	13	BULGARIA	0	0
SWITZERLAND	25	3.571	CUBA	0	0
UKRAINE	22	5.5	GHANA	0	0
FINLAND	20	4	SAUDI ARABIA	0	0
IRAN	14	2	SERBIA	0	0
LUXEMBOURG	14	7	SRI LANKA	0	0

**Fig. 1.** The summary of the most popular keywords used in papers about advertising in social media

According to Table 2, researchers from USA have published 3917 papers followed by Israel with 982 papers and United Kingdom with 656 papers. In terms of the average citation, papers published by researchers in Israel and United Kingdom have maintained the highest citations. Fig. 2 shows the results of the collaborations among various countries.

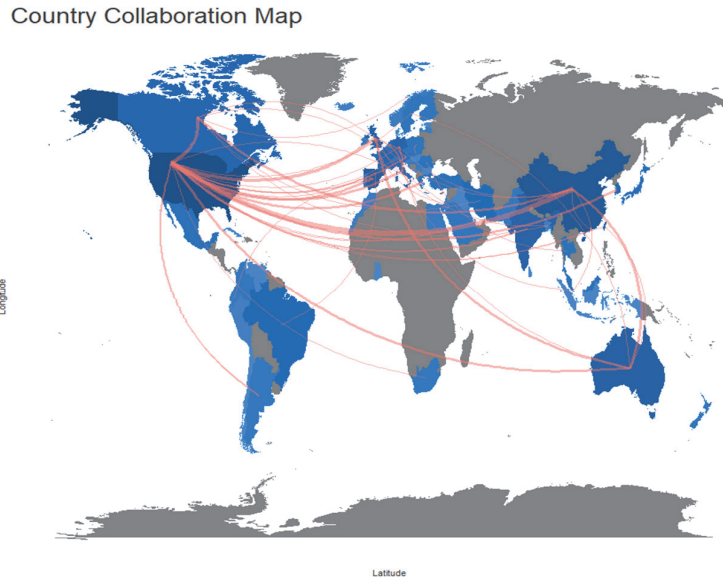


Fig. 2. Country collaboration map

As we can observe from the results of Fig. 2, there were strong collaboration between China and United States. Moreover, there was also a remarkable collaboration between the researchers in United States from one side and other countries.

4. Highly cited papers

Table 3 shows the summary of the most cited articles. As we can observe from the results of Table 3, the study by Goldenberg et al. (1999) received the highest citations in this area. The study on oral marketing and WOM advertising has been devoted on role of social networks in advertising. The focus of this study was on the power of WOM on e-business. In this study, they emphasized on the crucial role of personal communication among intimate groups as well as the impact of the lack of this close relationship among different groups. In fact, special attention was paid to two categories of “weak & strong ties”, and a survey was conducted on this subject. In the article by Trusov et al. (2009), the authors investigated the effects of the WOM advertising on the growth of members of social networks and compared the effects with traditional marketing. The results showed that people who had been absorbed into the market through WOM had significantly improved their survival in that position. Also, the method of calculating the cost of WOM advertising and its difference with other methods of advertising in this research was investigated. In another study, Costa et al. (2008) investigated on how to identify different kinds of tip spam on a popular Brazilian Location Based Social Networks system, namely Apontador. They determined three kinds of irregular tips, namely local marketing, pollution and, bad-mouthing and leveraged our characterization on a classification method which helps differentiate these tips with better accuracy. Trusov et al. (2010) developed a method to determine which users had substantial impacts on the activities of other people using the longitudinal records of members' log-in activities. The method identified the specific users most influence others' activity and did substantially better than simpler alternatives. They also found that, on average, approximately one-fifth of some user's friends actually impact their activity levels on the site.

