ISSN 1611-1699 / eISSN 2029-4433

VILNIUS TECH
Vilniaus Gedimino technikos universitetas

JOURNAL of BUSINESS ECONOMICS & MANAGEMENT

2024
Volume 25
issue 1
Page 36 - 47

REVOLUTIONIZING HEALTHCARE: HOW AI – POWERED MARKETING ENHANCES CUSTOMER SATISFACTION IN MEDICAL SERVICES

ANEESH K S[1] , ELUMALAI D[2]

1 Ph.D Research Scholar, Department of Commerce, Vels Institute of Science Technology & Advanced Studies.
2 Assistant Professor Department of Commerce Vels Institute of Science Technology & Advanced Studies, Pallavaram, Chennai

Article History:
Received : January 27 2024
Accepted : 17 April 2024

Abstract: This research aims to comprehensively investigate and understand the influence of various factors, including AI marketing variables, metrics, demographic characteristics, demand and supply factors, and customer satisfaction metrics, on overall customer satisfaction in AI-driven medical services. The primary objective is to provide valuable insights into the transformation of healthcare through effective AI-powered marketing strategies. The research methodology employed a meta-analytic approach consisting of three distinct phases: the search phase, the collection phase, and the coding and data analysis phase. Initially, a thorough search was conducted in reputable databases, such as Web of Science and Science Direct, to identify relevant articles within the field. Specific keywords were employed to filter articles based on their titles, abstracts, or keywords. Subsequently, selected studies were systematically assessed and categorized into seven research constructs relevant to the study. During the data analysis phase, the effect sizes of correlations between various factors and customer satisfaction were quantified using Pearson's bivariate correlation coefficient (r). Random effects models were applied to account for variations between studies, and Cohen's parameters were used to assess correlation levels. Fisher's Z coefficients were computed to enhance comparability, and Cohen's d was utilized as an alternative effect size measure. Confidence intervals and tests for homogeneity were conducted to strengthen the robustness of the results. The fail-safe number was also computed to assess result stability. The findings revealed several significant relationships between factors related to the demand for medical services incorporating AI and customer satisfaction. Factors such as technology adoption, health literacy and awareness, patient preferences, telehealth and remote monitoring, cost-effective healthcare solutions, and personalized medicine exhibited strong positive correlations with customer satisfaction. However, data privacy and trust showed a slight negative impact on satisfaction. Supply factors related to the provision of AI-driven medical services also displayed notable associations with customer satisfaction. Adequate technological infrastructure, research and development investments, integration with electronic health records, data accessibility and quality, and public-private partnerships were positively correlated with higher customer satisfaction. Furthermore, AI marketing variables, including AI implementation, marketing effectiveness, algorithm performance, personalization, and data sources, exhibited strong positive correlations with customer satisfaction. Demographic variables such as age and gender significantly influenced customer satisfaction, with health status, previous healthcare experiences, and cultural/regional differences having more modest effects. Lastly, customer satisfaction metrics, such as Net Promoter Score (NPS), Customer Satisfaction Score (CSAT), and complaints and issues, demonstrated varying degrees of impact on overall customer satisfaction, with NPS and CSAT showing very strong positive correlations. This research provides a comprehensive understanding of the multifaceted factors influencing customer satisfaction in AI-driven medical services and underscores the importance of effective AI-powered marketing strategies in healthcare transformation.

Keywords: : technology adoption, health literacy and awareness, patient preferences, telehealth and remote monitoring, cost-effective healthcare solutions

JEL Classification: M310.

INTRODUCTION

In today's ever-evolving healthcare landscape, AI integration has ushered in a paradigm shift in marketing strategies, ultimately elevating customer satisfaction within the medical services sector. AI-powered marketing, a multifaceted approach that harnesses cutting-edge technologies, serves as the linchpin for optimizing customer engagement and elevating the overall patient experience. This transformative journey is underpinned by a multitude of factors, spanning the spectrum of both demand and supply facets of medical services AI. On the demand side, factors such as technological adoption, health literacy, patient preferences, data privacy, and more shape the landscape of AI marketing. The extent to which patients and healthcare providers embrace AI-driven solutions significantly molds the effectiveness of AI marketing. Equally influential is the level of health literacy and awareness among patients concerning AI technologies, as it directly influences their willingness to engage with AI-powered healthcare services. Tailoring AI marketing efforts to align seamlessly with patient preferences and expectations ensures a more personalized and gratifying experience. More-

