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A STUDY ON ROLE OF ARTIFICIAL INTELLIGENCE AND AUTOMATION IN DIGITAL MARKETING

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Abstract: Artificial Intelligence (AI) and automation are rapidly transforming industries, with marketing among the most impacted. This study, explores how these technologies are reshaping customer engagement, strategic decision-making, and business operations. In today's competitive market, businesses must enhance efficiency, deliver personalized experiences, and adapt quickly. AI and automation help achieve these goals by minimizing manual tasks and enabling data-driven marketing, allowing marketers to analyze large datasets, predict customer behavior, and execute highly targeted campaigns. The research outlines the core applications of AI and automation in marketing, including data analytics, CRM, content generation, and programmatic advertising. AI has improved audience segmentation and campaign targeting, resulting in increased customer satisfaction and higher conversion rates. Automation further supports operations by managing repetitive tasks such as email marketing, social media scheduling, and analytics reporting, enabling teams to focus on strategic priorities. Despite these benefits, the study identifies key challenges including high initial investment, ongoing technical support requirements, and ethical concerns around data privacy and algorithmic bias. Employees also highlight the importance of maintaining authentic human connections amid increasing automation. The study recommends a phased adoption approach, beginning with small pilot projects to build organizational confidence, alongside continuous employee training to bridge skill gaps. Ultimately, a balanced strategy that integrates AI efficiency with human creativity and oversight is essential for sustainable success in digital marketing.

Index Terms **-** Artificial Intelligence, Automation, Personalization, Customer Engagement, Data Privacy, Marketing Strategy

I. INTRODUCTION

In the contemporary digital era, marketing is experiencing a transformative shift driven primarily by advances in Artificial Intelligence (AI) and automation. These technologies are reshaping the way businesses understand consumer behaviour, deliver personalized experiences, and execute marketing strategies. As companies strive to stay competitive and meet the dynamic expectations of their customers, AI and automation

are increasingly viewed not merely as tools but as strategic assets offering significant advantages in speed, accuracy, scalability, and cost-effectiveness.

Artificial Intelligence encompasses a range of technologies that enable machines to simulate human intelligence processes such as learning, reasoning, and self-correction. Machine learning, a subset of AI, uses statistical techniques to allow computer systems to learn from data and improve performance over time without being explicitly programmed. In the context of marketing, AI empowers businesses to analyze vast amounts of customer data, derive actionable insights, predict future behaviours, and make informed decisions in real time.

Automation refers to the use of software and technology to perform tasks with minimal human intervention. Marketing automation involves handling repetitive tasks such as email campaigns, social media posting, ad management, and lead nurturing. These tools not only improve operational efficiency but also ensure consistency, timely execution, and enhanced customer engagement across channels.

A forward-thinking digital marketing agency based in Chennai, India, has embraced AI and automation as core components of its strategic marketing initiatives. Incorporated in 2023, the company has integrated AI-driven tools and automated systems across its marketing functions to optimize campaign performance, enhance customer targeting, and streamline internal processes. This study aims to analyze the role of AI and automation in enhancing digital marketing strategies through primary data collected from 69 employees across various departments.

II. REVIEW OF LITERATURE

Potwora et al. (2024) highlighted that AI is transforming marketing by enabling automation, personalization, and precise forecasting, while also noting that ethical and privacy challenges require careful consideration for responsible adoption.

Miklosik et al. (2019) revealed a significant gap in marketers' understanding and adoption of machine learning tools, particularly among marketing agencies, and proposed a framework to guide organizations in effectively leveraging ML tools in digital marketing.

Kedi et al. (2024) explored how AI technologies such as machine learning, natural language processing, and predictive analytics enable SMEs to deliver personalized content and recommendations, enhancing customer engagement, retention, and sales performance.

Islam et al. (2024) synthesized insights from 150 studies using the PRISMA methodology, highlighting AI's role in streamlining processes, automating tasks, and delivering hyper-personalized experiences while addressing challenges such as data privacy, algorithmic bias, and high costs.

Zumstein et al. (2024) found that AI tools including predictive analytics, NLP, and chatbots enhance customer segmentation, content personalization, and campaign optimization, while emphasizing ethical practices and transparency for consumer trust.

Hossain et al. (2022) demonstrated that marketing analytics capabilities enable firms to sense, seize, and reconfigure markets, with AI integration enhancing these capabilities and driving superior market performance in competitive export environments.

