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Role of artificial intelligence in optimizing digital marketing : An empirical study

Abhishek Chauhan [†]
Saurav Kumar [§]
Atul Kumar Karn [‡]
Faculty of Business Management
Sarala Birla University
Ranchi 835103
Bihar
India

Shilpa Sharma *
Department of Computer Applications
Manipal University Jaipur
Jaipur 303007
Rajasthan
India

Abstract

Artificial Intelligence (AI) is a critical component of digital marketing optimisation because it allows companies to provide effective and personalised client experiences. Artificial intelligence (AI) systems examine enormous volumes of data to find trends and forecast customer behaviour, enabling focused advertising efforts. By helping to segment audiences, machine learning models make sure the appropriate message is delivered to the right person at the right moment. Artificial intelligence (AI)-driven solutions, like as chatbots, improve customer happiness and retention by instantly responding to inquiries and offering personalised responses. AI also frees up time for marketers to concentrate on strategy and creativity by automating tedious processes like social media management, email marketing, and content development. AI-powered predictive analytics helps companies to anticipate trends and make proactive strategy adjustments. In order to maximise ROI, AI also optimises ad budget by determining the best times and channels for commercials. Essentially, artificial intelligence (AI) changes digital marketing by making it more efficient, individualised, and data-driven, which eventually leads to improved commercial results.

[†] *E-mail:* **abhishek.chauhan@sbu.ac.in**
[§] *E-mail:* **saurav.kumar@sbu.ac.in**
[‡] *E-mail:* **atul.karn@live.in**
* *E-mail:* **shilpa.sharma@jaipur.manipal.edu (Corresponding Author)**

227 people from digital marketing department were surveyed to know the factors that determines different role of Artificial intelligence in optimizing digital marketing and found that Personalization, Customer insights, Predictive Analytics and Automation of Marketing Processes are the factors that determines different Role of Artificial intelligence in optimizing digital marketing.

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Keywords: *Artificial intelligence (AI), Digital marketing optimisation, Personalised client experiences, Data analysis, Predict customer behaviour, Audience segmentation, Machine learning models, AI-driven solutions.*

1. Introduction

By improving user engagement and conversion rates, artificial intelligence (AI) completely changed digital marketing in India. According to Bag et al. [1], artificial intelligence (AI) technologies have become essential for comprehending and charting the "customer journey" in the digital age. With the use of these technologies, marketers were able to develop campaigns that were both individualised and precisely targeted by extracting valuable insights from massive volumes of data analysis. Artificial intelligence (AI)-powered solutions like as "chatbots" and "virtual assistants" offered immediate, customised customer support, greatly enhancing customer happiness and retention. Furthermore, by examining previous interactions and preferences, AI systems forecasted customer behaviour, enabling companies to customise their marketing tactics to suit specific requirements. AI is a crucial tool for digital marketers in India because of this tailored strategy, which improved user engagement and raised the possibility of conversions.

Businesses' overall success was strongly impacted by the use of AI in marketing efforts. According to Umamaheswari [2], AI has aided in the automation of repetitive marketing chores including "content generation," "social media posts," and "email campaigns." Because of this automation, marketers were able to concentrate more on strategic planning and creative work, which resulted in the development of more creative marketing solutions. AI's "predictive analytics" capabilities allowed companies to effectively predict consumer wants and market trends, enabling them to make proactive changes to their marketing plans. AI guaranteed better returns on investment (ROI) for marketing initiatives by optimising "ad placements" and focusing on the appropriate audience at the appropriate moment. Thus, the use of AI to digital marketing improved company outcomes by streamlining operations and boosting the efficacy and efficiency of marketing initiatives.

Eni, et al. [3] assessed the application of artificial intelligence (AI) and "big data analytics" to marketing within the framework of the Indian banking industry. They discovered that the accuracy and customisation of marketing tactics were much enhanced by these technologies. Banks were able to create more focused marketing efforts by using AI to analyse consumer data and spot patterns and trends. Because banks could now provide individualised products and services that catered to each customer's demands, this strategy enhanced consumer engagement and loyalty. AI also made it possible for banks to streamline their "customer segmentation" procedures, guaranteeing that marketing expenditures were focused on the most lucrative clientele. Thus, increasing marketing efficacy and obtaining greater conversion rates in the Indian banking sector were made possible by the integration of AI and big data analytics in bank marketing.

