

BIBLIOMETRIC ANALYSIS OF RESEARCH ON DIGITAL MARKETING FROM 2010-20

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Abstract

This study aims to perform citation, trend, content, keyword & co-citation analysis of noteworthy body of scholarly publications on digital marketing published over the last decade. The research publications having “Digital Marketing” in their title were extracted from Scopus; around 296 such publications were identified, among them only 286 publications are being considered for the study. The data set is analyzed using VosViewer software and Voyant tool. The results indicate that the maximum research on digital marketing with the highest number of publications was done in the year 2019. The maximum citations on publications were observed in 2017 and the highest number of citations per publication was seen in the period of 2010-2013. India contributed the most to the research on digital marketing in terms of total number of publications. Digital marketing literature revolved around three key words: social, data and tourism.

Key words: Bibliometric Analysis, digital marketing, marketing, h-index, co-citation, collaborative structure, content analysis.

Introduction

It is the digital era and marketing is transforming (Pal, 2019). In simple words Digital marketing refers to the use of the internet or any electronic media for promotion of products. It has various definitions amongst which one says that “Digital marketing is the use of technologies to help marketing activities in order to improve customer knowledge by matching their needs” (Chaffey, 2012). With the gradual growth of the internet, digital marketing is not just selling products now, it has become a whole network of software, stock trading, consumer behavior analysis etc. Today digital marketing has become a very vital part of any business, corporate and organization’s marketing strategy. In addition, “it is so powerful that it can help revive the economy and can create tremendous opportunities for governments to function in a more efficient manner” (Munshi, 2012). The latest trends in digital marketing revolves around Social media marketing, mobile marketing and video marketing. These tools provide humongous reach to the potential customers and make marketing easy and efficient.

Businesses today have moved from using social platforms as merely a means to broadcast content to really listening, mining and understanding the social data to provide stronger insights that deliver a better, more personalized customer experience (Bear, 2015). Successful businesses must have social woven into the fabric of daily operations, from marketing and sales, to service and research, to employee communications and collaboration (Bear, 2015).

Just to explain the urgency Wilcox (2016) stated that ‘To avoid putting the brand at risk of ‘so last-century’ status, it is critical to adapt as fast as the ceaseless parade of new platforms, devices, applications, social media as market expectations demand.’

Digital marketing so pervasive that it has been deployed strategically even in recruitment (Snyder & Schaffer, 2019); employee engagement (Burnett & Lisk, 2019); financing elements (Slywotzky, 2001).

Various researches have been carried out on digital marketing in the past years, it becomes necessary to analyze the research in the Digital marketing area, basically to get some important information or to know the various trends in its development.

Bibliometric/Bibliographic analysis-

Bibliometric analysis is an attempt to access quantitatively the quality of journals or authors by using statistical methods. It can be used to evaluate various activities, but it is commonly used to evaluate scholarly publications. Bibliometric information in consideration with publication includes authors, citations, sources of publication, co-citation, keywords and usage to the reader. Citation refers to the references on which the author's research investigation depends, tracking and understanding them would be a key to determine the influence of research. Consequently, researchers have used bibliometric analysis based on statistics and mathematics to analyze various journals, publications etc. Bibliometric analysis is also used by various information scientists to analyze core journals and publications in various fields and interrelationship between various authors from different institutions and social thought. Bibliometric analysis measures the number of papers, total citations on the paper, average citation per paper, percentage of cited and uncited papers and the impact of the journal. Analysis can be performed by various software including VosViewer, CitNetExplorer, Bibexcel and many more. In view of conducting bibliometric analysis, a dataset of all available various journals and research papers with the title including "Digital marketing" was produced.

Embracing Digital Marketing-

Digital marketing is an evolving and dynamic concept, before it traditional marketing was prevalent and is still in use. As mentioned above various factors including the trend in the internet gave birth to digital marketing and the concept has evolved overtime. In the past 3 decades digital marketing had to keep up with the growing digitization and technology upgradation. Various trends have been observed in these past 30 years from the introduction of big data to the increasing role of social media, artificial intelligence, mobile marketing, video marketing, influencer marketing, search engine optimization (SEO), search engine marketing (SEM), web analytics and many more.

Social media has become an important aspect of digital marketing overtime as it is free and has a great global reach as out of 3 million people using the internet, 2 million use social media and use of social media has increased by more than 70%.

Mobile marketing is another important aspect in digital marketing, as more than 40% internet users' time is spent on mobiles which means that it is a great opportunity to target the audience. Mobile marketing has various components like use of app based marketing, SMS marketing, mobile search ads etc. Email is another digital platform for marketing and it involves sending advertisements using electronic mail to a group of people and potential or current customers.

