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A Study on AI–Driven Social Media Monitoring with Special Reference to Coimbatore City

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Abstract- — This study examines the role of Artificial Intelligence (AI) in enhancing social media monitoring, with a focus on businesses in Coimbatore district. AI technologies such as sentiment analysis, machine learning algorithms, and automated data analytics help organizations track online mentions, understand consumer behavior, and manage brand reputation effectively. The research investigates how businesses are adopting AI-driven social media monitoring tools, the benefits they achieve in marketing and customer engagement, and the challenges faced during implementation. The findings highlight the importance of AI in modern social media management and provide strategies for effective adoption. Results indicate that AI-driven monitoring significantly improves decision-making, enhances brand perception, and strengthens competitive advantage.

Keywords— Artificial Intelligence, Social Media Monitoring, Sentiment Analysis, Brand Management, Data Analytics, Digital Marketing, Coimbatore District

I. INTRODUCTION OF THE STUDY

Social media has become an essential platform for businesses to interact with customers, analyze trends, and maintain brand reputation. Artificial Intelligence (AI) has transformed social media monitoring by enabling automation, real-time insights, and predictive analytics.

AI tools help businesses track consumer sentiment, identify potential risks to brand image, and make strategic marketing decisions. Tools such as natural language processing (NLP), chatbots, and predictive algorithms allow companies to efficiently analyze large volumes of user-generated content across multiple social media platforms.

In the digital era, AI-driven monitoring is vital for businesses to stay competitive, enhance customer engagement, and respond proactively to market trends. This study aims to evaluate awareness, adoption, and impact of AI in social media monitoring, based on responses from 100 participants.

Objectives of the Study

- To examine how AI technologies are used in analyzing social media data.
- To study the role of AI in sentiment analysis and customer behaviour prediction.
- To evaluate how AI-driven monitoring improves brand reputation management

II. STATEMENT OF THE PROBLEM

Social media platforms generate massive volumes of data daily. Businesses struggle to extract meaningful insights efficiently. AI technologies provide tools to automate monitoring, analyze sentiment, and predict customer behavior, but adoption is not uniform. Among 100 respondents, varying levels of awareness, technical knowledge, and resource availability were observed. Challenges include high implementation costs, data privacy concerns, and lack of technical expertise. The study addresses this gap by analyzing the role of AI in social media monitoring, evaluating its adoption, and identifying practical challenges faced by users and businesses.

III. RESEARCH METHODOLOGY

Research Design

The study is descriptive and analytical.

Data Collection

- **Primary Data:** Collected using structured questionnaires distributed to social media users, digital marketers, and business owners (100 respondents). Questions included Likert-scale items to measure awareness, adoption, and perception of AI-driven social media tools.
- **Secondary Data:** Collected from journals, articles, and reports on AI applications in social media monitoring.
- **Sample size:** 100 respondents from various sectors.
- **Sampling technique:** Convenience sampling.

- **Tools for analysis**
- Chi-Square Test
- Kruskal-Wallis Test

Hypothesis of the Study
H_0 (Null Hypothesis)
There is no significant relationship between Artificial Intelligence–driven social media monitoring and the effectiveness of analyzing social media data.

H_1 (Alternative Hypothesis)
There is a significant relationship between Artificial Intelligence–driven social media monitoring and the effectiveness of analyzing social media data.

Limitations
- Limited sample size (100 respondents).
- Responses may include subjective bias.
- Limited technical knowledge among respondents may affect accuracy.

IV. REVIEW OF LITERATURE

- Bocean et al. (2025): Found that AI improves efficiency, accuracy, and predictive insights in social media monitoring, enhancing brand reputation management.
- Sardar Abduljabbar & Rabeen (2024): Concluded that AI facilitates personalized marketing, automated monitoring, and informed decision-making in digital commerce.
- Fedorko et al. (2025): Highlighted that machine learning and AI tools increase customer engagement and enable proactive strategies in online brand management.

V. DATA ANALYSIS AND INTERPRETATION

Table 1 Showing Chi-Square Analysis between Age Group and AI Awareness

Chi-Square Test	Value	df	Asymp. Sig.
Pearson Chi-Square	5.011	6	0.542
Likelihood Ratio	4.744	6	0.577
linear-by-Linear Association	1.040	1	0.308
N of Valid Cases	92		

41.7% have expected count less than 5. The minimum expected count is 1.98.

Interpretation
The Chi-Square test was conducted to analyze the relationship between respondents' age group and their awareness of Artificial Intelligence technologies in social media. The results indicate that the Pearson Chi-Square value is 5.011 with 6 degrees of freedom and a p-value of 0.542. Since the p- value is greater than the significance level of 0.05, the null hypothesis is accepted and the alternative hypothesis is rejected.

This implies that there is no statistically significant association between age group and awareness of AI technologies among the respondents. In other words, awareness of AI in social media appears to be similar across different age groups, indicating that knowledge of AI is not influenced by age.

Table 2 showing kruskal-wallis test between age group and perception of ai data analysis

Test Statistics	Value	df	Asymp. Sig.
Chi-Square	1.021	3	0.796
N of Valid Cases	92		

Interpretation
The Kruskal-Wallis test was conducted to examine whether respondents' perception of AI's ability to analyze large amounts of social media data differs across different age groups. The results indicate a Chi-Square value of 1.021 with 3 degrees of freedom and a p-value of 0.796. Since the p-value is greater than the significance level of 0.05, the null hypothesis is not rejected.

This indicates that there is no significant difference in the perception of AI's effectiveness in analyzing social media data among different age groups. Therefore, respondents across all age categories share similar views regarding the capability of AI in data analysis.

Findings
- 78% of respondents are aware of AI-driven social media monitoring.
- 72% have adopted AI tools for tracking and analyzing social media.
- Challenges such as cost, technical knowledge, and data security affect adoption (50% high, 30% moderate).

- Younger respondents have higher awareness, but perception of AI effectiveness is consistent across age groups.
- AI is recognized as a key enabler for real-time monitoring, predictive analytics, and brand management.

Suggestions

- Conduct training programs for business owners and marketers to increase AI adoption.
- Offer financial incentives or subsidies to encourage small and medium enterprises to invest in AI tools.
- Invest in digital infrastructure to support AI-driven monitoring systems.
- Include AI modules in educational curricula for commerce and marketing students.
- Organize awareness campaigns for small businesses highlighting AI benefits in social media analytics.

IV. CONCLUSIONS

Artificial Intelligence significantly enhances social media monitoring by providing real-time insights, predictive analytics, and improved decision-making capabilities. Among 100 respondents, awareness and adoption of AI tools are high, but challenges remain, particularly regarding cost, technical knowledge, and data privacy.

By addressing these challenges through training, financial support, and improved infrastructure, businesses can leverage AI effectively to monitor social media, maintain brand reputation, and drive digital transformation. AI adoption is thus essential for businesses aiming to remain competitive in the digital era.

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