2. Literature Review

Artificial Intelligence (AI) has improved the efficacy and efficiency of marketing techniques, which has drastically changed digital marketing in India. According to Devang et al. [4], the use of AI in marketing has transformed consumer engagement through tailored interactions. Artificial intelligence (AI) systems examine enormous volumes of data to comprehend consumer preferences and behaviour, enabling marketers to more precisely customise their content and ads. This "data-driven personalisation" has helped companies develop audience-relevant targeted advertising that increase consumer happiness and engagement rates. Furthermore, by instantly responding to inquiries, chatbots and other AI-powered solutions have simplified customer support and improved the overall customer experience.

AI's incorporation into digital marketing has also made decision-making processes more precise and efficient. Murgai [5] asserts that by examining past data and present market circumstances, AI systems can forecast consumer demands and market trends. Marketers can use this "predictive analytics" tool to make well-informed choices on new product launches, price plans, and advertising campaigns. AI, for instance, can determine the best times to send out email campaigns or post material on social media in order to increase reach and engagement. Businesses may keep ahead of the competition and modify their plans to satisfy the market's ever-changing wants by utilising this information. AI has also made it possible to automate a variety of marketing processes, which has

improved productivity and reduced expenses. According to Vishnoi et al. [6], repetitive processes like email marketing, social media posting, and even content production can be automated with AI-driven technologies. In addition to lightening the strain for marketing teams, this "marketing automation" makes ensuring that programmes are carried out precisely and consistently. The use of AI technologies has enabled companies in India, where digital marketing is fast developing, to grow without sacrificing product quality. Consequently, businesses are able to concentrate on more strategic facets of marketing, like client relationship management and creative creation, which promotes industry growth and innovation.

According to Chintalapati and Pandey [7] artificial intelligence's impact on marketing, AI has made it possible for companies to use data-driven insights to develop more individualised marketing campaigns. Businesses have analysed enormous volumes of customer data by using "machine learning algorithms" and "predictive analytics," and they have been able to spot trends and preferences that were previously hidden. The development of highly focused marketing campaigns has been made possible by this capacity, greatly enhancing the efficacy and efficiency of advertising initiatives. AI has emerged as a vital tool for companies looking to differentiate themselves in a crowded market in India, where the number of digital consumers is growing quickly.

The utilisation of artificial intelligence (AI) in contemporary digital marketing has transformed consumer interactions while simultaneously improving personalisation. Nair and Gupta [8] emphasised how instantaneous, round-the-clock assistance provided by AI-powered "chatbots" and "virtual assistants" has enhanced customer service. These solutions have been especially helpful in the Indian market, where companies frequently have a high volume of client requests to handle. Businesses have been able to concentrate more on complicated problems that need for human intervention by automating ordinary consumer contacts. Furthermore, AI has made "customer relationship management (CRM)" systems more responsive and dynamic, enabling companies to interact with their clients in real-time and increase client happiness and loyalty.

AI applications have also improved content generation and delivery, which has optimised digital marketing. AI-driven technologies like "natural language processing (NLP)" and "content generation algorithms," according to Haleem et al. [9], have made it possible for marketers to create high-quality content at scale. With the use of these technologies, you may

create content that appeals to your target audience by analysing their interests and behaviour. Artificial intelligence (AI) has proven crucial in producing tailored content that appeals to various demographic groups in India, a country where language variety and shifting consumer tastes present formidable obstacles. AI has also improved the content's dissemination across a range of digital platforms, guaranteeing that marketing messages are seen by the appropriate people at the appropriate moment. The digital economy has grown overall thanks to the accuracy and efficiency of Indian businesses' digital marketing, which has improved engagement and conversion rates.

Jain and Aggarwal [10] claim that by utilising enormous volumes of data to obtain insights into customer behaviour, AI technology allowed marketers to optimise their plans. Marketers examined consumer interactions on a range of digital platforms using AI-powered technologies to spot trends and forecast future actions. Businesses were able to customise their marketing efforts with previously unheard-of accuracy thanks to this data-driven approach, which made sure that the appropriate message was delivered to the right target at the right time. The application of "machine learning algorithms" and "predictive analytics" improved marketing operations' efficacy and efficiency tremendously, increasing engagement and conversion rates.