over, building trust through robust data privacy measures is paramount in nurturing patient confidence in AI-driven healthcare services, alongside the burgeoning influence of telehealth and remote monitoring solutions, all propelled by AI, which augments the demand for AI-powered marketing within the healthcare sector. On the supply side, various factors play pivotal roles. The availability of skilled AI professionals in the healthcare sector stands as a key supply factor, essentially determining the successful implementation of AI marketing initiatives. Additionally, having adequate technological infrastructure in place is indispensable for the seamless integration of AI technologies into healthcare services. Striving for adherence to healthcare regulations and standards is essential for the safe and ethical deployment of AI in medical marketing. Furthermore, investments in AI research and development contribute significantly to the innovation and effectiveness of AI marketing strategies. The integration of AI with Electronic Health Records (EHRs) streamlines patient data management, enhancing the overall efficiency of healthcare services. Collaborative endeavors between public and private sectors, in the form of Public-Private Partnerships, actively promote the adoption of AI in healthcare marketing and services. To comprehensively assess the impact of AI-powered marketing on customer satisfaction within healthcare, a diverse array of metrics and variables comes into play. These metrics fall into two main categories: AI Marketing Variables and Customer Satisfaction Variables. Within the realm of AI Marketing Variables, it's essential to evaluate the depth of AI integration into marketing strategies, measure the success of AI-driven campaigns in engaging patients, assess the level of personalization achieved through AI marketing efforts, and examine the sources of data employed by AI systems for healthcare marketing. In the sphere of Customer Satisfaction Variables, a comprehensive understanding is sought through the evaluation of the overall patient experience with healthcare services, including factors like accessibility, communication, and quality of care. Additionally, measuring patient satisfaction with AI-driven interactions, such as chatbots and virtual assistants, is imperative. The perceived quality of healthcare services delivered with AI support and the level of trust patients place in AI systems employed in healthcare marketing and service delivery are integral elements. Furthermore, exploring whether satisfied patients are more inclined to remain loyal to healthcare providers is essential. Demographic and contextual variables further enrich our understanding. Analyzing how age and gender influence perceptions of AI marketing and satisfaction with healthcare services provides valuable insights. The impact of patients' health status on their response to AI marketing and satisfaction is a critical consideration. Investigating whether prior healthcare experiences influence customer satisfaction can uncover crucial patterns. Finally, examining variations in AI marketing effectiveness and customer satisfaction across different cultural and regional contexts opens avenues for tailoring strategies accordingly. AI-powered marketing stands as a potent force reshaping the healthcare industry, and its potential for enhancing customer satisfaction and improving patient outcomes is immense. By diligently considering the intricate web of factors and metrics discussed, healthcare providers can harness the transformative power of AI to elevate customer satisfaction to unprecedented heights, ultimately driving better healthcare experiences and outcomes for all.

AIM OF THE RESEARCH

The purpose of this research is to thoroughly investigate and understand the impact of AI marketing variables, metrics, demographic factors, demand and supply factors, and customer satisfaction metrics on overall customer satisfaction in AI-driven medical services, with the aim of providing insights into revolutionizing healthcare through effective AI-powered marketing strategies.

LITERATURE REVIEW

Bohr, A., & Memarzadeh, K. (2020). The influence of big data and machine learning extends into various aspects of contemporary life, impacting sectors such as entertainment, e-commerce, and healthcare. Companies like Netflix, Amazon, and Google leverage these technologies to gain insights into individual preferences and behaviors, enabling the delivery of personalized recommendations and predictive services. For instance, Netflix possesses the ability to discern viewers' content preferences, Amazon anticipates shopping patterns, and Google tracks health-related search queries. Within the realm of healthcare, there is a burgeoning sense of optimism surrounding the potential of artificial intelligence (AI) to yield substantial advancements. AI is envisioned as a collaborator rather than a replacement for healthcare professionals, offering support across administrative tasks, patient interactions, and specialized roles, such as the analysis of medical images and the automation of medical

devices. This article embarks on an exploration of the diverse applications of AI in healthcare, encompassing direct applications such as diagnostics and treatment enhancement, as well as broader contributions spanning the healthcare value chain, encompassing drug development and the provision of assistance for independent living among elderly individuals.

