

A Bibliometric Analysis using Biblioshiny on Future of Artificial Intelligence in Digital Marketing

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Abstract: In the success of digital marketing the *Artificial Intelligence (AI)* plays a very significant role. Human intelligence transforms into machines in AI. It collects data on customer's behaviour and learns about their interests and desires. AI easily understands customer's behaviour and gives personalised treatment. Many AI tools are used for data analysis. In the digital marketing, Artificial Intelligence is boon or bane, depending on how to use AI. If we use it responsibly then definitely, it can be a very powerful tool for solving problems and good for future. But if we misuse it, businesses will face dangerous consequences. AI improve the quality life and time of human beings, provide safety and more productive, the AI-based technologies are used by businesses. By using the Scopus database, the paper analysed 282 publications through "Bibliometric Analysis" using Biblioshiny. This paper tries to present a systematic and analytical review on the application of AI in digital marketing.

Keywords: Artificial intelligence, Bibliometric, Biblioshiny, Digital marketing, Personalised treatment.

I. INTRODUCTION

Artificial Intelligence transforms human behaviour into machines. It is a very powerful tool. Digital marketing means, the activity which is done with the help of electronic sources. Nowadays customer's prefers buying and selling activities via digital platforms. And the machine easily learns their desires and interest. Accordingly machine will show products to them. AI easily reaches out to customers and gives personalised treatment. Many AI tools are used for data analysis and more. With the AI, Businesses captures the market.

II. LITERATURE REVIEW

Christopher Collins, Denis Dennehy, Kieran Conboy, and Patrick Mikalef [1] - Says that a state-of-the-art of AI research in Information Systems between 2005 and 2020. This study is based on the 15 years of AI evolution and the findings suggest that more systematic literature review is required to know about AI, its tools and models. Their analysis depends upon 1877 studies. They have collected conference papers and journal articles from – eLibrary, Scopus, Web of Science and International Journal of Information Management.

Iain M. Cockburn, Rebecca Henderson, and Scott Stern [2] - The study revealed the Impact of Artificial Intelligence. This chapter has collected data from the articles and books through the Web of Science from 1955 to 2015. The purpose of this paper is to raise some possibilities that are helpful for management Institutes and policies.

Mudit Verma [3] - This paper concluded about the concept of artificial intelligence, the scope of artificial intelligence in different areas with special to "the field of education". The study has another aspect that it can be dangerous for human beings. Dependency on machines ruin our life completely, if we don't use our body then we will lose them. So, use machine whenever it requires the utmost.

Olaf Zawacki-Richter, Victoria L. Marin, and Franziska Gouverneur [4] - This paper explains the AI, in the publication and authorship pattern of Education research. This study gives an overview and the potential of AI applications in the higher education and trying to facilitate students, faculties, and administrators, but the study also revealed that the consequences of AI applications in Education will see in the next 20 years. It is very helpful for teachers, students as well as for administration.

James Cannella [5] - This paper analyses the impact of artificial intelligence on marketing at micro and macro levels. AI is helpful for current applications as well as for future, how to implement it and where improvement is required. AI is beneficial to marketers, consumers, and society at large. Marketer's understands the desires of customers easily and provide whatever they want at right time and at right place. The study has provided an over view that how artificial intelligence has a potential to change everything drastically.

Sanjeev Verma, Rohit Sharma, Subhamay Deb, and Debojit Maitra [6] - This paper highlight the importance of artificial intelligence (AI) in marketing. The present study is based on the analysis of literature that was published during 1982-2020. Authors have used bibliometric, conceptual and intellectual network analysis. This paper analysed 1580 research papers. They have also explained how to use artificial intelligence in marketing and in so many other fields – like in strategy, product, pricing, place, and in promotion management etc.

Anantha Murthy, Pushpa Mamoria, Rakesh Kumar, Sujay Shrivastava, and Shaun Kannampallil Thomas [7] - This research paper aims to identify the recent advances and future trends in the application of artificial intelligence (AI) and machine learning (ML) in the field of marketing.