Social media plays an important role in the area of health care and these days, people present the results of their blood test, X-ray, etc. to specialists through these facilities (Child et al., 2014). According to Greene et al. (2011), several disease-specific information are presently exchanged on Facebook and other online social networking sites. These are considered as new sources of knowledge, support, and engagement for patients living with different deceases such as chronic disease, yet the quality but the content of

the information provided in these social networks are still poorly understood. Hemminki et al. (2010) studied the role of the cooperation between patient firms and the drug industry in Finland through social network. According to Jones et al. (2012), better use of e-health services by patients definitely provides better outcomes and reduces medical expenses. Mackey and Liang (2013) investigated the role of the Pharmaceutical digital marketing and governance and studied the role of illicit actors and challenges to global patient safety and public health. Despite the fact that social media may provide good information for users in health related topics. Weitzman et al. (2011) in a survey concluded that the information must be used cautiously. Nevertheless, many studies have suggested that employing people for advertising health related products may increase the profitability in drug industry. According to Fenner et al. (2012), recruitment the young people for health research by old techniques is now more costly and the use of social media and Internet may present an opportunity for innovative recruitment modalities. Arcia (2014) described that many people use Facebook advertisements as an inexpensive participant recruitment among women in early pregnancy. Some people call social media advertisement as tool with minimal regret (Aslay et al., 2015). Atkinson et al. (2017) performed a comprehensive study to see the effects of alcohol advertising on social networking sites. Privacy is another issue in social media communication. Syred et al. (2014) performed a survey on whether users should share their health related problems on social pages such as Facebook. They discussed that health promotion interventions on social networking sites could communicate individually tailored content to a large audience and also examined which elements of moderator and participant behavior stimulated and maintained interaction with some deceases on Facebook. Social media are also used to medical survey and it helps collecting useful information quickly (Nelson et al., 2014).

Tourism is another interesting areas which could be boosted using social media advertisement. These days, many travel agencies use social media to attract people all over the world (Vigil, 2010; Chen & Law, 2016). Hernández-Méndez and Muñoz-Leiva (2015) performed a survey to find out what type of online advertising would be most effective for e-tourism in future. Social media is also used for political campaigns (Cunha et al., 2014; Boerman & Kruikemeier, 2016). For instance, Boerman and Kruikemeier (2016).discussed how different political groups used Twitter for promoting their team leaders in presidential complains. Towner and Dulio (2012) discussed how political campaigns used social media to promote the presidential election in United States. Vesnic-Alujevic and Van Bauwel (2014) described how different European political groups used YouTube in the campaign for the European Parliament elections. Social learning is one of the interesting topics that has been mentioned in the context of social networking and advertising. It is important to categorize different types of consumers to get insights for social learning purposes both theoretically and managerially important. A consumer decides whether to adopt a product after receiving a private signal about product quality and observes the actions of others (Chen et al., 2011; Lazarsfeld & Merton, 1954). People often make decisions after observing and learning from others' actions (Banerjee, 1992; Bikhchandani et al., 1992). Consider a consumer is deciding whether or not to buy a new electronic device. He/she has some preferences for a product but is unsure about its quality. She then notices that a friend has bought it, but others did not. Conventional wisdom suggests that the consumer is more likely to emulate his/her friends. As a result, people normally follow their friends in decisions such as which movie to watch and which political candidates to vote for (Moretti, 2011; Sinha & Swearingen, 2001). Social media are important determinants of how people reach other people's opinion and form beliefs. In the past, most people used to get their feedback from other people in meeting, phone conversation, etc. Obviously, these kinds of feedback are limited to geographical locations, ethics group, etc. However, when a person shares his/her opinion through social media, anyone in the globe can reach and add comment. These days, well reputed online shoppers provide some forums to get customers' feedback about their products and services (Chen et al., 2011). For instance, Facebook and Amazon have built a common platform to share customers' feedback since 2010 and this has boosted the products (Villiard & Moreno, 2012). Such instances present profound trends of consumer social learning based on electronic commerce and social life: (1) the consumers' ability to read the actions of others before making their own final decisions, and (2) the company's unprecedented potential to strategically implement various social networks among consumers. Compared with the situation

where a consumer can only find others' behaviors within a physical location, people may now perform on a much larger scale on the Internet. By enhancing different methods such as social login with Facebook and other social network services, companies increasingly attempt to decide whether people can observe the behavior of other people (Zhang et al., 2015). Table 3 shows the summary of the most cited articles.