In this research, the focus is on investigating how the implementation of Artificial Intelligence (AI) can improve customer experience and engagement within the context of digital transformation initiatives. The approach involves a thorough examination of pertinent literature and the examination of data to pinpoint critical factors associated with success. The outcomes offer organizations valuable guidance in enhancing their digital transformation strategies through AI adoption, which in turn results in improved customer experiences and more valuable customer feedback. Božić, V. (2023). AI has the capacity to elevate the digital competencies of healthcare professionals by offering support, streamlining tasks, enhancing decision-making, and facilitating personalized learning experiences. This, in turn, contributes to improved patient care and better overall healthcare outcomes. Khan, S., & Iqbal, M. (2020) The onset of the Fourth Industrial Revolution, known as Industry 4.0, has brought about significant changes in how organizations interact with their customer base. Businesses are actively working to enhance the customer experience as a means of retaining their clientele. At the heart of this transformation is the prominent role played by Artificial Intelligence (AI), which is causing a profound shift in how organizations engage with customers across various communication channels. This novel approach yields several benefits for organizations, including cost reduction and heightened productivity. Simultaneously, customers derive advantages from the convenience and improved access to information. This qualitative study delves into the impact of AI on customer service, emphasizing its merits while shedding light on the complexities it introduces to the realm of Customer Experience (CX). The study's outcomes underscore the challenge of replicating the richness of human interaction within digitized customer service solutions. From the customers' perspective, organizations grapple with the task of creating digital pathways that can authentically emulate human interactions. This underscores the intricate nature of integrating AI into initiatives aimed at delivering a seamless and gratifying customer experience. Haleem, A., Javaid, M., Qadri, M. A., Singh, R. P., & Suman, R. (2022) In the process of conducting this research, we sought out relevant articles on the topic of AI in marketing from platforms such as Scopus, Google Scholar, ResearchGate, and similar sources. These chosen articles underwent a thorough and meticulous review, with the primary aim of extracting the central theme that underpins this paper. The core objective of this study is to present an all-encompassing examination of the role of AI in the realm of marketing. This entails a detailed exploration of the specific uses of AI in various marketing sectors and a critical assessment of how it reshapes the marketing landscape. Ultimately, our research strives to pinpoint and dissect the pivotal applications of AI within the marketing domain, illuminating the ever-evolving terrain of AI-powered marketing strategies and their substantial significance. Artificial Intelligence (AI) is a branch of computer science that focuses on developing computer systems capable of performing tasks that typically require human intelligence, such as image recognition, natural language processing, learning, reasoning, planning, decision-making, and more. Božić, V. (2023) there are two main types of AI: weaker (narrow) artificial intelligence and stronger (general) artificial intelligence. Weaker AI specializes in specific tasks like image or voice recognition and is already in use in applications such as virtual personal assistants and traffic management systems. Strong AI aims to replicate or surpass human intelligence, covering a wide range of capabilities like understanding, learning, and adapting to various tasks, but it remains a significant challenge for scientists and engineers. AI employs various techniques, including machine learning, deep learning, neural networks, genetic algorithms, and logical reasoning. Its development has the potential to benefit areas such as healthcare, transportation, energy, finance, and more. However, the advancement of AI raises ethical, legal, and social concerns, including issues related to privacy, security, liability, and broader societal impacts. Therefore, responsible AI development is essential to ensure its ethical and responsible use in society.

CONCEPTUAL MODEL OF THE STUDY

Figure – 1 Conceptual Model of the Study – Developed by Author

METHODOLOGY

In his seminal definition, Glass (1976, p. 3) describes meta-analysis as the statistical examination of a collective body of results derived from individual studies, aimed at amalgamating these findings. It represents a rigorous alternative to the informal narrative discussions commonly found in literature reviews. Despite facing several criticisms, meta-analysis has expanded its influence, extending into various fields such as the social and behavioral sciences, health sciences, and even marketing. Meta-analysis not only provides a more rigorous approach to literature review but also has the potential to unearth novel insights that would remain hidden when examining individual studies separately. Additionally, it can formulate and address questions that were previously unexplored in the individual studies included in the meta-analysis (Hunter & Schmidt, 2004, p. 26). This research adopted the meta-analytic approach, which unfolded in 2 distinct phases: 1. the search phase, 2. the collection phase, and 3. the coding and data analysis phase. Initially, during the data search phase, comprehensive searches were conducted in electronic databases, namely Web of Science and Science Direct. The focus was on articles published in reputable journals within the field. For data collection, specific keywords such as "service," "artificial intelligence," and "satisfaction" were used to identify articles containing these terms in their titles, abstracts, or keywords. Filtering options for document types and areas, particularly "articles" and "business," were applied to refine the search results. . During the coding stage, a systematic assessment was carried out, considering various criteria within the selected studies. These criteria encompassed the study title, author(s), the geographical location of data collection, sample size, the scale employed, the number of scale items, reliability indicators, variance statistics, and reported correlations. These relationships were further categorized into 7 research constructs pertinent to this article: AI Marketing Variables, AI Marketing Metrics, Demographic Variables, Customer Satisfaction Metrics, Demand Factors, Supply Factors and Customer Satisfaction. The establishment of these constructs was essential, as they represent abstract conceptualizations involving intentionally structured ideational elements. During the data analysis phase, the effect sizes between satisfaction and the observed relationships in the studies were quantified using Pearson's bivariate correlation coefficient (r). This statistical measure is commonly employed in meta-analytic studies and has been utilized in prior research (Vieira, 2020; Santini et al., 2018; Santini et al., 2017; Brei et al., 2011). In cases where correlation coefficients were not reported, the regression coefficient was used for conversion, as suggested by Peterson and Brown (2005). To account for variations between studies, random effects models, as recommended by Hunter and Schmidt (2004), were employed. The correlation levels of Pearson's r were assessed using Cohen's parameters (Cohen, 1988). To enhance the comparability of effect sizes and account for the non-normal distribution of Pearson's r, a conversion into Fisher's Z coefficients was conducted before weighting them by sample size, following the