They have also explained the various applications of AI and ML in marketing, like marketing segmentation, customized marketing, pricing, and customer relationship management. Challenges and limitations associated with AI and ML in marketing is also identified by the authors. This paper also offers practical insights for marketers and organizations, and guide them that how to use AI and ML in this competitive era and achieve target.

Abid Haleem, Mohd Javaid, Mohd Asim Qadri, Ravi Pratap Singh, and Rajiv Suman [8] - This study reveals that AI is highly dependent on the nature of the website and the type of business. By using AI, marketers easily understands customer and fulfil their desires at the right time. For this research paper author read relevant articles on AI in marketing from Scopus, Web of Sciences, Google Scholar, Research Gate etc. With the help of AI marketer easily target their customer and their personalise experiences.

Girish Garg, Mohd Shamshad, Nikita Gauhar, Mosab I. Tabash, Basem Hamouri, and Linda Nalini Daniel [9] - The study focused on Fintech's functions and research constraints in digital finance. The study used the Scopus database and analysed 665 publications through "VOS-Viewer" software and "Biblioshiny" using RStudio.

Neha Saini [10] - This paper reveals features of artificial intelligence, introduction, definitions of AI, history, applications, growth and achievements.

Abdul Moaz Alkhayat, and Ahmed Mohamud Ahmed [11] - This study analyse the influence of artificial intelligence and

its uses in digital marketing. How artificial intelligence will use in digital marketing and also improve their performance by using it. Analysis was done through semi-structured interview questions.

III. OBJECTIVES

- To find out the most relevant authors in Artificial Intelligence who have published research papers?
- Find out the most relevant sources of artificial intelligence research papers?
- Which country does the maximum research in the domain of AI in digital marketing?
- Find out the most frequent word used in AI?

IV. LIMITATIONS

This research paper has collected data from the Scopus database only and not collected data from Web of Science, which is also one of the main sources of data collection. Here, the researchers try to show the future of Artificial Intelligence in digital marketing. The researcher focused on the data which is from 2013-2023 by using Biblioshiny software.

V. METHODS

- *Data Collection* – For this study database were extracted from the Scopus between the years 2013 to 2023. A total of 282 conference, articles and research publications were taken into consideration for this investigation.
- *Methodology* - Publications on Artificial Intelligence in digital marketing were retrieved from the English Database. Bibliometric analyses were performed using R, R Studio and Biblioshiny software to evaluate the work of different countries, authors and many more.

VI. RESULT ANALYSIS AND INTERPRETATION

A. Descriptive Analysis

Elsevier's Scopus database is used for collecting published work on Artificial Intelligence. As can be seen in Fig. 1, the main information regarding the study is present between 2013-2023. The database is described by bibliometric analysis and numerical expressions were used. In this figure, picture is generated by Scopus, which is differentiated by timespan (2013-2023), sources (141), documents (282), annual growth rate (12.51%), author (791), average citations per document (21.52), references (18243), keyword (1030), single author (37), international co-author (34.04%), document type – article or conference paper.



