

AI IN SOCIAL MEDIA MARKETING: OPPORTUNITIES AND CHALLENGES

SHREY J. GAJJAR
SHREEYA S. PANDHRE

ABSTRACT

This paper assesses various contributions and drawbacks that come with the integration of Artificial Intelligence (AI) on social media platforms. AI has introduced culture shift in social networks through better targeting of content, improved experience, and content curation, thus making advertising and interacting with users easier. However, the integration of AI has ethical issues, such as privacy invasion, biases of the algorithm, and fake news. The paper explores how the field of artificial intelligence applies to social media beginning with recommendation systems and reaching up to deep learning systems such as GPT-3 and how AI has shifted not only the content curation, but also the sense of sentiment and engagement. As beneficial for innovation and consumption-focused experiences that AI is, it has flaws that require regulations, ethical principles, and fair use of it.

KEYWORDS: ARTIFICIAL INTELLIGENCE, SOCIAL MEDIA, CONTENT PERSONALIZATION, ETHICAL CONCERN, ALGORITHMIC BIAS, MISINFORMATION, DEEP LEARNING, USER ENGAGEMENT, CONTENT CURATION, PRIVACY ISSUES

INTRODUCTION

Modern communication is incomplete without involvement of social media. It will be seen as an informative and socio-psychological tool for influencing the public while keeping and building relationships.

Social media marketing has significantly revolutionized conventional marketing approaches. This swiftly changing sphere is multifaceted and includes several well-known platforms like Facebook and Instagram co-exist with newer players such as TikTok and Clubhouse. This trend has also been apparent where companies have expanded content including multimedia videos or live streams. Narratives and stories being some of them most key features of streams and stories. Utilizing visual storytelling and user generated content has become incredibly significant in creating interpersonal interactions and depending on the level of interaction. Marketers can now target extremely specific audiences based on factors such as demography, interest, and behaviour. In this way, the content can be made more relevant and hence marketers are in a better position to meet this goal with their marketing efforts, which in turn leads to a greater level of participation and conversion rates.

ARTIFICIAL INTELLIGENCE

Artificial intelligence defines a collection of technologies that enable the computer to functionally imitate the human brain.

AI refers to a collection of techniques that power computers to do sophisticated tasks such as visual recognition, natural language processing, making judgments, and many other features.

AI is the pillar of value creation in today's computerized environment for the benefit of individual and organization. For instance, Optical Character Recognition or OCR leverages machine learning to capture plain text and data from an image or a document, transform unstructured information into structure data ready for use within a business and unlock insights.

Seeing and understanding: AI is capable of interpreting what is being seen and can translate both voiced and written words.

Analysing data: AI can transform images and documents into information and then can analyse information to give suggestions.

Learning and reasoning: AI can learn and reason to solve complex problems.

Interacting with the environment: AI can perceive its environment and interact with it.

SOCIAL MEDIA

Social media is known as virtual communication platform which facilitate the creation, sharing and aggregation of content (2). It enable users to share and consume content through varied modalities such as text, image, and video. Social media provide users with interactive services in which they can communicate with friends, family, and organizations all over the world. Moreover, it also used to promote people, companies, products, and ideas. This platforms are typically free and open to anyone with an email address to join.

The number of uses of social networking sites makes it attractive to marketers and organization alike to venture to social media. Social media marketing helps companies to increase brand exposure and broaden customer reach. Mobile social media tools can be applied for sales promotion, marketing research, communication, and relationship development. Mobile social media communication is either company-to-consumer or user- generated content. Social media is also often used for crowdsourcing, which is the process of getting work done by online community or crowd of people in the form of an open call. Facebook, for example, has about 2 billion users across the globe. An ad on such large website can reach out to a massive audience at relatively low costs making it at the forefront of business decision making.(1)

APPLICATION OF AI IN SOCIAL MEDIA

Social media has moved away from its traditional method (B2B) role of being a platform where humans interact and connect with each other. Today, most companies are using social media for ecommerce, customer service, marketing, public relations, and more. The applications of artificial intelligence in social media companies are so many. Examples of how AI is used on social media platforms include analysing text, analysing pictures, detecting spam, social insights, advertising, and data gathering. Some of these applications are discussed as follows (3)