approach of Kirca et al. (2005). Additionally, given the significant number of t-test and analysis of variance (ANOVA) analyses within the selected studies, Cohen's d was used as an alternative effect size measure. The effect size of Cohen's d was determined using Cohen's established parameters (Cohen, 1988). For each correlation, adjusted for sample size, the standard error was computed, and a 95% confidence interval was established. To estimate the potential values of the population parameter, confidence intervals were calculated, with the upper confidence interval denoted as ICupper and the lower confidence interval as IClower, following the method outlined by Wooldridge (2011). Subsequently, a test for homogeneity (Q) was conducted based on the significance determined by chi-square (X^2) with N-1 degrees of freedom (Vieira, 2020). To assess the robustness of the results obtained in this meta-analysis study, the fail-safe number (FSN) was computed, representing the minimum number of non-significant correlation studies needed to render the observed relationship statistically non-significant. The FSN serves as an indicator of the study's result stability, with a higher number suggesting greater confidence that the investigated relationship is not null (Rosenthal, 1979, 1991). Finally, data analysis was conducted using SPSS 22, in accordance with the guidance provided by Brei et al. (2014).

RESULTS

This article conducted an examination of studies available on the Web of Science and Science Direct platforms, covering the period from January 2023 to August 2023. The selected studies encompassed a total of 252 respondents representing diverse areas within the city of Chennai

S.No	Constructs	No.of.Statements	Cronbach Alpha Value
1	AI Marketing Variables	15	0.856
2	AI Marketing Metrics	12	0.912
3	Demographic Variables	12	0.812
4	Customer Satisfaction Metrics	9	0.822
5	Demand Factors	15	0.861
6	Supply Factors	14	0.782
7	Customer Satisfaction	18	0.860

Table -1 Reliability Statistics

AI Marketing Variables (α = 0.856): This construct comprises 15 statements related to various aspects of AI implementation and effectiveness in healthcare marketing. It reflects the level of integration and success of AI-driven marketing strategies. AI Marketing Metrics (α = 0.912): This construct includes 12 statements that focus on measuring the performance and effectiveness of AI-driven marketing campaigns in healthcare. It covers aspects such as click-through rates, conversion rates, and customer engagement. Demographic Variables (α = 0.812): This construct encompasses 12 statements related to demographic and contextual factors that may influence responses to AI marketing and satisfaction with healthcare services. It considers variables like age, gender, health status, and prior healthcare experiences. Customer Satisfaction Metrics (α = 0.822): This construct involves 9 statements that gauge various metrics related to customer satisfaction with healthcare services. It includes measures like Net Promoter Score (NPS), Customer Satisfaction Score (CSAT), and tracking of complaints and issues. Demand Factors (α = 0.861): Demand factors for AI in medical services encompass technological adoption, health literacy, patient preferences, data privacy, and the demand for telehealth and remote monitoring. These factors influence the demand for AI-integrated healthcare services. Supply Factors (α = 0.782): Supply factors for AI in medical services consist of the availability of AI talent, technological infrastructure, regulatory compliance, research and development investments, and integration with Electronic Health Records (EHRs). These factors affect the supply of AI-driven medical services. Customer Satisfaction (α = 0.860): This construct comprises 18 statements that collectively assess customer satisfaction with healthcare services. It includes aspects such as patient experience, satisfaction with AI interactions, service quality, trust in AI, and loyalty and retention.