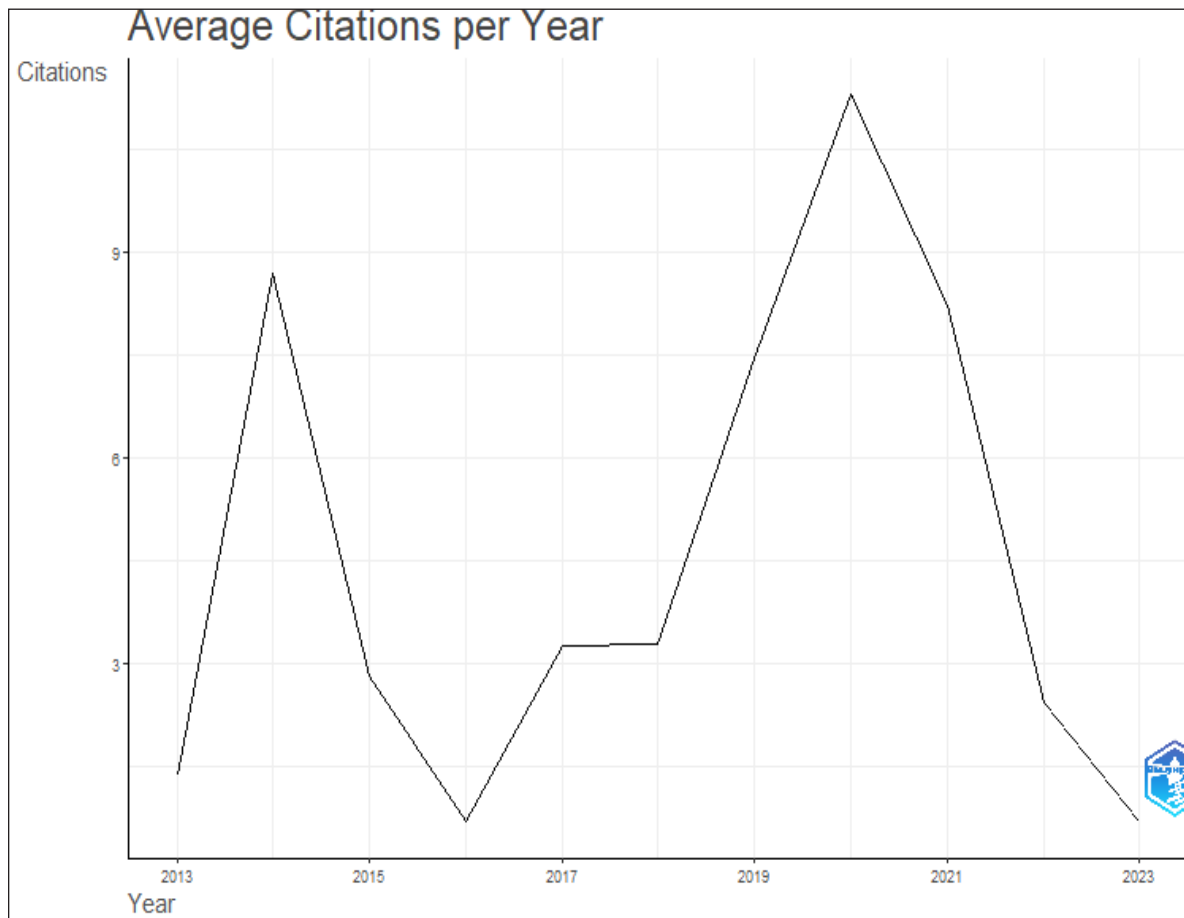
Source - Author's contribution.

Fig. 1

B. Annual Citation Per Year

Fig. 2 explains annual citations per year. The researcher selected 2013-2023 articles & conference papers. Regarding

the citations, the year 2020 has the maximum average citation. The minimum average citation was in the year 2016 and 2013. The graph was generated by Scopus.

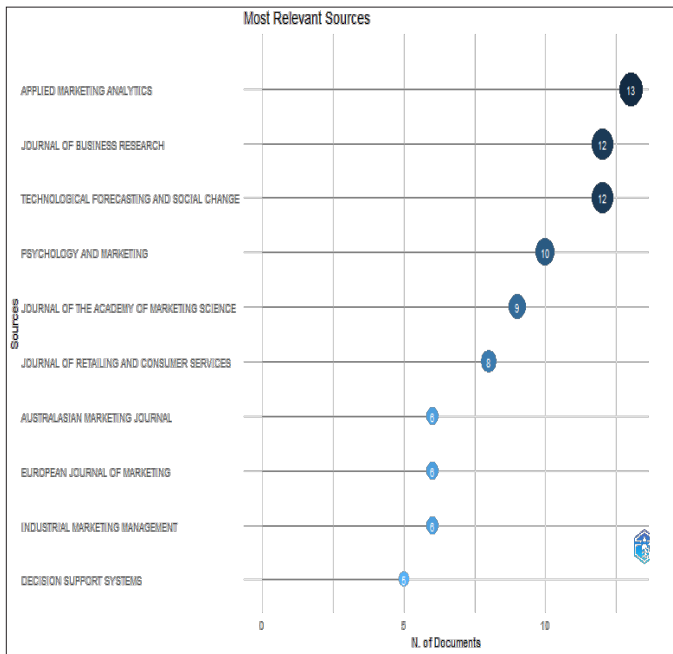


Source - Author's contribution.