Influencer marketing is another trend in digital marketing that is considered a part of social media marketing involving the promotion of products or brands by people having committed social following, it works efficiently because the followers have trust on the influencer and believe what they say. Seeing the involvement of various social media platforms, YouTube won't stay back. This gave birth to video marketing which is use of dedicated videos for promotion of products and brands and a recent study claims that there is 57% more chance of conversion in Video ads than any other source.

These were some examples of the reach and diversity of digital marketing, it is just evolving and using each and everything connected to the internet and having mass reach as a tool for marketing.

The company should utilize the components that fit them the best. The deemed authors have conducted various researches and papers were published to analyze these trends and their impact on digital marketing. With the increasing growth of internet and social media today and tomorrow, the topic digital marketing would be momentous for each and every organization.

There have not been many efforts for conducting a comprehensive bibliometric analysis of these papers. Hence, this study becomes necessary to acknowledge the contribution and impact of various authors and their publications in the development of Digital marketing. This research paper would enable us to identify the

research focus and trends of digital marketing over the last decade in different periods, gradually understanding its evolution and changes overtime.

Objectives Of The Study-

1. To analyze publishing trend in the period ranging from 2010-2020 for papers published with 'digital marketing' in their title.
2. To citation analysis as well as geographical analysis of literature in digital marketing.
3. To identify the influential publications and authors in the area of Digital marketing.
4. To perform a content analysis to explore themes pursued by researchers involved in digital marketing.

Methods-

First of all, the dataset was created by extracting publications from Scopus by searching for articles having digital marketing and its synonyms in their title, around 296 such publications were identified, among them only 286 publications are being considered as the research focus of this paper is on the research publications that were published in the field of digital marketing over the last decade i.e from 2010-2020(Q1) only. For conducting bibliometric analysis, VOSviewer software was utilized.

VOS stands for "visualization of similarities". It is a software that develops bibliometric maps based on the dataset and provides 3 kinds of visualization- network visualization, overlay visualization and density visualization. It constructs and visualizes bibliometric networks based on citations, co-authorship, co-citation links and helps to create and explore maps based on network data. It allows its unique feature to zoom more into maps for detailed view and analysis. VOSviewer can also create clusters according to the relationship between nodes and use colors to define their density. Every node indicates authors, publications etc. The difference between the nodes shows the relation between them, smaller the distance greater the similarity. This helps to analyze the cluster of items that are closely related to each other but on the other part, it creates the problem of overlapping of labels. In the case of co-authorship networks, the margins between the nodes indicate that the article were published by the authors together and hence indicating the author's cooperative structure. Another important feature of VOSviewer is that it can easily produce large maps having more than 10,000 items and allows to take a screenshot of all the maps.

Research Approach-

The first step towards performing the bibliometric analysis was to create a database of various publications and journals having "Digital marketing" and its synonyms as titles. The publications were taken from Scopus (publication catalogue). The data was properly arranged and managed, providing them with author id and mentioning the year of publication, number of pages, link to the publication, number of citations, authors, keywords etc.

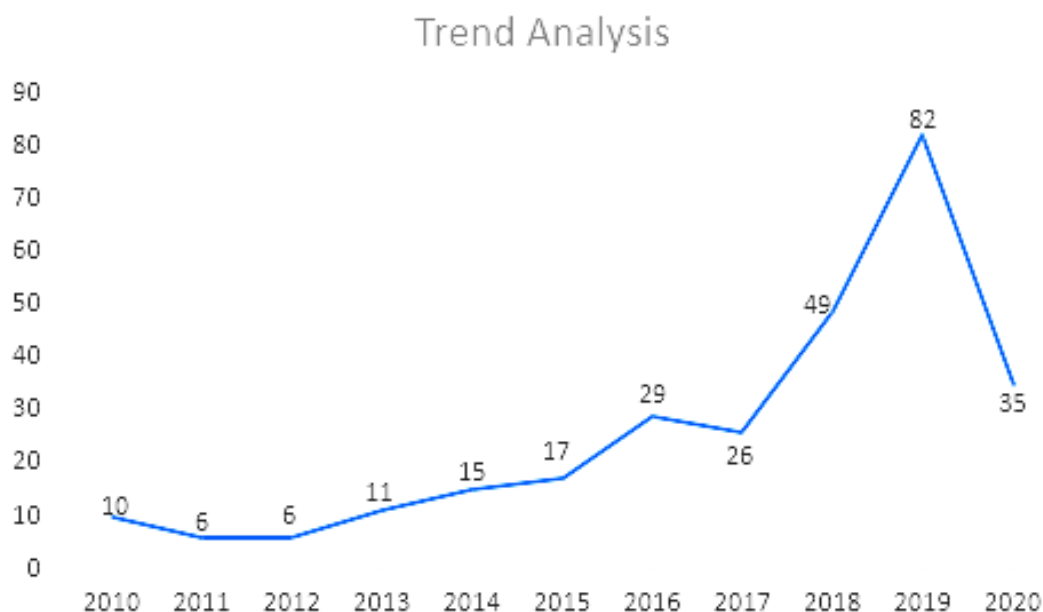
Firstly, to analyze the trends of publications in digital marketing research, the period of 10 years was bifurcated into 3 timelines 2010-2013, 2014-16, 2017-2020(Q1). This would help to analyze the number of publications in different periods and compare them based on total citations(TC), total number of publications(TP) and average citation per publication (TP/TC) are taken as a base to analyze and compare the authors, publications and countries/ territories. To determine the most influential publications, only the total numbers of citations were considered. This method is somewhat similar to the one used by (Yu, D., Wang, W., Zhang, W., & Zhang, S., 2018).