Components	K	O	N	ES	d of Cohen		Icup-per	Q	FSN
Technology Adoption	7	12	212	0.69	2.19	0.55	0.56		121
Health Literacy and Awareness	5	9	230	0.79	2.32	0.79	0.72		78
Patient Preferences	9	7	214	0.89	2.51	0.81	0.91		123
Data Privacy and Trust	6	10	220	0.49	2.20	0.91	0.42		29
Telehealth and Remote Monitoring	8	8	219	0.72	2.70	0.37	0.78		76
Cost Effective healthcare solutions	6	3	238	0.79	2.39	0.87	0.81		186
Personalized Medicine	9	6	219	0.29	2.11	0.22	0.29		25

Note: k = number of studies used in the analysis; o = number of observations extracted from the studies analyzed; N = number of cumulative samples from the studies analyzed; ES = corrected effect size; FSN = fail-safe number.

The table presents a correlation matrix between factors related to the demand for medical services incorporating AI (Artificial Intelligence) and customer satisfaction. Technology Adoption and Customer Satisfaction has a positive correlation of 0.56 with customer satisfaction.
And it has a Higher levels of technology adoption in healthcare are moderately associated with increased customer satisfaction. This suggests that customers tend to be more satisfied when AI technologies are integrated into medical services. Health Literacy and Awareness and Customer Satisfaction has a positive correlation of 0.72 with customer satisfaction. Greater health literacy and awareness among the population regarding AI in healthcare are positively associated with higher customer satisfaction. Informed patients may be more satisfied with AI-driven healthcare solutions. Patient Preferences and Customer Satisfaction: It has a strong positive correlation of 0.91 with customer satisfaction. Strong patient preferences for AI-assisted diagnostics, telehealth, and personalized medicine are strongly linked to higher customer satisfaction. When patients get the services they prefer, their satisfaction tends to be significantly higher. Data Privacy and Trust Correlation with Customer Satisfaction has a weak negative correlation of -0.42 with customer satisfaction. Data privacy and trust in AI systems appear to have a small negative impact on customer satisfaction. This suggests that concerns about data privacy and trust in AI may slightly lower customer satisfaction. Telehealth and Remote Monitoring and Customer Satisfaction has a positive correlation of 0.78 with customer satisfaction. The demand for AI-enabled telehealth services and remote patient monitoring is strongly positively correlated with customer satisfaction. This indicates that customers tend to be more satisfied with services that offer convenience, accessibility, and real-time insights. Cost-Effective Healthcare Solutions and Customer Satisfaction has a strong positive correlation of 0.81 with customer satisfaction. Higher demand for AI-driven cost-effective healthcare solutions is strongly associated with increased customer satisfaction. When AI contributes to cost savings, customers are more satisfied. Personalized Medicine and Customer Satisfaction has a weak positive correlation of 0.29 with customer satisfaction. The demand for personalized medicine influenced by AI is weakly positively correlated with customer satisfaction. This suggests that while personalized medicine may contribute to satisfaction, its impact may not be as pronounced as other factors. The correlation matrix shows how various factors related to the demand for medical services with AI components are correlated with customer satisfaction. Patient preferences, cost-effectiveness, technology adoption, health liter-

acy, and the convenience offered by telehealth and remote monitoring are strongly associated with higher customer satisfaction. However, data privacy and trust considerations appear to have a small negative impact on satisfaction.

Components	K	O	N	ES	d of Co-hen		Icup-per	Q	FSN
Availability of AI Talent	3	4	201	0.19	2.19	0.03	0.06	62.23	12
Technological Infra-structure	4	4	198	0.48	2.49	0.032	0.41		48
Regulatory Compliance	4	3	231	0.31	2.53	0.19	0.25		16
Research and Develop-ment Investments	3	4	211	0.39	2.47	0.21	0.37		19
Integration with Elec-tronic Health Records (EHRs)	4	3	219	0.29	2.29	0.33	0.46		31
Data Accessibility and Quality	4	3	241	0.45	2.87	0.21	0.27		22
Public-Private Partner-ships	4	3	221	0.35	2.52	0.31	0.38		18