Fig. 2

C. Most Relevant Sources

The most relevant sources as per the analysis of Scopus were Applied Marketing Analytics. The second source is the Journal of Business Research, and the third is Technological. The Forecasting and Social Change, The fifth is Psychology & Marketing, the sixth is the Journal of Retailing & Customer Services, and the three sources are at same position that is number seven, sources are Australian Marketing Journal, European Journal of Marketing & Industrial Marketing Management Journal. And at the last number, eight is a Decision support system. The Graph shows an upward trend.

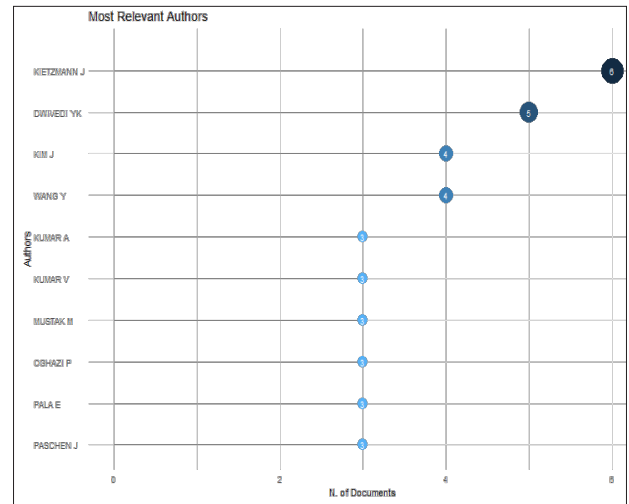


Source - Author's contribution.

Fig. 3

D. Most Relevant Authors

Fig. 4 explains to the most relevant author as per the analysis of Scopus was J. Kietzmann, Dwivedi, J. Kim, and Y. Wang are in 2nd, 3rd & 4th place of relevant authors. Six authors (A. Kumar, V. Kumar, M. Mustak, P. Oghazi, E. Pala, and J. Paschen) had scored the same rank. Artificial intelligence is in demand in every sector, so authors are writing several articles and conference papers related to artificial intelligence. The Graph is generated by Scopus.

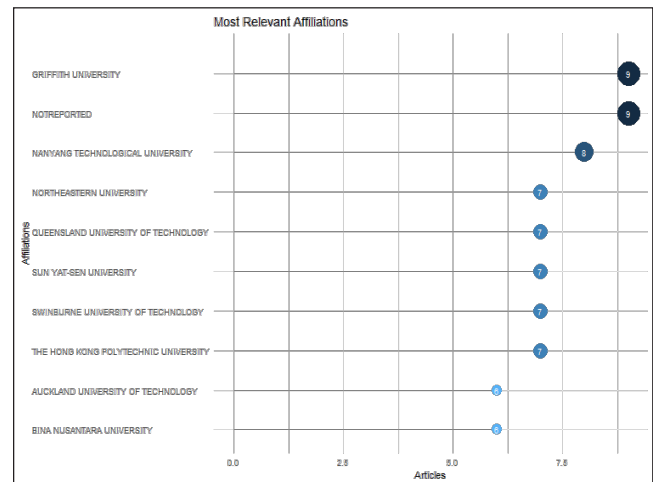


Source - Author's contribution.

Fig. 4

E. Most Relevant Affiliation

Fig. 5 shows the Most Relevant Affiliation based on Artificial Intelligence. Griffith University & Not reported are the two most relevant Affiliations. Nanyang Technological University is at second most relevant affiliation. There are five affiliations that are Universities at number three (Northeastern, Queensland of Technology, Sun Yat-Sen, Swinburne, University of Technology and Hong Kong Polytechnic University). After that, there are two more during 2013-2023, which are the last relevant affiliation (Auckland University of Technology & Bina Nusantara University).