Analysis & Results -

Bibliometric analysis of the papers was conducted keeping in mind the objectives of this paper. Various aspects were explored and variations were examined, figures and tables are being used to provide better explanation and analytics. Firstly, there is a need to analyze the publishing trend of papers to know the growth of research in different periods.

Figure 1

Year-wise frequency of publication in Digital Marketing field (2010-2020)



Publishing Trends of research papers related to digital marketing-

It is clearly seen in the fig-1 that the frequency of publication was quite less between 2010-2013. But in the period of 2014-2016 there was a slight rise in the number of researches and publications. The frequency of research and publication was at its peak in the period between 2017-20, with maximum research in 2019 as observed in Table-1. This indicates an increased trend of research in the digital marketing area in the period between 2017-20.

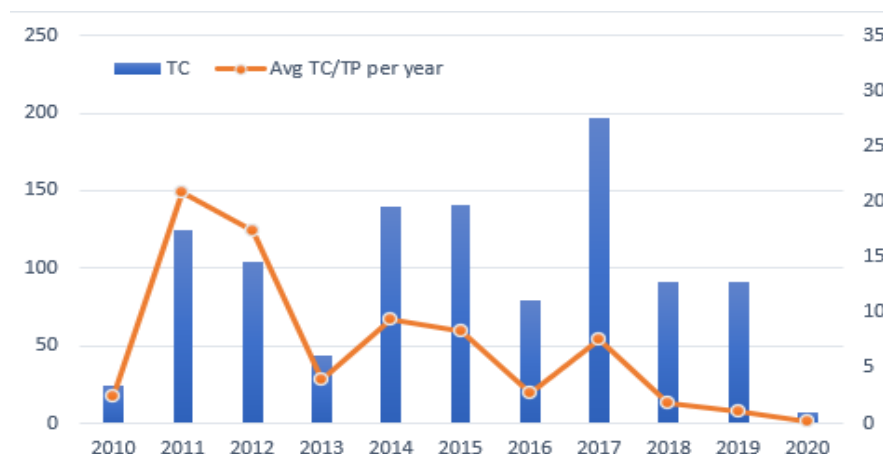
Table 1 Year wise total number of publications, citations and citations per publication.

Year	Total Publications	Total Citations	Citations per publication
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2020-Q1	36	7	5.1
2019	84	111	1.3
2018	49	69	1.5
2017	26	767	29.5
2016	29	75	2.6
2015	17	141	8.2
2014	15	184	12.2
2013	11	44	4
2012	6	104	17.3
2011	6	125	20.8
2010	9	24	2.7

After analyzing the publishing trends of paper the focus shifts towards the year wise frequency of total number of citations and citations per publication. Citation refers to the source which an author consulted and on which he was dependent while writing his own research paper. The image below provides a graph for better analysis of it.

Figure 2 Year-wise frequency of Total citations and citations per publication per year (2010-2020)



As evident in Figure-2, the total number of citations and citations per publication per year is being analyzed. The period between 2010-13 has a total of 297 citations on publications/publications. There was a slight increase in the number of citations on publications during 2014-16 and the maximum citations on publications was observed in 2017 with around 200 citations in a year.

If we shift our focus to the citations per publication per year, 2011 observed the highest value with on an average of 20 citations per year. Based on the time period, 2010-2013 acquired more citations per

publication/publication per year than any other time period. 2019 recorded the lowest with an average of 1 citation per publication/publication per year.