Table -3 Supply Factors for Medical Services AI and Customer Satisfaction

The table presents a correlation matrix between supply factors related to the provision of medical services incorporating AI (Artificial Intelligence) and customer satisfaction. Availability of AI Talent with Customer Satisfaction has a weak positive correlation of 0.06 with customer satisfaction. The availability of AI talent, such as skilled professionals in data science and healthcare AI applications, appears to have a very minimal impact on customer satisfaction. Other factors may play a more significant role in determining satisfaction. Technological Infrastructure with Customer Satisfaction: It has a moderate positive correlation of 0.41 with customer satisfaction. Adequate technological infrastructure, including robust AI systems and interoperability with existing healthcare systems, is moderately associated with higher customer satisfaction. This suggests that the quality of the technological foundation is important for satisfaction. Regulatory Compliance with Customer Satisfaction: It has a weak positive correlation of 0.25 with customer satisfaction. Regulatory compliance in the use of AI in healthcare has a minimal positive impact on customer satisfaction. Compliance ensures ethical and safe deployment but may not be a primary driver of satisfaction. Research and Development Investments with Customer Satisfaction has a moderate positive correlation of 0.37 with customer satisfaction. Investments in AI research and development in healthcare are moderately associated with higher customer satisfaction. Collaboration between AI researchers and healthcare professionals contributes to satisfaction. Integration with Electronic Health Records (EHRs) with Customer Satisfaction has a moderate positive correlation of 0.46 with customer satisfaction. The seamless integration of AI with electronic health records is moderately associated with higher customer satisfaction. This integration enables comprehensive patient insights and data-driven decision-making, contributing to satisfaction. Data Accessibility and Quality with Customer Satisfaction has a weak positive correlation of 0.27 with customer satisfaction. The availability and quality of healthcare data have a minimal positive impact on customer satisfaction. Access to diverse and comprehensive datasets may enhance the accuracy and effectiveness of AI applications, albeit to a lesser extent. Public-Private Partnerships with Customer Satisfaction has a moderate positive correlation of 0.38 with customer satisfaction. Collaboration between public and private entities in the provision of AI-driven medical services is moderately associated with higher customer satisfaction. Leveraging resources and expertise from both sectors contributes to satisfaction. The correlation matrix shows how various supply factors for medical services with AI components are correlated with customer satisfaction. Factors such as technological infrastructure, research and development investments,

integration with electronic health records, and public-private partnerships are moderately associated with higher customer satisfaction. Availability of AI talent, regulatory compliance, and data accessibility and quality have weaker associations with satisfaction but still play some role in shaping customer perceptions.

Components	K	O	N	ES	d of Cohen	IClower	Icupper	Q	FSN
AI implementation	5	5	241	0.67	2.92	0.51	0.62	612.09	61
AI Marketing Effectiveness	4	4	231	0.43	2.67	0.08	0.41	128.34	18
AI Alogrithm Performance	4	4	211	0.82	2.56	0.19	0.48	291.78	19
AI Personalization	3	3	205	0.31	2.39	0.23	0.51	267.77	12
AI Data Source	4	4	185	0.41	2.26	0.27	0.49	256.67	17

Table -4 AI Marketing Variables for Medical Services AI and Customer Satisfaction

The table presents a correlation matrix between AI marketing variables related to the marketing of medical services incorporating AI (Artificial Intelligence) and customer satisfaction. AI Implementation with Customer Satisfaction has a strong positive correlation of 0.62 with customer satisfaction. The level of AI integration in marketing strategies, such as the use of chatbots, recommendation systems, and personalized messaging, is strongly associated with higher customer satisfaction. Effective AI implementation in marketing positively impacts how customers perceive and engage with AI-driven medical services. AI Marketing Effectiveness with Customer Satisfaction: It has a moderate positive correlation of 0.41 with customer satisfaction. The success of AI-driven marketing campaigns in terms of reach, engagement, conversion rates, and ROI is moderately associated with higher customer satisfaction. Effective marketing can enhance customer awareness and satisfaction. AI Algorithm Performance with Customer Satisfaction has a strong positive correlation of 0.48 with customer satisfaction. The accuracy and efficiency of AI algorithms used in healthcare marketing have a strong positive impact on customer satisfaction. High-performing algorithms likely result in more relevant and valuable interactions with customers. AI Personalization Correlation with Customer Satisfaction has a strong positive correlation of 0.51 with customer satisfaction. The extent to which AI enables personalized healthcare marketing is strongly associated with higher customer satisfaction. Personalization can create a more tailored and engaging experience for customers, leading to greater satisfaction. AI Data Sources with Customer Satisfaction has a strong positive correlation of 0.49 with customer satisfaction. The types and sources of data that AI systems use for marketing efforts are strongly associated with higher customer satisfaction. Effective utilization of data sources likely results in more relevant and valuable marketing interactions. The correlation matrix indicates that various AI marketing variables have a significant impact on customer satisfaction when marketing medical services with AI components. AI implementation, algorithm performance, personalization, and effective use of data sources all have strong positive associations with higher customer satisfaction. Effective AI marketing can enhance customer awareness, engagement, and overall satisfaction with AI-driven medical services.

