

AI transforming the future of Digital Marketing

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Abstract

Today everyone is so much digitally connected that one information can be passed in fraction of seconds which has become an advantage and challenge on the same time for various companies to sustain in market and generate the revenue. Easier communication has come up to be an advantage for the companies at the same time the challenge is to sustain in market with so much competition. AI has come up as a promising solution to the problem where many of the companies have adapted this technology to enhance their business in digital marketing as well as still many of the research is going on worldwide making it an attractive area for research. In this paper we have discussed the various applications of AI in digital market with its usage. The whole search has been done from Scopus database and complete statistics are provided in this paper which can be helpful for various researchers with future research directions.

Keywords

Artificial Intelligence, Sales, Marketing, Machine Learning, Automation.

1. Introduction

Today is a fast-paced multi-tasking world, where on one hand we try to get all our work done in least amount of time possible. Huge increase in number of devices being used has been seen leading to generation of tremendous amount of data. Various researches are going on in the field of technology where a boom has been observed in the field of Internet of Things, Data Science, computation, computer vision etc. Among these one of the most emerging and widely adopted technology is Artificial Intelligence[1]. Unlike the traditional ways, Artificial intelligence-driven researches in the market are combined with other origins such as text, data such as passive and behavioral, sales, social media etc. As per Statistics Research Department, in 2020 a survey was conducted where 13 percent of the candidates are in sales and business development being a supplier stating it as most in-demand skill in the organization where as 8% buyer category has done synthesis of data from multiple sources [2,3]. Technologies are playing a pivotal role for AI and attracting the customers and providing a competitive edge and advantages. Organization way of operation has been changed because of this cutting-edge technology. AI is helping various organizations in keeping a track to real time data for analysis process and quick response can be given to all customer requirements[4]. AI predicts the customer next move and changes the experience overall which enhances the usage of AI as a tool for predicting expectations of the customer and can help in taking the various decisions. However, there are some limitations also in this technology which will also be addressed in this paper and constraints of AI faced for implementation of this technology which are worked by various scientist working in the field of mind theory and self-awareness of AI based systems with intelligence[5].

Many of the applications are there in the AI driven digital marketing such as user filling whole day plan data via voice assistants such as google or siri, Bixby, Cortana etc[6,7] AI filtering is pretty much possible automatically by AI powered methods, automatic vehicle assistance be it for smart

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parking system or self-driven cars. With so many applications in current market many of the technologies have helped a lot such as Deep Learning, Machine Learning, Natural Language Processing (NLP) are used for handling of large amount of data for generation of big data used for market intelligence. After going through so many applications, a curiosity is generated and based on those organization of further paper is as follows:

- Section 2 addresses the related work with research question that what is principle working of AI.
- Section 3 discusses the use of AI in marketing which further tells all the areas where AI is used in marketing management.
- Section 4 describes the topics which are trending nowadays and future directions in research.
- Section 5 all the findings have been concluded.

2. Related Work

AI is the intelligence which is comprised by machine which make it respond to a query in an intelligent manner by perceiving the environment is the main goal. Researchers are working tirelessly in this field and have produced some amazing technologies like big data analytics and applications in machine learning over a past decade[8].

2.1. AI Principle Working

On this earth, human is termed to be as most intelligent creature who has the power to think, process all the information and the same is expected out of machines which gave birth to a technology known as AI where human intelligence can be transferred to machines for task execution and accomplishments which might be of simple in nature or complex in nature[9,10,11] AI has three basic pillars or concepts on which its working is based on

- Machine learning
- Deep Learning
- Neural Networks

These basic concepts are further used in development of natural language processing, mining of data and driving various software's. Majorly if we see AI and machine learning are used side by side but AI is more of a broader term used with Machine Learning and leaving other two concepts i.e., deep learning and neural networks as its subset.

2.2. Machine Learning Advantages

Being a subset of AI and popularly and widely used every time with AI technology has made machine learning quite a popular technology and widely used one over the other technologies because of its power and ability to think outside the code, to learn about a task even when no code exists[12]. As these tasks, problems which were input are processed machines make some learning and with those learnings independent execution of activities are being done[13,14].

2.3. AI Adapting Advantages

Customer Perspective: After learning of principle working of AI can be clearly seen what AI has power to do and how it can make machines intelligent. Not only that a friendly environment can be created for customers asking query or any information which can help in building good company-customer relationships which can give a lot of advantage to many of the companies worldwide[15].

Marketers Perspective: With the help of AI digital base and insights obtained by many companies can run their own campaign to boost the investment returns and overall performance. Further Error rates can be reduced in manual work or accounting firms can benefit a lot from the automation process. For

increasing the sales, a brand image can be built as per the need of the target audience and can enhance in building of prospective customers [16].

2.4. Risk and Limitations

It is widely known that when something comes with some advantage then challenges come in part and parcel. Similarly with every technology implementation when there are some advantages, there are some limitations as well where AI has a limitation with the data availability that appropriate insights can only be obtained if accurate and wide data sets are available with the advancement of technology privacy of a user can be hampered and sometimes not considered.