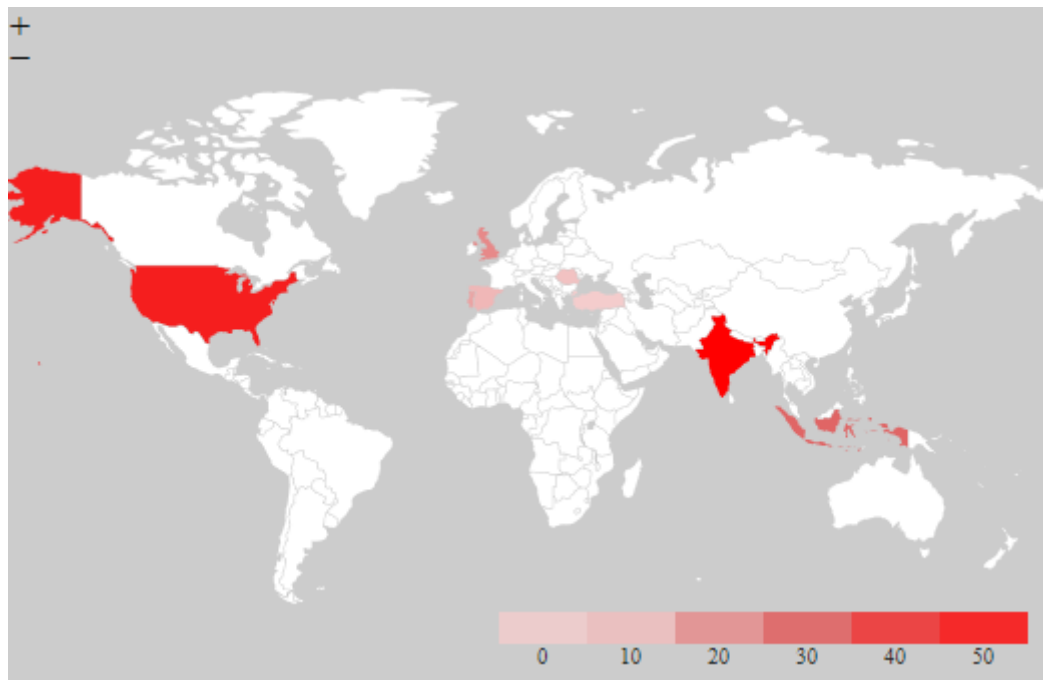
Before moving on to the most influential publication, there is a need to recognize the contribution of the countries/territories towards the publication of papers on digital marketing and determine the country having contributed the most to it. The table below provides an overview of the top 10 countries with the total number of publications and citations from them during 3 different timelines.

Table 2 Top 10 productive countries / territories in three different periods

RANK	COUNTRIES	TP	TC	TC/TP	2010-2013		2014-2016		2017-2020	
					TP	TC	TP	TC	TP	TC
1	India	46	42	0.9	0	0	10	16	36	26
2	United States	40	407	10.1	9	208	9	18	22	181
3	Indonesia	26	76	2.9	0	0	2	2	24	74
4	United Kingdom	19	122	6.4	10	56	3	55	6	11
5	Portugal	14	132	9.4	0	0	3	118	11	14
6	Spain	10	9	0.9	0	0	1	1	9	8
7	Romania	8	10	1.2	0	0	0	0	7	3
8	Finland	6	112	18.7	0	0	3	98	1	0
9	Thailand	6	66	11	0	0	0	0	6	66
10	Turkey	6	3	0.5	0	0	0	0	6	3

Figure-3 offers an insight about the contribution of countries/territories to the research in Digital marketing. It is observed that the major contribution in the research on Digital marketing is seen from South Asia, North America and Europe. The table 2 shows country wise contribution based on the values of total number of publications, total citations. India is ranked first with the most number of publications (46) in the period between 2010-2020 based on the total number of publications, followed by the United states with 40 publications and Indonesia with 26 publications. If we compare on the basis of total number of citations (TC), the top 3 contributors are the United States, Portugal and the United Kingdom. Although India have the highest number publications (TP) but its performance in terms of average citation per publication (TC/TP) is quite lower as compared to other countries. Finland has the highest number of average citations per publication (TC/TP), followed by Thailand and the United States. Table 2 also helps us to analyze the trends in publication of the top 10 contributing countries mentioned. In the years 2010-2013, the United states and United Kingdom were the only two countries that had published a paper on Digital marketing. In the period between 2014-2016, other countries apart from the United States and United Kingdom had entered the research field among which the most prominent ones were India, Portugal and Finland. In the past 3 years from 2017-2020, the number of publications from India, Indonesia and Portugal has consistently increased. However, the publications from Spain, Romania, Thailand and Turkey have shown steady growth over the periods.