Table 3
The summary of the most cited articles

Paper	Total	TC per Year
GOLDENBERG J, 2001, MARK LETT	967	53.7222
TRUSOV M, 2009, J MARK	878	87.8
COSTA P, 2008, IEEE J SEL AREAS COMMUN	361	32.8182
GREENE JA, 2011, J GEN INTERN MED	347	43.375
NEKOVEE M, 2007, PHYS A STAT MECH APPL	331	27.5833
TRUSOV M, 2010, J MARK RES	318	35.3333
STIEGLITZ S, 2013, J MANAGE INF SYST	293	48.8333
XIN RS, 2013, INT WORKSHOP GRAPH DATA MANAGE EXP SYST , GRADES - CO-LOCATED SIGMOD/PODS	257	42.8333
RAMO DE, 2012, J MED INTERNET RES	188	26.8571
FENNER Y, 2012, J MED INTERNET RES	186	26.5714
GUHA S, 2008, PROC WORKSHOP ONLINE SOC NETW , WOSP	169	15.3636
LIU K, 2010, IEEE TRANS SIGNAL PROCESS	163	18.1111
TUCKER CE, 2014, J MARK RES	143	28.6
ENDERS A, 2008, EUR MANAGE J	133	12.0909
SHAH D, 2009, FOUND TRENDS NETWORKING	126	11.4545
SEIFERT B, 2003, J BUS ETHICS	118	7.375
MANCHANDA P, 2008, MARK SCI	117	10.6364
TERLUTTER R, 2013, J ADVERT	113	18.8333
CHANG RM, 2014, DECIS SUPPORT SYST	112	22.4
WINER RS, 2009, J INTERACT MARK	105	10.5
BAKSHY E, 2012, PROC ACM CONF ELECTRON COMMER	100	14.2857
HUANG CY, 2010, TOUR MANAGE	100	11.1111
BRENNAN L, 2010, J BUS RES	99	11
DELIENS T, 2014, BMC PUBLIC HEALTH	88	17.6
BENNETT WL, 2006, ANN AM ACAD POLIT SOC SCI	81	6.2308
BROMLEY DB, 2000, CORP REPUTATION REV	77	4.0526
LIANG BA, 2011, J AM MED ASSOC	74	9.25
PROVOST F, 2009, PROC ACM SIGKDD INT CONF KNOWL DISCOV DATA MIN	74	7.4
KAYTOUE M, 2012, WWW - PROC ANNU CONF WORLD WIDE WEB COMPANION	70	10
LIANG BA, 2011, J MED INTERNET RES	69	8.625
VAN HOYE G, 2009, J OCCUP ORGAN PSYCHOL	69	6.9
GJOKA M, 2008, PROC WORKSHOP ONLINE SOC NETW , WOSP	68	6.1818
FREEMAN B, 2008, J EPIDEMIOLOG COMMUNITY HEALTH	66	6
KOSINSKI M, 2014, MACH LEARN	65	13
CLEMONS EK, 2009, DECIS SUPPORT SYST	65	6.5
RAMO DE, 2014, INTERNET INTERV	63	12.6
SHRIVER SK, 2013, MANAGE SCI	63	10.5
KAPP JM, 2013, J CANCER EDUC	63	10.5
GUHA S, 2010, PROC ACM SIGCOMM INTERNET MEAS CONF IMC	63	7
YANG WS, 2006, PROC ANNU HAWAII INT CONF SYST SCI	63	4.8462
HE W, 2011, PROC INT CONF DISTRIB COMPUT SYST	59	7.375
PHAN M, 2011, J GLOB FASH MARK	58	7.25
SMITH AMA, 2004, SEX TRANSM INFECT	57	3.8
YUAN NJ, 2013, COSN - PROC CONF ONLINE SOC NETWORKS	55	9.1667
MÅNSSON M, 2011, ANN TOUR RES	55	6.875
WEITZMAN ER, 2011, J AM MED INFORMATICS ASSOC	55	6.875
NAM S, 2010, MARK SCI	55	6.1111
HEIDEMANN J, 2010, PROC INTER CONF INF SYS	54	6
SCOTT G, 2008, INT J DRUG POLICY	53	4.8182
GRBOVIC M, 2015, PROC ACM SIGKDD INT CONF KNOWL DISCOV DATA MIN	51	12.75
PARVEEN F, 2014, TELEMATICS INF	50	10
YANG T, 2012, J COMPUT INF SYST	49	7
ZHANG M, 2011, ELECTRON MARK	48	6
KRASNOVA H, 2009, ICIS 2009 PROC - THIRTIETH INT CONF INF SYS	47	4.7
ALKEMADE F, 2005, COMPUT ECON	47	3.3571
BATTERHAM PJ, 2014, INT J METHODS PSYCHIATR RES	46	9.2
LI Y, 2015, PROC VLDB ENDOW	43	10.75
ZHANG C, 2012, ACM INT CONF PROC SER	43	6.1429