Chatbots: Chatbots have benefited sponsors on social media in many ways. AI-powered chatbots are benefiting digital marketers in many ways AI-powered chatbots are most helpful for digital marketers in different ways. in this modern time, companies introduced AI-powered chatbots on social media for solving their customers' queries in no time. AI tools help companies to automatically answer and interact consumers by developing AI chatbots. . Brands can also use chatbots for businesses to provide personalized support to shoppers. With this, businesses can improve customer experience to a significant level. (4)

Social listening: This is another area in which AI is making a big impact. Social listening is a technique that is often used to monitor a business' social media channels and help listen to what people are saying about your products and services. Through social media listening tools, businesses can efficiently analyse thousands of conversations and identify patterns. They can use the information for their overall marketing strategy.

Security and justice: This domain involve preventing crime and other physical dangers, as well as tracking criminals and mitigating bias in police forces. It focuses on security, policing, and criminal-

justice issues. AI can be used to identify tax fraud using alternative data such as browsing data, retail data, or payments history.

Other areas of applications of AI in social media include customer behaviour, customer analysis, consumer engagement, social media management, social media monitoring, competitive analysis, content creation, content curation, sentiment analysis, social media analytics, image recognition, facial recognition, and text understanding.

OBJECTIVES

The following are the major objectives of the study.

- 1) Outline the advantages and disadvantages of AI driven social media in marketing.
- 2) To study how AI is revolutionizing social media.

LITERATURE REVIEW

Social media is one of the most significant phenomena that has appeared, expanded, and evolved extremely fast over the past decade. Though, together with the advantages of higher cohesion and integration, the use of social media as a center of collaboration and sharing of information has been accompanied by many safety and security challenges. From largely cases of cyber bullying and harassment to spread of fake news /information and theals communicate, interact, and access information online.

HISTORICAL OVERVIEW

1. Early AI Applications in Social Media (2000s)

Research Focus: The application of AI in social media during this period was limited to simple operations such as classification of content, recommendation systems, and detection of spam.

"Collaborative Filtering for Recommender Systems" (2001) by Jannach et al. This paper discussed collaborative filtering methods, which could be considered some of the first recommendation systems, essential for platforms like Facebook and LinkedIn to suggest connections and content to users.

2. Machine Learning and Data Mining Era (2010-2015)

Research Focus: At this time, AI started growing on social media platforms for use in the delivery of feeds and recommendations for the content to show to users to enhance the engagement.

"Deep Neural Networks for YouTube Recommendations" (2016) by Paul Covington, Jay Adams, and Emre Sarge.

In this paper, YouTube's recommendation system where the platform relies on deep learning techniques to find patterns of users and the videos, they are likely to watch next was described.

3. Rise of Deep Learning and NLP (2015-2020)

Research Focus: The application of deep learning for content filtering, deep neural reinforcements for predictions, and ultramodern NLP for chatbots, voice assistants.

"BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding" (2018) by Jacob Devlin, Ming-Wei Chang, Kenton Lee, and Kristina Toutanova. BERT (Bidirectional Encoder Representations from Transformers), which transformed how AI saw and created text, language, was adapt to social media for improving the identification of context, screening content, and natural language interactions of the bots.

4. The Rise of Large Language Models and Generative AI (2020-2024)

Research Focus: Big and efficient models for text, image synthesis and cross-modal AI for interaction and content generation.

"Language Models are Few-Shot Learners" (2020) by Tom B. Brown et al. This paper began by presenting GPT-3 – a language model designed to write human-like text and able to interpret intricate instructions. Now different social networks use GPT-3 for auto-captioning, content generation, and responding to the comments section.