Figure 3 Distribution of global countries/ territories of digital marketing research Publication (2010-2020)



One of the major objectives of bibliometric analysis is to determine the most influential publications, which is determined on the basis of total citations which implies that the paper having the most number of citations is the most influential in that particular period. The Table 3 provides an overview of the same.

Table 3- Top 20 most influential publications according to TC

Rank	Author	Total Citations	Rank	Author	Total Citations
1	Kannan, P. K. (2017)	132	11	Mackey, T. K., & Liang, B. A. (2013)	23
2	Tiago, M. T. P. M. B., & Veríssimo, J. M. C. (2014)	117	12	Chaffey, D., & Patron, M. (2012)	23
3	Smith, K. T. (2012)	73	13	Confos, N. and Davis, T. (2016)	22
4	Syazali, M., Putra, F., Rinaldi, A., Utami, L., Widayanti, W., Umam, R., & Jermisittiparsert, K. (2019)	66	14	Li, S., Li, J. Z., He, H., Ward, P., & Davies, B. J. (2011)	19
5	Järvinen, J., & Karjaluo, H. (2015)	59	15	Smith, K. T. (2011)	19
6	Royle, J., & Laing, A. (2014)	49	16	Buchanan, L., Kelly, B., & Yeatman, H. (2017)	18
7	Wymbs, C. (2011)	46	17	Chester, J., & Montgomery, K. C. (2017)	14
8	Taiminen, H.M. and Karjaluo, H. (2015)	37	18	Boelsen-Robinson, T., Backholer, K., & Peeters, A. (2015)	14
9	De Pelsmacker, P., Van Tilburg, S., & Holthof, C. (2018)	34	19	Leppäniemi, M., Karjaluo, H., Lehto, H., & Goman, A. (2010).	14
10	Levy, S., & Gvili, Y. (2015)	23	20	Watrobski, J., Jankowski, J., & Ziemba, P. (2016)	12

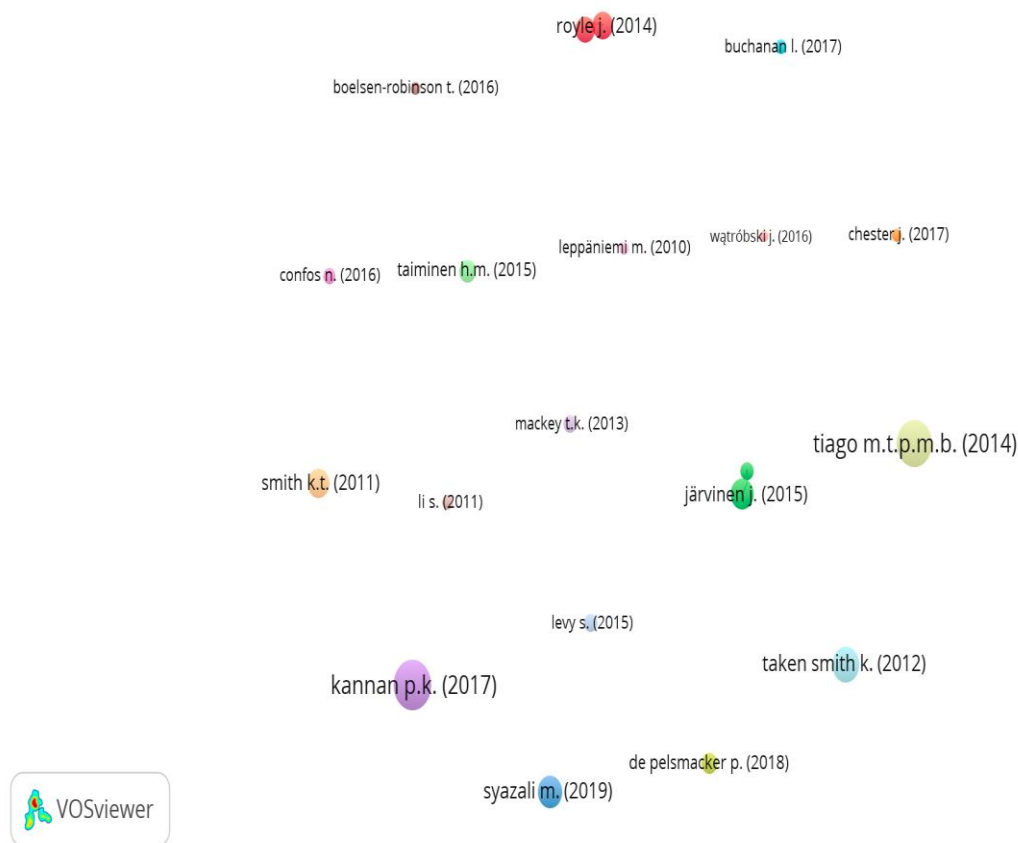
Table 3 lists the top 20 influential publications in the field of Digital Marketing on the basis of their total number of citations (TC). While analyzing these 20 influential publications, authors identified three key themes i.e. Strategies, Social media and youth.