Bala and Verma [11], AI made it easier to automate a variety of marketing procedures. AI-driven algorithms took care of mundane jobs like content production, ad placement, and market research, freeing up human resources for more strategic endeavours. A great example of artificial intelligence (AI) in action, virtual assistants offered individualised shopping advice and assistance, enhancing user pleasure. These automated systems guaranteed fast and constant consumer communication while also cutting down on operating expenses. AI-powered segmentation and targeting tools have made it possible to produce personalised content, which has improved the relevancy of marketing messages and increased consumer loyalty and retention. Furthermore, Shaik [12] highlighted how artificial intelligence (AI) might improve marketers' analytical skills. Complex data sets were processed and evaluated by AI algorithms to provide greater insights into customer preferences and market trends. This made it possible for marketers to decide with greater knowledge and to modify their plans on the go. More complex and focused ad campaigns were also made easier to create by integrating AI with digital marketing platforms. More accurate audience targeting and engagement methods based on real-time data analysis were made possible by techniques like

"sentiment analysis" and "predictive customer service". As a result, AI-driven marketing techniques increased return on investment while giving businesses a competitive edge in India's quickly changing digital market.

In India, digital marketing techniques have seen a significant transformation thanks in large part to artificial intelligence (AI). Verma et al. [13] emphasised how AI may improve marketing strategies by automating processes and providing data-driven insights. Applications of AI, such personalised suggestions and predictive analytics, have "revolutionised" the way marketers target customers based on their tastes and behaviour. This AI integration "streamlined" client contact procedures and "boosted" marketing efficiency, improving campaign performance across various digital channels. According to Shameem et al. [14], AI is becoming more and more important in Indian online advertising, with a focus on "enhancing" ad targeting precision and ROI. They emphasised how real-time adjustments to ad placements based on changes in consumer behaviour and demographic shifts are "facilitated" by AI-powered algorithms. In the rapidly expanding Indian digital market, this adaptive method not only "optimised" digital ad spends but also "maximised" reach and conversion rates, demonstrating a dynamic move towards AI-driven marketing techniques. AI's critical role in promoting marketing innovation in India was studied by Silalahi et al. [15], who concentrated on AI's capacity to "catalyse" originality and responsiveness in digital campaigns. AI's potential to "revolutionise" client interaction through personalised content delivery and "augmented" customer care encounters was highlighted. Indian marketers have "empowered" themselves to anticipate market trends and consumer preferences by utilising AI-driven analytics and machine learning, thus "redefining" criteria for digital marketing efficacy in the region, [16] [17] [18] [19] [20].

3. Objective

1. To know the factors that determines different Role of Artificial intelligence in optimizing digital marketing.

4. Methodology

227 people from digital marketing department were surveyed to know the factors that determines different role of Artificial intelligence in optimizing digital marketing. "Convenient sampling method" and "Factor Analysis" were used to collect and analyze the data.

5. Findings

Survey population in table 1 finds that males are 64.3% and 35.7% are female. Among them 30.4% are below 32 years of age, 40.1% are between 32-42 years of age and rest 29.5% are above 42 years of age. 22.5% of the respondents are digital marketer, 31.7% are marketing analyst, 29.5% are working as social media manager and rest 16.3% are content marketing manager.

Table 1

"General Details"

"Variables"	"Respondents"	"Percentage"
Gender		
Male	146	64.3
Female	81	35.7
Total	227	100
Age (years)		
Below 32	69	30.4
32-42	91	40.1
Above 42	67	29.5
Total	227	100
Designation		
Digital marketer	51	22.5
Marketing analyst	72	31.7
Social media manager	67	29.5
Content Marketing Manager	37	16.3
Total	227	100

Source: (Author's Own)

Table 2

"KMO and Bartlett's Test"

"Kaiser-Meyer-Olkin Measure of Sampling Adequacy"		.851
"Bartlett's Test of Sphericity"	"Approx. Chi-Square"	2068.108
	"df"	120
	"Sig."	.000

KMO value in table 2 is 0.851 and the "Barlett's Test of Sphericity" is significant.
Source: (Author's Own)

Table 3
Total Variance Explained

Component	Initial Eigen values			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.215	38.842	38.842	3.308	**20.673**	20.673
2	2.161	13.504	52.346	2.871	**17.944**	38.618
3	1.621	10.134	62.479	2.777	**17.355**	55.973
4	1.270	7.940	70.420	2.311	**14.447**	**70.42**0
5	.761	4.754	75.174			
6	.705	4.407	79.581			
7	.547	3.419	83.000			
8	.526	3.290	86.290			
9	.417	2.604	88.894			
10	.402	2.515	91.409			
11	.322	2.011	93.420			
12	.276	1.725	95.145			
13	.236	1.477	96.622			
14	.232	1.450	98.071			
15	.170	1.064	99.135			
16	.138	.865	100.000			

Source: (Author's Own)

In table 3 "principal component analysis" it is found that 16 variables form 4 Factors. The factors explained the variance of 20.673%, 17.944%, 17.355% and 14.447% respectively. The total variance explained is 70.420%.