Boozary et al. (2024) found that marketing automation using advanced AI algorithms enables precise customer behavior predictions, personalized content delivery, and reduced analysis costs, thereby improving efficiency and effectiveness in digital marketing operations.

III. RESEARCH METHODOLOGY

A descriptive research design was employed in this study to systematically analyze how AI and automation impact marketing strategies. Both primary and secondary data sources were used.

Primary data was collected through structured questionnaires administered to 69 employees who are directly or indirectly involved in marketing activities. A purposive sampling method was utilized to ensure relevant and valuable insights from professionals with experience in AI-driven tools and marketing campaigns.

Secondary data was gathered from company reports, academic journals, industry publications, and relevant research on AI and automation in marketing. The collected data was analyzed using statistical tools including Independent Samples T-Test, Regression Analysis, and Chi-Square Test, supported by pie chart visualizations to represent key findings.

IV. DATA ANALYSIS AND INTERPRETATION

A. AI Tool Usage

Out of 69 respondents, 44.9% agreed that uses AI or automation tools in digital marketing, while 39.1% remained neutral. The most widely used AI tool was Chatbots (27.3%), followed by Email Automation (25%), Programmatic Advertising (18.2%), Content Generation (17%), and Predictive Analytics (11.4%).

B. AI Efficiency and Workload Reduction

A significant 46.4% of respondents agreed that AI has improved efficiency in marketing campaigns, with 34.8% strongly agreeing, totaling 81.2% positive sentiment. Additionally, 47.8% agreed that AI has reduced manual workload in marketing tasks, with 8.7% strongly agreeing, reflecting AI's strong operational impact.

C. Customer Engagement and Personalization

A majority of 49.3% agreed and 13% strongly agreed that AI helps in better customer engagement. Regarding personalized customer experiences, 21.7% said AI helps completely, 23.2% said to a large extent, and 17.4% said to a moderate extent. The top AI-driven personalization tactics identified were dynamic website content (31.9%), personalized email marketing (24.6%), and behavioral ad targeting (24.6%).

D. ROI and Campaign Decision-Making

In terms of ROI impact, 31.9% reported AI improved ROI 'well' and 18.8% 'very well', totaling 50.7% positive response. For campaign decision-making, 30.4% believed AI makes decisions faster and data-driven, while

27.5% felt it is more accurate but slower. About 29% reported no major impact, highlighting room for deeper integration.

E. Implementation Challenges

The biggest challenge identified was high costs (28.7%), followed by integration with existing tools (20%), lack of skilled personnel (17.5%), resistance to change (17.5%), and data privacy concerns (16.2%). These findings suggest that must prioritize seamless technical compatibility and structured change management strategies.

F. Future AI Trends

Respondents predicted automated customer service via chatbots (31.9%) as the dominant AI trend in the next five years, followed by hyper-personalization (18.8%), generative AI for content (17.4%), voice and visual search optimization (17.4%), and AI-driven predictive analytics (14.5%).

V. SPSS STATISTICAL ANALYSIS

A. T-Test – Gender vs. Comfort Levels

An independent samples T-Test was conducted to compare comfort levels between male and female participants. The mean comfort level for males was 2.64 (SD = 1.662) and for females was 2.73 (SD = 1.701). Levene's Test for Equality of Variances was not significant (F = 0.003, p = 0.959), confirming equal variances. The T-Test result was t(67) = -0.226, p = 0.822 (2-tailed), indicating no statistically significant difference in comfort levels between genders. The 95% confidence interval ranged from -0.906 to 0.721, including zero, further confirming the null hypothesis. Gender does not appear to significantly influence comfort levels with AI tools.

Table I: Group Statistics – T-Test

Variable	Gender	N	Mean	Std. Deviation
Comfort Level	Male	39	2.64	1.662
Comfort Level	Female	30	2.73	1.701
Result: t(67) = -0.226, p = 0.822 — No significant difference				

B. Regression Analysis – AI Familiarity vs. Efficiency

A simple linear regression was conducted with 'Familiarity with AI' as the predictor and 'Efficiency Improvement from AI' as the dependent variable. The model was not statistically significant (F = 1.31, p = 0.257), indicating that familiarity with AI alone does not significantly predict perceived efficiency improvement. The regression coefficient was B = -0.116 (Beta = -0.138), suggesting a weak negative relationship that was not statistically significant. These findings suggest the need to explore additional predictors to better understand the factors influencing efficiency improvement from AI adoption.