It is observed that most of these 20 publications were published during the periods of 2014-2016 and 2017-2020. These influential papers are mostly centered around

1. strategies for digital marketing,
2. effect of social media,
3. effect of digital marketing on society or the youth,
4. impact of digital marketing on industrial revolution 4.0.

As we can clearly notice in the fig-4 that among the top 20 most influential publications only two i.e. Royle, J., & Laing, A. (2014) and Järvinen, J., & Karjaluoto, H. (2015) have established links with other influential publications and both having one separate link.

Fig 4 Citation network of the top 20 most influential publications in Digital Marketing



The table 6 shows the top cited authors according to the total number of citations. The **authors having minimum 2 publications** were analyzed and are ranked based on the total number of citations. The table also provides an h-index of the authors as presented on Scopus and provides the affiliations to which the author belongs.

Table 6 Top 20 cited authors based on total citations.

Rank	Author	Institution/ Affiliation	TP	TC	h- index
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1	Karjaluoto H.	University of Jyväskylä, Finland	4	118	25
2	Li S.	Westminster Business School, London	4	31	40
3	Chaffey D.	Marketing Insights Limited	2	23	2
4	He H.	Westminster Business School, London	2	22	-
5	Lehto H.	University of Oulu, Finland	2	22	-
6	Leppaniemi M.	University of Jyväskylä, Finland	2	22	8
7	Martins J.	University of Trás-os-Montes and Alto Douro, Portugal	3	10	12
8	Au-yong-oliveira	Universidade de Aveiro, Portugal	2	8	8
9	Branco F.	University of Trás-os-Montes and Alto Douro, Portugal	2	8	10
10	Moreira F.	University of Trás-os-Montes and Alto Douro, Portugal	2	8	16
11	Teixeira S.	University of Trás-os-Montes and Alto Douro, Vila Real, Portugal	2	8	3
12	Jorge F.	University of Trás-os-Montes and Alto Douro, Portugal	2	6	2
13	Krishnan C.	Amity University, Noida, India	2	6	2
14	Malik P.	Amity International Business School, Noida, India	2	6	2
15	Sahai S.	Amity University, Noida, India	2	6	3
16	Singh G.	Amity University, Noida, India	2	6	5
17	Li J.Z.	Westminster Business School, London	2	4	57
18	Medury Y.	Jaypee Group, New Delhi, India	2	3	7
19	Mekonnen A.	GSM Association, London, United Kingdom	2	3	2
20	Shihab M.R.	Universitas Indonesia, Depok, Indonesia	2	2	4

From Table-6, **It is evident that** out of 20 most influential/cited authors, 14 comes from Europe specifically Portugal, Finland and the United Kingdom. This indicates that Portugal, Finland and the United Kingdom have made substantial contributions to research in the Digital Marketing area on the basis of the number of citations and publications.