TOWNER TL, 2012, J POLIT MARK	43	6.1429
LI YM, 2011, INF SCI	43	5.375
BHATT R, 2010, INT CONF INF KNOWLEDGE MANAGE	43	4.7778
POLONEC LD, 2006, HEALTH COMMUN	43	3.3077
CHU JL, 2013, J ADOLESC HEALTH	42	7
VIGIL JM, 2010, GROUP PROCESSES INTERGROUP RELAT	42	4.6667
KNOLL J, 2016, INT J ADVERT	41	13.6667
OSBORNE SL, 2015, VACCINE	41	10.25
DINH TN, 2014, IEEE ACM TRANS NETWORKING	41	8.2
CORAZZA O, 2014, J PSYCHOACT DRUGS	41	8.2
MART S, 2009, J GLOBAL DRUG POLICY PRACT	40	4
VOLKOVA S, 2015, PROC NATL CONF ARTIF INTELL	39	9.75
KOROLOVA A, 2010, PROC IEEE INT CONF DATA MIN ICDM	39	4.3333
AMON KL, 2014, ACAD PEDIATR	38	7.6
JENSSEN BP, 2009, PEDIATRICS	38	3.8
ZHU WY, 2015, PROC ACM SIGKDD INT CONF KNOWL DISCOV DATA MIN	37	9.25
CLOSE S, 2013, J MED INTERNET RES	37	6.1667
DELIENS T, 2015, BMC PUBLIC HEALTH	36	9
HALE TM, 2014, J MED INTERNET RES	36	7.2
ARMENATZOGLOU N, 2013, PROC VLDB ENDOW	35	5.8333
BARRETO AM, 2013, J RES INTERACT MARK	34	5.6667
ALOWIBDI JS, 2013, PROC IEEE/ACM INT CONF ADV SOC NETWORKS ANAL MIN , ASONAM	34	5.6667
ZHANG X, 2012, INT J ENG EDUC	34	4.8571
CLEMONS EK, 2007, ACM INT CONF PROC SER	34	2.8333
HARRIS ML, 2015, AM J EPIDEMIOLOG	33	8.25
LIU K, 2010, ICASSP IEEE INT CONF ACOUST SPEECH SIGNAL PROCESS PROC	33	3.6667
LEE J, 2016, INT J INF MANAGE	31	10.3333
QIN J, 2014, PROC IEEE INFOCOM	31	6.2
TRUONG Y, 2010, J STRATEG MARK	31	3.4444
DE CRISTOFARO E, 2014, PROC ACM SIGCOMM INTERNET MEAS CONF IMC	30	6
MALANDRINO D, 2013, PROC ACM CONF COMPUTER COMMUN SECUR	30	5
KIM D, 2013, ELECT COMMER RES APPL	30	5
LI YM, 2012, INT J ELECT COMMER	30	4.2857
BISGIN H, 2012, WORLD WIDE WEB	30	4.2857
MURILLO AC, 2012, IEEE COMPUT SOC CONF COMPUT VIS PATTERN RECOGN WORKSHOPS	29	4.1429
DONELLE L, 2012, ONLINE J ISSUES NURS	29	4.1429
ROMERO NL, 2011, BOTTOM LINE	29	3.625
PFEIFFER M, 2010, J ADVERT RES	29	3.2222
CHO J, 2008, COMMUN RES	29	2.6364
HADIJA Z, 2012, QUAL MARK RES	28	4.0000
ENSOR J, 2001, J INF SCI	28	1.5556
SOARES AM, 2012, J TRANSNATL MANAGE	28	4.0000
MART SM, 2011, SUBST USE MISUSE	28	3.50000
GUILLORY A, 2010, ICML - PROC , INT CONF MACH LEARN	27	3.00000
JING P, 2018, IEEE TRANS KNOWL DATA ENG	27	27.0000
YANG WS, 2008, EXPERT SYS APPL	27	2.4545
WANG C, 2011, SIGIR - PROC INT ACM SIGIR CONF RES DEV INF RETR	27	3.3750
NELSON EJ, 2014, J MED INTERNET RES	26	5.2000
HASTINGS G, 2013, BMJ (ONLINE)	26	4.3333
HASTINGS G, 2010, BMJ (ONLINE)	25	2.7778
KWON KH, 2014, AM BEHAV SCI	25	4.8000
GOEL S, 2014, MARK SCI	23	4.6000
WEN C, 2009, ICIS 2009 PROC - THIRTIETH INT CONF INF SYS	23	2.3000
GINSBURG M, 2002, PROC ANNU HAWAII INT CONF SYST SCI	23	1.3529