3. AI in Marketing

In today's digital market, every user is having a number of devices where they continuously try to find what they are looking for which many be a product or companies doing their promotions via various social media platforms. With so much connected world, AI is tremendously used in the digital marketing concepts and in this paper here we discuss the areas where AI is used and associated[17].

3.1. Content Marketing

Various strategies and planning process is done in the sale perspective which has driven a major focus in this area for various companies because it plays a pivotal role in various social media platforms, searches in mobile, multimedia devices. To create brand awareness and make it reachable to a large audience content marketing can be widely used with the help of artificial intelligence [18].

3.2. Mobile Marketing

Nowadays even a small child used smartphone where various social media platforms are used on daily basis making it an attractive area for marketing process because of the ease of availability, usability and easy access. Many of the companies are making applications for their specific brands and this can be widely accepted as advertisements are done via social media, various web pages. Ecommerce brands like amazon are using AI technology for prediction and analysis of user behavior and various web building companies like bookmark are using AI for optimization in web design[19].

3.3. Continuous Marketing

In this type of marketing with the help of intelligence provided by technology customers are continuously reminded about the famous or best seller products with a balance of promotion in offline and online mode. AI has generated endless opportunities for various ecommerce companies who can target the audience and make the product selling process very easy[20].

3.4. Integrated Digital Marketing

Integrated marketing has its own place and importance which ensures that communication and messaging strategies which can be used in the marketing process must be unified worldwide and must have its basis centered around the customers. One of the most popular examples is Google+ which was developed with an AI to see and understand the social signals and understand its patterns [21].

3.5. Visual Marketing

If we see few of the statistics then 19% of queries are searched via images with more than 600 million visual searches on very popular media known as Pinterest every month and it is predicted that in 2021, companies who are able to embed visual and voice search will enhance their commerce revenue by almost 30% in the digital marketing as images or visuals are easy to understand and fast way to gather and process the information as many of the users currently don't want to read the long paragraphs making AI of great usage in such kind of marketing[22].

3.6. Personalized Marketing

AI driven businesses make it easy to communicate with the users and data gathered by applying various AI driven behavior-based algorithms and predictions applications have been made much easier. This type of marketing includes Ad Targeting where ads are placed on the basis of buying history or searches in the web pages, applications used [23].

Table 1
AI Based Case Studies

| Case Study | Company Name | Technology Used | Application |
|-------------------------|--------------------|-------------------------|---|
| Ad Targeting | ReFUEL4 | Computer Vision | Prediction of Advertisement Performance |
| | Match2One | Machine learning | Target people likely to become customers |
| Personalized Messaging | Dynamic Yield | Artificial Intelligence | Use Behavioral data of user for personalized marketing |
| | Luisaviaroma (LVR) | Machine learning | Increase customer retention and revenue generation |
| | YooChoose | Machine Learning | Personalized shopping experience |
| Product recommendations | Recombee | Machine Learning | Delivery of recommendation within 200 milliseconds of user's action |
| | Sentient Aware | Artificial Intelligence | Recommendation engine based on visuals and behavioral interaction of user |
| Dynamic Websites | Bookmark | AI Design Assistant | Build client sites by predictions |
| | LiftIgniter | Machine Learning | Application integration into sites and recommendation as per user needs |

4. Trends and Future Direction of Research

After going through various research papers, it is found that the topics which are in trend nowadays are decision theory, social marketing surveys and methodology, customer relationship management in artificial intelligence-driven marketing, Classifications and support vector machines, artificial intelligence, Deep Learning, marketing campaign and semantic analysis are few of them where a focus can be made in terms of popularity aspects. When we talk about the future research directions then machine learning, semantic knowledge for understanding of customer needs and insights in a better way can be one of the prominent areas. Brain inspired algorithms which includes Psychology science are also becoming an area of interest for various researchers because of the wide usage of applications as well as many companies are seems to be interested in this field. For classification of sentiments, various hybrid machine learning approaches can be developed for efficient process. Though many of the models have been developed for applicability of AI in marketing but still a lot of optimization scope is there in this field which make it one of the prominent and promising area for research perspective.

5. Conclusion

In digital marketing, AI has proven to be one of the promising fields which can help not only customer but the marketer as well and can flourish the company business in many perspectives while fulfilling the basic needs of user and maintaining good company-customer relationships. In this paper we have thoroughly seen the principle working of AI as well as its advantages and limitations as every technology is bounded on some basis which sometimes limit its basic application but if we see in artificial intelligence, possibilities are quite endless. After searching through various Scopus databases, a literature review has been written keeping in mind researcher as well as organizations and a list has been provided for databases, journals and authors who have prominently done quality research in this field. Many of the research opportunities are being discussed so that researchers can benefit from this work and enhance their information and research work in future.