Figure-5(a) Authors keywords

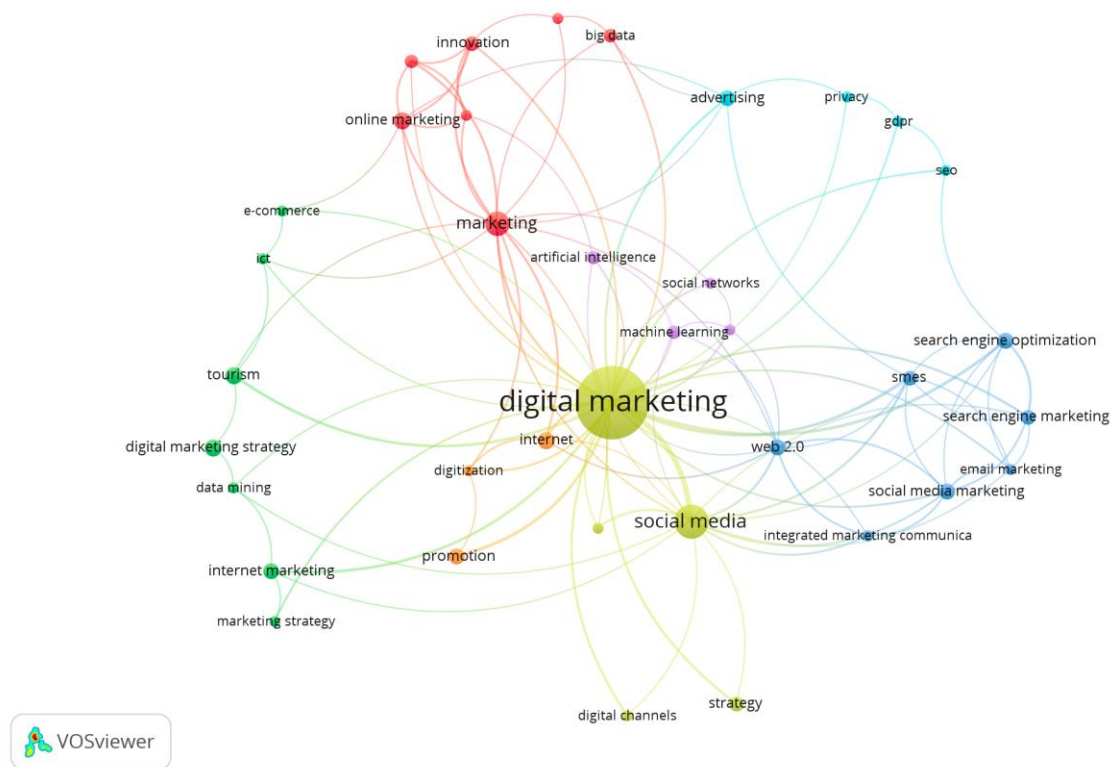


Figure-5(b) Co-occurrence network of the top 20 keywords

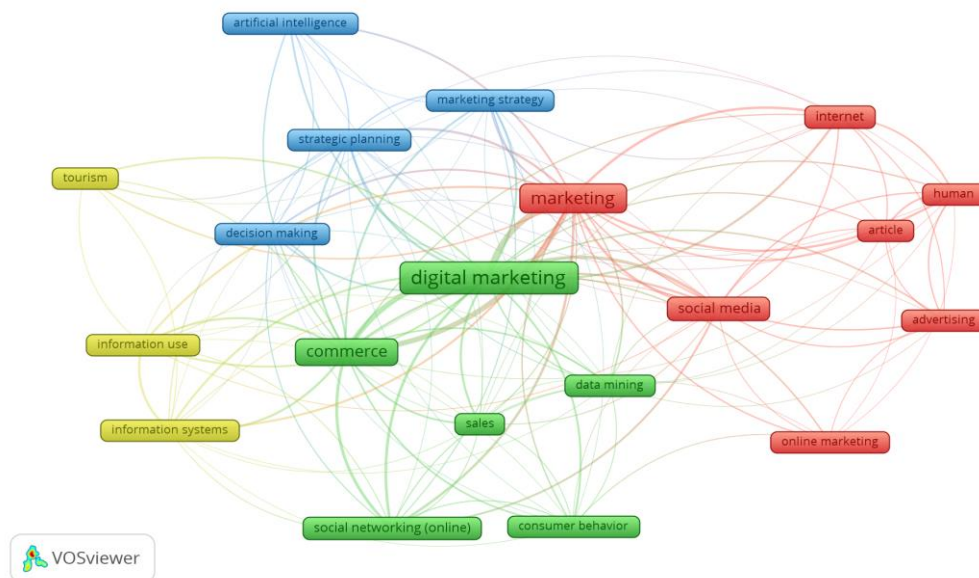


Figure-5(a) and 5(b) gives an insight into the most used keywords by the authors and the co-occurrence network of top 20 keywords respectively.

Figure-5(a) provides the co-occurrence network of keywords used by authors that have occurred at least 7 times, Digital marketing is the most frequently occurring keyword used by authors and has links with 19 keywords including marketing, artificial intelligence, promotion, machine learning etc. The second most frequently occurring keyword used by the author is social media and has 12 links with other keywords including SMEs, internet marketing. Social media marketing, machine learning etc. The third most frequently occurring keyword is marketing and has 10 links with other keywords including web2.0, innovation, big data, online marketing etc.