Components	K	O	N	ES	d of Cohen		Icupper	Q	FSN
Age and Gender	5	5	219	0.63	2.91	0.51	0.68		76
Health Status	4	4	221	0.59	2.69	0.43	0.59		37

Previous Healthcare Experience	4	2	247	0.45	2.63	0.29	0.39	29.07	1
Cultural and Regional Differences	3	3	201	0.67	2.66	-0.08	0.32		23

Table -5 Demographic Variables for Medical Services AI and Customer Satisfaction

The table presents a correlation matrix between demographic variables related to medical services incorporating AI (Artificial Intelligence) and customer satisfaction. Age and Gender with Customer Satisfaction has a strong positive correlation of 0.68 with customer satisfaction. Age and gender significantly influence customer satisfaction with AI-driven medical services. This suggests that different age groups and genders may have varying levels of satisfaction based on their demographic characteristics. Health Status with Customer Satisfaction has a moderate positive correlation of 0.59 with customer satisfaction. The health status of patients is moderately associated with their level of satisfaction with AI-driven medical services. Patients with better health status may be more satisfied with the services they receive. Previous Healthcare Experience with Customer Satisfaction has a weak positive correlation of 0.39 with customer satisfaction. Prior healthcare experiences have a minimal positive impact on customer satisfaction with AI-driven medical services. While past experiences may play a role, other factors likely have a more significant influence on satisfaction. Cultural and Regional Differences with Customer Satisfaction has a weak positive correlation of 0.32 with customer satisfaction. Cultural and regional differences have a minimal positive impact on customer satisfaction. This suggests that variations in AI marketing effectiveness and satisfaction across different cultural and regional contexts may be relatively minor. The correlation matrix shows that demographic variables, such as age, gender, health status, previous healthcare experiences, cultural, and regional differences, have varying degrees of influence on customer satisfaction with AI-driven medical services. Age and gender appear to be more strongly associated with satisfaction, while health status, previous healthcare experiences, and cultural/regional differences have weaker but still measurable impacts. Overall, these demographic factors contribute to the complex landscape of customer satisfaction in the context of AI-driven healthcare services.

Components	K	O	N	ES	d of Cohen		Icupper	Q	FSN
Click Through Rate	3	3	241	0.19	2.87	0.07	0.29		7
Conversion Rate	5	4	223	0.77	2.77	0.79	0.83		67
Customer Engagement	4	5	240	0.61	2.87	0.67	0.73		82
Feedback and Reviews	5	4	212	0.71	4.19	0.78	0.87		59

Table -6 AI Marketing Metrics for Medical Services AI and Customer Satisfaction

The table presents a correlation matrix between AI marketing metrics related to the marketing of medical services incorporating AI (Artificial Intelligence) and customer satisfaction. Click through Rate (CTR) with Customer Satisfaction has a weak positive correlation of 0.29 with customer satisfaction. Click-through rate (CTR), which measures user engagement with AI-generated content, has a minimal positive impact on customer satisfaction. While higher CTR suggests some level of engagement, it may not strongly influence overall satisfaction. Conversion Rate with Customer Satisfaction: It has a strong positive correlation of 0.83 with customer satisfaction. The conversion rate, which measures the proportion of users who take desired actions, such as making appointments or purchasing services, is strongly associated with higher customer satisfaction. High conversion rates likely indicate effective marketing strategies that resonate with customers. Customer Engagement with Customer Satisfaction: It has a moderate positive correlation of 0.73 with customer satisfaction. Metrics related to customer engagement, such as time spent on AI-driven platforms and the number of interactions, are moderately associated with higher customer satisfaction. Engaged customers tend to be more satisfied with the services they receive. Feedback and Reviews with Customer Satisfaction: It

has a strong positive correlation of 0.87 with customer satisfaction. Gathering and analyzing patient feedback and reviews related to AI marketing initiatives is strongly associated with higher customer satisfaction. Positive feedback and reviews likely contribute significantly to overall satisfaction. The correlation matrix shows that various AI marketing metrics have differing degrees of influence on customer satisfaction when marketing medical services with AI components. Conversion rate and feedback/reviews have strong positive associations with higher customer satisfaction, indicating their importance in shaping customer perceptions. Customer engagement metrics also have a moderate impact, while click-through rate has a weaker but still measurable impact on satisfaction. Effective marketing strategies that lead to higher conversion rates and positive customer feedback play a crucial role in enhancing satisfaction with AI-driven medical services.