Table II: Regression – ANOVA Summary

Model	Sum of Squares	df	F	Sig.
Regression	0.981	1	1.31	0.257
Residual	50.179	67	—	—
Total	51.159	68	—	—

C. Chi-Square Test – Role of AI vs. Customer Engagement

A Chi-Square Test was conducted to examine the association between 'Role of AI' and 'Customer Engagement'. The Pearson Chi-Square value was 31.455 (df = 16, p = 0.012), indicating a statistically significant association between the two variables. The linear-by-linear association also showed significance (Chi-Square = 9.095, p = 0.003), confirming a significant linear trend. However, 80% of cells had expected counts less than 5, suggesting that the findings should be interpreted with caution. These results confirm that the role of AI has a meaningful impact on customer engagement.

Table III: Chi-Square Test Results

Test	Value	df	Asymp. Sig.
Pearson Chi-Square	31.455	16	0.012*
Likelihood Ratio	25.626	16	0.060
Linear-by-Linear Association	9.095	1	0.003*
N of Valid Cases	69	—	—

* Significant at 0.05 level

VI. FINDINGS

- Gender does not significantly influence comfort levels with AI tools (t(67) = -0.226, p = 0.822), indicating equal adaptability across genders.
- AI familiarity alone does not significantly predict efficiency improvement (F = 1.31, p = 0.257), suggesting multi-dimensional predictors are required.
- A significant association exists between the Role of AI and Customer Engagement (Chi-Square = 31.455, p = 0.012), confirming AI's strategic importance.
- 81.2% of respondents (agree + strongly agree) reported that AI has improved efficiency in marketing campaigns.
- 56.5% of respondents agree that AI has reduced manual workload in marketing tasks.
- 62.3% agree or strongly agree that AI helps in better customer engagement.
- The top AI tools used are Chatbots (27.3%), Email Automation (25%), and Programmatic Advertising (18.2%).
- Social media management (21.1%) and data analysis and reporting (21.1%) are the marketing areas most benefited by AI.

- High costs (28.7%) and integration with existing tools (20%) are the biggest implementation challenges.
- 50.7% of respondents reported positive ROI improvement due to AI-driven marketing campaigns.
- Automated customer service via chatbots is predicted to be the dominant AI trend in the next five years (31.9%).
- 53.6% believe AI is replacing human jobs in marketing, indicating workforce concerns that require proactive management.

VII. SUGGESTIONS

- Introduce structured AI training programs to bridge knowledge gaps and improve employee familiarity with AI tools.
- Develop a clear internal communication strategy to ensure all teams are aware of how AI tools are integrated in marketing operations.
- Adopt a phased AI implementation approach, starting with pilot projects to build confidence before scaling across departments.
- Prioritize AI tools that integrate smoothly with existing marketing systems to overcome technical compatibility challenges.
- Provide transparent communication about AI's role in the workforce to address job displacement concerns and promote AI as a collaborative tool.
- Focus on hyper-personalization strategies using AI to deliver tailored content and campaigns to individual customer segments.
- Improve data quality and governance practices to enable AI tools to deliver more consistent personalization and targeting outcomes.
- Form a dedicated AI strategy team to align leadership and staff around a unified AI vision and roadmap.
- Expand AI-powered customer service tools such as chatbots to enhance real-time customer engagement and support.
- Regularly evaluate and refine AI tools and models to maintain campaign efficiency and adapt to evolving market dynamics.

VIII. CONCLUSION

They made significant strides in adopting AI and automation within its marketing operations, marking a notable shift toward modern, data-driven practices. Employees exhibit growing awareness and acceptance of AI tools, particularly in programmatic advertising, customer targeting, and ad optimization. These implementations have begun yielding tangible benefits, including improved campaign efficiency and enhanced return on investment.

However, the utilization of AI in creative domains such as content generation and advanced data analysis remains limited, presenting untapped opportunities for innovation. Challenges including technical compatibility, employee resistance, and data privacy concerns must be addressed through structured change management and transparent communication strategies.

The study also highlights a growing emphasis on hyper-personalization and AI-driven customer engagement. Consistent and high-quality results in this area require improved data governance and continuous AI model training. Statistical analysis confirms that while gender does not influence comfort with AI, the role of AI significantly impacts customer engagement outcomes.

In conclusion, AI is already a transformative force, reducing manual workloads, streamlining processes, and improving customer interactions. To fully capitalize on this potential, the company must invest in advanced AI tools, upskill its workforce, and develop a cohesive strategic framework that aligns technological advancement with organizational objectives.

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