Figure-5(b) gives an insight into the top 20 most frequently occurring key words in all the papers and their co-occurrence network. Here also just like in figure-5(a), digital marketing is the most frequently occurring keyword with 158 occurrences and has 19 links. The second most frequently occurring keyword is marketing with 104 occurrences and has 19 links with other keywords including strategic planning, decision making, informative use etc. The third most frequently occurring keyword is commerce with 78 occurrences in all the papers and has 17 links including consumer behavior, sales, data mining, information use etc.

The image below provides a co-keyword network of the most frequently occurring keywords during different periods, which would allow us to determine the focus of research using the links between them. The large nodes are the words having most links and hence are associated with the most number of words. The words most used shall be the focus of research during that particular period.

Figure 6 Co-keyword network in different period (a) 2010-2014, (b) 2015-2017, (c) 2018-2020

(A)

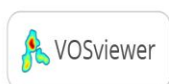
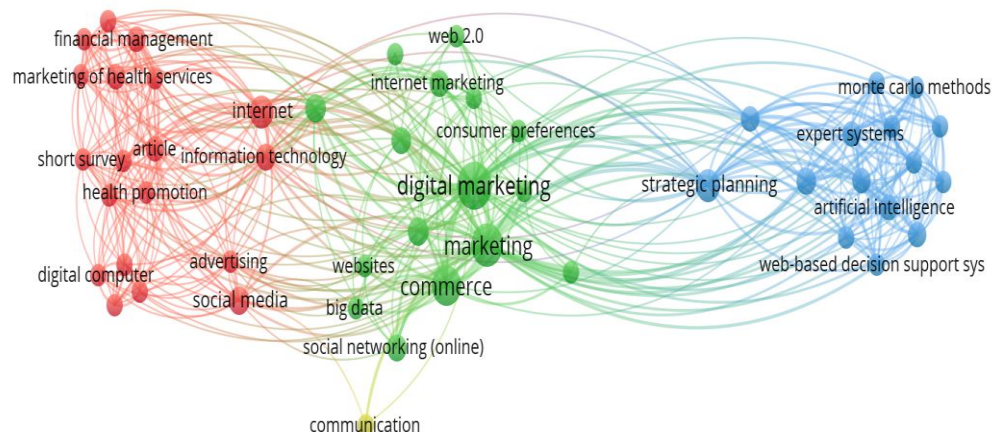




Table 7 – Changing Focus of Digital Marketing Research

2010-14	2015-17	2018-2020
1. strategic planning, 2. importance of information technology for digital marketing 3. role of e-commerce	1. impact of social media 2. the effect of digital marketing on commerce	1. application of digital marketing in decision making 2. social networking 3. relationship between digital marketing and sales

During the period of 2010-14, the research focus was mainly on strategic planning, importance of information technology for digital marketing and role of e-commerce in development of internet marketing. The research in the period of 2015-17 was more focused on the impact of social media and the effect of digital marketing on commerce. The period 2018-2020 had focused more on application of digital marketing in decision making and social networking and relationship between digital marketing and sales. If we compare the periods of 2015-2017 and 2018-2020, the later has shifted research focus on consumer satisfaction, mobile marketing, SMEs, regional planning, big data, decision making etc. The focus of research depends on relevance of certain things in a particular time period that would affect the subject of research. Table 7 summarizes how focus has moved from strategy to impact and then applications & outcomes.

Conclusion:

To fulfil the objectives and aims of this paper, bibliometric analysis of 286 publications in the Digital marketing field was conducted keeping in mind the different aspects of it.

One of the interesting observation is the select countries from North America, Europe and Asia has contributed to the Digital marketing research. Any research emanating from Africa and South Africa will make it an across the globe phenomenon.

Europe emerged out a dominant region in terms of most influencing researchers. Although India was leading in the number of publications but there was seen a rise in contributions from Portugal, Indonesia and Spain especially from past three years.

Another interesting observation is lack of collaboration amongst the researchers of top twenty publications. Collaboration between top researchers would through more insights. Authors strongly feel there is need of more collaboration amongst highly cited researchers. Any collaboration with African or Latin American researchers would help in expanding the 'digital marketing' literature.

Themes pursued by digital marketing researchers were more strategic initially but later started focusing upon social as well as business outcome. Of late in last two years few technologies based themes were seen such as big data, data visualization, artificial intelligence, machine learning, digital technologies (Refer figure 6 - C). Author strongly have opinion that themes such as ethics, privacy, customer engagement, involvement needs to be undertaken in years to come.

The fact that this paper has its limitations cannot be ignored as it extracted only one publication catalogue which is Scopus and did not take other indexing agencies into consideration.

Hence, the scope of this paper is limited due to one database. A further can be taken for other research databases. Even more granular research would be possible by focusing upon top 100 most cited papers across the databases.

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