KEY RESEARCH DEVELOPMENTS

"**Artificial Intelligence in Social Media: Opportunities, Challenges, and Ethical Considerations**" M. C. Hossain, M. A. Al-Zain, M. A. R. S. Al-Kabir, M. A. H. Chowdhury (2021). This paper seeks to find out how AI is becoming a crucial aspect of social media and the various areas it is employed in such as recommendation systems, classification of emotions and mobilization of the public. This review also reflects on the possible vices of the algorithms including; biases, privacy issues, and fake news.

"**The Role of Artificial Intelligence in Social Media Platforms: Current Applications, Opportunities, and Future Prospects**" M. A. Khan, F. S. U. Khan, M. N. Khan, M. A. Azam (2020). Within this paper, a vast look will be taken at the extent of AI use in social media

as we focus on content curation, advertising, and user interaction. They state important positives like better targeting of ads and users in general. However, the paper also highlights threats such as Ethical issues; privacy and data security, and the manipulation by the AI-based recommendation systems.

"**Artificial Intelligence in Social Media Marketing: Opportunities, Challenges, and Future Directions**" A. G. Z. Maleki, J. M. Moen, M. S. Pahlavani(2020). This paper aims to discuss how AI is becoming increasingly present in social media advertising to provide new opportunities such as advertising, content curation in real-time, and predictive analytics. It opens up the possibility of better customer interactions but also raises questions about algorithmic influence, data sharing, and the absence of legal norms in AI persuasion techniques.

"**AI and Social Media: The Double-Edged Sword**" M. C. K. Vennila, R. A. M. P. Raja, P. N. R. Prakash (2020). This paper aims to explain the positive and negative sides of AI in the context of social networks. On the one hand, AI may improve the interaction with users and deliver useful information to the companies. While AI-based algorithms may have some inclusive suggestions, it can also uncouth any pre-existing bias, control public sentiments and lead to the sharing of fake news and could misinformation. The paper measures the dangers of AI in social media and the need to have a set of ethical standards and improved governance.

"**Opportunities and Challenges of Artificial Intelligence in Social Media: A Literature Review**" L. Li, X. Zhang, J. Zhang, X. Li, Y. Zhang (2020). This paper brings out a comprehensive analysis of the different approaches used in integrating AI in social media platforms from 2015 to 2021. The topic includes the use in content recommendation, user behaviour modelling, and sentiment analysis. The paper also looks at the disadvantages of AI, for example questions on fairness of the algorithms, privacy, and the problem of controlling AI systems on social media.

METHODOLOGY

This study showing both sided views associated with us of artificial intelligence (AI) in social media marketing. The sources were relied on to get an immense understanding of the topic the sources used included research articles, business publications and empirical cases. In addition, the method used to include the use of available literature and the synthesis of the more recent case studies.

OPPORTUNITIES:

1. **Personalised Content:** AI improves a platform by providing super-targeted content to the target audience, which increases their interest. Many platforms such as Facebook, Instagram and YouTube use the concepts of AI to suggest the contents which include the post, videos or adverts based on

the users' behaviour patterns and their previous interaction history.

For example, AI-driven recommendation systems suggest relevant posts, friends, groups, and even news, keeping users engaged for longer periods.

Content Creation and Curation: AI is also sourcing and generating content across every field, permitting innovation to flow from both casual users and organizations. Graphic designing tools, image and video processing tools, writing and editing tools, and other design bots help the developers in content creation. For instance, AI can caption, produce automatic video, suggest the related images or music for video edition.

2. filtering Misinformation: AI can mitigate the problem of the spread of fake news in the social media platforms. Thus, it is possible to apply machine learning algorithms that filter out fake or fake news by analysing the text, images, or video materials. Some of the goals include the use of AI technology to mark or cut damaging information like hatred speech or fake news to enhance safety in online spaces.

3. Gathering insights through social listening: AI has helped incorporate tools such as social listening that can analysis social media post at scale, listen the audience views on brand and help to discover emerging trends or potential customers to target. People might be using the product and services in way that no one never intended. They will generate new business avenues for promotion for the brand. (5)

4. Reduced marketing costs with better return on investment (ROI): AI can fully or partially automate time-consuming and labour-intensive tasks. It can help a social media marketer increase revenue and reduce costs.