As we can observe from the results of Fig. 3, “Marketing” is a one of the main issues in the discussion of social networks and advertising. Predicting the individuals’ behaviors is the primary objective of the social sciences from the economists’ perspective (Hiebert, 1974; Manski, 2007) to psychologists (Ajzen & Fishbein, 1980), sociologist (Burt, 1987; Coleman et al., 1966), and business partners (Bass, 1969; Mahajan et al., 1990). The targeting decision is informed by predicting which individuals are most likely to take action, for example, to adopt an innovative product, to support a cause, to switch providers, or to change in response to marketing communications. Traditionally, as long as there are only a limited number of television stations and papers that the majority of people may reach, big corporations may easily reach both intended and unintended groups without wasting their times (Iyer et al., 2005).



Fig. 3. The frequency of the keywords used in different advertising in social network studies

The rapid growth on media such as television, satellite, and Internet bandwidth have created more opportunities for small and medium enterprises to reach customers more easily. As a result, we see a more competition for marketing products and services. During the past few years, targeting has included whatever predictors were effective, affordable, and available. For more than a decade, online marketers have forecasted behavior at the individual level based on different variables such as age, gender, etc. (Goel & Goldstein, 2014). Today, ad servers can respond to the text of the page being viewed, be it a news story or personal email, and deliver ads on the fly that match page content (contextual targeting) (Gupta et al., 2004; Malthouse & Blattberg, 2005). After many years of advances, the baseline models for forecasting consumer behavior have reached a higher level. Moreover, new sources of data will constantly request the question of the degree to which targeting can be improved (Goel & Goldstein, 2014).

5. Contribution of the countries

One of the interesting areas of the interest is to learn more about the contribution of different countries on the impacts of social networks on advertising. As we can observe from the results of Fig. 4, researchers from United States (610 papers), China (228 papers), Australia (144 papers) and Spain (125) have contributed the most on advertising.

Country Scientific Production

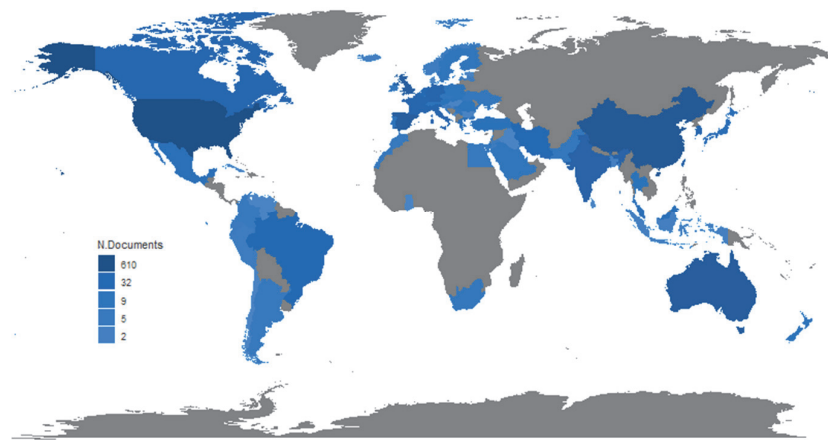


Fig. 4. The frequency of the keywords used in different advertising studies

6. Conclusion

This study has tried to provide a comprehensive scientometrics review of the studies published in the literature associated with the impacts of social networks on advertisement. Social media has appeared to become an appropriate tool for promoting different products and services. Social media has been extensively used in the health care to provide medical treatment, it is also used to share news, pass on rumors or even promote political parties. We hope this survey provides sufficient information for interested researchers for future works.

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