Table 4
Rotated Component Matrix

S. No.	Statements	Factor Loading	Factor Reliability
	Personalization		.903
	AI algorithms deliver personalized content, offers, and recommendations	.899	

Contd...

	Send personalized emails based on user actions, such as abandoned carts or browsing history	.836	
	AI-powered chatbots provide personalized responses	.833	
	AI creates personalized landing pages that cater to individual visitor preferences	.662	
	Customer insights		.857
5	AI allowing for more targeted marketing strategies	.812	
6	AI creates detailed profiles for each customer	.811	
7	Provides a holistic view of customer behavior and preferences	.794	
8	Help marketers to gain immediate insights and respond promptly to customer actions and trends	.744	
	Predictive Analytics		.847
9	AI models predict customer behavior	.866	
10	AI enhances accuracy in sales forecasting	.858	
11	AI models predict the lifetime value of customers	.721	
12	AI models forecast the performance of content based on past engagement metrics	.631	
	Automation of Marketing Processes		.744
13	AI-powered chatbots handle customer inquiries in real-time	.802	
14	AI helps in curating content that is relevant to the audience	.713	
15	AI automates the buying and selling of online advertising	.704	
16	AI monitors social media channels	.677	

Source: (Author's Own)

Table 4 shows the factors that determines different Role of Artificial intelligence in optimizing digital marketing. Personalization is the factor and its supporting variables are AI algorithms deliver personalized content, offers, and recommendations, send personalized emails based on user actions, such as abandoned carts or browsing history, AI-powered chatbots provide personalized responses and AI creates personalized landing pages that cater to individual visitor preferences. Another

Table 5
Reliability Statistics

Cronbach's Alpha	N of Items
.844	16

Source: (Author's Own)
Total reliability is 0.844 (Table 5) for 4 constructs including seventeen items.

construct is Customer insights and its associating variables are AI allowing for more targeted marketing strategies, AI creates detailed profiles for each customer, provides a holistic view of customer behavior and preferences and help marketers to gain immediate insights and respond promptly to customer actions and trends. Predictive Analytics is third factor and its supporting variables are AI models predict customer behavior, AI enhances accuracy in sales forecasting, AI models predict the lifetime value of customers and AI models forecast the performance of content based on past engagement metrics. Factor four is Automation of Marketing Processes and AI-powered chatbots handle customer inquiries in real-time, AI helps in curating content that is relevant to the audience, AI automates the buying and selling of online advertising and AI monitors social media channels.

6. Conclusion

In India, artificial intelligence (AI) is transforming digital marketing with its unparalleled capacity to maximise return on investment, personalise user experiences, and optimise campaigns. Businesses may use massive volumes of data to pinpoint trends, client preferences, and behaviour patterns with very high precision by utilising AI-driven analytics. This makes it possible to target advertisements, personalise content, and make real-time changes that raise engagement and boost conversion rates. In conclusion, artificial intelligence (AI) is changing Indian digital marketing more than just being a technical development. It gives marketers the ability to go beyond conventional techniques and embrace dynamic tactics that quickly adjust to changes in the market and customer needs. AI will change how brands interact with customers and accomplish their goals as a business, making its incorporation into marketing plans ever more crucial as it develops. Adopting AI-driven solutions ensures continued growth and relevance in the market while

also offering efficiency gains and a competitive edge in a quickly changing digital ecosystem.

The study was conducted to know the factors that determines different Role of Artificial intelligence in optimizing digital marketing and found that Personalization, Customer insights, Predictive Analytics and Automation of Marketing Processes are the factors that determines different Role of Artificial intelligence in optimizing digital marketing.

7. Future Scope

The current research study is not an exception, so it also carries certain limitation which may act as a future scope for the researchers. The current research study includes variables like personalization, optimization, AI driven and predictability. The future research can be implemented using other relevant variables. The current study employs EFA, the researcher in order to check the model fir may use CFA and model fitness analysis. The respondent for the current studies were dta analysis and other academicians relating to research study, in future the researcher can use the same questionnaire and items to study its impact on other population group.

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