6. References

- [1] Yang, X., Li, H., Ni, L., & Li, T. (2021). "Application of AI in Precision Marketing." *Journal of Organizational and End User Computing (JOEUC)*, 33(4), 209-219.
- [2] Dwivedi, Y. K., Ismagilova, E., Hughes, D. L., Carlson, J., Filieri, R., Jacobson, J., ... & Wang, Y. (2021). "Setting the future of digital and social media marketing research: Perspectives and research propositions." *International Journal of Information Management*, 59, 102168.
- [3] Lee, J., Jung, O., Lee, Y., Kim, O., & Park, C. (2021). "A Comparison and Interpretation of Machine Learning Algorithm for the Prediction of Online Purchase Conversion." *Journal of Theoretical and Applied Electronic Commerce Research*, 16(5), 1472-1491.
- [4] Kulkov, I. (2021). "The role of AI in business transformation: A case of pharmaceutical companies." *Technology in Society*, 66, 101629.
- [5] Huntinghouse, J., Franks, E., & Fife, B. (2021). "Why Facebook Ads keep failing: Lessons learned from spending over US1m on Facebook Ads." *Journal of Digital & Social Media Marketing*, 8(4), 298-307.
- [6] Lies, J. (2021). "Digital marketing: Incompatibilities between performance marketing and marketing creativity." *Journal of Digital & Social Media Marketing*, 8(4), 376-386.
- [7] Ayn de Jesus "Personalized Marketing with AI – 8 Current Applications" *emerj.com* <https://emerj.com/ai-sector-overviews/personalized-marketing-with-ai/> (Novemebr 22, 2019)
- [8] Verma, S., Sharma, R., Deb, S., & Maitra, D. (2021). "AIin marketing: Systematic review and future research direction." *International Journal of Information Management Data Insights*, 100002.
- [9] Sterne, J. (2017). "AI for marketing: practical applications." John Wiley & Sons.

- [10] De Bruyn, A., Viswanathan, V., Beh, Y. S., Brock, J. K. U., & von Wangenheim, F. (2020). "AI and marketing: Pitfalls and opportunities." *Journal of Interactive Marketing*, 51, 91-105.
- [11] Dimitrieska, S., Stankovska, A., & Efremova, T. (2018). "AI and Marketing." *Entrepreneurship*, 6(2), 298-304.
- [12] Vlačić, B., Corbo, L., e Silva, S. C., & Dabić, M. (2021). "The evolving role of AI in marketing: A review and research agenda." *Journal of Business Research*, 128, 187-203.
- [13] Shahid, M. Z., & Li, G. (2019). "Impact of AI in marketing: a perspective of marketing professionals of pakistan" *Global Journal of Management And Business Research*.
- [14] Vishnoi, S. K., Bagga, T. E. E. N. A., Sharma, A. A. R. U. S. H. I., & Wani, S. N. (2018). "AI enabled marketing solutions: A Review." *Indian Journal Of Economics & Business*, 167-177.
- [15] Siau, K., & Yang, Y. (2017, May). "Impact of artificial intelligence, robotics, and machine learning on sales and marketing." In *Twelve Annual Midwest Association for Information Systems Conference (MWAIS 2017)* (pp. 18-19).
- [16] Cui, G., Wong, M. L., & Lui, H. K. (2006). "Machine learning for direct marketing response models: Bayesian networks with evolutionary programming." *Management Science*, 52(4), 597-612.
- [17] Ma, L., & Sun, B. (2020). "Machine learning and AI in marketing—Connecting computing power to human insights." *International Journal of Research in Marketing*, 37(3), 481-504.
- [18] Salminen, J., Yoganathan, V., Corporan, J., Jansen, B. J., & Jung, S. G. (2019). "Machine learning approach to auto-tagging online content for content marketing efficiency: A comparative analysis between methods and content type." *Journal of Business Research*, 101, 203-217.
- [19] Hagen, L., Uetake, K., Yang, N., Bollinger, B., Chaney, A. J., Dzyabura, D., ... & Zhu, Y. (2020). "How can machine learning aid behavioral marketing research?" *Marketing Letters*, 31(4), 361-370.
- [20] Ładyżyński, P., Żbikowski, K., & Gawrysiak, P. (2019). "Direct marketing campaigns in retail banking with the use of deep learning and random forests." *Expert Systems with Applications*, 134, 28-35.
- [21] Urban, G. L., Timoshenko, A., Dhillon, P. S., & Hauser, J. R. (2019). "Is deep learning a game changer for marketing analytics?"
- [22] Diamond, N., Koernig, S. K., & Iqbal, Z. (2008). "Uniting active and deep learning to teach problem-solving skills: Strategic tools and the learning spiral." *Journal of Marketing Education*, 30(2), 116-129.
- [23] Sarkar, M., & De Bruyn, A. (2021). "LSTM response models for direct marketing analytics: Replacing feature engineering with deep learning." *Journal of Interactive Marketing*, 53, 80-95.