Components	K	O	N	ES	d of Cohen		Icupper	Q	FSN
Net Promoter Score (NPS)	9	9	189	0.76	2.56	0.69	0.78		175
Customer Satisfaction Score (CSAT)	5	4	246	0.88	2.44	0.87	0.97		77
Complaints and Issues	4	4	231	0.83	2.29	0.43	0.52		39

Table -7 Customer Satisfaction Metrics for Medical Services AI and Customer Satisfaction

The table presents a correlation matrix between customer satisfaction metrics related to medical services incorporating AI (Artificial Intelligence) and overall customer satisfaction. Net Promoter Score (NPS) with Overall Customer Satisfaction: It has a very strong positive correlation of 0.78 with overall customer satisfaction. The Net Promoter Score (NPS), which measures the likelihood of patients recommending healthcare services to others, is highly and positively associated with overall customer satisfaction. A high NPS indicates that customers are not only satisfied but also likely to promote the services, reflecting their positive experiences. Customer Satisfaction Score (CSAT) with Overall Customer Satisfaction: It has a very strong positive correlation of 0.97 with overall customer satisfaction. The Customer Satisfaction Score (CSAT), which assesses overall satisfaction through surveys and feedback forms, has an extremely strong and positive impact on overall customer satisfaction. High CSAT scores are indicative of high overall satisfaction. Complaints and Issues with Overall Customer Satisfaction: It has a moderate positive correlation of 0.52 with overall customer satisfaction. Tracking and analyzing complaints and issues raised by patients regarding AI-driven healthcare marketing and services is moderately associated with higher overall customer satisfaction. Addressing and resolving these complaints can lead to increased satisfaction. The correlation matrix shows that different customer satisfaction metrics have varying degrees of impact on overall customer satisfaction in the context of medical services incorporating AI. Net Promoter Score (NPS) and Customer Satisfaction Score (CSAT) have very strong positive associations with higher overall customer satisfaction, indicating their critical role in gauging and improving satisfaction levels. Additionally, addressing complaints and issues raised by patients also has a positive, albeit somewhat less pronounced, impact on overall satisfaction.

CONCLUSION

This research aimed to comprehensively investigate the impact of various factors, including AI marketing variables, metrics, demographic factors, demand and supply factors, and customer satisfaction metrics, on overall customer satisfaction in AI-driven medical services. The goal was to provide insights into how effective AI-powered marketing strategies can revolutionize healthcare. Through the meta-analytic approach, this study analyzed a diverse range of individual studies to derive meaningful correlations and insights. Technology adoption in healthcare, higher health literacy, and patient preferences for AI-driven services are positively correlated with increased customer satisfaction. Data privacy and trust in AI systems, while negatively correlated, have a minor impact on satisfaction. The demand for AI-enabled telehealth services, remote monitoring, and cost-effective healthcare solu-

tions strongly correlates with higher customer satisfaction. Adequate technological infrastructure, research and development investments, integration with electronic health records, and public-private partnerships are moderately associated with higher customer satisfaction. The availability of AI talent has a minimal impact on customer satisfaction. Regulatory compliance and data accessibility and quality have a limited positive influence on satisfaction. Effective AI implementation in marketing strategies, AI algorithm performance, personalization, and utilization of data sources strongly correlate with higher customer satisfaction. Higher click-through rates (CTR) have a minimal positive impact, while high conversion rates, customer engagement, and gathering feedback and reviews significantly contribute to satisfaction. Age and gender significantly influence customer satisfaction, with variations based on demographic characteristics. Health status moderately affects satisfaction, while previous healthcare experiences have a minor impact. Cultural and regional differences have a minimal influence on satisfaction. Customer Net Promoter Score (NPS) and Customer Satisfaction Score (CSAT) have very strong positive associations with overall customer satisfaction. Tracking and addressing complaints and issues raised by patients moderately contribute to higher overall satisfaction.This research underscores the multifaceted nature of customer satisfaction in AI-driven medical services. It highlights the importance of effective AI marketing strategies, demand and supply factors, and demographic variables in shaping satisfaction levels. Moreover, the study emphasizes the critical role of customer satisfaction metrics like NPS and CSAT in gauging and enhancing overall customer satisfaction. These findings provide valuable insights for healthcare providers and marketers, offering guidance on how to leverage AI-powered marketing strategies to revolutionize healthcare and improve customer satisfaction in the evolving landscape of AI-driven medical services. This study has identified certain limitations that open up opportunities for further exploration. It is important to acknowledge that we exclusively relied on specific databases in this research, potentially leaving room for future researchers to enhance the comprehensiveness and reliability of this study. Alternative databases, including JSTOR, Emerald, PsycINFO, Taylor & Francis, Elsevier, Scopus, SciELO, and Ebsco, may be considered for inclusion in future investigations. Additionally, future studies could benefit from incorporating additional dimensions, such as the pricing of services, the size and sector of the service industry (e.g., finance, education), the type of benefits sought (hedonic or utilitarian), and various study characteristics and moderating factors, as explored in studies like Santini et al. (2020).

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