5. Cost-reduction: Once the algorithms and action points are in place, AI can function with minimum human monitoring. This helps to reduce marketing expenditure. AI has the benefit of speed as well as cost versus using human effort.

CHALLENGES:

- **Filter Bubbles:** Personalization makes the clients interested in the content, but relying solely on their interests, they do not see various views and can get trapped in filter bubbles.
- **Addictive Behaviours:** Moreover, due to the high personalization of AI generated content, it causes addiction or excessive use of social media, which in turn has negative effects such as increased rates of anxiety and depression, especially among the young population.
- **Lack of Authenticity:** Machine intelligence content such as deep fake videos and fake voices provide a threat to the reality of social media. AI can be used to twist content thus leading to wrong information dissemination and therefore distrust.
- **Over-reliance on Automation:** Even though AI helps in content generation, the problem will become worse if all content is generated by AI since users prefer real human connections on social media instead of robotic interactions.
- **Ethical Concerns:** The application of ethical artificial intelligence in the social media platform is an issue of much consideration. For example, the algorithms that sort the content by reach and visibility contribute to the misinformation, sensationalism, division, and polarisation. Moreover, exist questions to the responsibility for the AI decisions in controlling the content, which can result in censorship or exclusion of opinions.

FUTURE OF INDUSTRIAL AI

Artificial Intelligence is now a household term used across popular culture, science, and technology. It is having great impact on all over the world and generating and transforming each and every area.

It will going rule the entire world in upcoming generation. Soon, machines will be able to make the same kinds of inferences that humans can. Artificial intelligence is constantly developing in social media. It has a bright future in social media industry as it improves user experiences and help brands to serve them better. AI technologies will likely influence the world of social media in the following ways (7).

- AI will enable the creation of hyper-personalized marketing messages
- AI will provide more robust buyer and customer personas
- AI will make it easier to distinguish between qualified leads and unqualified leads
- AI will enable bots to converse with prospects on just about any topic
- AI technology will help social networking companies to deliver better customer experience and help marketers to target the right customers that will increase their ROI. The best we can do is to wait and see AI evolves.

The Future Of A.I.

Forecasted cumulative global artificial intelligence revenue 2016-2025, by use case (U.S. dollars)



<https://www.business2community.com/social-media/artificial-intelligence-ready-social-media-01856391>

CONCLUSION

This study revealed that the AI has had significant impact on marketing, both in terms of its opportunities and challenges. While AI can provide users personalised content, there are also concerns about privacy of individual, as well as increases addictive behaviour which directly effects mental health. To mitigate these potential negative effects, it is important to promote transparency, media literacy, and human moderation, in order to ensure that social media content diverse and informative.

Moving forward, AI driven content is filtered content which is best interests of users. As, AI technology continues to evolve, it is essential to ensure that ethical consideration and social responsibility are prioritized in the development and use of AI in social media marketing.

REFERENCES

- Chui, M., et al. (2018, November 28). *Applying artificial intelligence for social good*. McKinsey & Company. Retrieved from <https://www.mckinsey.com/featuredinsights/artificial-intelligence/applying-artificialintelligence-for-social-good>
- Datta, S. (2019, November 20). *Social artificial intelligence: Intuitive or intrusive?* BD TechTalks. Retrieved from <https://bdtechtalks.com/2019/11/20/socialartificial-intelligence/>



- Quadros, M. (2020, September). *Artificial intelligence in social media marketing*. Socialbakers. Retrieved from <https://www.socialbakers.com/blog/ai-in-socialmedia>
- Sadiku, M. N. O. (2018, March). *Social media for beginners*. Retrieved from https://www.researchgate.net/publication/324821530_SOCIAL_MEDIA_FOR_BEGI_NNERS
- “Social media.” (n.d.). *Wikipedia, the free encyclopedia*. Retrieved from https://en.wikipedia.org/wiki/Social_media
- Yin. (n.d.). *How we can use AI in digital marketing*. MotoCMS Blog. Retrieved from <https://www.motocms.com/blog/en/ai-in-digitalmarketing/>