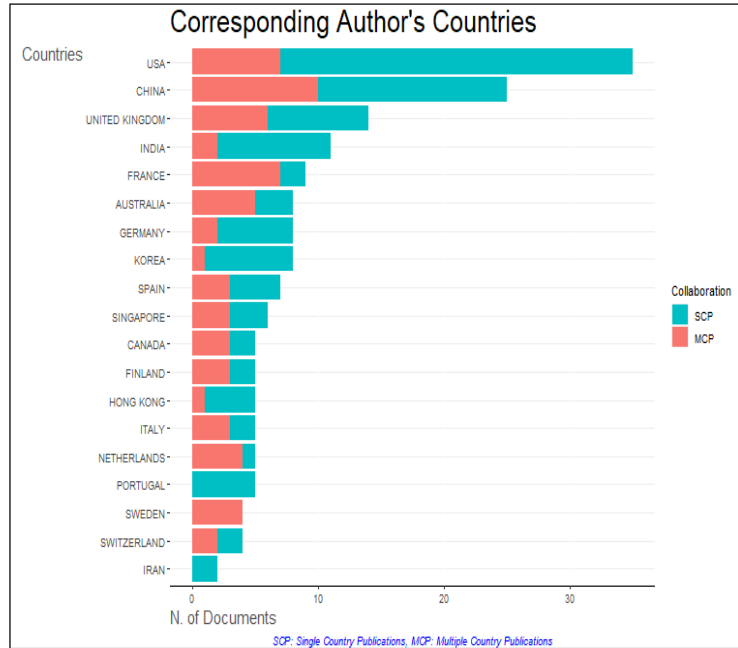
Source - Author's contribution.

Fig. 5

F. Corresponding Author's Countries

Fig. 6 explains the corresponding Author's Countries with the help of a graph. The number company is USA, second is China, United Kingdom, India is at 4th place. Other countries like France, Australia, Germany, Korea, Spain, Singapore, Canada,

Finland, Hong Kong, Italy, Netherlands, and Portugal hold 5th position. The Graph is divided into two portions; one is SCP (Single Country Publications), and the other one is MCP (Multi Countries Publication). Portugal & Iran have one which has only SCP, similarly, Sweden has multi-country publications only. The Graph is prepared by Scopus.



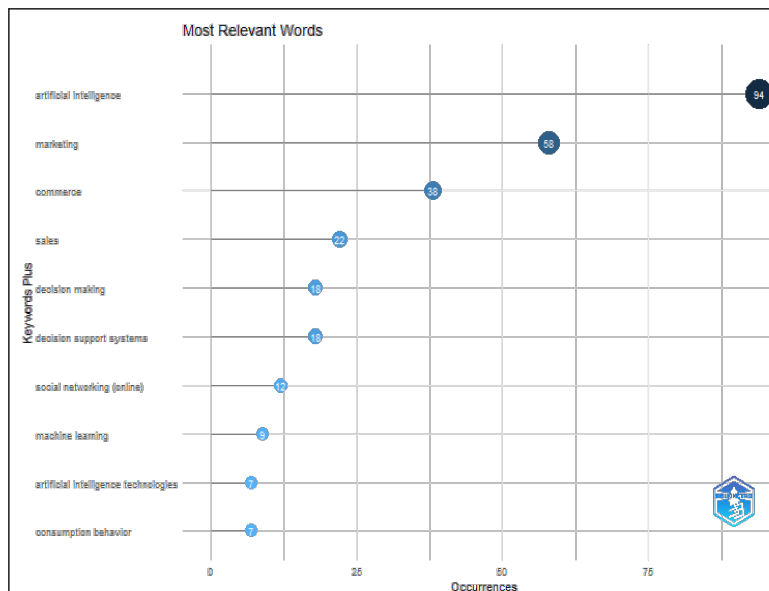
Source - Author's contribution.

Fig. 6

G. Most Relevant Words

Fig. 7 shows the, most relevant words. The first relevant word is AI, second is marketing, the third word is commerce, and the fourth is sales, at fifth place there are two words decision-

making and decision support system, sixth is social networking (online), seventh is machine learning, eighth is artificial intelligence technologies and consumption behaviour. The Fig. 7 and Fig. 8 (Tree Map) below is prepared by Scopus, Bibliometric Analysis using Biblioshiny.



Source - Author's contribution.

Fig. 7

